



## Note on Asilidae (Diptera) collected near Mount Kilimanjaro, Tanzania

Guy TOMASOVIC<sup>1</sup> & Wouter DEKONINCK<sup>2</sup>

<sup>1</sup> Faculté universitaire des Sciences agronomiques, Unité d'Entomologie fonctionnelle et évolutive, Passage des Déportés, 2, B-5030 Gembloux, Belgium (e-mail: guytomasovic@yahoo.fr)

<sup>2</sup> Royal Belgian Institute of Natural Sciences, Scientific Service Heritage/O.D. Taxonomy and Phylogeny, Vautierstraat 29, 1000 Brussels, Belgium

### Abstract

We present a list of five species of Asilidae collected in February-March 2018 near Mount Kilimanjaro, Tanzania. Three species are new for science and are described here: *Pegesimallus uhuruensis* **sp. nov.**, *Ommatius uhuruensis* **sp. nov.** and *Oligopogon kilimanjaroensis* **sp. nov.** Moreover, the species *Machimus ugandiensis* Ricardo, 1919 was recorded for the first time in Tanzania.

**Keywords:** Afrotropical, distribution, new record, new species, taxonomy

### Samenvatting

We presenteren een lijst met vijf soorten Asilidae verzameld in februari-maart 2018 nabij de Kilimanjaro, Tanzania. Drie soorten zijn nieuw voor de wetenschap en worden hier beschreven: *Pegesimallus uhuruensis* **sp. nov.**, *Ommatius uhuruensis* **sp. nov.** en *Oligopogon kilimanjaroensis* **sp. nov.** Bovendien werd de soort *Machimus ugandiensis* Ricardo, 1919 voor het eerst geregistreerd in Tanzania.

### Résumé

Nous présentons une liste de cinq espèces d'Asilidae récoltées en février-mars 2018 près du mont Kilimandjaro, en Tanzanie. Trois espèces sont nouvelles pour la science et sont décrites ici: *Pegesimallus uhuruensis* **sp. nov.**, *Ommatius uhuruensis* **sp. nov.** et *Oligopogon kilimanjaroensis* **sp. nov.** De plus, l'espèce *Machimus ugandiensis* Ricardo, 1919 est signalée pour la première fois de Tanzanie.

### Introduction

The Afrotropical Asilidae includes 1700 species belonging to 148 genera. Of these 148 genera 91 (61.5%) are endemic to the Afrotropical Region and 13 (8.8%) other genera have their greatest species diversity and centre of distribution in the Afrotropics (LONDT & DIKOW, 2017). An updated checklist of Asilidae of Tanzania can be found on <https://asiloidflies.si.edu> (DIKOW, 2001–2020) where 128 species are mentioned for the country.

In February-March 2018, Wouter Dekoninck collected 40 specimens of Asilidae near Mount Kilimanjaro, Tanzania. The present paper aims to list and comment the species encountered and describe these new to science.

