

**CONTRIBUTIONS TO THE STUDY OF THE GENUS
CLETOPSYLLUS WILLEY, 1935 (COPEPODA, HARPACTICOIDA)
FROM THE INDIAN OCEAN**

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On décrit une espèce nouvelle, *Cletopsyllus bacescui* n. sp., ainsi que le mâle de l'espèce *C. quartus* Soyer, recueillis dans les fonds coralligènes de la côte tanzanienne.

Over the December 1973 to January 1974 period, a team of Romanian researchers, under the leadership of Dr. M. Băcescu, Director of the «Gr. Antipa» Museum, conducted a survey in the Indian Ocean, along the Tanzanian coast, and collected an abundant faunal material in the coral reefs area.

In one of the samples, East Mbvakumi, 18.I.1974, 25.20 m, we found two species of the genus *Cletopsyllus*, *C. quartus* Soyer and *C. bacescui* n. sp. that make the object of the present note.

Cletopsyllus quartus Soyer 1966
(Fig. 1—2)

The species was erected by Soyer (1966) on the basis of a single specimen ♀, found in the coral bottom at Banyuls.

We identified *C. quartus* by studying a set of microscopical preparations with dissected material considered as belonging to *C. bacescui* n. sp. That is why we are not in the position to give the body sizes. We found 3 specimens, 1 ♀ and 2 ♂. We give the description of the male as new to science.

DIAGNOSE

Male. Furca, 8.5 times as long as wide. Presence of sexual dimorphism at P2—P5 level.

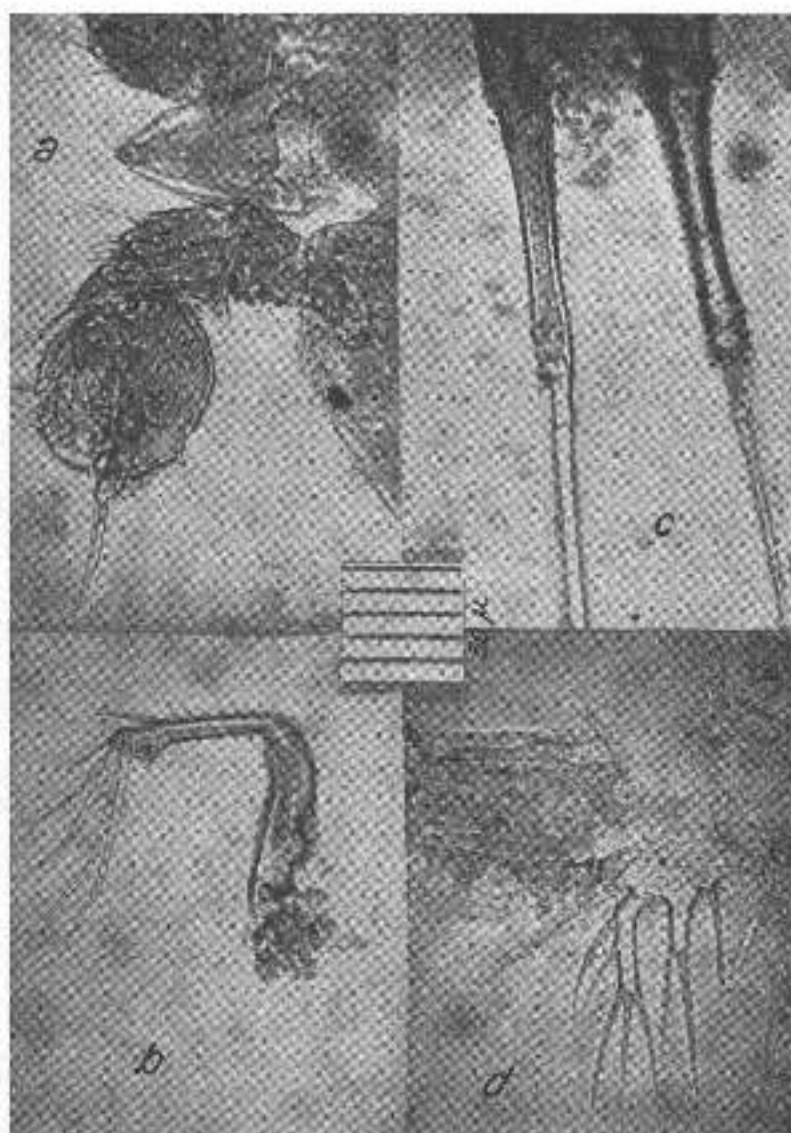


Fig. 1 — *Clitopyllus quartus* ♂. a — A1; b — A2; c — Fa; d — P5. (Photo by Ioan Negrea)

DESCRIPTION

Metatype: 1 ♂ in the collection of « Gr. Antipax Museum, no. 420.

