

# New records of Atlantic *Hippolyte*, with the description of two new species, and a key to all Atlantic and Mediterranean species (Crustacea, Decapoda, Caridea)

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## ABSTRACT

*Hippolyte longiallex* n. sp. is described after specimens from Principe and São Tomé islands (West Africa). This species, which is the smallest of the genus *Hippolyte* Leach, 1814, is very similar to the West Indian species *H. nicholsoni* Chace, 1972. In *H. longiallex* n. sp., the third to fifth pereopods have longer dactyli with longer spines on the flexor border than in *H. nicholsoni*. Both *H. longiallex* n. sp. and *H. nicholsoni* are gorgonian associates. *Hippolyte catagrapha* n. sp. is described after specimens from South Africa (False Bay). It is very similar to the European species *Hippolyte leptometrae* Ledoyer, 1969, both species being crinoid associates. *Hippolyte leptometrae* has two dorsal teeth: one median and one subdistal. *Hippolyte catagrapha* n. sp. has only one median dorsal tooth. *Hippolyte leptometrae* is recorded for the second time in the Bay of Biscay and illustrations of an Atlantic specimen are given for the first time. A putative new species close to *H. varians* Leach, 1814 and *H. kraussiana* (Stimpson, 1860) is recorded from Principe and São Tomé islands but it is not named because the available material is insufficient. Its rostrum has three dorsal teeth and the sixth segment of its pleon is very slender. *Hippolyte varians* is recorded for the first time in the area of Tromsø, northern Norway. An identification key is provided for all *Hippolyte* species from the Atlantic Ocean, the Mediterranean Sea and neighbouring areas.

## KEY WORDS

Crustacea,  
Decapoda,  
Caridea,  
*Hippolyte*,  
identification key,  
Atlantic,  
commensal,  
gorgonian,  
crinoid,  
new species.

## RÉSUMÉ

*Nouveaux signalements d'Hippolyte atlantiques, avec la description de deux nouvelles espèces, et une clé d'identification de toutes les espèces atlantiques et méditerranéennes (Crustacea, Decapoda, Caridea).*

*Hippolyte longiallex* n. sp. est décrite d'après des spécimens des îles Principe et São Tomé (Afrique de l'Ouest). Cette espèce, qui est la plus petite du genre, est étroitement apparentée à l'espèce ouest-atlantique *H. nicholsoni* Chace, 1972, et toutes deux sont des commensales de gorgones. Chez *H. longiallex* n. sp., les trois derniers péréiopodes ont le dactyle plus long et avec des épines plus longues sur le bord flexeur que chez *H. nicholsoni*. *Hippolyte catagrapha* n. sp. est décrite à partir de spécimens d'Afrique du Sud (False Bay). *Hippolyte catagrapha* n. sp. est très proche de l'espèce européenne *H. leptometrae* Ledoyer, 1969 et toutes deux sont des commensales de crinoïdes. *Hippolyte leptometrae* a deux dents dorsales: une médiane et une subdistale. *Hippolyte catagrapha* n. sp. présente une dent unique, située au milieu du rostre. *Hippolyte leptometrae* est signalée pour la seconde fois dans le golfe de Gascogne et des figures d'un spécimen atlantique sont données pour la première fois. Une espèce probablement nouvelle, apparentée à *H. varians* Leach, 1814 et à *H. kraussiana* (Stimpson, 1860), est signalée des îles Principe et São Tomé mais n'est pas nommée car le matériel disponible est insuffisant. Son rostre a trois dents dorsales et le sixième segment du pléon est très gracile. *Hippolyte varians* est signalée pour la première fois dans la région de Tromsø (Norvège septentrionale). Une clé d'identification est donnée pour toutes les *Hippolyte* Leach, 1814 de l'Atlantique, de la Méditerranée et des régions avoisinantes.

## MOTS CLÉS

Crustacea,  
Decapoda,  
Caridea,  
*Hippolyte*,  
clé d'identification,  
Atlantique,  
commensal,  
gorgone,  
crinoïde,  
nouvelles espèces.

## INTRODUCTION

The genus *Hippolyte* Leach, 1814 in the East Atlantic Ocean and the Mediterranean Sea was revised by d'Udekem d'Acoz (1996), who also gave a list of all known species of the genus. However very little African material was available during this study, and the West and South African coast could not be considered as properly investigated at that time. Through the courtesy of Prof. Peter Wirtz (Madeira) and Prof. Charles Griffiths (University of Cape Town), I have recently come across two new Atlantic African *Hippolyte* species, which are described in the present paper: *H. longiallex* n. sp. from Principe and São Tomé islands (Gulf of Guinea) and *H. catagrapha* n. sp. from False Bay (South Africa). The first one is a commensal of gorgonians and the second one of crinoids. *Hippolyte longiallex* n. sp. is very similar to the West

Indian *H. nicholsoni* Chace, 1972, also a gorgonian associate. *Hippolyte catagrapha* n. sp. is remarkably close to the rare and poorly known European species *H. leptometrae* Ledoyer, 1969, which also lives on crinoids. New figures of *H. leptometrae* are given after a female from the Bay of Biscay made available for study by Dr Jean-Claude Sorbe. A third probable new species has been recorded from the islands of the Gulf of Guinea (Principe and São Tomé islands) but is not named since the material available for study is insufficient. It belongs to the group including *H. varians* Leach, 1814 and *H. kraussiana* (Stimpson, 1860), i.e. a complex of allopatric ill-defined species widely distributed in the East Atlantic, the Mediterranean, the Red Sea and the Western Indian Ocean. A breeding population of *Hippolyte varians* is recorded in the area of Tromsø, northern Norway. This is the northernmost record of the species. An identification key restricted to

females is provided for all *Hippolyte* species from the Atlantic Ocean, the Mediterranean Sea and neighbouring areas.

#### ABBREVIATIONS

|                  |   |
|------------------|---|
| Mxp1-Mxp3        | first to third maxilliped;  |
| P1-P5            | first to fifth pereopod;  |
| MNHN             | Muséum national d'Histoire naturelle, Paris;                        |
| OUMNH Zoo. Coll. | Oxford University Museum of Natural History, Zoological Collection; |
| TMU, TSZCr       | Tromsø Museum University, Tromsø Samlinger Zoologi Crustacea.       |

#### SYSTEMATICS

Family HIPPOLYTIDAE Bate, 1888

Genus *Hippolyte* Leach, 1814

#### *Hippolyte catagrapha* n. sp.

(Figs 1-4)

**TYPE MATERIAL.** — **South Africa.** False Bay, 6-8 m depth, from the crinoid *Tropiometra carinata* (Lamarck, 1816), collected by the scuba divers Georgina Jones, Peter Southwood and Guido Zsilavec and made available for study by Charles L. Griffiths, 1.V.2005, ovigerous ♀ holotype (MNHN-Na16258); 1 ovigerous ♀ dissected paratype (MNHN-Na16259); 1 immature ♀ paratype (MNHN-Na16260).

**ETYMOLOGY.** — *Catagrapha* is the feminine of the Latin adjective *catagraphus*, which means painted, coloured, figured. The name alludes to the complex and variable colour pattern of the species.

**DISTRIBUTION.** — False Bay (South Africa).

#### DESCRIPTION

Carapace moderately stout. Rostrum moderately high, straight, about as long as carapace, much longer than antennular peduncle. Rostrum without postrostral tooth, with a single dorsal teeth at 0.4 of rostrum length; two or three ventral teeth, distant from tip of rostrum. Hepatic tooth overreaching or not reaching anterior edge of carapace. Pterygostomial angle not protruding (Fig. 1A, B).

Third pleonite barely curved in lateral view. Ratio dorsal length/height of sixth pleonite: 1.8 in holotype (Fig. 1A). Distal border of telson with 10 well

developed spines in dissected paratype (outer spines much shorter than others). First pair of dorsolateral spines on 0.5 or 0.6 of telson and second pair on 0.8 (Fig. 1E, F).

Unpigmented part of cornea slightly longer than broad (Fig. 1C). Cornea not reaching stylocerite apex (Fig. 1A). First article of antennular peduncle without distolateral tooth; stylocerite long, reaching or just overreaching tip of first article of antennular peduncle. Second article of antennular peduncle distinctly longer than broad in dorsal view, distinctly longer than third article in dorsal view. Inner antennular flagellum longer than outer flagellum (Fig. 1C). Scaphocerite 3.2 times as long as wide; distolateral spine of scaphocerite not reaching tip of blade; distolateral spine and blade separated by a distinct notch (Fig. 1D).

Mandibular incisor process with seven teeth (Fig. 2B). Third maxilliped reaching about 0.5 of scaphocerite (Fig. 1A). Ultimate article of third maxilliped with many long apical setae (looking like a paintbrush), with 10 conical spines on its apex and the distal third of its mesial border (the apical ones are difficult to see in dorsal view, being hidden by setae); 3 times as long as wide when dorsally measured; 1.5 times as long as penultimate; exopod of third maxilliped not reaching half of antepenultimate segment of endopod (Fig. 3A-D).

P1 (Fig. 3E, F) with outer edges of fingers of chela not denticulate (but with marginal tiny setules).

P2 (Fig. 3G, H) with first segment of carpus 2.1 times as long as third segment, 1.2 times as long as second and third segments combined; first segment 8.6 times as long as wide; second segment 3.6 times as long as wide; third segment 3.7 times as long as wide.

P3-P5 stout (Fig. 4). Merus of P3-P4 with a single spine, in subdistal position; merus of P5 without spine; carpus of P3-P5 with spine; propodus with about two or three slender spinules on distal third, hidden by dense tufts of setae; dactylus short and very stout, with two terminal spines much shorter than dactylus (most anterior spine 2.5 times as long as next one), and with four or five more slender but rather well developed spines on flexor border.

No specimens with plumose setae on body ("fascigerous" specimens) were recorded.

