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Authors: Olmi, Massimo, Guglielmino, Adalgisa, Natha, Sultan Adamo, and Alfredo, Alberto Albino Nota

Source: African Invertebrates, 53(2) : 715-731

Published By: KwaZulu-Natal Museum

URL: <https://doi.org/10.5733/afin.053.0216>

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A catalogue of Dryinidae of Mozambique, with description of a new species (Hymenoptera: Chrysidoidea)

Massimo Olmi^{1*}, Adalgisa Guglielmino², Sultan Adamo Natha³ and
Alberto Albino Nota Alfredo⁴

¹Tropical Entomology Research Center, Via De Gasperi 10, Viterbo, 01100 Italy; olmi@unitus.it;

²Department of Agriculture, Forests, Nature and Energy, University of Tuscia, Viterbo, 01100 Italy; guglielm@unitus.it

³Catholic University of Mozambique, Faculty of Agriculture, Cuamba, Mozambique; sultannatha@gmail.com

⁴Departamento de Engenharia Alimentar, Faculdade de Engenharia, Chimoio, Manica, Mozambique; alnota2005@yahoo.com

*Corresponding author

ABSTRACT

A new species of Dryinidae, *Gonatopus chiruanus*, is described from Mozambique, Niassa Province, Mecanheles District, Entre-Lagos. The male of *Gonatopus bekilyanus* (Benoit, 1954) is described for the first time. An updated checklist of Dryinidae of Mozambique is presented. With the above new records, 45 species of Dryinidae are now known from Mozambique. New records from other countries are also provided.

KEY WORDS: Dryinidae, Afrotropical, Mozambique, new species, checklist, identification key.

INTRODUCTION

The Dryinidae (Hymenoptera: Chrysidoidea) are parasitoids of Auchenorrhyncha (Hemiptera) (Guglielmino & Bückle 2003, 2010; Guglielmino *et al.* 2006; Guglielmino & Olmi 1997, 2006, 2007; Guglielmino & Virla 1998).

In the monograph of world Dryinidae (Olmi 1984), no species were listed for Mozambique. Dryinidae were first collected in Mozambique in 1985 by the first author. He found *Gonatopus okahandjae* Olmi, 1984 and *Echthrodelpfax afer* Olmi, 1984 on the campus of the Faculty of Agriculture, Eduardo Mondlane University, Maputo, and described for the first time the male of both species (Olmi 1987a). The third record from Mozambique was that of *Anteon kawandanum* Olmi, 1984, collected in Maputo by the same author (Olmi 1990). In more recent years, Olmi (1994a, 1998, 2004) has published three contributions on the knowledge of Dryinidae of Mozambique, with many new records as well as descriptions of the following new species: *Gonatopus festivus* Olmi, 1994; *Gonatopus amoenus* Olmi, 1994; *Gonatopus mossambicus* Olmi, 1998; *Gonatopus faustae* Olmi, 1998; *Gonatopus maputensis* Olmi, 1998 (= *Paradicondylus australis* Olmi, 1994); *Gonatopus gazensis* Olmi, 1998; *Gonatopus cuambensis* Olmi, 2004; *Gonatopus macua* Olmi, 2004; *Gonatopus niassensis* Olmi, 2004; and *Dryinus zambeziacus* Olmi, 2004. Lastly, in a recent paper, Olmi (2007) described a new subfamily of Dryinidae, namely Apoaphelopinae, with two species, *Apoaphelopus mostovskii* Olmi, 2007 from South Africa, KwaZulu-Natal, and *A. niassensis* Olmi, 2007 from Mozambique, Niassa Province.

In 2011, the study of new material collected by the authors resulted in the discovery of an additional new species (described herein) and the male of a species previously known only from females. These records provided the opportunity to compose a checklist of dryinids known from Mozambique.

MATERIAL AND METHODS

Species descriptions follow the terminology used by Olmi (1984, 1994b, 1999). The measurements reported are relative, except for the total length (head to abdominal tip, without the antennae), which is expressed in millimetres.

In the descriptions, POL is the distance between the inner edges of the two lateral ocelli; OL – between the inner edges of a lateral ocellus and the median ocellus; OOL is the distance from the outer edge of a lateral ocellus to the compound eye; OPL – from the posterior edge of a lateral ocellus to the occipital carina; and TL – from the posterior edge of the eye to the occipital carina.

Most of the material that is the subject of the present paper was reared. The authors have adopted the following rearing abbreviations: C – date of collection of parasitized host, B – date of dryinid cocooning, E – date of dryinid adult emergence.

The material referred to in this paper is in the following collections:

- AMNH – American Museum of Natural History, New York, USA;
- BMNH – The Natural History Museum, London, UK;
- CASC – California Academy of Sciences, San Francisco, California;
- CNC – Canadian National Collection of Insects, Ottawa, Canada;
- DEUW – Department of Entomology, University of Wageningen, The Netherlands;
- DJBC – Denis J. Brothers' Collection, University of KwaZulu-Natal, Pietermaritzburg, South Africa;
- FAG – Faculté des Sciences Agronomiques de l'État, Gembloux, Belgium;
- INIA – Instituto Nacional de Investigação Agronómica, Maputo, Mozambique;
- KJHC – Karl-Johan Hedqvist's collection, Stockholm, Sweden;
- MNHN – Muséum national d'Histoire naturelle, Paris, France;
- MRAC – Musée Royal de l'Afrique Centrale, Tervuren, Belgium;
- NNIC – Namibian National Insect Collection, Windhoek, Namibia;
- OLM – Department of Plant Protection, University of Tuscia, Viterbo, Italy (Massimo Olmi's collection);
- OOLM – Oberösterreichisches Landesmuseum, Linz, Austria;
- SAMC – Iziko South African Museum, Cape Town, South Africa;
- USNM – National Museum of Natural History, Washington, DC, USA;
- ZIL – Zoological Institute, Lund, Sweden.

TAXONOMY

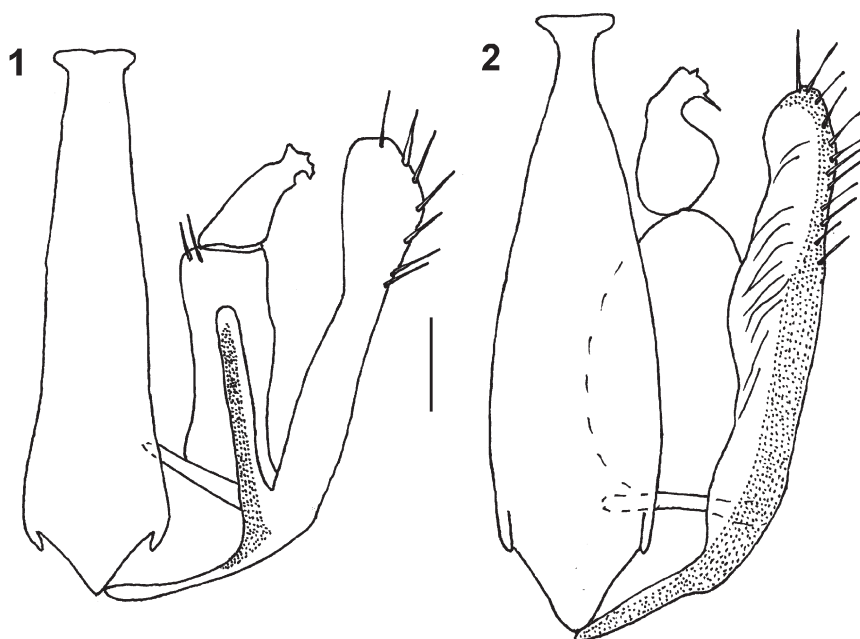
Family Dryinidae Haliday, 1833
 Subfamily Gonatopodinae Kieffer, 1906
 Genus *Gonatopus* Ljungh, 1810
Gonatopus bekilyanus (Benoit, 1954)

Fig. 1

Neogonatopus bekilyanus: Benoit 1954: 394.

