

TWO NEW GENERA OF WESTERN ATLANTIC ABDOMINALLY
PARASITIZING BOPYRIDAE (ISOPODA, EPICARIDEA), WITH A
PROPOSED NEW NAME FOR THEIR SUBFAMILY ¹⁾

BY

JOHN C. MARKHAM

Rosenstiel School of Marine and Atmospheric Science, University of Miami,
Miami, Florida 33149, U.S.A.

During periodic sampling of the shallow-water biota of southern Biscayne Bay and Card Sound, Florida, the hippolytid shrimp *Thor floridanus* Kingsley was by far the most frequently taken crustacean. Many individuals were found bearing the branchial bopyrid parasite *Bopyrina thorii* Richardson, previously recorded from this host in southern Florida (Richardson, 1904), but an even larger number bore an abdominal parasite which proved to belong to a new genus and species. Another similar undescribed parasite was found in the collection of the United States National Museum. It had been collected in St. Lucia, West Indies, parasitic on the palaemonid shrimp *Periclimenes americanus* Kingsley; it too appears to belong to a new genus. Since the subfamily of the Bopyridae to which these genera belong has been known by an unacceptable name, it seemed appropriate to give it a new name while describing these two new genera and species.

FAMILY BOPYRIDAE RAFINESQUE, 1815

Subfamily Hemiarthrinae nom. nov.

Bopyriens abdominaux [pro parte] Hesse, 1861: 114.
Bopyrinae [pro parte] Cornalia & Panceri, 1861: 111.
Bopriden II Walz, 1882: 178-183.
Phryxiens abdominaux Giard, 1907: 322.
Bopyres abdominaux Giard, 1907: 322.
Gruppe der Abdominal-Parasiten [pro parte] Nierstrasz & Brender à Brandis, 1931: 195.
Pbryxus-like genera Shiino, 1937: 489-492.
Bopiridi addominali Caroli, 1949: 232.
Phrixinae Caroli, 1949: 232.
Phryxinae Codreanu & Codreanu, 1956: 119-120; Codreanu, 1967: 207.
Phryxid bopyrids Bruce, 1966: 385.
Hemiarthrus- or *Pbryxus*-group Shiino, 1965: 462.
Hemiarthrus-group Shiino, 1965: 465.

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Diagnosis of the subfamily Hemiarthrinae (modified from Codreanu & Codreanu, 1956). — The females are ventral ectoparasites of caridean shrimps, to which they attach themselves with the pereopods of only one side, the opposite half of the body undergoing a pronounced hypertrophy. The resultant asymmetry leads to a marked inequality of the oöstegites on the ventral side, where they enclose an incubatory cavity which also extends over to the dorsal surface. The first four oöstegites of the same side predominate, the fifth on that side being absent. According to the genera, the number of pereopods on the hypertrophied side is variable, ranging from 1 (the anterior-most) to 7. The pleopods have more or less reduced endopodites, and the abdomen bears pleural laminae (lateral plates) on pedunculate processes. In the dwarf males, which are usually found clinging to the females, the abdomen is unsegmented and pleopods are absent.

A single species, *Metaphrixus intutus* Bruce (1966) appears to be attached normally to the dorsal surface of its host's abdomen; otherwise the rule of ventral attachment seems to be universal among adults of the subfamily, although larvae have been recorded (Dahl, 1949) from elsewhere on their hosts.

Discussion. — Rathke (1843) established the genus *Phryxus* to include 2 abdominal bopyrid parasites. His type species, *P. hippolytes*, he realized, was identical with *Bopyrus abdominalis* Krøyer, 1840, so he used the name *Phryxus abdominalis*. At the same time, Rathke (1843) also described a parasite from the dorsal surface of the abdomen of *Pagurus bernhardus* (L.) as *Phryxus paguri*. Hesse (1876) recognized that *Phryxus paguri* belongs in the genus *Athelges*, which he (Hesse, 1861) had established to include *A. cladophorus*, a similar parasite of *Pagurus cuanensis* Bell. Although the validity of Rathke's genus was never otherwise questioned, at least as early as 1848 its name was found to be preoccupied when Agassiz (1848: 831) noted the existence of *Phryxus* Hübner, 1816, in the Lepidoptera. More recently, Sherborn (1929: 4928) listed this and a second prior use of the name, *Phryxus* Rafinesque, 1815, for a hemipteran genus. Nonetheless, use of the name has persisted, and at least 22 specific names have been used in conjunction with the generic name *Phryxus* Rathke at one time or another.

Giard & Bonnier (1887), without questioning the acceptability of the name *Phryxus*, established, as distinct from *Phryxus*, the genus *Hemiarthrus*, which contained some species formerly assigned to *Phryxus*. Curiously, the one species which they specifically cited for inclusion in their new (and otherwise undescribed) genus was *Phryxus abdominalis*, the type-species of *Phryxus*. Shortly thereafter, these same authors (Giard & Bonnier, 1890) published, without descriptions, the names of 4 new species which they assigned to *Hemiarthrus*. Bonnier (1900: 217), however, apparently had second thoughts about the use of the generic name which he had coauthored and placed all of its species back in *Phryxus*, which he simultaneously made the type of a new family, Phryxidae; this included all of the abdominal isopod parasites of decapods, i.e. those similar to *Phryxus*

and to *Athelges*. On the other hand, Giard (1907), aware of the homonymy of *Phryxus*, later stated that that name should be replaced entirely by *Hemiarthrus*.

