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New Record of *Rhipidothripiella* Bagnall, 1932 (Thysanoptera, Aeolothripidae) from Ethiopia, the North East of Africa

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ABSTRACT

The species of *Rhipidothripiella turneri* (Moulton, 1930) is newly recorded from Ethiopia. This species is detail described, a list of 7 genera and 25 Aeolothripidae species in Africa is provided.

Keywords: Metanotal sculpture, sensorium, *Rhipidothripiella*, grasses

1. INTRODUCTION

More than 200 species of Aeolothripidae are recognized in 23 genera around the world, and more than 50% of them are included in the Holarctic genus *Aeolothrips* Haliday and Australian genus *Desmothrips* Hood. Seven monotypic genera were distributed in Africa (*Corynothripoides* Bagnall, *Euceratothrips* Hood, *Rhipidothripiella* Bagnall), Australia (*Andrewarthaia* Mound, *Erythridothrips* Mound & Marullo, *Lamprothrips* Moulton) and Asia (*Indothrips* Bhatti). Mound and Marullo, (1998) discussed the diversity of biologies amongst Aeolothripidae and provided a key of 36 species in 12 genera in Australia. Masumoto and Okajima, (2019) studied 3 genera and 10 species of Aeolothripidae in Japan. This family in Africa is poorly studied, most species were recorded in the last century and with few detailed informations.

Mound, (1968) revised Bagnall's collection and redefined several genera and a few species. Most Aeolothripidae species are distinguished by the linear sensoria on antennal segments III-IV and curved around the apex of the segment, still, members of the *Rhipidothrips* Uzel genus are marked by the sensoria retained only the distal curved portion, while some species of *Cycadothrips* Mound, *Dactuliothrips* Moulton and *Orothrips* Moulton segments III-IV posse two sensoria (Marullo and Mound, 1993). Metanotum sculpture with little difference among different genera in this family (from Laurence Mound's personal communications, 2024), the relationships of these genera are unknown. To provide enough information for further study about the Aeolothripidae species, the species of *Rhipidothripiella turneri* collected from *Calamagrostis epigejos* [Grass: Poaceae] is described.

2. MATERIALS AND METHODS

The specimens were collected in Haramaya University (9° 25' 23'' N, 42°02' 14'' E), Haramaya district, this area is located in the eastern part of Ethiopia, it is characterized by a sub-humid type of climate. The annual mean temperature is 9.9-24.18°C, whereas the annual mean rainfall ranges between 600-1260 mm. The short and main rain seasons extend from March to May and July to September, respectively (Sorecha, 2017). Thrips collection and slide preparation methods followed (Zhang et al., 2006). Specimens were observed with an Olympus BX53 System Microscope. Figures were made using an Olympus DP74 CCD with cellSens imaging software. Slide-mounted specimens are deposited at Yunnan Agricultural University, Kunming.

3. RESULTS AND DISCUSSION

***Rhipidothripiella turneri* (Moulton, 1930)**

Female. Macropterous. Body uniformly brown (Figure 1); antennae brown, III- IV yellow with apex of IV light brown (Figure 2G); fore wing with two dark cross bands alternating with two pale areas, the pale areas at base and sub-apex, clavus pale (Figure 2F); all legs dark brown; prominent body setae brown. Head longer than wide, slightly produced in front of eyes, with transverse close striae, postocular setae in two rows but irregularly arranged (Figure 2A); eyes extending posteriorly on ventral side; maxillary palp 3-segmented, II subdivided into five parts, the structures between the fourth and the fifth is distinct (Figure 2C). Antennal segments III–IV with sensoria vermicular, recurved and crossing around apex on one side and turn straight towards the base on the other side, sometimes sensorium on III with an interruption medially (Figure 2H), segment III slightly more extended than IV, VI-VII almost subequal (Figure 2G).

Figure 1 *Rhipidothripiella turneri.* Body of Female.

Pronotum is wider than long, smooth, with about 30 discal setae and three pairs of posteromarginal setae, one pair of posteroangular setae slightly longer than discal setae (Figure 2A). Mesonotum sculptured with closely transverse striae, with one pair of setae medially, anteromedian CPS absent (Figure 2D). Metascutum with weak reticulations medially, poster and lateral part sculptured with longitudinal striae, one pair of small setae near posterior, CPS present (Figure 2D). Spinula absent on both meso- and metasternum (Figure 2E). Fore tarsus with two stout setae (Figure 2I).

