

## **A new species of *Brevitalitrus* (Crustacea, Amphipoda, Talitridae) from Mauritius – first record of the genus from the Indian Ocean**

Jan H. STOCK

c/o Institute of Systematics and Population Biology, University of Amsterdam,  
P.O. Box 94766, 1090 GT Amsterdam, The Netherlands.

**A new species of *Brevitalitrus* (Crustacea, Amphipoda, Talitridae) from Mauritius – first record of the genus from the Indian Ocean.** - A new species of landhopper (Amphipoda, Talitridae), *Brevitalitrus strinatii* n. sp., is described from a lava cave on the island of Mauritius (Indian Ocean). It has been compared with paratypes of *B. hortulanus* (Calman), the type-species of the genus *Brevitalitrus*, and with Transvaal topotypes of *Talitriator eastwoodae* Methuen, the type-species of the genus *Talitriator*. On the basis of this comparison, the new species is placed in *Brevitalitrus* rather than in *Talitriator*, and *Brevitalitrus* is removed from the simplidactylate to the cuspidactylate Talitridae. The new species is the first representative of *Brevitalitrus* recorded from an Indian Ocean island.

**Key-words:** Amphipoda - *Brevitalitrus* - *Talitriator* - Mauritius - cavernicole.

### INTRODUCTION

Terrestrial Amphipoda are rarely recorded from islands in the Indian Ocean. The only pertinent Mauritius paper that I could trace is that of K.H. BARNARD (1936), who records *Talitrus* (?) *gulliveri* Miers, 1876 (now in *Talitriator*, *vide* Hurley, 1975: 166), *Talitroides topitotum* (Burt, 1934), and *Orchestia mauritiensis* K.H. Barnard, 1936. The first of these, *T. gulliveri*, was not described by BARNARD from Mauritius proper, but based on two cotypes loaned from the British Museum (Natural History), London, originating from the island of Rodriguez, like Mauritius is the Mascarene group, but some 1200 km more to the east. The second species, *T. topitotum*, may originate from S.E. Asia, but has synanthropically been introduced in warmer countries all over the world. The third species, *O. mauritiensis*, certainly does not belong in the genus *Orchestia*, but is hard to place correctly, since it was not illustrated in great detail by Barnard. *Macarorchestia* or *Floresorchestia* might be a possible seat for *mauritiensis*.

Dr P. Strinati kindly entrusted me another terrestrial amphipod collected recently in a cave on Mauritius, an island in the Indian Ocean (ca. 20°10' S 57°30' E), some 2500 km E of the African mainland.

Although obtained in a cave, the animal shows few cave adaptations: some of the ocelli are depigmented and the antennae are somewhat more slender than in epigeal talitrids. I would not be surprised if it were found again in humid forest bottoms.

## THE MAURITIUS TALITRID

The present Mauritius landhopper does not belong to any of the taxa recorded by K.H. Barnard from the island. It is close to the genera *Talitriator* Methuen, 1913 (see STOCK & BIERNBAUM 1994, for review of the component species) and *Brevitalitrus* Bousfield, 1971 (with review of the species included). Unfortunately, the subtle differences between these two genera (BOUSFIELD 1971: 284) are not borne out by all component species or are not described or illustrated for certain others.

So, the marginally spinous exopodite of uropods 1 and 2, attributed to *Brevitalitrus*, fails to discriminate *B. toli* (J.L. Barnard, 1960), *B. hortulanus* (*sensu* J.L. Barnard, 1960), *B. dyaulanus* Bousfield, 1971, and *B. nesius* (J.L. Barnard, 1960), which all have a glabrous ramus. The propodus of gnathopod 1 is said to be "deep" in *Talitriator*, but it is not in *T. insularis* Stock & Biernbaum, 1994 and *T. cylindripes* K.H. Barnard, 1940. The ischium of gnathopod 2 is of about the same elongate shape, in species of *Brevitalitrus* and *Talitriator*, not really distinguishing the two genera. The telson of *Brevitalitrus* usually has one large spine on each lobe, that of *Talitriator* has 2 or 3 large spines, but in a series of paratypes of the type-species of *Brevitalitrus*, *B. hortulanus* (Calman, 1912), which I re-examined for the purpose of this study, five had one spine, whereas two had two spines, showing that this character is not absolutely discriminative.