This would have been a simple end to the matter except that Caroli (1930) tried a different approach. Although fully aware of the existence of the name *Hemiarthrus*, he decided that Rathke had incorrectly transliterated the name *Phryxus* from the Greek, and that it should be *Phrixus*, a name which was not preoccupied. Caroli therefore used *Phrixus* with *Hemiarthrus* as a junior synonym. His action did not introduce a valid name, but, instead, it created considerable confusion regarding the proper spelling of *Phryxus* and other names derived from it, as, for example, *Metaphrixus* Nierstrasz & Brender à Brandis (1931) and *Anomophryxus* Shiino (1937). Later, he (Caroli, 1949) established the bopyrid subfamily Phrixinae to include only those genera which are ventral abdominal parasites of shrimps and prawns. In this same sense I am now using Hemiarthrinae.

In recent years, the name *Hemiarthrus* seems to have gained acceptance, but familial and subfamilial names derived from *Phryxus* have persisted. Codreanu & Codreanu (1956) established as part of the family Phryxidae (as defined by Bonnier, 1900) the subfamily Phryxinae s. str. nov., in reality a synonym of Caroli's Phrixinae. Later, Codreanu (1967) considered this to belong to the family Bopyridae, which he divided into 8 subfamilies.

The International Code of Zoological Nomenclature (1964) states clearly (Article 39) that "The name of a taxon of the family-group is invalid if the name of its nominal type-genus is a junior homonym". Although the Code fails to require the use of any particular generic name as a basis for replacing an invalid family-group name, I feel that *Hemiarthrus*, as one of the best known and oldest valid names in the group, is the most appropriate. Thus I have selected the name Hemiarthrinae nov., no other name being available.

The proper status of this group is largely a matter of opinion, and leading authorities on the Bopyridae are not agreed whether to call it a family or a subfamily. I prefer, for the present, to consider it a subfamily, Hemiarthrinae, of the family Bopyridae.

Loki gen. nov.

Diagnosis. — Female. Of general hemiarthrine form, main body axis only slightly bent. Head deeply embedded in pereon, the segments of which are poorly set off. All 7 pereopods on both sides present and well developed; first 2 pairs on each side extending beyond head, last 4 clustered near abdomen. Third pereopod on long (hypertrophied) side located opposite head; that on short side lying adjacent to head. Abdomen without lateral plates on fifth segment, those on fourth segment reduced or absent. Pleopods present only on first three pleomeres, all uniramous. Uropods prominent.

Male. Eyeless. Head and abdomen almost completely fused with pereon, whose segments are distinct. No trace of segmentation on abdomen, which terminates in conspicuous anal tube.

Origin of name. — In naming a new genus of shrimps, Kingsley (1878: 94, footnote) selected "Thor, a Scandinavian deity". Since the type species of my new genus parasitizes *Thor floridanus* Kingsley, drawing from the same source, I have selected the name of Loki, who frequently accompanied Thor and caused him considerable trouble, as recorded in the following passage from "Loki's Altercation" of the Prose Edda:

Loki: "Why dost thou chafe so, Thor?"

Thor: "Silence, thou impure being!"

Type species. — *Loki circumsaltanus* nov.

Gender masculine.

***Loki circumsaltanus* sp. nov. (figs. 1-7)**

?*Metaphrixus carolii*; Rouse, 1970: 135 (not *Metaphrixus carolii* Nierstrasz & Brender à Brandis, 1931).

Material. — More than 50 females, some with males attached, from shallow waters of southern Biscayne Bay and Card Sound, southeastern Florida, collected from June to December, 1970. Host: *Thor floridanus* Kingsley or unidentified specimens of *Thor* which are probably *T. floridanus*. Holotype and allotype: female and male, respectively, obtained from abdomen of *Thor floridanus* Kingsley (fig. 1) taken at Sta. N I 2, 1/4 mile NE of entrance to Turkey Point Turning Basin, lower Biscayne Bay, 25°22'N 80°19'W, in average of 0.75 m of water on bottom covered predominantly by the rhodophyte *Laurencia* sp., 1 June 1970, R. Rehrer, coll. Host identified by R. J. Garcia.

Female (holotype, USNM 137391; figs. 2-4). — Body, viewed from ventral side, appearing superficially rather symmetrical, with pleopods at one end and marsupium tapering to other end of long axis. Viewed from dorsal side (fig. 2),

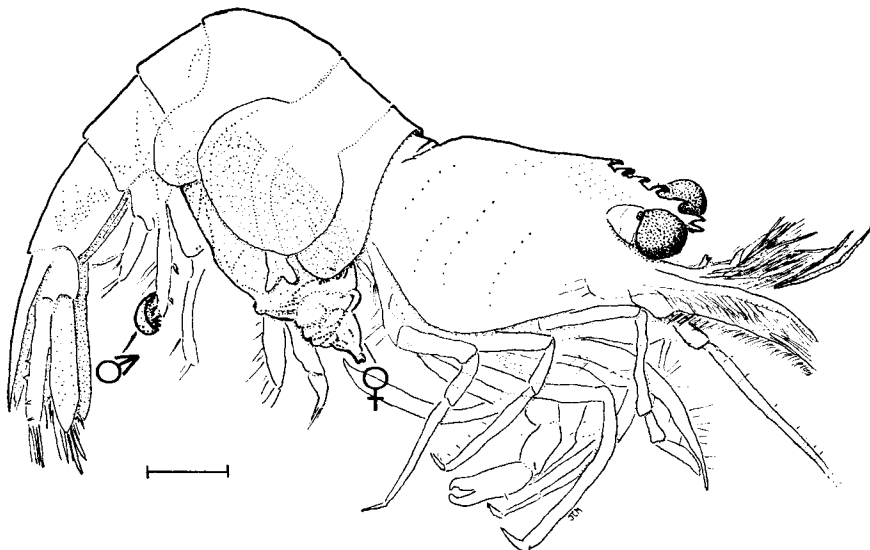


Fig. 1. *Thor floridanus* Kingsley bearing holotype female and allotype male of *Loki circumsaltanus* n. gen. n. sp. 1.0 mm indicated.

body in reality markedly asymmetrical, body axis bending through a smooth curve, 42° from a straight line, with head lying on one side of body. Dimensions: maximal length from posterior edge of pleomere 5 across marsupium 3.31 mm; length from posterior edge of pleomere 5 to anterior edge of head 1.93 mm; maximal width 2.12 mm. Color completely absent.

