

***Yansacyclops ferrarii*, new genus, new species (Copepoda: Cyclopoida) from the Amazon Basin, Brazil**

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Abstract

Yansacyclops ferrarii, new genus, new species (Copepoda: Cyclopoida) is described from the plankton of Rios Guamá and Acará Grande near Belém, State of Pará, Brazil.

Introduction

Samples of zooplankton from fresh-water, tidal tributaries of the Amazon River south of Belém, Brazil, proved to contain specimens of a cyclopoid copepod belonging to an undescribed genus and species. The samples were taken by Dr. Frank D. Ferrari of the Smithsonian Oceanographic Sorting Center during cruise 'Carib I' of the Scripps Institution of Oceanography RV Alpha Helix (Ferrari & Bowman, 1980).

Family Cyclopidae

Subfamily Cyclopinae Dana, char. emend. Kiefer

Yansacyclops, new genus

Female. – Prosome not markedly depressed, lateral margins of posterior prosomites rounded, well separated, lacking ornamentation. Seminal receptacle with narrow anterior and posterior lateral expansions. Urosomites slender, elongate, anal somite slightly longer than penultimate urosomite. Caudal rami longer than broad, without

dorsal keel. Antennule of 10 articles. Maxillular palp of 2 distinct articles. Swimming legs each with rami of 2 articles, spine formula 3, 4, 4, 3. Leg 1 lacking seta on inner expansion of basipod 2. Leg 4 endopod 2 with outer terminal spine and inner terminal seta. Articles of leg 5 fused to laterally enlarged somite; proximal article indicated by dorsolateral seta and distal article by ventrally inserted, posteriorly directed spine and additional seta inserted equidistantly between spine and dorsolateral seta. Leg 6 a small flap with seta and spinule.

Male. – Slightly smaller than female. Antennule geniculate, of 15 articles, with long esthetascs on articles 1, 3 and 12. Leg 6 bearing spine and 2 setae.

Differential diagnosis. – Table 1 indicates some differences between *Yansacyclops* and those cyclopine genera which include at least some species having leg 5 completely fused to the somite. *Yansacyclops* differs from these in having an antennule of 10 articles, and generally from *Bryocyclops* and *Speocyclops* by its cyclopoid rather than harpacticoid body form and associated morphological details. In all species presently attributed to *Allocyclops*, spine and seta of

Table 1. Some characteristics of cyclopine genera that include at least some species having leg 5 completely fused to thoracic somite. Abbreviations: Al, antennule; CR, L : B, caudal ramus, ratio of length: breadth; P1–4, swimming legs 1–4; enp2, endopod article 2.

Characteristic	<i>Bryocyclops</i>	<i>Speocyclops</i>	<i>Allocyclops</i>	<i>Yansacyclops</i>
1. ♀ A1, no. articles	11	11	11	10
2. Body form	Harpacticoid	Harpacticoid	Cyclopoid	Cyclopoid
3. Anal operculum	Well-developed, triangular, margin smooth or serrated; or reduced in subgenus <i>Haplocyclops</i>	Usually well-developed, triangular or semicircular, margin smooth or serrated	Little developed, semicircular or quadrate; margin smooth	Little developed, semicircular; margin smooth
4. ♀ CR, L : B	1–2.7: 1	1–2: 1	2–3.75: 1	5: 1
5. P1–4, spine formula	3,3,3,4 or 3,3,3,3 or 3,3,3,2 or 2,3,3,3 or 2,2,2,2	3,4,4,3	3,4,4,3 or 3,3,3,3 or 3,3,3,2	3,4,4,3
6. ♂ P3 enp2	Modified terminal spine and setae	No modified spine or setae*	No modified spine or setae*	No modified spine or setae
7. Habitat	Groundwaters, phytotelmata, mosses; always benthic	Groundwaters; always benthic	Pneatic, ephemeral or groundwaters; always benthic	Planktonic in rivers

* Males of some species not described.

the former terminal article of leg 5 are inserted close together. Although the morphology of only *A. silvaticus* Rocha & Bjornberg is completely known, other differences from *Allocyclops* appear to include the presence of a seta on the inner expansion of basipod 2 of leg 1 (*A. chappuisi* Kiefer, *A. kieferi* Petkovski and *A. silvaticus*) and a reduced maxillular palp, which is of 1 article in *A. kieferi* (Petkovski, 1971) and also appears fused in *A. silvaticus* (Rocha & Bjornberg, 1988). There is 1 short and 1 long terminal spine on endopod 2 of leg 4 in most species of *Allocyclops*, except *A. ritae* Dumont & Lamoot (1978) and *A. silvaticus*, which possess one terminal spine only.