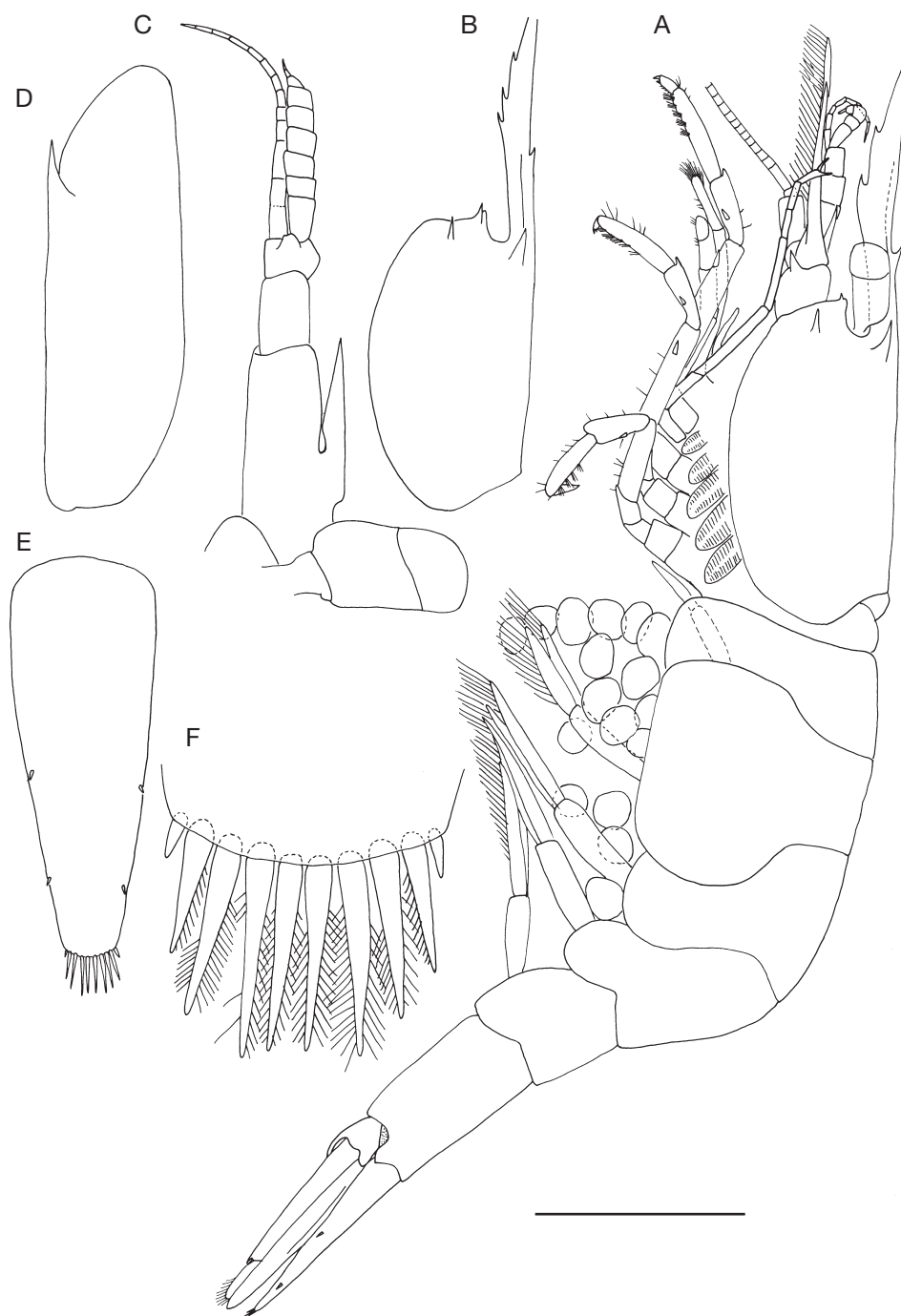


FIG. 1. — *Hippolyte catagrapha* n. sp., ♀♀, South Africa, False Bay: **A**, holotype; **B-D**, paratype; **A**, habitus in lateral view; **B**, carapace; **C**, right eye and antennula; **D**, left scaphocerite; **E**, telson; **F**, tip of telson. Scale bar: A, B, 2.9 mm; C-E, 1.24 mm; F, 0.3 mm.



FIG. 2. — *Hippolyte catagrapha* n. sp., ♀ paratype, South Africa, False Bay: **A**, right mandible; **B**, incisor process of right mandible; **C**, left maxillula; **D**, left maxilla; **E**, left Mxp1; **F**, left Mxp2. Scale bar: A, 0.42 mm; B, 0.10 mm; C-F, 0.30 mm.

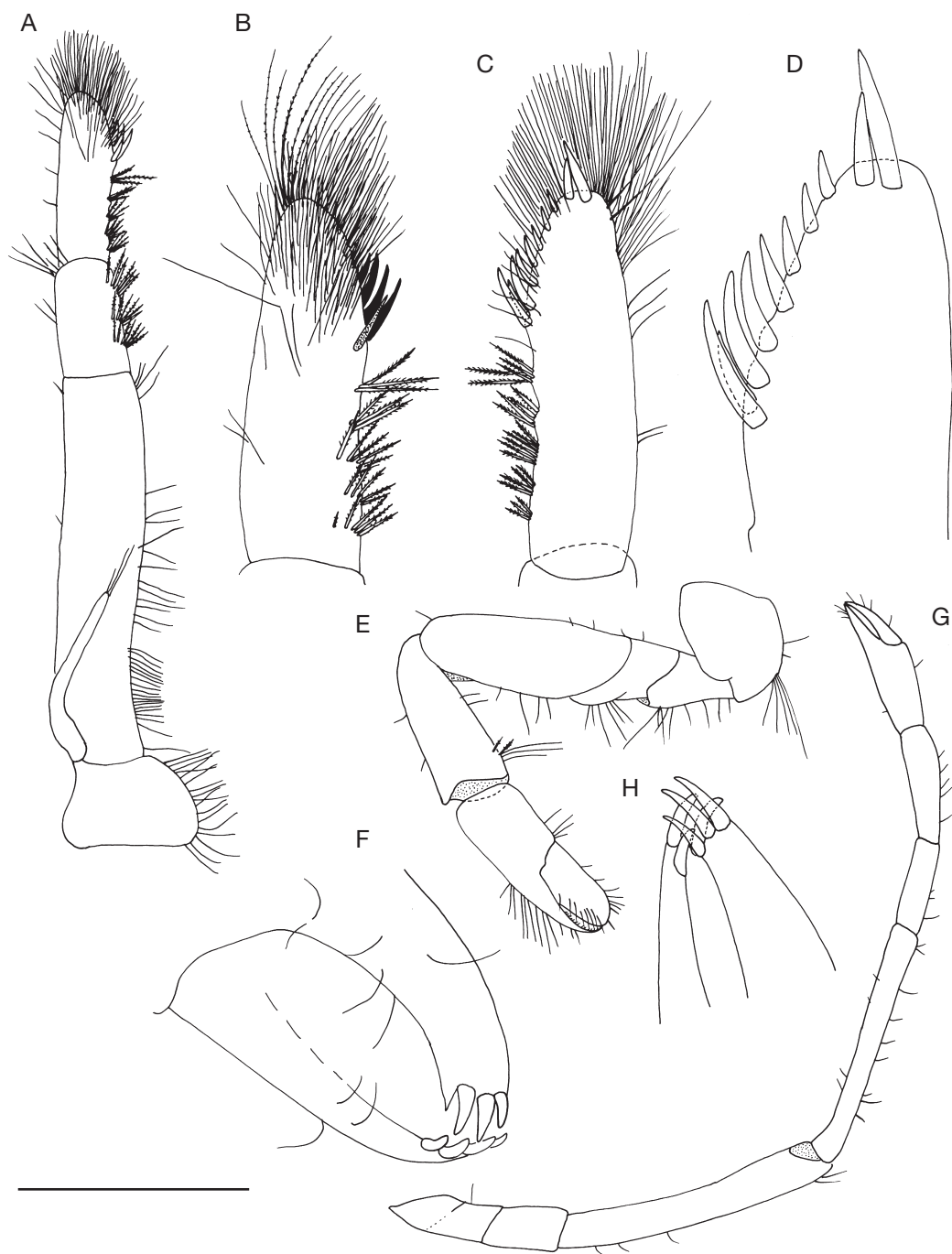


FIG. 3. — *Hippolyte catagrapha* n. sp., ♀ paratype, South Africa, False Bay: **A**, left Mxp3 in dorsal view; **B**, distal article of left Mxp3 in dorsal view; **C**, distal article of left Mxp3 in ventral view; **D**, tip of distal article of left Mxp3 in dorsal view (setae not shown); **E**, left P1; **F**, tip of left P1 in mesial view; **G**, left P2; **H**, tip of left P2. Scale bar: A, E, G, 0.84 mm; B, C, 0.42 mm; D, F, H, 0.20 mm.

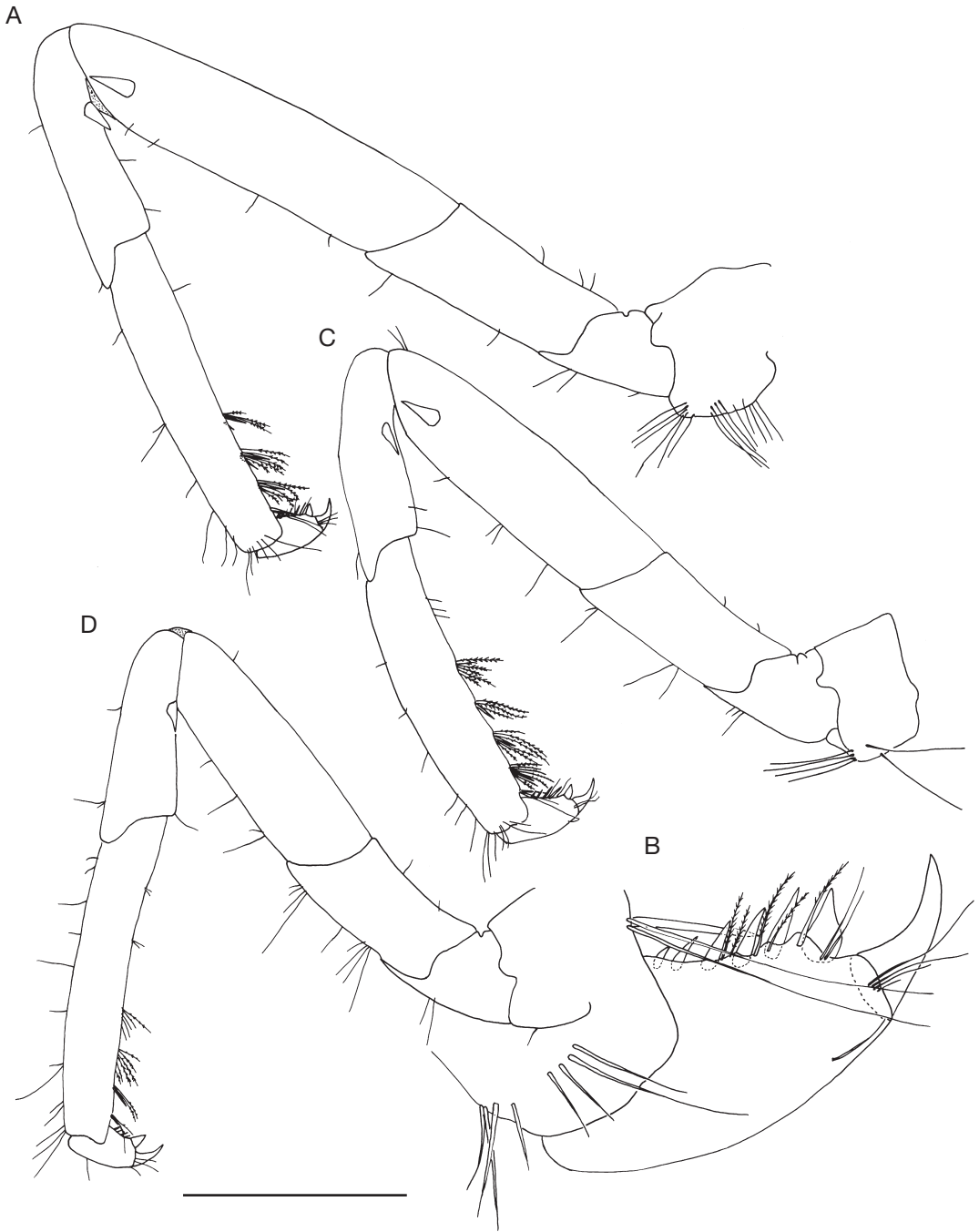


FIG. 4. — *Hippolyte catagrapha* n. sp., ♀ paratype, South Africa, False Bay: **A**, left P3; **B**, dactylus of left P3; **C**, left P4; **D**, left P5. Scale bar: A, C, D, 0.84 mm; B, 0.17 mm.



