

Two new species of Meconematinae (Ensifera: Tettigoniidae) from Thailand

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Abstract

Two new species of Meconematinae (*Kuzicus aspercaudatus* sp. n. and *Xizicus kaltenbachi* sp. n.) are described and diagnosed. Furthermore, parasitism by a Nemestrinidae (Diptera), probably *Atriadops* sp., in a Meconematinae is proved for the first time.

Key words: Meconematinae, taxonomy, *Kuzicus*, *Xizicus*, new species, Nemestrinidae, Thailand.

Summary

Zwei neue Meconematinae-Arten (*Kuzicus aspercaudatus* sp. n. und *Xizicus kaltenbachi* sp.n.) werden beschrieben. Erstmals wird bei dieser Unterfamilie die Parasitierung durch Nemestrinidae (Diptera), möglicherweise *Atriadops* sp. nachgewiesen.

Introduction

Since the 1990ies a great number of Meconematinae - mainly from Asia - have been described (OTTE & NASKRECKI, 1997). Within this subfamily GOROCHOV (1993) revised, amongst others, the heterogeneous genus *Xiphidiopsis* REDTENBACHER 1891 and divided it in numerous new genera and subgenera. Two of them are relevant for the present paper: *Kuzicus* GOROCHOV 1993, based on *K. suzukii* (MATSUMURA & SHIRAKI 1908), redescribed by YAMASAKI (1982) and *Xizicus* GOROCHOV 1993 based on *X. fascipes* (BEY-BIENKO 1955). Members of both genera are distributed in South-, Southeast- and East Asia (OTTE & NASKRECKI, 1997).

The taxonomy of Asian Meconematinae is strongly in flux also with respect to the genera treated herein. GOROCHOV (1993, 2002, e. a. 2005) erected subgenera, which LIU & ZHANG (2000) partly raised to generic status. In the light of such rapid changes and different evaluations, we refrain from assigning our species to any subgenus or from establishing new ones.

Although the number of new Meconematinae has considerably increased, our knowledge of their life style strategies lag far behind. According to our long-term observations of these small, inconspicuous tettigoniids in the habitats of SE-Asia, most species inhabit the

lower vegetation strata, where they feed on live prey but also on dead animal material. These findings also apply to the new species described and diagnosed in the present paper.

Here, we also report the first evidence of parasitism by a nemestrinid in a Meconematinae; to date, we had only recorded Gordian worms as parasites of tettigoniids.

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Materials and Method

In the descriptions, body length is fastigium verticis to posterior margin of ultimate tergite, head length is fastigium verticis to clypeal suture. The type specimens were measured using a Wild-Censor in combination with a Wild M5 stereo microscope; morphological structures were recorded with a video camera (Sony CCD-Iris) and processed by Pinnacle PCTV Vision.

The material is preserved in alcohol and deposited in the collection of the Museum for Natural History, Vienna (Naturhistorisches Museum Wien).

Results

Kuzicus aspercaudatus sp. n.

Holotype: ♂, Pak Chong (Province Nakhon Ratchasima, Thailand), 14°47' N, 101°50' E; Mixed Deciduous Forest, 24.7.2004.

Etymology: the name refers to the partly rough surface of the tail-like anal processes.

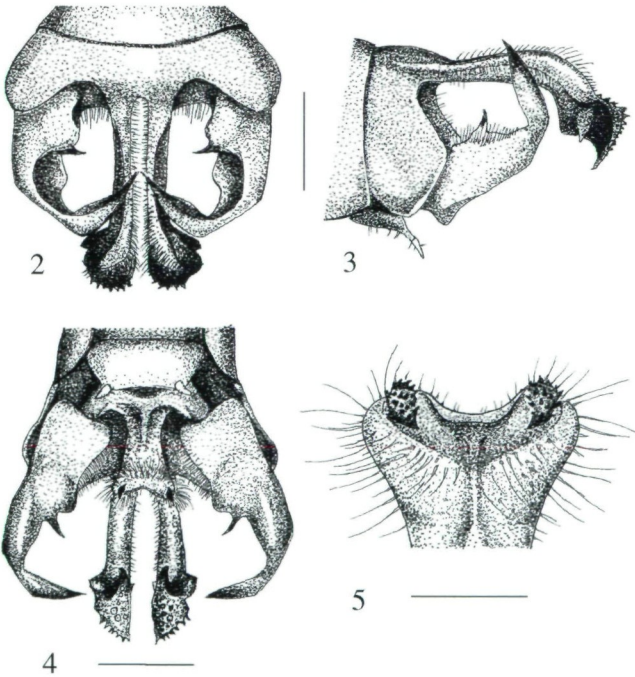
Description:

