



ISSN: 0030-5316 (Print) 2157-8745 (Online) Journal homepage: https://www.tandfonline.com/loi/toin20

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To cite this article: M. Olmi (1998) A contribution to the knowledge of Dryinidae (Hymenoptera: Chrysidoidea) and Strepsiptera of Mozambique, Oriental Insects, 32:1, 59-78, DOI: 10.1080/00305316.1998.10433767

To link to this article: https://doi.org/10.1080/00305316.1998.10433767



Published online: 18 Apr 2012.



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Oriental Insects, Vol. 32: 59-78, 1998.

A CONTRIBUTION TO THE KNOWLEDGE OF DRYINIDAE (HYMENOPTERA: CHRYSIDOIDEA) AND STREPSIPTERA OF MOZAMBIQUE(*)

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ABSTRACT. Only twelve species of Dryinidae and no species of Strepsiptera are known so far from Mozambique. In 1993-1996 the author collected and reared several species there, resulting in the discovery of three new species of Dryinidae (Gonatopus mossambicus, G. faustae and G. gazensis) and 10 known species of which 5 are new records from Mozambique [Dryinus orophilus (Benoit), Gonatopus similis Brues, G. rubripes (Olmi), G. capensis Brues and G. guigliae (Benoit)]. A new combination and a new name (Gonatopus maputensis) are proposed for Paradicondylus australis Olmi. The males of Gonatopus maputensis, G. communis Olmi, G. rubripes and G. guigliae are described for the first time. The author also reared the following Strepsiptera: Elenchus tenuicornis (Kirby) from Toya propinqua (Fieber) and Halictophagus australensis Perkins from Cofana spectra Distant (new records from Mozambique).

Key words: Chrysidoidea, Dryinidae, Strepsiptera, Mozambique, taxonomy,

Introduction

The Strepsiptera of Mozambique are fully unknown; no species are, in fact, listed by Luna de Carvalho (1978, 1982) in his revisions of the African Strepsiptera. The present world leading authority on Strepsiptera, Dr. Jeyaraney Kathirithamby, does not list Mozambique species in her papers. The Dryinidae of Mozambique are only known from two recent papers of Olmi (1987a, 1994a), listing the following 12 species:

Subfamily Anteoninae: Anteon afrum Olmi 1984; Subfamily Gonatopodinae:

> Echthrodelphax afer Olmi 1984; Echthrodelphax migratorius Benoit 1953; Gonatopus varipes Brues 1906; Gonatopus ochreus (Olmi 1984); Gonatopus festivus Olmi 1994b; Gonatopus amoenus Olmi 1994b; Gonatopus incognitus Olmi 1984; Gonatopus ridens Olmi 1984; Gonatopus communis Olmi 1984; Gonatopus okahandjae Olmi 1984; Paradicondylus australis Olmi 1994b.

^(*) Study supported by a grant of the Italian Ministry of the University, Scient. Res. 40%.

The Dryinidae and a few families of Strepsiptera (Elenchidae and Halictophagidae) are parasitoids of leafhoppers, planthoppers and treehoppers (Homoptera: Auchenorrhyncha). The hosts are frequently important pests of plants, so that some species of Dryinidae have been used in the past in biological control programs (Olmi, 1984, 1994b).

Some leafhopper and planthopper pests of cultivated plants also occur in Mozambique (Olmi, 1985) where they cause economic damage. The main species are *Perkinsiella saccharicida* Kirkaldy, *Toya propinqua* (Fieber), *Sogatella kolophon* (Kirkaldy), *Peregrinus maidis* (Ashmead) (Delphacidae), *Cicadulina mbila* Naudé and *Empoasca facialis* (Jacobi) (Cicadellidae) (Olmi, 1985).

Further studies on Dryinidae and Strepsiptera of Mozambique would be useful to know better the possibilities of biological control in that country.

Material and Methods

The present paper is the result of my investigations in Mozambique in 1993-1996, while stationed there to teach Agricultural Entomology at the E. Mondlane University of Maputo. These stays were financed by the Italian Ministry of Foreign Affairs.

Parasitized leafhoppers and planthoppers were collected in the field and reared in the laboratory. Adult Dryinidae, Strepsiptera and hosts were studied.

The rearing techniques were those described by Olmi (1984); the systematics is that proposed by Olmi (1984, 1993, 1994b). The following species of Dryinidae and Strepsiptera were collected or reared:

Maputo Province — About 6 Km N Palmeira (along Road N. 1)

mapato i tovince	Thous o Him I' I annona (along	,
Dryinidae:	Echthrodelphax afer Olmi	1 ♀, 2♂.
·	Gonatopus similis Brues	19.
	Gonatopus amoenus Olmi	19.
	Gonatopus communis Olmi	1Q,20°.
	Gonatopus varipes (Brues)	19.
	Gonatopus faustae, sp. nov.	3Q,4ơ.
Elenchidae	(Strepsiptera): Elenchus tenuicorni	s (Kirby) 20°.
Maputo Province -	- Ponta de Ouro, near Lighthouse	
Dryinidae:	Echthrodelphax afer Olmi	19.
Maputo Province -	- About 9 Km N Ponta de Ouro, nea	r Ponta
-	Malangane Road - Maputo Road	d Junction
Dryinidae:	Dryinus orophilus (Benoit)	10°.
Maputo Province -	- Umbeluzi, S.E.M.O.C. farm	
Dryinidae:	Gonatopus amoenus Olmi	19.
Maputo Province —	- Maputo, Municipal Agricultural N	ursery at Costa do Sol
Dryinidae:	Dryinus orophilus (Benoit)	10,20
-	Gonatopus maputensis Olmi, ne	w name 20 [°] .

