

Zeitschrift: Mitteilungen der Schweizerischen Entomologischen Gesellschaft =
Bulletin de la Société Entomologique Suisse = Journal of the Swiss
Entomological Society

Herausgeber: Schweizerische Entomologische Gesellschaft

Band: 60 (1987)

Heft: 3-4

Artikel: A review of the genus *Caffrocixius* Fennah, 1967 with description of four
new species (Homoptera, Cixiidae)

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DOI: <https://doi.org/10.5169/seals-402283>

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A review of the genus *Caffrocixius* FENNAH, 1967 with description of four new species (Homoptera, Cixiidae)

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The South African species *Caffrocixius synavei* sp. n., *C. muiri* sp. n., *C. capeneri* sp. n. and *C. metcalfi* sp. n. are newly described and a key to the six species of *Caffrocixius* is given.

INTRODUCTION

The cixiid genus *Caffrocixius* FENNAH, 1967: 656 was erected for one South African species, namely *C. personatus*. A second species was described by SYNAVE (1969), also from South Africa. In the present paper four additional taxa are described and a key to the species is given.

The genus *Caffrocixius* can be recognized from other African genera by a combination of the following characters: in tegmina Sc fused with R, hind tibiae without lateral spines, lateral borders of face and vertex not prominent or lamelliform, vertex with a transverse subapical keel and mesonotum with five keels, the two submedian ones however sometimes very obsolete. The presence of the latter character in a non pentastirine Cixiid genus is of interest phylogenetically: it indicates that this state has evolved several times in the Cixiidae along different evolutionary lines. The median and two outer keels are probably homologous with the three keels of the Cixiini, as suggested by their place and general structure. The two additional submedian keels, situated between the median and lateral keels, might be obsolete in some species, or even totally lacking. In all species the term "submedian keel" is used to designate these two additional keels.

In addition to the characters described and used by FENNAH (1967) and SYNAVE (1969) the state of the chaetotaxy of the hind tarsi that have a single row of 7 or 8 black teeth on the first tarsite and a double row of eight teeth on the second segment in all presently recorded species has been examined.

The material studied below is deposited in the collections of the following museums, which are listed with their abbreviations:

PPRI Plant Protection Research Institute, Pretoria, S. A.

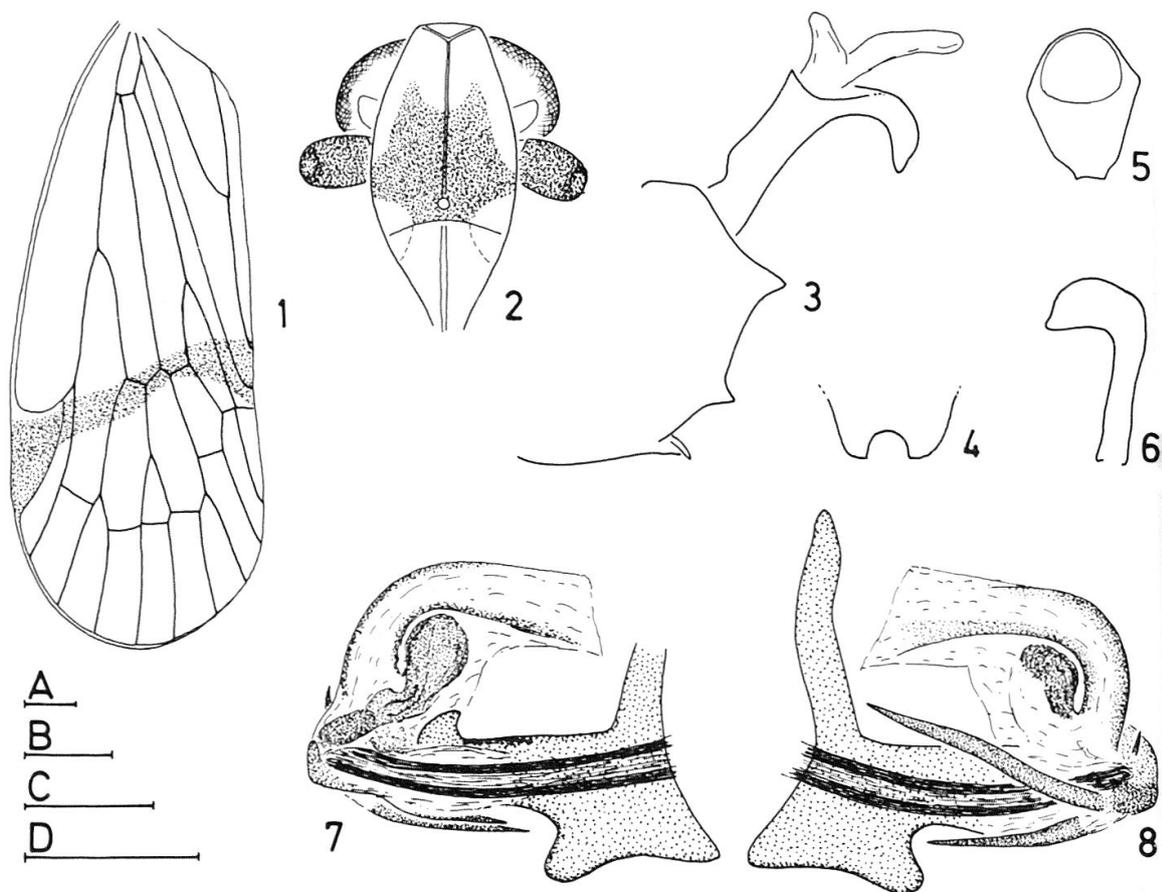
BMNH British Museum (Natural History), London, U. K.

