COCOHARPINIA ILIFFEI, NEW GENUS AND SPECIES FROM BERMUDA, WITH REMARKS TO OTHER GENERA AND SPECIES (FAM. PHOXOCEPHALIDAE). (CONTRIBUTION TO THE KNOWLEDGE OF THE AMPHIPODA 103).

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ABSTRACT

New genus and species of the family *Phoxocephalidae* from the caves with the sea water on Bermuda Island is described and figured, *Cocoharpinia iliffei*, n. gen., n. sp.

Genus *Cocoharpinia* belongs to the subfamily *Harpiniinae*, i. e. to the *Harpinia* group of genera, differing from genus *Harpinia* by the shape of antenna 1 and by presence of eyes in males. The mouthparts of the males are partially reduced.

The problem and the value of genera *Harpinia, Harpiniopsis, Pseudharpinia, Proharpinia* and *Heterophoxus* are discussed. The taxonomic characters differing four genera of this subfamily, i. e. genera *Harpiniopsis, Pseudharpinia, Proharpinia* and *Heterophoxus*, are of very doubtfull generic value (presence or absence of eyes, presence or absence of ensiform process on antenna 2, presence or absence of contiguous row of dorsal spines to the apex of uropods 1-2) and probably these four genera belong to the one genus, *Harpiniopsis* Stephensen 1925 or *Heterophoxus* Shoemaker 1925 (to older one between them).

The key to the genera of the subfamily *Harpiniinae* is made. Redescription of *Harpinia laevis* Sars from North Atlantic is presented.

INTRODUCTION

Although the fauna of *Amphipoda* in North Atlantic was very intensively studied during last hundred years, the numerous new species of *Amphipoda* are being discovered every year.

Thanks to prof. Dr. B. Sket from the University of Ljubljana (Yugoslavia) I have a possibility to study one small collection of *Amphipoda* collected along the coast and in the caves of Bermuda Island. The study of these specimens showed the existence of some interesting Amphipoda-species, among them *Cocoharpinia iliffei,* n. gen. n. sp.

As the female of *C. iliffei* was very similar to *Harpinia laevis* Sars from North Atlantic, it was redescribed *H. laevis* to point out all differences existing between both species.

ACKNOWLEDGMENTS.

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PROBLEM OF HARPINIA- GENUS COMPLEX

Genus *Harpinia* was established by Boeck (1876) with the type-species *Phoxus plumosus* Kroyer 1842. Later many other species of this genus were described, some of them later removed to other similar genera, *Pseudharpinia* and *Harpiniopsis* (See Barnard et Drummond 1978).

Genus *Harpinia* is characterized (sensu auctorum) by flagellum of male antenna 2 short as in female, and by article 1 of main flagellum male antenna 1 elongate and brushy. To this genus (sensu auctorum) the following species belong: *Harpinia abyssi* Sars, 1885; *Harpinia antennaria* Meinert, 1893 (=*H. neglecta* Sars 1891/5); *Harpinia bidentata* Stephensen, 1925; *Harpinia cabotensis* Shoemaker, 1930; *Harpinia crenulata* Boeck, 1871; ?*Harpinia crenuloides* Stephensen, 1925; *Harpinia curtipes* Stephensen, 1925; *Harpinia dellavallei* Chevreux, 1911; *Harpinia laevis* Sars, 1891/5; *Harpinia mucronata* Sars, 1885; *Harpinia pectinata* Sars, 1891/5; *Harpinia pectinata f. mediterranea* Karaman, G., 1973; *Harpinia propinqua* Sars, 1891/5; *Harpinia serrata* Sars, 1882; *Harpinia truncata* Sars, 1891/5; *Phoxus plumosus* Kroyer, 1842.

Genus *Harpiniopsis* was established by Stephensen (1925) for the new species *Harpiniopsis similis* Stephensen 1925, and later some other species of this genus were discovered (see Barnard, J., Drummond, 1978). This genus is very similar to genus *Harpinia,* but

differs from later by elongate and proliferate flagellum of male antenna 2 and by article 1 of main flagellum of male antenna 1 scarcely elongate and not brushy. This genus is consisting (sensu auctorum) of the following species: *Harpinia amundseni* Gurjanova 1946, *Harpinia australis* Barnard, J. 1961, *Harpinia laevis capensis* Barnard, J. 1962, *Harpiniopsis emeryi* Barnard, J. 1960, *Harpiniopsis epistomata* Barnard, J. 1960, *Harpiniopsis fulgens* Barnard, J. 1960, *Harpiniopsis galera* Barnard, J. 1960, *Harpinia gurjanovae* Bulycheva 1936, *Harpinia hobjakovae* Bulycheva 1936, *Harpinia miharaensis* Nagata 1960, *Harpinia moiseevi* Gurjanova 1953, *Harpinia nadania* Barnard, J. 1961, *Harpiniopsis naiadis* Barnard 1960, *Harpinia orientalis* Bulycheva 1936, *Harpinia pacifica* Bulycheva 1936, *Harpiniopsis percellaris* Barnard, J. 1971, *Harpiniopsis petulans* Barnard 1966a, *Harpiniopsis profundis* Barnard, J. 1960, *Harpinia salebrosa* Gurjanova 1936, *Harpinia schurini* Bulycheva 1936, *Harpiniopsis similis* Stephensen 1925, *Harpinia spaercki* Dahl 1959, *Harpinia tarasovi* Bulycheva 1936, *Harpiniopsis triplex* Barnard, J. 1971, *Harpinia wandichia* Barnard, J. 1962.

Genus *Pseudharpinia* was esablished by Schellenberg (1931) for the new species *Pseudharpinia dentata* Schell. 1931, and later other species of this genus were discovered. The following species belong to this genus (sensu auctorum): *Harpinia abyssalis* Pirlot 1932, *Harpinia ayutlanta* Barnard, J. 1964b. *?Harpinia birjulini* Gurjanova 1953, *Harpinia brevirostris* Chevreux 1920, *Harpinia cariniceps* Barnard, K. H. 1932, *Harpinia cinca* Barnard, J. 1961, *Pseudharpinia dentata* Schellenberg 1931, *Harpinia excavata* Chevreux 1887 (=*Harpiniopsis sanpedroensis* Barnard, J. 1960), *Harpinia latipes* Norman 1900, *Harpinia obtusifrons* Stebbing 1888, *Harpinia vallini* Dahl 1954.

Genus *Pseudharpinia,* like genus *Harpiniopsis,* differs from genus *Harpinia* by highly elongate and proliferate flagellum of male antenna 2 and by article 1 of main flagellum of male antenna 1 scarcely elongate and not brushy.

On the other hand, genus *Pseudharpinia* differs from genus *Harpiniopsis* (sensu auctorum) by presence of dorsal spines continuous to apex of some rami of uropods 1-2 (without dorsal spines contiguous to apex in *Harpiniopsis),* by short article 2 of outer ramus of uropod 3 (elongate in *Harpiniopsis)* and by usually ensiform (=liguliform) process on antenna 2 (scarcely or not ensiform in *Harpiniopsis).*

The main problem is that the taxonomic characters of these three genera are based prevalently on the males. As the males of many species of these 3 genera are still unknown or undescribed, for many species is still uncertain if they belong to genus *Harpinia* or to *Harpiniopsis- Pseudharpinia* complex.

Another problem is division of genera *Harpiniopsis* and *Pseudharpinia* to each other. The present taxonomy recognizes 3 main characters differing these two genera from each other: presence or absence of contiguous row of dorsal spines to the apex of some rami of uropods 1-2 (a), the length of second article of outer ramus of uropod 3 (b), ensiform or nonensiform process on antenna 2 (c).

a) Regarding this character, there are species with transitive characters *(Harpiniopsis galera,* pls. 71, 72 in Barnard, J. 1960, p. 338); there are the combinations of characters: species with uropods 1-2 bearing both rami almost naked (with 0-2 spines each) *(Harpiniopsis epistomata),* species with rami of uropod 1 poorly spinose and with rami of uropod 2 bearing several spines each *(Pseudharpinia excavata)* and species with both rami of uropods 1-2 with a contiguous row of spines *(Pseudharpinia dentata).*

b) The lenght of second article of outer ramus of uropod 3 is rather variable within the specimens of the same species (short to long) (*Harpiniopsis galera, Harpiniopsis fulgens,* where the females are with long second article of outer ramus of uropod 3, and males are with short this second article). The females can be with short second article of outer ramus of uropod 3, reaching only 1/4 of first article *(Harpiniopsis profundus),* reaching 3/4 of first article *(Harpiniopsis fulgens)* or reaching 4/4 of first article *(Harpiniopsis epistomata).*

c) There are the full transitions from ensiform to nonensiform process on antenna 2 within the species of one genus (genera *Harpinia, Harpiniopsis).*

Based on all these characters mentioned above, it is evidently that there are still not distinct characters to separate species of genus *Harpiniopsis* from these of genus *Pseudharpinia,* and probably the both genera will be submerged into one genus, *Harpiniopsis* Steph. (as older one).

