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The African species of the subgenus *Tipula* Linnaeus, 1758 (Diptera, Tipulidae)

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ABSTRACT

An account is given on the African species of the subgenus *Tipula* (Diptera, Tipulidae) present in the Institute of Taxonomic Zoology (Zoological Museum), Amsterdam, and a new species, *T. (Tipula) lourensi*, is described.

INTRODUCTION

Though the first Tipulidae from the African region were described during the first half of the 19th century, the first surveys of the African tipulid fauna were given by C. P. Alexander as late as 1956 (covering the area between 20° N. to 20° S. Lat.) and 1964 (covering the area South of 20° S. Lat.). In these two surveys 10 species are mentioned which belong to the subgenus *Tipula* ("oleracea group").

In between, Mannheims (1958, 1961), studying material from Tanzania, Mount Kilimanjaro, described two new species of the subgenus concerned.

During 1971, Drs. J. H. Lourens collected rather large numbers of Tipulidae in Rwanda (Mount Karasimba), Kenya (Mount Kinangop and Mount Elgon) as well as in Tanzania (Mount Kilimanjaro). The species from this collection, together with some material already present in the Institute of Taxonomic Zoology (Zoological Museum), Amsterdam, are reported upon in the present study.

MATERIAL

T. eumecacera Speiser: 6 ♂♂, Tanzania, Kilimanjaro, 3100 m, 23-II-1971, J. H. Lourens. 1 ♂, Tanzania, Kilimanjaro, 2800 m, 9-III-1971, J. H. Lourens.

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T. capnioneura Speiser/*T. flagellicurta* Mannheims: 1 ♂, 1 ♀, Tanzania, Kilimanjaro, Bismarck Hut surr., 2800-3100 m, 8-III-1971, J. H. Lourens. 1 ♂, Tanzania, Kilimanjaro, 3000 m, 8-III-1971, J. H. Lourens.

T. speiseriana Alexander: 4 ♂♂, Kenya, Kinangop, 27-I-1971, J. H. Lourens. 65 ♂♂, 15 ♀♀, Rwanda, Ruhengeri, Karasimba, 3400 m, 21-23-II-1971, J. H. Lourens. 43 ♂♂, 5 ♀♀, Rwanda, Ruhengeri, Karasimba, 3000 m, 21-23-II-1971, J. H. Lourens.

T. soror Wiedemann/*T. frater* Alexander: 1 ♀, 2 ♂♂, S. Rhodesia, Inyanga, Fort Cottage, 14-II-1961 and 22-27-III-1961 respectively, H. A. W. Paine-Smit. 1 ♀, S. Rhodesia, Rhodes, Inyanga Orchards, 29-XI-1963, H. A. W. Paine-Smit. 1 ♂, S. Africa, Natal, 5-6-III-1967, D. Gillisen & L. Blommers.

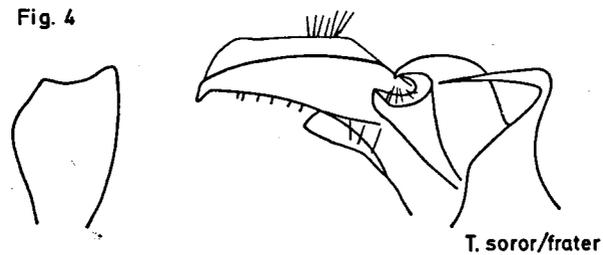
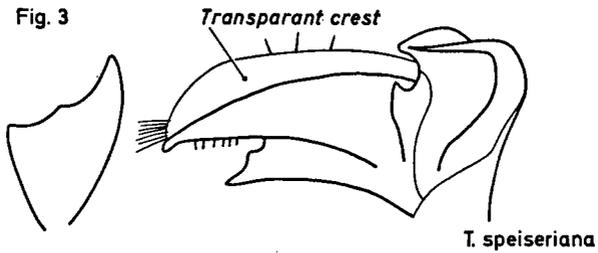
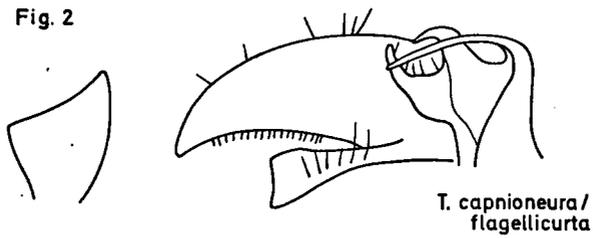
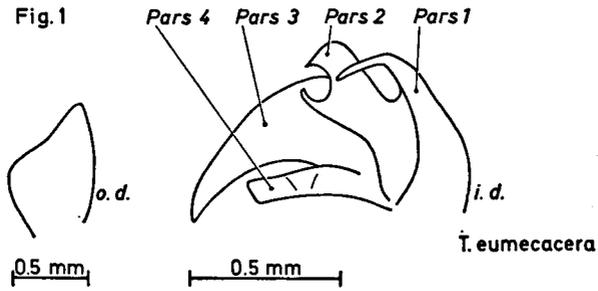
T. bevisiana Alexander: 2 ♂♂, S. Rhodesia, Inyangani Mountain, 13-XI-1963, H. A. W. Paine-Smit.