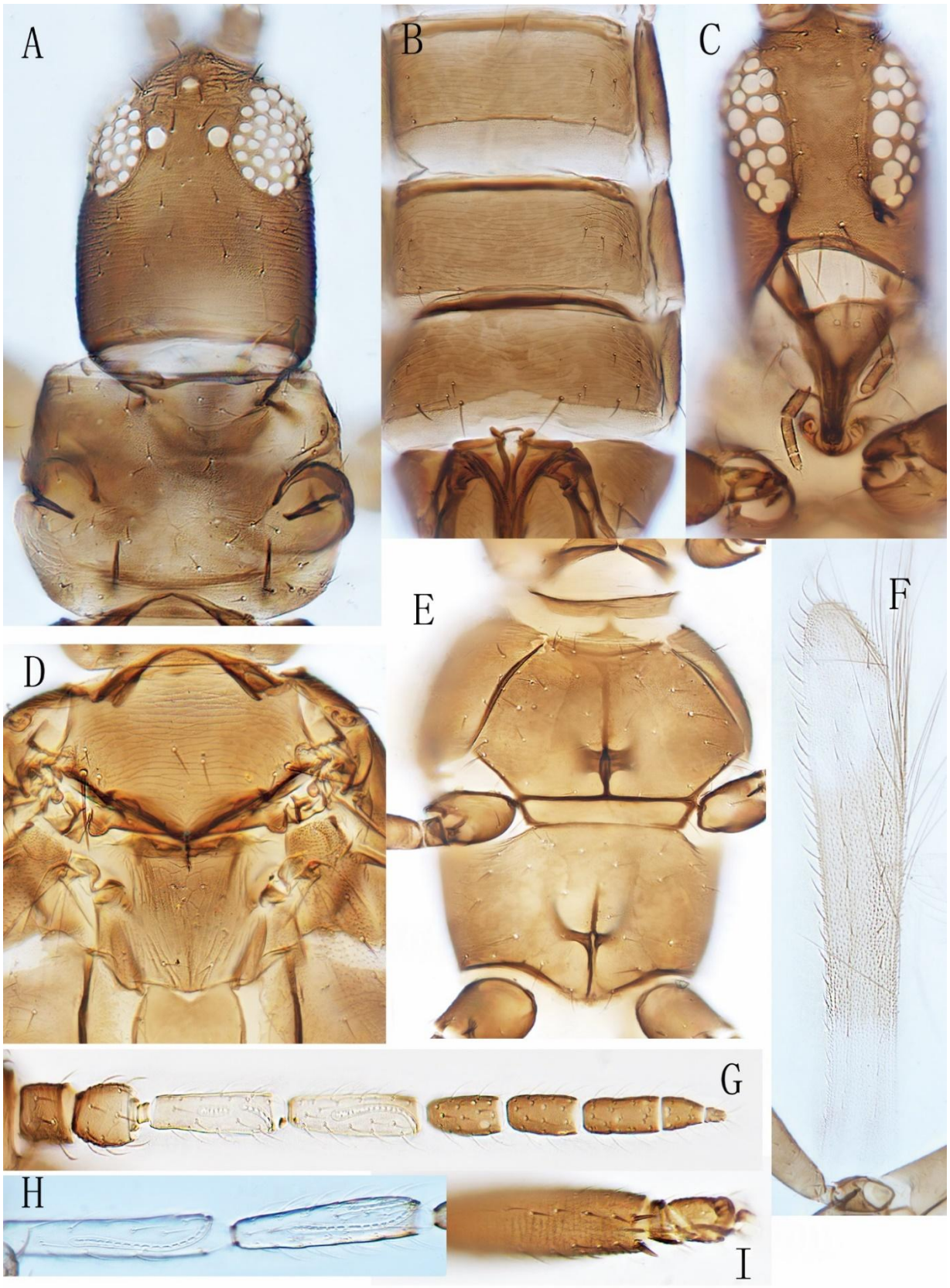

Figure 2 *Rhipidothripiella turneri.* A. Head and pronotum. B. Abdominal sternites V–VII. C. Ventral of head and pronotum. D. Mesonotum and metanotum. E. Mesosternum and metasternum. F. Fore wing. G. Antennae. H. Antennal segments III–IV. I. Fore tibiae.

Fore wing first and second vein with setal rows regular and complete, clavus with six anteromarginal setae (Figure 2F). Abdominal sternites I-VII with two pairs of posteromarginal setae, the setae at the posterior margin except segment I in front of margin; sternites II-IV each with two pairs of discal setae laterally, V–VII with four pairs of discal setae laterally; VII with two pairs of accessory setae between S1 and S2 (Figure 2B).

Materials examined

Ethiopia, Harar, Haramaya University Road; 9° 25' 23" N and 42° 02' 14" E; alt.2057m; 11.X.2022; Ntirenganya Elie leg.; 7 ♀, collected from *Calamagrostis epigejos* [Poaceae].