PROBLEM OF HETEROPHOXUS GENUS-COMPLEX

The similar problem is with genera *Heterophoxus* and *Proharpinia.*

Genus *Heterophoxus* established Shoemaker (1925) for the new species *Heterophoxus pennatus* Shoem. 1925 considered later a synonym of *Heterophoxus oculatus* (Holmes 1908). This genus is characterized by the presence of ensiform process on antenna 2.

The following species (sensu auctorum) belong to this genus: *Harpinia ophthalmica* Schell. 1925, *Harpinia oculata* Holmes 1908, *Heterophoxus trichosus* K. H. Barnard 1932, *Heterophoxus videns* K. H. Barnard 1930.

Genus *Proharpinia* was created by Schellenberg (1931) for the new species *Proharpinia antipoda* Schell. 1931. This genus differs from genus *Heterophoxus* by absence of ensiform process on antenna 2.

The following species (sensu auctorum) belong to genus *Proharpinia: Proharpinia antipoda* Schell. 1931, *Heterophoxus stephenseni* Schell. 1931, *Proharpinia tropicana* J. L. Barnard 1960.

The genera *Heterophoxus* and *Proharpinia* differ from *Harpinia* complex of genera by the presence of eyes only.

The presence or absence of eyes within all *Amphipoda* groups was never one generic character, because there are numerous marine and freshwater genera consisting of species with and species without eyes *(Synurella, Gammarus, Melita* etc.). On the other hand, in the subfamily *Harpiniinae* there are the species with males and females with well developed eyes *(Proharpinia tropicana),* the species with males provided with large eyes and females with poorly developed eyes, sometimes undistinct or absent *(Proharpinia antipoda)* and the species where the males and females are without eyes *(Harpinia* species).

Barnard, J. L. and Drummond used successfully (1978) the taxonomic characters of males for division of genera of subfamily *Harpiniinae* to each other. But, the males of many known species belonging to the subfamily *Harpiniinae* are not studied or are unknown, so for the moment is not possible to establish in which genus numerous species belong.

The second problem is the using of some taxonomic characters of doubtfull generic value in the division of genera to each other (presence or absence of eyes, ensiform process on antenna 2, dorsal contiguous row of spines on rami of uropods 1-2).

For this reason, the value of last four genera in the present key *(Heterophoxus, Proharpinia, Pseudharpinia* and *Harpiniopsis)* is very doubtfull and the next detailed study of the type species and other species of these genera will show the eventually submersion of all these four genera into one genus. Provisionally, we left all these genera as distinct ones.

KEY TO THE GENERA OF THE SUBFAMILY HARPINIINAE

1. Mandible molar triturative . . . . . COXOPHOXUS
— Mandible molar notriturative 2
2. Coxa 5 not bilobe. Article 4 of pereopod 6 as large as article 2 n. gen. J. L. Barnard 1978 *(Harpinia palabria)*
— Coxa 5 bilobe. Article 4 of pereopod 6 narrower than article 2 3

3. Maxilliped palp articles 4=3, nail very short . . BASUTO
— Maxilliped palp article 4 shorter than article 3, nail highly longer 4
4. Male antenna 2 short, as long as antenna 1 5
— Male antenna 2 long, much longer than antenna 1 6
5. Male antenna 1 article 1 of main flagellum short, not brushy, article 3 of peduncle of Al with numerous long ventral setae (eyes in males present) . . . . . COCOHARPINIA
— Male antenna 1 article 1 of main flagellum elongated, brushy, article 3 of peduncle of antenna 1 without long setae (eyes in males absent) . . . . . HARPINIA
6. Eyes at least in males present 7
— Eyes absent 8
7. Antenna 2 with strong ensiform process HETEROPHOXUS
— Antenna 2 without ensiform process . . . PROHARPINIA
8. Rami of uropods 1-2 with dorsal spines continuous to apex. Antenna 2 with ensiform process . . . PSEUDHARPINIA+
— Rami of uropods 1-2 without dorsal spines continuous to apex. Antenna 2 without ensiform process . . . HARPINIOPSIS

Remarks. +The males of the species mentioned sub genus *Pseudharpinia* are with long antenna 2. But, as the male of the type-species, *Pseudharpinia dentata* Schell. 1926 is unknown, the value of this genus in the key is alternative and conditional. If the male of *P. dentata* has a short antenna 2, the genus *Pseudharpinia* will be removed to genus *Harpinia* as synonym because of transitive armature of rami of uropods 1-2 (smooth to spiniferous) (*Harpinia dellavallei*, etc.).

TAXONOMIC PART

Genus COCOHARPINIA, n. gen.

Type-species: *Cocoharpinia iliffei*, n. sp.

Diagnosis: Body *Harpinia*-like, urosomites free. Coxae well developed, coxa 4 with distoposterior lobe. Rostrum well developed, eyes present or absent. Antenna 1 of male short, as long as antenna 2, like that in females, but with peduncle article 3 provided with numerous long aesthetasc-like setae along ventral margin; article 1 of main flagellum of antenna 1 in male short, not brushy. Antenna 2 with variable ensiform process.

Mouthparts *Harpinia*-like: labrum emarginate distally, labium with small coalesced inner lobes. Maxilla 1: inner lobe setose, outer

lobe with 9 spines, palp 2-segmented. Lobes of maxilla 2 short, inner lobe without dorsal oblique row of setae. Maxilliped: both lobes short, outer lobe with strong setae along inferior margin, palp 4-articulate, with very long nail. Mandible with nontriturative molar, incisor toothed; palp linear, 3-segmented (males with partially reduced mouthparts). Gnathopods 1-2 subchelate, similar to each other, with unlobed article 5. Pereopod 5 with linear, narrow article 2, pereopods 6-7 with ovoid, dilated article 2 and with linear articles 3-6. Uropods 1-3 biramous, with inner ramus slightly shorter than outer one; outer ramus of uropod 3 consisting of 2 articles. Rami of uropods 1-2 without dorsal spines continuous to apex. Telson incised to the basis, normal, setose.

Taxons: Only type-species is known.

Cocoharpinia iliffei n. sp.*

figs. I-VII, VIII, 1-3.

Description: Male: length 2 mm. Body smooth, urosomites free, smooth (fig. VIII, 3). Coxae 1-4 long, with 2-3 ventral setae each, distoposterior corner entire, without notch. Coxa 1 dilated distally (fig. II, 4), coxae 2-3 with parallel lateral margins (fig. II, 5, 6), coxa 4 large, with subrounded distoposterior lobe (fig. II, 7). Coxa 5 bilobe, with large posterior lobe (fig. III, 1), coxa 6 poorly bilobe (fig. III, 2), coxa 7 entire (fig. III, 3).

Rostrum long, without dorsal carina, reaching or exceeding second ped. article of antenna 1 (fig. I, 1), with obtuse ventroanterior corner (fig. I, 1). Eyes present, rounded, moderate.

Antennae 1-2 short, subequal long. Antenna 1: peduncle article 1 large, with bunch of short plumose setae at ventrodistal margin (fig. I, 2), ped. articles 2-3 combined shorter than ped. article 1; ped. article 3 with numerous very long aesthetasc-like setae at ventral margin; main flagellum slender, 5-articulate, articles with one aesthetasc each, slightly shorter than the article itself. Accessory flagellum 4-articulate, exceeding half of main flagellum.

Antenna 2: liguliform process (=ensiform process) short (fig. I, 3), ped. article 3 short; ped. article 4 dilated distally, nearly as long as ped. article 5, flagellum slender, 5-articulate.

Mouthparts partially reduced (fig. I, 4-5), poorly marked. Maxilliped papilliform (fig. II, 1-3), small. Mandible with nontriturative molar, incisor non toothed (fig. VIII, 1); palp well developed, 3-ar-

* This species is named in honor of Dr. Thomas Iliffe from Bermuda who collected these specimens.