Head (fig. 3A) sunk deeply into pereon and somewhat deltoid in outline except

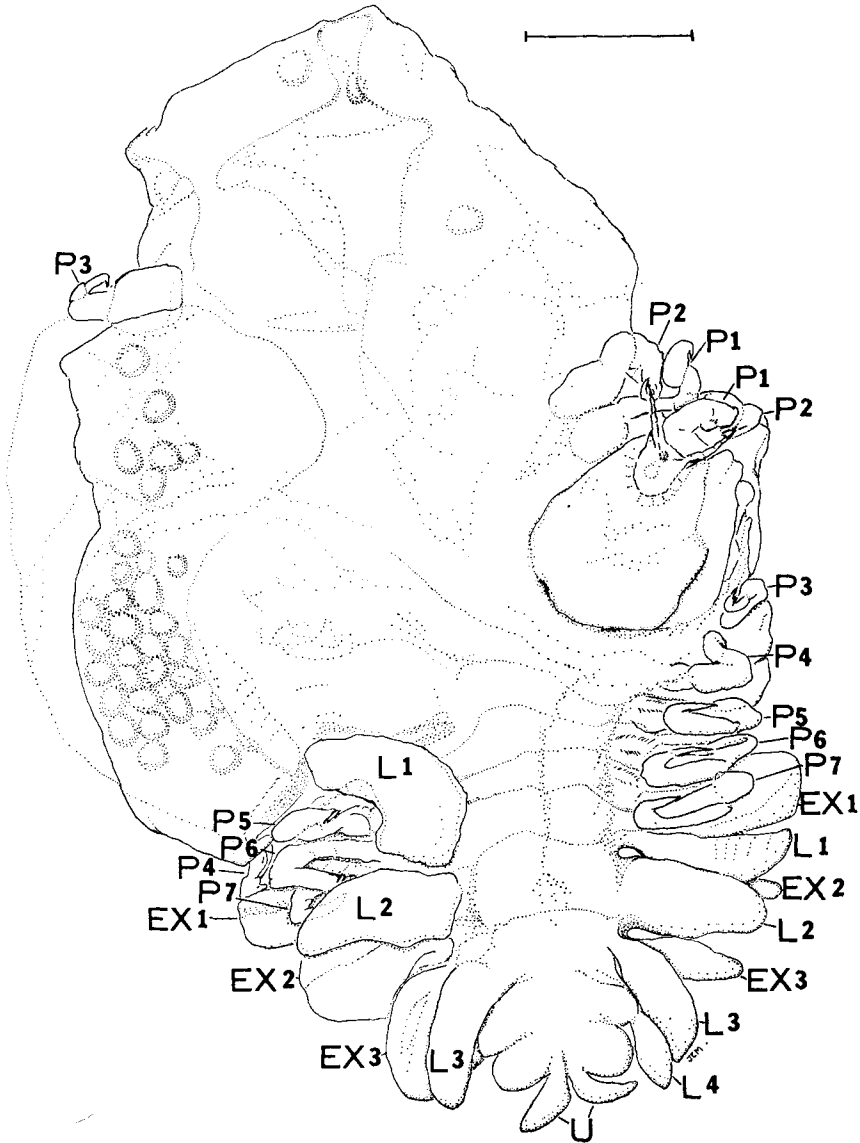


Fig. 2. *Loki circumsaltanus* n. gen. n. sp., holotype female, dorsal view. P1-P7, pereopods 1-7; L1-L4, lateral plates 1-4; EX1-EX3, pleopodal exopodites 1-3; U, uropods. 0.5 mm indicated.

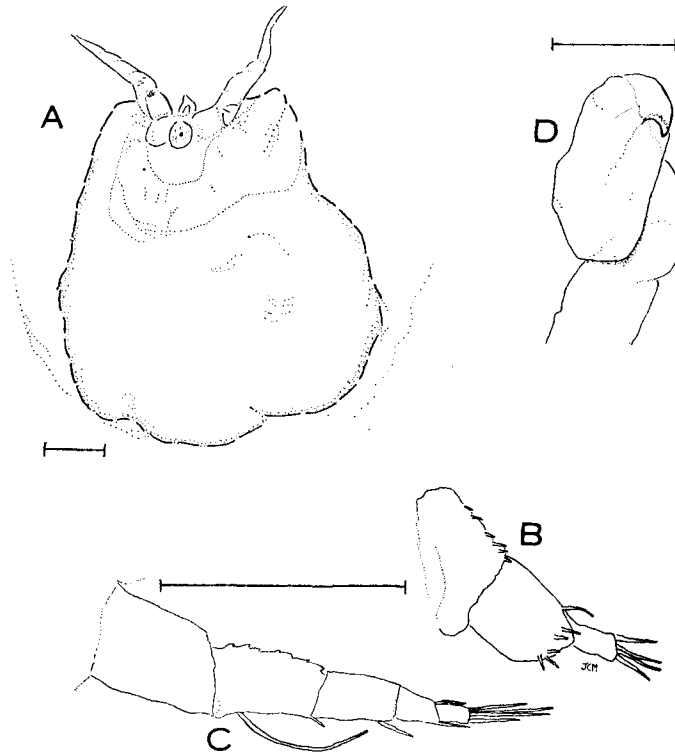


Fig. 3. *Loki circumsaltanus* n. gen. n. sp., holotype female. A, head; B, left first antenna; C, left second antenna; D, first right pereopod. 0.1 mm indicated for each figure.