Gonatopus bekilyanus (Benoit): Olmi 1984: 1612.

Gonatopus bekilyanus was known only on the basis of female specimens collected in Kenya, Madagascar, Mozambique and South Africa (Benoit 1954; Olmi 1984, 2004; Olmi & Copeland 2011). In 2011, both sexes of this species were reared in Mozambique, Niassa Province, Cuamba, from an unidentified species of Cicadellidae. This rearing resulted in the discovery of the previously unknown male, described herein.



Figs 1, 2. Male genital armatures of (1) *Gonatopus bekilyanus* (Benoit) from Cuamba and (2) paratype of *Gonatopus chiruanus* sp. n. Left half removed. Scale bar = 0.04 mm for both figures.

Description:

Male.

Fully winged; length 1.6 mm. Head black, except mandible testaceous; antenna brown; mesosoma black; metasoma brown; legs brown, except articulations and tarsal segments 1–4 testaceous. Antenna hairy, filiform; antennal segments in following proportions: 4:3:4.5:4:3.5:4:3.5:4:3:6; antennal segment 3 less than 3 times as long as broad: 4.5:2. Head dull, granulated; frontal line absent; occipital carina absent; POL = 5; OL = 3; OOL = 4; greatest breadth of posterior ocelli shorter than OL (2:3). Vertex of head with two oval, dull, granulated areas situated between posterior ocelli and eyes and surrounded anteriorly by very high carina, posteriorly not surrounded by carina. Temple distinct, granulated, not crossed by carina. Palpal formula 4/2. Scutum dull, granulated. Notauli complete, posteriorly separated; minimum distance between notauli slightly shorter than greatest width of posterior ocelli (1.5:2). Scutellum and metanotum shiny, smooth, weakly punctate, without sculpture among punctae. Propodeum dull, weakly reticulate rugose, with small areolae; dorsal surface without median longitudinal furrow; posterior surface without longitudinal or transverse keels. Forewing hyaline, without dark transverse bands, and with only costal cell surrounded by strongly pigmented veins; marginal cell open; stigmal vein regularly curved, with distal part longer than proximal part. Dorsal process of paramere (Fig. 1) short and slender, with distal apex pointed. Tibial spurs 1/1/2.

Material examined: KENYA: *Central Province*: Mt Kenya, 1♀ (DEUW). MADAGASCAR: *Toamasina*: Tamatave, 1♀ (FAG); Rogez, 2♀ (MRAC, OLM). *Toliary*: Bekily, iii.1943, A. Seyrig, ♀ holotype (MNHN);

same locality label, vii.1937, A. Seyrig, 4♀ paratypes (2 in MNHN; 2 in MRAC); Ifaty, 23°09'S 43°37'E, 17.ix.1993, under seaweed drift on sand beach, W.E. Steiner & R. Andriamasimanana, 1♀ (USNM). MOZAMBIQUE: *Niassa*: Cuamba, Mozambique Catholic University Campus, M. Olmi reared, 1♀: C. 19.iv.2002, B. 21.iv.2002, E. 12.v.2002; same locality label, 1♀: C. 22.iii.2003, B. 23.iii.2003, E. 14.iv.2003 (OLM); same locality label, 1♀: C. 23.iii.2003, B. 27.iii.2003, E. 18.iv.2003 (OLM); same locality label, 1♀: C. 29.v.2007, B. 30.v.2007, E. 30.vi.2007 (OLM); same locality label, 1♀: C. 29.v.2007, B. 31.v.2007, E. 1.vii.2007 (SAMC); same locality label, 1♀: C. 19.iv.2007, B. 20.iv.2007, E. 14.v.2007 (SAMC); same locality label, 1♀: egg 27.v.2007, first instar larva 31.v.2007, second instar larva 1.vi.2007, third instar larva 3.vi.2007, fourth instar larva 5.vi.2007, fifth instar larva 6.vi.2007, B. 7.vi.2007, E. 30.vi.2007 (OLM); same locality label, 1♀: C. 3.ii.2011, B. 4.ii.2011, E. 23.ii.2011 (OLM); same locality label, 1♀: C. 6.ii.2011, B. 8.ii.2011, E. 27.ii.2011 (OLM); same locality label, 1♀: C. 3.ii.2011, B. 4.ii.2011, E. 23.ii.2011 (OLM); same locality label, 1♂: C. 6.ii.2011, B. 7.ii.2011, E. 1.iii.2011 (OLM); same locality label, 1♀: C. 6.ii.2011, B. 10.ii.2011, E. 1.iii.2011 (OLM); same locality label, 1♀: C. 1.iv.2009, B. 7.iv.2009 (OLM). SOUTH AFRICA: *Gauteng*: nr Pretoria, Discovery, 28.ix.1961, Empey, 1♀ (DJBC).

Hosts: In Niassa, adults and nymphs of *Exitianus capicola* (Stål) and *Exitianus taeniaticeps* (Kirschbaum) (Cicadellidae) (Guglielmino & Olmi 2006).

Comments: Because of the complete notauli, the antennal segment 3 that is less than 3 times as long as broad, and the area between posterior ocelli and eyes having an ovoidal area anteriorly delimited by a strong and high carina, the male of *G. bekilyanus* is similar to those of *G. cornutus* (Benoit 1951b) and *G. ridens* Olmi, 1984. For the main differences between the above species see the comments on the following species, *G. chiruanus* sp. n.

***Gonatopus chiruanus* sp. n.**

Figs 2, 3

Etymology: This species is named after Chirua Lake, on the banks of which it was collected.

Description:

Male.

Fully winged; length 1.9 mm. Head black, except mandible testaceous; antenna brown; mesosoma, metasoma and legs black. Antenna hairy, filiform; antennal segments in the following proportions: 4:4:5:5:5:5:4:4:7; antennal segment 3 less than 3 times as long as broad (5:2). Head dull, hairy, granulated; frontal line complete; occipital carina absent; POL = 4; OL = 2; OOL = 4; greatest breadth of posterior ocelli about as long as OL. Vertex of head with two oval, smooth, granulated areas situated between posterior ocelli and compound eyes and surrounded anteriorly by very high carina and posteriorly by lower carina not continuing on temples and behind ocellar triangle. Temple distinct, granulated, not crossed by carina. Palpal formula: 4/2. Scutum dull, granulated. Notauli complete, posteriorly separated; minimum distance between notauli about half as long as greatest width of posterior ocelli. Scutellum and metanotum shiny, smooth, punctate, without sculpture among punctae. Propodeum dull, weakly reticulate rugose, with small areolae; dorsal surface with median longitudinal furrow; posterior surface without longitudinal or transverse keels. Forewing hyaline, without dark transverse bands, and with only costal cell surrounded by strongly pigmented veins; marginal cell open; stigmal vein regularly curved, with distal part longer than proximal part. Dorsal process of paramere absent; paramere with an inner membranous band along the entire length (Fig. 2). Tibial spurs 1/1/2.

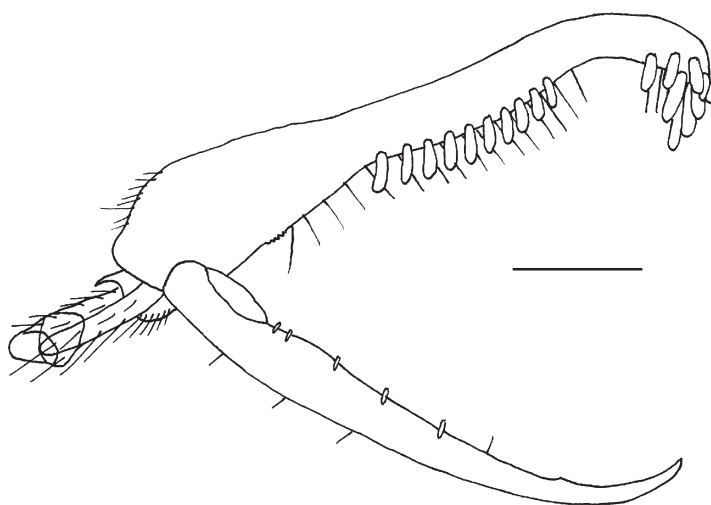


Fig. 3. Chela of holotype of *Gonatopus chiruanus* sp. n. Scale bar = 0.1 mm.