Both genera, *Talitriator* and *Brevitalitrus*, were classified with the simplidactylate landhoppers by BOUSFIELD (1984, Table 7), and I tended therefore to synonymize the two. However, to my surprise, I found that the seven paratypes of the generotype *B. hortulanus* were all cuspidactylate, whereas the generotype of *Talitriator*, *T. eastwoodae* Methuen, 1913 showed simplidactylate pereopods. Close inspection of drawings of various other *Brevitalitrus* species described by J.L. BARNARD (1960), with a magnifying glass, revealed cuspidactylate pereopods in *B. toli* (his fig. 2f, g, i) and in what he considers *B. hortulanus* (his fig. 1g). Although BOUSFIELD (1971: 285, fig. 17) re-examined all original material on which CALMAN initially described *B. hortulanus*, he failed to notice this important character.

The Mauritius material is cuspidactylate and has moreover unequal rami of uropod 2, agreeing in both characters better with *Brevitalitrus* than with *Talitriator*. Within *Brevitalitrus* it is in many details very similar to the paratypes of *B. hortulanus*. The distinction between the various taxa within this genus is of a very refined nature (see for instance BOUSFIELD's key, 1971: 285).

It should be noted here that BOUSFIELD's key is misleading in couplet 3, that attributes a long peduncular segment 3 in antenna 1 ("nearly equal to segments 1 and 2 combined") to *B. hortulanus*, whereas the paratypes re-examined by me, and BOUSFIELD's own fig. 17–A1, show a relatively short third peduncular segment, about 15% longer than segment 2. An unnamed "variety" from the New Hebrides has a long peduncular segment 3, according to BOUSFIELD's re-examination (1971: 287) of STEPHENSEN's (1943; 299, fig. 2) original sample in the Zoological Museum Copenhagen.

#### DESCRIPTION OF *Brevitalitrus strinatii* n. sp.

Material. - 1 ♂ (holotype), completely dissected and mounted on 2 slides in Reyne's modification of Faure's medium. Mauritius, Trois Cavernes, 6 Nov. 1994, leg. P. Strinati. Deposited in the Muséum d'histoire naturelle, Geneva.

The cave called 'Trois Cavernes' is located near Cascavelle (W. of Quatre Bornes and S. of Bambous, just E. of road A3). It extends over 240 m, of which 194 m form a cavity, in lava outcrops of Trou aux Cerfs. The cave consists, as the name suggests, in reality of 3 cavities. The talitrid was found in the third cavity, which is rather humid with a bottom covered with small stones and woody debris. At the collection site it is completely dark, air temperature 22° C. A more detailed description of the cave can be found in BILLON & CHOJNACKI (1993)

MALE (holotype): Body length 7.3 mm. Body surface unarmed. Eye (fig. 1a) roughly egg-shaped, black, but some ocelli lacking pigmentation.

First antenna (fig. 1a) twice as long as length of head; peduncular segment 3 only slightly longer than segment 2; flagellum 8-segmented, segments 3 through 7 with 1 (rarely 2) short, pawn-shaped aesthetascs (marked by \* in fig. 1a).

Second antenna (fig. 1a) with slender, 22-segmented flagellum, geniculate at first segment, as in *Talitriator*. First antenna reaching to distal end of peduncle segment 5 of second antenna.

Upper and lower lips, and mandible comparable to those of *Talitriator insularis* Stock & Biernbaum, 1994. First maxilla with 10 (not 9) distal spines on outer lobe; from outer to inner, these spines bear 0–0–2–5–3–1–4–3–3–3 (left) or 0–0–0–4–4–1–3–3–3–3 denticles (right), respectively; palp small, without distal setules. Second maxilla (fig. 1b) with long proximo-medial seta on the inner lobe, displaced to the proximal part of the lobe. Maxilliped (fig. 1c) with articulate 4th palp segment.

First gnathopod (fig. 2a): posterior margin of carpus convex; propodus tapering, not 'deep'; palm not demarcated; unguis slightly shorter than dactylus.

Second gnathopod (fig. 2b): propodus slender, distal lobe rounded, not upcurved.