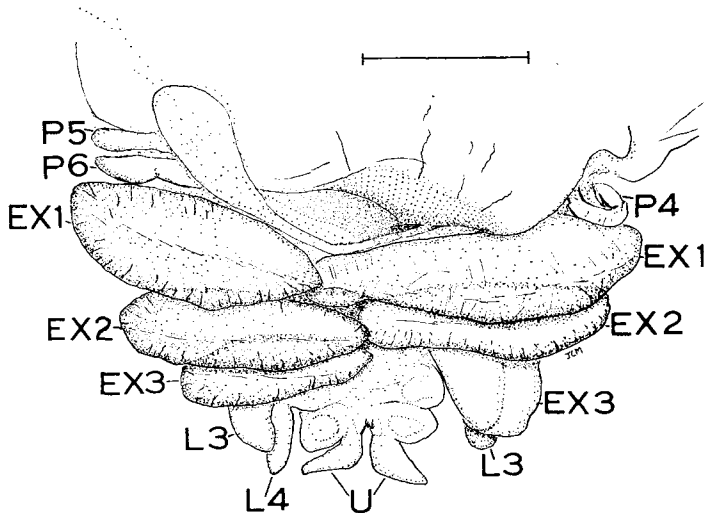


Fig. 4. *Loki circumsaltanus* n. gen. n. sp., holotype female, ventral view of abdomen. Appendages indicated as in fig. 2. 0.5 mm indicated.

for cleft in anterior edge. Mouth at center of resultant concavity of anterior edge, in which are found the short first antennae and the long multiarticulate second antennae (figs. 3B, C). No eyes.

Pereon (fig. 2) divided into 7 segments visible on short side and in middle of body; on long side, third and fourth segments difficult to distinguish, though others well marked. First 2 pereopods (fig. 3D) on each side flexed in front of head. On short side, third through seventh pereopods close together. On long side, third leg isolated opposite head; others clustered beneath marsupium; fifth, sixth and seventh legs in one row; fourth ventral to them. All 7 legs on each side well developed, posterior ones slightly larger than others. Marsupium completely closed, covering entire ventral surface of head and pereon.

Abdomen (figs. 2, 4) of 5 moderately distinct segments. Each of first 3 with a lateral plate extending out from each side, those on pleomere 1 largest, others progressively smaller; pleomere 4 with reduced lateral plate on right side, none on left; pleomere 5 with no trace of lateral plates. On first 3 pleomeres, pleopods represented by well developed exopodites, which overlap medially and cover all but posterior portion of ventral face of abdomen. All except left exopodite of third pleopod showing an "inflated" appearance, which may be an artifact of

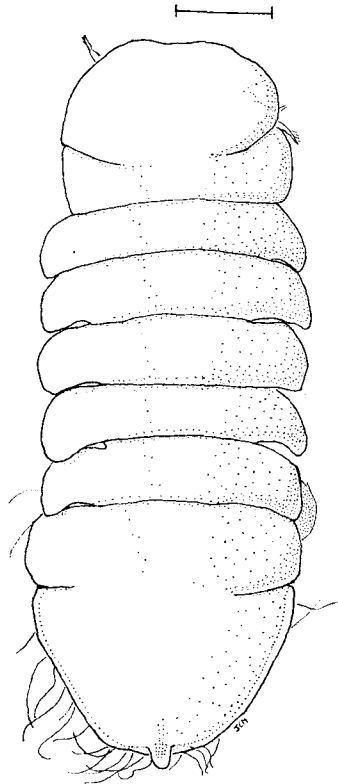


Fig. 5. *Loki circumsaltanus* n. gen. n. sp., allotype male, dorsal view. 0.1 mm indicated.

preservation. No trace of pleopods on last 2 pleomeres. Endopodites absent, though ill-defined tubercles on some pleomeres may represent them. Prominent divergent uropods on end of fifth pleomere, which appears to extend far posteriorly because of absence of pleopods and reduction of lateral plates on final 2 pleomeres.

Examination of several other females revealed no noteworthy variations except in some characters of the abdomen. The lateral plates of the fourth pleomere may be completely absent, or both may be present though reduced, so the condition of the holotype is intermediate. The endopodites of the pleopods are frequently not "inflated"; where only a few of them show this condition, it is the more anterior ones. The uropods, though always well developed, occasionally extend nearly straight back, though divergence, as in the type, seems more common.

Male (allotype, USNM 137392; figs. 5, 6). — Body shape resembles that of males of other genera of the subfamily; it is essentially symmetrical. All 3 body regions fused together except for lateral indentations. No abrupt change in width at any point, body tapering gradually toward each end. Eyes absent. First antenna (fig. 6B) of 3 poorly separated segments, distal one bearing a terminal tuft of 5 setae, each of others with several distal setae. Longer, 8-segmented second antenna (fig. 6A) bearing 5 terminal setae and a few others scattered sparsely along the 6 distal segments. Seven pairs of isomorphic subchelate pereopods of typical

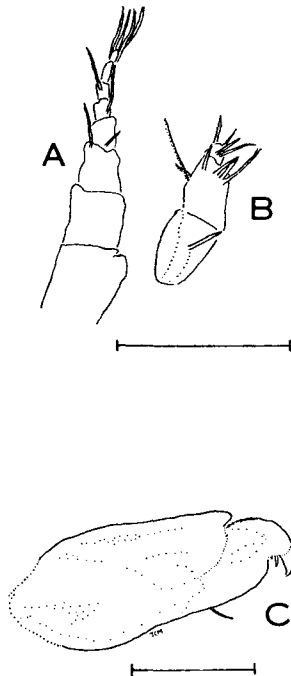


Fig. 6. *Loki circumsaltanus* n. gen. n. sp., allotype male. A, left second antenna; B, left first antenna; C, distal end of left fifth pereopod. 0.05 mm indicated for each figure.

bopyrid structure; pleopods and uropods completely absent. End of abdomen extended into central anal tube. Long setae scattered along edges of body, particularly on abdomen. Dimensions: length 0.78 mm, maximal width 0.31 mm. Color of freshly preserved specimen: none.