### Colour pattern

Colour pattern very vivid but variable (photographs given by C. Griffiths). Some specimens have a colour pattern made up of longitudinal red and yellowish stripes, some stripes being interrupted and forming longitudinal series of spots. Others are spotted like a panther: black spots on a yellow background with a few small whitish marks. The different colour patterns mimic those (also varied) of the feather star *Tropiometra carinata* (Lamarck, 1816).

### Size

Total length up to 22 mm.

### ECOLOGY

6–8 m depth, associated with the crinoid *Tropiometra carinata*, mimicking its various colour patterns.

### REMARKS

*Hippolyte catagrapha* n. sp. can be distinguished at first glance from the other South African *Hippolyte* described by Barnard (1950) and Kensley (1970, 1972) by the whorl of setae of the tip of its third maxilliped. This character is shared with the rare European species *H. leptometrae*. The two species are very similar but *H. catagrapha* n. sp. lives in shallower waters than *H. leptometrae*. *Hippolyte catagrapha* n. sp. has only one dorsal rostral tooth (on the middle of the rostrum), whilst *H. leptometrae* has in addition a subdistal tooth on the dorsal part of the rostrum. *Hippolyte catagrapha* n. sp. is also stouter than *H. leptometrae*, especially in the last three pereopods and their dactyli.

The validity of the rostral ornamentation as a diagnostic character is variable within the genus *Hippolyte*. There are species in which this character is very constant, e.g., *H. varians*, and others, such as *Hippolyte leptocerus* (Heller, 1863), in which it is exceedingly variable (d'Udekem d'Acoz 1996). Griffiths (*in litt.*) who examined more specimens of *H. catagrapha* n. sp. confirmed that there was one single dorsal rostral tooth in all his specimens, confirming the validity of this character for the species.

The existence of a pair of very similar species, one European and one South African is not unique amongst decapods. This is for example the case

in *Callianassa subterranea* (Montagu, 1808) and *C. australis* Kensley, 1974. In other cases there is a latitudinal succession of three related species, for example *Polybius* (*Macropipus*) *tuberculatus* (Roux, 1830) in Europe, *P. (M.) rugosus* Doflein, 1904 in West Africa and *P. (M.) australis* Guinot, 1961 in South Africa. Therefore it would not be unexpected if a third *Hippolyte* species of the group *leptometrae* would occur on crinoids of tropical West Africa.

Unlike *H. catagrapha* n. sp. and *H. leptometrae*, the third crinoid-associated *Hippolyte* species, the European *H. prideauxiana* Leach, 1815 (syn. *H. huntii* Gosse, 1877), has no dense whorl of setae on the tip of the third maxilliped. However *H. prideauxiana* shares other characters with *H. catagrapha* n. sp. and *H. leptometrae*, such as a very long and narrow first article of the carpus of P2 and the general morphology of the dactylus of P3–P5.

*Hippolyte catagrapha* n. sp. exhibits either longitudinal stripes or a spotted colour pattern. *H. leptometrae* is longitudinally striped (in the very few specimens observed alive) (Noël 1983). Adult females of *H. prideauxiana* are always transversally striped (Smaldon *et al.* 1993). *Hippolyte catagrapha* n. sp. probably is able to modify its colour pattern to match the variable colour of its host. Free-living *Hippolyte* species such as *H. varians* are able to modify their colour pattern to match the substrate, in modifying their chromatophores (Chassard-Bouchaud 1965). So, it could also be the case in some symbiotic species.

### *Hippolyte leptometrae* Ledoyer, 1969 (Figs 5; 6)

*Hippolyte leptometrae* Ledoyer, 1969: 342, pl. 2. — Lagardère 1973: 80, 84. — Noël 1983: 37, fig. 1. — D'Udekem d'Acoz 1996: 54, fig. 24.

MATERIAL EXAMINED. — **France**. Bay of Biscay, TROPICAL cruise, sample E3-TS03-F1 (daytime sampling), 46°56'N 004°30'W, medium-grained sand ["sables moyens"], 130–132 m depth, the occurrence of *Leptometra celtica* (McAndrew & Barrett, 1858) in the sample was noted (Jean-Claude Sorbe pers. comm.), 13.IX.2002, coll. J.-C. Sorbe, 1 ovigerous ♀ (MNHN-Na16261).

DISTRIBUTION. — Bay of Biscay (Lagardère 1973; present data); Mediterranean (d'Udekem d'Acoz 1996).



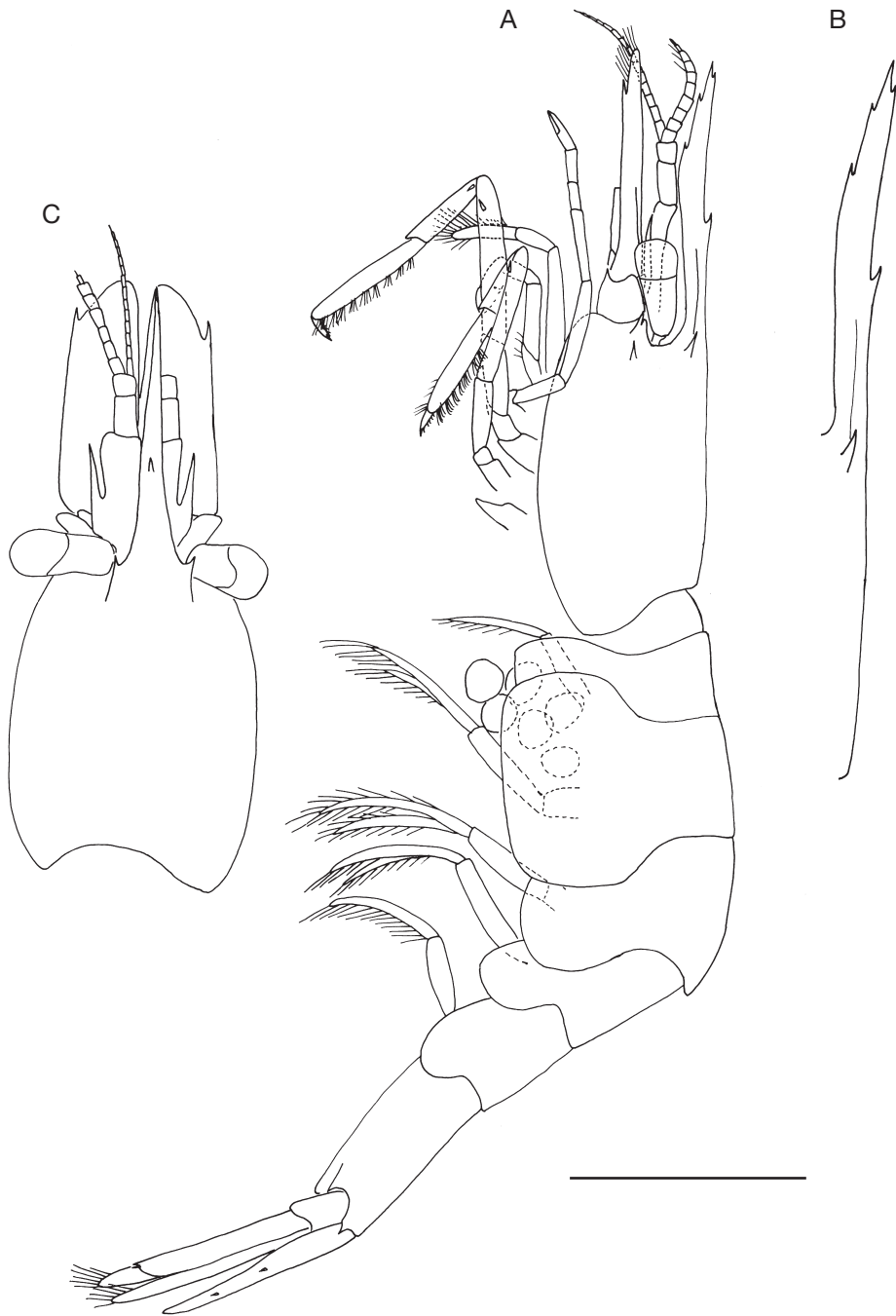


FIG. 5. — *Hippolyte leptometrae* Ledoyer, 1969, ♀, Bay of Biscay: **A**, habitus in lateral view (right P4 used for illustration since left P4 is missing); **B**, rostrum and dorsal part of carapace; **C**, carapace and cephalic appendages in dorsal view. Scale bar: A, C, 2.5 mm; B, 1.8 mm.