Material examined: 2 ♂♂.

Furca, (Fig. 1 c). 3.5. times as long as wide.

Antennule, (Fig. 1 a). With usual dimorphic modifications. The second segment with two inner conical expansions just like in the female.

Antenna, (Fig. 1 b). mouth parts and leg 1, as in female.

Leg 2, (Fig. 2 a). The apical inner seta of the last segment of exopodite changed in a spine with bifid tip.

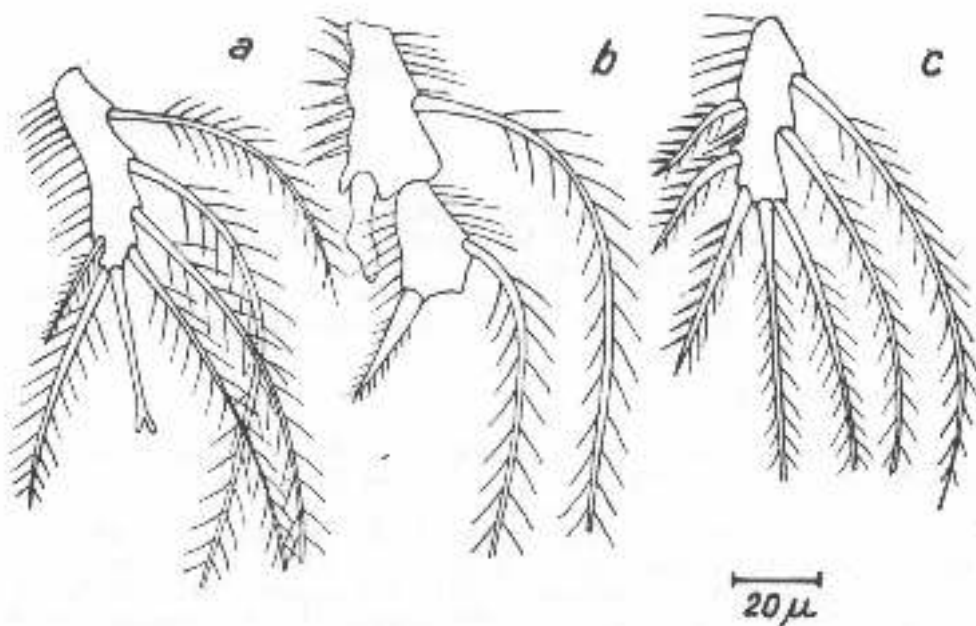


Fig. 2. — *Cletopsyllus quartus* ♂. a — P2 endop. last segment; b — P3 exop. proximal segment; c — P4 exop. last segment.

Leg 3, (Fig. 2 b). Outer spine of the proximal segment of exopodite very broad, modified as shown in the figure.

Leg 4, (Fig. 2 c). Outer spines of the distal segment of exopodite, strongly spinulose.

Leg 5, (Fig. 1 d). Exopodite with 5 setae, six times as long as broad. Basipodite with 3 setae, without the apical process reported in the female.

DISCUSSION

Just like the female, the male of *C. quartus* resembles that of *C. tertius*. The features common to both species are: dimorphic modifications of leg 4

and absence of apical process on the basipodite of leg 5. The dimorphic modification of legs 2 and 3 distinguishes the male of *C. quartus* from that of *C. tertius*.

Table I shows a comparative analysis between all species belonging to the genus *Cletopsyllus*; the characters specific to each species are written in italics.

The presence of a sexual dimorphism at the level of legs 2—5, which is very rare in copepods, is characteristic of the male of *C. quartus*, within the genus *Cletopsyllus*.

Cletopsyllus bavescui n.sp.

(Fig. 3—5)

I respectfully dedicate this species to Dr. M. Băcescu, head of the Expedition.

DIAGNOSE

♀. Furca, 3.5 times as long as broad. Fourth segment of A1 with a spiniform seta. Medial segment of the exopodite P1 without inner seta. Basipodite of P5 with a marked projection.