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	Halictophagic	lae (Strepsiptera):		
		Halictophagus australensis Perkins	20 [•] .	
Maput	to Province — 3	Km N of Umbeluzi, Soc. Agro-pecuaria	l de	
-		Umbeluzi farm (Maputo - Boane road	l)	
	Dryinidae:	Gonatopus mossambicus, sp. nov.	31Q,9♂.	
Maput	to Province — I	Near Magude, Chobela		
-	Dryinidae:	Gonatopus mossambicus, sp. nov.	59,1ď.	
Mapu	to Province — S	S. Maria (Along Bairro dos Pescadores -		
_		Marracuene Road)		
	Dryinidae:	Gonatopus faustae, sp. nov.	4Q.	
		Gonatopus amoenus Olmi	19,1ơ.	
Gaza	Province — 2 K	Im E of Incomati River bridge		
		(Along Palmeira - Macia Road)		
	Dryinidae:	Gonatopus communis Olmi	2Q.	
		Gonatopus guigliae (Benoit)	2Q,3♂.	
Gaza	Province — 23.	6 Km S of Macia (Along Macia - Praia d	lo Bilene Roa	d)
	Dryinidae:	Gonatopus rubripes (Olmi)	6Q,50°.	
Gaza	Province — Pra	aia do Bilene, Airport		
	Dryinidae:	Dryinus orophilus (Benoit)	1Q,2ơ.	
		Gonatopus gazensis, sp. nov.	19.	
		Gonatopus capensis Brues	19.	

Almost always in the description of the new species the collection information includes three dates: the first (C) refers to the date of collection of the parasitized hosts, the second (B) to the dryinid larva pupation and the third (Sf.) to the emergence of the dryinid from the cocoon.

All the material described in this paper has been deposited in the following collections:

FFC:	Fausta Finocchi's collection, Maputo, Mozambique.
JKC:	Jeyaraney Kathirithamby's collection, c/o Department of Zoology,
	Oxford University, Oxford, England.
OLC:	Massimo Olmi's collection, c/o Dipartimento di Protezione delle piante, Viterbo, Italy.
PRC:	South African National Insect Collection, Pretoria, South Africa.
USNM:	National Museum of Natural History, Washington, D.C., U.S.A.

Systematic Account

Family Dryinidae Subfamily Dryininae

1. Dryinus orophilus (Benoit, 1950)

Both sexes of this species are known (Olmi, 1984).

Distribution: Gabon, Ghana, Nigeria, Zaire, Cameroon, Angola, Zimbabwe, Mozambique (New Record).

In Mozambique reared from *Paroxychara* sp. (Flatidae) (at Praia do Bilene, Airport; at 9 Km N Ponta de Ouro) and from unidentified Dictyopharidae (in Maputo, Costa do Sol) feeding on grass. In Maputo (Costa do Sol) D. orophilus were parasitized by Encyrtidae; 21 specimens (18 females, 3 males) of an unknown species of Encyrtidae emerged from a single cocoon of D. orophilus. All are new host records.

Subfamily Gonatopodinae

2. Echthrodelphax afer Olmi, 1984

Reared from *Toya propinqua* (Fieber) at 6 Km N of Palmeira (Maputo Prov.) and from unidentified delphacid feeding on grass at Ponta de Ouro (Maputo Prov.). At 6 Km N of Palmeira *E. afer* was parasitized by at least two unknown species of Encyrtidae.

E. afer was reared previously in Mozambique (Olmi, 1990, 1994a), from the delphacids Toya propinqua (Fieber) (at Umbelúzi) and Nycheuma endymion (Fennah) (at Maputo) (Guglielmino & Olmi, 1997).

Another species of *Echthrodelphax* Perkins occurs in Mozambique: *E. migratorius* (Benoit) (Olmi, 1994a). This species was reared in Mozambique from the delphacid *Sogatella petax* Fennah (Guglielmino & Olmi, 1997).

3. Gonatopus similis Brues, 1906

Pseudogonatopus similis (Brues): Olmi 1984: 1234.

Both sexes of this species are known (Olmi, 1984, 1987b).

Distribution: Mauritius, La Reunion, Gambia, Lesotho, South Africa, Mozambique (New Record).

In Mozambique, reared from the delphacid *Toya propinqua* (Fieber) at 6 Km N of Palmeira (Maputo Prov.) (Guglielmino & Olmi, 1997). In Mauritius, reared from *Perkinsiella saccharicida* Kirkaldy and *Dicranotropis muiri* Kirkaldy (Delphacidae) (Olmi, 1984); in La Reunion Island, reared from *Peregrinus maidis* (Ashmead) (Delphacidae) (Olmi, 1987b).

4. Gonatopus amoenus Olmi, 1994a

Both sexes of this species are known (Olmi, 1994a).

Distribution: Burkina Faso, Mozambique (Olmi, 1994a).

Reared from Toya propinqua (Fieber) at 6 Km N of Palmeira (Maputo Prov.) and at Umbelúzi (Maputo Prov.). G. amoenus was reared previously in Mozambique (Olmi, 1994a) from the delphacids Toya propinqua (Fieber) (at Umbelúzi), Sogatella kolophon (Kirkaldy) (at Maputo) and Sogatella petax Fennah (at 3 Km N Umbelúzi) (Guglielmino & Olmi, 1997.

5. Gonatopus varipes (Brues, 1906)

Tetrodontochelys varipes (Brues): Olmi 1984: 1459.

Already recorded from Mozambique by Olmi (1994a).

Reared from an unidentified cicadellid at 6 km N of Palmeira (Maputo Prov.).

6. Gonatopus mossambicus, sp. nov. (Figs. 1-2)

Female: Apterous; length 1.68-2.93 mm (length of the holotype: 2.81 mm); testaceous, with petiole black, posterior third of the gaster black and antennal segments 3-10 black or brown; head rarely darkened; antennae distally thickened; antennal segments in the following proportions: 7-4.5-6-4.5-4.5-4.5-4.5-4-6; head excavated, shiny, smooth, without sculpture; frontal line complete; occipital carina absent; POL = 1; OL = 1; OOL = 6; temples distinct; pronotum not crossed by a transversal impression, shiny, smooth, without sculpture; metanotum very inclined, not hollow behind the scutellum; metathorax + propodeum shiny, smooth, without sculpture, except for the posterior surface transversely striate; meso-metapleural suture obsolete; fore tarsal segments in the following proportions: 10-2-4-9-15; enlarged claw (Fig. 1) without a subapical tooth, with a small tooth at the end of a longitudinal furrow and with 1 bristle and 2 peg-like bristles; segment 5 of front tarsus (Fig. 1) with a row of 1 (proximal) + 12 lamellae; distal apex with a group of approximately 7 lamellae; maxillary palpi with 3 segments; labial palpi with 2 segments; tibial spurs 1, 0, 1.