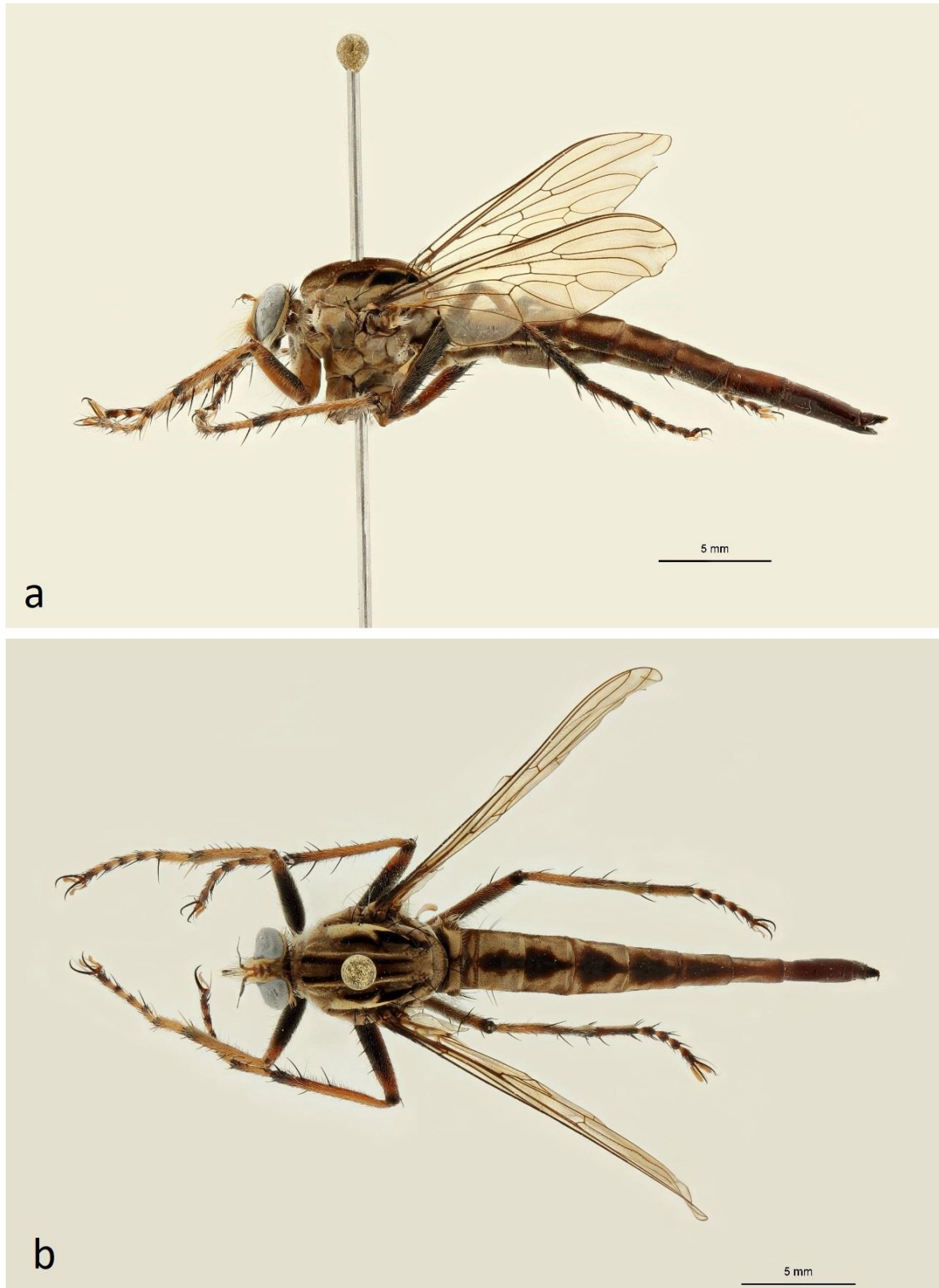


Fig. 1. Female of *Alcimus anax*, Tanzania, Machame. Road to Machame Gate, 03°12'S 37°13'E, 1505 m, 01.III.2018. a, lateral view; b, dorsal view. © Florence Trus.

## Material and methods

All specimens are stored in the entomological collections of the Royal Belgian Institute of Natural Sciences in Brussel, Belgium. The general information on the biology of the different genera originates from LONDT & DIKOW (2017). Information on the distribution of the majority of the species was found in LONDT (2007).

Acronyms:

RBINS: Royal Belgian Institute of Natural Sciences, Brussel, Belgium

SMNS: Staatliches Museum für Naturkunde, Stuttgart, Germany

## Results

### Subfamily Apocleinae Papavero, 1973

LONDT (2005) provides an annotated key of the 19 genera of the Afrotropical Apocleinae.

#### Genus *Alcimus* Loew, 1848

A medium-sized genus of very large species, with five representatives in Tanzania. Species of this genus inhabit grassland, savanna and woodland habitats and adults perch on the ground, river banks, rocks, or at the tips of shrubs and bushes. No identification key for Afrotropical species is currently available. *Alcimus anax* Speiser, 1924 was collected on the Kilimanjaro.

#### *Alcimus anax* Speiser, 1924

(Fig. 1)

*Alcimus anax*: SPEISER 1924: 97

MATERIAL EXAMINED: TANZANIA, 1♂, 1♀, Machame. Road to Machame Gate, 03°12'S 37°13'E, 1505 m, 01.III.2018 (Fig. 1a,b); 1♂, Mweka Road, Moshi Mweka farm Soonre, 03°15'S 31°19'E, 1290m, 26.II.2018 and idem, 1♂, 27.II.2018; 1♀, Mweka training field bee pollinator course, 03°15'S 37°20'E, 1300 m, idem, 1♀, 21.II.2018. All RBINS, I.G. 33.892, leg. Dekoninck W., GTI project.

### Subfamily Asilinae Latreille, 1802

#### Genus *Machimus* Loew, 1849

A genus of 187 medium-sized species with thirteen species occurring in the Afrotropics and three species in Tanzania. The genus probably inhabits savanna and woodland habitats and adults perch on the ground and near shrubs and bushes. This genus requires a modern revision.

#### *Machimus ugandiensis* Ricardo, 1919 new record

(Figs 2, 3)

*Machimus ugandiensis*: RICARDO (1919 p. 56–58) provides a detailed description of the species and OLDROYD (1970: 310) illustrates the male genitalia of this species.

MATERIAL EXAMINED: TANZANIA, 1♂, 1♀, Machame. Road to Machame Gate, 03°11'S, 37°40'E, 1780 m, 01.III.2018 (Fig. 2a, b). 1♂, 1♀, Mweka. Road to Kilimanjaro, 03°13'S, 37°20'E, 1553 m, 28.II.2018. All RBINS, I.G. 33.892, leg. Dekoninck W., GTI project.