KBIN Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussel, Belgium

SAM South African Museum, Cape Town, S. A.

KEY TO THE SPECIES OF *CAFFROCIXIUS* BASED ON MALES

1. – Large species (8–9 mm); face fuscous, with a broad white band at level of frontoclypeal suture; part of lateral borders of frons pale ochreous (fig. 24)
 - *C. personatus* FENNAH
 - smaller species (5–7 mm); face pale ochreous to yellowish with a black transverse band just above median ocellus (fig. 2 and 15) 2
2. – Tegmina completely hyaline, no transverse band at level of stigma ... 3
 - Tegmina with a transverse brown band at level of stigma (fig. 1) 4
3. – anal segment and aedeagus as illustrated in fig. 16 and fig. 18 to 19
 - *C. capeneri* sp. n.
 - anal segment and aedeagus as illustrated in fig. 21 and fig. 23
 - *C. metcalfi* sp. n.
4. – aedeagus with three large spines implanted on apex and visible in left lateral view (figs. 12 and 13) *C. fennahi* SYNAVE
 - aedeagus with two long apical spines on left side 5
5. – 2 parallel spines on inner side of flagellum, visible in right lateral view (fig. 9) *C. muiri* sp. n.
 - no such spines visible on inner and right side of flagellum (fig. 7)
 - *C. synavei* sp. n.



Figs. 1–8. *Caffrocixius synavei* sp. n., holotype 1: left tegmen; 2: head, frontal view; 3: pygofer and anal segment; 4: medioventral process of pygofer; 5: anal segment, caudal view; 6 left genital style. – Scale A (0.2 mm): 2; B (0.2 mm): 3–6; C: (1 mm): 1; D (0.2 mm): 7, 8.

LIST OF SPECIES

Caffrocixius synavei sp. n. (figs. 1–8)

Description: face ochreous with a large black band on frons and a pale spot on each border (the latter limited by dotted lines as illustrated in fig. 2). Antennae black. Vertex, pronotum and mesonotum ochreous, mesonotum with three longitudinal keels, the two additional submedian ones very obsolete. Tegmina hyaline, stigma and a transverse band brown, veins ochreous. Legs ochreous, tarsi and ends of tibiae dark brown to black, chaetotaxy hind tarsi 8/(8).

Length: 5–6 mm.

Male genitalia: anal segment, pygofer and genital styles symmetrical. Apex of anal segment not excavated; pygofer on each side with two tooth-shaped processes, and medioventral process semicircular. Aedeagus with three long spines, a small spinose process near base of flagellum and a flat triangular process on right side of sclerified periandrium.

