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PUBBLICAZIONI DEL CENTRO DI STUDIO PER LA FAUNISTICA ED ECOLOGIA TROPICALI DEL C.N.R.: CXCIV

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### ON A COLLECTION OF ZOOPLANKTON FROM SOMALIA, WITH A DESCRIPTION OF THREE NEW SPECIES OF COPEPODA

(PUBBLICAZIONI DEL CENTRO DI STUDIO  
PER LA FAUNISTICA ED ECOLOGIA TROPICALI DEL C.N.R.: CXCIV)

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Since no information is available on the zooplankton of the Horn of Africa, a small set of freshwater samples, collected and kindly made available by the Centro di Studio per la Faunistica ed Ecologia Tropicali of the Consiglio Nazionale delle Ricerche, Florence (Director, Prof. L. Pardi), provided an opportunity to put on record the first species of Cladocera and Copepoda from that part of Africa.

The scarcity of surface waters in Somalia by no means implies that the local planktonic fauna is uninteresting. The fact that three out of four copepod species found here are new to science, points towards a long history of uninterrupted and undisturbed evolution. On the other hand, the fact that at least one species was also found in samples from the Kenyan rift valley, suggests that past climatic phases of increased humidity permitted aquatic forms to disperse over relatively wide areas that are now at least partly arid or even hyperarid.

#### SUBORDER CLADOCERA

*Moina brachiata* (Jurine, 1850) (Fig. 1).

*Material examined.* — Maas (04°23'N-46°05'E), well near to the village, several ♀♀ MF (1) 008, leg. SBS (2), 1.IX.1968.

(1) MF = Museo Zoologico dell'Università di Firenze.

(2) SBS = Spedizione Biologica in Somalia del Centro di Studio per la Faunistica ed Ecologia Tropicali del C.N.R. (see PARDI, 1976).

