CONTRIBUTIONS TO THE KNOWLEDGE OF THE MYDIS (CRUSTACEA) FROM THE TANZANIAN WATERS

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Abstract

This is the first study on Mysids from the Tanzanian coast waters, in which, on the basis of material captured by himself, the author deals with some species belonging to the subfamily of Gastrosaccidae and Mysinae.

Of the about 20 species identified so far in the collected material, five are new, namely: **Gastrosaccus msangii** n.sp.; **Anisomysis kunduchiana** n.sp.; **Tenagomysis tanzaniana** n.sp.; **Anisomysis sirielloides** n.sp. and **Mysidopsis coralicola n.sp.** and six others are new to the area. Ecological and ethological data concerning all species all species mentioned, are given.

During December 1973 and January 1974 I had the opportunity to study the benthic fauna of mysids from several points on the Tanzanian coast. It deals with dredging samples between 5 and 25 m and especially net samples taken in the intertidal area either from the moving waters (high tide and low tide) or from the puddles left upon low tide in the mediolittoral area. We also have plankton samples with or without light, taken at the limits of waters upon low tide. Commensal fauna has also been followed up.

So far, there haven't been any special studies on either mysids from the Tanzanian waters, or from the entire East African coast: we have but a few sporadic data in papers dealing with mysid fauna from other areas — either from the Red Sea or the Madagascar **(8, 10—12)** as well as from South Africa and Mozambique **(14, 16, 18)** or from Kenya **(2—3)**.

As to the area we are concerned with, an earlier mention was made by Hilgendof **(5)** who described **Heteromysis harpax** from Mozambique, and some recent ones made by O. Tattersall **(18)** who found again this species along with other two **(Heteromysis gymnura and H.zeylanica)** also from Zanzibar. It results that as yet, 20 species of Mysids have been noted from the Eastern African Coast and Nosy-Be, N.W. of Madagascar — without ta-

king into account the six species found by Nouvel(**13**) in the Gulf of Aden — and 3 from the region of our concern (only from the Zanzibar area). See the table below :

Mysidacea quoted in the Eastern African waters and in Nosy-Bè (in Chronological order)

Species	Author and year of citation	Area
Heteromysis harpax (Hilg.) 1879	Hilgendorf 1879	Mozambique
Gastrosaccus dunkeri Zimmer.	O. Tattersal 1958	Mozambique
Heteromysis zeylanica W. Tatt. 1922	O. Tattersal 1962	Zanzibar
Heteromysis zeylanica W. Tatt. 1922	O. Tattersal 1962	Zanzibar
Dioptromysis proxima Nouvel 1964	Nouvel 1964	NW Madagascar
Mysidopsis hellvillensis Nouvel 1964	Nouvel 1964	NW Madagascar
Acanthomysis quadrispinosa Nouvel 1965	Nouvel 1965	NW Madagascar
Diamysis frontieri Nouvel 1965	Nouvel 1965	NW Madagascar
Anisomysis hanseni Nouvel 1967	Nouvel 1965	NW Madagascar
Mesacanthomysis pygmaea Nouvel 1967	Nouvel 1965	NW Madagascar
Hyperiimysis madagascariensis Nouvel 1967	Nouvel 1965	NW Madagascar
Anchialina madagascariensis Nouvel 1969	Nouvel 1965	NW Madagascar
Siriella brevicaudata Paulsen 1875	Ledoyer 1970 rectif. Bacescu	NW Madagascar
Kainomatomysis foxi W. Tatt. 1927	Ledoyer 1970 rectif. Bacescu	NW Madagascar
Anchialina typica (Kroyer 1861)	Nouvel 1971	NW Madagascar
Anchialina latifrons Nouvel 1971	Nouvel 1971	NW Madagascar
Anisomysis ijimai estafricana Bacescu 1973	Bacescu 1973	Kenya
Haplostylus estafricana Bac. 1973	Bacescu 1973	Kenya
Mysidopsis kenyana Bac. & Vas. 1973	Bacescu and Vasilescu 1973	Kenya
Tenagomysis (Nouvelia) natalensis mombassae Bac. & Vas. 1973	Bacescu and Vasilescu 1973	Kenya

We express our warmest thanks to Prof. A.S. Msangi — head of the Chair of Zoology and Director of Kunduchi Marine Biological Station, as well as to the researchers of this Station, for their kind assistance during the activity of our team at sea and in the laboratory.

As a result of our researches, concerning part of about 60 samples of Mysids, we found the following species :

Subfam. Gastrosaccinae
- **Gastrosaccus msangii** n.sp.
- **Haplostylus parerythraeus**
- **Pseudanchialina erythraea**
- **Anchialina typica**

Subfam. Siriellinae
- **Siriella brevicaudata**

Subfam. Mysinae
Tribe Mysini
- **Anisomysis hanseni**
- **Anisomysis sirielloides** n.sp.
- **Anisomysis kunduchiana** n.sp.
- **Anisomysis maris rubri**

Tribe Leptomysini
- **Dioptromysis proxima**
- **Mysidopsis coralicola** n.sp.
- **Tenagomysis tanzaniana** n.sp.

Thibe Heteromysini
- **Heteromysis harpax**

In the present note we particularly deal with 11 species.

Some other species — especially belonging to the Genus **Siriella, Anchialina and Heteromysis** — will be treated in another paper.

1. **Gastrosaccus msangii** n.sp.[1]
(Fig. 1, A-I)

Mysid lanceolate, very lively, with morphology and colour well adapted to psammobiontic life.

Description. Carapace with rostrum pointed but not long, its tip scarcely exceeding the ocular commissure. Postero-median sinus slightly sinuous, bordered with postero-lateral lobes hardly prominent, with rounded edges, posterior large folds perfectly rounded (Fig. 1A). Between pleonite IV and V, above, an intermediate articulation fold. Eyes cylindrical with corneal portion black extending over half of their length (Fig. 1B). Labrum with rostral spini for projection (Fig. 1C). Antennule with 3 external spines on the median segment of basis and a dactyloid apophysis on the superior part of the distal segment, above male lobe. Scale scarcely reaching distal segment.