♂. Furca, 4.5 times as long as broad. Presence of sexual dimorphism at P5 level. Exopodite P2 with four setae, basipodite with a marked projection

DESCRIPTION

Holotype: 1 ♀ in the collection of the "Gr. Antipa" Museum, no 417; allotype: 1 ♂, ditto no. 418; paratypes: 2 ♀♀ no 419 a and b.

Material examined: 35 specimens, 18 ♀♀, 9 ♂♂, 6 juv.

Female. (Fig. 3a). Total length 1.300 μ ; maximal breadth 220 μ . Rostrum. (Fig. 4a,b) triangular, broad, bifid in its apical portion. Integument granular. Segments 3—5 of metasome and 1—4 of urosome with strong lateral processes. Their inferior margin markedly dentated. Genital segment formed by the fusion of abdominal segments 1 and 2. Anal operculum with long hairs. Furca. (Fig. 3b) 3.5 times as long as broad.

Antennule. (Fig. 4a and 5c). 4-segmented. Segments 1,3 and 4 of nearly similar length, segment 1 being the longest. Segment 2, the shortest, shows on the inner edge a conical expansion with an apical seta. Distal half of inner margin of segment 3 slightly crenellate. Segment 4 bearing on its outer margin a spiniform seta with short hairs.

Antenna. (Fig. 4d). Basipodite absent. Exopodite very small, unisegmented with two apical setae.

Mandible. (Fig. 5a). Pars incisiva strongly dentate. Coxa elongated with three setae. Endopodite with four setae, exopodite with an apical seta.

Maxillule. (Fig. 5b). Basis with three lateral setae and three apical ones, of which one spiniform. Coxa with two apical setae, one spiniform, the other very fine.

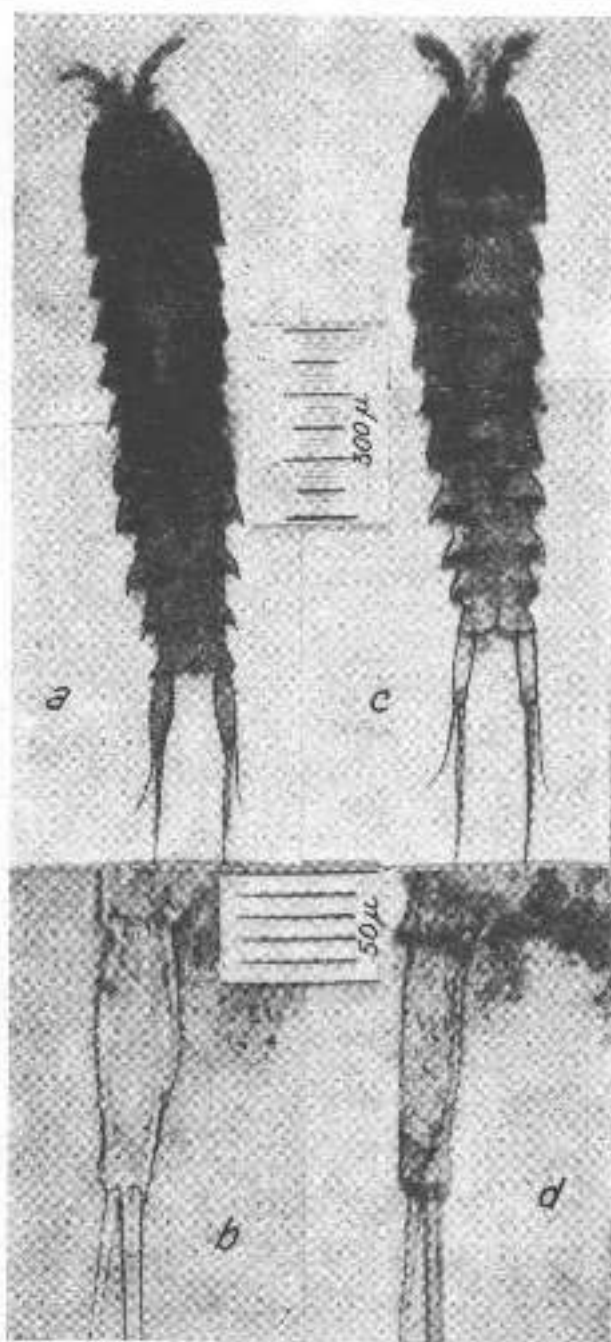


Fig. 3. — *Cletophyllus boeckei* ♀ and ♂. a — ♀; b — Fu ♀; c — ♂; d — Fu ♂. (Photo by Ioan Negrea).