Holotype: Q, MOZAMBIQUE: Maputo Prov.: 3 Km N Umbeluzi (along Maputo - Boane road), reared from an unidentified parasitized adult of cicadellid captured (C) on 29.XI.1993, dryinid larva pupated (B) on 1.XII.1993, adult dryinid emerged (Sf) on 18.XII.1993, M. Olmi (OLC).

Paratypes: 289, same label locality data, M. Olmi (OLC), with the following dates (first date: C; second date: B; third date: Sf):

1) 29.XI.1993, 30.XI.1993, 17.XII.1993;
2) 29.XI.1993, 29.XI.1993, 16.XII.1993;
3) 29.XI.1993, 3.XII.1993, 19.XI.1993;
4) 29.XI.1993, 2.XII.1993, 20.XII.1993;
5) 29.XI.1993, 29.XI.1993, 20.XII.1993;
6) 29.XI.1993, 30.XI.1993, 17.XII.1993;
7) 29.XI.1993, 2.XII.1993, 20.XII.1993;
8) 29.XI.1993, 1.XII.1993, 18.XII.1993;
9) 29.XI.1993, 1.XII.1993, 18.XII.1993;
10) 29.XI.1993, 2.XII.1993, 20.XII.1993;
11) 29.XI.1993, 2.XII.1993, 18.XII.1993;
12) 29.XI.1993, 1.XII.1993, 18.XII.1993;
13) 29.XI.1993, 2.XII.1993, 18.XII.1993;
14) 29.XI.1993, 2.XII.1993, 18.XII.1993;
15) 15.XI.1993, 23.XI.1993, 10.XII.1993;
16) 15.XI.1993, 18.XI.1993, 7.XII.1993;
17) 15.XI.1993, 18.XI.1993, 6.XII.1993;
18) 15.XI.1993, 18.XI.1993, 6.XII.1993;
19) 15.XI.1993, 18.XI.1993, 7.XII.1993;
20) 15.XI.1993, 17.XI.1993, 5.XII.1993;
21) 15.XI.1993, 17.XI.1993, 5.XII.1993;
22) 15.XI.1993, 17.XI.1993, 5.XII.1993;
23) 15.XI.1993, 18.XI.1993, 6.XII.1993;
24) 15.XI.1993, 18.XI.1993, 6.XII.1993;
25) 15.XI.1993, 17.XI.1993, 5.XII.1993;
26) 15.XI.1993, 17.XI.1993, 5.XII.1993;
27) 19.X.1993, 23.X.1993, 13.XI.1993;
28) 19.X.1993, 20.X.1993, 11.XI.1993;

Other paratypes: 2 Q, same label locality data, reared from unidentified cicadellids, M. Olmi (in USNM), with the following dates:

1) 19.X.1993, 22.X.1993, 11.XI.1993; 2) 19.X.1993, 20.X.1993, 11.XI.1993.

Other paratypes: 90°, same label locality data, reared from unidentified cicadellids, M. Olmi (in OLC), with the following dates:

29.XI.1993, 1.XII.1993, 18.XII.1993;
 29.XI.1993, 30.XI.1993, 16.XII.1993;
 29.XI.1993, 1.XII.1993, 17.XII.1993;
 3) 29.XI.1993, 1.XII.1993, 17.XII.1993;
 4) 19.X.1993, 22.X.1993, 12.XI.1993;
 5) 15.XI.1993, 18.XI.1993, 5.XII.1993;
 6) 15.XI.1993, 16.XI.1993, 5.XII.1993;
 7) 15.XI.1993, 18.XI.1993, 6.XII.1993;
 8) 15.XI.1993, 18.XI.1993, 6.XII.1993;
 9) 15.XI.1993, 17.XI.1993, 5.XII.1993.

Other paratypes: 4Q, Mozambique, Maputo prov., near Magude, Chobela, reared from unidentified cicadellids, M. Olmi (in OLC), with the following dates:

29.X.1993, 2.XI.1993, 24.XI.1993;
 29.X.1993, 2.XI.1993, 24.XI.1993;
 29.X.1993, 31.X.1993, 22.XI.1993;
 29.X.1993, 4.XI.1993, 26.XI.1993.

Other paratype: 12, Mozambique, Maputo Prov., near Magude, Chobela, reared from unidentified cicadellid, C. 29.X.1993, B. 1.XI.1993, Sf. 22.XI.1993 (in PRC).

Other paratype: 10, Mozambique, Maputo Prov., near Magude, Chobela, reared from unidentified cicadellid, C. 3.XI.1995, M. Olmi (in OLC).

Remarks: Because of the absence of a transversal pronotal furrow, the absence of a strong subapical tooth in the enlarged claw and the palpal ratio (3/2), Gonatopus mossambicus, sp. nov. belongs to the Ethiopian group ochreus (Olmi) (formerly known as Tetrodontochelys Richards and now synonym of Gonatopus Ljungh) (Olmi, 1993, 1994a). Seven species of this group were previously known from the Ethiopian Region, of which two occur in Mozambique (Olmi, 1994a). The two species previously known in Mozambique were G. ochreus (Olmi 1984) and G. varipes Brues 1906. The female of G. mossambicus is very near G. ochreus; in G. mossambicus, however, the head is excavated and the antennae are almost totally black or brown (in G. ochreus the head is almost flat and the antennae are totally testaceous). The male of G. mossambicus is very near G. varipes, because the dorsal process of the parameres is very similar; the propodeum of G. mossambicus, however, is almost fully smooth, shiny and without sculpture.