Female.

Apterous; length 3.1–3.9 mm (holotype 3.4 mm). Head black, except mandible, clypeus, anterior region of face (more along orbits) and part of ventral side testaceous; antenna brown, except segment 1 testaceous; prothorax black, except posterior margin of pronotum testaceous; scutum dark testaceous, except anterior and posterior margin black; rest of mesosoma black; metasoma brown; foreleg brown, except tarsus testaceous; mid- and hindleg brown, except tarsal segments 1–4 testaceous. Antenna clavate; antennal segments in the following proportions: 8:6:16:15:14:12:10:9:7:8. Head excavated, dull, granulated; frontal line incomplete, absent on anterior third of face; occipital carina absent; temple prominent, granulated and crossed by longitudinal keel; POL = 1; OL = 1; OOL = 7; greatest breadth of posterior ocelli about as long as POL. Palpal formula: 4/2. Pronotum crossed by strong transverse impression, granulated. Scutum very long, about 4 times as long as broad, dull, granulated. Scutellum hardly visible, dull, granulated. Stalk between pronotum and metanotum composed of scutum + scutellum, more than 4 times as long as broad (19:4). Metanotum very long, granulated, not transversely striate, not hollow behind scutellum. Metathorax + propodeum dull, completely granulated, with posterior surface not transversely striate. Mesopleura and metapleura granulated, not transversely striate. Meso-metapleural suture distinct and complete. Protarsal segments in the following proportions: 13:2.5:4:14:21. Enlarged claw (Fig. 3) with small subapical tooth and one row of five peg-like hairs + one normal hair. Segment 5 of protarsus (Fig. 3) with one row of 10–14 lamellae (10 in holotype); distal apex with about 10 lamellae. Tibial spurs 1/0/1.

Holotype: ♀ “MOZAMBIQUE: Niassa: Mecanhelas District, Entre-Lagos, Lake Chirua bank in front of Railway Station, 14°58'S 35°53'E, C. 6.iii.2011, B. 9.iii.2011, E. 22.iv.2011, reared from a nymph of *Nicolaus attenuatus* Stiller, M. Olmi and A. Nota”; [in red] “*Gonatopus chiruanus* sp. n. M. Olmi det. 2011 ♀” (OLM).

Paratypes: same data as holotype: 1♀, C. 13.iii.2011, B. 15.iii.2011, E. 12.v.2011 (OLM); 1♀, C. 13.iii.2011, B. 14.iii.2011, E. 14.v.2011 (OLM); 1♀, C. 13.iii.2011, B. 15.iii.2011, E. 15.v.2011 (OLM); 1♀, C. 13.iii.2011, B. 16.iii.2011, E. 15.v.2011 (OLM); 1♂, C. 13.iii.2011, B. 14.iii.2011, E. 14.v.2011 (OLM).

Hosts: *Nicolaus attenuatus* Stiller (Cicadellidae).

Comments: Because of the strong pronotal transverse furrow, the palpal formula 4/2 and the small subapical tooth of the enlarged claw, the female of *G. chiruanus* belongs to the *Gonatopus incognitus* group (Olmi 2007). The female of *G. chiruanus* is characterized by the long and slender stalk between pronotum and metathorax + propodeum and by the temple being crossed by a sharp carina. For this reason, it is very similar to *G. leptothorax* Ceballos, 1936, and *G. fortis* Olmi, 2007. The holotype of the new species was compared with the holotypes of *G. leptothorax* from Madagascar, Bekily (deposited in MNHN) and *G. fortis* from Namibia, 51 km S Grünau (deposited in NNIC). Following the description of *G. chiruanus*, the key to the females of the Afrotropical *Gonatopus* of *incognitus* group published by Olmi (1984, 2007) can be modified by replacing couplet 18 as follows:

- 18 Temple with a strong, sharp carina (Olmi 2007: fig. 26) 18'
- Temple without a sharp carina 19
- 18' Posterior surface of propodeum granulated, not transversely striate; scutum very long, about 4 times as long as broad **chiruanus** sp. n.
- Posterior surface of propodeum transversely striate; scutum shorter, about 2–3 times as long as broad 18"
- 18" Scutum very long, approximately 2.5–3.0 times as long as broad; temple rugose **leptothorax** Ceballos
- Scutum shorter, about twice as long as broad; temple smooth **fortis** Olmi

Because of the complete notauli, the antennal segment 3 less than 3 times as long as broad, and the area between posterior ocelli and eyes having an ovoidal area anteriorly delimited by a strong and high carina, the males of *G. chiruanus* and *bekilyanus* are very similar to those of *G. cornutus* (Benoit, 1951) and *G. ridens* Olmi, 1984. The main differences between these four species can be summarized as follows:

- 1 Dorsal process of paramere absent; paramere with an inner membranous band along the entire length (Fig. 2) **chiruanus** sp. n.
- Dorsal process of paramere (Olmi 2004: fig. 7; 2007: fig. 25; Fig. 1) short and slender, with distal apex pointed 2
- 2 Notauli posteriorly joint, or separated, but very close, with minimum distance between notauli shorter than half of posterior ocellus breadth; head and scutum dull, granulated **ridens** Olmi
- Notauli posteriorly separated; minimum distance between notauli longer than half of posterior ocellus breadth; head and scutum dull and granulated, or shiny, punctate, without sculpture among punctae 3
- 3 Head punctate, without sculpture among punctae, with a shiny, unsculptured, ovoidal area between posterior ocelli and eyes, surrounded posteriorly by a lower carina continuing on the temples and behind the ocellar triangle (Olmi 2007: fig. 24); scutum shiny, strongly punctate, without sculpture among punctae **cornutus** (Benoit)
- Head granulated, with a dull, granulated, ovoidal area between posterior ocelli and eyes, not surrounded posteriorly by a lower carina continuing on the temples and behind the ocellar triangle; scutum dull, granulated **bekilyanus** (Benoit)

CHECKLIST OF DRYINIDAE OF MOZAMBIQUE

An asterisk indicates that specimens are known only from Mozambique. Provinces are in italics.

Subfamily Aphelopinae Perkins, 1912

Genus *Aphelopus* Dalman, 1823: 8

Type species: *Dryinus atratus* Dalman, 1823, by subsequent designation (Westwood 1840).

Aphelopus mediocarinatus (Benoit, 1951b: 23)

Distribution: *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, C. 4.iii.2005, B. 9.iii.2005, E. 5.iv.2005, M. Olmi, 9♀ and 2♂ (OLM), 2♀ (SAMC).

Hosts in Mozambique: *Molopopterus alfa* Dworakowska and *Empoascanara ethiopica* Dworakowska (Cicadellidae: Typhlocybinae) (Guglielmino & Olmi 2006).

Recorded from many Afrotropical countries (Olmi & van Harten 2006), including Madagascar (Olmi 1984), in addition to Yemen (Olmi & van Harten 2006).

Aphelopus wittei Benoit, 1951b: 16

Distribution: *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, C. 18.ii.2005, B. 20.ii.2005, E. 8.iii.2005, M. Olmi, 1♀ (OLM); 17.iv–2.vi.2006, Malaise trap, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: Unknown.

Recorded from many Afrotropical countries (Olmi & van Harten 2000), including Madagascar (Olmi 1984), in addition to Yemen (Olmi & van Harten 2000).

Subfamily Apoaphelopinae Olmi, 2007

Genus *Apoaphelopus* Olmi, 2007: 228

Type species: *Apoaphelopus mostovskii* Olmi, 2007, by original designation.