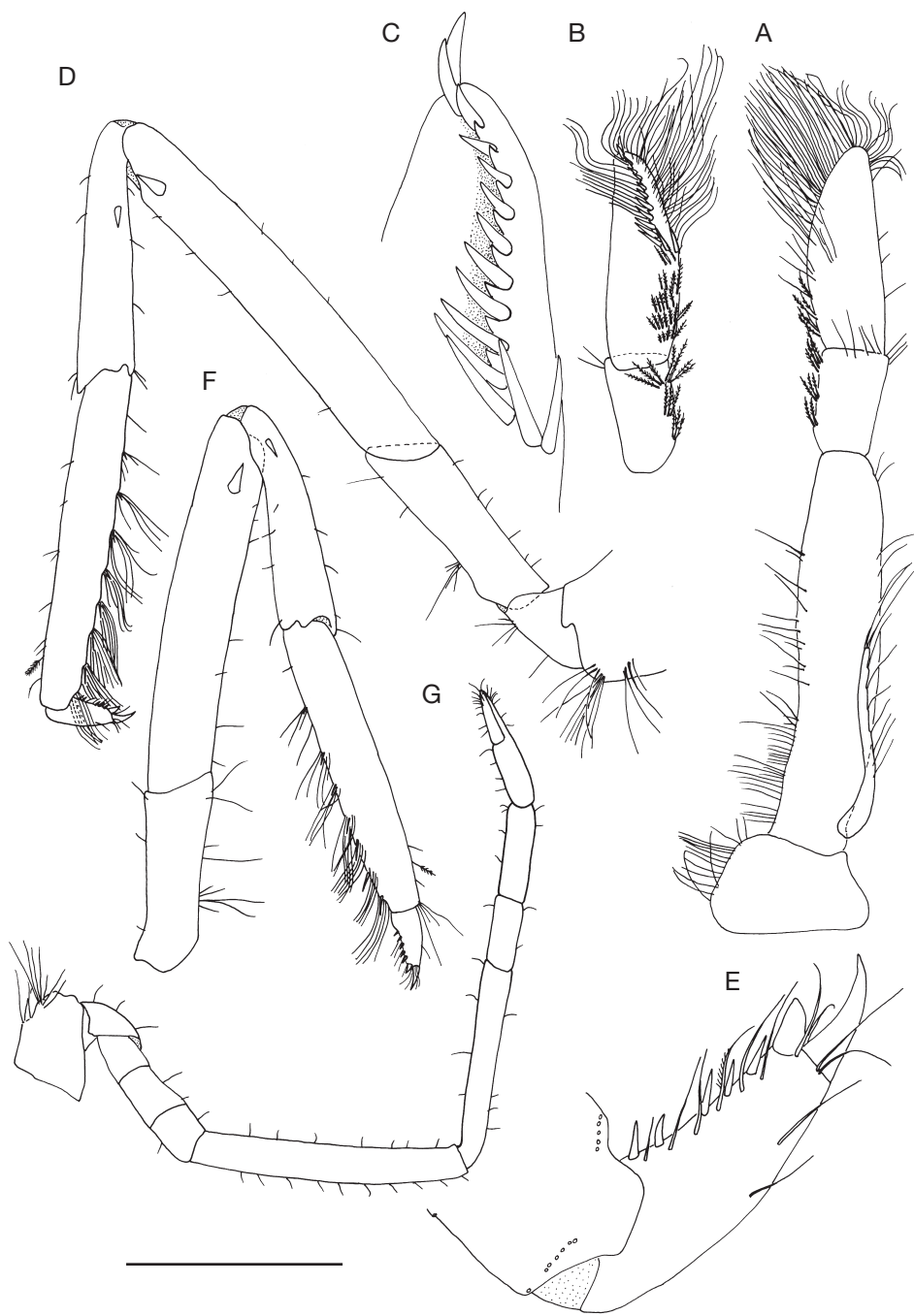


FIG. 6. — *Hippolyte leptometrae* Ledoyer, 1969, ♀, Bay of Biscay: **A**, right Mxp3 in dorsal view; **B**, distal two articles of Mxp3 in ventral view; **C**, tip of distal article of right Mxp3 in dorsal view (setae not shown); **D**, left P2; **E**, left P3; **F**, dactylus of left P3; **G**, right P4. Scale bar: A, B, 0.75 mm; C, 0.21 mm; D, E, G, 0.84 mm; F, 0.17 mm.

## ECOLOGY

The species has been recorded between 95 and 130 m depth. It is associated with the crinoids *Leptometra phalangium* (J. Müller, 1841) in the Mediterranean (Ledoyer 1969; Noël 1983) and presumably with *Leptometra celtica* in the eastern Atlantic, as the occurrence of *L. celtica* in the sample here examined was noted.

## REMARKS

*Hippolyte leptometrae* has rarely been recorded, and all illustrations in the literature are based on Mediterranean specimens. The Biscayan specimen under study proves to be slightly more robust than the Mediterranean shrimp illustrated by d'Udekem d'Acoz (1996). In that paper, I indicated that I was unable to observe spines on the last article of the third maxilliped of the single specimen examined (which was not dissected). The dissection of the maxilliped of the present specimen (from the Bay of Biscay) indicates that such spines are indeed present but cannot be seen in dorsal view (Fig. 6A-C).

*Hippolyte longiallex* n. sp.  
(Figs 7-9)

TYPE MATERIAL. — **West Africa.** Gulf of Guinea, Principe Island, Pedra da Galé, 1°43'N, 7°23'E, 35 m depth, from blue *Muriceopsis tuberculata* (Esper, 1792), scuba diving, 16.II.2004, coll. Peter Wirtz, 2 ovigerous ♀♀ (holotype with intact rostrum [MNHN-Na16262]; paratype with broken rostrum [MNHN-Na16263]; all P3-P5 are detached and cannot be attributed to which specimen) (MNHN-Na16263). — Principe Island, Pedra da Galé, 1°43'N, 7°23'E, 35 m depth, from red *M. tuberculata*, scuba diving, 16.II.2004, coll. Peter Wirtz, 1 ovigerous ♀ paratype (MNHN-Na16264). — Pedra da Galé, 40 m depth, from *M. tuberculata*, scuba diving, 17.II.2004, coll. Peter Wirtz, 1 paratype ♀ with a bopyrid in gill chamber (MNHN-Na16265). São Tomé Island, Diogo Vaz, 35 m, from gorgonians, scuba diving, 13.II.2006, coll. Peter Wirtz, 1 paratype ♀ (MNHN-Na16266).

ETYMOLOGY. — The name derives from the Latin adjective *longus* (long) and noun *allex* (big toe), the name alluding to the very long terminal unguis of the P3-P5. The name is a noun in apposition.

DISTRIBUTION. — Tropical West Africa: Principe and São Tomé islands.

## DESCRIPTION

Carapace stout. Rostrum narrow, straight, slightly shorter than carapace, shorter or longer than antennular peduncle. Rostrum without postrostral tooth, with two or three dorsal teeth (of which one is close to rostrum tip); one or two ventral teeth, close to tip of rostrum (Fig. 7A-C). Hepatic tooth not reaching anterior edge of carapace. Pterygostomial angle barely protruding.

Third pleonite with a well distinct curve in lateral view. Ratio dorsal length/height of sixth pleonite: 2.5 in holotype (Fig. 7A). Distal border of telson with four large and eight short spines in dissected paratype (Fig. 7I). First pair of dorsolateral spines on 0.5 of telson and second pair on 0.7 (Fig. 7H).

Unpigmented part of cornea scarcely longer than broad (Fig. 7D). Cornea not reaching stylocerite apex (Fig. 7A). First article of antennular peduncle without distolateral tooth; stylocerite short, reaching 0.67 of first article of antennular peduncle (Fig. 7E). Second article of antennular peduncle slightly longer than broad in dorsal view, distinctly longer than third article in dorsal view. Inner antennular flagellum incomplete or missing in all specimens. Scaphocerite 3.1-3.3 times as long as wide; distolateral spine of scaphocerite not reaching tip of blade; distolateral spine and blade separated by a distinct notch (Fig. 7F).

Mouthparts with morphology typical for the genus *Hippolyte* (Figs 7G; 8). Mandibular incisor process with five teeth (Fig. 8A). Third maxilliped reaching about 0.5 of scaphocerite (Fig. 7A). Ultimate article of third maxilliped with few rather short apical setae, with eight rather slender conical spines on its apex and the distal third of its mesial border; 4.2 times as long as wide when dorsally measured; 1.9 times as long as penultimate; exopod of third maxilliped not reaching half of antepenultimate segment of endopod (Fig. 7G).

P1 (Fig. 9A) with outer edges of fingers of chela not denticulate.

P2 (Fig. 9B) with first segment of carpus 1.5 times as long as third segment, 0.95 times as long as second and third segments combined; first segment 3.6 times as long as wide; second segment 1.1 times as long as wide; third segment 1.6 times as long as wide.

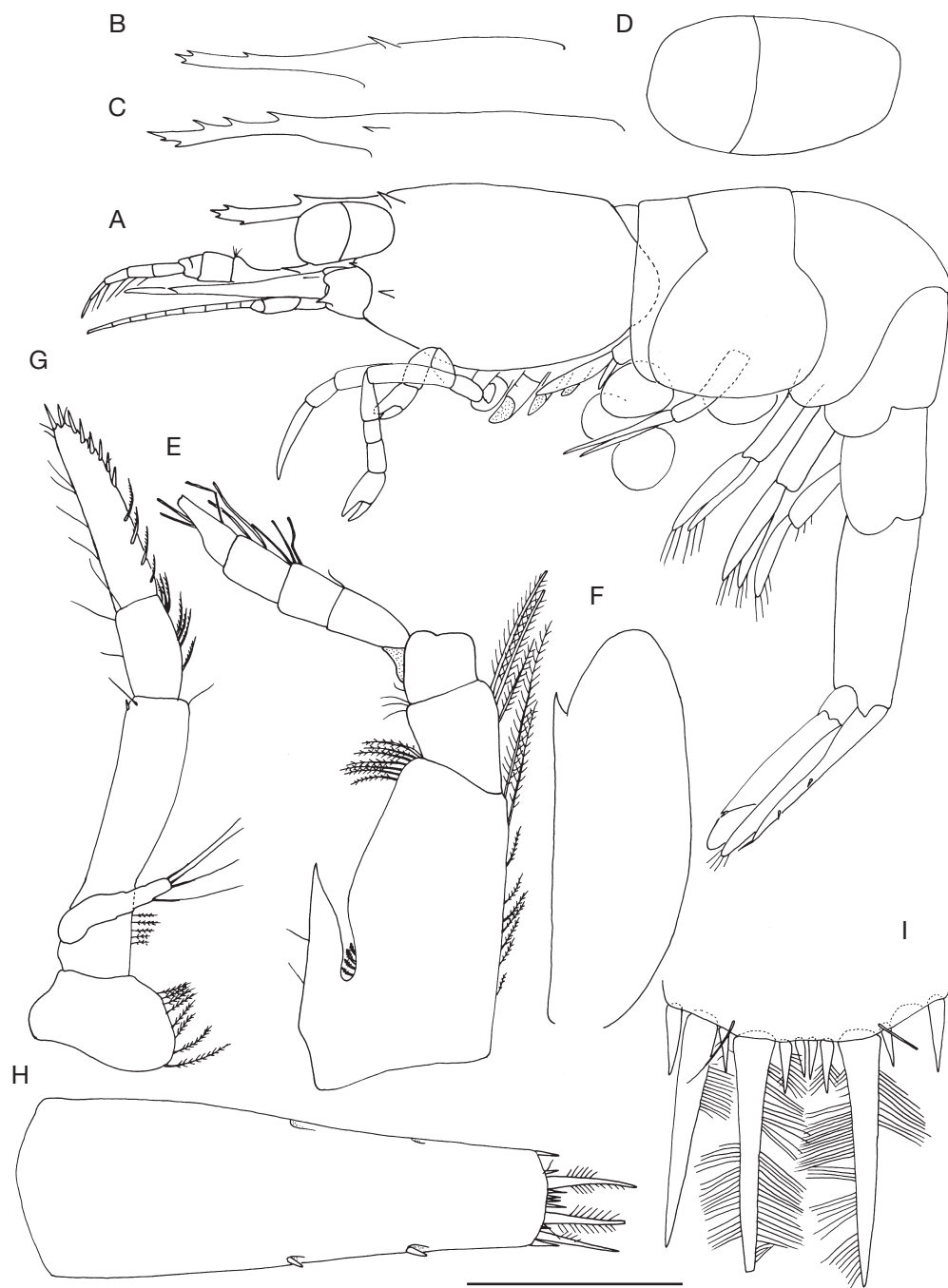


FIG. 7. — *Hippolyte longiallex* n. sp., ♀♀, West Africa, Principe Island: **A, F**, holotype; **B-E, G-I**, paratypes; **A**, habitus in lateral view; **B, C**, rostrum and dorsal part of carapace; **D**, left eyestalk in dorsal view; **E**, left antennula (inner flagellum missing); **F**, left scaphocerite; **G**, left Mxp3; **H**, telson; **I**, tip of telson. Scale bar: A-C, 1.24 mm; D, F, 0.62 mm; E, G, H, 0.42 mm; I, 0.14 mm.