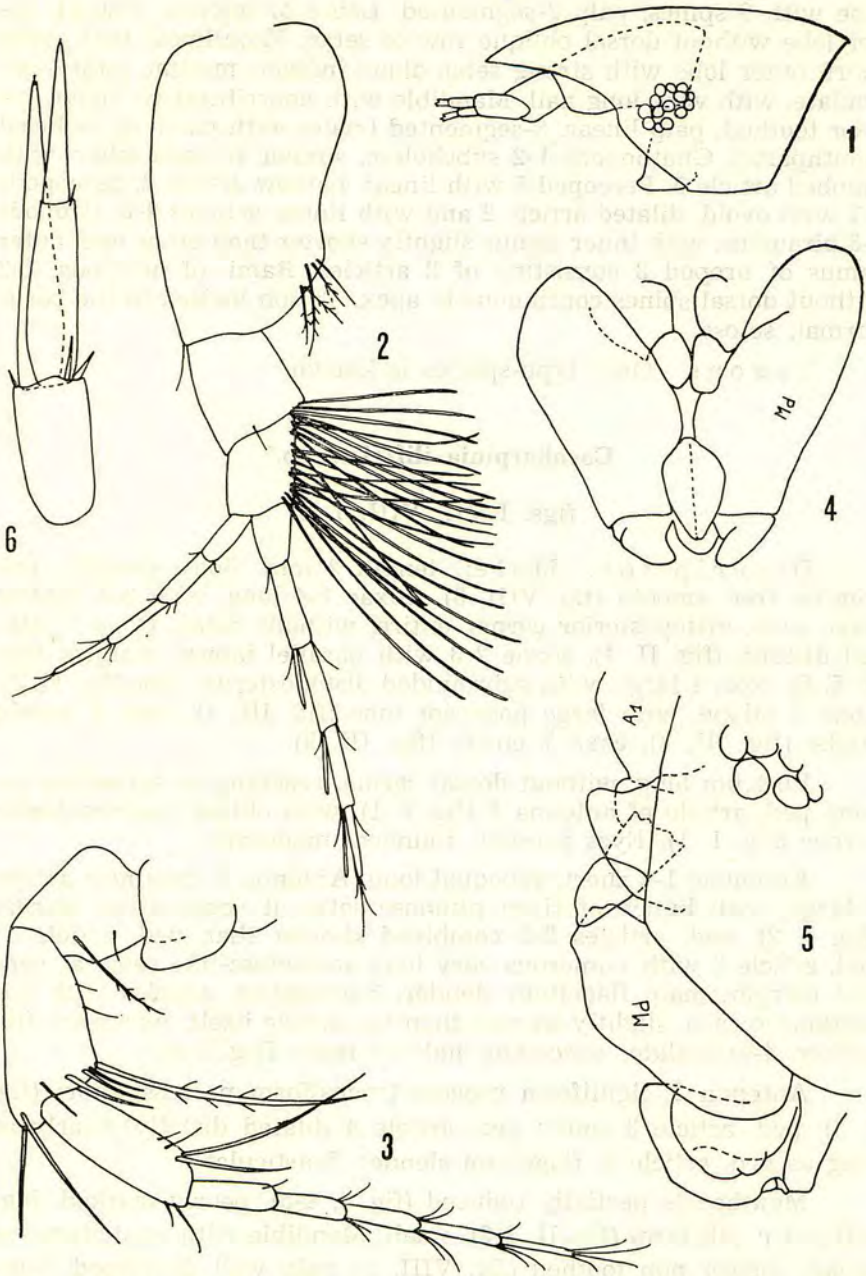

Fig. I. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, male 2 mm: 1 = head; 2 = antenna 1; 3 = antenna 2; 4 = mouthparts, dorsal view; 5 = mouthpart, lateral view; 6 = uropod 3.

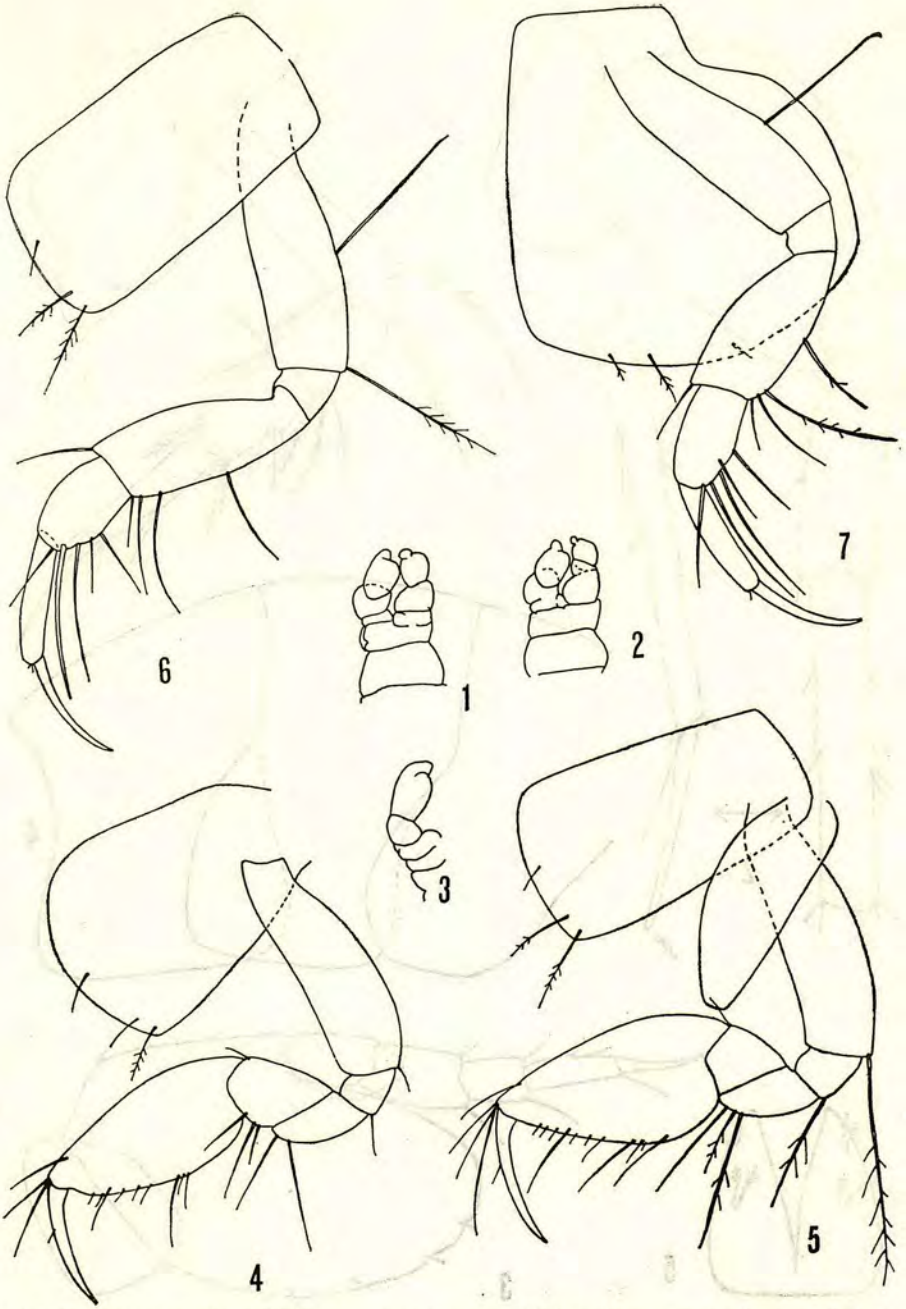

Fig. II. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, male 2 mm: 1-3 = maxilliped; 4 = gnathopod 1; 5 = gnathopod 2; 6 = pereopod 3; 7 = pereopod 4.