Diagnosis: closely related to *C. fennahi* and *C. muiri*. In *C. synavei* the extension of the black spot on the face is the greatest. Their major differences however are situated at the level of the male genitalia: in *C. muiri* the anal segment is excavated apically and the implantation of spines on the aedeagus is different. In *C. fennahi* the aedeagus bears two additional spines on the flagellum.

Etymology: the species is named in honour of Dr. H. SYNAVE who devoted his career mainly to the study of African Fulgoroidea and Cercopoidea.

Material examined: holotype male, South Africa, 20 km SE Loskopdam, 25.22 S 29.35 E, 9–13.II.1981, C. G. MOOLMAN, W. HARROP, PPRI.

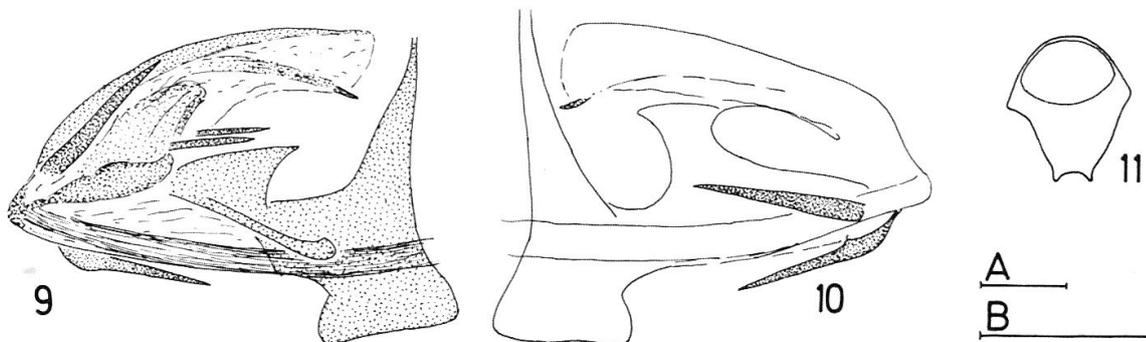
Paratypes: 2 males 1 female, same data as holotype; 1 female, Transvaal, Groblersdal, 25.10 S 29.23 E, 11.II.1981, C. G. MOOLMAN, W. HARROP, PPRI, KBIN.

Caffrocixius muiri sp. n. (figs. 9–11)

Description: general colour as the preceding species; extension of black band on face less large, as long as broad.

Length: 5 mm.

Male genitalia: pygofer and genital styles shaped like those of the preceding species. Anal segment (fig. 11) slightly excavated on apex (caudal view). Aedeagus with five long spines on apex and on base of flagellum, four visible in



Figs. 9–11. *Caffrocixius muiri* sp. n., holotype 9–10: Aedeagus, right and left lateral view; 11: anal segment, caudal view. – Scale A (0.2 mm): 11; B (0.2 mm): 9, 10.

right lateral view and one on left margin, and a small spine on apex of flagellum; sclerified perianthrium with a large triangular process on dorsal margin and an additional lamelliform process on right side.

Diagnosis: closely related to the preceding species from which it differs in the structure of the aedeagus.

Etymology: the species is named in honour of Dr. F. MUIR who made important contributions to the study of world Fulgoroidea.

Material: holotype male, South Africa, Magoebaskloof, 13.I.1965, A. L. CAPENER, PPRI.

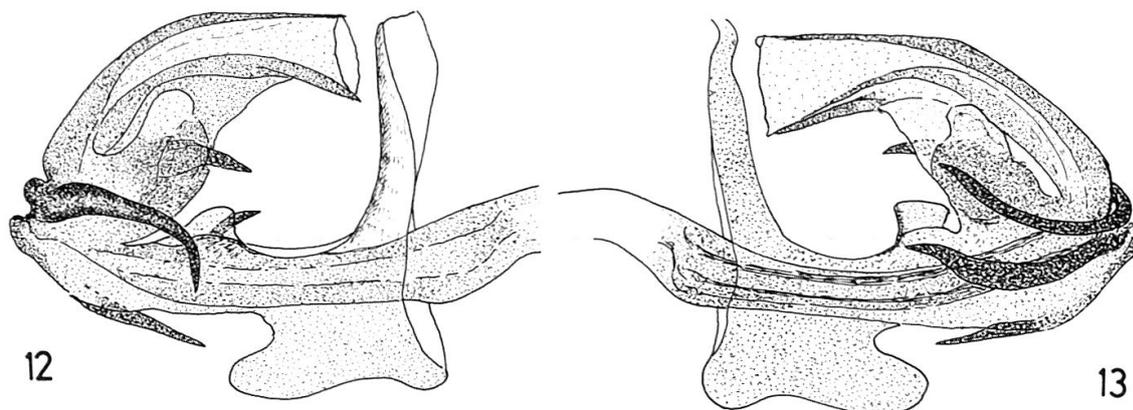
Paratype: 1 female, same data as holotype, KBIN.