Type species. – *Yansacyclops ferrarii*.

Yansacyclops ferrarii, new species. Figs. 1–21

Material. – Holotype ♀, National Museum of Natural History (USNM) 234103 from Station PN-1-260, mouth of northern channel of Rio Guamá, State of Pará, Brazil, 01° 27.8' S, 48° 29.2' W., depth 3 m, 11 June 1977. Allotype ♂, USNM 234104 from Station PN-2-260, same locality and date, depth 8 m. Paratypes: 3 ♀, USNM 234105, dissected on slides, and 14 ♀,

USNM 234106, all from Station PN-1-260, same locality and date; USNM 234107: 3 ♀ and 2 CV ♀, Station PN-2-260; 2 ♀ and 1 CV ♀, Station PN-3-260, same locality and date, depth 4 m; 1 ♂ and 1 CV ♂, Station PN-6-260, mouth of Rio Acará Grande, State of Pará, Brazil, same coordinates, 14 June 1977, depth 0 m. 10 ♀, Museu de Zoologia da Universidade de São Paulo (MZUSP) 8989, from sample at Station PN-1-260. All material from plankton tows; undisseminated specimens alcohol-preserved.

Female. – Length of holotype, excluding caudal setae 805 µm; lengths of 10 paratypes 760–870 µm (median length 810 µm). Habitus (Fig. 1) as for genus. Genital segment (Fig. 2) broadened anteriorly, tapering posteriorly; seminal receptacle with narrow anterior and posterior expansions. Posterior hyaline margins of prosomites smooth, those of most urosomites finely toothed, except anal somite (Fig. 4) which bears slender spinules. Anal operculum (Fig. 4) weakly convex. Caudal rami (Fig. 4) 91 µm long by 18 µm broad, thus 5X longer than broad; inner surfaces not haired. Lateral setae inserted at distal sixth of rami; dorsoventral row of spinules anterior to each lateral seta. Lengths of setae of