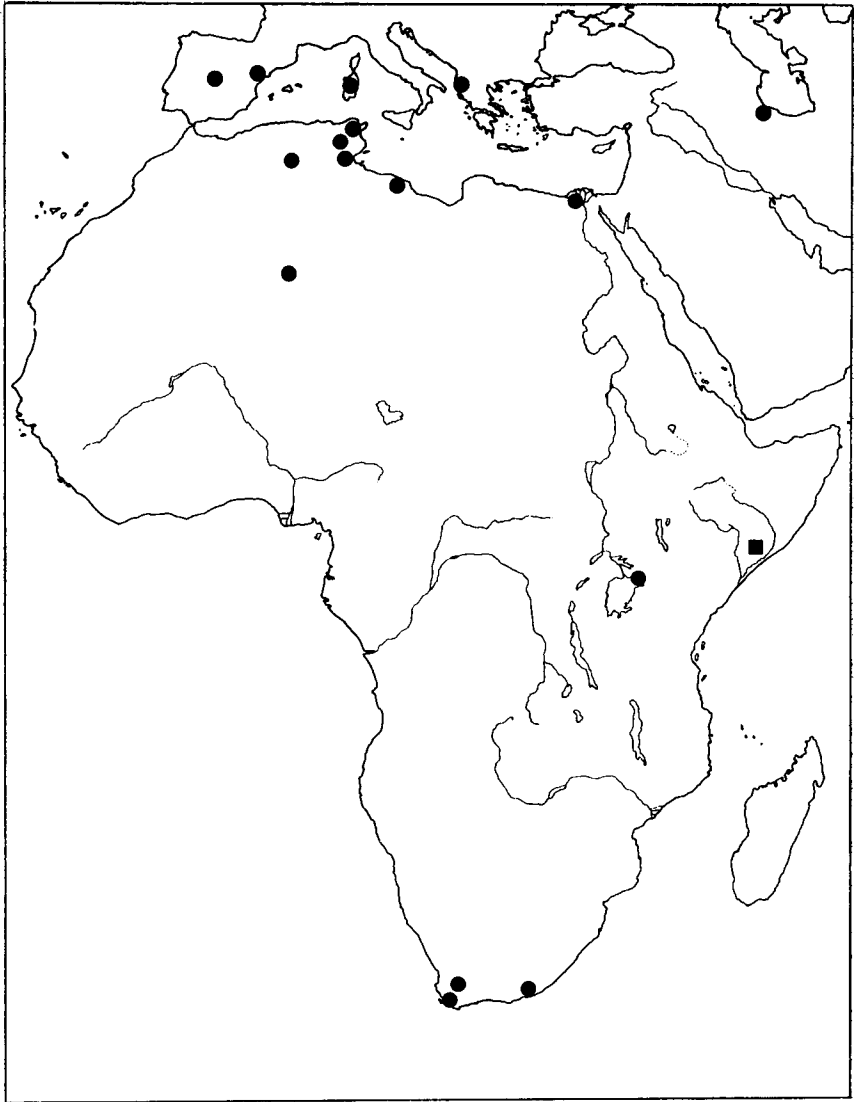


Fig. 1. — Distribution of *Moina brachiata* (Jurine, 1850) in Africa and around the Mediterranean basin. Somalian record indicated by a square.

*Remarks.* — This species is rather widespread in Europe, North Africa including the central Sahara, and South Africa. Records are presented in Fig. 1 (from DUMONT, 1979). In eastern Africa, there was only one old and somewhat doubtful record from Lake Victoria (DADAY, 1907), that now

gains considerable credibility by the discovery of a second population in the same general area. Morphologically, Somalian animals are noteworthy for the pecten on the end-claws of the postabdomen, which is composed of the unusually low number of only eight teeth.

*Bosmina longirostris* O.F. Müller, 1846.

*Material examined.* — Maas, well near to the village, 1 ♀ MF 009, leg. SBS, 1.IX.1968.

*Remarks.* — A single, somewhat damaged specimen was found amidst the individuals of the foregoing species.

## Subclass COPEPODA

### SUBORDER HARPACTICOIDA

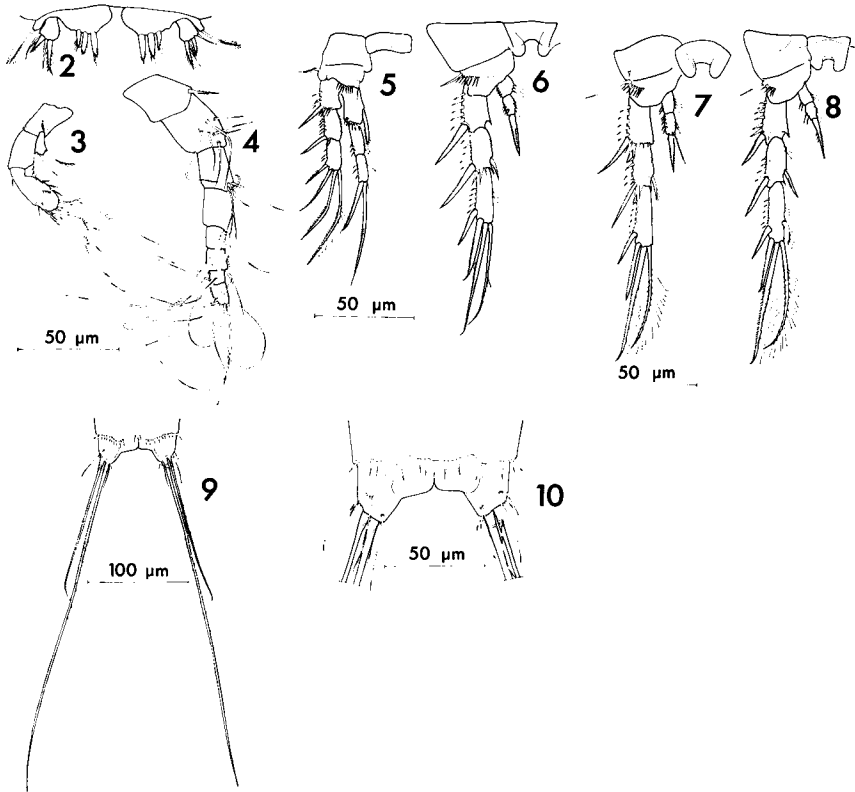
*Nitocrella somalica* n. sp. (Figs 2-10).