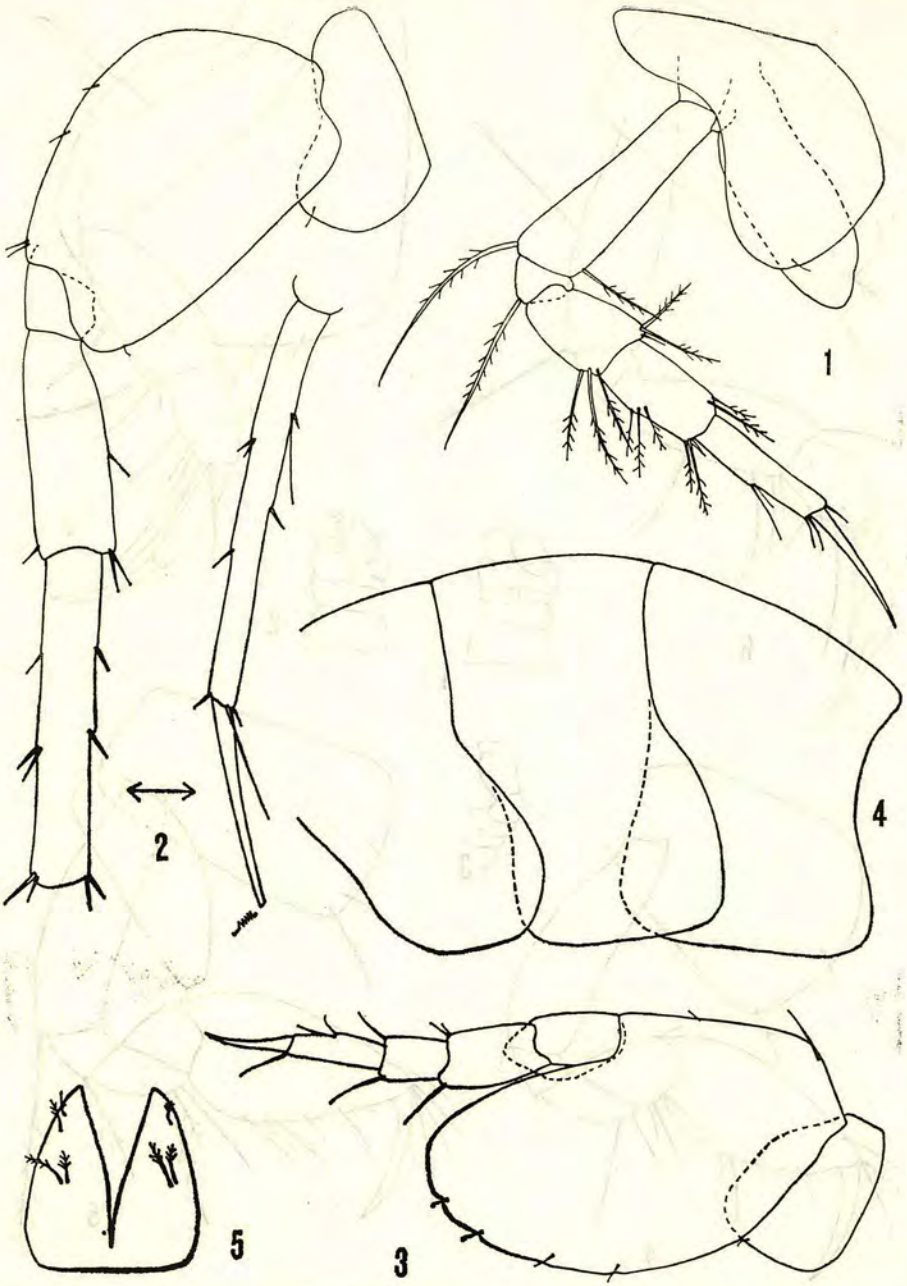

Fig. III. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, male 2 mm: 1 = pereopod 5; 2 = pereopod 6; 3 = pereopod 7; 4 = epimeral plates; 5 = telson.

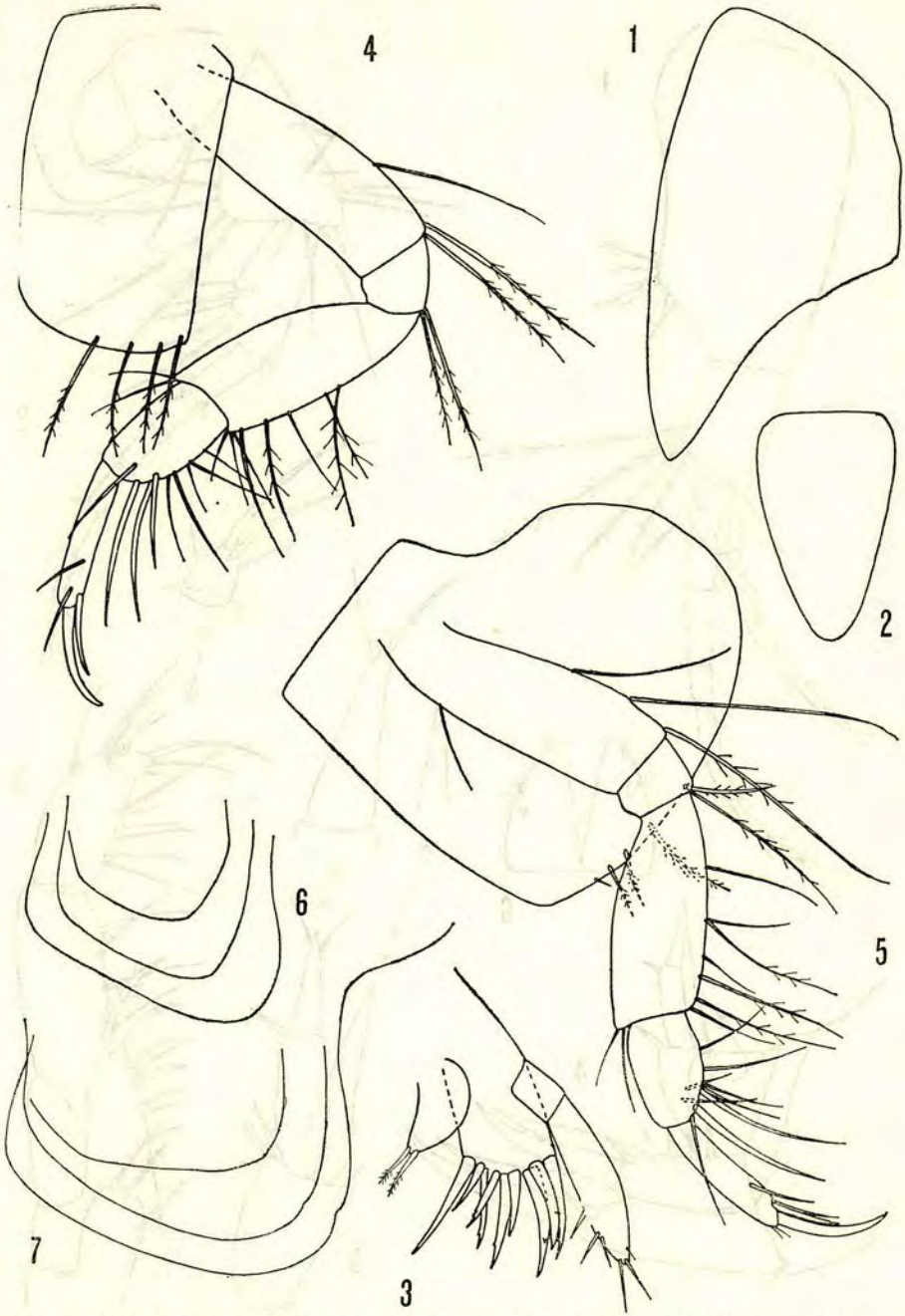

Fig. IV. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, female 2 mm: 1 = head, lateral view; 2 = head, dorsal view; 3 = maxilla$_a$ 1; 4 = pereopod 3; 5 = pereopod 4; 6 = epimeral plates; 7 = epimeral plates, other female, 2 mm.

Fig. V. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, female 2 mm: 1 = antenna 1; 2 = antenna 2; 3 = maxilliped; 4 = urosome with uropods 1-3; 5 = uropod 3; 6 = telson.