The following new key to the Ethiopian species of the *Gonatopus ochreus* group (formerly *Tetrodontochelys* Richards) is proposed:

Key to the species

Females

1.	Body yellow-testaceous or reddish, with petiole black; occasionally gaster
	partly or totally brown or black; occasionally antennae partly brown
	or black
	Body at least partly black or brown5
2.	Antennae brown or black, with segments 1-2 testaceous
	Gonatopus mossambicus, sp. nov.
-,	Antennae totally testaceous
3.	Head almost flat
	Head excavated
4.	Anterior surface of metathorax + propodeum shiny, smooth, without
	sculpture
	Anterior surface of metathorax + propodeum dull, granulated
5.	Anterior surface of metathorax + propodeum very inclined (Fig. 1006 C in
	Olmi, 1984)

7.	Gonatopus rubripes (Olmi, 1984) (Fig. 3)
	Gonatopus varipes Brues
	the anterior half of the dorsal surface, which is granulated
	Propodeum shiny, almost fully smooth and without sculpture. except for
2.	Propodeum fully dull and granulated Gonatopus mossambicus. sp. nov.
•.	2)
	(Fig. 57 E in Olmi, 1989)
1.	Dorsal process of the parameres approximately as long as the parameres
	Males
	less slender (Fig. 1009 in Olmi, 1984) Gonatopus varipes Brues
	Body more slender (Fig. 1006 F in Olmi, 1984); segment 5 of front tarsus
	more slender (Fig. 1008 in Olmi, 1984) Gonatopus afer (Olmi)
8.	Body more robust (Fig. 1006 D in Olmi, 1984); segment 5 of front tarsus
	Mesosoma black, with scutum black
••	Gonatopus obscurus (Olmi)
7.	Mesosoma brown-reddish or black-reddish, with scutum vellow
	on pleura and posterior surface
	striae on pleura and posterior surface
6.	Metathorax + propodeum shiny, without sculpture, except for transversal
	E, F in Olmi, 1984)
	Anterior surface of metathorax + propodeum less inclined (Figs 1006 D,

Tetrodontochelys rubripes Olmi, 1984: 1454.

Only a female of this species from South Africa was known (Olmi, 1984). Six females and five males were collected by sweeping or reared from an unidentified cicadellid collected at 23.6 Km S of Macia (along Praia do Bilene -Macia road, Gaza Prov.) (New record from Mozambique).

The male is described below:

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maxillary palpi with 4 segments; labial palpi with 2 segments; tibial spurs 1, 1, 2.

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Specimens examined: 3Q, MOZAMBIQUE: Maputo Prov.: 23.6 Km S of Macia (along Praia do Bilene - Macia road), collected by sweeping on 4.X.1996, M. Olmi (OLC); 2Q, same label locality data (FFC); 1Q, same label locality data, reared from an unidentified cicadellid collected (C) on 4.X.1996, dyinid larva pupated (B) on 8.X.1996, dryinid adult emergence (Sf) on 4.XI.1996, M. Olmi (OLC); 5 males: same label locality data, reared from an unidentified cicadellid, M. Olmi (in OLC), with the following dates (first date: C; second date: B; third date: Sf) :

> 1) 4.X.1996, 6.X.1996, 3.XI.1996; 2) 4.X.1996, 7.X.1996, 3.XI.1996; 3) 4.X.1996, 6.X.1996, 4.XI.1996; 4) 4.X.1996, 5.X.1996, 4.XI.1996; 5) 4.X.1996, 8.X.1996, 5.XI.1996.

Remarks: The male of G. rubripes comes close to the male of G. incognitus Olmi 1984 by having incomplete notauli, in the length of antennal segment 3 and by having an unsculptured propodeum, In rubripes, however, the dorsal process of the parameres is short, transverse, and with distal apex rounded (dorsal process long or with distal apex pointed in *incognitus*). In the key to the males of the Ethiopian Gonatopus proposed by Olmi (1994a), G. rubripes can be inserted at number 12, near G. nearcticus (Fenton) and G. incognitus Olmi, as follows:

8. Gonatopus communis Olmi, 1984 (Fig. 5)

This species was already listed in Mozambique by Olmi (1994a). One female and two males were reared from unidentified parasitized cicadellid collected at 6 Km N of Palmeira (Maputo Prov.); two females were reared from unidentified cicadellid nymphs collected at 2 Km E of Incomati River bridge (along Palmeira - Macia road, EN N. 1).

The record from 6 Km N of Palmeira is very interesting, because only the females were previously known (Olmi, 1984). The male is described below:

Male: Fully winged; length 1.12 - 1.37 mm; head black, with mandibles testaceous; antennae brown; thorax and propodeum black; gaster and legs brown; antennae distally not thickened; antennal segments in the following

proportions: 3-4-6-5-5-5-5-5-5-7; antennal segment 3 three times or more than three times as long as broad (6:2 or 6:1.5); head shiny, swollen, granulated and rugose; frontal line complete; occipital carina absent; POL = 5; OL = 2; OOL = 2.5; two oval shiny areas are visible between the posterior ocelli and the eyes; these areas are surrounded anteriorly by a high carina; scutum dull, granulated; notauli complete, posteriorly separated; least distance between the notauli as long as the breadth of the ocelli (2:2); scutellum and metanotum shiny, smooth, punctate, without sculpture among the punctures; propodeum dull, fully reticulate rugose; areolae very small; fore wing hyaline, without dark transversal bands; stigmal vein regularly curved, with distal part longer than proximal part (11:5); marginal cell open; dorsal process of the parameres (Fig. 5) slender; maxillary palpi with 5 segments; labial palpi with 2 segments; tibial spurs 1, 1, 2.