Apoaphelopus niassensis Olmi, 2007: 230*

Distribution: *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, 7.iv–2.vi.2006, Malaise trap, M. Olmi, immature ♂ holotype (OLM); same data as holotype, 4–18.ix.2007, 1 mature ♂ (OLM).

Hosts in Mozambique: Unknown.

Subfamily Anteoninae Perkins, 1912

Genus *Anteon* Jurine, 1807: 302

Type species: *Anteon jurineanum* Latreille, 1809, by monotypy.

Anteon afrum Olmi, 1984: 375

Distribution: *Maputo*: Maputo (AMNH); 3 km N Umbelúzi (AMNH); 5 km E Manhiça (AMNH).

Hosts in Mozambique: *Nephotettix afer* Ghauri and *Nephotettix modulatus* Melichar (Cicadellidae) (Guglielmino & Olmi 1997).

Recorded from Congo (Olmi 1994a), Namibia (Olmi 1984) and South Africa (new record: *KwaZulu-Natal*: Eshowe, 1–3.v.1926, R.E. Turner, 1♀ (BMNH)).

Anteon brachypterum Olmi, 1984: 353

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 21.iii.2008, B. 22.iii.2008, E. 2009, M. Olmi, reared from a nymph of an unknown species of Cicadellidae showing two cysts, 1♀ (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from Eritrea (Olmi 1984).

Anteon kawandanum Olmi, 1984: 374

Distribution: *Maputo*: Maputo (AMNH, CNC). *Nampula*: Nampula, near Bishop Catholic Seminary, 1999 (OLM). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 23.iii.2003, B. 24.iii.2003, E., ♀ 9.iv.2003, ♂ 11.iv.2003, M. Olmi reared from a nymph of an unknown species of Cicadellidae that had two cysts (OLM); Cuamba, Farm of the Catholic University of Mozambique, 17.iv–2.vi.2006, Malaise trap, M. Olmi, 1♂ (OLM); Cuamba, Camboja, 28.iii–4.iv.2009, Malaise trap, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from many Afrotropical countries, including Madagascar (Olmi 2004), in addition to Yemen (Olmi & van Harten 2006).

Anteon tetense Olmi, 2008b: 217*

Distribution: *Tete*: 20 km N Tete, 16°02'S 33°35'E, 260 m, 1.xii.2005, J. Halada, ♀ holotype (OOLM).

Hosts in Mozambique: Unknown.

Anteon traorei Olmi, 1995: 133

Distribution: *Maputo*: 5 km E Manhica (AMNH).

Hosts in Mozambique: Unknown.

Recorded from Burkina Faso (Olmi 1995) and South Africa (Olmi 2009).

Subfamily Bocchinae Richards, 1939

Genus *Bocchus* Ashmead, 1893: 91

Type species: *Bocchus flavicollis* Ashmead, 1893, by original designation.

Bocchus watshami Olmi, 1987b: 45

Distribution: *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, 17.iv–2.vi.2006, Malaise trap, M. Olmi, 1♂ (OLM).

Hosts in Mozambique: Unknown.

Recorded from Namibia (Olmi 1987b), South Africa (Olmi 2006), Botswana (new record: Serowe, Farmer's Brigade, 1♂ (AMNH)) and Guinea Bissau (new record: Cacheu Region, 2 km E Bigene, 1.xi.1992, 2♂ (AMNH, ZIL)).

Subfamily Dryininae Haliday, 1833

Genus *Dryinus* Latreille, 1804: 176

Type species: *Dryinus formicarius* Latreille, 1804, by subsequent monotypy (Latreille 1805).

Dryinus bisulcatus (Benoit) group

Dryinus orophilus (Benoit, 1950: 226)

Distribution: *Gaza*: Praia do Bilene, Airport, M. Olmi (AMNH). *Maputo*: Maputo, Costa do Sol, M. Olmi (AMNH); 9 km N Ponta de Ouro, M. Olmi (AMNH). *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, C. 4.iii.2005, B. 9.iii.2005, E. 26.iii.2005, M. Olmi, 1♀ (OLM); Cuamba, Mituque, 6–22.v.2008, Malaise trap, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: *Paroxychara cowla* Medler (Flatidae) and *Elasmoscelis cimicoides* Spinola (Lophopidae) (Guglielmino & Olmi 2006); unidentified Dictyopharidae (new record).

Recorded from Yemen and many Afrotropical countries (Olmi & van Harten 2006), in addition to Oman (Olmi & Copeland 2011: Dhofar, Ain Razat, 17°07.75'N 54°14.24'E, 110 m, 6.x.2001, yellow pan trap, F. Strumia, 1♀ (OLM)). Not collected in Madagascar.

Dryinus spangleri Olmi, 1984: 762

Distribution: *Nampula*: Nampula, neighbourhood of Bishop Catholic Seminary, C. 21.xi.1999, B. 26.xi.1999, E. 22.xii.1999, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: *Paranotus rufilineus* (Walker) (Flatidae) (Guglielmino & Olmi 2006).

Recorded from Guinea-Bissau, Kenya, Namibia, South Africa, Tanzania and Zimbabwe (Olmi & Copeland 2011).

Dryinus undulatus (Benoit, 1950: 226)

Distribution: *Niassa*: approximately 8 km N Maúa, Coração Sagrado de Jesús de Maúa Mission, C. 11.xi.1999, B. 12.xi.1999, E. 1.xii.1999, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: *Elasmoscelis cimicoides* Spinola (Lophopidae) (Guglielmino & Olmi 2006).

Recorded from Burundi, Congo, Kenya and Uganda (Olmi & Copeland 2011).

Dryinus zambeziacus Olmi, 2004: 357*

Distribution: *Zambezia*: Gurué, 580 m, C. 20.xi.2002, B. 26.xi.2002, E. 16.xii.2002, M. Olmi, ♀ holotype (OLM); same data as holotype, C. 19.xi.2002, B. 24.xi.2002, E. 15.xii.2002, 1♂ paratype (OLM).

Hosts in Mozambique: *Philotheria talassio* Fennah (Dictyopharidae) (Guglielmino & Olmi 2006).

Subfamily Gonatopodinae Kieffer, 1906

Genus *Echthrodelfax* Perkins, 1903: 36

Type species: *Echthrodelfax fairchildii* Perkins, 1903, by monotypy.

Echthrodelfax migratorius Benoit, 1954: 397

Distribution: *Gaza*: between Macia and Palmeira, 2 km E Incomati River Bridge along Road EN1 (AMNH). *Maputo*: 3 km N Umbelúzi (AMNH). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 7.iv.2003, B. 9.iv.2003, E. 24.iv.2003, M. Olmi, 1♂ (OLM); Cuamba, Farm of the Catholic University of Mozambique, 17.iv–2.vi.2006, Malaise trap, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: *Sogatella petax* Fennah (Delphacidae: Delphacinae) (Guglielmino & Olmi 1997).

Recorded from many Afrotropical countries, including Madagascar (Olmi 1994a), in addition to Egypt (Hendawy 2001) and Oman (new record: Muscat, 5.iv.1985 (ZIL)).

Echthrodelpfax tauricus Ponomarenko, 1970: 432

Pterogonatopus hortusensis Abdul-Nour, 1976: 276.

Echthrodelpfax afer Olmi, 1984: 1155.

Distribution: *Maputo*: Maputo, Eduardo Mondlane University, Faculty of Agriculture, experimental fields (AMNH); 26 km S Maputo, Umbelúzi (AMNH); 3 km N Umbelúzi along Maputo–Namaacha road (AMNH); Ponta de Ouro (AMNH); 6 km N Palmeira along Maputo–Xai Xai road (AMNH). *Niassa*: Cuamba, Mituque, 22.vii–5.viii.2008, Malaise trap, M. Olmi, 1♀ (OLM); same locality label, 12.iv–6.v.2008, 1♀ (OLM); same locality label, 12.iv–6.v.2008, Malaise trap, M. Olmi, 2♂ (OLM).