Third pereopod (fig. 2c): unguis and dactylus of equal length; dactylus not 'pinched'. Fourth pereopod (fig. 2d): projecting posterior point of coxal plate small; dactylus 'pinched'. Fifth and sixth pereopod as illustrated (fig. 2f, g); basis of P5 with free posterior lobe. Seventh pereopod (fig. 2h) with subcircular basis; distoposterior

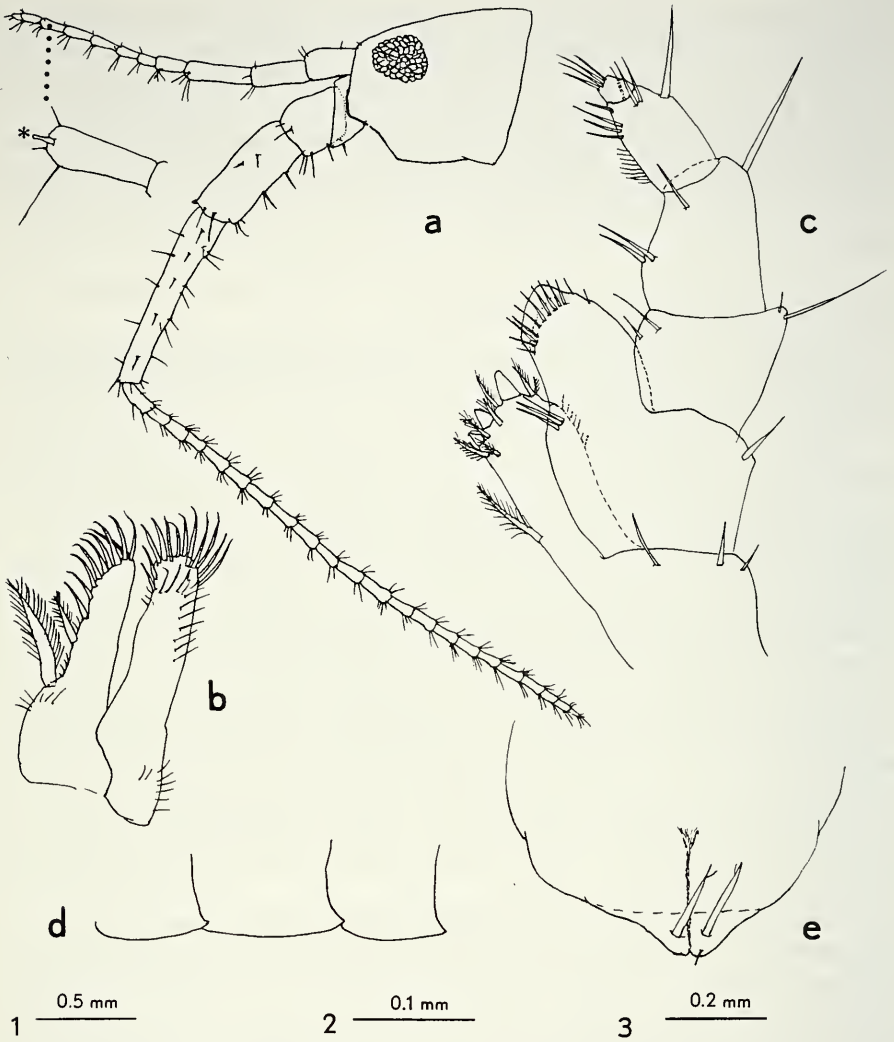


FIG. 1

*Brevitalirus strinatii* n. sp., ♂ holotype. a, head and antennae, from the left (scale 1) (aesthetasc on flagellar segment 6 of antenna 1 more strongly enlarged); b, maxilla 2 (2); c, maxilliped (2); d, epimeral plates 1 to 3 (1); e, telson (2).

lobe free and shallowly incised near junction with ischium. All pereiopods cuspidactylate. Coxal gills on gnathopod 2 and pereiopods 3 through 6, relatively simple, not strongly branched or contorted, largest on gnathopod 2.

Epimeral plates (fig. 1d) unarmed, with slightly pointed posteroventral corner. First and second pleopods (fig. 3c, d) with slender, rod-like peduncle; peduncular



margins smooth; rami 3-segmented (segmentation lines somewhat indistinct), with short plumose setae on outer and inner margins, and 2 long plumose setae on distal end. Third pleopod (fig. 3e) shortened, peduncle not slender, but with finely setulose inner and outer margins, outer margin moreover with 2 short plumose setae; rami less than half as long as peduncle, unsegmented, with several plumose setae. All pleopods with 2 (medial) retinacula, of bifid shape (fig. 3d, detail).