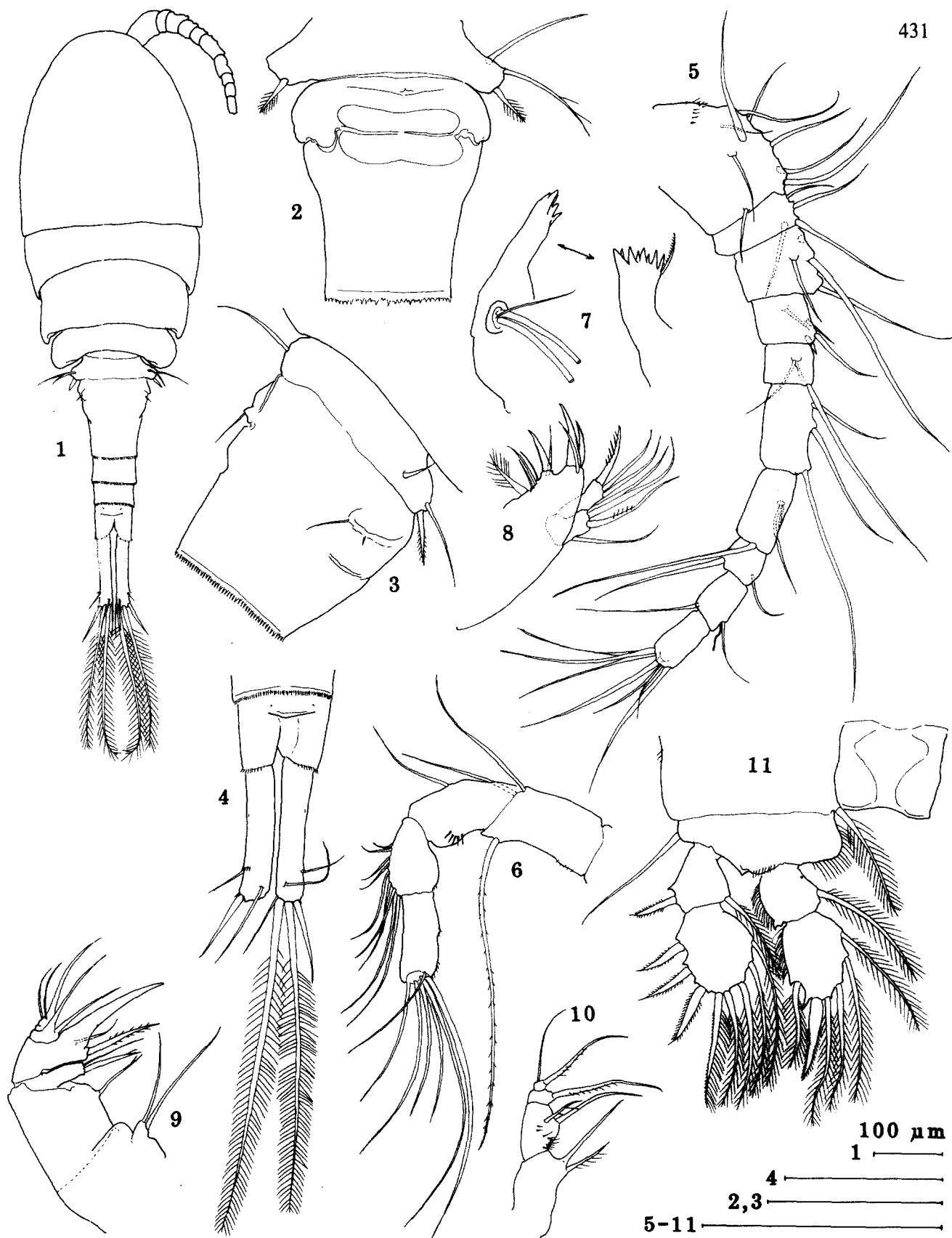


Fig. 1-11. *Yansacyclops ferrarii*, new genus, new species, female: 1, habitus; 2, urosomite 1 and genital segment, ventral; 3, urosomite 1 and genital segment, dorsolateral; 4, anal somite and caudal rami, dorsal; 5, antennule; 6, antenna; 7, mandible; 8, maxillula; 9, maxilla; 10, maxilliped; 11, leg 1.