Hosts in Mozambique: *Nycheuma endymion* (Fennah), *Peregrinus maidis* (Ashmead), *Toya propinqua* (Fieber) (Delphacidae: Delphacinae) (Guglielmino & Olmi 1997).

Recorded from many Palaearctic (Olmi 1999, 2008a) and Afrotropical countries (Olmi 1994a), including Madagascar (new record: Toliary, Mite Forest, 20.7 km 29° WNW Tongobory, 23°31.27'S 44°07.17'E, 75 m, 27.ii–3.iii.2002, Malaise trap, in gallery forest, Fisher, Griswold and others, 1♂ (CASC)).

Genus *Gonatopus* Ljungh, 1810: 161

Type species: *Gonatopus formicarius* Ljungh, 1810, by monotypy.

Gonatopus nearcticus (Fenton) group

Gonatopus nearcticus (Fenton, 1927: 6)

Platygonatopus ugandanus Benoit, 1951a: 300.

Acrodontochelys ugandanus (Benoit): Olmi, 1984: 1174.

Distribution: *Nampula*: Nampula, near Bishop Catholic Seminary, 24.xi.1999, M. Olmi (OLM). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, 26.v.2007, M. Olmi, 2♀ (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from many countries of Palaearctic, Afrotropical and Nearctic regions (Olmi 1999; Olmi & Copeland 2011). Not collected in Madagascar.

Gonatopus pilosoides Olmi group

Gonatopus acutus (Olmi, 1984: 1230)

Distribution: *Niassa*: Cuamba, Camboja, C. 15.xi.1999, B. 18.xi.1999, E. 12.xii.1999, M. Olmi, 1♀, 2♂ (OLM).

Hosts in Mozambique: Unidentified species of *Caliscelis* (Caliscelidae) (Guglielmino & Olmi 2006).

Recorded from Benin, Gabon and South Africa (Olmi 2004, 2006).

Gonatopus amoenus Olmi, 1994a: 72

Distribution: *Gaza*: Between Macia and Palmeira, 2 km E Incomati River bridge along Road EN1 (AMNH). *Maputo*: 27 km S Maputo, Umbelúzi, farm of Instituto Nacional de Investigação Agronómica (INIA), 20.x.1992, M. Olmi, ♀ holotype (AMNH); same data as holotype, x–xi.1992, M. Olmi, 25 paratypes (12♀, 13♂) (AMNH); 3 km N Umbelúzi (23 km S Maputo), fields on a private farm, C. 11.xi.1992, B. 12.xi.1992, E. 26.xi.1992 and 28.xi.1992, 2♂ paratypes, M. Olmi (AMNH); 2 km S Umbelúzi, SEMOC farm (AMNH); 6 km N Palmeira along road EN1 (AMNH); Maputo, Costa do Sol, Municipal Nursery, 25.ix.1992, 1♀ paratype, C. 31.x.1992, B. 2.xi.1992, E. 15.xi.1992, M. Olmi, 1♂ paratype (AMNH); 5 km E Manhica (AMNH). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 4.iv.2003, B. 7.iv.2003, E. 24.iv.2003, M. Olmi, 1♂ (OLM); same locality label, C. 7.iv.2003, B. 11.iv.2003, E. 25.iv.2003, 1♂ (OLM); same locality label, C. 7.iv.2003, B. 10.iv.2003, E. 25.iv.2003, 1♂ (OLM); same locality label, C. 6.iii.2005, B. 8.iii.2005, E. 22.iii.2005, 1♂ (OLM); Cuamba, Farm of the Catholic University of Mozambique, C. 18.ii.2005, B. 20.ii.2005, E. 8.iii.2005, M. Olmi, 1♂ (OLM).

Hosts in Mozambique: *Sogatella kolophon* (Kirkaldy), *Sogatella petax* Fennah and *Toya propinqua* (Fieber) (Delphacidae) (Guglielmino & Olmi 1997); unidentified species of Meenoplidae (new record).

Recorded from Burkina Faso and South Africa (Olmi 1998, 2006).

Gonatopus festivus Olmi, 1994a: 70

Distribution: *Maputo*: Maputo, Costa do Sol, Municipal Agricultural Nursery, C. 11.x.1992, B. 12.x.1992, E. 29.x.1992, M. Olmi, ♀ holotype (AMNH); same data as holotype, C. 11.x.1992, B. 12.x.1992, E. 30.x.1992, 1♀ paratype (AMNH); same data as holotype, C. 11.x.1992, E. 5.xi.1992, 1♀ paratype (AMNH); same data as holotype, C. 11.x.1992, E. 30.x.1992, 1♂ paratype (AMNH); same data as holotype, C. 6.x.1992, E. 25.x.1992, 1♂ paratype (AMNH).

Hosts in Mozambique: *Nisia nervosa* (Motschulsky) (Meenoplidae) (Guglielmino & Olmi 1997).
Recorded from South Africa (Olmi 2009).

Gonatopus niassensis* Olmi, 2004: 360

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 23.iii.2003, B. 25.iii.2003, E. 14.iv.2003, M. Olmi, ♀ holotype (OLM); same data as holotype, C. 21.iii.2003, B. 22.iii.2003, E. 11.iv.2003, M. Olmi, 1♂ paratype (OLM).
Hosts in Mozambique: Unidentified species of Delphacidae.

***Gonatopus similis* Brues, 1906: 107**

Distribution: *Gaza*: 2 km E Incomati River bridge, along road EN1 between Macia and Palmeira (AMNH).
Maputo: 6 km N Palmeira, along road EN1 between Maputo and Macia (AMNH).
Hosts in Mozambique: Unidentified species of Delphacidae.
Recorded from Gambia, Kenya, La Réunion, Lesotho, Mauritius and South Africa (Olmi 1998; Olmi & Copeland 2011).

***Gonatopus ochreus* (Olmi) group**

***Gonatopus afer* (Olmi, 1984: 1458)**

Distribution: *Nampula*: Nampula, near Bishop Catholic Seminary, C. 22.xi.1999, B. 25.xi.1999, E. 23.xii.1999, M. Olmi, 1♀ (OLM).
Hosts in Mozambique: *Exitianus frontalis* (Distant) (Cicadellidae) (Guglielmino & Olmi 2006).
Recorded from Congo (Olmi 2004), Madagascar (Olmi 1994c), Ethiopia (Ponomarenko & Olmi 2006), South Africa (new records: *Free State*: Royal Natal National Park, 11 km E of park gate along road from R74 to park, grass along the road, C. 9.iv.2007, B. 11.iv.2007, E. 8.v.2007, M. Olmi, 1♀ (OLM). *Western Cape*: Cederberg Mts, Algeria, 6.ii.2006, M. Olmi reared ex *Cicadulina theroni* Van Rensburg, 2♀ (OLM, SAMC), 1♂ (SAMC)) and Tanzania (new records: Mkomazi Game Reserve, Kisima Plot, 4°06.06'S 38°05.58'E, 25.xi–8.xii.1995, Malaise trap, *Acacia/Commiphora* bushland, S. van Noort, 1♀ (SAMC); Mkomazi Game Reserve, Kavateta Dam, 3°54.90'S 38°02.55'E, 16.iv.1996, sweep, grasses and shrubs in *Acacia/Commiphora* bushland, S. van Noort, 1♀ (SAMC)).