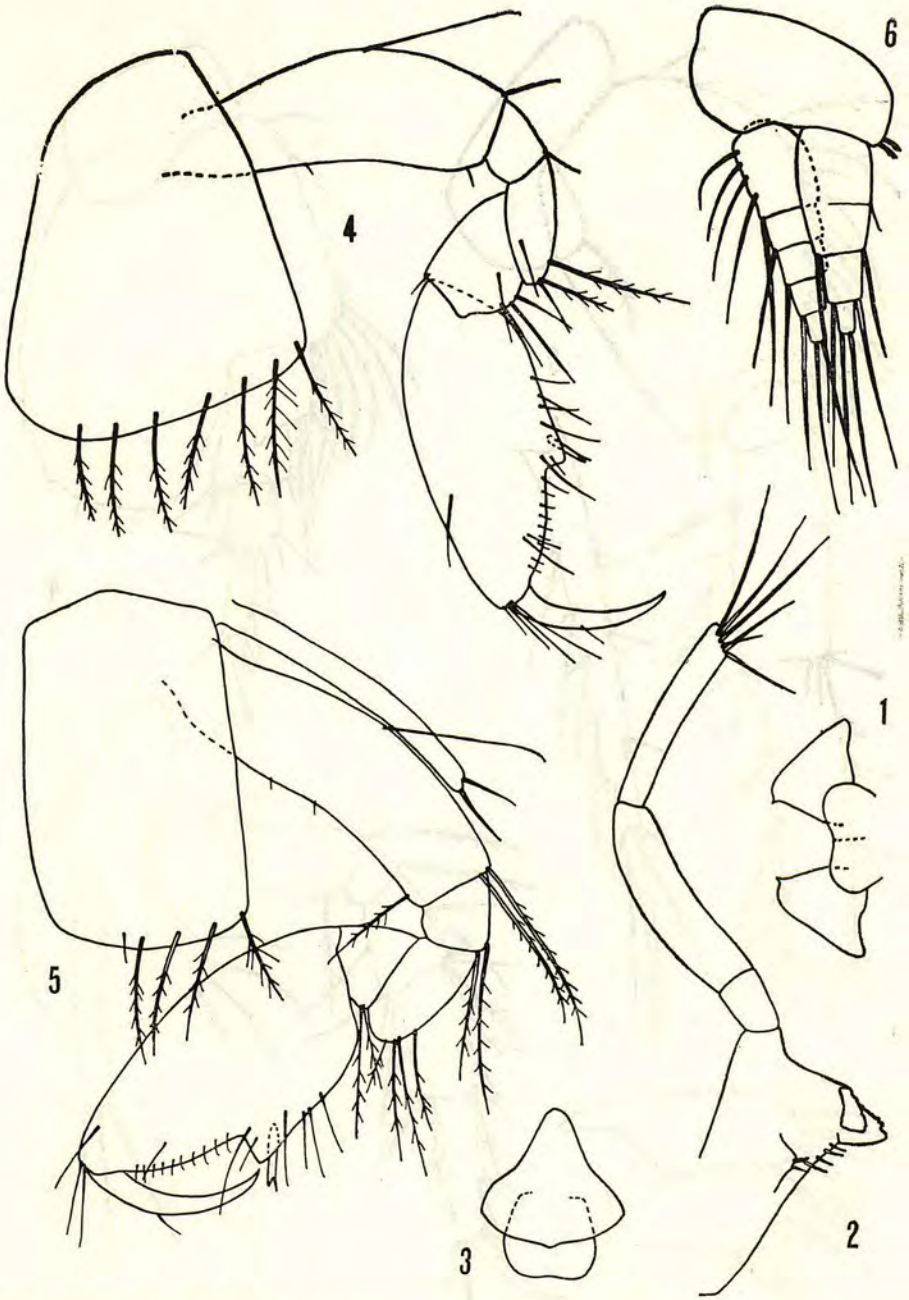

Fig. VI. *Cocoharpinia ilʸffei*, n. gen. n. sp., Walsingham, female 2 mm: 1 = labium; 2 = mandible; 3 = labrum; 4 = gnathopod 1; 5 = gnathopod 2; 6 = pleopod.

Fig. VII. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, female 2 mm: 1 = maxilla 2; 2 = pereopod 5; 3 = pereopod 6; 4 = pereopod 7.

ticulate (fig. VIII, 1-2): article 1 short, article 2 smooth, article 3 with 5-6 distal setae.

Gnathopods 1-2 subequal, alike, subchelate: article 2 with 1 long distal plumose seta (fig. II, 5), articles 3-4 short; article 5 short, without posterior lobe; article 6 ovoid, tapering distally, poorly setose (fig. II, 4-5); palm entire, slightly convex, with several setae along margin, and exceeding half of the posterior margin of article 6, without distoposterior corner-tooth or corner-spine; dactyl slender, longer than the diameter of article 6, with smooth both margins, bearing 1 short seta at outer margin. Article 6 of gnathopod 1 is slightly narrower than that of gnathopod 2.

Pereopods 3-4 alike to each other in the shape and size: article 2 elongated, article 3 short; article 4 poorly inflated, article 5 shorter than 6, with several long setae and spines along posterior margin; article 7 (dactyl) as long as article 6 (fig. II, 6-7).

Pereopod 5: article 2 narrow (fig. III, 1), with 1 distoposterior long plumose seta; articles 3-6 relatively narrow, bearing plumose and/or simple setae along both margins, dactyl as long as article 6.

Pereopod 6: article 2 dilated, slightly tapering distally, with entire posterior margin and with distinct distoposterior lobe (fig. III, 2); articles 3-6 narrow, poorly spinose along both margins, articles 4-6 progressively longer, article 7 long, missing distally in our specimens.

Pereopod 7 short (fig. III, 3), article 2 ovoid, with poorly crenellated posterior margin bearing single short simple setae; ventroposterior lobe of article 2 long, reaching tip of article 4; articles 3-6 narrow, poorly setose, article 5 shorter than 6, articles 3-4 subequal long, article 7 (dactyl) as long as article 6. Pleopods normal, biramous, rami consisting of several articles, peduncles with 2 retinacula each.

Epimeral plates 1-3 smooth, with subrounded entire distoposterior corner (fig. III, 4).

Uropods 1-2 well developed (fig. VIII, 3). Uropod 1: peduncle as long as outer ramus, without spines along dorsal margin, bearing 1 short distal spine (fig. VIII, 3); both rami slender, almost naked, outer ramus slightly longer than inner one, bearing 1-2 dorsal spines; inner ramus with 0-1 dorsal spines.

Uropod 2: peduncle slightly shorter than rami, outer ramus slightly longer than inner one, both rami without dorsal spines (fig. VIII, 3). The tip of rami of uropods 1-2 smooth, without spines.

Uropod 3 slightly exceeding tip of uropod 1, lanceolate (fig. I, 6), peduncle nearly 1/2 of rami-length; outer ramus 2-segmented, second segment almost as long as first one; inner ramus reaching

2/3 of second segment of outer ramus; distal tip of first article of outer ramus with 2 distal short setae; distal tip of both rami with very short distal seta (fig. I, 6).

Telson reaching tip of uropod 3-peduncle, nearly as long as broad, incised nearly to the basis (fig. III, 5); each lobe pointed distally, bearing 1-2 short plumose distal setae and 1 pair of longer dorsal plumose setae. Coxal gills normal, ovoid.

F e m a l e: ovig. specimen of 2 mm: Body smooth, coxae like these in males (fig. IV, 4, 5; VI, 4, 5; VII, 2-4). Rostrum long, reaching or exceeding tip of peduncle of ontenna 1, bearing small incision in lateral projection (fig. IV, 1). Eyes absent or provided with 2-3 undistinct omatidia, ventroanterior corner tooth of head absent (IV, 1).

Antennae 1-2 stout, nearly subequal long. Antenna 1: peduncle article 1 strong, longer than peduncle articles 2-3 combined (fig. V, 1); Main flagellum slightly shorter than peduncle, consisting of up to 8 articles, poorly setose; accessory flagellum slightly shorter than main flagellum, up to 6-segmented.

Antenna 2 with liguliform (=ensiform) basic process well developed (fig. V, 2); peduncle article 4 dilated distally, bearing a bunch of long plumose setae at ventral margin; ped. article 5 narrow, shorter than 4, with several poorly plumose setae at ventral margin; flagellum up to 7-segmented, poorly setose (fig. V, 2).

Labrum with emarginate distal margin (fig. VI, 3), epistom not prominent. Labium with well developed outer lobes bearing distal finger each (fig. VI, 1), inner lobes small, coalesced.

Maxilla 2 with short lobes moderately narrow, subequal (fig. IV, 3), outer lobe with 9 distal spines bearing 1-4 lateral teeth each; palp 2-segmented (fig. IV, 3).

Maxilla 1: inner lobe short, with 2 distal plumose setae (fig. VII, 1), inner lobe without dorsal oblique row of setae but with several distal plumose setae, outer lobe with several distal simple setae.

Maxilliped: inner lobe small, with 3 distal plumose setae, lobe hardly exceeding basis of first palp article (fig. V, 3), outer lobe narrow, reaching or hardly exceeding tip of first palp article and provided with 2 distal strong plumose setae and with several lateral simple spine-like setae or smooth setae (fig. V, 3); palp normal, 4--segmented: palp article 3 longer than broad, but not lobed, palp article 4 very short, nearly as long as broad, shorter than 1/3 of palp article 3, and bearing long distal spine (nail) nearly 3 times longer than article 4 itself (accompanied by 2 shorter distal spines) (fig. V, 3).

