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New generic synonyms in the Palaeotropical genus *Urothrips* (Thysanoptera: Phlaeothripinae) with one new species from Seychelles

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Abstract

Urothrips kobroi sp. n. is described from Seychelles, and reasons are given for considering *Biconothrips* Stannard and *Coxothrips* Bournier as **new synonyms** of *Urothrips* Bagnall. This genus now includes nine species, distributed between Africa and Australia, and a key to these species is provided.

Key words: *Urothrips*, *Coxothrips*, *Biconothrips*, new species

Introduction

This paper considers a group of fungus-feeding Phlaeothripinae species that live mainly in leaf litter, and are recorded across the Old World tropics from Africa to Australia. Generally wingless, they all have the anal setae and the tenth abdominal segment (the tube) unusually long, and they are generally referred to as the “urothripines”. The genus *Urothrips* was initially placed by Bagnall (1909) in its own Family, the Urothripidae, although subsequently (1912) he erected a third Thysanoptera Sub-Order, Polystigmata through misinterpreting the abdominal dorso-ventral muscle insertion points as “stigmata” (=spiracles). Priesner (1960) recognized this group as the subfamily Urothripinae, and Stannard (1971) referred to it as the Tribe Urothripini. However, subsequently Stannard (1957) indicated that the genera involved are closely related to the *Neurothrips* group of genera in the Phlaeothripinae, and referred to them as constituting the “*Amphibolothrips* line” rather than a discrete Tribe.

A total of 17 genera have been proposed within this group. However, particularly in the absence of any molecular data, generic classifications commonly involve arbitrary assessments of character state differences. Thus when species within a particular group are distinguished from each other on differences that are relatively difficult to see, then all the species will be placed into a single genus. But when the character differences are highly visible, it is likely that several genera will be recognised. Urothripine species often differ from each other in the degree of fusion of the antennal segments, such that the number of visible antennal segments ranges from eight down to four. Moreover, the morphological segments that are fused differ between species. Such highly visible differences in structure are reflected in the number of generic names proposed for species in this group. These patterns of variation amongst urothripines were discussed by Mound (1972), and one conclusion was that *Baenothrips* Crawford is a pantropical genus with four generic synonyms.

A further conclusion in Mound (1972) involving the classification of urothripines concerned dispersive behavior. Species in this group that live in leaf-litter or on dead twigs, and whose behavior involves crawling up above soil level, are likely to be wind dispersed. *Baenothrips mouni* Stannard is one such species, and this is widespread and structurally uniform across Australia. In contrast, *Biconothrips* adults do not crawl up grass stems or twigs, and seem to be relatively non-dispersive, with the result that there are often differences in structure or colour between localized populations. Previous workers on both *Trachythrips* in the Americas and *Urothrips* in Africa have interpreted such small differences as representing species. The definition of species among these wingless thrips requires further consideration, preferably using molecular data.

The objective of the present study is to reconsider the significance of some related genera from the Old World tropics in the light of a new species from the Seychelles that is described below in the genus *Urothrips*.

Genera related to *Urothrips*

Within the key to genera of urothripines presented by Mound (1972), there is one group of four genera that is distinguished by the following three character states: absence of elongate setae on anterior margin of head; presence of prominent external fore tarsal hamus; reduction of prosternal basantra (=praepectus) to a pair of small triangles placed laterally. These four genera were each erected for a single species, and were distinguished from each other as follows:

Coxothrips Bournier: antennal segments I–VIII all distinct from each other, but VII–VIII closely joined; head prolonged over antennal segment I (cf. Fig. 4).

Ananthakrishnaniella Stannard: antennal segments I–VI all distinct from each other, but VII–VIII fused (Fig. 1); head not prolonged over antennal segment I (Fig. 1).

Urothrips Bagnall: antennal segments III–V distinct but broadly joined, and VII–VIII fused (Fig. 2); head not prolonged over antennal segment I (Fig. 2).