Gonatopus mossambicus* Olmi, 1998: 63

Distribution: *Maputo*: 3 km N Umbelúzi, along Maputo–Boane road, C. 29.xi.1993, B. 1.xii.1993, E. 18.xii.1993, M. Olmi, ♀ holotype (AMNH); same data as holotype, 28♀ paratypes (AMNH, USNM); near Magude, Chobela, C. 29.x.1993, B. 2.xi.1993, E. 24.xi.1993, M. Olmi, 1♀ (AMNH); same locality label, C. 29.x.1993, B. 2.xi.1993, E. 24.xi.1993, 1♀ (AMNH); same locality label, C. 29.x.1993, B. 1.xi.1993, E. 22.xi.1993, 1♀ (AMNH); same locality label, C. 29.x.1993, B. 31.x.1993, E. 22.xi.1993, 1♀ (AMNH); same locality label, C. 29.x.1993, B. 4.xi.1993, E. 26.xi.1993, 1♀ (AMNH); Maputo, Costa do Sol, Maputo Racecourse (AMNH); 6 km E Manhica (AMNH). *Niassa*: Cuamba, C. 15.xi.1999, B. 18.xi.1999, E. 5.xii.1999, M. Olmi, 1♀ (OLM); same locality label, C. 4.iv.2003, B. 8.iv.2003, E. 2.v.2003, 1♀ (OLM).
Hosts in Mozambique: *Doratulina instabilis* (Ribaut) and *Stirellus flavovirescens* (Stål) (Cicadellidae) (Guglielmino & Olmi 2006).

***Gonatopus ochreus* (Olmi, 1984: 1450)**

Distribution: *Maputo*: 26 km S Maputo, Umbelúzi (AMNH); 22 km N Maputo (AMNH); 6 km N Palmeira (AMNH). *Nampula*: Nampula, near Bishop Catholic Seminary, 21.xi.1999, sweeping, M. Olmi, 1♀ (OLM); same locality label, C. 21.xi.1999, B. 24.xi.1999, E. 16.xii.1999, 1♂ (OLM). *Niassa*: 8 km N Maúá, Catholic Mission of “Coração Sagrado de Jesus de Maúá”, M. Olmi (OLM); Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, 10.iv.2002, M. Olmi, 1♀ (OLM); same locality label, 26.v.2007, sweeping, M. Olmi, 1♀ (OLM); same locality label, C. 29.v.2007, B. 31.v.2007, E. 22.vi.2007, 1♀ (SAMC); same locality label, C. 29.v.2007, B. 1.vi.2007, E. 1.vii.2007, 1♀ (OLM); near Cuamba, near the bridge at the beginning of the Maúá Road, C. 8.xi.1999, B. 9.xi.1999, E. 1.xii.1999, M. Olmi, 1♀ (OLM).
Hosts in Mozambique: *Aconurella shaba* Ghauri and *Exitianus capicola* (Stål) (Cicadellidae) (Guglielmino & Olmi 2006).
Recorded from Cameroon, Namibia and South Africa (Olmi 2004).

***Gonatopus rubripes* (Olmi, 1984: 1454)**

Distribution: *Maputo*: along Macia–Praia do Bilene road, 23.6 km S Macia, 4.x.1996, sweeping, M. Olmi, 5♀ (AMNH); same locality label, C. 4.x.1996, B. 6.x.1996, E. 3.xi.1996, 1♂ (AMNH); same locality label, C. 4.x.1996, B. 7.x.1996, E. 3.xi.1996, 1♂ (AMNH); same locality label, C. 4.x.1996, B. 6.x.1996, E. 4.xi.1996, 1♂ (AMNH); same locality label, C. 4.x.1996, B. 5.x.1996, E. 4.xi.1996, 1♂ (AMNH); same

locality label, C. 4.x.1996, B. 8.x.1996, E. 5.xi.1996, 1♂ (AMNH); same locality label, C. 4.x.1996, B. 8.x.1996, E. 4.xi.1996, 1♀ (AMNH).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from South Africa (Olmi 2006).

***Gonatopus varipes* Brues, 1906: 106**

Distribution: *Maputo*: Maputo Bay, Inhaca Island (AMNH); 22 km N Maputo (AMNH); 6 km N Palmeira along the Maputo–Xai Xai road (AMNH). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, 10.iv.2002, M. Olmi (OLM); Cuamba, Farm of the Catholic University of Mozambique, 18.ii.2005, M. Olmi (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from Botswana, Gambia, South Africa and Zimbabwe (Olmi 1994a, 2004).

***Gonatopus vulgaris* Olmi, 2000b: 72**

Tetrodontochelys obscurus Olmi, 1984: 1452.

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, C. 30.iii.2003, B. 1.iv.2003, E. 20.iv.2003, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from Madagascar (Olmi 1994c) and South Africa (Olmi 2006).

Gonatopus incognitus Olmi group

***Gonatopus bekilyanus* (Benoit, 1954: 394)**

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, M. Olmi, C. 19.iv.2002, B. 21.iv.2002, E. 12.v.2002, 1♀ (OLM); same locality label, C. 19.iv.2002, B. 21.iv.2002, E. 12.v.2002, 1♀ (OLM); same locality label, C. 22.iii.2003, B. 23.iii.2003, E. 14.iv.2003, 1♀ (OLM); same locality label, C. 23.iii.2003, B. 27.iii.2003, E. 18.iv.2003, 1♀ (OLM); same locality label, C. 29.v.2007, B. 30.v.2007, E. 30.vi.2007, 1♀ (OLM); same locality label, C. 29.v.2007, B. 31.v.2007, E. 1.vii.2007, 1♀ (SAMC); same locality label, C. 19.iv.2007, B. 20.iv.2007, E. 14.v.2007, 1♀ (SAMC); same locality label, 1♀: egg 27.v.2007, first instar larva 31.v.2007, second instar larva 1.vi.2007, third instar larva 3.vi.2007, fourth instar larva 5.vi.2007, fifth instar larva 6.vi.2007, B. 7.vi.2007, E. 30.vi.2007 (OLM); same locality label, C. 3.ii.2011, B. 4.ii.2011, E. 23.ii.2011, 1♀ (OLM); same locality label, C. 6.ii.2011, B. 8.ii.2011, E. 27.ii.2011, 1♀ (OLM); same locality label, C. 3.ii.2011, B. 4.ii.2011, E. 23.ii.2011, 1♀ (OLM); same locality label, C. 6.ii.2011, B. 7.ii.2011, E. 1.iii.2011, 1♂ (OLM); same locality label, C. 6.ii.2011, B. 10.ii.2011, E. 1.iii.2011, 1♀ (OLM); same locality label, C. 1.iv.2009, B. 7.iv.2009, E. 1.v.2009, 1♀ (OLM).

Hosts in Mozambique: *Exitianus capicola* (Stål) and *Exitianus taeniticeps* (Kirschbaum) (Cicadellidae) (Guglielmino & Olmi 2006).

Recorded from Madagascar, Kenya and South Africa (Olmi 2004; Olmi & Copeland 2011).

***Gonatopus capensis* Brues, 1906: 105**

Distribution: *Gaza*: Praia do Bilene, Airport, M. Olmi (AMNH).

Hosts in Mozambique: *Hecalus dubius* Melichar (Cicadellidae) (Guglielmino & Olmi 2006).

Recorded from Gambia and South Africa (Olmi 1998).

Gonatopus chiruanus* sp. n.

Distribution: *Niassa*: Mecanhelas District, Entre-Lagos, Lake Chirua bank in front of Railway Station, C. 6.iii.2011, B. 9.iii.2011, E. 22.iv.2011, M. Olmi & A. Nota, ♀ holotype (OLM); same data as holotype, C. 13.iii.2011, B. 15.iii.2011, E. 12.v.2011, 1♀ paratype (OLM); same data as holotype, C. 13.iii.2011, B. 14.iii.2011, E. 14.v.2011, 1♀ paratype (OLM); same data as holotype, C. 13.iii.2011, B. 15.iii.2011, E. 15.v.2011, 1♀ paratype (OLM); same data as holotype, C. 13.iii.2011, B. 16.iii.2011, E. 1.v.2011, 1♀ paratype (OLM); same data as holotype, C. 13.iii.2011, B. 14.iii.2011, E. 14.v.2011, 1♂ paratype (OLM).

Hosts in Mozambique: *Nicolaus attenuatus* Stiller (Cicadellidae).

