New records of Afrotropical Tersilochinae (Hymenoptera: Ichneumonidae)

Новые находки афотропических терзилохин (Hymenoptera: Ichneumonidae: Tersilochinae)

A.I. Khalaim
A.I. Халаим

Abstract. A new data on distribution of 19 species of Tersilochinae (Ichneumonidae) belonging to the genera Allophrys Förster (four species), Aneuclis Förster (five spp.), Diaparsis Förster (eight spp.) and Tersilochus Holmgren (two spp.) in the Afrotropical Region are provided. Tersilochus abyssinicus Khalaim, 2006, syn. nov., is synonymised with T. moestus Holmgren, 1868. The subfamily Tersilochinae is recorded from Benin, Côte d’Ivoire, Mozambique, Niger, Nigeria, Sierra Leone, Togo, Zambia and Yemen for the first time.

Key words: parasitoids, taxonomy, Afrotropical Region, Hymenoptera, Ichneumonidae, Tersilochinae, new synonym


Introduction

Until the 21th century, the Afrotropical fauna of the subfamily Tersilochinae was virtually unknown, being represented by only three species from two genera (Townes & Townes, 1973: 167): Diaparsis evanescens (Morley, 1912) from the Seychelles, D. moesta (Holmgren, 1868) and the cosmopolitan Sathropterus pumilus (Holmgren, 1860), the latter two from South Africa.

In the 21th century, Afrotropical Tersilochinae were studied by the author who revised all Afrotropical tersilochine genera and described 38 new species (Khalaim, 2006, 2007, 2009, 2010, 2013a, 2013b, 2013c; Khalaim et al., 2014). One species was also described from Reunion by Rousse & Villemant (2012), and the genus Meggleus Townes, 1971 was recently deleted from the Afrotropical fauna (Khalaim, 2017). Following tersilochine genera are known to occur in the Afrotropical Re-
gion at present day: *Allophrys* Förster, 1869 (ten species), *Aneuclis* Förster, 1869 (eight spp.), *Diaparsis* Förster, 1869 (17 spp.), *Heterocola* Förster, 1869 (one spp.), *Phradis* Förster, 1869 (two spp.), *Probles* Förster, 1869 (one spp.), and *Tersilochus* Holmgren, 1859 (three spp.). Most Afrotropical species of Tersilochinae were described (or recorded) from South Africa, while very scarce records are from other countries.

The aim of this work is to provide a plenty of new distributional records of Tersilochinae from African countries, and to revise taxonomic status of three *Tersilochus* species.

**Material and methods**

This work is primarily based on the ichneumonid collections of the Naturalis, Leiden, The Netherlands (RMNH), and the former American Entomological Institute (AEIC), which was recently moved to the Utah State University, Logan, Utah, USA. Some specimens were also examined from the collections of the Finish Museum of Natural History, Helsinki University, Helsinki, Finland (MZH), Oberösterreichisches Landesmuseum, Linz, Austria (OLML), the Texas A&M University, College Station, Texas, USA (TAMU), and the Iziko South African Museum, Cape Town, South Africa (SAMC). From these collections, a large amount of Tersilochinae material from Benin, Cameroon, Ethiopia, Côte d’Ivoire, Kenya, Mozambique, Namibia, Niger, Nigeria, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe and Yemen was examined. Some specimens are deposited in the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia (ZIN).

Taxa and countries in Material examined and Distribution sections are given in the alphabetical order. Countries in which a species is recorded for the first time are marked by an asterisk (*). Morphological terminology follows that of Townes (1969, 1971), with changes according to Khalaim (2011). Photographs were taken in ZIN, with a DFC 290 digital camera attached to a Leica MZ16 stereomicroscope (Figs 1–17) and a Canon EOS 70D digital camera attached to an Olympus SZX10 stereomicroscope (Figs 18–22), and partially focused images were stacked in Helicon Focus 6 Pro software.

**Taxonomy**

Order **Hymenoptera**

Family **Ichneumonidae**

Subfamily **Tersilochinae**

Genus *Allophrys* Förster, 1869

Almost exclusively tropical genus with 34 described and many undescribed species. The South African fauna of *Allophrys* comprises nine species (Khalaim, 2013b, 2013c); new data on the distribution of five species in Cameroon, Kenya, South Africa and Uganda are provided. The genus is recorded from Cameroon and Kenya for the first time.