Measurements in mm: Length of: body 19.7; head 3.0; pronotum 5.4; elytra 25.5; alae 28.4; metafemur 15.4; metatibia 17.2.

Rather large-sized Meconematinae (fig. 1). Eyes round, protruding. Fastigium verticis conical, small (length about one quarter of scapus), narrow, smooth. Final segment of the maxillary palpus equal in length to the fourth segment. Pronotum in dorsal view twice as long as wide, covering the base of elytra, discus flat, transverse sulcus only dorsally conspicuous, fading towards the lateral parts of the pronotum; anterior margin slightly convex, posterior margin triangularly rounded; margins of paranota (= lateral lobes of the pronotum) not undulated, without humeral sinus. Foramen prothoracicum in lateral view fully exposed, kidney-shaped. Parapterous, elytra extending behind the hind knees, alae distinctly longer. Procoxal spur short. Tympana open. Pro- and mesotibiae with 5 outer and 4 inner spines and 1 pair of apical spurs. Metatibiae ventrally and dorsally with numerous outer and inner spines as well as 2 ventral and 1 dorsal pairs of apical spurs.



Fig. 1. *Kuzicus aspercaudatus* sp. n. ♂



Figs. 2-5. *Kuzicus aspercaudatus* sp. n. ♂ – 2) Ultimate segments in dorsal view; 3) dto. in lateral view; 4) dto. in ventral view (cerci spread); 5) apex of phallic complex. – Scale bar (figs. 2-4) = 2 mm; scale bar (fig. 5) = 0.5 mm.

Genital segments ♂ (figs. 2-5): Paired processes of the ultimate tergite long, apically curved downwards, the very last part acute and dorsally with minute teeth and warts, ventrally excavated. Near the apex on the outer side a short, downwards directed projection. Cerci predominantly membranous, apically bent inwards and upwards, with acute, sclerotised apex. Near the base one acute, sclerotised projection, which is directed inwards and upwards. Phallic complex as typical for the genus, but sclerotised titillators minutely toothed. Subgenital plate broad, styli rather short.

Colouration ex alcohol: General colour whitish to ochre. Fastigium verticis, scapi, clypeus and proximal part of labrum dark-brown, distal part of labrum, palpi, coxae and femora whitish. Flagella, tibiae and tarsi bright brown. Sternites mostly dark-brown, only the 3rd thoracal sternite and the abdominal sternites 1-3 whitish. Subgenital plate brown, styli white. Cerci basally whitish, distally brown. Ultimate tergite brown. Elytra ochre, alae hyaline-colourless.

Colouration in vivo: General colour bright green. Flagella bright brown. Vertex with dark-green markings. Discus with yellowish markings. Distal part of labrum, sternites and pleura whitish, cerci and distal parts of ultimate tergite dark-brown. Elytra basally bright brown, alae hyaline-colourless.

The female of *K. aspercaudatus* is yet unknown.

Diagnosis

K. aspercaudatus resembles *Kuzicus megaterminatus* INGRISCH & SHISHODIA 1998 in the general shape of the ultimate segments, but differs from that and all other species of *Kuzicus* s. str. GOROCHOV 1993, described by YAMASAKI (1982), GOROCHOV (1993) and SÄNGER & HELFERT (2004) in the following characters: the apex of the processes of the ultimate tergite is strongly sclerotised and bears numerous minute teeth and warts. Except for the thoothed apices, the processes are long and shaped similarly to those of *Kuzicus uvarovi* GOROCHOV 1993, but the phallic complex is completely different from the latter species. In *K. aspercaudatus* the appendage of the phallic complex has apically two sclerotised titillators only, the proximal acute branches are lacking.