Examination of other specimens indicates that the long setae fringing the body are frequently absent. The allotype was found attached to one of the pleopods of the host *Thor* (fig. 1) while other males were attached to their mates in typical bopyrid fashion; most of the females lacked associated males.

One specimen of *Thor floridanus* collected in Biscayne Bay bore a bopyrid cryptoniscid larva attached to the antennal scale (fig. 7). Since no one has studied the life cycle of *Loki* or any other bopyrid from this region, it is impossible to say with any certainty to which species this larva belongs. Because of its host and

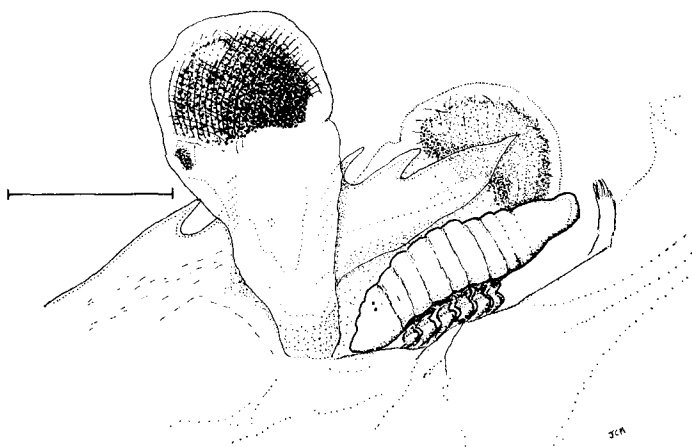


Fig. 7. *Thor floridanus* Kingsley bearing cryptoniscid larva which may be that of *Loki circum-saltanus* n. gen. n. sp. on antennal scale. 0.5 mm indicated.

locality, I have tentatively considered it to be the cryptoniscid of *Loki circum-saltanus*. It would thus be a record comparable to the cryptoniscid of *Hemiarthrus abdominalis* (Krøyer) which Dahl (1949) recorded on the eyestalk of *Spirontocaris gaimardii* (H. Milne Edwards) in Norwegian waters. Another possibility is that it belongs to *Bopyrina thorii* Richardson, which is also known from this host in southern Florida (Richardson, 1904).

Source of name. — The specific name *circumsaltanus* is compounded from the Latin *circum* (around or near) + *saltus* (glade) + *-anus* (suffix denoting belonging to a locality) in reference to the occurrence of this species in the estuarine regions fringing the Everglades of southern Florida.

Rouse (1970) mentions several specimens of *Thor floridanus* abdominally parasitized by a bopyrid identified as *Metaphrixus carolii* Nierstrasz & Brender à Brandis. Unfortunately, his material seems to have been mislaid, and I have been

unable to examine it to check the identity of the parasite. Since no other records of that parasite on *Thor* exist, and since *Loki circumsaltanus* is the only abdominal parasite I have found on *Thor floridanus* taken from localities close to Rouse's sampling stations, it seems almost certain that the material assigned by him to *Metaphrixus carolii* actually belongs to *Loki circumsaltanus*.

Discussion. — *Loki* belongs among the least modified members of the Hemiarthrinae because the female bears 7 well developed legs on the long side. The other genera in this group are *Eophrixus Caroli* (including *Hypophrixus Shiino*), *Cataphrixus Shiino* and *Anisarthrus Giard*. *Loki* differs sufficiently from these genera to deserve separate generic status. The female of *Loki* can be distinguished from those of the other genera mainly by the structure of its abdominal appendages. The females of all of these genera have unadorned fifth pleomeres, but, in addition, in *Loki*, in distinction to the other 3 genera mentioned, pleopods are completely absent from the fourth pleomere, and that segment's lateral plates are either reduced or unilaterally or bilaterally absent. On the other hand, the uropods are much more prominent than in the other genera. The male of *Loki* is also quite distinctive in having both the head and abdomen distinguished from the pereon, though fused with it, and the pereonal segments rather poorly defined. These distinctions are summarized in table I.

Distribution of type material. — In addition to the holotype and allotype,

TABLE I

Comparison of *Loki* n. gen. with 3 other closely related genera of the subfamily Hemiarthrinae

Female	<i>Loki</i>	<i>Eophrixus</i>	<i>Cataphrixus</i>	<i>Anisarthrus</i>
Lateral plates, pleomere 4	Reduced or absent	Well developed	Well developed	Present
Endopodites of pleopods	Absent	Reduced	Present	Absent ¹
Pleopods, pleomere 4	Absent	Well developed	Present	Present
Uropods	Prominent	Present	Absent	Absent
Male				
Eyes	Absent	Small	Absent	Fairly large
Head and Pereon	Fused	Fused	Separated	Fused
Pereonites	Fused medially	Distinct	Completely distinct	Completely distinct
Pereon and abdomen	Fused	Separated ²	Separated	Separated
Pleomeres	Completely fused	Defined laterally	Completely fused	Completely fused
Posterior edge, abdomen	Anal tube	Long taper	Smooth	Anal tube

Notes: 1. The first pleopod of the female of *Anisarthrus* bears what is possibly a rudimentary endopodite. 2. The pereon and abdomen of the male of *Eophrixus shojii* Shiino are fused.

other type material is also to be deposited in the United States National Museum of Natural History, the reference collection of the Rosenstiel School of Marine and Atmospheric Sciences of the University of Miami, and the collections of several other institutions.