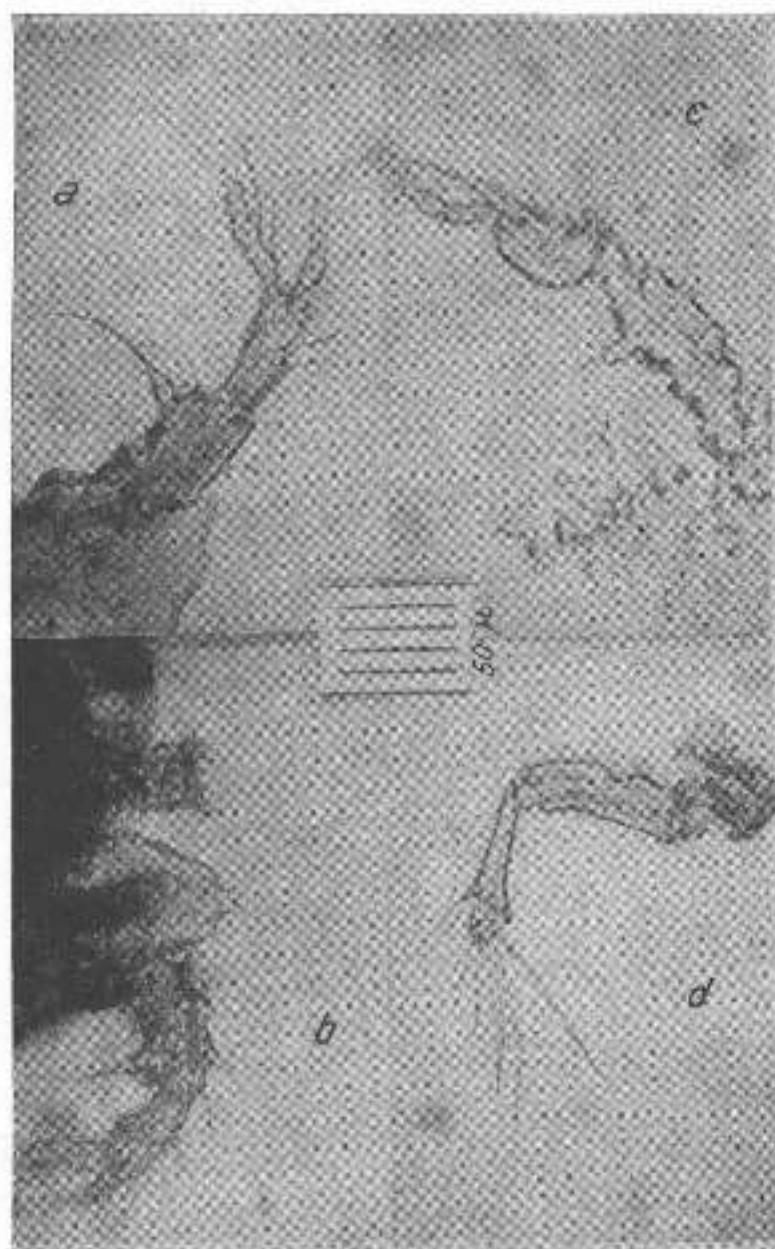


Fig. 4. — *Clatopseyllus bacescens*. ♀ and ♂. a-b — A1 + R ♀; c — A1 ♂ ; d — A2 ♀. (Photo by Ioan Negrea).