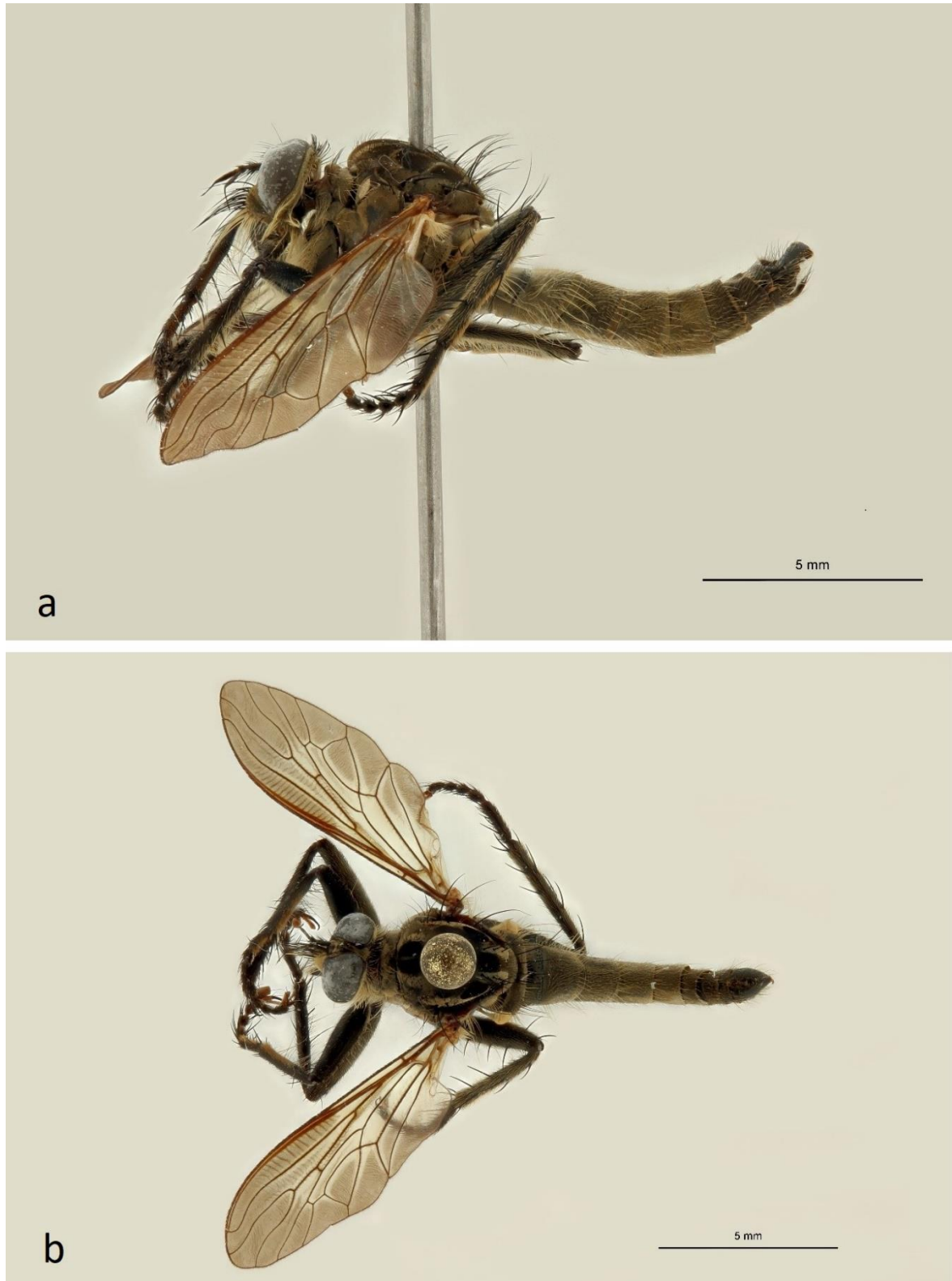


Fig. 2. Male of *Machimus ugandiensis*, Tanzania Machame. Road to Machame Gate, 03°11'S, 37°40'E, 1780 m, 01.III.2018. a, lateral view; b, dorsal view. © Florence Trus.

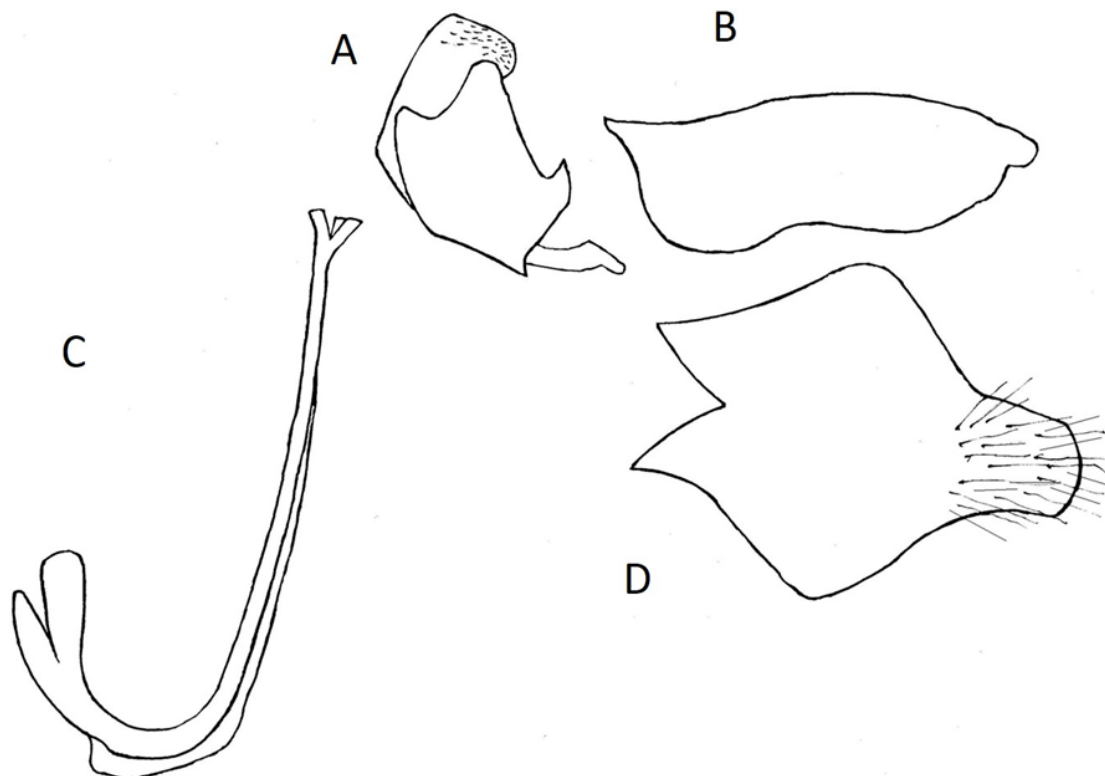


Fig. 3. Male genitalia of *Machimus ugandiensis*, Tanzania Machame. Road to Machame Gate, 03°11'S, 37°40'E, 1780 m, 01.III.2018 with A, gonocoxite and dististylus, B, epandrium, C, phallus and D, hypandrium.

### Subfamily Dasypogoninae Macquart, 1838

#### Genus *Pegesimallus* Loew, 1851

A large genus of small to medium sized species, with 46 species in the Afrotropics and six species recorded in Tanzania. The genus inhabits forest and savanna and adults perch on the ground, within grass or within and at the tips of shrubs. Oviposition takes place in sandy soils. LONDT (1980) revised the genus and provided an identification key to the 46 Afrotropical species. In 2008, TOMASOVIC studied the species of *Pegesimallus* from western Africa and the Democratic Republic of Congo.