Specimens examined: 10[°], MOZAMBIQUE: Maputo Prov., 6 Km N of Palmeira, reared from an unidentified cicadellid collected (C) on 30.XI.1995, dryinid larva pupated (B) on 5.XII.1995, dryinid adult emergence (Sf) on 21.XII.1995, F. Finocchi (OLC); 10[°], same label locality data, reared from an unidentified cicadellid collected (C) on 11.IX.1996, dryinid larva pupated (B) on 14.IX.1996, dryinid adult emergence (Sf) on 10.XI.1996, M. Olmi (FFC).

Remarks: The male of G. communis Olmi is close to the males of G. amoenus Olmi 1994 and ruens (Olmi 1984). In the key to the males of the Ethiopian Gonatopus proposed by Olmi (1994a), G. communis can be inserted at number 7, near G. amoenus and G. ruens, as follows:

7. Dorsal process of the parameres slender (Fig. 5)

9. Gonatopus faustae, sp. nov. (Figs. 6-8)

Female: Apterous; length 3.62-3.75 mm; ferruginous, with petiole black and gaster darkened; antennae distally thickened; antennal segments in the following proportions: 7-4-17-11-8.5-8-7-7-6.5-8.5; head excavated, shiny, strongly granulated on occiput, weakly granulated on frons; temples distinct; frontal line complete; occipital carina only visible behind the posterior ocelli; POL = 1; OL = 1.5; OPL = 9; pronotum crossed by a strong transversal furrow, granulated, dull; scutum dull, granulated, without lateral points; mesometapleural suture obsolete; metanotum not hollow behind the scutellum, without lateral points, with sides rounded (Fig. 6); scutellum hardly visible; metathorax + propodeum dull, granulated, with pleura and posterior surface transversely striate; fore tarsal segments in the following proportions: 17-3.55-14-22; enlarged claw (Fig. 7) without a subapical tooth, only with a small tooth at the distal apex of a longitudinal furrow, with a row of 4-5 peg-like hairs; segment 5 of front tarsus (Fig. 7) with two rows of 3 + 15-16 lamellae; the shortest row is extended beyond 0.5 length of segment; distal apex with a group of at least 12 lamellae; maxillary palpi with 5 segments; labial palpi with 2 segments; tibial spurs 1, 0, 1.

Male: Fully winged; length 2.18 - 2.50 mm; head black, with mandibles testaceous; antennae brown; thorax and propodeum black; gaster brown; legs brown, with articulations, tarsi and part of the tibiae whitish; antennae not distally thickened; antennal segments in the following proportions: 4-4-7.5-6-6-6.5-6-6-6-8; antennal segment 3 more than three times as long as broad (7.5:2); head shiny, swollen, granulated and rugose; frontal line complete; occipital carina absent; POL = 7; OL = 3; OOL = 3; two oval shiny areas are visible on the sides of the posterior ocelli between the ocelli and the eyes; these areas are not anteriorly surrounded by high keels; scutum dull, granulated; notauli complete, posteriorly separated; least distance between the notauli longer than the breadth of the ocelli (3.5:2); scutellum and metanotum shiny, punctate, without sculpture among the punctures; propodeum shiny, mostly smooth and without sculpture, partly rugose; fore and hind wings very hyaline, with veins and pterostigma hardly visible; marginal cell open; stigmal vein regularly curved, with distal part longer than proximal part (13:9); dorsal process of the parameres very broad (Fig. 8); maxillary palpi with 4-5 segments; labial palpi with 2 segments; tibial spurs 1, 1, 2.

Holotype: Q, MOZAMBIQUE: Maputo Prov.: 6 Km N of Palmeira (along Maputo - Gaza road), reared from an unidentified parasitized adult of cicadellid captured (C) on 5.IX.1995, dryinid larva pupated (B) on 1.XII.1995, M. Olmi (OLC). Paratypes: 19, Mozambique: Maputo Prov., 6 Km N of Palmeira (along Maputo - Xai Xai road), reared from an unidentified cicadellid captured (C) on 24.VIII.1996, dryinid larva pupated (B) on 4.IX.1996, dryinid adult emergence (Sf) on 29.IX.1996, F. Finocchi (FFC); 19, same label locality data, reared from an unidentified adult cicadellid captured (C) on 30. I.1995, dryinid larva pupated (B) on 3.XII.1995, not emerged, but taken out from the cocoon (OLC); 10°, same label locality data, reared from an unidentified cicadellid captured (C) on 30.XI.1995, dryinid larva pupated (B) on 2. II.1995, dryinid adult emergence (Sf) on 23.XII.1995, F. Finocchi (FFC); 10, same label locality data, reared from an unidentified cicadellid captured (C) on 30.XI.1995, dryinid larva pupated (B) on 2.XII.1995, dryinid adult emergence (Sf) on 21.XII.1995, F. Finocchi (FFC); 10°, same label locality data, reared from an unidentified cicadellid captured (C) on 24.VIII.1996, dryinid larva pupated (B) on 27.VIII.1996, dryinid adult emergence (Sf) on 24. X.1996, F. Finocchi (FFC); 10, same label locality data, reared from an unidentified cicadellid captured (C) on 24.VIII.1996, dryinid larva pupated (B) on 25.VIII.1996, dryinid adult emergence (Sf) on 29.IX.1996, F. Finocchi (OLC).

Other 4 Q paratypes (in OLC), Mozambique: Maputo prov.: S. Maria (along Bairro dos Pescadores (Maputo) - Marracuene road), reared from unidentified cicadellids, M. Olmi, with the following dates (first date: C; second date: B; third date: Sf):

> 1) 5.IX.1996; 6.IX.1996; 9.X.1996; 2) 5.IX.1996; 10.IX.1996; 14.X.1996; 3) 5.IX.1996; 10.IX.1996; 14.X.1996; 4) 6.IX.1996; 12.IX.1996; 14.X.1996.