T. lobeliae Alexander: 1 ♂, 1 ♀, Kenya, Elgon, 3100 m e. slope, 4-II-1971, J. H. Lourens. 16 ♂♂, Kenya, Elgon, 3500 m e. slope, 4-II-1971, J. H. Lourens.

T. lourensi nov. spec.: 2 ♂♂, Tanzania, Kilimanjaro, 3100 m, 8-III-1971, J. H. Lourens. 6 ♂♂, Tanzania, Kilimanjaro, 3000 m, 8-III-1971, J. H. Lourens. 27 ♂♂, Tanzania, Kilimanjaro, 2800 m, 9-III-1971, J. H. Lourens.

KEY TO THE AFRICAN SPECIES (MALES) OF THE SUBGENUS *Tipula*

1. Antennae longer than 7 mm 2
Antennae 4-7 mm 4
Antennae shorter than 4 mm 8
2. Wings strongly reduced *curtipennis*
Wings fully developed 3
3. Flagellum yellow (last three segments darker) *eumecacera*
Flagellum black (first segment more or less yellow) *capnioneura*/
flagellicurta
4. Pars 2 of the inner dististyle claviform, short verticils on
flagellar segments (fig. 5) *bevisiana*
Pars 2 of the inner dististyle pincer-like 5
5. Pars 3 of the inner dististyle anvilliform *chubby*
Pars 3 of the inner dististyle cleaver-like 6
6. Verticils on flagellar segments very short *setosipennis*
Verticils on flagellar segments at least as long as the corresponding
segment 7
7. Anterior tip of the pars 3 of the inner dististyle with a small tuft of hairs
(fig. 3) *speiseriana*
Anterior tip of the pars 3 of the inner dististyle bare (fig. 8) *lourensi*
8. Pars 2 of the inner dististyle rod-shaped (fig. 7) *lobeliae*
Pars 2 of the inner dististyle pincer-like 9
9. Wings strongly reduced *subaptera*
Wings fully developed *soror*/*frater*.



FIGS. 1, 2, 3, 4: The outer dististyle and the inner dististyle of the male hypopygium of *T. eumeracera*, *T. capnioneura/flagellicurta*, *T. speiseriana* and *T. soror* respectively.

Fig. 5



Fig. 6

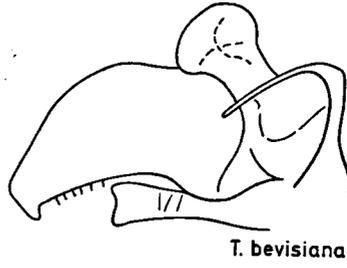


Fig. 7

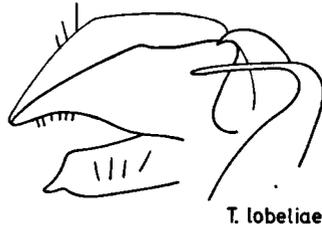


Fig. 8

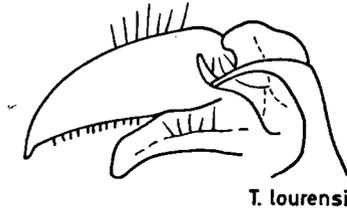
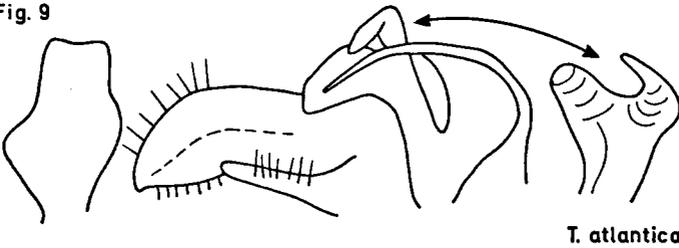


Fig. 9



FIGS. 5, 6, 7, 8, 9: The antenna of *T. bevisiana* (= fig. 5). The outer dististyle and the inner dististyle of the male hypopygium of *T. bevisiana*, *T. lobeliae*, *T. lourensi* and *T. atlantica* respectively.