#### *Pegesimallus uhuruensis* sp. nov.

(Figs 4–6)

MATERIAL EXAMINED: Holotype: 1♂, TANZANIA, Mweka farm, Road Moshi Mweka farm Soon(r)e, 03°15'S 37°19'E, 1290 m, 26.II.2018 (Figs 4a, b).

Paratypes: 5♂♂, 10♀♀, TANZANIA, Mweka farm, Road Moshi Mweka farm Soon(r)e, 03°15'S 37°19'E, 1290 m, 26.II.2018, 2♂♂, 2♀♀, Machame, Road to Machame Gate, 03°12'S 37°13'E, 1505 m, 01.III.2018. All RBINS, I.G. 33.892, leg. Dekoninck W., GTI project.

DIAGNOSIS. Small sized species. Head with face yellowish, mystax with two stout and long setae. Thorax grey-green mat. Wings pale and hyaline. Legs and abdomen mostly reddish some specimens have small silver pruinose spots on the last tergites.

DESCRIPTION. 9–10 mm long.

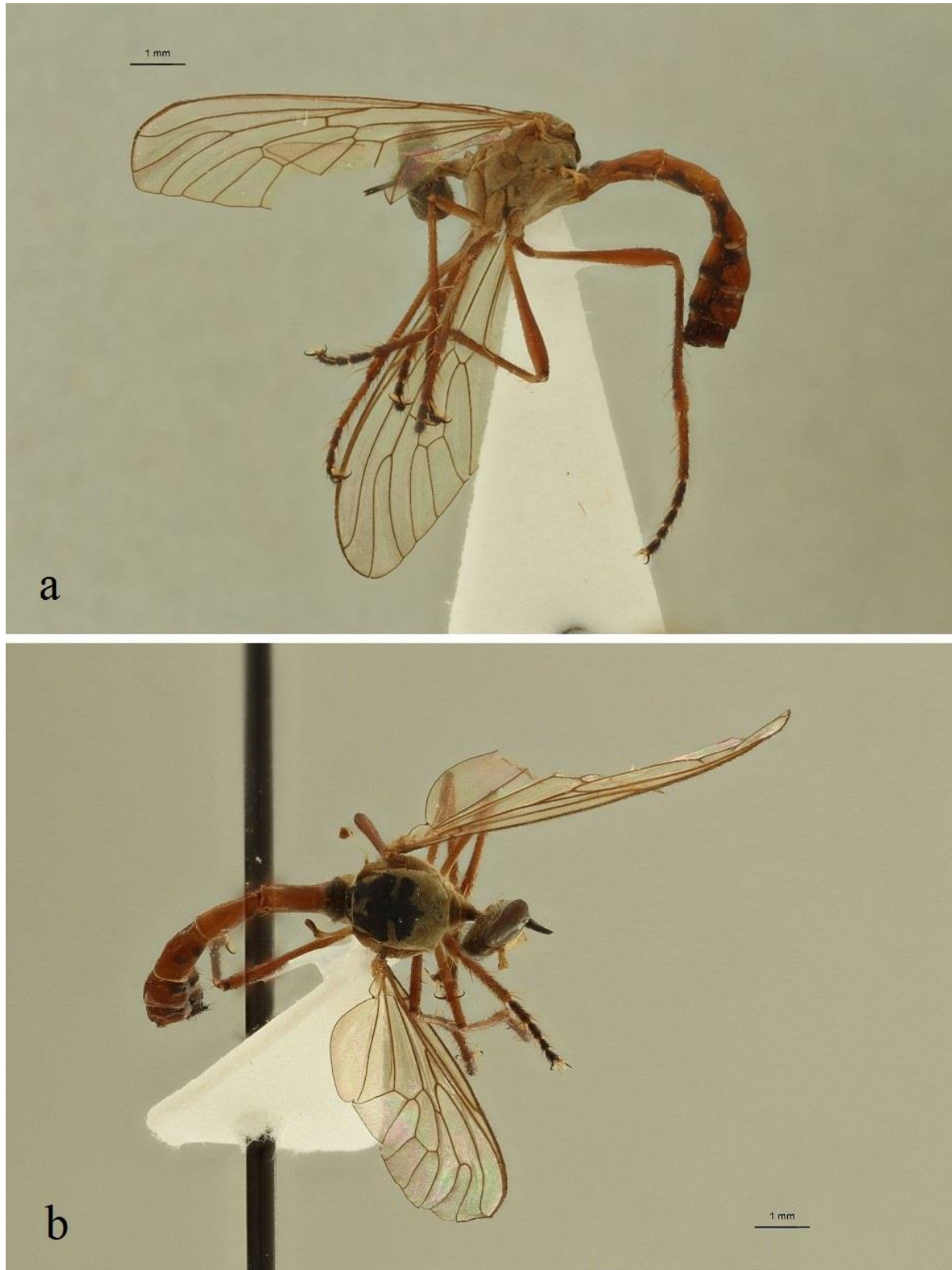


Fig. 4. Holotype of *Pegesimallus uhuruensis* sp. nov., Tanzania, Mweka farm, Road Moshi Mweka farm Soon(r)e, 03°15'S 37°19'E, 1290 m, 26.II.2018. a, lateral view; b, dorsal view. © Florence Trus.