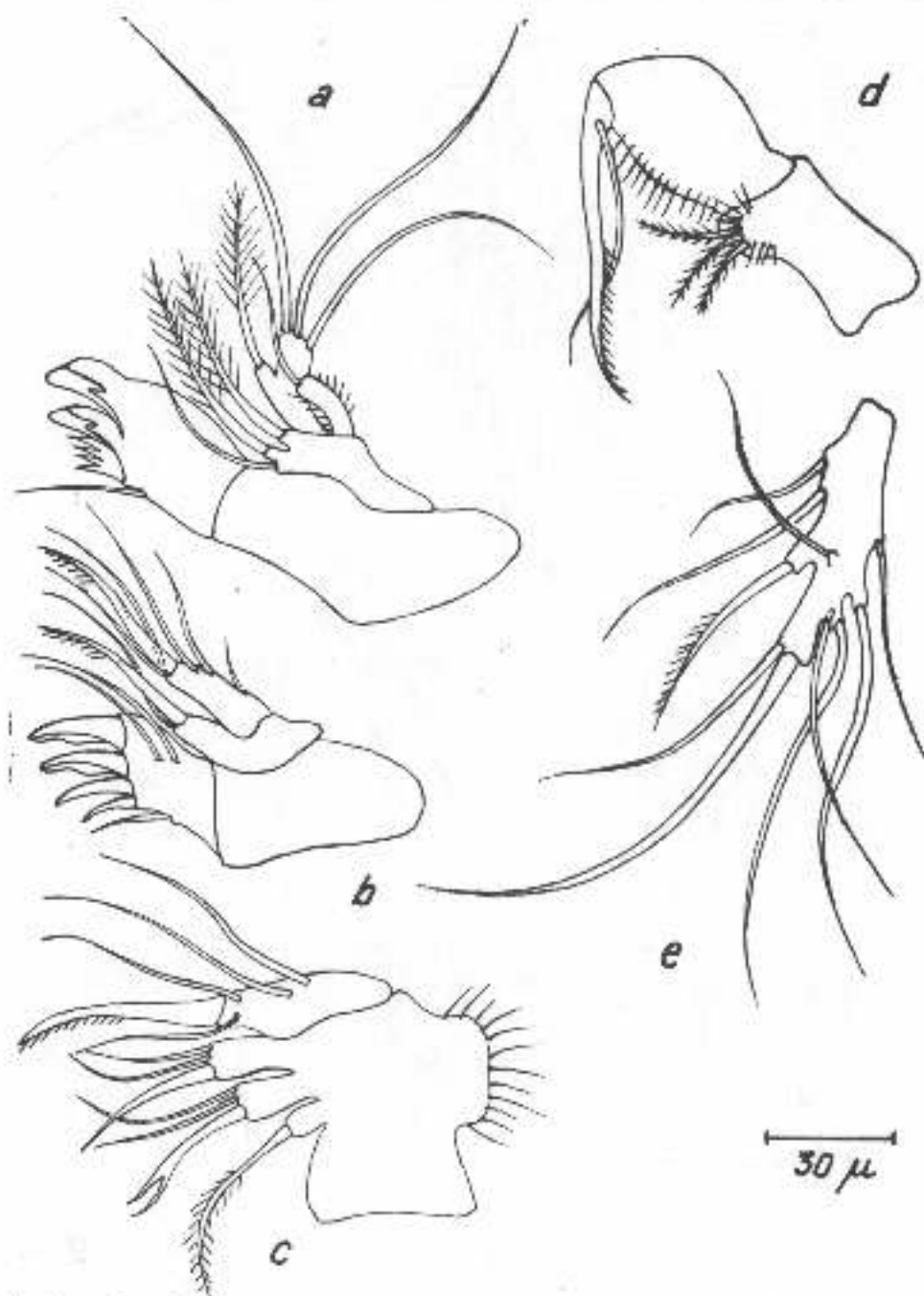


Fig. 5. — *Cletopsyllus buesseni* ♀. a = md; b = mxl; c = mxlp; d = mx; e = Al last segment.