Mandible normal: incisor toothed, molar week, nontriturative, with 2 distal setae (fig. VI, 2); palp linear, 3-segmented: article 1 short, articles 2-3 nearly subequal long, article 2 smooth, article 3 with 6-7 distal setae.

Gnathopods 1-2 subchelate, nearly subequal. Gnathopod 1: articles 3-5 short, not lobed; article 6 ovoid, narrow, poorly setose at posterior margin; palp reaching 1/2 of posterior margin of article 6, convex, entire, defined by 1 corner spine and 1 corner tooth; dactyl narrow, with 1 seta at outer margin (fig. VI, 4).

Gnathopod 2: article 3 short, article 4 lobed posteriorly, article 5 short, not lobed (fig. VI, 5); article 6 ovoid, slightly broader than that of gnathopod 1, bearing a row of setae along posterior margin; palm convex, entire, reaching nearly half of posterior margin of article 6, defined by corner tooth and corner spine; dactyl like that of gnathopod 1.

Pereopods 3-4 similar to each other in the shape and size (fig. IV, 4, 5); article 5 short, bearing at posterior margin 2-3 long spines intermixed with setae; article 6 longer than article 5, dactyl slightly shorter than article 6.

Pereopod 5: article 2 narrow, with 1 seta at distoposterior margin (fig. VII, 2); articles 4-5 stout, article 6 longer than article 5, dactyl shorter than article 6, smooth.

Pereopod 6: it is the longest one, with article 2 dilated, tapering distally and provided with small distoposterior lobe, posterior margin of article 2 smooth (fig. VII, 3); anterior margin of article 2 with a row of plumose setae; article 3 short, articles 4-6 progressively longer, linear, dactyl poorly exceeding half of article 6.

Pereopod 7: article 2 very large, ovoid, with large distoposterior lobe reaching distal tip of article 4, poorly crenellated at posterior margin (fig. VII, 4); articles 3-5 very short, article 6 slightly longer and narrower than article 5, dactyl slightly longer than article 6.

Pleopods short, peduncle broader than long, bearing 2 retinacula, rami plurisegmented (fig. VI, 6).

Epimeral plates 1-3 with subrounded ventral margin and distoposterior corner, or with very small irregular incision at distoposterior margin (fig. IV, 6, 7), no distoposterior tooth or regular incisions were observed.

Uropods 1-2 well developed. Uropod 1: peduncle with short distal spine, rami slightly unequal (outer ramus is slightly longer than inner one), both rami with one dorsal spine each (fig. V, 4).

Uropod 2: peduncle with a row of dorsal spines, rami unequal (inner ramus slightly shorter than outer one, smooth), outer ramus with 1 dorsal spine (fig. V, 4).

Uropod 3 short (fig. V, 4, 5), not exceeding tip of uropod 1; peduncle slightly shorter than rami, with 2-3 distal spines; outer ramus 2-segmented, second segment slightly shorter than first one, bearing 2 subdistal setae shorter than second article itself (fig. V, 5), inner ramus reaching nearly half of second article of outer ramus, bearing one very short distal spine.

Telson incised nearly to the basis (fig. V, 6), each lobe tapering distally, bearing one pair of short subdistal setae and one pair of longer dorsal plumose setae. Coxal gills normal, ovoid. Oostegyts linear (fig. VII, 2).

Variability: Epimeral plates usually subrounded, occassionally with small irregular distoposterior depression.

Material examined: Bermuda Island, Walsingham, cave with sea water, Dec. 8, 1978, 5 spec intermixed with *Idunella sketi* G. Kar. 1979 (leg. T. Iliffe); ibid., Sept. 1978, 1 spec.; ibid., Dec. 12, 1978, 4 spec. (leg. Iliffe).

Holotype: male 2 mm. Holotype is preserved in Karaman's Collection in Titograd (Yugoslavia).

Remarks and affinities. The females of *Cocoharpinia iliffei* were found intermixed with males in one sample and we supposed that the males and females belong to the same species, *C. iliffei,* especially because of the shape of epimeral plates, head, coxae, uropods, telson. But some other taxonomic characters (absence of distinct eyes, well developed mouthparts, shape of article 6 of gnathopods 1-2 with palmar tooth, shape of pereopod 7, antenna 1 etc.) showed remarkably differences between females and males.

The similar partially reduced mouthparts and different shape of article 6 of gnathopods 1-2 without palmar tooth were observed in some *Harpinia*-species also *(Harpinia antennaria* Meinert 1893).

Harpinia laevis Sars

figs. VIII, 4-7; IX-X.

Syn.: *Harpinia laevis* Sars 1891-95: 161, pl. 56, fig. 2; Della Valle 1893: 745; Walker 1895: 297; Norman 1895: 483; Norman 1900: 338; Stebbing 1906: 145; Stephensen 1926: 62; Stephensen 1928: 144, fig. 27, 21-22; Stephensen 1929: 87, fig. 21, 106; Oldevig 1933: 86; Moore 1937: 119; Raitt 1937: 249; Stephensen 1938: 156; Oldevig 1959: 41; Barnard, J. 1958: 116; Barnard, J. 1960: 354; Karaman, G. 1973: 65, fig. 14 (5); Barnard, J., Drummond, M. 1978: 536.

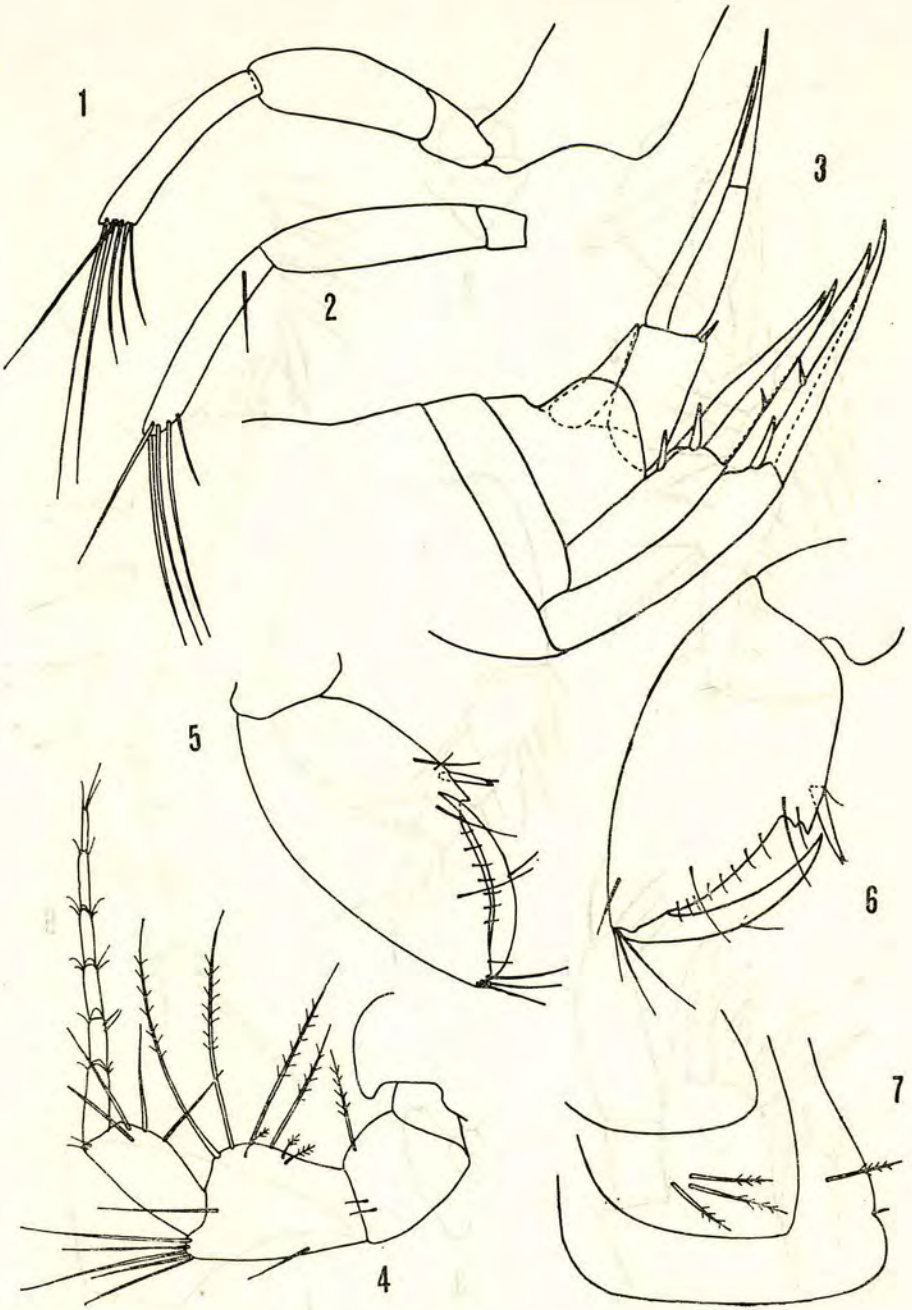

Fig. VIII. *Cocoharpinia iliffei*, n. gen. n. sp., Walsingham, male 2 mm: 1-2 = mandible; 3 = urosome with uropods.
Harpinia laevis Sars, Fanafjord Norway, female 2.8 mm: 4 = antenna 2; 5 = gnathopod 1; 6 = gnathopod 2; 7 = epimeral plates 1-3.