Remarks on host. — Dobkin (1968) and Rouse (1970) have pointed out that there is some confusion regarding the specific identity of *Thor* taken in southern Florida; there are at least 2 distinct species present inshore, although *T. floridanus* is the only one described. Dr. Fenner A. Chace, Jr., has informed me that he has found 3 distinct species in the habitat, 2 of them new. On the basis of information which he has furnished me, however, I believe that all of the hosts of *Loki circumsaltanus* which I have examined belong either definitely or probably to *T. floridanus*, while none is definitely assignable to either of his other 2 new species.

Dicropleon gen. nov.

Diagnosis. — Females. Of general hemiarthrine form, main body axis bent little. Head deeply embedded in pleon. First 2 legs on long (hypertrophied) side well developed, third present though markedly reduced, others absent. Abdomen with 4 pairs of well developed lateral plates and 4 pairs of pleopods, the first 3 biramous; fifth pleomere divided into 2 large terminal lobes but lacking uropods.

Male. With eyes. Head and abdomen medially fused with pereon. Abdomen ending in a rather sharp double point.

Origin of name. — Compounded from Greek words δικρος and πλεον meaning "forked tail" in reference to bilobed posterior border of abdomen of both sexes.

Type species. — *Dicropleon periclimentis* nov.

Gender masculine.

Dicropleon periclimentis sp. nov. (figs. 8-10)

Material. — One pair from abdomen of host *Periclimentes (Harpilius) americanus* Kingsley, male, collected on old stump in 2 to 3 feet of water, Marigot Bay, St. Lucia Island, West Indies, 13°58'N 61°01'W, Smithsonian-Bredin Expedition Sta. 53-59, 14 April 1959.

Female (holotype, USNM 128467; figs. 8, 9). — Head (fig. 8) asymmetrical with large projection on short side of body; head deeply set into pereon and exceeded by first 2 pairs of pereopods. Eyes absent. Anterior border of head slightly cleft, resultant concavity being filled by antennae. Antennae of both pairs (fig. 9B) sharply bent; short first antenna on each side lying on top of longer second antenna. Number of antennal segments uncertain because of indistinct sutures.

First segment of pereon distinct at each side but obliterated in middle, where deeply embedded head extends to second segment. Second segment well defined dorsally and essentially wrapped around head. Segments 3-7 distinct on short side but obsolete on long side. Seven legs (pereopods) on short side, 3 on long side (fig. 9A). First and second legs relatively large on both sides. Third leg on long side reduced except for large basal segment in furrow in marsupium. Legs 3-7

on opposite side lined up together, fairly small but fully developed (fig. 9A). In the specimen at hand, legs 5-7 appear damaged, their distal portions evidently broken off.

Abdomen of 5 pleomeres. Each of first 4 pleomeres bearing a pair of lanceolate lateral plates, which diminish slightly in size posteriorly. First 3 pairs of pleopods biramous, their endopodites quite reduced (fig. 9D). Fourth pleopods uniramous. Fifth pleomere bilobed and unadorned, although on one lobe there is ventrally an ill-defined stub which may represent the rudiment of a uropod.

Dimensions. — Length from front of head to end of abdomen 1.65 mm; length from maximal extension of marsupium to end of abdomen 2.47 mm; maximal width across marsupium and head 2.47 mm.

Color (of long-preserved specimen). — Entire dorsal surface of pleon and

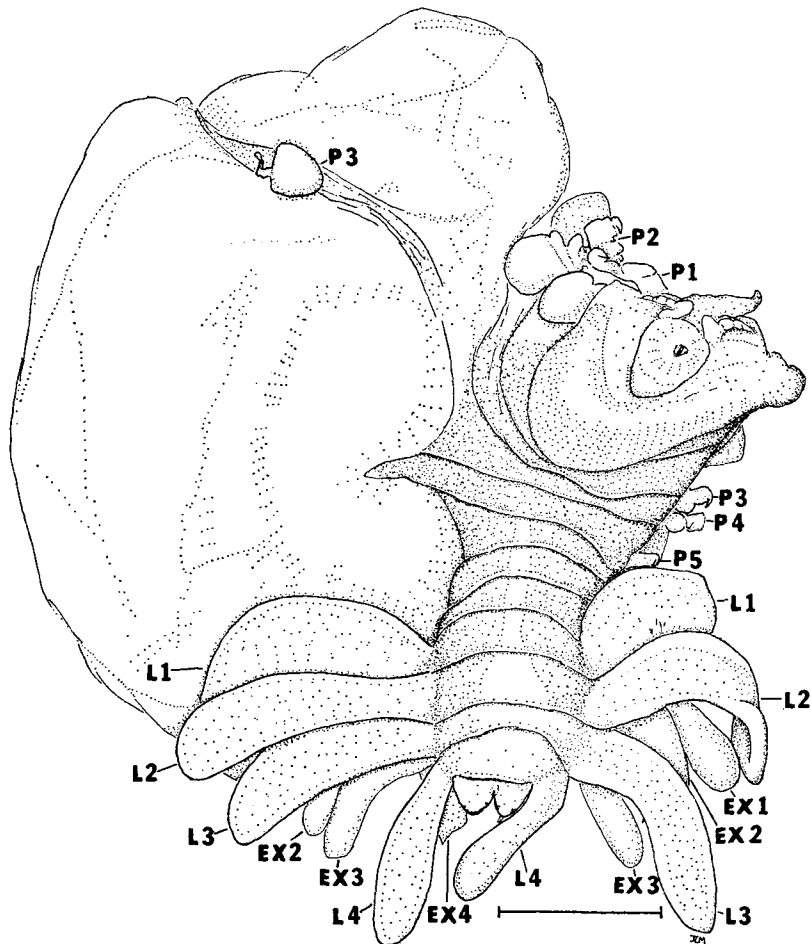


Fig. 8. *Dicropleon periclimentis* n. gen. n. sp., holotype female, dorsal view. Appendages labeled as in fig. 2. 0.5 mm indicated.

abdomen very dark except for a central pale line extending forward from abdomen to center of fourth pereonite; body otherwise uniformly pale.

