

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

CITHADIUS CYATHURAE, A NEW GENUS AND
SPECIES OF TACHIDIIDAE (COPEPODA:
HARPACTICOIDA) ASSOCIATED WITH THE
ESTUARINE ISOPOD, *CYATHURA POLITA*

BY THOMAS E. BOWMAN

Smithsonian Institution, Washington, D.C. 20560

While examining populations of the estuarine isopod *Cyathura polita* that he had collected at the Chesapeake Bay Center for Environmental Studies, John W. Vogel noticed a harpacticoid copepod in his preserved samples of this isopod. The copepod occurred so regularly that it seemed likely that its association with the isopod was not accidental. Observations on living specimens (see below) supported this supposition.

I am grateful to Mr. Vogel for his discovery of the copepod, a new genus and species which is described below, and for carefully selecting and preserving the specimens on which the description is based.

TACHIDIIDAE

TACHIDIINAE

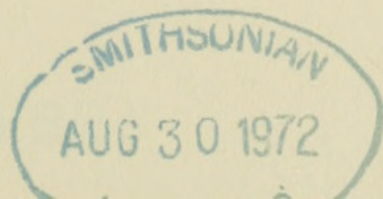
Lang (1948) divided the family Tachidiidae into three subfamilies, Euterpininae, Thomsonulinae, and Microarthridioninae. The last, which contains *Microarthridion* and the type-genus of the family, *Tachidius*, is the nominate subfamily, and must be named *Tachidiinae*.