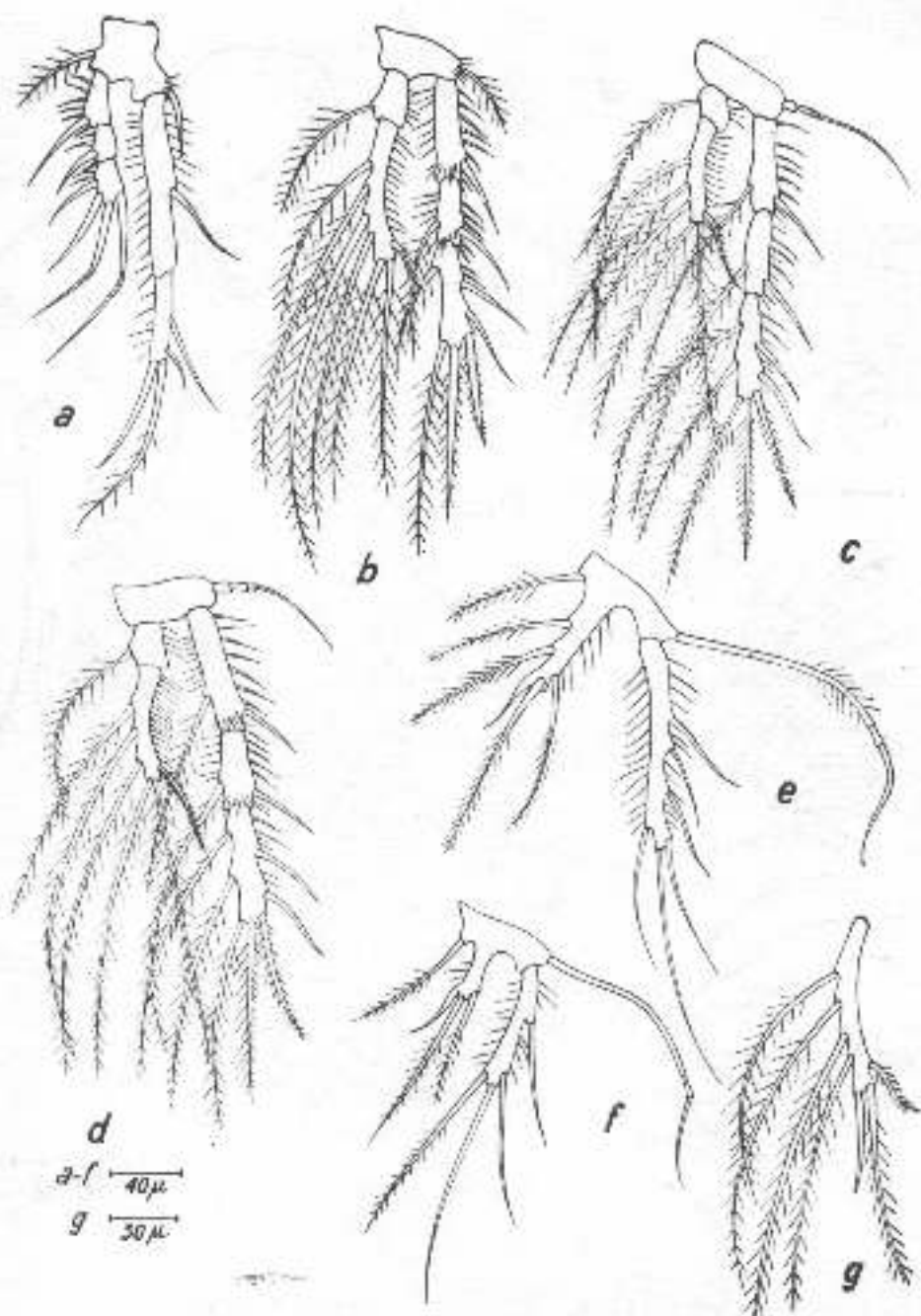


Fig. 6. — *Cletophyllus hazzesi* ♀ and ♂. a-e — P1-5 ♀; f — P5 ♂; g — P2 ♂ last segment

Maxilla, (Fig. 5c). Basis with a strong claw and four fine setae. Syncoxa with three endites; the distal endite with a crotchet and two setae; the medial endite with a crotchet with bifid tip, and two setae, the proximal endite with a seta provided with short hairs in its outer half.

Maxilliped, (Fig. 5b). Basis with three plumose setae and a row of hairs in its distal portion. First segment of endopodite with hairs on the inner edge. Second segment under the shape of a strong claw bearing a long, simple seta.

Leg 1, (Fig. 6a). Exopodite 3-segmented reaching the half of endopodite. Medial segment without inner seta. Endopodite bisegmented. Distal segment with two apical, and two inner, shorter setae.

Legs 2-4, (Fig. 6b-d). Exopodites 3-segmented, endopodites bi-segmented. Setae and spines formula:

	Exop.			Endop.	
P2	0	1	1,2,3.	1	4,2,1.
P3	1	1	2,2,3.	1	3,2,1.
P4	1	1	2,2,3.	1	3,2,1.

Leg 5, (Fig. 6c). Exopodite with six setae, 13 times as long as wide. Basipodite with five setae, elongated, reaching the middle of the exopodite; distally, terminating in a marked upturned projection.

Male, (Fig. 3c). Total length 990 μ . Maximal breadth 220 μ . Furca, (Fig. 3d) 4.5 times as long as broad.