TAXONOMIC ACCOUNT AND GENERAL REMARKS (DESCRIPTION, DISTRIBUTION, FLY PERIOD)

Tipula (Tipula) eumecacera Speiser, 1909
(Table 1; Fig. 1)

Male.— Relatively small (12 mm), of yellowish colour. Antennae very long (10 mm), yellow, last three segments darker.

Distribution: Tanzania, Kilimanjaro 2800-3100 m; II, III (Speiser, 1909; Mannheims, 1961; ZMA).

Tipula (Tipula) capnioneura Speiser, 1909
Tipula (Tipula) flagellicurta Mannheims, 1958
(Table 1; Fig. 2)

Male.— Rather large (15-20 mm), dark species with long (20-23 mm) smoky-brown wings. Antennae variable in length, most of the segments black.

Female.— Brachypterous, body-colour dark brown, antennal flagellum black.

Distribution: Tanzania, Kilimanjaro 2800-3500 m; II, III, IV (Speiser, 1909; Mannheims 1958, 1961; ZMA).

Mannheims (1958) described *T. flagellicurta* as a new species very similar to *T. capnioneura*, especially concerning the hypopygial characteristics. However, the length of the antennae (*flagellicurta*: 7 mm; *capnioneura*: 11 mm), the colour of the basal part of the flagellum (*flagellicurta*: black; *capnioneura*: yellow) as well as the colour of the wings (*flagellicurta*: smoky-brown; *capnioneura*: pale-brown) proved to be different in both species. An examination of the specimens of both species present in the Museum Koenig, Bonn, did not reveal any difference in the hypopygial structures as well as in the distance between the eyes beneath the head.

In the collection under study, two specimens occurred which showed intermediate combinations of characters. The length of the antennae was intermediate between *flagellicurta* and *capnioneura*. The colouration of the antennae was similar to that in *flagellicurta* whereas the wings were coloured like in *capnioneura*. The difference in fly period of the two species as mentioned by Mannheims (1961) (*capnioneura*: February; *flagellicurta*: April) is not valid anymore since the present specimens were caught in March. So, in my opinion, it is not yet clear whether *T. flagellicurta* and *T. capnioneura* are different species or that they represent the extremes of a wide range of variation. More specimens are needed to solve this problem.

Tipula (Tipula) speiseriana Alexander, 1930
(Table 1; Fig. 3)

Male.— Rather large sized (16-21 mm); long pale-brown wings (19-24 mm); thorax yellowish brown with light greyish upper side; abdomen yellow-brown

with darker lateral stripes. Antennal basis yellow, like the first flagellar segment. Other segments bicolourous brown-black, last three segments black. Characteristic for this species is the small tuft of hairs on the anterior tip of the pars 3 of the inner dististyle of the male hypopygium. (Fig. 3).

Female. — Fully winged, the wings being smoky-brown. Antennae rather short, yellow, only the tip of the flagellum somewhat darker to black.

Distribution: This species was reported from Kenya, Uganda and Zaire (Belgian Congo), October-February (Alexander, 1956). The 4 ♂♂ in the present collection (ZMA) from Kenya, Kinangop, closely agree with the original description of Alexander. The specimens from Rwanda, Karasimba, on the other hand, slightly deviate.

In this species, again, some variability regarding quantitative as well as qualitative characters occurs. The specimens from Kenya have considerably shorter antennae than those from Rwanda, whereas the latter ones show darker coloured wings (smoky-brown) as well as darker coloured antennae (first flagellar segment dark yellow, other segments becoming more and more darker brown, last six segments always black). However, the inner dististyles of specimens from both localities are quite similar.

The description of *T. speiseriana* by Alexander (1930) perfectly matches the specimens from Kenya, Kinangop, except with regard to the length of the antennae. Alexander gives about 6 mm for this length, which is in accordance with the specimens from Rwanda, Karasimba (4.9-6.3 mm). The Kenya specimens, on the other hand, have considerably shorter antennae (3.8-4.5 mm).

So, I do not consider the aberrant specimens from Rwanda to represent a separate species nor a distinct subspecies; it is much more likely that both the length of the antennae and the colouration of the antennal flagellum vary independently on the population level throughout the area of distribution of *T. speiseriana* in Central Africa.