***Gonatopus communis* Olmi, 1984: 1610**

Distribution: *Maputo*: Maputo (AMNH); 3 km N Umbelúzi (AMNH); 6 km N Palmeira, C. 30.xi.1995, B. 5.xii.1995, E. 21.xii.1995, F. Finocchi, 1♂ (AMNH); same locality label, C. 11.ix.1996, B. 14.ix.1996, E. 10.xi.1996, M. Olmi, 1♂ (AMNH); 2 km E Incomati River bridge, along EN1 (AMNH). *Nampula*: Nampula, near Bishop Catholic Seminary, C. 21.xi.1999, B. 24.xi.1999, E. 16.xii.1999, M. Olmi, 1♀ (OLM); same locality label, C. 21.xi.1999, B. 23.xi.1999, E. 10.xii.1999, 1♂ (OLM); same locality label, C. 21.xi.1999, B. 21.xi.1999, E. 24.xii.1999, 1♂ (OLM). *Zambézia*: Gurué, C. 19.ii.2011, B. 21.ii.2011, E. 10.iii.2011, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: *Balclutha saltuella* (Kirschbaum) (Cicadellidae).

Recorded from Congo, Ethiopia, Kenya, Madagascar, South Africa and Tanzania (Olm 2004).

***Gonatopus cuambensis* Olmi, 2004: 358**

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 26.iv.2002, B. 30.iv.2002, E. 15.v.2002, M. Olmi, ♀ holotype (OLM).

Hosts in Mozambique: *Hecalus virescens* (Distant) (Cicadellidae) (Guglielmino & Olmi 2006).

Recorded from South Africa (Olmi 2006).

***Gonatopus ericeti* Olmi, 1984: 1637**

Distribution: *Maputo*: 5 km E Manhiça (AMNH).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from Congo (Olmi 1984), Yemen (Olmi & van Harten 2006) and United Arab Emirates (Olmi 2008a), in addition to Gambia (new record: Lower River Division, Upper Baddibu, Farafenni (KJHC)) and Tanzania (new record: Mkomazi Game Reserve, Ibaya Camp, north-west side, 3°57.91'S 37°48.09'E, 30.iv–2.v.1996, yellow pan trap, *Acacia/Commiphora/Combretum* bushland, S. van Noort, 1♀ (SAMC)).

***Gonatopus faustae* Olmi, 1998: 68**

Distribution: *Maputo*: 6 km N Palmeira along Maputo–Xai Xai road, C. 5.ix.1995, B. 1.xii.1995, M. Olmi, ♀ holotype (AMNH); same data as holotype, C. 24.viii.1996, B. 4.ix.1996, E. 29.ix.1996, 1♀ paratype (AMNH); same data as holotype, C. 30.xi.1995, B. 3.xii.1995, E. 2.i.1996, 1♀ paratype (AMNH); same data as holotype, C. 30.xi.1995, B. 2.xii.1995, E. 23.xii.1995, 1♂ paratype (AMNH); same data as holotype, C. 30.xi.1995, B. 2.xii.1995, E. 21.xii.1995, 1♂ paratype (AMNH); same data as holotype, C. 24.viii.1996, B. 27.viii.1996, E. 24.ix.1996, 1♂ paratype (AMNH); same data as holotype, C. 24.viii.1996, B. 25.viii.1996, E. 29.ix.1996, 1♂ paratype (AMNH); *Maputo*, along Bairro dos Pescadores–Marracuene road, Santa Maria, 14 paratypes (4♀, 10♂) (AMNH). *Nampula*: Nampula, near Bishop Catholic Seminary, C. 24.xi.1999, B. 25.xi.1999, E. 21.xii.1999, M. Olmi (OLM).

Hosts in Mozambique: *Doratulina instabilis* (Ribaut) (Cicadellidae) (Guglielmino & Olmi 2006).

Recorded from South Africa (Olmi 2006).

***Gonatopus guigliae* (Benoit, 1951a: 298)**

Distribution: *Gaza*: 2 km E Incomati River bridge, along Palmeira–Macia road, C. 11.x.1996, B. 15.x.1996, E. 14.xi.1996, M. Olmi, 1♀ (AMNH); same locality label, C. 11.x.1996, B. 15.x.1996, E. 18.xi.1996, 1♀ (AMNH); same locality label, C. 11.x.1996, B. 15.x.1996, E. 18.xi.1996, 1♀ (AMNH); same locality label, C. 11.x.1996, B. 16.x.1996, E. 18.xi.1996, 1♂ (AMNH); same locality label, C. 11.x.1996, B. 15.x.1996, E. 13.xi.1996, 1♂ (AMNH); same locality label, C. 11.x.1996, B. 16.x.1996, E. 18.xi.1996, 1♂ (AMNH). *Maputo*: Catembe, C. 26.xi.1999, B. 27.xi.1999, E. 7.i.2000, M. Olmi, 1♂ (AMNH). *Nampula*: Nampula, near Bishop Catholic Seminary, C. 24.xi.1999, B. 28.xi.1999, E. 1.i.2000, M. Olmi, 1♀ (OLM). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 29.v.2007, B. 5.vi.2007, E. 7.vii.2007, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: *Exitianus zuluensis* Ross (Cicadellidae) (Guglielmino & Olmi 2006).

Recorded from South Africa (Olmi 2006) and Uganda (Benoit 1951a).

***Gonatopus incognitus* Olmi, 1984: 1613**

Distribution: *Maputo*: Maputo (AMNH, USNM); 26 km S Maputo, Umbelúzi (AMNH). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 6.iii.2005, B. 7.iii.2005, E. 24.iii.2005, M. Olmi, 1♀ (OLM); same locality label, C. 8.xi.1999, B. 9.xi.1999, E. 27.xi.1999, 1♀ (OLM); same locality label, C. 8.xi.1999, B. 10.xi.1999, E. 28.xi.1999, 1♀ (OLM); same locality label, 8.xi.1999, sweeping, 1♀ (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from Burkina Faso, Cameroon, Cape Verde Islands, Congo, Gambia, Guinea Bissau, Madagascar, Nigeria, Sierra Leone, South Africa, Tanzania and Uganda (Olmi 2004), in addition to Yemen and Oman (Olmi & van Harten 2000).

Gonatopus macua* Olmi, 2004: 359

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, 10.iv.2002, sweeping, M. Olmi, ♀ holotype (OLM).

Hosts in Mozambique: Unknown.

***Gonatopus okahandjae* Olmi, 1984: 1623**

Distribution: *Maputo*: Maputo, Eduardo Mondlane University, Faculty of Agriculture, experimental fields, 1985, M. Olmi (AMNH); 26 km S Maputo, Umbelúzi (AMNH).

Hosts in Mozambique: *Agalliopsis* sp. (Cicadellidae) (Guglielmino & Olmi 1997).

Recorded from the Cape Verde Islands, Mauritania, Namibia, South Africa and Yemen (Olmi & van Harten 2000), in addition to Sudan (new record: 39 km W Gedaref, 19–29.ix.1987, L.J. Pinto, 1♀ (USNM)).

***Gonatopus ridens* Olmi, 1984: 1607**

Distribution: *Maputo*: Maputo (AMNH); Maputo, Costa do Sol, Racecourse (AMNH). *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, C. 8.xi.1999, B. 10.xi.1999, E. 27.xi.1999, M. Olmi, 1♀ (OLM); same locality label, C. 8.xi.1999, B. 11.xi.1999, E. 2.xii.1999, 1♂ (OLM); same locality label, C. 8.xi.1999, B. 12.xi.1999, E. 2.xii.1999, 1♂ (OLM); same locality label, C. 8.xi.1999, B. 9.xi.1999, E. 1.xii.1999, 1♂ (OLM); same locality label, C. 8.xi.1999, B. 10.xi.1999, E. 1.xii.1999, 1♂ (OLM); same locality label, C. 22.iii.2003, B. 24.iii.2003, E. 14.iv.2003, 3♂ (OLM); same locality label, C. 22.iii.2003, B. 24.iii.2003, E. 14.iv.2003, 1♂ (SAMC); Maúa, C. 10.xi.1999, B. 14.xi.1999, E. 10.xii.1999, M. Olmi, 1♂ (OLM).