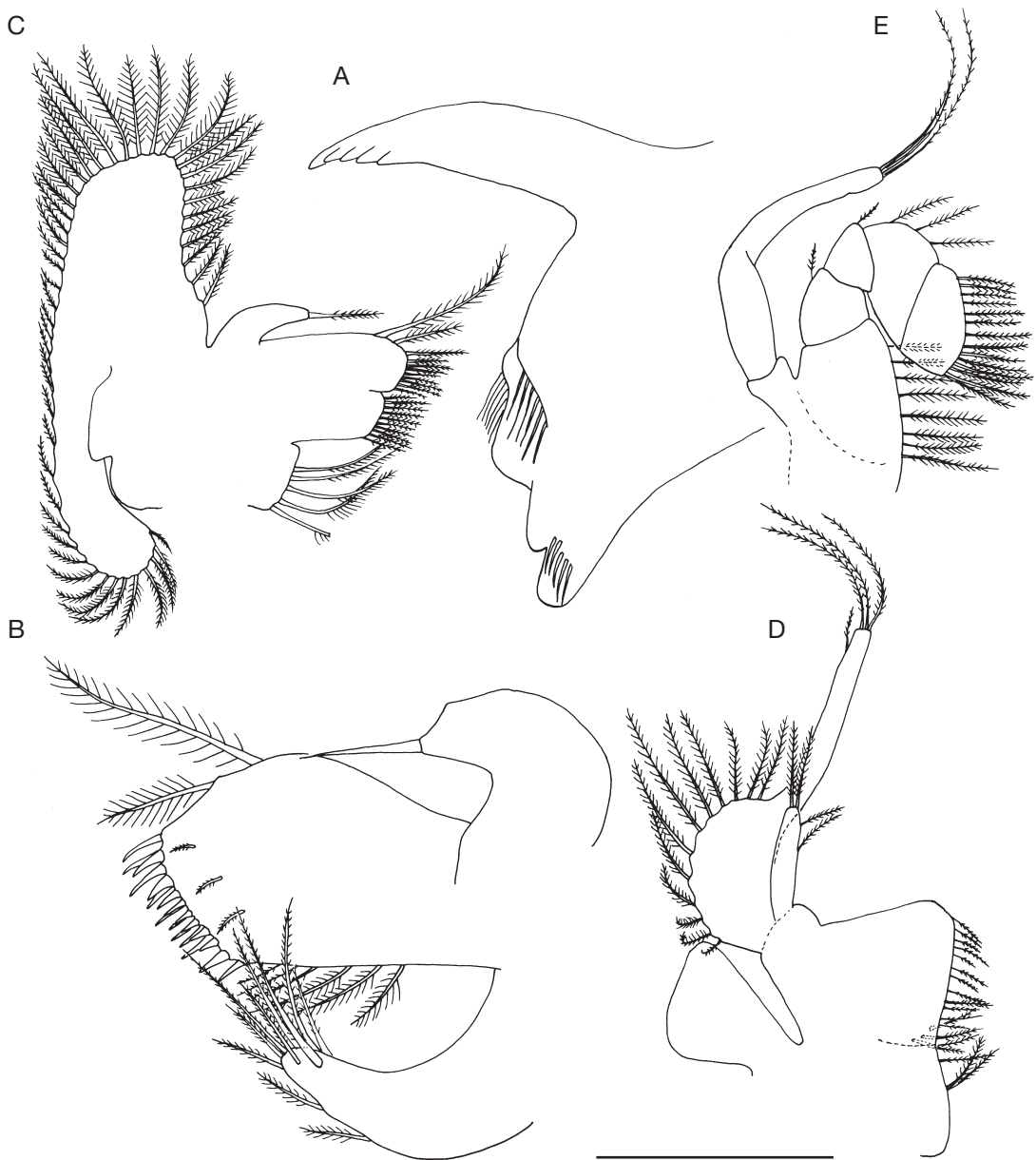


FIG. 8. — *Hippolyte longiallex* n. sp., ♀ paratype, West Africa, Principe Island: **A**, left mandible; **B**, right maxillula; **C**, right maxilla; **D**, right Mxp1; **E**, right Mxp2. Scale bar: A, B, 0.14 mm; C-E, 0.30 mm.

P3-P5 slender (Fig. 9C-G). Merus and carpus of P3-P5 without spines; propodus with about two or three tiny spinules on distal third, with few setae; dactylus long, very slender with a single huge termi-

nal spine (0.4 times as long as the whole dactylus, unguis included), with two or three slender and very short spines on flexor border. Dactylus of P3 about 0.85 times as long as carpus. Last two spines

of flexor border of P3-P5 about as long as or longer than width of dactylus at the level of insertion of terminal spine.

No specimens with plumose setae on body ("fascigerous" specimens) were recorded.

#### Colour pattern

Unknown.

#### Size

Total length up to 8 mm.

#### ECOLOGY

Commensal of the gorgonian *Muriceopsis tuberculata*, between 35 and 40 m depth.

#### REMARKS

*Hippolyte longiallex* n. sp. has unusually stout eyestalks, with a swollen non-corneal part. The rostrum of some specimens of *H. longiallex* n. sp. is reminiscent of that of *H. varians*. However *H. longiallex* n. sp. is unusual in the genus *Hippolyte* by the morphology of its ambulatory pereopods. The merus has no lateral or ventral spine, whilst at least the third pair (and usually also the fourth one and often the fifth one) have one or more spines in other species. The carpus of the third pereopod has no spine, whilst all other known species except *H. nicholsoni* have an outer carpal spine. The dactylus of the last three pereopods is characterized by its slenderness and especially by its single terminal unguis which is no less than 0.4 times as long as the whole dactylus. In other *Hippolyte* species except *H. nicholsoni*, there are two or more terminal spines on the dactylus, which are about 0.15 times as long as the whole dactylus. *Hippolyte longiallex* n. sp. is probably the sister species of the West Atlantic *H. nicholsoni*, which is also a gorgonian associate.

Adult females of the two species can be separated as follows. *Hippolyte longiallex* n. sp. has no spine on the merus of the third pereopod (Fig. 9A), whilst *H. nicholsoni* has one subdistal spine (Fig. 10D). In *H. longiallex* n. sp., the dactylus of the third pereopod is 0.85 times as long as carpus (Fig. 9A), whilst in *H. nicholsoni* it is 0.50 times as long (Fig. 10D). The dactylus of

*H. longiallex* n. sp. is also more slender than that of *H. nicholsoni* (Fig. 9A vs. Fig. 10D). In *H. longiallex* n. sp., the last two spines of flexor border of P3-P5 are about as long as, or longer than width of dactylus at the level of insertion of distal unguis (Fig. 9B, D), whilst in *H. nicholsoni* these spines are no more than 0.25 times as long as width of dactylus at the level of insertion of distal unguis (Fig. 10E). In *H. longiallex* n. sp. the rostrum has one to three dorsal teeth, at least one of them being far beyond the middle of rostrum (Fig. 7A-C), whilst in *H. nicholsoni* there are zero or one (very rarely two, according to Chace [1972]) dorsal teeth, and if one tooth is present, it is on the middle of rostrum (Fig. 10A-C). With a maximum recorded size of 8 mm, *H. longiallex* n. sp. is by far the smallest known *Hippolyte* species.

#### *Hippolyte nicholsoni* Chace, 1972

(Fig. 10)

*Hippolyte nicholsoni* Chace, 1972: 113, figs 46, 47. — Abele & Kim 1986: 231 (key), fig. d-h p. 237 (after Chace 1972). — Debelius 1999: 14, unnumbered colour photograph. — Wicksten 2005: 112, fig. 11 (after Chace 1972).

DISTRIBUTION.— West Indies: British Virgin Islands, Antigua Island, Saint Lucia Island, Tobago; Yucatán, Honduras.

MATERIAL EXAMINED. — **Honduras.** Pelican Point, Cayos Grande, Cayos Cochinos, from a *Pseudopterogorgia americana* (Gmelin, 1791), 4.6-16.7 m depth, VII.2003, leg M. Dowell & D. Livingston, 8 ♀♀ (OUMNH Zoo. Coll. 2004-17-0002).

**British West Indies.** Pine Cay, Turks and Caicos Islands, near 21°51'N, 72°05'W, from *P. americana*, 3 m depth, 5.XI.1988, coll. Stephen Spotte, 5 ♂♂, 1 ovigerous ♀ (MNHN-Na16267).

#### REMARKS

Chace (1972) states that in adult females the rostrum is usually dorsally unarmed, rarely with one or two dorsal teeth. The Honduran material examined comprises females with an unarmed rostrum and with one dorsal tooth in similar proportions. The British West Indian female and males have the rostrum dorsally (and ventrally) unarmed.