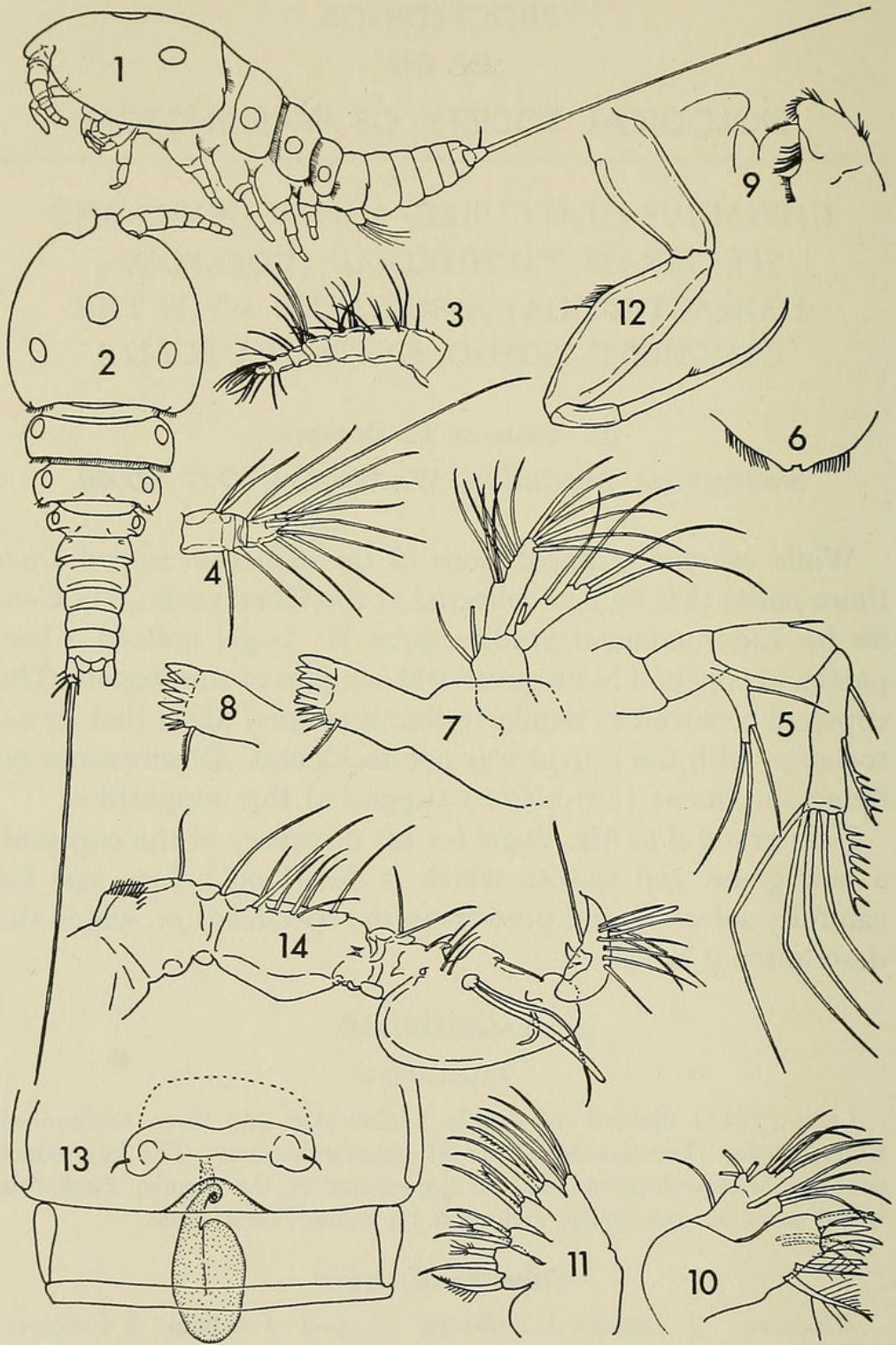
***Cithadius* new genus**

Diagnosis: ♀ antenna 1 7-merous. Exopod of antenna 2 1-merous, with 4 setae. Endopod of leg 1 not longer than exopod. Legs 2-3 not sexually dimorphic; rami subequal; 1st segment of exopod and endopod not reduced, with seta on medial margin. Leg 4 much reduced; rami 2-merous. Leg 5 in both sexes a broad undivided plate.

Type-species: *Cithadius cyathurae* new species.

Etymology: An anagram of *Tachidius*. Gender, masculine.





FIGS. 1-14. *Cithadius cyathurae*. 1-13, ♀: 1, lateral view. 2, dorsal view. 3, left 1st antenna. 4, right 1st antenna, distal segments. 5, 2nd antenna. 6, labrum. 7, mandible. 8, gnathal lobe of mandible from different specimen. 9, hypopharynx. 10, 1st maxilla. 11, 2nd maxilla. 12, maxilliped. 13, genital field. 14, ♂ 1st antenna.

Cithadius cyathurae new species

Figures 1-23

Diagnosis: With the characters of the genus.

Additional description: Length of ♀ 0.54-0.58 mm, of ♂ 0.48-0.50 mm. Nuchal organ and lateral discs present on cephalothorax; lateral discs on pedigerous segments 2-4. Rostrum broad. Posterolateral margins of cephalothorax and pedigerous segments 2-4 and dorsal margin of pedigerous segment 2 fringed with fine setae. Genital field as in Figure 13; ♀ leg 6 represented by a single seta. Urosomites 4-5 each with row of spines along posteroventral margin. Anal operculum margin smooth.

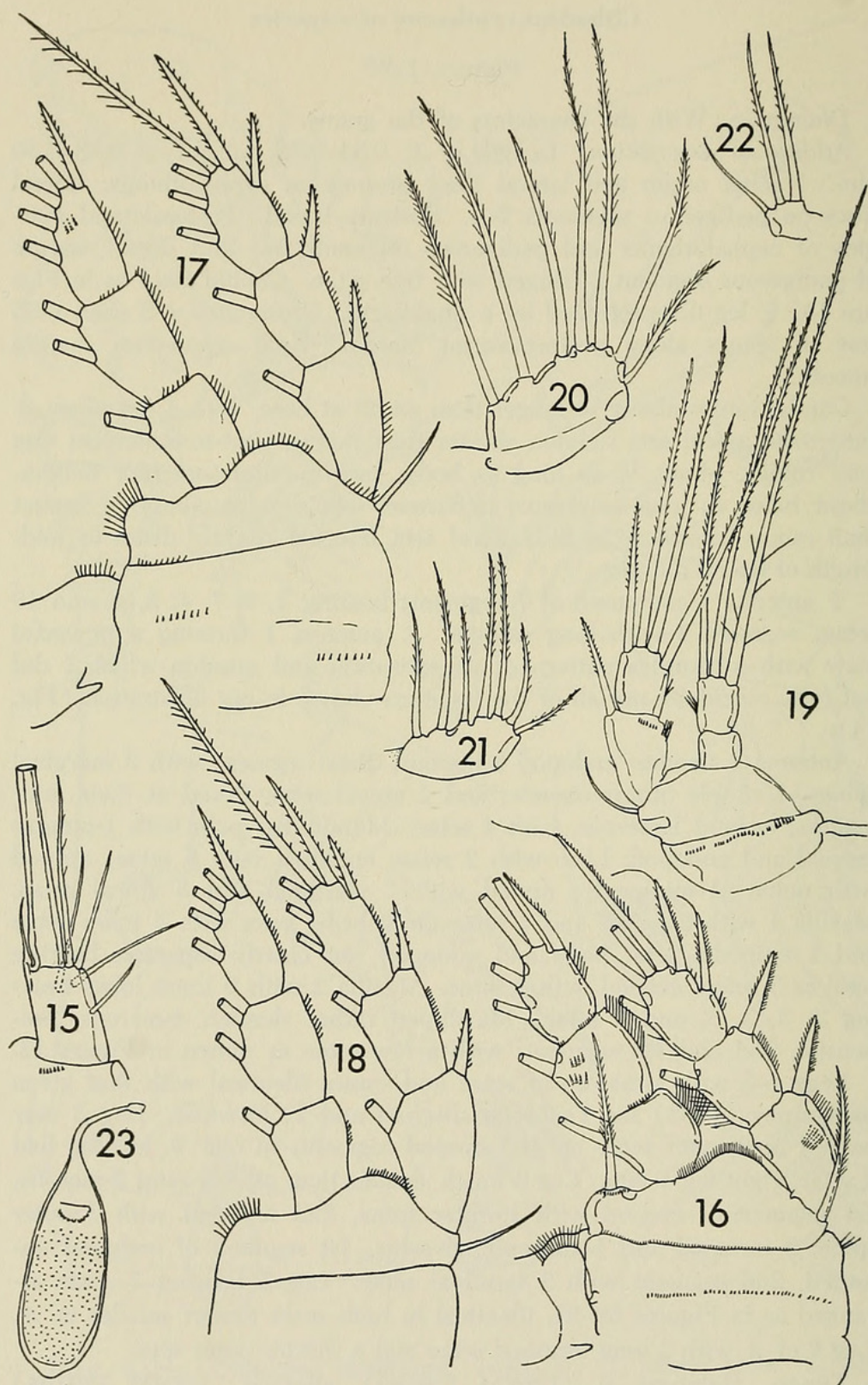
Caudal ramus about $\frac{1}{3}$ longer than width at base, with 4 apical setae. Innermost apical seta slender, shorter than ramus; next-to-innermost seta very robust, about $\frac{7}{8}$ as long as body; next-to-outermost seta slender, about twice as long as ramus; outermost seta slender, about $\frac{1}{4}$ longer than ramus; dorsal setae 2. Lateral seta inserted slightly distal to mid-length of lateral margin.