Tipula (Tipula) soror Wiedemann, 1821

Tipula (Tipula) frater Alexander, 1921

(Table 1; Fig. 4)

Male.— Slender, medium-sized. Thorax yellow; abdomen yellow with three longitudinal dark stripes. Wings fragile, whitish. Antennae short, yellow, only last segments somewhat darker.

Female.— Larger than males, darker coloured, wings more robust.

Distribution: This species is wide-spread in Africa south of 15° S. Lat. (Alexander, 1964).

Comparing the descriptions by Alexander (1917, 1921, 1964) I cannot see that *T. soror* and *T. frater* are distinct species (I did not study the type material). Rather small differences in general colouration as well as in hypopygial structures allegedly exist; however it may be quite possible that these only concern population differences.

Lackschewitz (1930) gave a detailed description of *T. soror*. However, his

figure of the male hypopygium does not refer to *T. soror* but clearly to *T. bevisiana* Alexander, 1956, according to the shape of the pars 2 of the inner dististyle. Pars 2 is pincer-like in *T. soror*, but claviform in *T. bevisiana* (Fig. 6). In the same way, the male hypopygium illustrated by Wood (1952) in his discussion of *T. soror* also refers to *T. bevisiana*.

The statement made by Edwards (see Alexander, 1964) that *T. mashona* Alexander, 1920, is a synonym of *T. soror* may be correct because the main difference between both species concerns the colour of the antennal flagellum, which character apparently shows some variability in the African species of the subgenus *Tipula* (see *T. speiseriana* and *T. capnioneura/flagellicurta*). However, at this moment, too little is known about this variability and the matter should be studied further.

***Tipula (Tipula) bevisiana* Alexander, 1956**
(Table 1; Fig. 5, 6)

Male.— Small sized; dark grey coloured; fragile, whitish wings. Antennae of moderate length, flagellum black. Flagellar segments with short verticils (about half the length of the segment). Probably this species has 14 antennal segments (normal number in the subgenus 13); however, only one of the two males in the collection under study had complete antennae, and the possibility of a morphological aberration of the antennae of this specimen cannot be excluded (Fig. 5). Characteristic for this species is the shape of the pars 2 of the inner dististyle of the male hypopygium, which is claviform (Fig. 6).

Distribution: Alexander (1956) mentions this species from South Africa (Basutoland, Natal, Cape Province). The present study reports 2 ♂♂ from S. Rhodesia, Mount Inyangani; 13-XI-1963 (ZMA).

***Tipula (Tipula) lobeliae* Alexander, 1956**
(Table 1; Fig. 7)

Male.— Small sized, with robust, long wings which are pale-brownish. Thorax greyish, abdomen yellowish brown. Very short antennae, yellow, darker to the tip. Pars 2 of the inner dististyle of the male hypopygium is very characteristic in that it terminates in a simple rod that tapers to a small blackened point (Fig. 7).

Female.— Brachypterous, similar colouration and measured values as the males.

Distribution: Alexander (1956) reported fully winged, brachypterous, as well as stenopterous males from Kenya, Mount Elgon. In the present collection (ZMA) all males have fully developed wings. Only the female is brachypterous.

***Tipula (Tipula) lourensi* nov. spec.**
(Table 1; Fig. 8)

Male.— Medium sized, with rather long, robust, smoky-brown wings.

TABLE I. Some measures (range and mean) of the African species of the subgenus *Tipula*.

Species	number	1 body length (mm)	2 wing length (mm)	3 antennal length (mm)	4 flagellar colour	5 3:2	6 eye-distance (mm)
<i>eumecacera</i>	7 ♂♂	12 (12.0)	13—15 (14.1)	9.8—10.8 (10.4)	yellow	0.74	0.43—0.46 (0.44)
<i>cappioneura/</i> <i>flagellitoria</i>	2 ♂♂	16—18 (17.0)	20—23 (21.5)	7.8—9.3 (8.5)	black	0.40	0.38—0.39 (0.38)
"	1 ♀	15.0	1.4	2.8	black		0.41
<i>bevisiana</i>	2 ♂♂	12—14 (13.0)	14—15 (14.5)	4.1 (4.1)	black	0.28	0.26—0.34 (0.30)
<i>lourensi</i>	25 ♂♂	14—17 (15.4)	18—21 (19.7)	5.0—6.0 (5.5)	black	0.28	0.33—0.43 (0.37)
<i>speiseriana</i> 1	4 ♂♂	16—19 (17.2)	19—22 (20.2)	3.8—4.5 (4.0)	yellow/brown	0.20	0.18—0.25 (0.21)
<i>speiseriana</i> 2	25 ♂♂	17—21 (18.1)	19—24 (21.2)	4.9—6.3 (5.7)	brown/black	0.27	0.16—0.31 (0.22)
"	10 ♀♀	20—22 (21.5)	18—20 (19.3)	3.1—3.7 (3.4)	yellow	0.18	0.19—0.29 (0.26)
<i>lobeliae</i>	17 ♂♂	11—15 (13.3)	16—20 (17.8)	2.6	brown/black	0.17	0.28—0.38 (0.33)
"	1 ♀	15.0	1.0	2.7—3.4 (3.1)	yellow		0.34
<i>sorori/frater</i>	3 ♂♂	14—17 (15.7)	15—17 (16.0)		yellow	0.19	0.05—0.08 (0.06)
"	2 ♀♀	21—23 (22.0)	19—21 (20.0)	3.0 (3.0)	yellow		0.05—0.07 (0.06)
<i>atlantica</i>	1 ♂	14.5	16.5	5.0	yellow/brown	0.30	0.50