First uropod (fig. 3f): peduncle with 6 spines on outer dorsal margin, 3 spines on inner dorsal margin and with short interrampal spine (about 25% of length of exopodite); 3 spines on dorsal margin of each ramus. Second uropod (fig. 3g) likewise with some spines on dorsal margin of rami; exopodite distinctly shorter than endopodite. Third uropod (fig. 3h): peduncle with 1 large outer spine; 2 very unequal distal spines on ramus.

Telson (fig. 1e) with shallow distal incision; each lobe with 1 distodorsal spine.

*Derivatio nominis.* - Named in honour of Dr Pierre Strinati, well-known Swiss biospeologist, who collected the talitrid described above.

*Remarks.* - The Mauritius specimen agrees in most characters with the paratypes of *Brevitalitrus hortulanus*. I have not dissected the paratypes, so for the finer structure of the mouthparts, I have relied upon BOUSFIELD's (1971) drawings of a dissected paratype. The third peduncular segment of antenna 1 agrees with the *B. hortulanus* types, in that it is only slightly longer than segment 2. Similar peduncular lengths are observed in *B. hortulanus* (*sensu* J.L. Barnard, 1960), possibly based on young material, and presumably in *B. stephensi* Bousfield, 1971 (first antenna neither described nor illustrated, but said to "agree on the whole" with CALMAN's description). *B. stephensi* is more *Talitriator*-like than any other taxon in the genus, since the telson bears not just one but several spines. Moreover, *B. stephensi* is distinguished by a prominent rounded tooth on the ventroposterior corner of each epimeral plate. The relative length of the peduncular segments is also approached by *B. wolffi* Bousfield, 1971, but this species differs from *B. hortulanus* and *B. strinati* by the absence of an incision between the posterodistal lobe of the basis of leg 7 at the junction with the ischium, less spinose pedunculi and rami of uropods 1 and 2, a non-lobate basis of pereopod 5, an unmodified (not 'pinched') dactylus of pereopod 4, segmented rami on uropod 3, a longer interrampal spine on uropod 1, and the presence of plumose setae on the *inner* margin of the pedunculus of pleopods 2 and 3 (on *outer* margin of pleopod 3 only in *strinati*).

From all other taxa recognized in *Brevitalitrus*, the new species from Mauritius differs in the relatively short third peduncular segment of the first antenna (all others: segment 3 almost as long as segments 1 and 2 combined), and in having dorsal spines on the exopodite of uropods 1 and 2 (all others: naked dorsal margin).

Yet, I cannot positively identify the Mauritius material with *B. hortulanus*, because of a number of differences, delicate but of the same magnitude as used by BOUSFIELD (1971) to distinguish the other 7 (named or unnamed) taxa in the genus: (1) the basis of pereopod 5 shows a deep distomedial sinus in *strinati* (fig. 3b, arrow), a shallow sinus in *hortulanus* (fig. 3a, arrow); (2) the inner seta on the inner lobe of maxilla 2 is much stronger and displaced in proximal direction in *strinati*