1. Dedicated to Prof. A.S. MSANGI, Head of the Zoological Department from the University of Dar es Salaam.

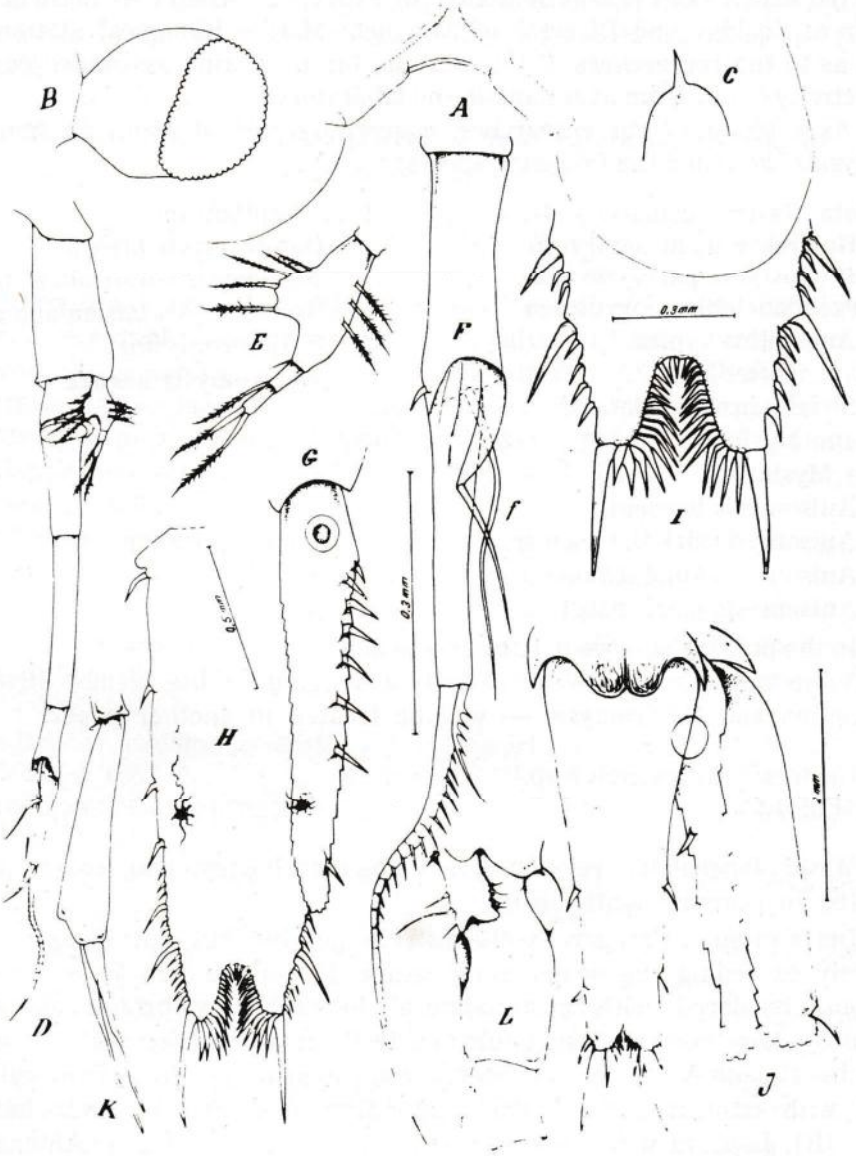

Fig. 1. A-I, Gastrosaccus msangi. n.sp. (♂ = 8mm). A, posterior margin of carapace. B, eyes. C, anterior part of labrum. D, pleopod III; E, its endopodite bi-segmented, magnified; F, particular structure of segments 3 and 4 (f, flagelliform phanera). G, endopodite of uropod. H, telson; I, tip of telson in another ♂ of 7mm. J. Pseudanchialina erythraea Nouvel, ♀ = 2.5mm, telson and udopod. K-L Haplostylus parerythraeus Nouvel. L, proximal segment of pleopod III ♂, K, tip of same pleopod.

Mouth parts, thoracopods and pleopods in females do not differ from those in **G. kempi** W. Tatt. f. inst., to compare a geographically neighbouring species. Pleopods I, II, IV and V in males are of same type. Pleopod II ♂ has sinuous setae as in **G. kempi.**

Only pleopod III is different, representing one of the characteristics of the new species (Fig. 1D). On a detailed study of hundreds of ♂ ♂, the pleopod is seen to carry an endopodite consisting of only 2 segments (Fig. 1E), and an exopodite of 4 thick segments with the following lengths, starting with the proximal one : 45; 48; 18; 27. (25; 22; 17; 17 in **G. kempi**); at the joint 3-4, some particular thicknesses ending in a short seta and in a flagelliform one (Fig. 1F), along with a short spine.

Phanera large, distally serrated and S-shaped, four times as large as the juxtaposited sickle-shaped claw.

When the mysid is stretched the S-phanera extends beyond statocysts, and pleopods are diverging towards the margins of abdomen. In immature males pleopod III does not reach the basis of telson and its seta is not S-shaped.

Uropodal endopodite usually with 8 spines; when their number is 9 or 10, the first near the statocyst is recumbent almost parallelly to the length of lamina, caudally directed (Fig. 1G).

Telson (Fig. 1H) short with only 6 lateral spines, rare, at nearly equal intervals; between the 3 distal ones, one row of short spinules : 2-3 and usually 5-6 (Fig. 1 I).

Terminal spines very long and fine, sheltering at their basis a cleft which does not exeed the line connecting the first pair of latero-distal spines, and which bears 26-28 long laminae; the distal laminae caudally bent in an obvious angle (Fig. 1I).

Size : Females 7.5-8.5mm, males somewhat larger, 8-9.5mm

Colour : Unlike most of the representatives of the genus **Gastrosaccus** l.s. with subgenus **Bowmaniella** (W. Atlantic); **Haplostylus** (E. Atlantic-Mediterr-erythraeic); **Iella** (Japanese) or **Gastrosaccus** s.s. (European in the first place).

G. msangii, as live material, is reddish or brown, due to the red chromatophores on the edges of each pleonite and to the strong chromatophores on the inferior part. Indeed, at the base of the mouthparts, and of peracopods, on the penis, on the basis of tail and on the ostegae, large and very ramified brown chromatophores are to be found. A brown ring encircles the distal part of last pleonite, a ring which like the pattern of brown dendrites of telson persists after several months of fixation. Eyes black with golden aura. Seen from above and laterally, the

animal seems to be crystalline transparent. Eggs and embryos perfectly transparent.

Material examined : thousands of specimens : juvenile, immature males, males and females, adults, captured upon all our night fishings, with light, in the plankton over the **Syringodium** beds where they are very abundant.

These were almost pure, concentrated upon low-tide, associated only with **Cumella** sp.

In the sample of 7.I.1974, taken at the South of Mbudya Islé, also with light, on the bottom of dead corals, only 4-5 **G. msangii** were found (hence it was not ideal biotope) and 2 **S. brevicaudata;** in exchange, hundreds of **Siriella** sp., **Cumella** and **Nannastacus** sp. were taken.

Holotype(♂) no 255 in the collection of Crustacea of the "Gr. Antipa" Museum, Bucharest — Romania; about 300 paratypes (♂,♀, juv.); also no 255 a. Allotype ♀ and over 1000 paratypes belonging to both sexes and different ages are in the Zoology Laboratory of the University of Dar es Salaam.