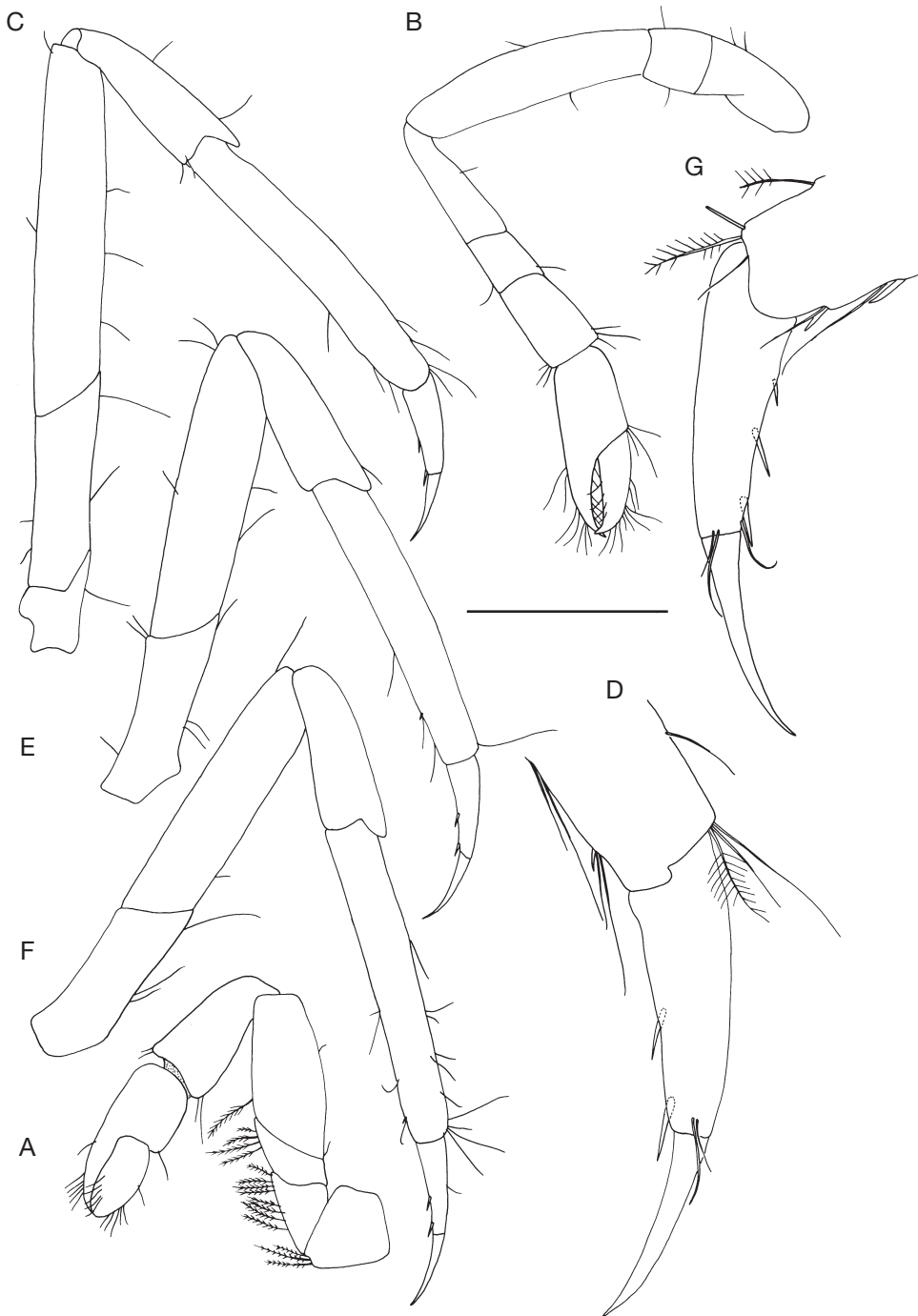


FIG. 9. — *Hippolyte longiallex* n. sp., ♀ paratypes, West Africa, Principe Island: **A**, left P1; **B**, left P2; **C**, right P3; **D**, dactylus of right P3; **E**, right P4; **F**, right P5; **G**, dactylus of a detached pereopod. Scale bar: A-C, E, F, 0.42 mm; D, G, 0.14 mm.



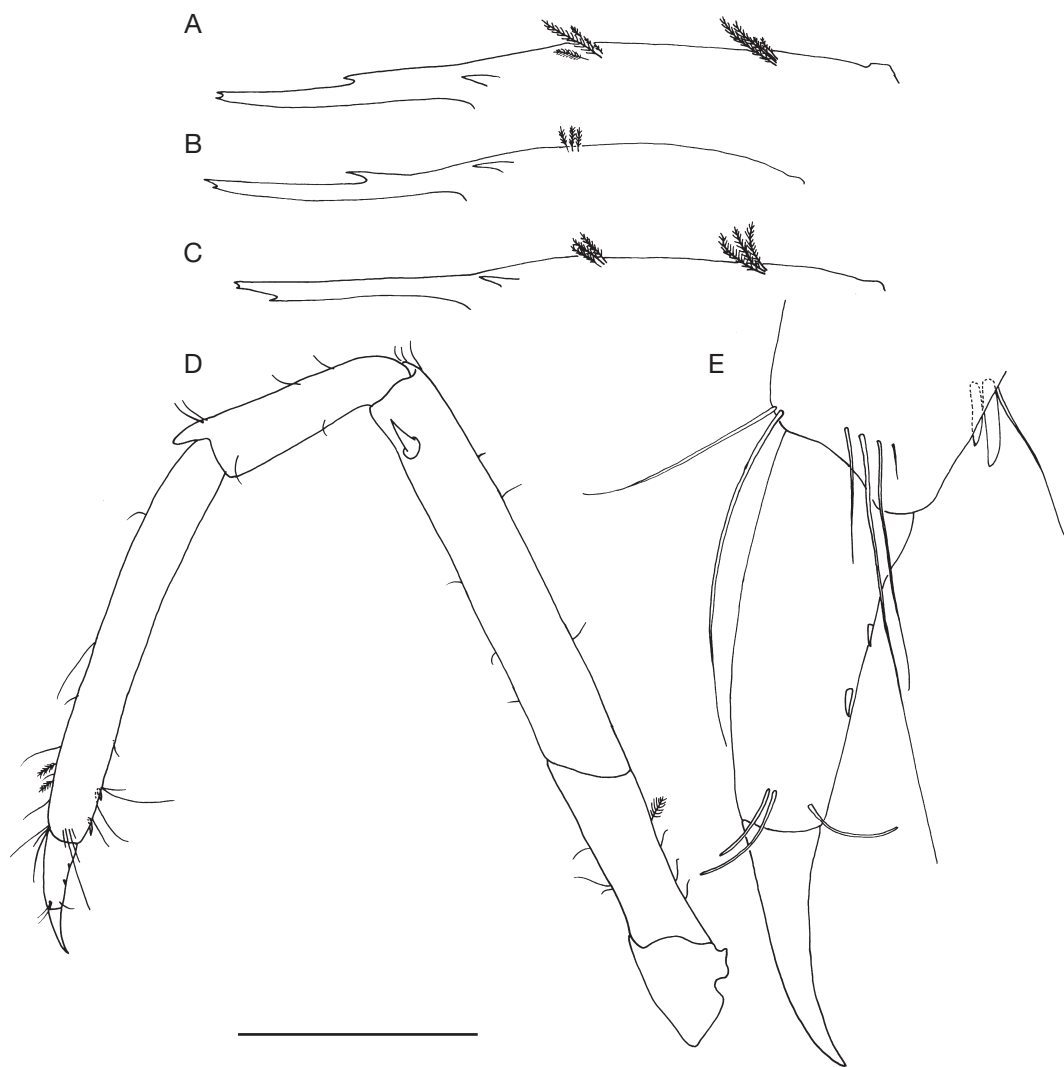


FIG. 10. — *Hippolyte nicholsoni* Chace, 1972, ovigerous ♀♀, Gulf of Mexico, Honduras: **A-C**, rostrum and dorsal part of carapace; **D**, left P3; **E**, dactylus of left P3. Scale bar: A-C, 1.24 mm; D, 0.53 mm; E, 0.1 mm.

*Hippolyte* sp.  
(Fig. 11)

**MATERIAL EXAMINED.** — **West Africa.** Gulf of Guinea, Principe Island, Pedra da Galé, 1°43'N, 7°23'E, 45 m depth, from *Antipathella*, scuba diving, 18.II.2004, coll. Peter Wirtz, 2 small juveniles (MNHN-Na16268). São Tomé Island, Diogo Vaz, 35 m depth, from *Muriceopsis truncata*, scuba diving, 13.II.2006, coll. Peter Wirtz, 1 ovigerous ♀ (incomplete: P1-P2 present, putative right

P3 detached, left P5 present; other pereopods missing) (MNHN-Na16269).

**DISTRIBUTION.** — Tropical West Africa: Principe and São Tomé islands.

**DESCRIPTIVE ACCOUNT**  
See Remarks

*Colour pattern*  
Unknown.



FIG. 11. — *Hippolyte* sp., ovigerous ♀, São Tomé: **A**, habitus in lateral view; **B**, carapace and cephalic appendages in dorsal view; **C**, putative right P3 (detached appendage); **D**, dactylus of the same. Scale bar: A, B, 1.24 mm; C, 0.42 mm; D, 0.10 mm.

### Size

Total length up to 9 mm.

### ECOLOGY

Although the three specimens examined were found in association with antipatharians and gorgonians, it is doubtful that *Hippolyte* sp. is an obligate commensal. Indeed it exhibits no modification of the spine pattern of its walking legs, as it is the case in all strictly commensal *Hippolyte* species known so far. It could be an ubiquitous species, which occasionally is found on cnidarians, just like its close relative *H. varians*.

### REMARKS

*Hippolyte* sp. is morphologically similar to *H. varians* from the temperate northeastern Atlantic, to *H. holthuisi* Zariquiey Álvarez, 1953 from the Mediterranean sea, to *H. kraussiana* (Stimpson, 1860) from South Africa and Madagascar and to *H. proteus* Paulson, 1875 from the Red sea. The mature female *Hippolyte* sp. (total length 9 mm) has three dorsal rostral teeth. The two juveniles which are very small (total length 5.5 mm) have respectively one single dorsal rostral tooth on the middle of the rostrum, and two dorsal rostral teeth. The rostrum formulae of the juveniles may result from their small size and should not be considered as representative of the species. The occurrence of three dorsal rostral teeth in the mature female suggests that it is neither *H. varians* nor *H. holthuisi*, since these species almost always have two dorsal rostral teeth (d'Udekem d'Acoz 1996). Its conspecificity with the poorly known species *H. kraussiana* seems unlikely due to their wide geographical separation. Furthermore there are significant morphological differences. Barnard (1950) states that the sixth pleonite of *H. kraussiana* is 1.5 times as long as wide, whilst it is 2.6 times as long in the mature female *Hippolyte* sp. He also states that there are three to five spines on the merus of P3-P4 in *H. kraussiana*, whilst there is only one in the mature female *Hippolyte* sp. However it must be borne in mind that South African *Hippolyte kraussiana* are much larger (up to 32 mm) than the illustrated specimen of *Hippolyte* sp. (9 mm), and in the genus *Hippolyte* the number of meral spines increases with size. It

must be pointed out that *Hippolyte* sp. is distinct from the superficially similar West Atlantic species *H. pleuracanthus* (Stimpson, 1871) and *H. zostericola* (S. I. Smith, 1873). The dactylus of P3-P5 of *Hippolyte* sp. has two terminal spines, of which the anterior is the longest, whilst in *H. pleuracanthus* and *H. zostericola* the dactylus of P3-P5 has three terminal spines, of which the anterior is significantly shorter than the next one (see illustrations by Chace 1972). With the very limited material at hand, it seems premature to name the species, although it is almost certainly a new one. Some illustrations of the mature female are given on Figure 11. The dactylus of the left P5, which is still fixed on the specimen, is very similar to that of the putative right P3 which has been found detached in the vial and has been illustrated.