Antennule, (Fig. 4c) with usual dimorphic modifications. Second segment with same conical projection on its inner margin, as reported in the female.

Antenna, mouthparts and leg 1 as in female.

Leg 2, (Fig. 6g). Inner apical seta of distal segment of endopodite changed in a spine.

Leg 5, (Fig. 6f). Exopodite with four setae, 9 times as long as broad. Basipodite terminating distally with an upturned projection similar to that of the female.

DISCUSSION

The genus *Cletopsyllus* described by Willey in 1935 includes four species: *C. papillifer* Willey 1935 from the Atlantic Ocean, the Bermuda Islands; *C. secundus* Nicholls 1945 from the Indian Ocean, Western Australia; *C. tertius* Por 1964 from the Israeli shore of the Mediterranean; *C. quartus* Soyev 1966 from the Mediterranean at Banyuls-sur-Mer.

All species have been described on the basis of a single female, excepting *C. tertius* erected after the finding of 2 specimens, one female and one male, the only male specimen known of this genus.

The similarity between the Mediterranean species *C. tertius* and *C. quartus* as well as their close relationship with *C. secundus* the Australian form, have been pointed out by both P o r (1964) and S o y e r (1966).

C. bacescui female is most closer to the type species *C. papillifer* by a series of morphological characters of the antennule, namely: length of segments, segment 2 with a single expansion, inner margin of segment 3 crenellate; length of furca; a marked apical projection of basipodite of leg 5.

The chetotaxia of legs 2—4 approaches our species to *C. secundus* and to the Mediterranean species.

The male of *C. bacescui* is very different from the two Mediterranean species which show an obvious kinship between them. The main differences consist in: length of furca; length of exopodite of leg 5; presence of four setae instead of the five found in the other species on the exopodite of leg 5; the distal projection of basipodite of leg 5.

The spiniform seta on the fourth segment of antennule, the coxa of mandible with three setae, the syncoxa of maxilla with two modified endites, the absence of the inner seta on the medial segment of exopodite of leg 1, represent the morphological characters that distinguish our species from all the other species of the genus *Cletopsyllus*.

In the determination key given by S o y e r (1966) we introduce *C. bacescui* in due place.

- | | |
|---|-----------------------------|
| 1(2) Exop. P4 with 3 inner setae on
the distal segment | <i>C. papillifer</i> Willey |
| 2(1) Exop. P4 with 2 inner setae on
the distal segment | 3 |
| 3(4) Exop. P1 without inner seta on
the medial segment | <i>C. bacescui</i> n.sp |
| 4(3) Exop. P1 with inner seta on the
medial segment | 5 |
| 5(6) A2 without exopodite | <i>C. secundus</i> Nicholls |
| A2 with exopodite | 6 |
| 6(7) Rostrum trilobate, maxilla with 3 endites,
furca 6 times as long as broad (♀) | <i>C. tertius</i> P o r |
| 7(6) Rostrum bilobate, maxilla with
4 endites, furca 10 times as long as
broad | <i>C. quartus</i> S o y e r |

Our remark concerning the similarity between our species and *C. papillifer* from to Bermuda Island is in good agreement with that of Dr. M. B ä c e s c u regarding the relationship established between the Cumacean fauna from the Red Sea and that from the Caribbean.*

It is very probable that in both cases it deals with relics from the Tethys Sea.

We express our warmest thanks to Dr. M. Băcescu who provided the material on which this paper is based.

* BĂCESCU (M.), 1971 — New Cumacean from the littoral Waters of Florida (Caribbean Sea). *Trav. Mus. Hist. Nat. Gr. Antipa*, 13: 4—20.

CONTRIBUȚII LA STUDIUL GENULUI *CLETOPSYLLUS* WILLEY 1935 (COPEPODA, HARPACTICOIDA) ÎN OCEANUL INDIAN

REZUMAT

Se studiază două specii ale genului *Cletopsyllus* Willey găsite în substratul coraligen din dreptul coastei tanzaniene, *C. quartus* Soyer și *C. bacescui* n.sp.

C. quartus Soyer. Se descrie masculul și se fac aprecieri asupra poziției speciei în cadrul genului *Cletopsyllus*.

C. bacescui n.sp. Se dă descrierea speciei, se fac considerații asupra poziției sistematice și a asemănării cu specia tip. *C. papillifer*, din Insulele Bermude.