Other 100[°] paratypes (in OLC), Mozambique, Maputo Prov., S. Maria (along Bairro dos Pescadores (Maputo) - Marracuene road), reared from unidentified cicadellids, M. Olmi (first date: C; second date: B; third date: Sf):

> 1) 6.IX.1996; 7.IX.1996; 10.X.1996; 2) 5.IX.1996; 8.IX.1996; 10.X.1996; 3) 5.IX.1996; 9.IX.1996; 10.X.1996; 4) 6.IX.1996; 11.IX.1996; 13.X.1996; 5) 5.IX.1996; 11.IX.1996; 13.X.1996; 6) 6.IX.1996; 10.IX.1996; 14.X.1996; 7) 5.IX.1996; 12.IX.1996; 14.X.1996; 8) 6.IX.1996; 12.IX.1996; 14.X.1996; 9) 5.IX.1996; 10.IX.1996; 15.X.1996; 10) 6.IX.1996; 12.IX.1996; 15.X.1996;

Etymology: This species is named in honor of the collector of a part of the type series, Mrs. Fausta Finocchi.

Remarks: Because of the presence of a transverse pronotal furrow, absence of a strong subapical tooth in the enlarged claw and palpal ratio (5/2), Gonatopus faustae, sp. nov. belongs to the Ethiopian group incognitus Olmi (formerly known as Gonatopus Ljungh) (Olmi, 1993, 1994a). Thirty-seven species of this group were known so far from the Ethiopian Region, four in Mozambique (Olmi, 1994a). The four species previously known in Mozambique were G. ridens Olmi, 1984, G. communis Olmi, 1984, G. incognitus Olmi, 1984, and G. okahandjae Olmi, 1984 (Olmi, 1984, 1994a). G. faustae, sp. nov. is very near G. hyalinus Olmi, 1984; in G. faustae, however, the anterior surface of metathorax + propodeum is fully dull and granulated (in G. hyalinus it is fully shiny and unsculptured); the metathorax + propodeum of G. hyalinus, is, besides, more slender.

The male of species is close to that of G. similis Brues, 1906 in having complete notauli, antennal segment 3 more than three times as long as broad, and by having shiny and almost unsculptured propodeum. However, they have different dorsal process of the parameres: long and slender in G. similis, broad in G. faustae).

In the key to the females of Ethiopian Gonatopus proposed by Olmi (1984), G. faustae, sp. nov. can be inserted at number 13, as follows:

13.	Body totally yellow-testaceous or ferruginous,	with petiole	black	.14
	Body at least partly black or brown or dark			.15

14.	Anterior surface of propodeum more inclined (Fig. 1111 B in Olmi, 1984)
	Gonatopus ericeti Olmi
	Anterior surface of metathorax + propodeum less inclined (Fig. 1111 A in
	Olmi, 1984)
14'	. Metathorax + propodeum more slender (Fig. 9), with anterior surface
	shiny and unsculptured

-. Metathorax + propodeum less slender (Fig. 6), with anterior surface dull and granulated......Gonatopus faustae, sp. nov.

In the key to the males of Ethiopian Gonatopus proposed by Olmi (1994a) G. faustae, sp. nov. can be inserted at number 5, near G. similis Brues, as follows:

5.	Propodeum shiny, almost fully or mostly smooth and without sculpture
•.	Propodeum dull, fully or mostly reticulate rugose
~ .	

5'. Dorsal process of parameres long and slender (Fig. 26 in Olmi 1987b). Gonatopus similis Brues

-. Dorsal process of parameres broad (Fig. 8)......Gonatopus faustae, sp. nov.

10. Gonatopus capensis Brues, 1906

Only the female of this species is known (Olmi, 1984).

Distribution: Gambia, South Africa, Mozambique (New Record).

Reared from an unidentified species of cicadellid at the airport of Praia do Bilene (Gaza Prov.).

11. Gonatopus guigliae (Benoit, 1951) (Fig. 10)

Only one female of this species was known (Olmi, 1984) from Uganda. Recently I examined another two females from the following localities of South Africa: 1) Orange Free State, Tussen Die Riviere Reserve, Near Bethulie, 30°30'S 26°12'E (in PRC); 2) Transvaal, Ellisras Dist., D'Nyala Nature Reserve, 23°45'S 27°49'E (in OLC).

Two females and three males were reared at 2 Km E of Incomati River Bridge (Along Palmeira - Macia Road, EN N. 1), Gaza Prov. (New Record from Mozambique). The male of G. guigliae is described for the first time.

Male: Fully winged; length 2.43 - 2.81 mm; head black, with mandibles testaceous; antennae brown; thorax and propodeum black; gaster brown; legs testaceous, with femora and mid and hind tibiae partly brown; antennae not distally thickened; antennal segments in the following proportions: 4.5-5.5-8-7-6.5-6-6-5.5-6-10; antennal segment 3 less than three times as long as broad (8:3); head dull, swollen, fully reticulate rugose; frontal line absent; occipital carina absent; temples distinct; POL = 7; OL = 3; OOL = 4; two oval shiny areas are visible between the posterior ocelli and the eyes; these areas are not delimited anteriorly by an apophysis; scutum dull, granulated; notauli com-

plete, posteriorly separated; least distance between the notauli almost as long as the breadth of the ocelli (3:2.8); scutellum and metanotum shiny, smooth, punctate, without sculpture among the punctures; propodeum dull, reticulate rugose; fore wing hyaline, without dark transversal bands; marginal cell open; stigmal vein regularly curvilinear, with distal part longer than proximal part (16:9); dorsal process of the parameres (Fig. 10) long and slender; maxillary palpi with 6 segments; labial palpi with 3 segments; tibial spurs 1, 1, 2.