*Allophrys astafurovae* Khalaim, 2013

**Remarks.** The species differs from other Afrotropical congeners by the combination of black antennal flagellum, upper mandibular tooth slightly longer than the lower tooth, smooth and shining vertex, foveate groove distinct in anterior 0.7 of mesopleuron, fore wing with brachial cell closed posteriorly (hind abscissa of postnervulus present), basal area of propodeum flat, and ovipositor sheath almost as long as first tergite.


**Distribution.** *Kenya, South Africa.*

*Allophrys broadi* Khalaim, 2013 (Figs 1, 2)

**Remarks.** *Allophrys broadi* is readily distinguished from other Afrotropical species in this genus by white apex of flagellum (Fig. 1) (sometimes apical flagellomere is infuscate). Fore wing with second recurrent vein (2m-cu) completely absent or discernible only posteriorly (Fig. 2).

**Variation.** Apical (or subapical) pale band on flagellum sometimes is weak and inconspicuous.

Figs 1–12. *Allophrys broadi* (1, 2), *A. excavator* (3), *Aneuclis lanternaria* (4), *A. larga* (5), *Diaparsis abstata* (6–8), *D. interstitialis* (9, 10) and *D. inusitata* (11, 12), all females. 1, head with antennae, lateral view; 2, 4, 10, apex of fore wing; 3, mandible; 5, metasoma with ovipositor; 6, 9, 11, antenna, front (6), lateral (9) and postero-lateral (11) view; 7, mesosoma, dorso-postero-lateral view; 8, apex of metasoma with ovipositor; 12, apex of ovipositor, lateral view.
**A.I. Khalaim. New records of Afrotropical Tersilochinae**

**Allophrys excavator** Khalaim, 2013  
(Fig. 3)

**Remarks.** *Allophrys excavator* can be readily distinguished from other Afrotropical species by mandible with upper tooth strongly reduced, much shorter than the lower tooth (Fig. 3), and short malar space which is 0.6 times as long as basal mandibular width.

**Material examined.**  

**Distribution.** *Kenya, South Africa.

**Allophrys tractor** Khalaim, 2013  

**Remarks.** *Allophrys tractor* is readily distinguished from other Afrotropical species in this genus by mandible with upper tooth subequal to, or slightly shorter than the lower tooth.

**Material examined.**  

**Distribution.** *Kenya, South Africa.

**Genus Aneuclis** Förster, 1869

Predominantly Holarctic genus with 35 species. Eight species occur in the Afrotropical Region (Khalaim, 2009, 2010). A new data on the distribution of five species of *Aneuclis* in Benin, Ethiopia, Côte d’Ivoire, Kenya, South Africa and Yemen are provided. The genus is recorded from Benin, Ethiopia, Côte d’Ivoire, Kenya and Yemen for the first time.

**Aneuclis laminosa** Khalaim, 2009  

**Remarks.** Female from Ethiopia has slender filiform flagellum with 15 flagellomeres; clypeus brownish yellow in lower half and dark brown to brownish black in upper half; short and strongly oblique foveate groove in anterior half of mesopleuron, with short but distinct transverse wrinkles; second tergite 1.8–2.4 times as long as broad anteriorly; ovipositor apex dorsally with very shallow depression and a very fine tooth before this depression; ovipositor sheath about 2.6 times as long as first metasomal tergite; second tergite extensively yellow, with slight brownish markings laterally, or yellow anteriorly and brown posteriorly, or more or less entirely brown; and tergites 3 and subsequent ones brown laterally to dark brown dorsally.

**Material examined.**  
**Ethiopia:** Gojjam Prov., Bahir Dar, Malaise trap, 1–21XI.1995, coll. A. van den Burg, 1 female (RMNH); *Oromia Prov., Shewa Zone, Ambo Town,* 8°05’N, 38°00’E, Malaise trap, 1–30.X.2009, coll. L. Rybakov, 2 females (ZIN).

**Distribution.** *Ethiopia, South Africa.

**Aneuclis lanternaria** Khalaim, 2009  

**Remarks.** *Aneuclis lanternaria* can be recognised by the combination of fore wing with interstitial second recurrent vein (2m-cu) and short metacarpus (Fig. 4), and very long ovipositor with sheath about 3.0 times as long as first tergite.

**Material examined.**  
**Côte d’Ivoire,** 3 km S of Katiola Town, forest, Malaise trap, 6.II.1981, coll. J.W. Everts, 1 female (RMNH).  