*Material examined.* — Baidoa (03°07'N-43°38'E), well of the aqueduct; holotype (a fully dissected female, mounted in glycerin), 1 ♀ MF 010; paratypes, 7 ♀ ♀ MF 011; leg. SBS, 27.VIII.1968.

*Description.* — Total length around 0.5 mm. First antenna composed of eight segments, bearing a long esthete on top of segment 4. Exopodite of second antenna bearing three appendages. Exopodites of thoracopods 1-4 all three-segmented. Their apical segment with four appendages on P<sub>1</sub>-P<sub>3</sub>, five appendages on P<sub>4</sub>. Middle segment without inner spine on P<sub>1</sub>, with one inner spine on P<sub>2</sub>-P<sub>4</sub>. The endopodite of P<sub>1</sub> three-segmented and with an inner spine on the basal segment. Endopodites of P<sub>2</sub>-P<sub>4</sub> two-segmented, with their basal segment naked. Their apical segment bears a strong spine on P<sub>2</sub>-P<sub>4</sub>. In addition, on P<sub>3</sub> only, a fine hair, slightly shorter than the spine, is seen. P<sub>5</sub>: basoendopodites not fused, bearing three short, strong, blunt spines. Exopodites only slightly longer than wide, hardly prominent over the basoendopodites, and bearing two strong and two slim spines, subequal in length. The furcal rami are short, not longer than wide, tapering towards their tip, distinctly shorter than the anal segment. A row of spines stands at their ventral base. The anal operculum is not prominent, and bears five strong spines.

*Relationship.* — Geographically closest is *N. africana* Chappuis, 1955 from the beaches of Lake Tanganyika. Following PETKOVSKI's (1976) revision, it belongs to the *N. chappuisi*-group, which undoubtedly also

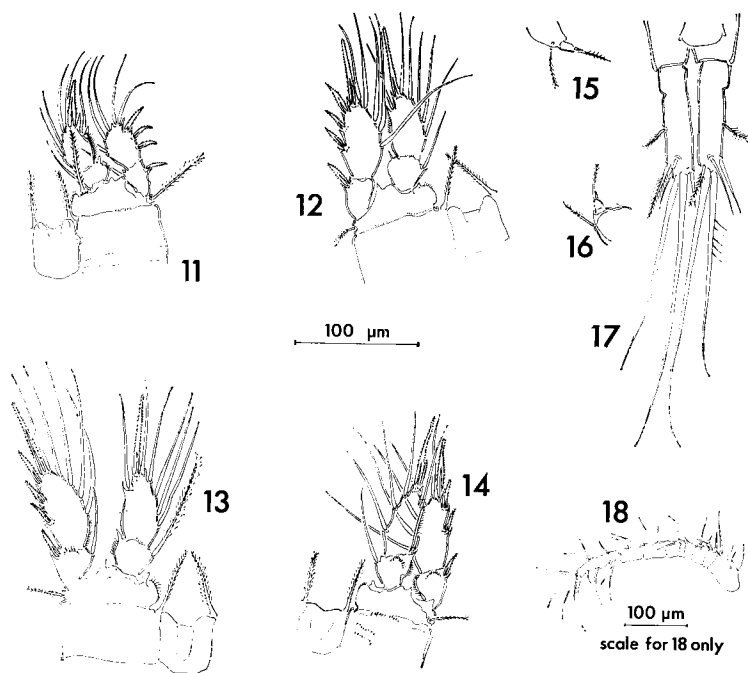
contains *N. somalica* on account of the presence of five appendages on the apical segment of the exopodite 3 of P<sub>4</sub>. However, *N. africana* clearly differs from *N. somalica* by its extremely long furcal rami, in addition to other structural details.