Remarks : The most common mysid from the medio — and infralittoral area down to 15-20m, both at the mouth of Pangani River and between Bagamoyo and Dar es Salaam, present among reefs and phanerogamia beds wherever sandy isles occur.

Although at first sight the structure of telson and appearance of pleopod IV ♂ may ally it to **Gastrosaccus kempi** W. Tatt. 1922 (Syn. **G. gordonae** O. Tatt. 1922), South-African, by the lack of the acute corners of the latero-dorsal lobes of carapace bordering the clefts(♂ ♀) and a differently armed telson, **G. msangii** differs distinctly from the former. The complicated subterminal articulation of pleopod IV ♂ and by its bi-segmented endopodite are distinctive of the new species readily distinguishes it from all species belonging to **Gastrosaccus** or **Haplostylus** known not only from the African Waters.

2. **Haplostylus parerythraeus** Nouvel 1944.
(Fig. 1, K, L)

The Tanzanian population of this species does not differ morphologically from the Red Sea species (Fig. 1, K. L). In our collections we found it only in the night plankton with light, in two or three samples, 2 or 3 specimens in each. This does not show its scarciness, the reason being the lack of shore planktonic collections. It was taken together with

hundreds of **Gastrosaccus msangii,** from the mass of which it is however readily distinguished by the total transparence of its live body or by its pure whiteness on fixed material, in contrast with the reddish colour of live meterial or with the brown belt at the end of the abdomen, brown dendrites on the telson and red little stars on the margins of pleonites, in fixed material.

3. **Pseudanchialina erythraea** Nouvel 1944
(Fig. 1 J)

Only 2 ovigerous females of 2.4 and 2.5mm respectively, belonging to this species have been found in the material examined, namely North of Mbudya, in a dredge on **Cymodocea** (6m depth) and in fishing with light at **1 m depth,** E of Kunduchi, upon low tide (7.1. 1974), along with a high number of **Gastrosaccus** resembling **G.gordonae** O.Tatt., and with the euphasid **Euphausia eximia.** They are consistent with Nouvel's description (1944, 1949) made upon a material from the northern part of the Red Sea as we can also see in the fig. 1 J.

4. **Anisomysis (Paranisomysis) maris rubri** Bacescu 1973
(Fig. 2 A-F)

Common species in the Tanzanian waters. The Tanzanian population of this species, — at least with regard to females, the only sex known before (Bac.) — differs but little from the erythraeic type in external morphology. Since the ♂ of this species was unknown, we describe it fully now.

Rostrum prominent, but not as acute as in **G.msangii** or in **A.lamellicauda,** extends beyond the basis of eyes. Lobe ♂ of antennule strongly excavated at the tip (Fig. 2A); scale of antenna distinctly longer than antennule and the lobe together. Eyes (Fig. 2 C) nearly globulose. Palp of maxilla II-with several spines on the distal edge — presents a small exopodite as in **A. ijimai** Ji. Palp of mandible with 8-10 flagellate spines and with 28-29 laminated setae in its concavity in ♂ and usually 9 and 39 laminated setae in ♀ (Fig. 2F). Preischium of peraeopod with a kind of heel; carpopropodite 2-segmented, except for peraeopod V, not distinctly divided. Penis cylindrical, with basal inflation and a ciliated lap, distally.

Telson (Fig. 2B), medallion — like with 11-13 lateral spines, up to apical plate nearly straight or gently bent (only in juv. slightly hollowed) bearing 10-12 larger spines of equal length. On the telson of 4 ♀♀ I counted 37, 32, 35 and 34 respectively of such spines around the distal portion, all of them upright as bristled. The small size specimens up to

Fig. 2. A-F : Anisomysis (Paranisomysis) maris rubri Bacescu 1973, ♂ . A, lobe masculina and sensitive setae on the tip of Antennule. B, telson. C, eyes. D, Pleopod IV; E, particular phanera on the tip ot exopodite, magnified. F, mandibular palp. G-P, Anisomysis (Anisomysis) kunduchiana n.s., ♂ . G, telson and uropods. H, distal end of telson magnified. I, peraeopod II. J, pleopod IV; K, its minute endopodite, magnified; L, its terminal phanera, magnified. M. Antennula and relative eye. O — P = ♀ N, Antenna. O, pleopod II ♀. P, pleopod III ♀.

6mm. generally bear 35 spines or even less. In ♀ ♀, especially the 2 central spines at on the tip of telson are somewhat shorter. Uropods extremely long and fine with spineless endopodite bearing a strikingly large statocyst. Pleopod IV ♂ styli-form as in all representatives of the genus with the following ratio of segments 17:6.8; 4 and 0.3 (Fig. 2 D); the tip with the usual phanera (Fig. 2E).

Colour on live material, slightly pinkish, transparent with ocular peduncles red and cornea golden-brown.

Material examined, density: found in 10 of the 65 samples with Mysids; generally in a low number (1-4) of specimens. Only in the station of 8.XII.1973, by dredging in the **Syringodium** beds, during low tide (the water down up to 1m) hundreds of specimens emerged on the surface of the formalinized water just like Ostracods or **Leptochelia,** together with **Siriella brevicaudata** and **Gastrosaccus msangii;** then, in the St. of 12.1.1974, by dredging at 1m, in the corals of Fungu Mkandya, they again emerged in heaps (5a♀♀,30♂♂).

Remarks. Differs from **A. lamellicauda** —, an allied species —, by the lower number of spines on the mandibular palp (9 instead of 13) and on the telson (28).

5. **Anisomysis (Anisomysis) kunduchiana** n.sp.
(Fig. 2 G-P)

Description. Mysids of small size, with shiny integument, glabrous. Carapace with weak rostrum. Eyes large, conical, with corneal portion black, twice as large as peduncle (Fig. 2M). Antennule stumpy of about equal length with scale of antenna in ♂; it ends with a strong apendix masculina, bifid, with series of silky setae (Fig. 2M). Scale of antenna, straight, lanceolate, without a distinctly defined apical segment, reaches to the basis of lobe ♂, the basis of antenna represents 1/3 of its length (Fig. 2N). Labrum discoidal, spineless; large segment of mandibular palp of foliaceous type (f.inst. **Anisomysis levi** type) apical segment narrow, twice as short as the former. Palp of maxilla II elongate as in the previous species or as in **A.ijimai** Ji.

Peraeopods — all pairs — with propodus unisegmented, short (almost 1/4 of carpus which is not secondarily divided, hence "tarsus" tri-segmented) Fig. 2 I). If the carpo-propodus is equal in length to merus, in exchange, the ischium is twice as short, especially at the last peraeopod. I underline the huge size of the trapezoid basis, twice as large as basis of exopodites, 8–segmented (Fig. 2I).