**Distribution.** *Côte d’Ivoire, South Africa, Yemen.

**Aneuclis larga** Khalaim, 2009  

**Remarks.** The species can be recognised by the combination of postfurcal second recurrent vein (2m-cu) in fore wing, and short ovipositor with sheath about as long as first tergite (Fig. 5).

**Material examined.**  

**Distribution.** *Benin, Ethiopia, Kenya, Reunion, South Africa, Tanzania.

---

*Zoosystematica Rossica, Vol. 28, No. 2, pp. 267–276*
**Aneuclis pumilus** (Holmgren, 1860) (Figs 16, 17)

Remarks. *Aneuclis pumilus* can be easily recognised by its head polished dorsally (Fig. 16) and conspicuously sinuate distal end of ovipositor (Fig. 17).


**Distribution.** Cosmopolitan species, in Afrotropical Region known from *Kenya and South Africa.

**Aneuclis rhodesiana** Khalaim, 2010

Remarks. *Aneuclis rhodesiana* is readily distinguished from other Afrotropical species of the genus by densely granulate propodeum with transverse carina strong and raised medially, and strongly upcurved apex of ovipositor.


**Distribution.** Cameron, South Africa, Zimbabwe.

Genus *Diaparsis* Förster, 1869

Large, almost worldwide genus (unknown only from Central and South America) with 17 species in the Afrotropical Region, including 15 species in Continental Africa, one species in the Seychelles and one in Reunion (Rousse & Villemant, 2012; Khalaim, 2013a, 2013c; Khalaim et al., 2014). New data on the distribution of eight *Diaparsis* species in Ethiopia, Côte d’Ivoire, Kenya, Mozambique, Niger, Nigeria, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia and Zimbabwe are provided. The genus is recorded from Côte d’Ivoire, Mozambique, Namibia, Niger, Nigeria, Sierra Leone, Togo and Zambia for the first time.

**Diaparsis abstata** Khalaim, 2013 (Figs 6–8)

Remarks. The species can be easily recognised by the combination of propodeum with basal keel as long as apical area; apical area very broadly rounded anteriorly; antennal flagellum more or less uniformly fuscous (Fig. 6); and ovipositor very short, with conspicuous nodus at apex (Fig. 8).

**Diaparsis interstitialis** Khalaim, 2013

(Figs 9, 10)

Remarks. *Diaparsis interstitialis* can be easily recognised by the combination of flagellum with conspicuous subapical pale band (Fig. 9), and fore wing with second recurrent vein (2m-cu) interstitial and metacarpu (R1) long (Fig. 10).

Material examined. **Côte d’Ivoire**, Mankono Town, 13.IX.1980, coll. J.W. Evers, 1 female (RMNH). **Kenya** near Nairobi Karen, 6000 ft. [= 1830 m], 1971, coll. C’ngham-vanSomeren (all in AEIC): 25–31. VIII (4 females), IX (3 females), X (3 females); same locality and collector, 2000 ft. [= 610 m], 1972 (all in AEIC): IX (15 females), X (3 females), XI (1 female), XII (2 females); **Eastern Prov.** [former], Kirimiri Hill, 0°25.45’S, 37°32.71’E, 1745 m, 20.VI–4.VII.2005, coll. R. Copeland, 1 female (TAMU); **Nyanza Prov.** [former]: Ungoye, 0°36.91´S, 34°05.52´E, Malaise trap, 13.XI.1977, coll. H. & M. Townes, 4 females (AEIC); same data, but 1147 m, 21.IV–5.V.2005, 1 female (ZIN).


**Diaparsis abstata** Khalaim, 2013

(Figs 6–8)

Remarks. The species can be easily recognised by the combination of propodeum with basal keel as long as apical area; apical area very broadly rounded anteriorly; antennal flagellum more or less uniformly fuscous (Fig. 6); and ovipositor very short, with conspicuous nodus at apex (Fig. 8).


**Zimbabwe,** Marandellas [Marondera], III.1972, coll. P. Ginn, 1 female (AEIC).


Diaparsis inusitata Khalaim, 2013
(Figs 11, 12)

Remarks. Diaparsis inusitata can be readily distinguished from other Afrotropical species of this genus by the combination of flagellum uniformly fuscous, without subapical pale band (Fig. 11); fore wing with second recurrent vein (2mt-cu) interstitial and metacarpus (R1) short; and ovipositor with weak dorsal subapical depression and weak but distinct rounded tooth before this depression (Fig. 12).