Male (allotype, USNM 137393; fig. 10). — Head (fig. 10A) rather flatly rounded at anterior end and bearing 2 distinct but irregularly shaped eyespots near posterior border. First antenna (fig. 10B) of 3 segments, each with several spines. Second antenna of 6 segments; terminal segment bearing apical tuft of 3 setae, fifth with 2 setae, fourth segment with 1 reduced seta. Abdomen (fig. 10A) a single fused triangular piece, abruptly narrower than pereon and terminating in incised point. No rudiments of pleopods. Length 0.70 mm; maximal width 0.29 mm. Color: pale except for black eyespots and irregular dark markings on pereon and abdomen.

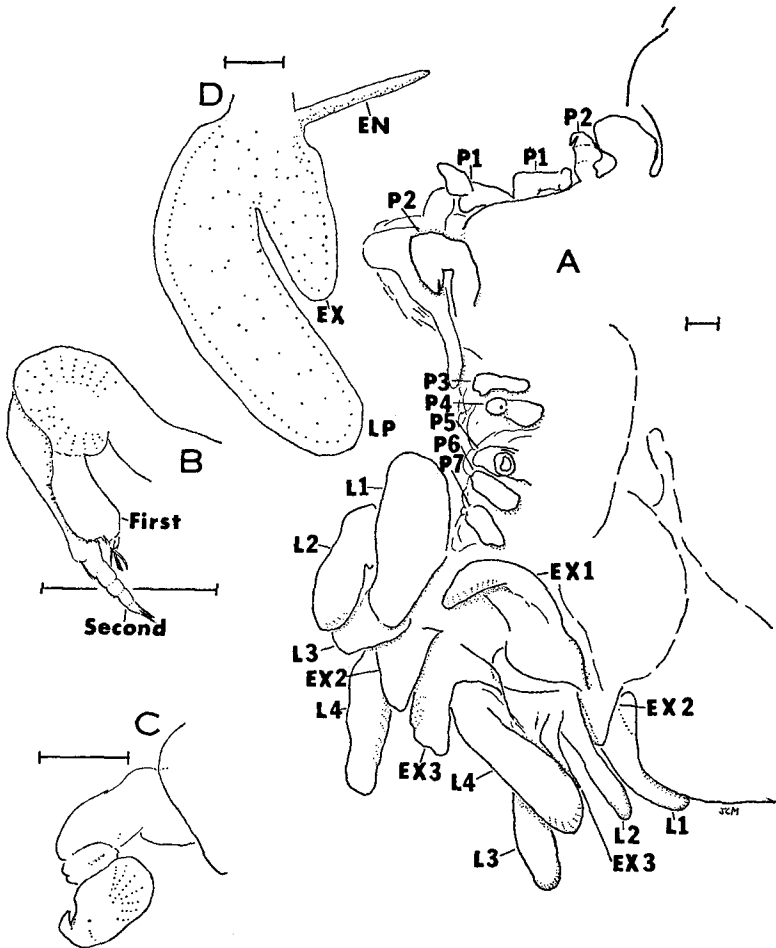


Fig. 9. *Dicropleon periclimentis* n. gen. n. sp., holotype female. A, right side; appendages labeled as in fig. 2; B, right first and second antenna; C, right second pereopod; D, right third pleopod. EX, exopodite; EN, endopodite; LP, lateral plate. 0.1 mm indicated for each figure.

Source of name. — The specific name *periclimentis* is the genitive form of the generic name of the host *Periclimentes americanus*.

Discussion. Caroli (1930) established 5 subgenera of the genus *Phryxus* (the spelling of which he emended to *Phrixus*) distinguished by the number of pereopods borne on the long side of the female. The next year, Nierstrasz & Brender à Brandis (1931) raised these subgenera to generic rank and added 2

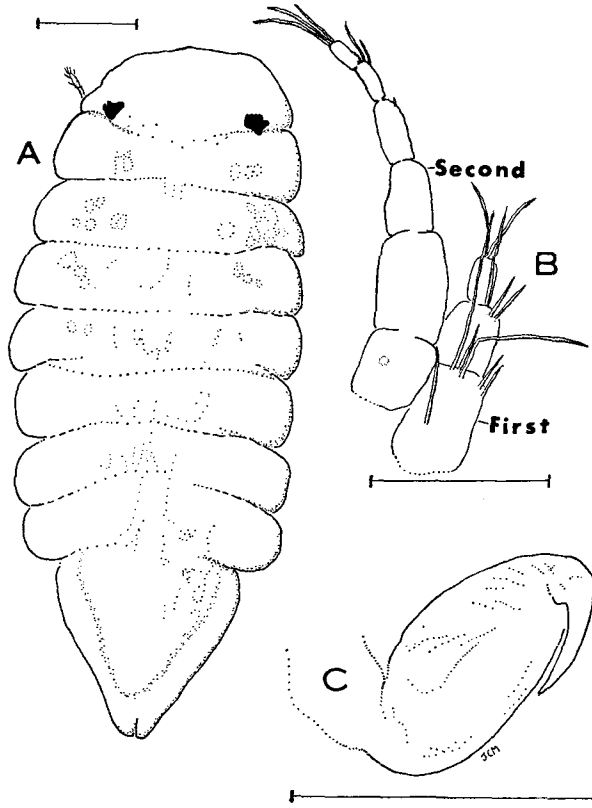


Fig. 10. *Dicropleon periclimentis* n. gen. n. sp., allotype male. A, dorsal view; B, right first and second antennae; C, right first pereopod. 0.1 mm indicated for each figure.

more genera on the same basis. Of these genera, *Pliophrixus* Caroli is described as having 3 pereopods on the long side, which would make it similar to my new species. Unfortunately, it is based on a single species, originally called *Hemiarthrus philonika* Giard & Bonnier, for which no proper description has been published, so its other characters remain unknown to me. Bourdon (1967) reports having found a specimen which is evidently assignable to *P. philonika*, but which bears not 3 but 4 legs on the long side; he does not otherwise describe it. Nonetheless, this one character seems to indicate that *Pliophrixus* is not congeneric with *Dicropleon*.