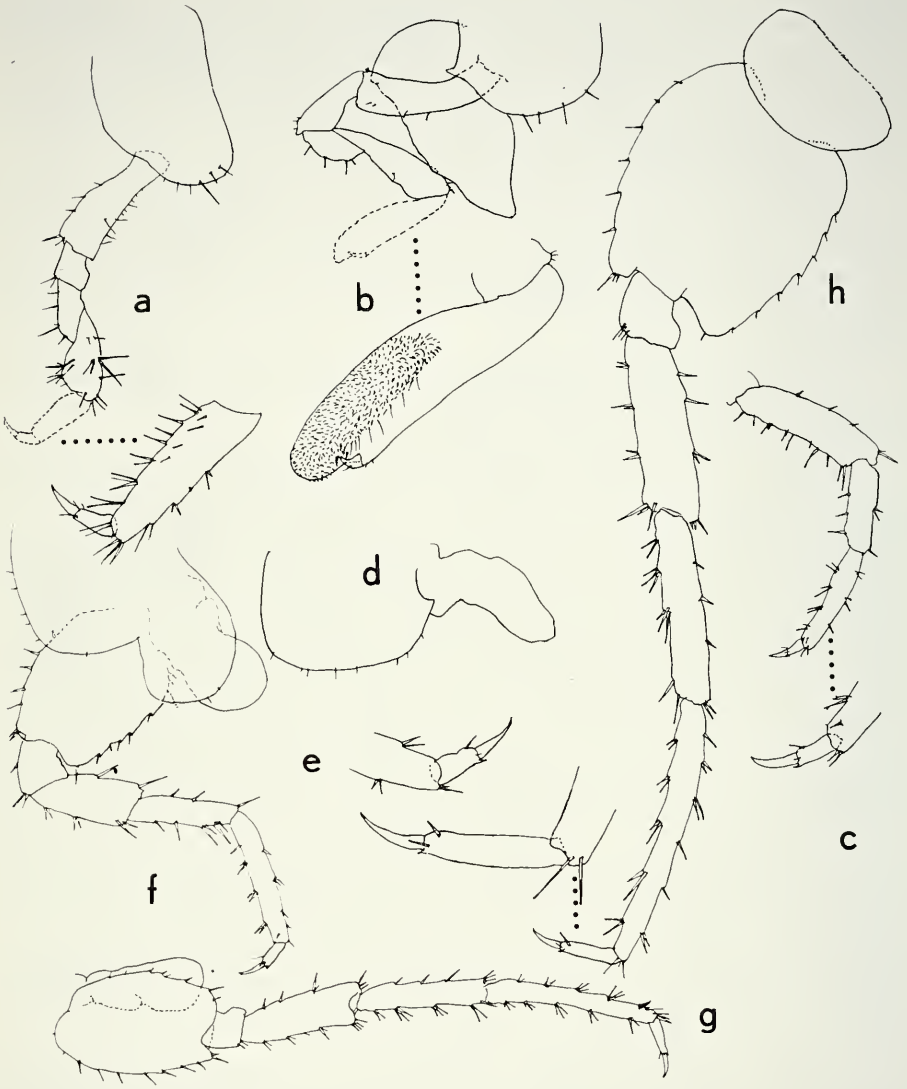


FIG. 2

*Brevitalitrus strinatii* n. sp., ♂ holotype. a, gnathopod 1; b, gnathopod 2; c, pereiopod 3; d, coxal plate and gill of pereiopod 4; e, claw of pereiopod 4; f, pereiopod 5; g, pereiopod 6; h, pereiopod 7. All to scale 1 (scale on fig. 1).