Xizicus kaltenbachi sp. n.

Holotype: ♂, Thale Ban (Province Satun, Thailand) (06°27' N, 100°08' E), Moist Evergreen Rainforest, 16.7.2004.

Etymology: named in honour of Dr. Alfred KALTENBACH, outstanding entomologist and doyen of Austria's orthopterologists, who regrettably passed away in September 2005.

Description

Measurements in mm: Length of: body 17.7; head 1.8; pronotum 4.1; elytra 19.0; alae 20.1; metafemur 9.8; metatibia 11.2.

Medium-sized Meconematinae (fig. 6). Eyes round, protruding. Scapus and pedicellus of the antennae long. Fastigium verticis small (less than a quarter of scapus), conical, dor-

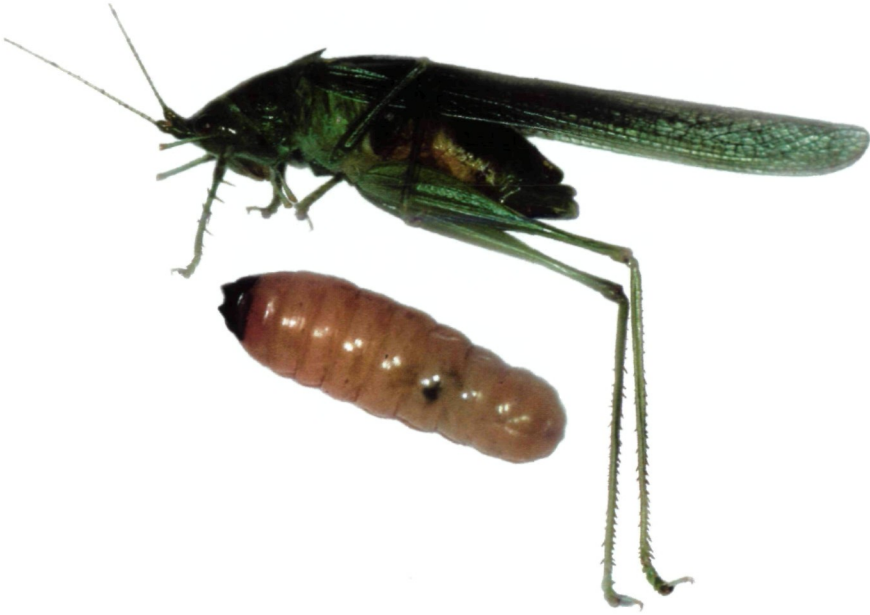


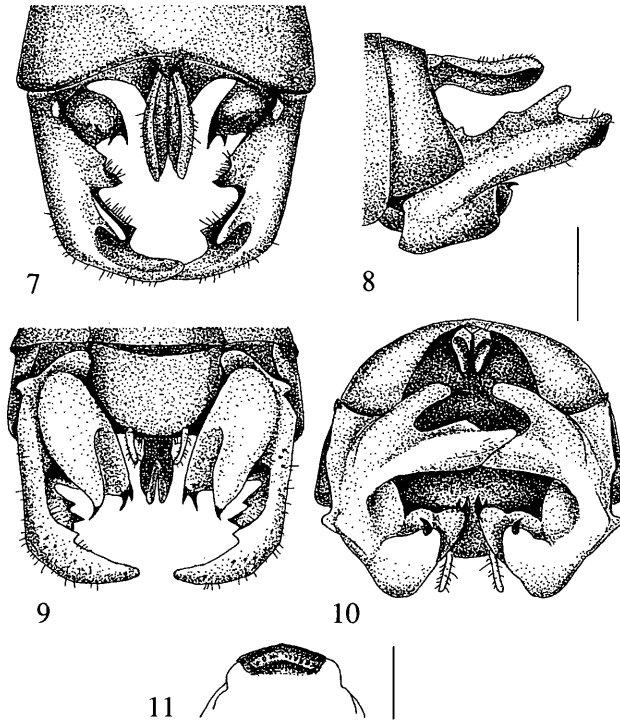
Fig. 6. *Xizicus kaltenbachi* sp. n. ♂ and parasite (Nemestrinidae)