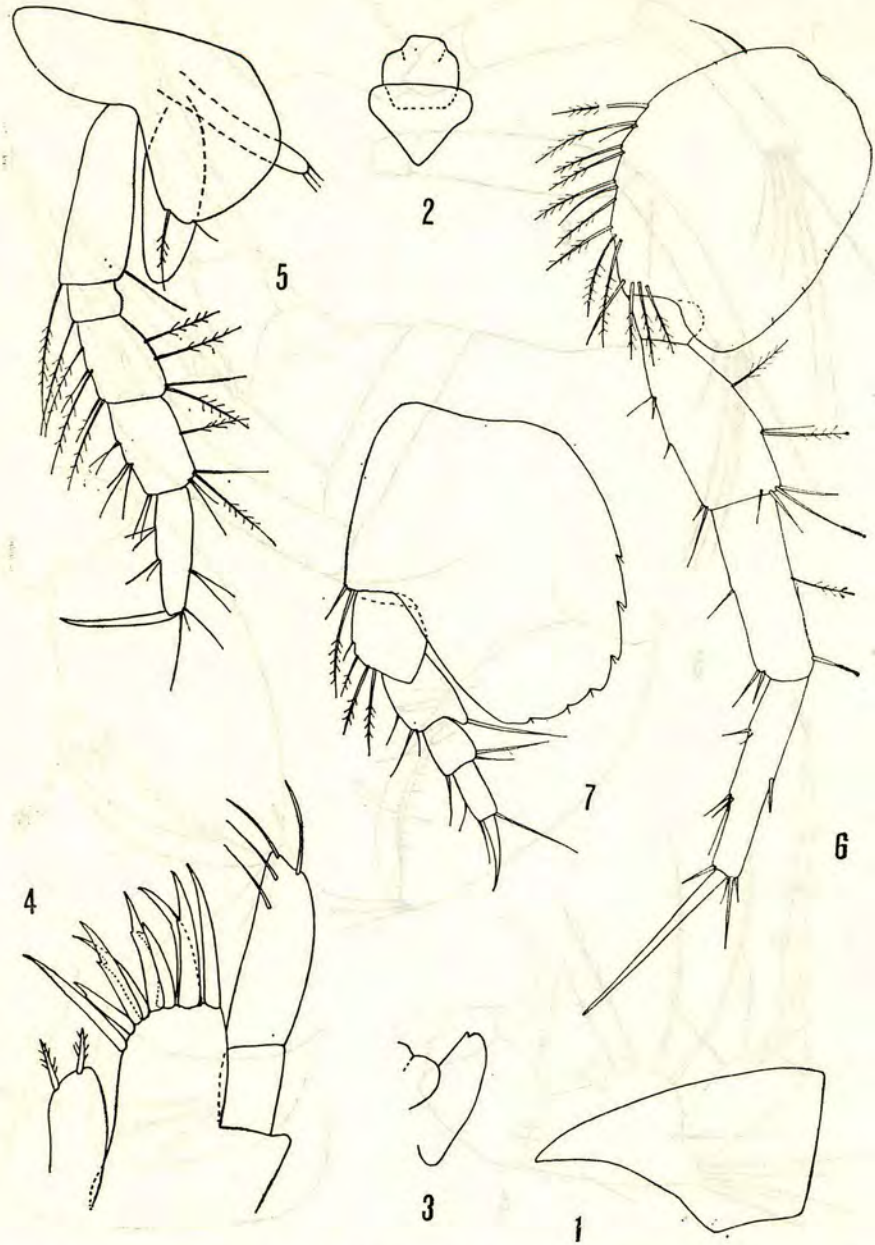

Fig. IX. *Harpinia laevis* Sars, Fanafjord, Norway, female 2.8 mm: 1 = head; 2 = labrum; 3 = labium; 4 = maxilla 1; 5 = pereopod 5; 6 = pereopod 6; 7 = pereopod 7.

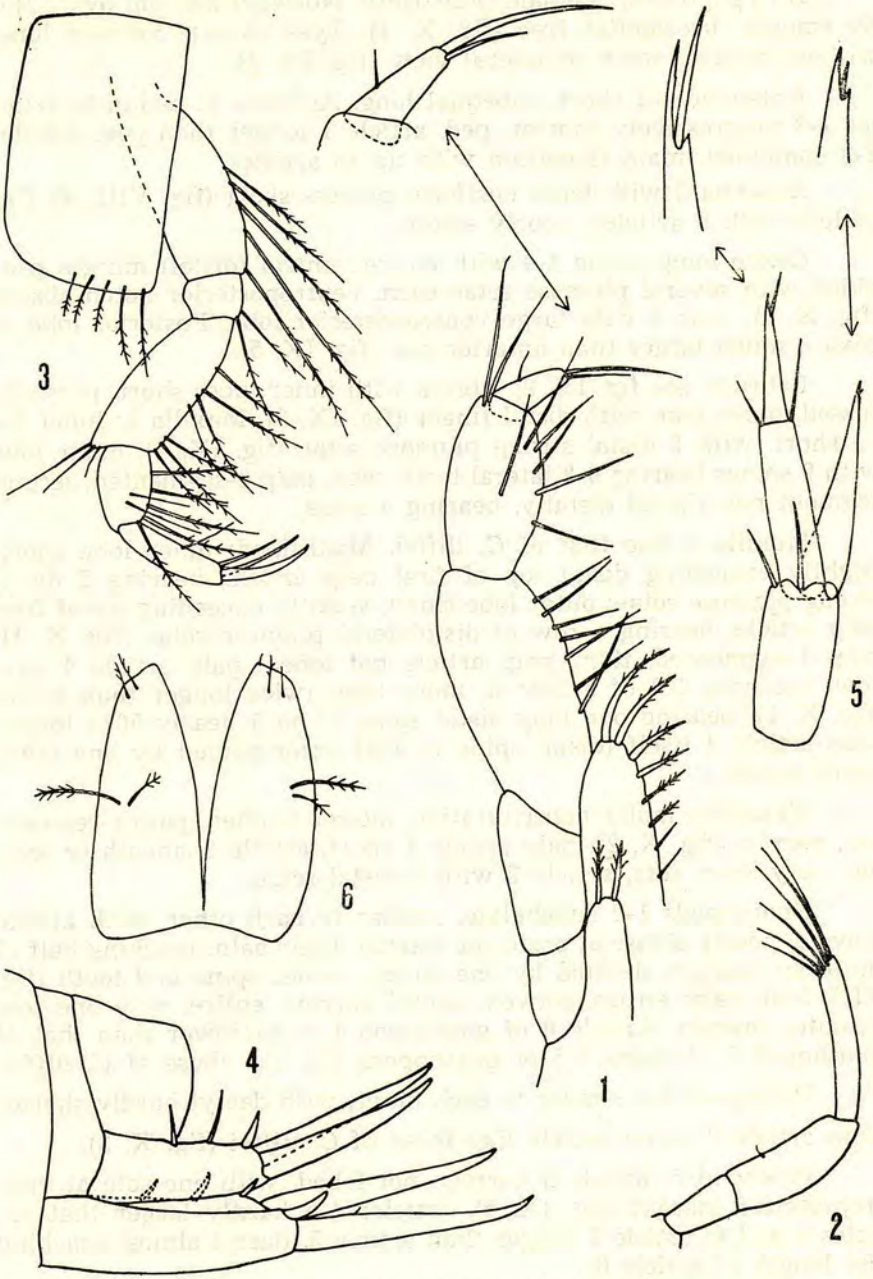

Fig. X. *Harpinia laevis* Sars, Fanafjord, Norway, female 2.8 mm: 1 = maxilliped; 2 = mandible palp; 3 = pereopod 3; 4 = urosome with uropods 1-2; 5 = uropod 3; 6 = telson.