Caffrocixius fennahi SYNAVE, 1969 (figs. 12–13)

Caffrocixius fennahi SYNAVE, 1969: 1, figs. 1–6.

The male genitalia have been adequately illustrated by Synave (1969) from which we have reproduced the figures of the aedeagus. The specimens of the type series, deposited in the South African Museum and the Koninklijk Belgisch Instituut voor Natuurwetenschappen have been examined and compared with the new species described below. The aedeagus of this species bears four spines inserted on its apex and two spines on the flagellum. Chaetotaxy hind tarsi 8/(8).

Material: holotype male, allotype female and paratype female, South Africa, Zululand, M'fongosi, SAM and KBIN (examined).



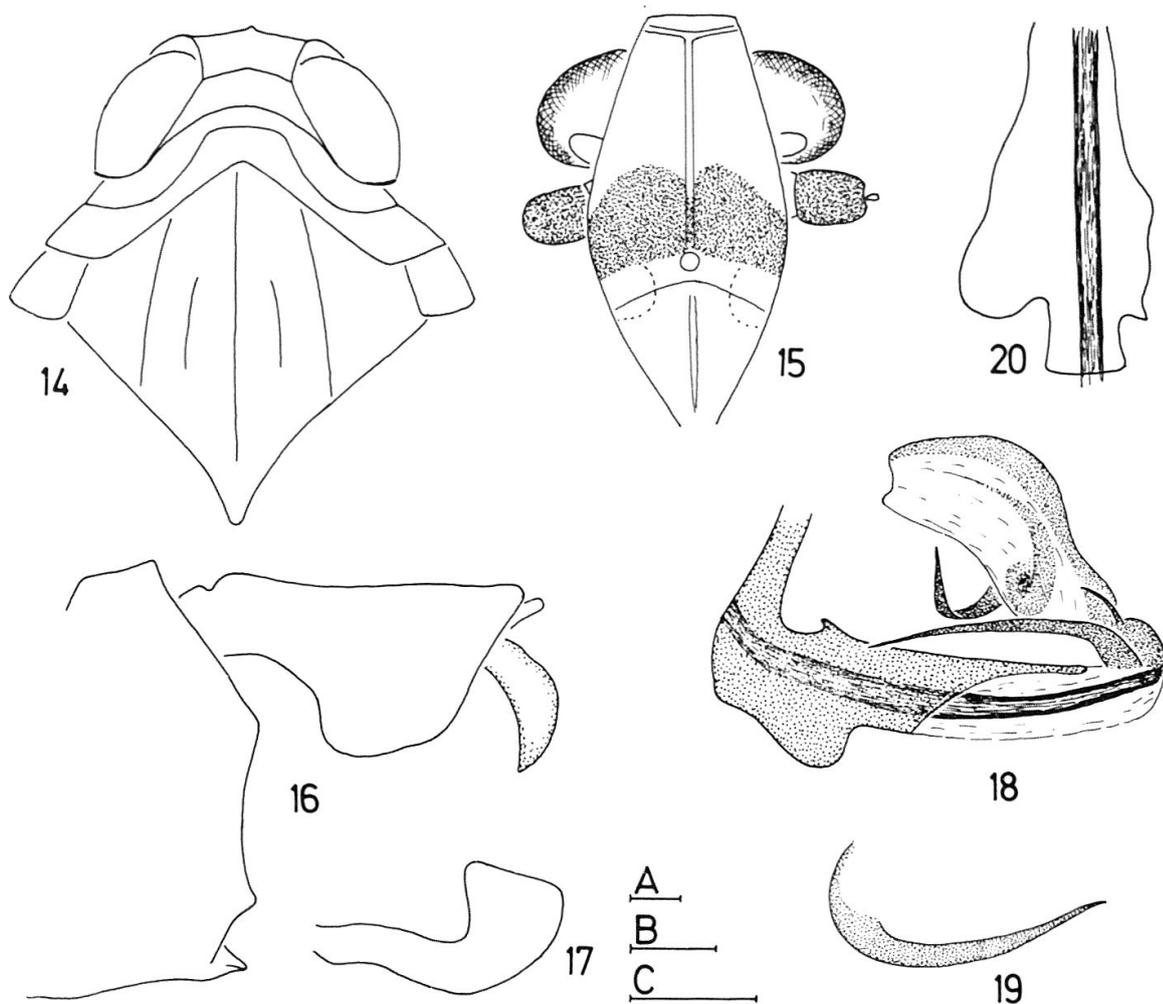
Figs. 12–13. *Caffrocixius fennahi* SYNAVE, 1969, holotype 12–13: aedeagus, right and left lateral view, after Synave, 1969.