*Head.* (Fig. 5) Face flat with yellowish tomentum, mystax with two long, stout setae. Antennae, scape and pedicel pale yellowish, postpedicel mostly brown, with short straight black setae, scape same length as pedicel, postpedicel same length as the two basal segments combined. Frons black brown, narrower than the width of one eye. Occiput with greyish tomentum and short, fine black setae and two long occipital black setae. Palpi black with long and black setae. Proboscis black same length as antennae with some black and fine hairs on the middle ventral part and very short white hairs at the tip.



Fig. 5. Head of a male paratype of *Pegesimallus uhuruensis* sp. nov. © Florence Trus.

*Thorax.* Pronotum, scutum and scutellum grey-green. Setae: 1 white notopleural, 1 white supra-alar, 1 black post-alar, and on the central part, parallel straight lines of very short, fine and black hairs. Scutellum with laterally some fine black hairs on the disc. Pleura with pale greyish tomentum and some short straight black katatergal setae.

*Legs.* Orange, long and thin, covered with very short black setae. Tibiae with some fine and white setae.

*Wings.* Pale hyaline. Haltere whitish brown at the tip.

*Abdomen.* Tergites orange with laterally one black strip and 1–2 white setae. Tergite II posteriorly black with a semicircular arch. Sternites orange with short black setae.

*Male genitalia.* (Fig. 6) black and orange. Gonopode with numerous straight and shorth black setae on the ventral lobe.

**ETYMOLOGY.** Species named after peak “Uhuru” on Kilimanjaro.

**REMARK.** The very closely related sister-species *Pegesimallus oralis* (Wulp, 1884) shows considerable individual and geographical variation. The male genitalia are useful to identify this species and illustrated by LONDT (1980, Figs 82–83). The postpedicel of *P. oralis* is yellow-brown and the thorax pale yellow-green. *P. uhuruensis* sp. nov. has a habitus with as

particularities the postpedicel mostly brown, the thorax uniformly grey-green and the gonocoxite with the apex covered by dense straight black setae.

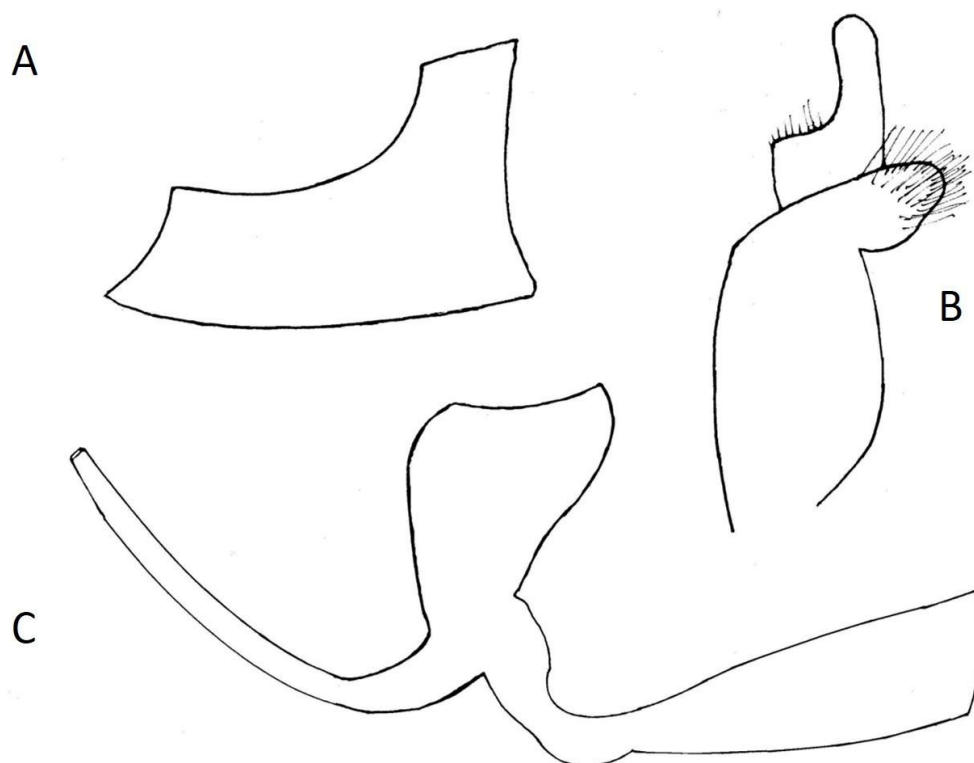


Fig. 6. Male genitalia of *Pegesimallus uhuruensis* sp. nov. Tanzania, Mweka farm, Road Moshi Mweka farm Soon(re), 03°15'S 37°19'E, 1290 m, 26.II.2018 with A, epandrium; B, gonocoxite and dististylus; C, phallus.

### Subfamily Ommatiinae Hardy, 1927

### Genus *Ommatius* Wiedemann, 1821

A very large genus with 70 species in the Afrotropical Region with nine species recorded in Tanzania. The genus inhabits grassland, savanna and woodland habitats and adults perch within grass and at the tips of shrubs, bushes and trees.

### *Ommatius uhuruensis* sp. nov.

(Figs 7–9)

MATERIAL EXAMINED: Holotype: TANZANIA, 1♂, Mweka Road to Kilimanjaro, 03°13'S 37°20'E, 1553m, 28.II.2018 (Fig. 7).

Paratypes: 4♂♂, 5♀♀, same as the type, 3♂♂, 5♀♀, at the Gate of Kilimanjaro National Park, 03°13'S 27°20'E, 1629m, 25.II.2018.

All RBINS IG 33.892, leg. Dekoninck W., GTI. Project.

DIAGNOSIS. Small black and slender species. Head: face yellowish, mystax with on the upper half part two lines of black setae and on the lower half part with a tuft of yellowish setae. Thorax with marks of grey-yellowish tomentum. Wings hyaline, covered completely by microtrichia. Legs black and yellow.

DESCRIPTION. 7 mm long.