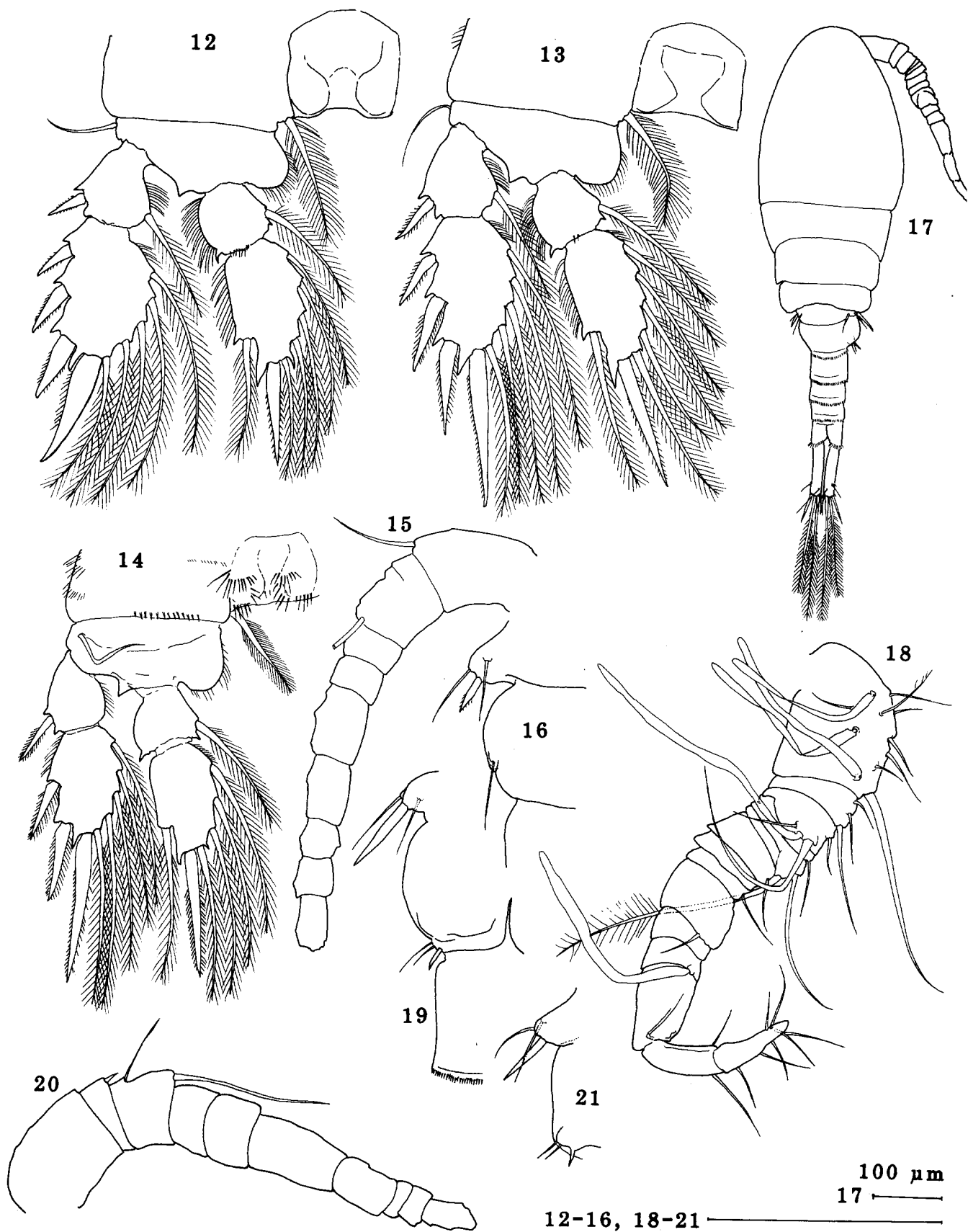


Fig. 12-14. *Yansacyclops ferrarii*, new genus, new species, female: 12, leg 2; 13, leg 3; 14, leg 4. Figs. 15, 16. *Y. ferrarii*, female copepodite V: 15, antennule; 16, urosomite 1 and genital segment, dorsal. Figs. 17-19. *Y. ferrarii*, male: 17, habitus; 18, antennule; 19, urosomites 1-3, ventral. Figs. 20, 21. *Y. ferrarii*, male copepodite V: 20, antennule; 21, urosomites 1 and 2, ventral.

mounted paratype: lateral 28; dorsal 43; inner to outer terminal 40, 225, 215, 51 μm . All setae of rami naked except median terminal setae which are finely and homogeneously plumose; outer terminal setae with fine whiplike tip, broken in some specimens.

Antennule (Fig. 5) with small esthetascs on articles 5, 7 and 9; article 4 with short spine. Antenna, mandible, maxillula, maxilla and maxilliped as in Figs. 6–10.

Connecting plates of swimming legs 1–4 (Figs. 11–14) having free margins without armament except that of leg 4 with groups of long hairs on posterior surface. Second basipods of all legs lacking setae on inner expansions. Leg 1, outer terminal seta of exopod 2 with spinules on outer margin. Leg 2, spines of exopod 2 distinctly broader than those of succeeding legs. Leg 4, endopod 2 1.6X longer than broad, with inner terminal seta and outer terminal spine; spine about 1.2X longer than article of endopod. Legs 5 and 6 (Figs. 2, 3) as described for genus; ventral spiniform seta of leg 5 thickly set with setules.

Female copepodite V. – Lengths of 3 paratypes 710, 720 and 730 μm . Antennule (Fig. 15) of 9 articles, article 2 incompletely divided. Ventral spiniform seta of leg 5 (Fig. 16) short and stout; leg 6 consisting of 1 long seta.

Male. – Length of holotype 730 μm ; paratype 670 μm . Body form, caudal rami and antennule as in Figs. 17 and 18. Legs 1–5 similar to female; leg 6 (Fig. 19) as described for genus.

Male copepodite V. – Length 700 μm . Antennule (Fig. 20) of 10 articles. Legs 5 and 6 (Fig. 21) each with spiniform seta proportionately shorter than in adult.

Etymology. – The genus prefix honors Yansã, river goddess of the Brazilian Candomblé and Yoruban pantheons, and patroness of winds, storms and controversies; the genus is of masculine gender. The species is named for Dr. Frank D. Ferrari, the collector, in grateful recognition of his help with many projects.

Discussion

Dussart (1984) described *Allocyclops neotropialis* from a single male collected in the Orinoco River, Venezuela; he considered the taxonomic position of this species provisional. In all respects except the antennular esthetascs, some of which may have been missing in Dussart's specimen, this individual fits the diagnosis of *Yansacyclops* and can be considered a member of this genus. It differs from *Y. ferrarii* in having a shorter caudal ramus (2.7X longer than broad, measured from the figure); the lateral seta inserted at the second third of the ramus, without setules anterior to the lateral seta; the dorsal seta shorter than the innermost terminal seta; and two straight rows of spinules on the connecting plate of leg 4.

The similarity in leg 5 among several genera indicates the conservative nature of this structure in cyclopines. Monchenko (1986) demonstrated that forms with similar fifth legs may show extreme differences in other respects. Demarcation of genera of cyclopoids must be based on balanced consideration of similarities in body form and all appendages, including mouthparts.

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