Biconothrips Stannard: antennal segments III–V fused, also VII–VIII fused (Fig. 3); head prolonged over antennal segment I (Fig. 3).

Subsequently, *Ananthakrishnaniella gibberosa* Kudo was described as a second species in that genus, with antennae similar to the type species but with the anterior margin of the head similar to that of *Coxothrips reticulatus* and prolonged over the base of the antennae. Moreover, *Coxothrips junctus* Okajima & Urushihara was described with the anterior margin of the head similarly prolonged (Fig. 4), but with antennal segment III separate from the closely united segments IV–V, and VII–VIII fused. The structure of the thorax and abdomen is closely similar among the various species in these four genera, except that in *Biconothrips* the mesoeusternum is divided longitudinally in the mid-line, whereas species in the other genera have the mesoeusternum entire with no indication of a median division.

Relationships amongst the eight described species are not reflected satisfactorily by classification into four genera. Bhatti (1998) synonymised *Ananthakrishnaniella* with *Coxothrips*, despite the obvious differences in the head and antennae among the four species thus included in that genus. Moreover, the new species described below from Seychelles is intermediate in structure between *Biconothrips* and *Urothrips*. Considering the antennal segmentation, either a new genus is required for this new species, plus a further new genus for *C. junctus* in view of the unique antennae of that species (Fig. 4), or a single palaeotropical genus should be recognized to include all of the available species. The second alternative is adopted here, with the generic synonymy indicated below.

Urothrips Bagnall

Urothrips Bagnall, 1909: 126. Type species *U. paradoxus* Bagnall, by monotypy.

Coxothrips Bournier, 1964: 75. Type species *C. reticulatus* Bournier, by monotypy. **Syn.n.**

Ananthakrishnaniella Stannard, 1970: 118. Type species *A. tarai* Stannard, by monotypy. Synonymised by Bhatti, 1998: 178.

Biconothrips Stannard, 1971: 121. Type species *B. reedi* Stannard, by monotypy. **Syn.n.**

Diagnosis. Apterous, anterior margin of head without prominent setae but sometimes produced over base of antennae; eyes reduced to about 10 ommatidia; all head setae small; stylets retracted to eyes, one-third of head width apart; antenna 8-segmented, but variously reduced to 5 visible segments due to fusion between different segments, III with 1 sensorium, IV with 2; pronotum transverse, setae small and pointed, epimeral setae larger, notopleural sutures not present; basantra absent; mesopresternum variable; fore tarsus usually with hook-like hamus on external margin; mesothorax swollen laterally, hind coxae further apart than mid coxae; pelta fully transverse, indistinctly separated from tergite II; tergites strongly sculptured, setae small, without wing-retaining setae; segments IX–X elongate much longer than VIII; anal setae usually longer than tube.



FIGURES 1–4. *Urothrips* species, head, thorax and antennae. (1) *tarai*; (2) *paradoxus*; (3) *reedi*; (4) *junctus*.

Comment. With the description of the new species below, the genus *Urothrips* now includes nine species (Table 1), all from the Old World. This genus shares most character states with the New World genus, *Trachythrips* Hood, but species in that genus have distinctive, fully transverse, prosternal basantra.

TABLE 1. Species included in *Urothrips* Bagnall.

<i>Urothrips bagnalli</i> Trybom, 1913 [Natal, South Africa]
<i>Urothrips gibberosa</i> (Kudo, 1989) Comb.n. [Nepal]
<i>Urothrips junctus</i> (Okajima & Urushihara, 1995) Comb.n. [Thailand]
<i>Urothrips kobroi</i> sp.n. [Seychelles]
<i>Urothrips minor</i> Faure, 1933 [South Africa]
<i>Urothrips paradoxus</i> Bagnall, 1909 [Kenya to South Africa & Angola]
<i>Urothrips reedi</i> (Stannard, 1970) Comb.n. [widespread across Australia]
<i>Urothrips reticulatus</i> (Bournier, 1963) Comb.n. [Angola]
<i>Urothrips tarai</i> (Stannard, 1970) Comb.n. [India]