Fig. 7. Holotype of *Ommatius uhuruensis* sp. nov. Tanzania, 1♂, Mweka Road to Kilimanjaro, 03°13'S 37°20'E, 1553 m, 28.II.2018. a, lateral view; b, dorsal view. © Florence Trus.

**Head.** (Fig. 8) Face narrow and flat with yellowish tomentum, mystax with two lines of black setae on upper half part and a tuft of yellowish setae on lower half part. Antennae black, scape and pedicel short and same length, pedicel with short black setae, postpedicel same length as pedicel, postpedicel shorter than the two basal segments combined. Style plumose and longer than the three basal segments combined. Frons with yellow tomentum. Ocellar tubercle with two short and black setae. Occiput with greyish tomentum, some relatively long, curved and black occipital setae. Palpi black with white fine setae. Proboscis black and with a tuft of white hairs on the base ventral and fine white hairs on the middle ventral part.



Fig. 8. Head of *Ommatius uhuruensis* sp. nov. Tanzania, 1♂, Mweka Road to Kilimanjaro, 03°13'S 37°20'E, 1553 m, 28.II.2018. © Florence Trus.

**Thorax.** Black. Anteprenotum with sparse fine, white hairs. Scutum with spots of grey-yellowish tomentum and with only 1 black notopleural seta. Scutellum with thick grey-yellowish tomentum and 2 long, fine black scutellar setae. Pleura with pale greyish tomentum and sparse fine and white hairs, highly visible 1 anepimeral seta long and black. Katatergal setae black and stout on the middle, fine and yellowish laterally.

**Legs.** Femora: black dorsally, yellow ventrally, mesothoracic with some black setae on the anterior part, metathoracic with several yellowish setae on the ventral part. Tibiae yellowish; mesothoracic and metathoracic brown on the tip and with long and fine black setae. Tarsi black with black chaetotaxy.

**Wings.** Hyaline and covered by microtrichia. Haltere white.

**Abdomen.** Tergites black, tergite I with long, fine and white setae laterally, tergites II–IV with 1 or 2 fine white setae. Sternites black with sparse long and fine white hairs.

**Male genitalia.** (see Fig. 9) Epandrium oblong with a pointed process at the dorsal margin, and deep concavity distal to it. Two stout and long setae on the ventral part. Gonocoxite long and rectangular, apically smaller and concave at the end. Dististylus long and slightly curved with

pointed apex. Phallus, large, concave on the dorsal part, apodeme long and slender, distiphallus strongly curved with pointed apex. All parts black.

ETYMOLOGY. Species named after peak “Uhuru” on Kilimanjaro.

REMARK. The species belongs to the species-group of *O. longipennis* Lindner, 1955 with 7 species (SCARBROUGH *et al.*, 2003) which are almost confined to the mountainous area in East Africa, extending from eastern Zimbabwe to the south and along the Rift Valley up to Ethiopia to the north. Three species: *O. carbonarius* Scarbrough, Marasci & Hill, 2003, *O. curtus* Scarbrough, Marasci & Hill, 2003 and *O. marginosus* Marasci & Hill, 2003 are known from Tanzania (SCARBROUGH *et al.*, 2003). *Ommatius uhuruensis* sp. nov. can be easily separated from the other species by comparing the male genitalia.

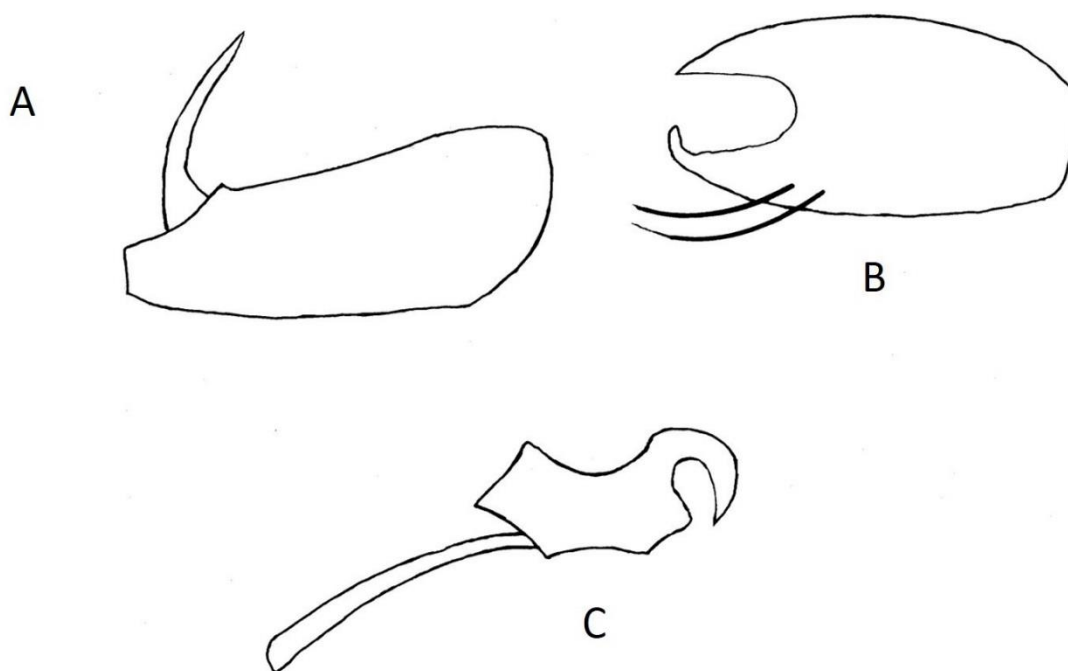


Fig. 9. Male genitalia of *Ommatius uhuruensis* sp. nov. Tanzania, 1♂, Mweka Road to Kilimanjaro, 03°13'S 37°20'E, 1553 m, 28.II.2018 with A, gonocoxite and dististylus; B, epandrium and C, phallus.