Thorax yellow with greyish upper side, abdomen mouse-grey (both the tergites and the sternites) with clear black lateral stripes and a narrow, vague, dorsal dark stripe. Antennae moderately long, basis yellow to dark yellow-brown, flagellum black, except the first segment (yellow-brown). The male hypopygium (Fig. 8) clearly belongs to the *capnioneura/flagellicurta* type (Fig. 2). Bodylength: 14-17 mm; winglength: 18-21 mm; antennal length: 5.0-6.0 mm; eye distance beneath the head: 0.33-0.43 mm (Table 1).

This species is closely related to *T. capnioneura/flagellicurta*. They are exactly similar regarding the colouration of the wings as well as of the antennae. However, whereas *T. capnioneura/flagellicurta* has a brownish, rather dark, cephalothorax and abdomen, the cephalothorax in *T. lourensi* is more yellow, the abdomen mouse-grey. Besides, clear differences exist in the length of the antennae (Table 1).

Holotype (male).— Bodylength (without head): 15.6 mm; winglength: 20.6 mm, width: 5.9 mm; antennal length: 6.0 mm; eye distance: 0.38 mm. Head grey; frontal prolongation of the head yellow-brown; palpi black, first two segments with numerous black hairs. Antennae with basis yellow, third flagellar segment proximal yellow, distal black, remaining segments black. Verticils as long as the corresponding segment. Upper side of the thorax greyish, patterned with brown, the remaining part of the thorax unicolourous yellow. Coxae and trochanters yellow; femora brown with blackened tips; tibiae brown, tips vaguely darkened; tarsi brown; claws with two simple spines. Wings smoky-brown, stigma and a seam in cell M along Cu and on m-cu, darker brown. Squama with setae. First abdominal segment brownish, the remaining mouse-grey. Tergites with a brownish dorsal longitudinal stripe and a clear black lateral stripe. Sternites unicolourous mouse-grey. Hypopygium yellowish, outer dististyle yellow, broadening up to half its length, then strongly tapering towards the apex. Inner dististyle with the pars 1 broadly based, produced into a stout, black, spine. Pars 2 very short, bifid, the inner claw thin, almost needle-like, the outer claw claviform. Pars 3 cleaver-like, rather short and broad-based, the surface of the blade scarcely set with thin hairs, the lower margin densely set with black setae. Pars 4 of the normal shape in the subgenus *Tipula*. Holotype ♂: Tanzania, Mount Kilimanjaro, 2800 m, 9-III-1971, J. H. Lourens (Institute of Taxonomic Zoology (Zoological Museum), Amsterdam). Other material: 26 ♂♂ Tanzania, Mount Kilimanjaro, 2800 m, 9-III-1971, 6 ♂♂ idem, 3000 m, 8-III-1971, 2 ♂♂ idem, 3100 m, 8-III-1971; all leg. J. H. Lourens and deposited in the Institute of Taxonomic Zoology (Zoological Museum), Amsterdam.

***Tipula (Tipula) atlantica* Mannheims, 1962**
(Table 1; Fig. 9)

Mannheims (1962) described a species belonging to the subgenus *Tipula* from Madeira. On the basis of the shape of the male hypopygium (Fig. 9) this species is closely related to the African species of the subgenus *Tipula*,

especially with regard to the shape of the pars 2 of the inner dististyle. This is somewhat shortened and more or less bifid (not clear in the figure given by Mannheims, 1962) as in most African species. Contrastingly, in most European species pars 2 is large, expanded distally and never bifid.

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