Figs. 2-10. — *Nitocrella somalica* n. sp. ♀: P<sub>5</sub> (Fig. 2), A<sub>2</sub> (Fig. 3), A<sub>1</sub> (Fig. 4), P<sub>1</sub> (Fig. 5), P<sub>2</sub> (Fig. 6), P<sub>3</sub> (Fig. 7), P<sub>4</sub> (Fig. 8), furcal rami (Fig. 9), furca and anal operculum (Fig. 10).

Morphologically closest appears to be *N. neutra* Kiefer, 1933, which is characterized by exactly the same spine and hair formula on the thoracopods 1-4, has short furcal rami, and a similar structure of P<sub>5</sub>. Differences between both species are small and concern the relative length and size of the spines and hairs on P<sub>5</sub> and on the endopodite 2 of P<sub>3</sub>. A very close relationship between both must thus be assumed, and without

the broad geographical gap (*N. neutra* is found in groundwaters of Yugoslavia, possibly also Turkey), a specific distinction would have appeared doubtful.



Figs. 11-18. — *Metacyclops somalicus* n. sp. ♀: P<sub>1</sub> (Fig. 11), P<sub>2</sub> (Fig. 12), P<sub>3</sub> (Fig. 13), P<sub>4</sub> (Fig. 14), P<sub>5</sub> (Figs 15, 16), furca (Fig. 17), A<sub>1</sub> (Fig. 18).

#### SUBORDER CYCLOPOIDA

*Metacyclops somalicus* n. sp. (Figs 11-18).

*Material examined.* — Maas, well near the village; holotype (a fully dissected female, mounted in glycerin), 1 ♀ MF 012; paratypes 3 ♀♀ MF 013; leg. SBS, 1.IX.1968.

*Description.* — Length 0.72 mm. A moderately small species. First antenna 11-segmented. The four thoracopods P<sub>1</sub>-P<sub>4</sub> biarticulate and with spine formula 3.4.4.3. Precoxal lamella naked. Hair on basopodite at the base of endopodite of P<sub>1</sub> long and strongly built, reaching the tip of the apical segment of the endopodite. Inner angle of basopodite protruding, presenting a blunt tubercle between the inner angle and the insertion of

the endopodite. Endopodite 2 of  $P_4$  with two apical spines; the shorter one is implanted outwardly and is less than half as long as the longer one, which is slightly sinuous and as long as the segment that bears it.  $P_5$  as usual for the genus, with an isolated lateral seta and a single subcubic segment, bearing an apical seta and an apical spine. The latter is slightly longer than the segment which supports it. Shape of the receptaculum seminis not visible. Anal operculum rather conspicuous, rounded. Furcal rami about six times as long as wide with a very distinct notch at about 1/4 of the length from the base. Lateral seta inserted somewhat distal to the middle. Terminal setae of furca: inner one shorter than outer one, and outer one about as long as dorsal one. Of the long median setae, the inner one is distinctly longer than the outer one. Both are set with long and relatively spaced, stiff hairs.

Male unknown.

*Relationship.* — There is only one other species that presents a notch on the furcal rami, *M. tropicus* Kiefer, 1933. However, in this species the furcal rami are short, only about three times longer than wide.

*Metacyclops chelazzii* n. sp. (Figs 19-30).

*Material examined.* — Giohar (02°46'N-45°30'E), well in the garden of the SMOM (1); holotype (a fully dissected female, mounted in glycerin), 1 ♀ MF 014; paratypes, several ♀ ♀ MF 015, 1 ♂ MF 016; leg. SBS, 5.VIII.1968.

*Extralimital material examined.* — Rift valley Kenya, brooklet flowing into Lake Elmenteita, 1 ♀, leg. A. Coomans, 10.VIII.1975.