Specimens examined: 1Q, MOZAMBIQUE: Gaza Prov.: 2 Km E of Incomati River bridge (along Palmeira - Macia road), reared from an unidentified female cicadellid adult collected (C) on 11.X.1996, dryinid larva pupated (B) on 15.X.1996, dryinid adult emergence (Sf) on 14.XI.1996 (OLC); 1Q, same label locality data, reared from an unidentified female cicadellid adult collected (C) on 11.X.1996, dryinid larva pupated (B) on 15.X.1996, dryinid adult emergence (Sf) on 18.XI.1996 (OLC); 1o^{*}, same label locality data, reared from an unidentified cicadellid nymph collected (C) on 11.X.1996, dryinid larva pupated (B) on 16.X.1996, dryinid adult emergence (Sf) on 18.XI.1996 (OLC); 1o^{*}, same label locality data, reared from an unidentified male cicadellid adult collected (C) on 11.X.1996, dryinid larva pupated (B) on 15.X.1996, dryinid adult emergence (Sf) on 13.XI.1996 (OLC); 1o^{*}, same label locality data, reared from an unidentified male cicadellid adult collected (C) on 11.X.1996, dryinid larva pupated (B) on 15.X.1996, dryinid adult emergence (Sf) on 13.XI.1996 (OLC); 1o^{*}, same label locality data, reared from an unidentified male cicadellid adult collected (C) on 11.X.1996, dryinid larva pupated (C) on 11.X.1996, dryinid larva pupated (B) on 16.X.1996 (OLC); 1o^{*}, same label locality data, reared from an unidentified male cicadellid adult collected (C) on 11.X.1996 (OLC); 1o^{*}, same label locality data, reared from an unidentified male cicadellid adult collected (C) on 11.X.1996, dryinid adult emergence (Sf) on 18.XI.1996 (OLC).

Remarks: The male of G. guigliae is close to that of G. okahandjae Olmi, 1984 in having complete notauli, short antennal segment 3, absence of an apophysis on sides of posterior ocelli, and in the sculpture of the propodeum. In the key to the males of the Ethiopian Gonatopus proposed by Olmi (1994a) G. guigliae can be inserted at number 4, near Gonatopus okahandjae Olmi and Pseudogonatopus cornutus Benoit, as follows:

4. Region of the head between posterior ocelli and eyes with a shiny, ovoidal area anteriorly delimited by a strong apophysis

Region of the head between posterior ocelli and eyes with a shiny, ovoidal

- -. Propodeum dull, fully reticulate rugoseGonatopus guigliae (Benoit)
- 12. Gonatopus maputensis Olmi, new comb., new name (Fig. 11)

Paradicondylus australis Olmi 1994a: 74. Preoccupied in Gonatopus by Ceballos, 1936. nec Eucamptonyx australis Ceballos 1936: 57. nec Gonatopus australis (Ceballos 1936): Olmi 1984: 1593.

As discussed below the discovery of the males of this species enabled me to synonymize *Paradicondylus* under *Gonatopus*, **new synonymy**. The name *australis* is preoccupied in *Gonatopus* by *G. australis* Ceballos. Therefore, a new name, *G. maputensis* is hereby proposed.

-.

Only females of *Paradicondylus australis* Olmi, 1994a were previously known. In 1993 and 1996 I obtained two males of this species by rearing parasitized adults of *Nisia nervosa* (Mots.) (Meenoplidae). These rearings were made in Maputo (Mozambique), in the Agricultural Municipal Nursery at Costa do Sol. The male is described below for the first time.

Male: Fully winged; length 2.18-2.31 mm; head black, with ventral side, temples, genae, clypeus and mandibles testaceous-dark; antennae brown, with segments 1-2 testaceous; mesosoma black; gaster brown; legs testaceous; antennae not distally thickened; antennal segments in the following proportions: 5-5-9-7-6.5-6.5-6.5-6.5-6-9; third antennal segment 4.5x as long as broad (9:2); head dull, granulated and rugose; frontal line absent; occipital carina absent; POL = 5; OL = 2; OOL = 2.5; temples very short; scutum shiny, weakly granulated; notauli complete, posteriorly separated; least distance between the notauli shorter than the breadth of the ocelli (2:3); scutellum and metanotum shiny, smooth, without sculpture; propodeum dull, reticulate rugose, except for the most part of the dorsal surface, which is smooth; dorsal surface with a strong median longitudinal furrow; fore wing hyaline, without dark transversal bands; marginal cell open; stigmal vein curvilinear, with distal part much longer than proximal part (15:8); dorsal process of the parameres reduced to an inner membranous band (Fig. 11); maxillary palpi with 4 segments; labial palpi with 2 segments; tibial spurs 1, 1.2.

Specimens examined: 15, MOZAMBIQUE: Maputo Prov.: Maputo, Costa do Sol, Municipal Agricultural Nursery, reared from a parasitized adult specimen of Nisia nervosa (Mots.) (Meenoplidae) collected (C) on 26.XI.1993, dryinid larva pupated (B) on 29.XI.1993, dryinid adult emergence (Sf) on 20.XII.1993, M. Olmi (OLC). 15, same label locality data, reared from a parasitized adult of Nisia nervosa (Mots.) (Meenoplidae) collected (C) on 21.IX.1996, dryinid larva pupated (B) on 25.IX.1996, dryinid adult emergence (Sf) on 22.X.1996, M. Olmi (OLC).

Remarks: Paradicondylus Olmi, 1986 contained two species occurring in the Ethiopian Region: P. paulyi Olmi, 1984 from Senegal, and P. australis Olmi, 1994 from Mozambique. According to the new classification of Gonatopodinae proposed by Olmi (1993) based on male and female characteristics, the discovery of the male Paradicondylus allows me to consider Paradicondylus as a junior synonym of Gonatopus Ljungh 1810 because I did not see differences of generic value among the males of these two genera.