Pleopods as in the previous species (see fig. 2, O and P). Pleopod IV ♂ (Fig. 2 J) despite the similarity of structure, differs by the ratio of segments of exopodal stylet, being: 10.5: 2.2; 5.0; 0.4, that is with segment 3 twice as long as segment 2; the two apical phanera reach to the half of uropodal endopodite (Fig. 2 L) and endopodite unisegmented plate-like (fig. 2 K).

Telson short, exceeding inflation of statocyst, shorter than its supporting pleonite; large with bare edges in the proximal 2/3, abruptly tapers forming almost right angles, bearing 2 spines, then largely bifurcate; cleft bare and the two apexes ending with 2 short spines each. (Fig. 2 G, H).

Uropods (Fig. 2 G) fine and long with endopodite spineless.

Colour on live material : Dorsal side of animal perfectly transparent, except for the eyes the cornea of which is brown-black; sternal side (the huge bases of thoracopods, mouthparts, penes) are dark brown, almost black.

Size 4.5-5mm (♂).

Material examined Locality : Kunduchi, Plankton with light on **Syringodium** beds, 7.I.1974: 2 specimens, juv.; Mbudya, 12.XII and 13.XII 1973, among **Cymodocea** — 2 ♂♂, along with **Siriella brevicaudata. Anisomysis sirielloidis** and **Gastrosaccus msangii.** Present in 3 of the 60 samples examined.

Remarks. Morphology of telson in **A. kunduchiana** distinctly differs from that of all 14 species known — belonging to the genus **Anisomysis latu sensu;** the species is readily identified by the telson.

6. **Anisomysis (Anisomysis) sirielloides** n.sp.
(Fig. 3 G-N).

Description. Small size Mysids, transparent with integument dense and short, hirsute. Carapace with rostral portion largely triangular, without any proper rostrum. Eyes large (Fig. 3 I), almost globulose, with corneal part brick-reddish extending somewhat over their half. Scale of antenna straight, four times as long as its basis; apical segment distinctly defined, exceeding by 1/3 of its length the basis. Antennule in ♀, about the same line as male lobe or slightly longer. This organ presents a large basis and an external projection, short and stout. Labrum without anterior spine, with a slight triangular prominence. Mandibular palp with proximal segment large, twice as long as the terminal segment, narrow. Palp of maxilla II with distal segment long, ovate, with 3 external setae (Fig. 3 H).

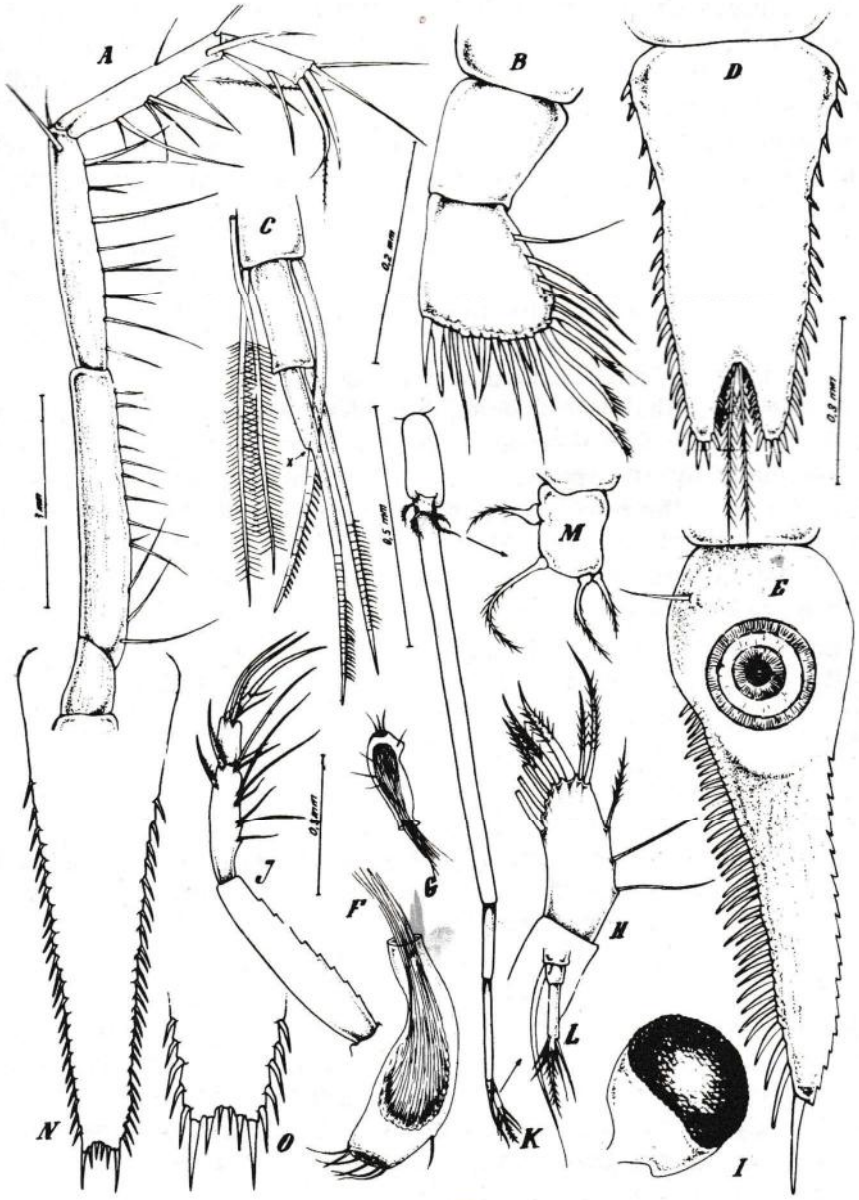

Fig. 3. A-F : Tenagomysis tanzaniana n.sp., ♂. A, peraeopod II. B, palp of maxilla II. C, tip of exopodite of pleopod IV ♂.
D, telson. E, endopodite of uropod. F, penis with fascicle of spermatozoa.
G-N : Anisomysis (Anisomysis) sirielloides n.sp., ♀. G, Penis. H, last segment of palp of maxilla II. I, eyes. J, extremity of peraepod II. K, plepod IV ♂; L, details on its tip. N, telson (♀); M, its minute endopodite; O, tip of telson ♀.

All peraeopods with propodus and carpus unisegmented (Fig. 3 J), the first being less than half as long as carpus: both segments are as long as merus and ischium (ischium of last legs is shorter and stronger); exopodites 8-segmented.

Pleopods reduced to minute plates unisegmented, with 2-4 setae, except for pleopod IV ♂ (Fig. 3 K) the endopodite of which extends beyond the level of statocyst. Also with structure specific to genus, but its proximal segment is twice as long as the 3 distal ones, their ratio being: 12:2.2; 3:0.3. Terminal phanera also common for the genus (Fig. 3 L) and with a minute endopodite nearly rectangular (Fig. 3 M).