Key to species of *Urothrips*

1. Antennal segments I–VIII all distinct from each other with VII–VIII separate but closely joined *reticulatus*
- . Antennal segments VII–VIII fused without suture 2
2. Antennal segment III clearly distinct from segment IV 3
- . Antennal segment III broadly joined or fused to segment IV 5
3. Ocellar region of head broadly rounded (Fig. 1) *tarai*
- . Ocellar region of head prolonged over base of antennae (Fig. 4) 4
4. Antennal segments IV–V fused (Fig. 4) *junctus*
- . Antennal segments IV–V distinct from each other *gibberosa*
5. Ocellar region of head prolonged over base of antennae into two small rounded tubercles (Fig. 3); mesoepisternum with median longitudinal division *reedi*
- . Ocellar region of head broadly rounded, scarcely overhanging base of antennae (Fig. 5); mesoepisternum anterior margin entire 6
6. Antennal segments III–V fused with sutures indicated by constrictions (Fig. 6) *kobroi* **sp.n.**
- . Antennal segments III–V articulated but broadly joined (Fig. 2) *paradoxus*-group

Urothrips kobroi **sp.n.**

Female aptera. Body bicolored brown and yellow; mainly yellow except as follows: head, pronotum and mesonotum, fore legs, coxae of the second legs, basal and terminal antennal segment, and tip of tube dark brown (Figs 5, 7); abdominal tergites II–VIII each with a pair of light brown dots, one on either side and medially with weak brownish shadings; segment IX laterally with longitudinal brown shadings.

Head broadly rounded in front, without any longer setae on anterior margin; tuberculate dorsally; maxillary stylets deeply retracted to compound eyes (Fig. 5). Eyes with about 8 facets dorsally but only 2 facets ventrally near the antennal base. Antennae arising ventrally, with 5 visible segments; sutures between morphological segments III–V weakly indicated, VII and VIII fused into one unit (Fig. 6).

Pronotum with all setae small, epimeral setae scarcely distinguished (Fig. 5); fore tarsi with a sharply recurved hamus on external margin. Mesoepisternum anterior margin entire. Abdominal segment IX slightly shorter than tube, all major posterior setae minute; tube slender, straight sided (Fig. 7).