sally very faintly furrowed. Final segment of maxillary palpus equal in length to the fourth segment, apically conspicuously widened. Pronotum in dorsal view twice as long as wide, anterior margin nearly straight, posterior margin rounded, discus flat, transverse sulcus weak, but conspicuous. Margins of paranota slightly undulating, humeral sinus very weak. Foramen prothoracicum in lateral view fully exposed, large, kidney-shaped. Elytra long, extending behind the hind knees, alae only slightly longer. Procoxal spur medium-sized, but conspicuous. Tympana open. Protibiae and mesotibiae each with 5 outer and 4 inner ventral spines and 1 pair of minute apical spurs. Metatibiae ventrally and dorsally with numerous outer and inner spines as well as 2 ventral and 1 dorsal pairs of apical spurs.

Genital segments ♂ (figs. 7-11): Ultimate tergite with short, paired processes, which are only separated in their distal quarter. Cerci membranous, with forked upper parts and a very conspicuous lower appendage. The lower part is also forked: the ventral arm bears one, the dorsal arm two sclerotised apical hooks. Phallic complex short as typical for the genus, with small, weakly sclerotised apex. Subgenital plate broad, distal margin very slightly convex, styli filiform, rather long.

Colouration ex alcohol: General colour whitish to ochre. Vertex and dorsal margin of elytra light-brown. Antennae dark-brown annulated. Elytra ochre, proximally with a dark-brown spot. Alae hyaline-colourless. Spines on metatibiae brown. Sclerotised hooks on cerci black.

Colouration in vivo: General colour green. Frons and labrum white. Flagella light-brown, dark-brown annulated. Thoracal sternites whitish green, abdominal sternites yel-



Figs. 7-11. *Xizicus kaltenbachi* sp. n. ♂ – 7) Ultimate segments in dorsal view; 8) dto. in lateral view; 9) dto. in ventral view (cerci spread); 10) abdominal end in straight view; 11) apex of phallic complex. – Scale bar (figs. 7-10) = 1 mm; scale bar (fig. 11) = 0.2 mm.

low. Dorsal margin of elytra brown, elytra proximally with a black spot. Alae hyaline-colourless. Spines on metatibiae dark-brown. Sclerotised hooks on cerci black.

Diagnosis

With respect to the fused appendages of the ultimate tergite and the forked cerci, the new species resembles members of the subgenus *Furcixizicus* GOROCHOV 2002, but *X. kaltenbachi* distinctly differs from them in the paired processes of the tergite being rather long and the cerci much more complicated; mainly the lower appendage of the cercus is very conspicuous and nearly completely conceals the subgenital plate in lateral view.

Some similarities exist with *X. changi* GOROCHOV 2002, whose cerci also bear a lower appendage, but this is considerably simpler than in the new species and moreover has no sclerotised hooks. *X. kaltenbachi* differs from *X. furcicercus* GOROCHOV 2002 in the much larger and apically hooked ventral processes of the cerci. The broad subgenital plate and the thin styli of the new species resemble *X. abnormalis* GOROCHOV & KANG 2005 and *X. siamensis* (KARNY 1926), whose male was diagnosed by SÄNGER & HELFERT (1998).

The latter two species, which GOROCHOV 2002 included amongst others in the subgenus *Furcixizicus*, were recently transferred by him, LIU & KANG (2005) to the subgenus *Eoxizicus*. LIU & ZHANG (2000), however, had upgraded *Eoxizicus* to the status of a genus.

The female of *X. kaltenbachi* is yet unknown.

The present specimen was parasitized by a Nemestrinidae (Diptera: Brachycera), probably *Atriadops* sp (fig. 6). Also in the Malesian Area, Nemestrinidae are considered to be important parasites of acridids (OOSTERBROEK 1998), in which they inhibit egg development (HORWOOD & HALES 2005). This paper and KANMIYA (1987) prove that tettigoniids are also hosts of nemestrinids.

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