Penis clubbed (Fig. 3 G).

Uropods long, straight, endopite spineless.

Telson longer than last pleonite, a peculiar case in the genus, elongate, linguiform (Fig. 3 N), resembling the telson in most species of **Siriella** which accounts for the specific name. Its proximol lateral margins bare on 1/4 of length; the remaining portion armed with 24-26 spines of about same length, slightly upright. At the tip of telson, a weak cleft provided with 2 spinules, each flanked by a larger terminal one; on each apex a spine twice as long (Fig. 3 N and O).

The two oostegae in the female, the styliform structure of pleopod IV ♂ and of male lobes of antennule — short, strong, with a single short external projection, and the cylindrical penis with a subterminal prominence are the only dimorphic features.

Size : 5-5, 5mm (♂,♀).

Colour on live material: Perfectly transparent, sometimes pinkish, without trace of pigment. not even at the basis of mouthparts. Base of telson pink red with a lot of pink here and there; eyes globulose appearing either golden or reddish-brick.

Locality : Tanzanian littoral waters, between 2 and 25m, often among the sands between the coral reefs.

Material examined: Over 200 specimens (♂,♀, juv.) found in 6 of the 65 samples. The most abundant were the dredges in **Cymodocea** beds among the corals of Mbudya Island, 3-4m depth, 12.XII. 1973 (90 specimens on sandy bottom at 25m and along with **Dioptromysis.** A particularly interesting sample was that taken in the beds of **Syringodium** in front of Kunduchi, upon low tide, 1m (11.I.1974).

Holotype ♀: no 256 in the collection of Crustacea in the "Gr. Antipa" Museum"; more than 100 paratypes (♂ ♀) also in the Museum under no 258. Allotype ♂ in the Laboratory of Zoology, of the University of Dar es Salaam together with 10 paratypes.

Remarks. A. sirielloides is readily distinguished within the genus by the shape and length of telson, resembling the telson common for the genus **Siriella (S. paulsoni** f. inst. from the Red Sea), by the 3-segmented tarsus of all peraeopods and by foliaceous segment 2 of mandibular palp of **A. levi** type. The peculiar shape of telson in this species as well as in the previous one, may adequately characterise the newly described species (see plate with all types of telson known so far in this genus, in Bacescu (1,p.177).

7. **Tenagomysis (Nouvelia) tanzaniana** n.sp.
(Fig. 3 A-F)

Description. Mysids remarkable by their slenderness and dark brown colour. Carapace with a weak rostrum; last pleonite laterally ends with a strong projection. Integument smooth. Antenna, at the basis with acute spine outward, and with lanceolate scale almost twice as long as basis; in ♂ it distinctly exceeds antennule. Male lobe cylindrical, very long, as long as the combined last segments of basis, intensely brown on live material.

Labrum with anterior spine.

Mandibular palp with both segments elongate; terminal segment of maxilla II (Fig. 3 B) obovate, with distal margin nearly straight, bearing 7-9 spines outward, along with pennate setae or usual serrate phanera.

Peraeopods with carpo-propodus 2-segmented (3 "tarsal segments) with straight joints (Fig. 3 A).

Pleopods reduced to simple lamine in ♀ and well developed and dimorphic in ♂ (Fig. 3 C), with a terminal seta presenting a distinct narrowing (Fig. 3 C) and 2 serrate phanera, one terminal and one subterminal. Uropods with endopodites (Fig. 3 E) bearing 30-32 spines in ♂♂ and 36-44 spines in ♀ ♀ thoughout the length of spines increasing in length but also with short spinules among them; last spine, almost apical, twice as long as the subapical one. Penis considerably enlarged distally (Fig. 3 F).

Telson (Fig. 3 D) with sinuous edges bearing throughout their length 18-25 nearly equal spines, with 2 curved apexes, armed with 2 large, strong spines each sheltering a cleft with 18-22 laminae and a pennate setae, specific to the genus.

Size : ♂♂ = 6.5-7.5mm; ♀ ♀ = 8-9mm.

Colour on live material : Intensely brown as only a few specimens of **Mysidopsis coralicola** usually accompany them. In fact, only the underside of the body is completely brown, when its chromatophores with golden core on black background (♂ ♀) are at maximal extension, whilst the

dorsal side is of fair colour. Antennule and its inside flagellum, as well as male lobe being dark brown leave the impression that the animals are still longer and slender. Marsupium and uropodal endopodites (completely brown in ♂ and only the anterior half in ♀) are also dark. Peraeopods and pleopods (♂ ♀) are transparent. Chromatophores — like black buttons — are obvious also in the white, transparent embryos; in the incubating bursa, the embryos arranged with their ventral face outwardly bent, towards the marsupial lamine. ♀ ♀ bear 9—19 eggs or embryos.

Material examined. Tens of specimens from 6-7 stations. Very abundantly found when fishing with light, on the **Syringodium** beds in front of the Kunduchi Marine Biological Station on the 7th I.1974 or 24th 12.1973; also by dredging still there or on the beds of **Cymodecea** among the reefs of Mbudya (12.XII.1973) rather seldom.

Remarks : Even with populations of same brown colour, **Tenagomysis tanzaniana** differs from **Mysidopsis coralicola** by its outline resembling a **Leptomysis** (f. inst. L. sardica), by the brown colour of the inferior part of body appearing especially in ♀ ♀ as burnt, by the entanglement of dendritiform projections of chromatophores; the core of these is golden and seems luminous as in photogenic organs. In **M. coralicola** only last pleonite appears as burnt.

Holotype ♀, in the collection of Crustacea, in the "Gr. Antipa" Museum, vial no 254 and 10 paratypes, no 254a. Allotype ♂ and other 5 paratypes in the collections of the Laboratory of Zoology in Dar es Salaam.

8. **Mysidopsis coralicola** n.s.p.
(Fig. 4 A-F)

Mysids stout and short, the stumpy appearance also reflected in the structure of appendages. Carapace with acute restrum the tip of which exceeds the basis of eyes in normal position, extended laterally. Eyes large, cylindrical in ♂, with peduncle slightly longer than the visual portion; in ♀ spherical, with cornea extending beyond their half (Fig. 4 F).

Last abdominal segment slightly longer than telson.

Antennule somewhat shorter than the scale of antenna, with a stout lobe masculina, milk-white, bearing in sexually mature males 3 parallel series of shiny silky setae, ending in the inferior part with a 4th set of setae, belonging to the antennule scales close to one another at their tips, and with crossing setae.

Antenna with basis half as long oval scale and 3.8 times as long as wide (Fig. 4 A).