Caffrocixius capeneri sp. n. (figs. 14–20)

Description: colour pale ochreous; black band on frons as illustrated in fig. 15. Antennae with first segment pale ochreous, second segment black. Tegmina completely hyaline, no transverse band at level of stigma; veins pale ochreous. Chaetotaxy hind tarsi 8/(8).

Length: 6,5–7 mm.

Male genitalia: anal segment, pygofer and genital styles nearly symmetrical. Anal segment with lateral lobe smaller on right side than on left side. Aedeagus with three spines: a small spine at apex near articulation of flagellum,



Figs. 14–20. *Caffrocixius capeneri* sp. n., holotype 14: head, pronotum and mesonotum; 15: head, frontal view (dotted line = limit of white spot); 16: pygofer and anal segment; 17: left genital style; 18: aedeagus, left lateral view; 19: dorsal spine of aedeagus; 20: aedeagus, basal perianthium, dorsal view. — Scale A (0.2 mm): 14, 15; B (0.2 mm): 16, 17; C (0.2 mm): 18–20.

a second spine on left side and a third spine inserted on right side and semicircularly curved to left side. Basal perianthium with a small tooth on left side and large lobe on right side. The small spine on the apex of the aedeagus is longer in a paratype and minor differences occur in the shape of the basal perianthium (dorsal view).

Diagnosis: *C. capeneri* differs from the preceding species in the absence of a transverse brown band on the tegmina; it differs from *C. personatus* in the different colour of the face. From *C. metcalfi* it can only be distinguished by the shape of the male genitalia, namely by the shape of the anal segment and pygofer, and by the proportions of the spines and processes on the aedeagus.

Etymology: this species is named in honour of Dr. A. L. CAPENER, the collector of this species, who made important contributions to the study of Membracoidea.

Material: holotype male, South Africa, Port St John, C. P., 3–4.XII.1969, A. L. CAPENER, PPRI.