DIAGNOSIS of *longipennis* species-group (following SCARBROUGH *et al.*, 2003: 234). Small to medium-sized (9.5–16.3 mm), black species with moderate to narrow face; flagellum usually 2.0–2.6× longer than wide; wing with cell R4 long, narrowly triangular, base just before beyond apex of discal cell; vein R4 strongly arched basally in male (female only slightly arched), slightly angled posteriorly beyond middle to wing margin. Femora mostly or entirely black. Middle femur with a row of anteroventral bristles. Hind femur with two ventral rows of short setigerous bristles. Terminalia, male: epandrium elongated and slender, not significantly wider medially, apical third often curved dorsally; digitate process present ventrally (except in *Ommatius carbonarius*); gonostylus usually narrow in apical third to half; gonocoxite wide apically, apex rounded, truncate, or oblique, apical sinus absent; distiphallus usually short, less than length of aedeagal sheath, tubular, usually slightly compressed laterally. Terminalia, female: sternum 8 with horn-like processes (except *O. acornutus*, *O. curtus* and *O. digitus*); spermatheca long and narrow, recurved, slightly swollen at middle or apically, median gland usually slightly longer and more swollen than lateral glands.

REMARK 2. Members of the *longipennis* species-group, are all of Afrotropical groups of *Ommatius*, are primarily recognized by the combined characters of the terminalia: 1) the slender ventral process on the epandrium (except *O. carbonarius*); 2) a laterally compressed aedeagus and short, slightly curved distiphallus that is tapered uniformly from a wide base to narrow apex; 3) a slender spermatheca are unique to this species-group. The femora are largely or entirely black. Other members of this genus have an elongated epandrium with a simple rounded or pointed apex or with a deep apical notch, and a more oval aedeagus with an elongated distiphallus with a shape that is group specific. The typical spermatheca is usually recurved, sometimes looped, basally with sides converging uniformly from a wide base to narrow apex. Further, members of the *longipennis* species-group differ from those of the subgenus *Metommatius* by 1) the presence of tomentum on the entire surface of the mesonotum; 2) presence of scutellar marginal bristles; 3) presence of ventral bristles on the middle and hind femora, and 4) a shorter, slightly curved distiphallus, and a simple, elongated spermatheca. They differ from those of the *flavipennis* species-group (SCARBROUGH *et al.*, 2003) in 1) the sparse vestiture of the face and mesonotum; 2) the short, slightly laterally compressed distiphallus and with a ventral carina; 3) the apex of the distiphallus is narrow, neither flared apically nor wider dorsally than laterally, and 4) the black femora. Though members are superficially similar to those of the *sinuatus* species-group, they differ by 1) mostly entirely black femora; 2) presence of anteroventral bristles on the middle femur; 3) presence of a posteroventral row of bristles on the hind femur, and 4) the combination of characters of the male genitalia.

### Subfamily Stenopogoninae Hull, 1962

#### Genus *Oligopogon* Loew, 1847

The genus *Oligopogon* is mostly in the Palaearctic and western Afrotropical regions (GELLER-GRIMM & HRADSKY, 2003; TOMASOVIC & DE BAKKER, 2010). All species from Africa were reviewed by LONDT (2014) who gave a key for the 31 Afrotropical species as well as details on their distribution. Only one species *O. platypteron* Londt, 2014 is present in Tanzania (LONDT, 2014).

They are small-sized species and inhabit forest (margins), grassland and savanna habitats and adults perch on the ground, within or at the tips of grass, shrubs, bushes and trees.

#### *Oligopogon kilimanjaroensis* sp. nov.

(Figs 10–11)

MATERIEL EXAMINED: Holotype: 1♂, TANZANIA, Mweka farm, Road Moshi Mweka farm Soon(r)e, 03°15'S 37°19'E, 1290m, 26.II.2018, IG 33.892, RBINS, leg. Dekoninck W., GTI project (Fig. 10).

DIAGNOSIS. Very small slender shiny black species. Head wide, style of antennae plumose. Wings clear. Legs black-brown.

DESCRIPTION. 7 mm long.

*Head:* (Fig. 11) Face slightly narrower than one eye and flat with brown pruinosity, mystax not bushy and with fine black setae, lines of black setae on upper half and a tuft of yellowish setae on lower half. Antennae black, scape and pedicel short and of same length, pedicel with short black setae, postpedicel flattened twice as long as the two basal segments combined and covered with felt. Style short and equipped with short black setae. Frons with brown tomentum. Three apruinose spots behind the antennae. Ocellar tubercle stout with two long and two short

black setae. Occiput with yellow-brown tomentum and one stripe of white tomentum on the lateral occipital region and 2 lateral and triangular brown spots on the superior part. Occipital setae black, lower occipital hairs white. Palpi black with white fine setae. Proboscis black and with a tuft of white hairs on the base of ventral part.



Fig. 10. Holotype of *Oligopogon kilimanjaroensis* sp. nov., Tanzania, Mweka farm, Road Moshi Mweka farm Soon(r)e, 03°15'S 37°19'E, 1290 m, 26.II.2018. a, lateral view; b, dorsal view. © Florence Trus.



Fig. 11. Head of holotype of *Oligopogon kilimanjaroensis* sp. nov., Tanzania, Mweka farm, Road Moshi Mweka farm Soon(r)e, 03°15'S 37°19'E, 1290 m, 26.II.2018. © Florence Trus.

**Thorax:** Black. Anterior antepronotum with fine and pale setae. Postpronotal lobe apruinose, shiny brown. Scutum with dull brown pruinose, one central U-shaped and laterally two large spots apruinose. Only 2 black notopleural setae. Scutellum apruinose, shiny brown with a black stripe posteriorly, scutellar setae pale, very fine and not easily distinguishable. Pleura greyish and covered by shorth flattened white hairs, katatergal setae white, fine and long.