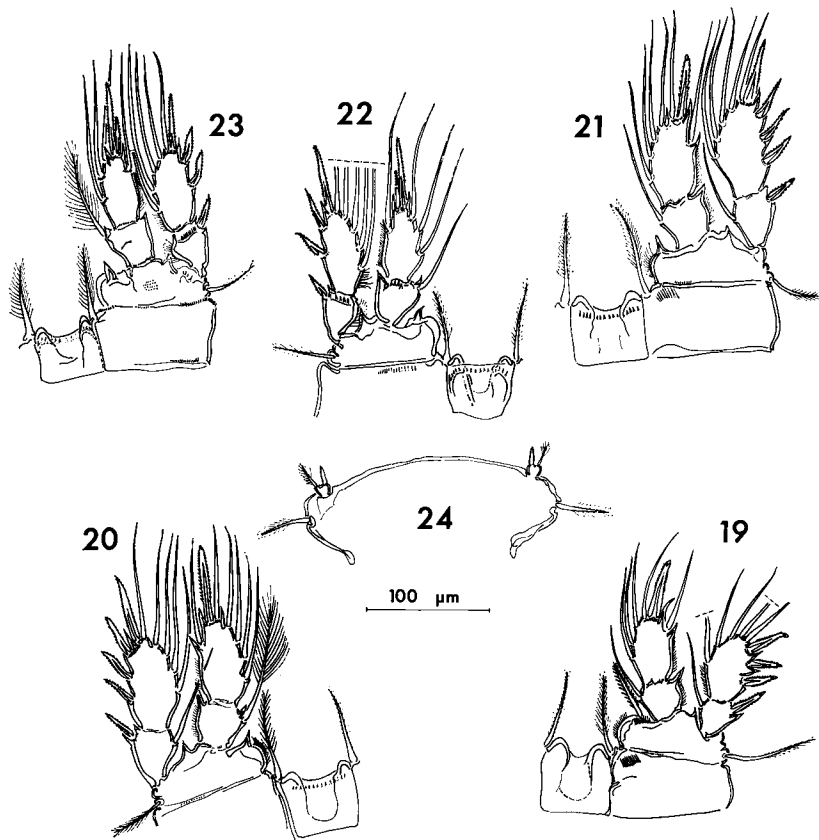
*Derivatio nominis.* — The species is named after Dr L. Chelazzi (Centro di Studio per la Faunistica ed Ecologia Tropicali del C.N.R., Florence), who collected it.

*Descriptions.* — *Female.* Length 1.1 mm. A moderately large species. First antenna 11-segmented.  $P_1$ - $P_4$  biarticulate. Spine formula 3.4.4.3. Precoxal lamellae with two tubercles and, on  $P_2$ - $P_4$ , with a transverse row of denticles. Hair at the base of endopodite 1 of  $P_1$  not reaching beyond half the apical segment of the endopodite. Inner angle of basopodite rounded, but a strong thorn is found between the inner angle and the base of the endopodite. Exopodite 3 of  $P_4$  with two apical spines; the inner one is longest and as long as the segment that bears it. The outer one is slightly over half as long as the inner one.  $P_5$  consists of an isolated seta, and a segment which is as long as wide and bears two apical

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(1) SMOM = Sovrano Militare Ordine di Malta.

appendages. The external one is a short seta, only about half as long as the isolated seta, and the internal one is a relatively strong spine, which is only very slightly shorter than the seta, but longer than the segment that