♀ antenna 1 composed of 7 segments bearing 1, 8, 7, 4, 2, 4, and 10 setae; segment 4 with long esthete. ♂ antenna 1 forming a powerful claw with a complex pattern of sclerotization and setation which I did not fully elucidate; not all of the setae are shown in my illustration (Fig. 14).

Antenna 2 slender; endopod 2-merous, distal segment with 3 marginal spines, 1 simple others ctenate, and 4 apical setae flexed at their mid-lengths; exopod 1-merous, with 4 setae. Mandibular palp with 1-merous exopod and endopod; basis with 2 setae; endopod with 5 setae; exopod with notch at midlength, armed with 7 marginal and 6 apical setae. Maxilla 1 with 6 spines and 4 setae on arthrite; coxa with 4 inner setae and 1 epipodal seta; basis and endopod not clearly separate, bearing total of 5 setae; exopod with 3 setae. Maxilla 2 with 5 inner lobes bearing 3, 3, 3, 3, and 4 setae. Maxilliped rather slender, 4-merous, prehensile; 2nd and 4th segments with a few setae as shown in Figure 12.

Legs 1-3 with armature of setae and spines identical with that given by Gurney (1932) for *Tachidius discipes* and *T. incisipes*. Leg 3 may have 1 or 2 inner setae on 2nd exopod segment; in one ♀ left leg had 2 setae, right leg 1 seta. Leg 4 much smaller than others; rami 2-merous; 1st segment of exopod with 1 outer spine, 2nd segment with 1 outer spine, 2 terminal and 1 subterminal setae; 1st segment of endopod unarmed, 2nd segment with 3 terminal setae. Leg 5 bearing 7 setae arranged as in Figures 20-21, identical in both sexes except smaller in ♂. Leg 6 of ♂ with 2 long terminal setae and a shorter outer seta.

Types: Holotype ♀ (USNM 139193), allotype (USNM 139194) and 38 ♀ and 4 ♂ paratypes (USNM 139195), collected with *Cyathura polita* by John W. Vogel, 29 April 1968, at Fox Creek, Rhode River estuary, Chesapeake Bay Center for Environmental Studies.



FIGS. 15-23. *Cithadius cyathurae*. 15-20, ♀: 15, caudal ramus, ventral. 16, leg 1. 17, leg 2. 18, leg 3. 19, leg 4. 20, leg 5. 21-23, ♂: 21, leg 5. 22, leg 6. 23, spermatophore.

Etymology: The specific name refers to the isopod with which it is associated.