### *Hippolyte varians* Leach, 1814

*Hippolyte varians* Leach, 1814: 431. — Zariquiey Álvarez 1953: 105, figs 1, 2, 5, 7. — Ledoyer 1969: 342, pl. 1a. — D'Udekem d'Acoz 1995: 497, figs 2a-q, 4a-m; 1996: 90, in part, figs 44-48, not figs 49, 50 (based on *H. holthuisi*). — García Raso *et al.* 1998: 455, fig. 2.

MATERIAL EXAMINED. — **Norway.** Tromsø area, Sommarøy, north coast, 69°38'03"N, 18°01'21"E, lower shore, 0.5 m depth, amongst the brown alga *Halidrys siliquosa* (L.) Lyngb., 11.VIII.2002, coll. Cédric d'Udekem d'Acoz, 4 specimens (including 2 ovigerous ♀♀) (TMU, TSZCr 12177). — Same locality, same depth, also amongst *Halidrys siliquosa*, 30.IV.2006, coll. Cédric d'Udekem d'Acoz, 8 specimens (all with uniform brown colour; no ovigerous specimens) (MNHN-Na16270). — Between 2002 and 2004, a few other specimens including ovigerous females have been observed at the same station, almost always amongst *Halidrys*, but they have not been preserved.

**France.** Bay of Biscay, INTRIGAS cruise, sample BB1-TS01N-F1 (night-time sampling), 46°57'N, 3°28'W, 104 m, 2.VI.2001, coll. Jean-Claude Sorbe, 1 specimen (MNHN-Na16271).

DISTRIBUTION. — East Atlantic: from Norway and Faeroe Islands to Southern Spain, Azores, Madeira, Canary Islands.

### REMARKS

D'Udekem d'Acoz (1996) stated that the deepest reliable records of *H. varians* were at 60 m depth

and that the deeper record (200 m) by Kemp (1910) could be based on misidentified *H. leptometrae*, a species which was not described in 1910. *Hippolyte varians* is here recorded at 104 m.

In Norway, Dons (1915: 128) stated that *H. varians* only occurs in the area of Bergen and that it is not present in the northern part of the country. Later on, Sivertsen (1925) recorded it well above Bergen, at his station VII in the Foldenford. According to Soot-Ryen (1925), this station is close to Røsvik, and its approximate coordinates are 67°30'N, 15°22'E. Dons (1933) and Brattegard & Holthe (1997) gave no new records farther north. The species is here recorded at 69°38'N, i.e. for the first time above the Lofoten Islands.

The occurrence of a breeding population of *H. varians* above the Arctic Circle is not necessarily a recent range extension. Indeed in the northernmost part of its range, the distribution of a species is likely to be patchy and a small shrimp like *H. varians* could be easily overlooked. Furthermore the species is common in the cold waters surrounding the Faeroe Islands (Berggren 1994), indicating that it is able to maintain populations in subarctic conditions. The collecting station, Sommarøy, is situated on

the outer coast which is bathed by the Gulf Stream and where the winter temperature is higher than in adjoining fjords.

Few other true temperate European decapods (i.e. species with breeding populations in the Iberian Peninsula or farther south) are common in the area of Tromsø: *Sergestes arcticus* Krøyer, 1855, *Pasiphaea multidentata* Esmark, 1866, *Dichelopandalus bonnierii* Caullery, 1896, *Pandalina brevirostris* (Rathke, 1843), *Pandalina profunda* Holthuis, 1946, *Crangon crangon* (Linnaeus, 1758), *Philocheras bispinosus* (Hailstone, 1835), *Pontophilus norvegicus* (M. Sars, 1861), *Calocaris macandreae* Bell, 1846, *Calocarides coronatus* (Trybom, 1904), *Galathea nexa* Embleton, 1834, *Munida sarsi* Huus, 1935, *Munida tenuimana* G. O. Sars, 1872, *Pagurus bernhardus* (Linnaeus, 1758), and *Carcinus maenas* (Linnaeus, 1758). All these species have been collected by the author in 2002-2004. Other decapods recorded as far north are either northern species or erratic individuals of temperate species, which do not form breeding populations above the Lofoten Islands (e.g., *Cancer pagurus* Linnaeus, 1758 and *Geryon trispinosus* (Herbst, 1803)).

#### KEY TO MATURE FEMALE *HIPPOLYTE* LEACH, 1914 OF THE ATLANTIC, THE MEDITERRANEAN AND NEIGHBOURING SEAS

The current knowledge of the *Hippolyte* species of the Atlantic Ocean and the Mediterranean basin is summarized by the present identification key and the checklist given after it. Since the key is intended to be a practical tool only, some species appear twice in it. Species like *H. proteus* and *H. kraussiana* key out by geographical area only since morphological accounts on them are insufficient. Only mature females are considered since males are not known for some species, and because males are often much more difficult to identify than females.

1. First article of peduncle of antennula with 1-3 teeth on outer distal corner ..... 2  
— First article of peduncle of antennula without teeth on outer distal corner ..... 4
2. First article of peduncle of antennula with 1 tooth on outer distal corner ..... 3  
— First article of peduncle of antennula with 2 or 3 teeth on outer distal corner .....  
..... *H. obliquimanus*
3. Fourth pleonite without pair of dorsolateral styliform teeth ..... *H. group ventricosa*  
— Fourth pleonite with a dorsolateral styliform tooth on each side ..... *H. coerulescens*
4. No postrostral tooth ..... 5  
— Postrostral tooth/teeth present ..... 21

5. Distal article of third maxilliped densely setose (paintbrush-like) ..... 6
- Distal article of third maxilliped not densely setose ..... 7
6. Rostrum with two widely separated dorsal teeth, one on the middle of the rostrum and one close to tip of rostrum. European species ..... *H. leptometrae*
- Rostrum with one dorsal tooth, on the middle of rostrum. South African species .....  
..... *H. catagrapha* n. sp.
7. Merus of P3-P4 not presenting the combination lateral row of spines + ventral row of spines (there can be a lateral row of spines, or a single distal spine, or no spines at all) ..... 8
- Merus of P3-P4 with lateral row of spines + ventral row of spines (rostrum long [often overreaching scaphocerite], either with no dorsal tooth or with 1 proximal dorsal tooth. Extended forward, P3 falls slightly short of midlength of scaphocerite. Large slender species which sometimes overreaches 40 mm) ..... *H. inermis*
8. Tip of dactylus of P3-P4 with one single very strong distal spine and 2 or 3 spinules on flexor border ..... 9
- Tip of dactylus of P3-P4 with 2 or 3 strong spines (which can be different-sized) and a row of 3-14 well developed spines on flexor border ..... 10
9. Dactylus of P3 about 0.85 times as long as carpus. Last two spines of flexor border of P3-P5 about as long as or longer than width of dactylus at the level of insertion of distal unguis. Merus of P3-P4 without spine. Rostrum with 1-3 dorsal teeth, at least one of them being far beyond half of rostrum. East Atlantic species ..... *H. longiallex* n. sp.
- Dactylus of P3 about 0.50 times as long as carpus. Last two spines of flexor border of P3-P5 no more than 0.25 as long as width of dactylus at the level of insertion of distal unguis. Merus of P3 (and sometimes of P4) with one subdistal outer spine. Rostrum with 0 or 1 (rarely 2) dorsal teeth; if one tooth present, it is on the middle of rostrum. West Atlantic species ..... *H. nicholsoni*
10. Tip of dactylus of P3-P5 with 3 spines, the anterior being significantly shorter than the next two ones. West Atlantic ..... 11
- Tip of dactylus of P3-P5 with 2 spines, the anterior being longer or subequal to the next one. East Atlantic, Mediterranean, South Africa, Suez Canal ..... 12
11. Rostrum not overreaching antennular peduncle ..... *H. pleuracanthus*
- Rostrum distinctly overreaching antennular peduncle ..... *H. zostericola*
12. Rostrum with no dorsal teeth ..... 13
- Rostrum with at least one dorsal tooth ..... 16
13. Dactylus of P3-P5 with 8-14 spines (flexor and apical spines considered). Most anterior spine of tip of dactylus of P3-P4 1.0-1.5 times as long as next spine ..... 14
- Dactylus of P3-P5 with 5 or 6 (sometimes 7) spines (flexor and apical spines considered). Most anterior spine of tip of dactylus of P3-P4 2.2-3.3 times as long as next spine. (First article of carpus of P2 significantly longer than two distal ones combined. P3-P4 merus with a single tooth; adult females with a colour pattern made of transverse red, yellow and white stripes) ..... *H. prideauxiana*
14. Stout species. Scaphocerite 2.2-3.0 times as long as wide. Rostrum far from reaching tip of scaphocerite. Extended forward, P3 reaches or nearly reaches tip of scaphocerite ..... 15
- Slender species. Scaphocerite 4.7-5.0 times as long as wide. Rostrum very long (and narrow), almost reaching or overreaching tip of scaphocerite. Extended forward, P3 falls slightly short of midlength of scaphocerite ..... *H. niezabitowskii*

15. Rostrum shorter than eyes (hence considerably shorter than antennular peduncle). P3 merus with 0 or 1 lateral spine ..... *H. palliola*  
 — Rostrum considerably longer than eyes, nearly reaching or slightly overreaching tip of antennular peduncle. P3 merus with several lateral spines ..... *H. lagarderei*
16. Rostrum longer than eye ..... 17  
 — Rostrum shorter than eye (very stout species with no more than one dorsal tooth on the rostrum and no ventral tooth) ..... *H. palliola*
17. Extended forward, P3 reaches or nearly reaches tip of scaphocerite. Scaphocerite 3.0-3.8 times as long as wide ..... 18  
 — Extended forward, P3 falls slightly short of midlength of scaphocerite. Scaphocerite 4.7-5.0 times as long as wide (rostrum very long and slender, with 0-4 dorsal teeth at various positions) ..... *H. niezabitowskii*
18. North Atlantic and Mediterranean species ..... 19  
 — Red Sea species entering the Suez Canal ..... *H. proteus*  
 — South African species ..... *H. kraussiana*  
 — Equatorial West African species ..... *Hippolyte* sp.
19. Rostrum measuring at least 0.92 of carapace length; large proximal dorsal tooth always present (rostrum dorsally with one subdistal and one proximal teeth). Pereiopods fairly robust or slender. First article of P2 at least 3.1 times as long as wide. Dorsal length of sixth pleonite 1.9-2.6 times longer than its height. Spines of dactylus of P3-P5 long or medium-sized ..... 20  
 — Rostrum measuring 0.67-0.78 of carapace length; small proximal tooth present or absent (rostrum dorsally with one subdistal tooth, and with or without proximal tooth). Pereiopods very robust. First article of P2 about 2.4-2.6 times as long as wide. Dorsal length of sixth pleonite 1.7-1.8 times longer than its height. Spines (particularly the terminal ones) of dactylus of P3-P5 short ..... *H. lagarderei*
20. Robust outline. Stylocerite reaching 0.8-1.0 of basal segment of antennular peduncle. Scaphocerite 3.0-3.5 times as long as wide. Mandibular incisor process with 5 teeth (rarely 4). Ratio between dorsal length and height of sixth pleonite 1.9-2.1. North East Atlantic ..... *H. varians*  
 — Slender outline. Stylocerite reaching 0.6-0.7 of basal segment of antennular peduncle. Scaphocerite 3.6-3.8 times as long as wide. Mandibular incisor process with 6 or 7 teeth. Ratio between dorsal length and height of sixth pleonite 2.5-2.6. Mediterranean ..... *H. holthuisi*
21. P3 in mature females reaching or slightly overreaching midlength of scaphocerite when extended forward. Outer antennular flagellum shorter than inner antennular flagellum. Scaphocerite 3.8-4.2 times as long as wide. Extremity of hepatic spine very distant of anterior margin of carapace. Dorsal length of sixth pleonite 2 times as long as its height. Eggs large ..... 22  
 — P3 almost extending to or overreaching apex of scaphocerite. Outer antennular flagellum longer than inner. Scaphocerite 2.5-3.1 times as long as wide. Extremity of hepatic spine almost reaching or slightly overreaching anterior margin of carapace. Dorsal length of sixth pleonite 1.6-1.8 times as long as its height. Eggs small ..... 23
22. Rostrum very long, almost reaching extremity of scaphocerites. One postrostral tooth (very rarely 2 teeth) and 2 (rarely 1 or 3) proximal dorsal rostral teeth present; 2 or 3 (rarely 1 or 4) ventral rostral teeth present ..... *H. saphphica* forma A