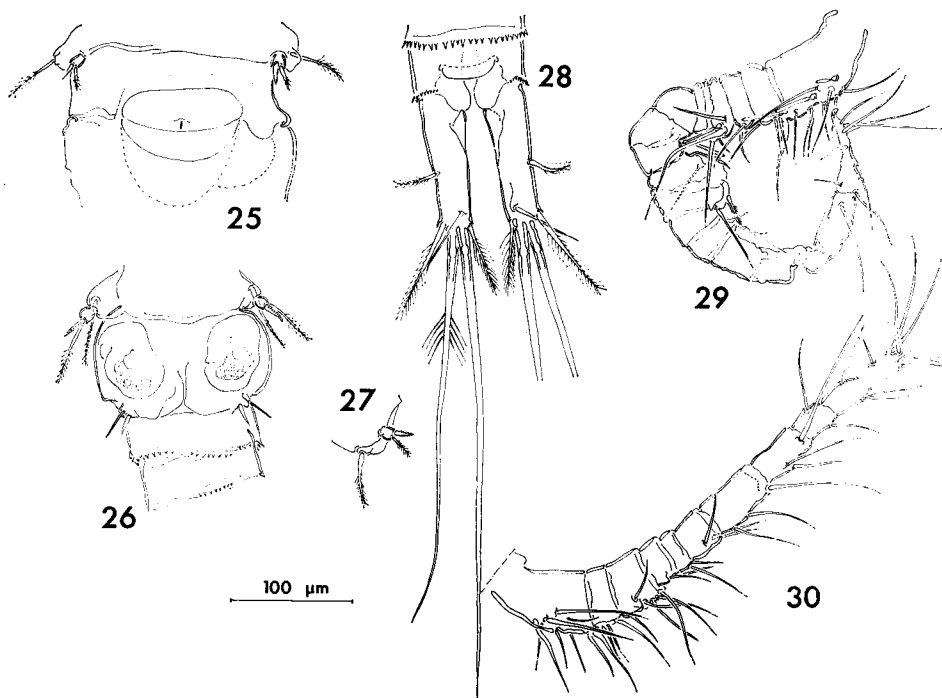


Figs. 19-24. — *Metacyclops chelazzii* n. sp. ♀: P<sub>1</sub> (Fig. 19), P<sub>2</sub> (Fig. 20), P<sub>3</sub> (Fig. 21), P<sub>4</sub>, second specimen (Fig. 23), P<sub>3</sub>, both sides (Fig. 24).

supports it. Shape of receptaculum seminis only partly visible. Anal operculum well developed, rounded. Furcal rami rather strongly built, tapering somewhat towards their apex, about 4.4 times as long as wide. Lateral seta implanted well distal to the middle. Dorsal seta distinctly shorter than outer apical seta, and about as long as inner apical seta. Inner median seta longer than outer median seta. Spinules on both long apical setae strongly developed, more than twice as long as the diameter of the setae, rather closely apposed.



*Male.* Length 0.9 mm. Differences with the female include the first antenna, which is 17-segmented and prehensile, and the structure of  $P_5$ , which shows an even more strongly developed apical spine on top of the



Figs. 25-30. — *Metacyclops chelazzii* n. sp.:  $P_5$  and receptaculum seminis, ♀ (Fig. 25);  $P_5$  and  $P_6$ , ♂ (Fig. 26);  $P_5$ , ♀ (Fig. 27); furca, ♀ (Fig. 28);  $A_1$ , ♂ (Fig. 29);  $A_1$ , ♀ (Fig. 30).

segment, and an apical seta of normal length (i.e. as long as the lateral seta).  $P_6$  consists of a single spine.

*Differential diagnosis.* — The peculiar shape of  $P_5$  will serve to differentiate this species from all its described congeners. Further, to the best of my knowledge, this is the first *Metacyclops* with a male in which  $P_6$  is reduced to a single appendix, all other species in which the male is known showing either two or three appendages on  $P_6$ .

*Metacyclops* sp.

*Material examined.* — Baidoa, well of the aqueduct, several copepodites MF 018, leg. SBS, 27.VIII.1968.

*Afrocyclops gibsoni* (Brady, 1904).

*Material examined.* — Giohar, well in the garden of the SMOM, 1 ♀ MF 017, leg. SBS, 5.VIII.1968.

*Remarks.* — A widespread African species, known from virtually all climatic zones of the continent, including the Sahara. It could therefore logically be expected to occur in Somalia as well.

#### SUMMARY

Two species of Cladocera and four species of Copepoda — three among which are new to science (*Nitocrella somalica*, *Metacyclops somalicus* and *Metacyclops chelazzii*) — are reported from Somalia. Their biogeographical relationships are briefly discussed.

#### RIASSUNTO

L'Autore ha studiato una piccola collezione di due specie di Cladocera e quattro specie di Copepoda (tre delle quali sono nuove per la scienza: *Nitocrella somalica*, *Metacyclops somalicus* e *Metacyclops chelazzii*) provenienti dalla Somalia. Sono brevemente discusse le loro relazioni biogeografiche.

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