Hosts in Mozambique: *Aconurella aethiopica* (Cogan) (Guglielmino & Olmi 2006) and *Aconurella shaba* Ghauri (new record) (Cicadellidae).

Recorded from South Africa (Olmi 2006).

***Gonatopus rubrithorax* (Benoit, 1954: 393)**

Distribution: *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, C. 11.iii.2005, B. 13.iii.2005, E. 4.iv.2005, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: Unidentified species of Cicadellidae.

Recorded from Madagascar (Benoit 1954).

***Gonatopus seyrigi* (Ceballos, 1936: 59)**

Distribution: *Niassa*: Cuamba, Campus of the Catholic University of Mozambique, Faculty of Agriculture, 7.vi.2007, M. Olmi, 1♀ (OLM); same locality label, C. 30.v.2007, B. 10.vi.2007, E. 15.vii.2007, 1♀ (OLM). Hosts in Mozambique: *Exitianus* sp. (Cicadellidae) (new record).

Recorded from Madagascar (Ceballos 1936) and South Africa (Olmi 2006).

Gonatopus fuscus (Olmi) group

***Gonatopus ceres* (Olmi, 1984: 1328)**

Distribution: *Nampula*: Nampula, near Bishop Catholic Seminary, sweeping, 21.xi.1999, M. Olmi, 1♀ (OLM). *Niassa*: Cuamba, Camboja, near University Dormitory, C. 15.xi.1999, B. 19.xi.1999, E. 18.xii.1999, M. Olmi, 1♀ (OLM); same locality label, C. 15.xi.1999, B. 17.xi.1999, E. 18.xii.1999, 1♀ (OLM).

Hosts in Mozambique: *Caliscelis* sp. (Caliscelidae) (Olmi 2004); *Eumecurus hottentottus* (Stål) (Cixiidae) (Olmi 2004).

Recorded from Namibia and South Africa (Olmi 2004, 2006), in addition to Tanzania (new record: Chambezi, vii.1987, on coconut, A.M. Varela, 1♀ (BMNH)) and Zimbabwe (new record: Sawmills, 9.vii.1923, Rhodesia Museum (SAMC)).

Gonatopus owaini Olmi group

***Gonatopus emelyanovi* Ponomarenko & Olmi, 2006: 7**

Distribution: *Niassa*: Cuamba, Farm of the Catholic University of Mozambique, C. 11.iii.2005, B. 12.iii.2005, E. 2.iv.2005, M. Olmi, 1♀ (OLM).

Hosts in Mozambique: Unidentified species of Dictyopharidae.

Recorded from Ethiopia (Ponomarenko & Olmi 2006).

Gonatopus gazensis* Olmi, 1998: 74

Distribution: *Gaza*: Praia do Bilene, Airport, 16.ix.1995, sweeping on grass, M. Olmi, ♀ holotype (AMNH).

Hosts in Mozambique: *Paroxychara cowla* Medler (Flatidae) (Guglielmino & Olmi 1997).

Gonatopus paulyi (Olmi) group

Gonatopus maputensis* Olmi, 1998: 72

Paradicondylus australis Olmi, 1994a: 74 (preoccupied).

Distribution: *Maputo*: Maputo, Costa do Sol, Municipal Agricultural Nursery, 10.x.1992, M. Olmi, ♀ holotype and 2♀ paratypes (AMNH); same data as holotype, C. 11.x.1992, B. 13.x.1992, E. 6.xi.1992, 1♀ paratype (AMNH); same data as holotype, C. 26.xi.1993, B. 28.xi.1993, E. 20.xii.1993, 1♂ (AMNH); same data as holotype, C. 21.ix.1996, B. 25.ix.1996, E. 22.x.1996, 1♂ (AMNH).

Hosts in Mozambique: *Nisia nervosa* Motschulsky (Meenoplidae) (Guglielmino & Olmi 1997).

DISCUSSION

The checklist of Dryinidae of Mozambique in this paper includes 45 species, of which one new species, *Gonatopus chiruanus*, is described herein. In addition, the hitherto unknown male of *Gonatopus bekilyanus* (Benoit) is described for the first time.

Table 1 summarizes data on the geographic distribution of currently known Mozambican species of Dryinidae. Eleven (25 %) of the Mozambican dryinid species are restricted to eastern Africa, all but nine of these being Mozambican endemics. Outside eastern Africa, the Mozambican fauna has its closest affinity with that of southern Africa, with 5 species (11 %) recorded elsewhere on the continent only from that region. A further 12 (27 %) have been found there and in other areas, with a single species known only from Madagascar. Fourteen other species have large continental distributions; some of them have also been collected in Yemen, Oman, on other Indian Ocean islands and in the Palaearctic and Nearctic regions – they are excluded from Table 1.

Table 2 presents the Mozambican distribution of species known from Mozambique and reported in this paper. The Table shows that Dryinidae have been under-sampled. In four provinces (Cabo Delgado, Inhambane, Manica and Sofala), no species are known. In large provinces, such as Tete and Zambézia, only one and two species, respectively, are known to occur. The best-sampled province is Niassa, with 28 species, collected in only four major sites, all situated in the Cuamba and Mecanhelas districts; the rest of this large province has not been covered.

A comparison between Mozambique, South Africa and Kenya, the African countries from which the dryinid fauna is best documented, is indicative of the research status on Dryinidae. In Kenya, 39 species have been recorded (Olmi & Copeland 2011); and in South Africa, 145 species (Olmi 2006, 2007, 2009; in addition, two new records are given in this paper). The conclusion arising from this comparison is that the dryinid fauna of Mozambique is insufficiently known.

As regards hosts, the checklist shows that they are known only for 25 of the 45 species recorded from Mozambique. Rearing activities are necessary to improve upon this important biological datum. The Dryinidae are in fact important natural enemies of leaf- and planthopper pests of cultivated plants, so some of them are currently being used in biological control programmes in certain countries (Olmi 1999, 2000a). From this point of view, Mozambique is better studied in comparison with other African countries; in South Africa, the hosts of Dryinidae are known only for 15 of the 145 recorded species (Olmi 2006, 2007, 2009). Hosts of the 39 species reported from Kenya are unknown (Olmi & Copeland 2011). The paucity of knowledge as regards hosts reflects the collection techniques used in the abovementioned countries: rearing of parasitized hosts in Mozambique compared with trapping in South Africa and Kenya. Whereas trapping gives good results in respect of general knowledge of populations and number of species, it does not yield any data concerning what the hosts are, or about the biology of host-parasite interactions.

TABLE 1
Geographic distribution of Mozambican Dryinidae in the Afrotropics.
Extensions to Palaearctic and Nearctic regions are not included.

Known no. of species	Widespread Afrotropical	East	Central and East	Southern	Southern and East	Central and West	Central and southern	West and southern	Madagascar only
45	14	11	1	5	5	1	1	6	1

TABLE 2
The distribution of dryinid species across Mozambique.

Province	No. of major collection sites	No. of dryinid species
Cabo Delgado	0	0
Gaza	2	7
Inhambane	0	0
Manica	0	0
Maputo	12	21
Nampula	1	9
Niassa	4	28
Sofala	0	0
Tete	1	1
Zambézia	1	2

ACKNOWLEDGEMENTS

Many thanks to the Director of the Faculty of Agriculture, Catholic University of Mozambique, for the facilities to collect in Cuamba area. For the identifications of Auchenorrhyncha species hosts of Mozambican dryinids, the authors are very indebted to Dr Michael Stiller (ARC-Plant Protection Research Institute, Pretoria, South Africa). Dr Eduardo G. Virla and an anonymous reviewer are acknowledged for commenting on the manuscript.

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