- Rostrum very short, sometimes almost indistinct, always shorter than eyestalks. One postrostral tooth, no dorsal rostral tooth, and no ventral tooth present ..... *H. sapphica* forma B
- 23. Lateral subdistal spine of merus of P5 almost always absent. Rostrum long or short (in Atlantic Ocean and Alboran sea usually shorter than antennular peduncle, often much longer in many Mediterranean populations); when longer than eyestalk, usually narrow or very narrow in Atlantic Ocean and Alboran sea, but sometimes very high in some Mediterranean populations. 1-6 (usually 3 or 4) dorsal teeth: first dorsal tooth and sometimes all dorsal teeth may be erected. Proximal teeth usually narrowly spaced. When at least 3 dorsal teeth, base of second dorsal tooth almost never distinctly overreaching extremity of supraorbital spine (second dorsal tooth and supraorbital spine often approximately at same level). Space between ultimate and penultimate dorsal tooth can be longer, equal or shorter than space between penultimate and antepenultimate dorsal tooth. Ventral rostral tooth or teeth absent or present. In many but not all populations, second pair of dorsolateral pair of dorsolateral spines of telson very frequently closer to first pair than to apex of telson; second pair can be more than 2 times closer to first pair than to telson apex. Incisor process of mandible with 4 (rarely 5) teeth ..... *H. leptocerus*
- Lateral subdistal spine present on merus of P5 in almost all Mediterranean specimens and in 25% of specimens of Arcachon Bay. Rostrum always long (always reaching or overreaching tip of antennular peduncle), high or rather high; 3, occasionally 4 dorsal teeth (rarely 2 teeth in Arcachon Bay), not erected and separated by large space. Base of second dorsal tooth distinctly overreaching extremity of supraorbital spine. Space between ultimate and penultimate dorsal tooth can be equal or shorter (but never distinctly longer) than space between penultimate and antepenultimate teeth. Ventral rostral tooth or teeth always present. Second pair of dorsolateral spines of telson very frequently closer to apex of telson than to first pair; second pair at most 1.4 times closer to first pair than to apex of telson. Incisor process of mandible with 5 or 6 (rarely 4) teeth ..... *H. garcianaso*

# CHECKLIST OF *HIPPOLYTE* SPECIES KNOWN IN THE ATLANTIC, THE MEDITERRANEAN AND NEIGHBOURING SEAS

- H. catagrapha* n. sp. West coast of South Africa, on the crinoid *Tropiometra carinata* (Lamarck, 1816). Figures: present paper.
- H. coerulescens* (Fabricius, 1775). Tropical and subtropical East and West Atlantic in offshore waters; lives on drifting substrates, especially *Sargassum*. Figures: Chace (1972); Crosnier & Forest (1973); d'Udekem d'Acoz (1996).
- H. garcianaso* d'Udekem d'Acoz, 1996. South of the Bay of Biscay to Mauritania, Mediterranean. Often confused with long-rostrated forms of *H. leptocerus* (Heller, 1863). Figures: d'Udekem d'Acoz (1996).
- H. holthuisi* Zariquiey Álvarez, 1953. Mediterranean Sea. *Hippolyte holthuisi* is the Mediterranean sister species of the Atlantic *H. varians*. D'Udekem d'Acoz (1996) synonymized both forms with hesitation. However there is today a consensus for considering them as separate species. Figures: Zariquiey Álvarez (1953); Ledoyer (1969); d'Udekem d'Acoz (1995, 1996, as

- H. varians*, part, Mediterranean specimens: fig. 29b, 49, 50); García Raso *et al.* (1998).
- H. inermis* Leach, 1815. Northeast Atlantic: Ireland to Morocco, Mediterranean. Usually found amongst seagrasses of various species, including *Posidonia oceanica* (L.) Delile (see d'Udekem d'Acoz 1996). Also found on the red alga *Gelidium sesquipedale* (Turner) Thur. in the South of the Bay of Biscay (d'Udekem d'Acoz 1999b) and amongst the green alga *Caulerpa prolifera* (Forssk.) J.V.Lamour. (see López De La Rosa *et al.* 2006). Figures: Lagardère (1971); d'Udekem d'Acoz (1993, 1996); García Raso *et al.* (1998).
- H. kraussiana* (Stimpson, 1860). South Africa and Madagascar. Figures: Lenz & Strunck (1914 as *Virbius capensis* Lenz & Strunck, 1914); Barnard (1950); Ledoyer (1968); Kensley (1972). Species not adequately described but close to *Hippolyte* sp., *H. proteus*, *H. varians* and *H. holthuisi*.
- H. lagarderei* d'Udekem d'Acoz, 1995. Northeast Atlantic: Morocco, amongst algae, intertidal on exposed coasts. Figures: Lagardère (1971 as *Hippolyte* sp.); d'Udekem d'Acoz (1995, 1996).
- H. leptocerus* (Heller, 1863) (senior subjective synonym of *H. longirostris* (Czerniavsky, 1868)). Northeast Atlantic: Western Ireland and Normandy to Mauritania,



- Madeira, Cape Verde Islands, Mediterranean, Black Sea. Very variable species. Figures: d'Udekem d'Acoz (1996).
- H. leptometrae* Ledoyer, 1969. Northeast Atlantic: Bay of Biscay, Mediterranean, on crinoids of the genus *Leptometra*. Figures: Ledoyer (1969); Noël (1983); d'Udekem d'Acoz (1996); present paper.
- H. longiallex* n. sp. Equatorial East Atlantic, on gorgonians. Figures: present paper.
- H. nicholsoni* Chace, 1972. Tropical and subtropical West Atlantic, on gorgonians. Figures: Chace (1972); present paper.
- H. niezabitowskii* d'Udekem d'Acoz, 1996. Mediterranean. Beds of small seagrasses, at least *Cymodocea nodosa* (Ucria) Ascherson (see García Raso *et al.* 2006), but never amongst *Posidonia oceanica* (L.) Delile. In non-lagunar conditions. Superficially similar to *H. inermis* but has only one row of spines on the merus of P3-P4 (instead of two), shorter stylocerites, and a more slender rostrum (with a more variable number of dorsal teeth in the populations of the central Mediterranean). Figures: d'Udekem d'Acoz (1996); García Raso *et al.* (1998).
- H. obliquimanus* Dana, 1852 (senior subjective synonym of *H. curacaoensis* Schmitt, 1924). West Atlantic: North Carolina to Brazil. Figures: Chace (1972 as *H. curacaoensis* Schmitt, 1924); d'Udekem d'Acoz (1997).
- H. palliola* Kensley, 1970. West and South Africa. Figures: Kensley (1970); Crosnier (1972); d'Udekem d'Acoz (1996).
- H. pleuracanthus* (Stimpson, 1871). Northwest Atlantic: Connecticut to North Carolina. Very close to *H. zostericola*. Figures: Chace (1972).
- H. prideauxiana* Leach, 1817 (senior subjective synonym of *H. huntii* (Gosse, 1877)). Northeast Atlantic: Scotland to Canary Islands, Mediterranean, on crinoids of the genus *Antedon*. Figures: Nouvel (1953, as *H. huntii*); d'Udekem d'Acoz (1996).
- H. proteus* (Paulson, 1875). Red Sea, Suez Canal. Figures: Paulson (1875, in part, as *Virbius proteus* group A I); Gurney (1927). Species not adequately described, close to *H. kraussiana*, *H. varians* and *H. holthuisi*. According to drawings of literature, the first article of the carpus of P2 is much stouter in *H. proteus* than in *H. holthuisi*.
- H. sapphica* d'Udekem d'Acoz, 1993 forma A. Mediterranean basin: Adriatic, Ionian, Aegean and Black seas. Amongst small seagrasses in lagoons, sheltered bays and tidal mud flats. Figures: Băcescu (1967 as *H. inermis*); d'Udekem d'Acoz (1993, 1996).
- H. sapphica* d'Udekem d'Acoz, 1993 forma B. Mediterranean basin: Adriatic and Ionian seas. Amongst small seagrasses in lagoons, sheltered bays and tidal mud flats. No intermediates between the formae A and B of *Hippolyte sapphica* have been recorded so far. Figures: d'Udekem d'Acoz (1996).
- Hippolyte* sp. Equatorial West Africa. Figures: present paper.
- H. varians* Leach, 1814. Northeast Atlantic from Northern Norway and Faeroe to Portugal, Azores, Madeira, Canary Islands. Figures: Zariquiey Álvarez (1953); Ledoyer (1969); d'Udekem d'Acoz (1995, 1996, as *H. varians*, part, Atlantic specimens: figs 44-48); García Raso *et al.* (1998).
- H. group ventricosa* H. Milne Edwards, 1837. Indo-Pacific, Red Sea, Suez canal, East of South Africa. Figures of syntypes of *H. ventricosa* and of the species of the group living in the Red Sea (*H. orientalis* Heller, 1862): d'Udekem d'Acoz (1999a). Different related species (some presumably not yet named) have been and are still confused under the name *H. ventricosa* (see d'Udekem d'Acoz 1996, 1999a, 2001).
- H. zostericola* (S. I. Smith, 1873). Northwest Atlantic: Massachusetts to Mexico, Caribbean, Bermuda. Figures: Chace (1972).

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