Diagnosis: Female (Fanafjord, Norway) 2.8 mm ovig.: Body smooth, urosomites free (fig. X, 4). Eyes absent, rostrum long, without median tooth in lateral view (fig. IX, 1).

Antennae 1-2 short, subequal long. Antenna 1: peduncle articles 1-3 progressively shorter, ped. article 1 longer than ped. articles 2-3 combined, main flagellum with up to articles.

Antenna 2 with basic ensiform process short (fig. VIII, 4), flagellum with 6 articles, poorly setose.

Coxae long, coxae 1-4 with entire ventral (distal) margin provided with several plumose setae each, ventroposterior notch absent (fig. X, 3), coxa 4 with large ventroposterior lobe. Posterior lobe of coxa 5 much larger than anterior one (fig. IX, 5).

Labrum: see fig. IX, 2; labium with inner lobes short, partially fussed, outer lobe with distal finger (fig. IX, 3). Maxilla 1: inner lobe short, with 2 distal strong plumose setae (fig. IX, 4), outer lobe with 9 spines bearing 0-2 lateral teeth each, palp 2-segmented, second segment not dilated distally, bearing 4 setae.

Maxilla 2 like that of *C. iliffei*. Maxilliped: inner lobe short, slightly exceeding distal top of first palp article, bearing 2 distal strong plumose setae; outer lobe small, slightly exceeding tip of first palp article, bearing a row of distolateral plumose setae (fig. X, 1); palp 4-segmented, third palp article not lobed; palp article 4 narrow, reaching 1/2 of article 3, more than twice longer than broad (fig. X, 1), bearing one long distal spine (=nail) nearly 50% longer than article 4 itself (distal spine or nail accompanied by one other small spine).

Mandible: molar nontriturative, incisor toothed, palp 3-segmented, narrow (fig. X, 2): palp article 1 short, article 2 smooth or with one very short seta, article 3 with 6 distal setae.

Gnathopods 1-2 subchelate, similar to each other, with article 6 ovoid, poorly setose at posterior margin; their palm reaching half of posterior margin, defined by one strong corner spine and tooth (fig. VIII, 5-6); palm entire, convex, dactyl narrow, entire, with one seta at outer margin. Article 6 of gnathopod 1 is narrower than that of gnathopod 2. Articles 2-5 of gnathopods 1-2 like these of *C. iliffei*.

Pereopods 3-4 similar to each other, with dactyl hardly shorter than article 6, other article like these of *C. iliffei* (fig. X, 3).

Pereopod 5: article 2 narrow, not lobed, with one seta at ventroposterior margin (fig. IX, 5), articles 4-5 hardly larger that articles 3 and 6; article 6 longer than article 5, dactyl almost reaching the length of article 6.

Pereopod 6: article 2 ovoid, with strong distoposterior lobe, smooth along posterior margin and bearing a row of plumose setae

at anterior margin (fig. IX, 6), article 3 short, articles 4-5 of the subequal length, article 6 hardly longer than article 5, dactyl hardly longer than article 6, straight.

Pereopod 7: article 2 large, ovoid, with slightly crenellated posterior margin bearing short setae (fig. IX, 7), distoposterior lobe very long, reaching or hardly exceeding distal tip of article 4; articles 3-6 short, dactyl exceeding the length of article 6.

Pleopods like these of *C. iliffei,* with 2 retinacula each.

Epimeral plates 1-3 nearly subrounded, epimeral plate 2 with 3 dorsal plumose setae, plate 3 with one dorsal plumose seta (fig. VIII, 7).

Uropods 1-2 well developed. Uropod 1: peduncle with 3-4 dorsal and one distal spine (fig. X, 4), rami pointed distally, bearing one small dorsal spine each, outer ramus slightly longer than inner one. Uropod 2: peduncle with 3 dorsal spines, rami smooth.

Uropod 3: peduncle shorter than rami, inner ramus slightly exceeding tip of first segment of outer ramus, bearing one short subdistal seta (fig. X, 5); outer ramus 2-segmented, first segment with 2 distal short setae, second (distal) segment with one short subdistal seta.

Telson slightly longer than broad, incised nearly to the basis, each lobe with 2 short distal and 2 long dorsal plumose setae (fig. X, 6). Oostegyts narrow (fig. IX, 5), gills simple, ovoid (fig. IX, 5).

Material examined: Coast of Norway: Fanafjord, 150--159 m depth (leg. W. Vader).

Loc. typ.: Hardangerfjord (Norway).

Localities cited: North Atlantic: Trondhjemsfjord, Hardangefjord, 50-100 fathoms, muddy bottom (Sars 1891-95, Della Valle 1893); Rödberg (Trondhjemsfjord), 20-40 fathoms (Norman 1895), Isle of Man (7 miles W. of Niarbyl, 45 fathoms (Walker 1895, Moore 1937), Tautra, 230 m (Trondhjemsfjord) (Oldevig 1959), Fanafjord, 150-159 m; Korsanes (Karaman, G. 1973), 56°26' N, 14°28' W, south of Rockall, 109 fathoms (Norman 1900), SW. of Iceland: 60°37' N, 27°52' W, 1505 m; Kattegat: the lighthouse of Anholt in N. b. W. 1/2 miles, 27 m (Stephensen 1925, 1926).

Distribution: Iceland, Norway, British Isles, Kattegat.

Remarks and affinities. *Cocoharpinia iliffei* n. sp. is very similar to *H. laevis,* but differs from later by shorter article 4 of maxilliped palp bearing longer nail, by smooth epimeral plates etc.

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COCOHARPINIA ILIFFEI, NOVI ROD I VRSTA SA BERMUDA, SA OSVRTOM NA OSTALE RODOVE I VRSTE (FAM. PHOXOCEPHALIDAE). (103. PRILOG POZNAVANJU AMPHIPODA).

U radu je opisan novi rod i vrsta morskih *Amphipoda* iz familije *Phoxocephalidae, Cocoharpinia iliffei,* n. gen. n. sp., koji je sakupljen u morskoj vodi pećina otoka Bermuda u Atlantiku.

Novi rod *Cocoharpinia* je blizak rodu *Harpinia* Boeck, posebno taksonomskim odlikama ženki, ali se razlikuje od roda *Harpinia* po dobro razvijenom trećem segmentu drške prve antene u mužjaka, koja nosi mnogobrojne duge dlake, kao i prisustvom dobro razvijenih očiju u mužjaka.

Ženke nove vrste *Cocoharpinia iliffei,* n. gen. n. sp. se odlikuje odsustvom jasno razvijenih očiju (ponekad samo 1-2 omatidije su razvijene), prisustvom jasnog palmarnog zupca na palmi prvog i drugog gnatopoda, dobro razvijenim usnim aparatom koji je sličan aparatu kod roda *Harpinia* (labrum odsječen sprijeda, labium sa malim, djelimično sraslim unutrašnjim lobusima, vanjski lobus prve maksile sa 9 trnova, palpus satavljen od dva segmenta; unutrašnji lobus druge maksile bez dorzalnog kosog reda dlaka; maksiliped dobro razvijen, mandibula sa slabim molarom, i palpusom sastavljenim od 3 segmenta). Drugi segment petog pereopoda je uzak, bez lobusa; šesti i sedmi pereopodi sa širokim drugim segmentom i relativno dugim daktilusom. Epimeralne ploče su ovalne. Uropodi sa nejednakim granama, vanjska grana trećeg uropoda sastavljena od 2 segmenta. Telson je usječen do dna, bez trnova.

Mužjak se razlikuje od ženke djelimično reduciranim usnim aparatom na kojemu je samo mandibularni palpus dobro razvijen, dobro razvijenim velikim očima, odsustvom palmarnog zuba na prvom i drugom gnatopodu, drugačijom građom prve antene i nešto drugačijim oblikom sedmog pereopoda.

Harpinia laevis Sars je opisana i nacrtana na osnovu primjeraka iz sjevernog Atlantika. Ova vrsta je vrlo slična ženki vrste *C. iliffei.*

U radu je razmatran problem razgraničenja srodnih rodova *Harpinia, Harpiniopsis, Pseudharpinia, Proharpinia* i *Heterophoxus* koji rodovi se međusobno razlikuju nizom taksonomskih karaktera od problematične vrijednosti (odsutvo ili prisustvo očiju, trnova na uropodima, ježičcima na drugoj onteni i sl.). Sastavljen je novi ključ za determinaciju rodova cijele podfamilije *Harpiniinae,* kojoj pripada i novoopisani rod *Cocoharpinia.*