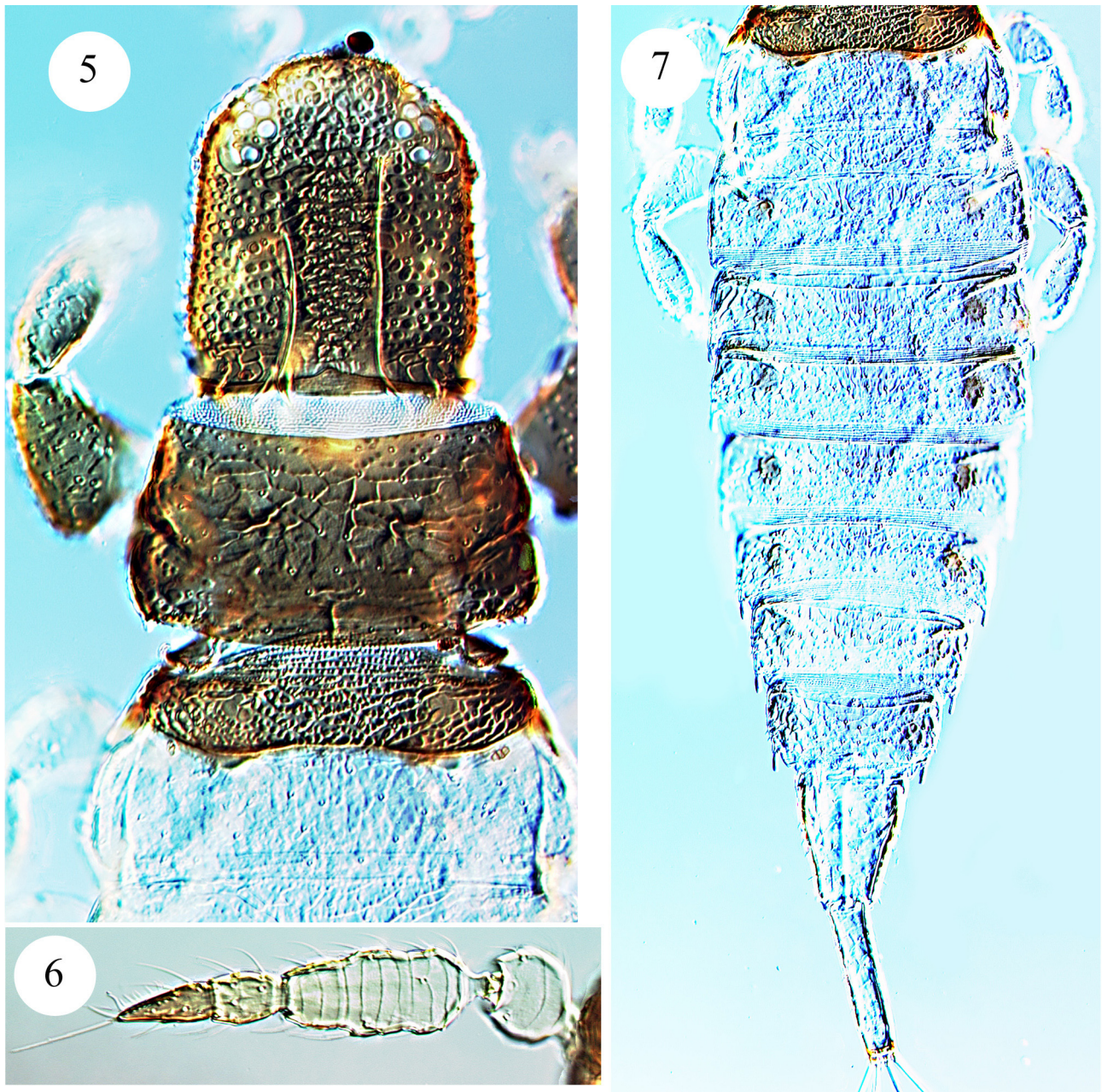
Measurements (holotype female, in microns). Body length 1140. Head, length 168; maximum width 145. Pronotum, length 100; median width 190; epimeral setae 5. Tergite VIII, length 50; maximum width 140. Tergite IX, length 98; basal width 87; distal width 45. Tube, length 118; median width 28; dorsal terminal setae 415; lateral terminal setae 430. Antennae, length of 5 visible segments: 22, 31, 73, 22, 34.

Derivatio nominis: This species is dedicated to Dr. Sverre Kobro (Bioforsk Plantehelse, Norway) to honor his scientific work on the order Thysanoptera.

Material studied: Holotype female, **Seychelles**, Praslin Island, from *Carex* sp., 10.xi.2012 (Sverre Kobro) in Senckenberg Museum, Frankfurt. Paratypes: Two females with same data as holotype, in the Natural History Museum, London and Collection Ulitzka.

Comments. The *paradoxus*-group comprises three species from South and East Africa, *bagnalli*, *minor* and *paradoxus*. These have been distinguished from each other on weak character states, including relative lengths of antennal segments VI–VII, and form of sculpture on the head.

They all have antennal segments III–V broadly joined but clearly articulated from each other. In contrast, these segments in *kobroi* are fused and non-articulated but with the constrictions between them distinct. Examination of these antennae suggested initially that this new species should be placed in *Biconothrips*, a genus known only from Australia. However, *B. reedi*, the only species in that genus, is remarkable amongst urothripines in having the mesoeusternum fully divided longitudinally in the midline. Moreover, the anterior margin of the head bears a pair of tubercles that overhang the first antennal segment (Fig. 3), and the terminal segment of the antennae is spindle-shaped, long and slender.



FIGURES 5–7. *Urothrips kobroi* sp.n. (5) head and thorax; (6) antenna; (7) abdomen.

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