**Legs:** Femora black dorsally, brown ventrally with white setae. Tibiae and tarsi mostly brown with black setae.

**Wing:** Hyaline, microtrichia entirely lacking. Haltere white.

**Abdomen:** Tergites shiny black, tergite I with long, fine and white lateral setae, tergite II-IV with 1 or 2 fine white lateral setae. Sternites clear brown with sparse long and fine white hairs.

**Male genitalia:** Brown [not examined in detail due to technical reasons].

**ETYMOLOGY:** Species named after the mountain ridge Kilimanjaro, where it was found on an altitude of 1290 m.

**REMARK.** This new species is a species of the group of 5 species with spotless wings, (see key for the Afrotropical species of the genus *Oligopogon* by LONDT (2014: 312–315). This species is close to *O. nitidus* Eflattoun, 1937, a species with a large distribution in southern, central and east Africa, but with a different habitus: face with brown pruinose, postpedicel flattened, the scutum shiny black with dark brown pruinose, the scutellum shiny brown and apruinose, the femora bicolored and the abdomen shiny black.

### Conclusion

Despite the small number of only 40 specimens, we have found representatives of 5 of the 10 subfamilies of Asilidae of the world (GELLER-GRIMM, 2003) in this collection from Tanzania.

This large subfamily diversity in such a small number of specimens collected and the fact that amongst them 3 new species for science and one new species for Tanzania were discovered, might indicate that the number of Asilidae species of this country is high and so far, underexplored.

### Acknowledgements

Thanks to Ludovic Nicolas (SRBE-RBINS) for mounting the specimens, Florence Trus (RBINS) for the nice pictures of the RBINS specimens, Daniel Whitmore (SMNS) for sending us the picture of the holotype of *Machimus schuezi* which we used for our study, and Jurate De Prins (SRBE-KBVE) for reviewing an earlier version of the manuscript. Alain Pauly and Jean-Luc Boevé are acknowledged for their help in the organisation of the GTI project and expedition and their company during the expedition. We want to thank Patrick Grootaert for his useful comments on an earlier version of the manuscript.

This paper is a result of the project ‘Training course on Hymenoptera and other pollinators in Tanzania’ MIS – 2017000474, supported through a grant issued by the capacity building Programme of the Belgian Global Taxonomic Initiative National Focal Point that runs under the CEBioS programme with financial support from the Belgian Directorate-General for Development Cooperation (DGD).

### References

- DIKOW, T., 2001–2020. - Asiloid Flies: deciphering their diversity and evolutionary history. <https://asiloidflies.si.edu/> [accessed 08 January 2021].
- GELLER-GRIMM F., 2003. - A world catalogue of the genera of the family Asilidae (Diptera). *Studia dipterologica*, 10(2): 473–526.
- GELLER-GRIMM F. & HRADSKÝ M., 2003. - The genus *Oligopogon* Loew, 1847 (Diptera: Asilidae) in the Palaearctic Region, including the description of new species and comments on the placement of this genus. *Studia Dipterologica*, 10(1): 165–179.
- LONDT J.H., 1980. - Afrotropical Asilidae (Diptera) 4. The genus *Pegesimallus* Loew, 1858 (= *Lagodias* Loew, 1858; *Neolaparus* Williston, 1889) including species from other zoogeographical regions and the descriptions of two new genera *Brevirostrum* and *Caroncoma*. *Annals of the Natal Museum*, 24: 233–347.
- LONDT J.H., 2005. - An annotated key to the genera of Afrotropical Apocleinae, with descriptions of six new genera (Diptera: Asilidae). *Tijdschrift voor Entomologie*, 148: 39–62.
- LONDT J.H., 2007. - Catalogue of the Afrotropical Asilidae. Database of Asilidae. [www.geller-grimm.de/asilidae.htm](http://www.geller-grimm.de/asilidae.htm) [accessed 28 October 2020].
- LONDT J.H., 2014. - A revision of Afrotropical *Oligopogon* Loew, 1847 (Diptera: Asilidae) with the description of eighteen new species. *African Invertebrates*, 55(2): 269–322.
- LONDT J.H., & DIKOW T., 2017. - Asilidae (Assassin Flies or Robber Flies). In: Kirk-Spriggs A.H. & Sinclair B.J. (eds.). - *Manual of Afrotropical Diptera. Volume 2. Nematocerous Diptera and lower Brachycera. Suricata*. South African National Biodiversity Institute, Pretoria, 1097–1182.
- OLDROYD H., 1970. - Studies on African Asilidae. I. Asilidae of the Congo Basin. *Bulletin of the British Museum (Natural History). Entomology Series*, 24: 209–334.
- RICARDO G., 1919. - Notes the Asilidae: subdivision Asilinae. *The Annales and Magazine of Natural History*, 9(3): 44–79.
- SCARBROUGH A.G., MARASCIA C. & HILL H.N., 2003. - The Afrotropical species of the genus *Ommatius* Wiedemann, 1821 (Diptera: Asilidae): *longipennis* and *sinuatus* species-groups. *African Entomology*, 11: 233–259.
- TOMASOVIC G., 2008. - Etude sur les espèces du genre *Pegesimallus* Loew, 1858, du Centre et Ouest Africain (Diptère: Asilidae). *Bulletin S.R.B.E./K.B.V.E.*, 144: 144–156.
- TOMASOVIC G. & DE BAKKER D., 2010. - Asilidae dans la canopée en Réserve Biosphère de Luki (Mayombe, Bas-Congo, République Démocratique du Congo) (Diptera: Brachycera). *Bulletin S.R.B.E./K.B.V.E.*, 146: 53–61.