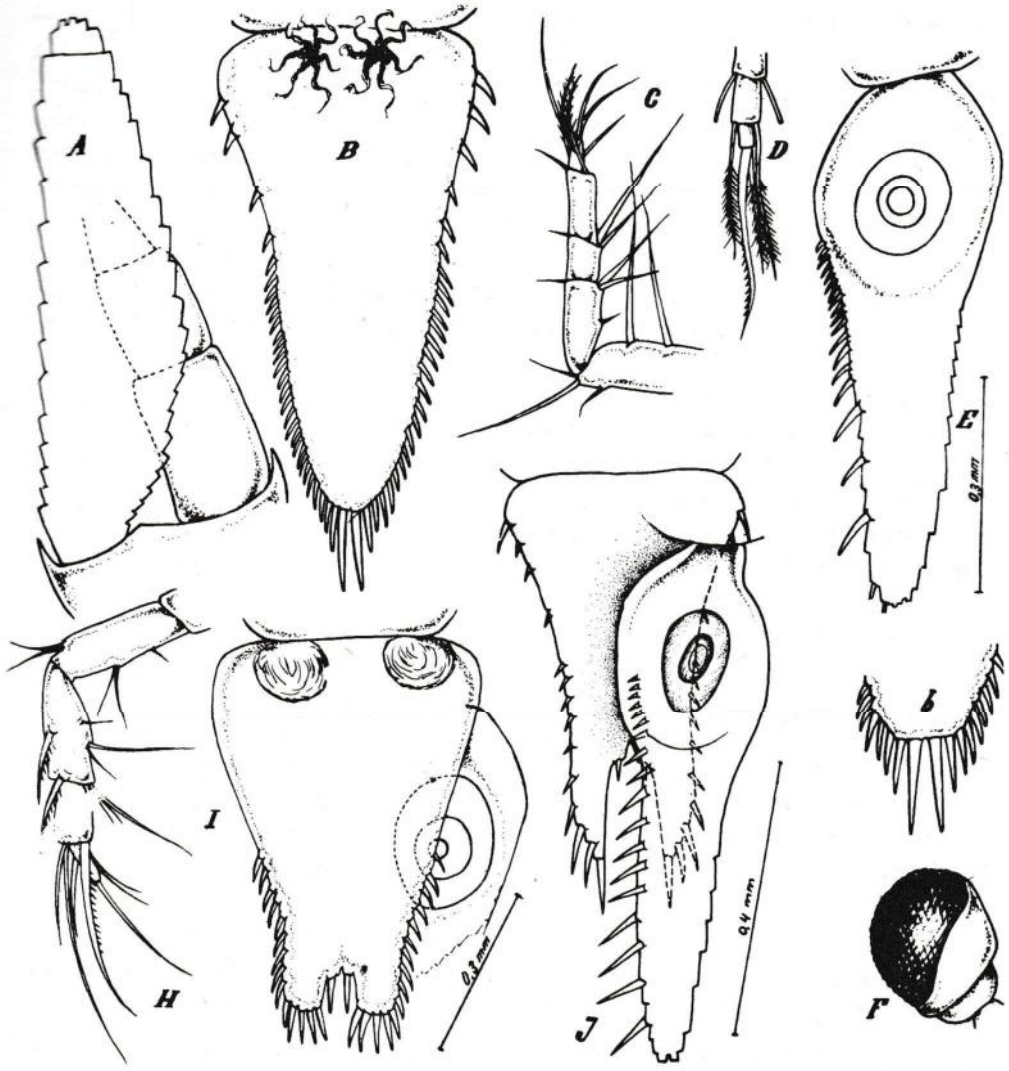

Fig. 4. A-F : Mysidopsis coralicola n.sp. A, Antenna ♀. B, telson (♀); b, tip of telson ♂; C, "tarsus" of peraeopod III. D, exopodite tip of pleopod IV ♂. E, endopodite of uropod. F, eye (♀).
H-I, Anisomysis Ranseni Nouvel, ♀ = 5,5mm. H, "tarsus" of peraeopod II. I, telson.
J, Dioptromysis proxima Nouvel, ♀. Telson and endopodite of uropod.

Labrum slightly bulging anteriorly, without spiniform projection, with 2 spherical masses shiny-golden on live animals. Mandibular palp with median segment foliaceous, almost triangular. Last segment of palp of maxilla II elongate, bearing setae. Peraeopods stout, with carpo-propodus 3 — segmented (Fig. 4 C); median segment always the shorter; exopodites with round basis, without external spines, consisting of 7-9 segments. Penis short, cup-shaped. Pleopods common to genus: unilamellar in♀♀, all well developed in♂♂; pleopod IV dimorphic bearing also in this species, only one serrate apical seta on the exopodite (Fig. 4 D); both rami with 7 segments each, endopodite shorter only by the length of one segment.

Telson linguiform (Fig. 4 B) with spines throughout the length of edges, increasing in length towards apex, the tip of which bears 2 longest spines. Depending on the size of individuals 25-32 spines may be found on each edge, wide-set in the proximal third, increasingly closer towards the tip of lamina; their number is slightly lower in♂♂(22-28) and the space between the apical spines, usually larger (Fig. 4 b), a detail which does not represent a dimorphic feature. In juveniles, each edge bears 20-22 spines.

Uropods short and wide with large statocyst (Fig. 4 E) from the distal margin of which start 16-22 short dense spines, becoming scarcer and longer towards the tip of lamina, the last located at 1/6 from apex.

Length♂♂= 6-6,5mm.;♀♀= 6.5-7.5mm.

Colour: Mysidopsis coralicola the most homochromic Tanzanian mysid after **Siriella brevicaudata** Paulsen 1875; dull-white, partially transparent during day-time in the sands among the **Syringodium** beds or with chalk-white spots on brick-reddish background, even completely brown especially in♀♀.The dark colour is due to the large chromotophores shining like the phosphorus on a watch dial, golden brown by night in live animals. Also striking, a black spot with golden reflections near the basis of telson (Fig. 4 B) sending dendrites in the distal half of last pleonite which appears as "burnt".

The usually golden eyes may be also blood-red having a red peduncle.

Material Examined : Mysidopsis coralicola was found in 13 of the 65 samples studied, at Kunduchi, Ladder Cove, Mbudya, Bahari Beach.

If in 8 stations only 1-15 specimens emerged, in one dredging sample (24.12.1973) on the sand beaches among **Syringodium** beds, where during extreme low water spring we captured hundreds of specimens, white in colour and not brown as in many other stations; this species found there even in higher numbers than **Gastrosaccus msangii.** Also dredged in the large granulous sand along with **Branchiostoma** and folioles of **Halimeda,** among corals, at 3 m. Mbudya, 20.XII.1973.

Holotype ♂, "Gr.Antipa" Museum, no 256 and over 100 paratypes, ditto, no 256a. Allotype and 20 paratypes in the Laboratory of Zoology, Dar es Salaam.