К ИЗУЧЕНИЮ РОДА *CLETOPSYLLUS* WILLEY 1935 (COPEPODA, HARPACTICOIDA) В ИНДИЙСКОМ ОКЕАНЕ

РЕЗЮМЕ

Изучаются два вида рода *Cletopsyllus* Willey найденных в основе коралловых рифов у берега Танзании; *C. quartus* Soyer и *C. bacescui* n.sp.

C. quartus Soyer. — Описывается самец и производится оценка систематического положения этого вида в роде *Cletopsyllus*. *C. bacescui* новый вид. Сделано описание вида и даны соображения относительно систематического положения и сходства с типичном видом *C. papillifer*, из вод Бермудских островей.

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Length	960 μ	900 μ	1520 μ
Fu	3.50 times as long as broad	As in <i>C. papillifer</i>	6 times as broad
R	Bilobate	Rounded	Trilobate
A 1	Segments 2,3 and 4 of similar length	Segment 3 is the longest	As in <i>C.</i>
	Segment 2 with 1 cylindrical expansion	Segment 2 with 2 conical expansions	As in <i>C.</i>
	Inner margin of segment 3, crenellated	Inner margin of segment 3, straight	As in <i>C.</i>
	Segment 4 without spiniform seta	As in <i>C. papillifer</i>	As in <i>C.</i>
A 2	With exop., without basipod.	Without exop., without basipod.	As in <i>C.</i>
Md	Exop. reduced to 2 short hairs Coxa with 2 setae	Unisegmented exop. with 1 hair As in <i>C. papillifer</i>	As in <i>C.</i> ?
Mx1	?	?	With blebs
Mx	Syncoxa with 3 simple edites	As in <i>C. papillifer</i>	Syncoxa with simple end
P 1	Median segment of exop., with inner seta	As in <i>C. papillifer</i>	As in <i>C.</i>
P 4	Distal segment of exop. with 3 inner setae	Distal segment of exop. with 2 inner setae	As in <i>C.</i>
P 5	Exop. 3 times as long as broad	Exop. 6 times as long as broad	As in <i>C.</i>
	Basipod. with marked, upturned, apical process	Basipod. with short, conical, apical process	As in <i>C.</i>

			δ
Length			1300 μ
Fu			12 times as broad
P 2 endopodite			Non modified
P 3 exopodite			Non modified
P 4 exopodite			Non modified
P 5			Exop. with 4 times as long as broad.
			Basipod. with apical process

	1550 μ	1300 μ
long	10 times as long as broad	As in <i>C. papillifer</i>
	As in <i>C. papillifer</i>	As in <i>C. papillifer</i>
secundus	As in <i>C. secundus</i>	Segments 1, 3 and 4 of similar length
secundus	As in <i>C. secundus</i>	As in <i>C. papillifer</i>
secundus	As in <i>C. secundus</i>	As in <i>C. papillifer</i>
papillifer	As in <i>C. papillifer</i>	Segment 4 with a spiniform seta
papillifer	With exop., with basipod.	As in <i>C. papillifer</i>
secundus	As in <i>C. secundus</i>	As in <i>C. secundus</i>
	As in <i>C. papillifer</i>	Coxa with 3 setae
non palp	Without biramous palp	As in <i>C. quartus</i>
with 2 lines	As in <i>C. papillifer</i>	Syncoxa with 3 endites: the medial with a bifid crochet at its tip; the proximal with a seta provided with small hairs
papillifer	As in <i>C. papillifer</i>	Median segment of exop., without inner seta
secundus	As in <i>C. secundus</i>	As in <i>C. secundus</i>
secundus	Exop. 10 times as long as broad	Exop. 13 times as long as broad
secundus	As in <i>C. secundus</i>	As in <i>C. papillifer</i>
	?	990 μ
as long	8.50 times as long as broad	4.50 times as long as broad
bed	Apical inner seta of distal segment transformed in a spine with bifid tip	Apical inner seta of distal segment transformed in a simple spine
bed	Outer spines of proximal segment broad	Non modified
bed	Outer spines of segment 3, spinulate	Non modified
5 setae, long	Exop. with 5 setae, 6 times as long as broad	Exop. with 4 setae, 9 times as long as broad
without setae	As in <i>C. tertius</i>	Basipod. with marked, upturned, apical process