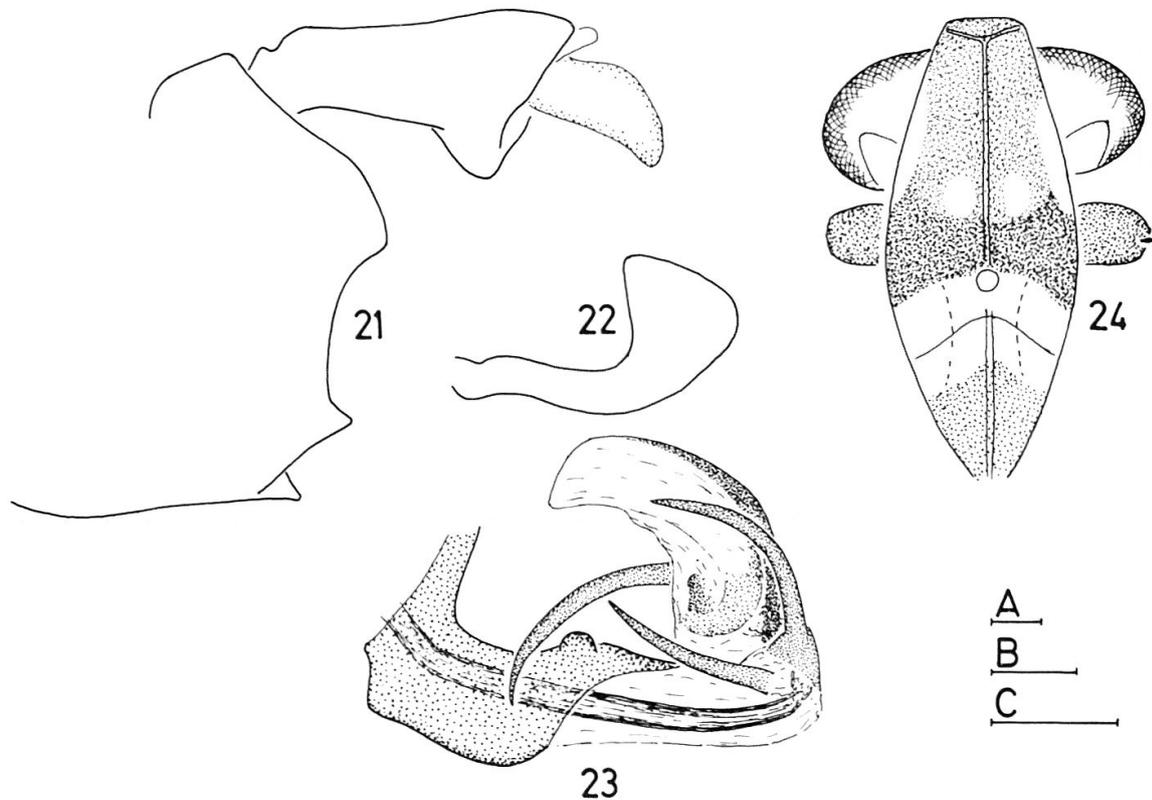
Paratypes: 1 male 1 female, same data as holotype, PPRI; 1 male 2 females, Pondoland, Port St John, 15–31.VIII.1923 and IX.1923, R. E. TURNER, BMNH.

Caffrocixius metcalfi sp. n. (figs. 21–23)

Description: externally like *C. capeneri*, but chaetotaxy of hind tarsi 7/(8). This species differs from *C. capeneri* in the shape of the male genitalia: the anal segment has a smaller process on the left lateral margin, the lateral margin of the pygofer is more excavated, and the aedeagus shows two large spines on left side instead of one large and one small spine, as is the case in *C. capeneri*.

Etymology: the species is named in honour of Z. P. Metcalf, author of a bibliography of Homoptera, who made important contributions to the study of Neotropical Fulgoroidea.

Material: holotype male, S. Africa, Port St John, IX.1923, R. E. TURNER, BMNH.



Figs. 21–23. *Caffrocixius metcalfi* sp. n., holotype 21: pygofer and anal segment; 22: left genital style; 23: aedeagus, left lateral view. – Scale B (0.2 mm): 21, 22; C (0.2 mm): 23.

Figs. 24. *Caffrocixius personatus* FENNAH, head, frontal view. – Scale A (0.2 mm).

Caffrocixius personatus Fennah, 1967 (fig. 24)

Caffrocixius personatus FENNAH, 1967: 657, fig. 1, A–J.

This species has been adequately described by FENNAH (1967). The chaetotaxy of the hindtarsi is 8/(8). It can be distinguished from all other species by the

colour pattern on the face and by the shape of the male genitalia: the lateral margins of the pygofer are convex in profile. The aedeagus bears two spines on right side and four on left, as illustrated by FENNAH.

Material: holotype male, South Africa, Pondoland, Port St John's, 16.X.1957, P. J. STUCKENBERG, Natal museum (not examined); allotype female, South Africa, Pietermaritzburg, Town Bush (B. & P. STUCKENBERG), BMNH (examined).

ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to Dr. I. M. Millar (PPRI), Dr. W. J. Knight (BMNH) and Dr. V. B. Whitehead (SAM) for the loan of material in their charge, and to Dr. M. R. Wilson (CAB, London) for critically reading the manuscript.

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(received, February 5, 1987)