Biocenosis: M.coralicola is usually captured on the sands among corals and phanerogamia beds, along with **Tenagomysis tanzaniana, Anisomysis maris rubri, Siriella brevicaudata** and **Gastrosaccus msangii.** In the reefs of Mbudya, also with **Anisomysis sirielloides.**

Remarks: Mysidopsis coralicola differs from all 34 species known to belong to the genus, by the combination of 3-4 morphological features, namely: carpo-propodus 3-segmented; telson linguiform bearing spines all around; scale of antenna 3.8 times as long as wide, with rounded apex and spines throughout the length of uropodal endopodite. With regard to the morphology of telson and scale of antenna, the species resembles **Mysidopsis similis** Zimmer 1912, nec. O.Tatt., 1955, a geographical neighbour (South Africa); it differs from the latter by a higher number of spines around the telson (over 40 instead of 20-22), by a much larger size (8-11 mm) and by the fact that **M.similis** has a series of nearly 40 spines very close to one another only in the proximal half of uropod.

It is one of the most wide spread and polytopic species of mysids from the intertidal area of Tanzania and her islands, despite a low fecundity (12-16 eggs).

Anisomysis (Anisomysis) hanseni Nouvel, 1967
(Fig. 4, H-I)

The 2 specimens of this species captured in the intertidal waters of Tanzania (dredged at Mbudya, in sand among corals and **Cymodocea** 2 m depth upon low tide, 13.12.1973)—♂ ♀ =5.5 mm and 1 ♂ juv. do not essentially differ from the type species described by Nouvel (**12**) from the NW of Madagascar, except for the terminal spines of the telson (Fig. 4 I) equal in length to the 4 ones of the apical group, the distinct carpopropodal joint in all peraeopods (Fig. 4 H), and perhaps the narrower median segment of the mandibular palp; this latter may be, however, a local variation without any taxonomic significance. The fact that we have but 2 specimens does not indicate the scarcity of the species, but — just as in the case of **Pseudanchialina** — this may be explained by the fact that our planktonic nocturnal catches are only from 1-4m depth and this species emerges in the plankton of 20-40m (fide Nouvel 1.c).

The live animals were transparent with little red stars on the ventral side; eyes golden with central portion embers-red, in frontal view. Captured in sand along with **Hippa, Gastrosaccus msangii, Anisomysis sirielloides** and **A. maris rubri.**

Dioptromysis proxima Nouvel, 1964
(Fig. 4 J)

Species also rare in our catches, only 4 specimens found at 25 m depth, NE of Mbudya Island on sandy bottom (12.12.1973).

Since it does not morphologically differ from the Madagascar population, from which it was described, we'll give for **D.proxima** only the figure of the telson and of the uropodal endopodite in order to facilitate its identification by those who have no other available bibliography. Scale of Antenna lanceolate extends by 1/3 beyond antennule. Uropodal spines vary between 19 and 26. In the biocenosis belong : **Anisomysis sirielloides** and **Siriella brevicaudata.**

Ecology, ethology

Due to their polytopy, on the one hand, and to the close neighbourhood of the different micro-biotops from the coral reefs area and the intertidal region which continues towards the shore, on the other hand, one sample may very often include species distinctly pasammobiontic along with algae, plants and rock living species. This is the case of the wide spread **Gastrosaccus msangii** encountered in the phreatic area of the intertidal zone, even in the mediolittoral beach of high tide, as well as in the submerging sand beaches extending among the Phanerogamia beds, among coral reefs (Mbudya, Pangavini, Oyster bay), and even in the ever moving sands at the river mouths (Pangani f. inst.). This is especially the case for **Siriella brevicaudata,** the second Mysid, as to density and frequency, from the littoral waters of Tanzania. It is perhaps the most polytopic Mysid; although a benthic species, it is encountered not only in the nocturnal plankton but also in the diurnal one, on corals or on phanerogamia beds (**Syringodium, Cymodocea**). It may be found in the pools left isolated for a while in the intertidal area, or by netting among phanerogamia at 1-10 m depth, or by dredging the sands between these latter and the corals, down to 25 m depth. This species is among the most wide spread as we found it wherever we explored between Bagamoyo and Dar es Salaam.

As the low waters in the intertidal zones compell numerous species to a double diurnal horizontal migration, sometimes of several hundreds of meters, and expose them to a strong light, even corallobionte or phytophile species who must leave for a while their prefferred environment these respond to the relative factors by a high homochronic ability.

The fact is obvious especially in the species **Siriella brevicaudata** and **Mysidopsis coralicola;** their populations may be, according to the collecting site, dark brown or transparent; reddish or golden spotted, or chalk-white, acquiring a colour adequate to the sandy bottoms — also presenting a large range of variations — in order to hide as well as possible.

Mysidopsis coralicola is the third species, as to frequency in the intertidal area of Tanzania; although it also occurs in different biota, its preference goes rather to coral sands, as shown by the repeated selective fishing in the same place and time. Thus in the **Syringodium** of **Cymodocea** beds, 2-3 or even no specimen were found, whereas by dredging in the sand islands among these, even hundreds of specimens were taken.

The species is also slightly phototropic, emerging by 12 individuals in one fishing with light on **Syringodium** beds, alternating with sand beaches of equal surfaces, on the 24th of Dec. 1973, at 3 m depth, along with several thousands of **Gastrosaccus msangii,** hundreds of **Cumella** sp. ♂♂ and hundreds of juv. specimens of Hippolytidae.

The large sandy mediolittoral area of Tanzania, the diversity of sands and depths permitted a good spreading and diversification of Gastrosaccinae. We detected there no less than 4 species. Among the ones making the object of the present paper, **Gastrosaccus msangii** presents a particular biology It seems that the species mates during the planktonic stage of its nocturnal life, and the gravid females — just as in **Gastrosaccus sanctus** (1) — sink in the mediolittoral sand which they don't leave during the incubation period not even when the waters recede during low tide. Thus we understand why —, although a pre-eminently phototropic species which may be captured in heaps on nocturnal fishing with light in the sandy areas among phanerogamia beds — the analysis of population caught in this way (24. XII. 1973) shows a number of juveniles of different ages (90%) males fully adult (6%) and females with marsupium but non ovigerous, (4%). The red and brown colour is related to life in the reddish sandy areas (psammobiontic species) from the regions with marine Phanerogamia. In exchange, burrowing in mediolittoral sand exposed during low tide (phreatic area respectively) only light colour, transparent populations consisting 95% of gravid females have been found.

They bear in the marsupium up to 35 eggs being among the most fertile Mysids of this region. It is not surprising that a species which can endure prolonged exposure and heating can survive well under laboratory conditions. It lives for 3-4 days in small glass receptacles without aeration.