The male of Gonatopus maputensis may be inserted in the key to the males of the Ethiopian Gonatopus proposed by Olmi (1994a) at number 5, near G. festivus Olmi, G. amoenus Olmi and G. ruens (Olmi), as follows:

5. Propodeum shiny, almost fully smooth and without sculpture

6. Head black, with ventral side, temples, genae, clypeus and mandibles testaceous-dark; dorsal process of the parameres reduced to an inner membranous band, not transverse (Fig. 11)

•	Head black, only with mandibles testaceous; dorsal process of the
	parameres long (Figs 7, 8, 10 in Olmi, 1994a) or short and transverse
	(Fig. 4 in Olmi, 1994a)6'
6'.	Dorsal process of the parameres short, transverse and pointed (Fig. 4 in
	Olmi, 1994a) Gonatopus festivus Olmi
-	Dorsal process of the parameres longer and not transverse (Figs 7, 8, 10
	in Olmi, 1994a)7

13. Gonatopus gazensis, sp. nov. (Figs. 12-13)

Female: Apterous; length 4.18 mm; ferruginous, with petiole black and distal half of gaster darkened; antennae distally thickened; antennal segments in the following proportions: 11-6-17-11-8-7-6-5-5-8; head flat (Fig. 12), dull, granulated; frontal line complete; occipital carina only visible behind and on the sides of the posterior ocelli; temples distinct; POL = 2; OL = 2; OOL = 11; pronotum crossed by a strong transversal impression, shiny, sculptured by numerous longitudinal striae; metanotum hollow behind the scutellum, with sides protruding; lateral protrusions pointed; mesometapleural suture distinct and complete; metathorax + propodeum with anterior surface sculptured by irregular longitudinal keels; posterior surface and pleura transversely striate; fore tarsal segments in the following proportions: 17-3.5-5.5-16-28; enlarged claw (Fig. 13) with a subapical tooth and a row of 6 lamellae; segment 5 of front tarsus (Fig. 13) with two rows of 4+12 lamellae; distal apex with a group of at least 15 lamellae; maxillary palpi with 6 segments; labial palpi with 3 segments; tibial spurs 1, 0, 1.

Male: Unknown.

Holotype: Q, MOZAMBIQUE: Gaza Prov.: Praia do Bilene, Airport, 16.IX.1995, M. Olmi (OLC).

Host: The holotype was collected by sweeping on grass near the airport of Praia do Bilene; it was kept alive in a glass tube for a few days; during this period the Author observed that this dryinid captured nymphs of *Paroxy-chara* sp. (Flatidae). This is surely the host.

Remarks: Because of the presence of a transversal pronotal furrow, presence of a strong subapical tooth, a row of lamellae in the enlarged claw and palpal ratio (6/3), Gonatopus gazensis, sp. nov. belongs to the Ethiopian group somerseti (Olmi) (formerly known as Apterodryinus Perkins and now synonym of Gonatopus Ljungh) (Olmi, 1993, 1994a). Three species of this group were previously known from the Ethiopian Region, all from South Africa (Olmi, 1984): G. somerseti (Olmi, 1984), owaini Olmi, 1993, and rufulus (Olmi, 1984). I also examined a female of Gonatopus somerseti (Olmi) from Kenya (Kora) (unpublished record). G. gazensis, sp. nov. is very near G. rufulus; in G. gazensis, however, the head is almost flat and the anterior surface

of metathorax + propodeum is sculptured by irregular longitudinal keels (in G. rufulus the head is excavated and the anterior surface of metathorax + propodeum is granulated and not sculptured by irregular keels).

After the description of G. gazensis, sp. nov. the following new key to the females of Ethiopian Gonatopus somerseti group (formerly Apterodryinus Perkins) is proposed:

- 1. Meso-metapleural suture obsolete...... Gonatopus somerseti (Olmi)
- -. Meso-metapleural suture well distinct and complete2
- Anterior surface of metathorax + propodeum less inclined (Fig. 922 A in Olmi, 1984); metathorax + propodeum almost fully black; enlarged claw with distal apex very bent (Fig. 923 in Olmi, 1984)
- Gonatopus owaini Olmi
 Anterior surface of metathorax + propodeum more inclined (Fig. 922 B in Olmi, 1984); metathorax + propodeum totally ferruginous; enlarged claw with distal apex less bent (Fig. 924 in Olmi, 1984; Fig 13).......3
- -. Head flat (Fig. 12); anterior surface of metathorax + propodeum sculptured by irregular longitudinal keels.......Gonatopus gazensis, sp. nov.

Strepsiptera

Family Elenchidae

1. Elenchus tenuicornis (Kirby, 1815)

New record from Mozambique.

Reared from Toya propinqua (Fieber) (Delphacidae) at 6 Km N of Palmeira (Maputo Prov.).

Family Halictophagidae

2. Halictophagus australensis Perkins, 1905

New record from Mozambique.

Reared from *Cofana spectra* Distant (Cicadellidae) in the Municipal Agricultural Nursery in Maputo (Costa do Sol), where it is very common.

According to Luna de Carvalho (1978) Cofana spectra Distant is parasitized by Halictophagus henriquei Luna de Carvalho, 1972 in Angola and by Halictophagus regina Fox, 1967 in Uganda.

Acknowledgments

I am thankful to Dr. J. T. Medler (Bishop Museum, Honolulu) for the identification of *Paroxychara* sp. (Flatidae), Dr. Jeyaraney Kathirithamby (Oxford) for the identification of Strepsiptera and Dr. Adalgisa Guglielmino (Viterbo) for the identification of planthoppers and leafhoppers. Special thanks also to Mrs Fausta Finocchi (Maputo) for her valuable help in collecting dryinids in Mozambique.

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Figs. 1 - 7. 1, chela of holotype of Gonatopus mossambicus; 2, male genital armature of paratype of G. mossambicus (left half); 3, male genital armature of G. rubripes (left half); 4, male genital armature of G. incognitus Olmi (left half); 5, male genital armature of G. communis (left half); 6, thorax + propodeum of holotype of G. faustae in dorsal view; 7, chela of holotype of G. faustae.



Figs. 8 - 14. 8, male genital armature of paratype of Gonatopus faustae (left half); 9, thorax + propodeum of holotype of G. hyalinus in dorsal view; 10, male genital armature of G. guigliae (left half); 11, male genital armature of G. maputensis (left half); 12, head of holotype of G. gazensis in apical view; 13, chela of holotype of G. gazensis; 14, head of holotype of G. rufulus in apical view.