Relationships: *Cithadius* shares many characters with the two genera of Tachidiinae, *Tachidius* and *Microarthridion*, as defined by Lang (1948), but can be immediately distinguished by its unique 4th legs, as well as by the 1-merous exopod of antenna 2. The discovery of *Cithadius* necessitates expanding the definitions of the family Tachidiidae and the subfamily Tachidiinae to include these characteristics.

Natural history: A few observations were made on living specimens of *Cyathura polita* together with *Cithadius*. The *Cyathura* paid no observable attention to the copepod, which moved over the body of the host with facility. Favorite sites seemed to be the telson and the articulations between the segments of the posterior pereopods, but other parts of the body were visited, including the ventral surface of the pereon.

The consistent occurrence of *Cithadius* in Vogel's collections of *Cyathura*, together with its observed behavior suggests that the natural habitat of *Cithadius* is the body surface of *Cyathura*. The biology of *Cyathura polita* has been studied intensively by Burbanck (1961, 1963, 1967) and its distribution is well known. It occurs in estuaries from the Sheepscot River, near Boothbay Harbor, Maine, to Lake Pontchartrain, Louisiana. It seems unlikely that *Cithadius* is limited to the Chesapeake Bay, and its distribution will probably be found to approximate that of *Cyathura polita*. Harpacticoid copepods have been reported as associates of other crustaceans, for example, spider crabs (Jakubisiak, 1932), land crabs (Humes, 1941), hermit crabs (Humes and Ho, 1969a, 1969b), lobsters (Humes, 1953), and crayfishes (Bowman, Prins, and Morris, 1968); among the isopods they are known to be associated only with the gribble, *Limnoria* (Stephensen, 1936; Coull and Lindgren, 1969).

LITERATURE CITED

- BOWMAN, THOMAS E., RUDOLPH PRINS, AND BYRON F. MORRIS. 1968. Notes on the harpacticoid copepods *Attheyella pilosa* and *A. carolinensis*, associates of crayfishes in the eastern United States. Proc. Biol. Soc. Washington 81: 571-586.
- BURBANCK, WILLIAM D. 1961. The biology of *Cyathura* sp., an estuarine isopod of eastern North America. Verh. Internat. Verein. Limnol. 14: 968-971.
- . 1963. Some observations on the isopod, *Cyathura polita*, in Chesapeake Bay. Chesapeake Sci. 4(2): 104-105.
- . 1967. Evolutionary and ecological implications of the zoogeography, physiology and morphology of *Cyathura* (Isopoda), pp. 564-573. In George H. Lauff (ed.), Estuaries. American Association for the Advancement of Science Publication No. 83.
- COULL, BRUCE C., AND ERIC W. LINDGREN. 1969. *Harrietella simulans* (Copepoda, Harpacticoida) associated with *Limnoria tri-*

- punctata* (Isopoda) in North Carolina. *J. Elisha Mitchell Sci. Soc.* 85(2): 73-75.
- GURNEY, ROBERT. 1932. *British Fresh-water Copepoda*, volume 2. Ray Society, London, ix + 336 pp.
- HUMES, ARTHUR G. 1941. A new harpacticoid copepod from the gill chambers of a marsh crab. *Proc. U.S. Nat. Mus.* 90(3110): 379-386.
- . 1953. Two new semiparasitic copepods from the coast of New Hampshire. *J. Washington Acad. Sci.* 43(11): 360-373.
- HUMES, ARTHUR G., AND JU-SHEY HO. 1969a. The genus *Sunaristes* (Copepoda, Harpacticoida) associated with hermit crabs in the western Indian Ocean. *Crustaceana* 17(1): 1-18.
- . 1969b. Harpacticoid copepods of the genera *Porcellidium* and *Paraidya* associated with hermit crabs in Madagascar and Mauritius. *Crustaceana* 17(2): 113-130.
- JAKUBISIAK, STANISLAUS. 1932. Sur les Harpacticoïdes hébergés par *Maia squinado*. *Bull. Soc. Zool. France*, 57(6): 506-513.
- LANG, KARL. 1948. *Monographie der Harpacticiden*, volume 1. Lund, 896 pp.
- STEPHENSEN, KNUT. 1936. Copepoda found on *Limnoria lignorum*. *Kgl. Norske Vidensk. Delsk. Skr.* 1935, No. 39: 1-10.



Bowman, Thomas E. 1972. "Cithadius cyathurae New Genus New Species Of Tachidiidae Copepoda Harpacticoida Associated With The Estuarine Isopod *Cyathura polita*." *Proceedings of the Biological Society of Washington* 85, 249–254.

View This Item Online: <https://www.biodiversitylibrary.org/item/107513>

Permalink: <https://www.biodiversitylibrary.org/partpdf/44051>

Holding Institution

Smithsonian Libraries

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Biological Society of Washington

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.