Diaparsis mostovskii Khalaim, 2013
(Fig. 13)

Remarks. Diaparsis mostovskii can be readily distinguished from other Afrotropical species of this genus in having first metasomal segment with petiole pale and postpetiole fuscous (Fig. 13), and ovipositor short and robust, with sheath about half as long as first tergite (Fig. 13).

Variation. Two females and two males (marked by an exclamation mark, !) are considerably smaller than other specimens, with body length about 3.3 mm and fore wing 2.5 mm. However, morphologically these specimens are generally well corresponding with type material of D. mostovskii, except for weaker punctures on head and mesosoma, and for ovipositor somewhat more slender.


**Diaparsis nebulosa** Khalaim, 2013

**Remarks.** The species is very similar to *D. ab斯塔ta* but distinct in having flagellum with conspicuous subapical pale band, and strongly punctate mesopleuron and dorsolateral area of propodeum.


**Distribution.** Cameroon, *Kenya, Zimbabwe.

**Diaparsis robusta** Khalaim, 2013

**Remarks.** The species differs from other Afrotropical congeners by the combination of short and robust ovipositor, impunctate or very indistinctly punctate dorsolateral area of propodeum, and filiform flagellum with 17 or 18 flagellomeres.

Distribution. South Africa.
Diaparsis voluptuosa Khalaim, 2013  
(Figs 14, 15)

Remarks. Female of *D. voluptuosa* can be easily recognised by its yellow or pale brown antenna with only a few apical flagellomeres fuscous, clearly contrasting with basal part of antenna (Fig. 14). Two males from Togo have antennae longer than in female, with flagellum distinctly tapered towards apex and with 30 flagellomeres; flagellum pale brown, with 8–10 apical flagellomeres infuscate in one male, and evenly fuscous in another male (Fig. 15).


Diaparsis vulgaris Khalaim, 2013

Remarks. *Diaparsis vulgaris* is an abundant South African species which differs from its Afro-
tropical congeners by the combination of long ovipositor, finely and sparsely punctate mesopleuron and dorsolateral area of propodeum, broad clypeus, and clavate antennal flagellum of female, comprising 20–23 flagellomeres.


Distribution. South Africa.

Genus Tersilochus Holmgren, 1859

*Tersilochus (Tersilochus) moestus* (Holmgren, 1868)  
(Figs 18–22)

*Tersilochus (Tersilochus) abyssinicus* Khalaim, 2006, syn. nov.

Remarks. *Tersilochus abyssinicus* (Figs 18–22) is found to be conspecific with the holotype female of *T. moestus* (Khalaim, 2013a), and with another female of this species which was recently recorded from Uganda (Khalaim et al., 2014).


*Tersilochus (Tersilochus) rusticulus* Khalaim, 2006  
(Fig. 23)

Remarks. This species was described based on a single female from Ethiopia (Khalaim, 2006). Three additional females that are recorded here from South Africa indicate that this is a distinct species. *Tersilochus rusticulus* differs from another Afrotropical species, *T. moestus*, by features given in the key below.

**Distribution.** Ethiopia, *South Africa.*

---

**Key to species of Tersilochus occurring in Afrotropical Region**

1. Metacarpus (R1) shorter, not reaching apex of fore wing (Fig. 21). Ovipositor more or less evenly tapered apically, with neither prominence nor notch dorsally (Fig. 22) .......................... T. moestus
2. Metacarpus (R1) almost reaching apex of fore wing. Ovipositor with shallow dorsal subapical depression, with prominence before this depression, and with a small but distinct notch on this prominence (Fig. 23) .......................... T. rusticolus

---

**Acknowledgements**

I am thankful to Frederique Bakker, curator of the RMNH ichneumonid collection, for her kind help while my visit to Naturalis in May 2015, and to David Wahl, curator of the AEIC collection, for permitting to study material of Ichneumonidae during my visit to AEIC in November 2014. Also I am thankful to Juho Paukkunen (MZJ), Martin Schwarz (OLML), John D. Oswald and Karen Wright (TAMU) for loans of additional specimens of Afrotropical Tersilochinae. I am grateful to Kyohei Watanabe (Odawara, Japan) and an anonymous referee for their valuable comments on the manuscript. This work was supported by the Russian Foundation for Basic Research (grant no. 16-04-00197) and the Russian State Research Project (no. AAAA-A19-119020690101-6).

---

**References**