The ecology of this species is worth studying on account of its possible economic value as evidenced by a study of related species, **G.psammodytes** by Brown and Talbot (4) from South Africa.

During the low tide the principal contingent of this mysid leaves the sandy area actively swimming towards the receding waters or in the pools created throughout the intertidal zone. From such a pool of only 0.20 m

depth, we took during minimum low water, at 7.30 a.m., on the 7th.XII.1973, several hundreds of specimens of **G.msangii** and **Cumopsis** sp.

At Ladder Cove (Oyster Bay), on the 11th XII.1973, in the pools left among the **Cymodocea** beds, **G.msangii** contends for numerical priority with **Siriella brevicaudata,** preferring the life among plants.

The species becomes scarcer towards depth, being replaced by another species of **Gastrosaccus,** as well as by **Anchialina** and **Haplostylus pareryth-raes** f.inst., a dredging in coral sand at 15 m in front of Kunduchi yielded only 3-4 specimens (23.XII.1973).

By sieving the sand of a bank where waters receded and so remained for 2-3 hours at each low tide — in front of Kunduchi, on the 4th.XII.1973, hundreds of white amphipods, 38 G. msangii, tens of Cyclaspis and Cumopsis were collected. The species must have a particular importance to the economy of the local waters if we take into account that during the night it gathers in heaps, moving towards the surface and that — along with shrimps and Euphausidae — the mysids represent the main food for many fishes, especially for their juveniles.

This must be all the more true as we found that the new species of **Gastrosaccus** strongly rises at light too. A case of fishing with light by means of a net no larger than the 8th part of a m^2, which took over 100 cm^3 of pure essence of **G.msangii** in only 10 minutes work, is edifying as to the food it might represent for planktonic fishes. The analysis of the intestinal content in different fishes will certainly disclose the mysidophage ones. Considering some other species of **Gastrosaccus,** it seems that this species, while settling on sandy bottom may form food of the juveniles of Pleuronectidae. In Tanzania, **Anisomysis** l.s. an Indo—West Pacific genus (15,19) proved to be very rich in intertidal species.

If Anisomysis sirielloides emerge in large numbers in some catches, followed by **A.maris rubri, A.hanseni** is rarely encountered (till its biotope will be established, of course). **Anisomysis maris rubri** is a grassliving species, typical benthic, attached to the sustance which it leaves only when the sample is treated with formalin; it is so well attached and transparent that on live material, no specimen could be observed, although, upon stirring the material after formalin was added, hundreds of specimens of this **Anisomysis** emerged on the surface just as **Leptochelia,** ostracods or some amphipods. The clinging to substrate is certainly an adaptation to tide currents. This species is very brittle, easily breaking at abdomen level. Weakly phototropic appeared but once. 1 specimen at light shed over **Syringodium** from where thousands of **G. msangii** emerged (24.12.1973).

Anisomysis sirielloides does not seem to be rare, as in the 5 catches its number exceeded a hundred specimens. It clings to the bottoms with fine corals, which remain submerged even upon low tide. Also present on sands at 25 m depth.

It seems to recede upon low tide with the waters, from the dead reef to the living one.

A particularly interesting sample was the coral material (**Stylopora, Galaxea,** a.s.o.) brought by T. Nalbant from Fungu Mkadya, an isolated reef, barely observable during low tide. Of the coral taken 5 m depth (12.1.1974) and treated with formalin, over 100 **A.sirielloides** emerged. In the dredgings carried out on **Syringodium** beds in front of Kunduchi — a frequently investigated place — the species emerged but once in 4-5 specimens.

Just as in other tropical areas, most of the representatives of the Tanzanian mysids are of small-size. Only **Gastrosaccus** and certain **Siriella** reach up to 10 mm; the majority of the others are 4-7 mm long. As there is no seasonal changes in the size of population as in the temperate areas — (small-size summer population and large-size winter population) — we must conclude that they are small-size throughout the year, reaching maturity faster in warm waters.

The most common mysid associations down to 15 m, are :

In the dredgings of sand among corals: **Siriella brevicaudata; Mysidopsis coralicola; Gastrosaccus msangii; Anisomysis sirielloides; A.maris rubri; Tenagomysis kunduchiana;** more rare, **Heteromysis sp.** and **Anisomysis hanseni.**

In the plankton with light, the same species, but in another order of frequency: **G. msangii** (thousands of specimens): **Mysidopsis coralicola** (tens); **Siriella brevicaudata; Tenagomysis kunduchiana** and **Anisomysis maris rubri** between 4 and 20 specimens each.

Zoogeographical considerations

Of all the species found, three are widely spread: **Gastrosaccus msangii** in every sandy region, whereas **Siriella brevicaudata** and even **Mysidopsis kunduchiana** on all marine phanerogamia beds or on dead corals.

Siriella brevicaudata presents an even higher frequency as it was found in 28 of the 65 samples, while **Gastrosaccus** in 21 and **Mysidopsis** in 11 samples.

Part of the Mysids found are species with wide geographical distribution, known either from the Red Sea and Gulf of Aden; **Pseudanchiliana erythraea, Haplostylus parerythraeus, Anisomysis maris rubri,** or from Madagascar waters: **Anisomysis hanseni, Dioptromysis proxima** and one

Anchialina. We may anticipate their being found also in the littoral waters of intermediate areas as it certainly is only a matter of research discontinuity and not a zoogeographical discontinuity proper.

Among the Mysidacea, before the publication of the present note, only 3 species were recorded from the Tanzanian waters, all of them in the waters of the Zanzibar isle. Therefore, the 12 species here cited are new for the continental littoral waters of the country.

Anyway, this is the first time when the genus **Pseudanchialina** and new representatives of other genera: **Tenagomysis, Mysidopsis** and **Anisomysis** have been mentioned from East Africa.

At the same time, we established the biota preferred by certain species previously considered as extremely rare. This is the case of **Siriella brevicaudata,** the most widely spread in the Indian Ocean among the above mentioned species, known from Ceylon (2 specimens) and the N of the Red Sea (2-3 specimens) found here in huge quantities as in the grass-beds of Tulear; it is also the case for **Anisomysis maris rubri,** previously known only from two ♀ ♀

In conclusion, we daressy that, despite its distinct Indo-West-Pacific affinities, with dominance of the species of **Tenagomysis** and especially **Anisomysis** — the fauna of benthic littoral Tanzanian mysids presents a very marked endemic character as well — at least for the present stage of the knowledge concerning the fauna from the West Indian Ocean.

At least some of the five new species described above would have a wider distribution. However, it seems somewhat singular that of the 9 species of South-African mysids known, only one was found here too, and even that, atypical; of the 11 species from Nosy-Be only two, and of the 18 erythraeic species, only 3 were found.

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