Another species whose female possibly has 3 legs on the long side is *Paraphrixus adriaticus*, which its authors, Nierstrasz & Brender à Brandis (1931) assigned to the genus *Paraphrixus*, in which the females are 5-legged, because it bears rudimentary structures which might be rudimentary fourth and fifth pereopods. In a similar case, Bourdon (1967a) used the opposite approach when describing the new species *Metaphrixus bifidus*, the female of which has 2 well developed legs and a third reduced one on the long side. He considered the rudimentary leg to be of no systematic value and so, albeit with some hesitation, placed the species in *Metaphrixus*, whose females are 2-legged, even though there are some rather marked differences between it and the other 2 species of that genus. The reduced leg of *Dicropleon periclimentis*, although it lies in a distinct furrow of the female's marsupium, may well be comparable to that of *M. bifidus*. This and the correspondence of several other morphological details (not to mention that both parasitize species of *Periclimentes*) lead me to believe that *M. bifidus* may properly belong in the new genus *Dicropleon*. It would, however, be advisable to withhold such judgment until a male of *M. bifidus* is discovered.

The female of yet another species, *Diplophryxus richardsoni* Chopra, possibly has 3 pereopods on the long side. In describing this species, Chopra (1930) stated that the number of its long-side pereopods was 3 or 4, but he placed it in the genus *Diplophryxus*, whose females have only 1 such pereopod. For this reason, Shiino (1934) was of the opinion that it probably belonged in a new genus, though it is hardly congeneric with *Dicropleon periclimentis* on the basis of other characters. Regrettably, the male *Diplophryxus richardsoni* is unknown. Table II contrasts *Dicropleon periclimentis* with 6 other closely similar species in 4 genera.

Three other species of *Periclimentes* have been reported parasitized by members of the Hemiarthrinae. Each of the 3 parasites belongs to a different genus. These are *Eophrixus kubo* (Shiino) on *Periclimentes akiensis* Kubo from the Inland Sea of Japan, *Paraphrixus nigrocinctus* (Chopra) on *Periclimentes elegans* (Paulson) from the Bay of Bengal, and the abovementioned *Metaphrixus* (?) *bifidus* Bourdon on *P. inornatus* Kemp from the Maldives.

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TABLE II

Comparison of *Dicropleon periclimenis* n. gen. n. sp. with members of 4 other closely related genera of the subfamily Hemiarthrinae

Species	<i>Dicropleon periclimenis</i> n. g. n. sp.	<i>Metaphrixus bifidus</i> Bourdon (1967a)	<i>Metaphrixus carolii</i> Nz. & B. à B. (1931)	<i>Metaphrixus intutus</i> Bruce (1966)	<i>Anomophryxus deformatus</i> Shirino (1937)	<i>Paraphrixus (?) adriaticus</i> Nz. & B. à B. (1930)	<i>Diplophryxus (?) richardsoni</i> Chopra (1930)
Locality	West Indies	Maldives	West Indies	Zanzibar	Tanabe Bay	Adriatic	Andaman Isls.
Host	<i>Periclimenes americanus</i> Kingsley	<i>Periclimenes inornatus</i> Kemp	<i>Hippolyte pleuracantha</i> 1 (Stimpson)	<i>Palaemonella vestigialis</i> Kemp	<i>Pleisionika ortmanni</i> Doflein	Unidentified hippolytid	<i>Pontophyllus lowisi</i> Kemp
Eyes	Absent	Absent	Present	Present	Absent	Absent	Minute
Curvature of body axis	28°	55°	90°	85°	55°	45°	48°
Pereopods on long side	3 (3rd reduced)	3 (3rd reduced)	2	2	2	3 (+ 2 possible rudiments)	3 or 4
Endopodites, pleopods 1-3	Reduced	Absent	Absent	Absent	Absent	Absent	Large
End of pleotelson	Bifid, short	Bifid, long	Simple	Simple	Simple	Simple	Simple
Lateral plates, pleomeres 1-4	Well developed	Well developed	Well developed	Well developed	Absent	Well developed	Absent
Center, pereonite 1	Obliterated	Present	Present	Obliterated	Obliterated	Present	Present
Male							
Eyes	Present	....	Present	Present	Absent	Absent	....
Head and pereon	Fused	....	Separate	Fused	Fused	Separate	....
Pereon and abdomen	Fused	....	Partially fused	Separate	Partially fused	Separate	....
End of abdomen	Bifid	....	Pointed	Rounded	Rounded	Rounded	....

Note 1. Although the host of the type specimens of *Metaphrixus carolii* was unknown, I have recently found a number of individuals infesting *Hippolyte pleuracantha* in southern Florida.

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ZUSAMMENFASSUNG

Es werden zwei neue Arten der Isopodenfamilie Bopyridae beschrieben, die zu neuen Gattungen gehören. *Loki circumsaltanus* n. gen. n. sp., ist ein Schmarotzer der seichtwasserbewohnenden Garnele *Thor floridanus* Kingsley aus Südflorida, während *Dicropleon periclimentis* n. gen. n. sp. eine andere Garnele, *Periclimentes (Harpilius) americanus* Kingsley, aus der westindischen Insel St. Lucia parasitiert. Für die Unterfamilie dieser und verwandter Gattungen wird ein neuer Name, Hemiarthrinae, vorgeschlagen, weil der ehemalige Name Phryxinae aus einem ungültigen Gattungsnamen abgeleitet wurde.

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