Discussion

Moulton, (1930) described *Rhipidothrips turneri* species from South Africa with only a single male specimen. Bagnall, (1932) built *Rhipidothripiella* genus and erected *turneri* as a type species. This monotypic genus was related to *Allelothrips* Bagnall than *Rhipidothrips* Moulton with pronotum has no posteroangular setae, but the fore wings were not as Bagnall stated, and the metanotal sculpture is quite different from that of *Allelothrips* (Bagnall, 1932; Mound, 1968). The relationship of this genus is not clear, and more collections and profound studies are needed. This species is newly recorded in Ethiopia. The specimens were collected from all parts of *Calamagrostis epigejos* plants, and in association with leave mites, which led to the predatory feeding habits suspect.

4. CONCLUSION

A list of 7 genera and 25 Aeolothripidae species in Africa are provided (Table 1), including *Rhipidothripiella turneri* Moulton, (1930) was newly recorded in Ethiopia.

Table 1 Aeolothripidae species from Africa

Genera	Species	Distribution	References
Aeolothrips Haliday, 1836	*arnebiae* Priesner, 1948	Sudan	Priesner, 1948
	brevicornis Bagnall, 1915	South Africa	Moulton, 1930 Mound, 1968
	collaris Priesner, 1919	Tunisia	Kort et al., 2020 Priesner, 1938
	deserticola Priesner, 1929	Egypt, Iran Israel Morocco	Priesner, 1948
	fasciatus (Linnaeus, 1758)	South Africa	Moulton 1936
	intermedius Bagnall, 1934	Tunisia	Kort et al., 2020
	scabiosatibia Moulton, 1930	South Africa	Moulton, 1930
	tenuicornis Bagnall, 1926	Tangier	Mound, 1968
	variicornis Bagnall, 1932	Tanganyika	Bagnall, 1932 Mound, 1968
	wittmeri Priesner, 1935	Egypt	Priesner, 1948
Allelothrips Bagnall, 1932	*brunneus* (Faure, 1941)	South Africa	Faure, 1941
	cameroni (Bagnall, 1932)	Sudan	Bagnall, 1932
	cincticornis Bagnall, 1932	Sudan	Bagnall, 1932

	talithae (Faure, 1941)	South Africa	Faure, 1941
	tenuicornis (Bagnall, 1932)	Sudan	Mound, 1968
	vilardeboi (Bournier & Bournier, 1979)	South Africa	Mound and Marullo, 1993
Audiothrips Moulton, 1930	*perplexus* Moulton, 1930	South Africa	Mound and Marullo, 1993
	senckenbergiana Mound & Marullo, 1993	South Africa	Mound and Marullo, 1993
Corynothripoides Bagnall, 1926	*marginipennis* Bagnall, 1926	Sierra Leone, Zaire,Congo, Rwanda, Uganda	Mound, 1968 Bagnall, 1926 Mound and Reynaud, 2005
Franklinothrips Back, 1912	*atlas* Hood, 1957	Congo	Hood, 1957
	megalops (Trybom, 1912)	South Africa	Bagnall, 1926 Moulton, 1930 Kort et al., 2020
	vespiformis (Crawford, 1909)	South Africa	Bagnall 1926 Kort et al., 2020
	tenuicornis Hood, 1915	South Africa	Bagnall, 1926
Mymarothrips Bagnall, 1928	*ritchianus* Bagnall, 1928	Tanzania	Bagnall, 1928
Rhipidothripiella Bagnall, 1932	*turneri* (Moulton, 1930)	South Africa Ethiopia	Bagnall, 1932 Present paper

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Author contributions

Conceptualization: Hongrui Zhang; Investigation: Ntirenganya Elie; Methodology: Xiran Tao; Resources: Ntirenganya Elie; Supervision: Hongrui Zhang; Project administration: Yajin Li, Ntirenganya Elie; Software: Xiran Tao; Writing – original draft: Yajin Li; Writing – review and editing: Ntirenganya Elie, Hongrui Zhang. All authors reviewed the manuscript.

Ethical approval & declaration

In this article, as per the animal regulations followed in University of Rwanda, Kigali, Rwanda; Haramaya University, Ethiopia & Yunnan Agricultural University, Yunnan. China, the authors observed & recorded the species *Rhipidothripiella turneri* Moulton, (1930) newly from Ethiopia. Slide-mounted specimens are deposited at Yunnan Agricultural University, Kunming, China. The Animal ethical guidelines are followed in the study for species observation, identification & experimentation.

Conflicts of interests:

The authors declare that there are no conflicts of interests.

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Data and materials availability

All data associated with this study are present in the paper.

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