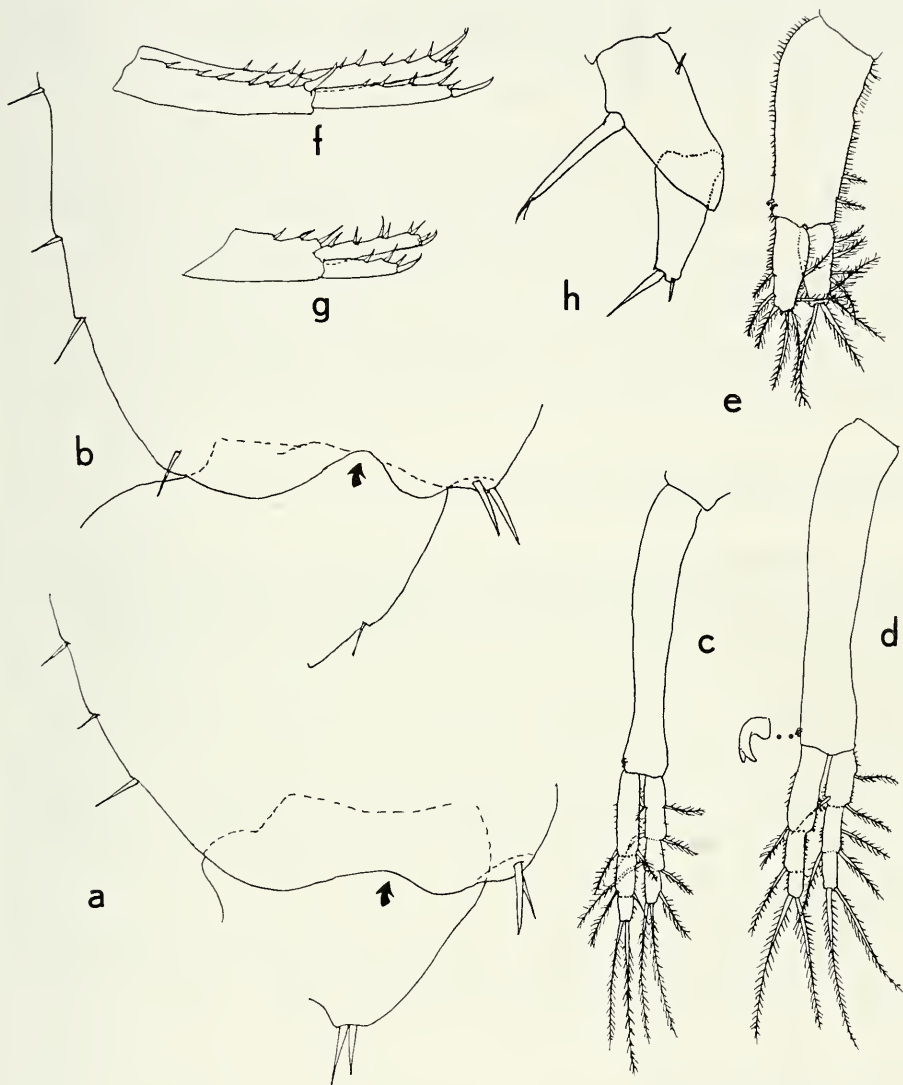


FIG. 3

a: *Brevitalitrus hortulanus* (Calman, 1912), paratype, BM(NH) 1912:1:6:1-9; b-h: *Brevitalitrus strinatii* n. sp., ♂ holotype. a, distal part of basis of pereopod 5 (scale 3); b, same of the other species (3); c, pleopod 1 (3); d, pleopod 2 (3); e, pleopod 3 (3); f, uropod 1 (1); g, uropod 2 (1); h, uropod 3 (2). Scales on fig. 1.

(compare our fig. 1b with Bousfield's, 1971, fig. 17); (3) segment 4 of the maxillipedal palp is free in *strinatii*, fused with segment 3 in *hortulanus*; (4) the shape of uropod 3 is different (cf. fig. 3h in present paper with fig. 17-U3 in BOUSFIELD 1971); (5) the eye of *strinatii* is larger than in *hortulanus*; (6) the rami of pleopods 1 and 2 are about half as long as the pedunculus in *strinatii*, nearly as long as the pedunculus in *hortulanus*.

From "*Talitrus*" (a *Talitriator*?) *gulliveri*, recorded from Rodriguez in the Mascarene archipelago, to which Mauritius also belongs, *Brevitalitrus strinatii* differs in a number of characters, as far as we can judge in absence of any published illustrations of *gulliveri*, viz. the rami of the pleopods (as long as pedunculus in *gulliveri*, versus half as long in *strinatii*); (2) the propodus of gnathopod 1 ( $2/3$  as long as the carpus in *gulliveri*, equally long in *strinatii*); (3) maxilla 1 (without trace of palp in *gulliveri*, short palp present in *strinatii*); (4) pleopod 3 (not reduced, almost as long as pleopod 2 and with segmented rami, in *gulliveri*, against the reduced size and segmentation in *strinatii*).

#### BIOGEOGRAPHIC OBSERVATIONS

The whereabouts of the type-species of *Brevitalitrus*, *B. hortulanus*, remain uncertain. CALMAN based his description on material from Kew Gardens (England), but on later inspection (BOUSFIELD 1971: 287) his material proved to consist of a mixture of two species: the real *B. hortulanus* and *Talitroides topitotum* (Burt, 1934). Later, *B. hortulanus* was recorded on two occasions from nature (J.L. BARNARD 1960: 17; STEPHENSEN 1943: 296) but these records are questioned by BOUSFIELD (1971), who revisited Stephensen's material and considered it distinct from the types of *B. hortulanus*. BARNARD's material, because of its small size possibly juvenile, is also considered different, since it lacks armature on the dorsal margin of the exopodite of uropod 1. If these questionable records represent just 'variants' of *B. hortulanus*, the true home for this species would be the New Hebrides, and the islands of Ton, Truk and Palau in the S.E. Pacific Ocean.

Other species of *Brevitalitrus* have been described from the Caroline islands, Samoa, Mussau I., and Dyaul I., all in the S.E. Pacific as well. The present finding in Mauritius is the first record from an island in the Indian Ocean.

#### ACKNOWLEDGEMENTS

I am indebted to Dr P. Strinati (Cologny, Switzerland) for entrusting me the Mauritius talitrid; Professor Ch. Griffiths (Rondebosch, South Africa) for putting some specimens of *Talitriator eastwoodae* at my disposal; and Dr R. Lincoln (The Natural History Museum, London) for making the paratypes of *Brevitalitrus hortulanus* available for comparison.



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