

CALICNEMIA ZHUAE SPEC. NOV. FROM SHAANXI, CHINA
(ZYGOPTERA: PLATYCNEMIDIDAE)

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Both sexes of the new sp. are described and illustrated. Holotype ♂ and allotype ♀: China, Shaanxi prov., Langao co., Mt Dubashan, alt. 1200 m, 28-VII-2006; both deposited with the Shaanxi Bioresource Key Laboratory, Hanzhong, China. The pattern of the head and synthorax are similar to *C. miles* (Laidl.), from which the new sp. differs in pattern of the top of the abdomen and in the structure of anal appendages and penile organ.

INTRODUCTION

The genus *Calicnemia* Strand is confined to Asia and its distribution is centred in the Himalaya range. Most species occur in the montane forest habitats. So far, 8 species have been reported from China and were recently reviewed by YU & BU (2008), viz. *C. chaoi* Wilson, *C. erythromelas* (Sel.), *C. eximia* (Sel.), *C. gulinensis* Yu & Bu, *C. haksik* Wilson & Reels, *C. miles* (Laidlaw), *C. porcata* Yu & Bu, and *C. sinensis* Lieftinck.

The specimens of the new species were collected by our students, Mo Fa-xiang and Wang Hao-jie, from the Dabashan mountain, located S of Mt Qinling in central Shaanxi, on the border between the northern temperate zone and the cool subtropical zone, i.e., on the border between the Palaearctic and Oriental biogeographical regions.

The Dubashan mountain is actually situated within the Oriental Region. *Calicnemia zhuae* sp. n. may be a species with the northernmost distribution for the genus.

CALICNEMIA ZHUAE SP. N.

Figures 1-7

Material. — **Holotype** ♂: China, Shaanxi prov., Langao co., Mt Dubashan (108°53'E, 32°19'N), alt. 1200 m, 28-VII-2006, Mo Fa-xiang leg. — **Allotype** ♀: same data. — **Paratype** ♀: same locality, 30-VII-1987, Wang Hao-jie leg. The holotype and allotype will be deposited with the Shaanxi Biore-source Key Laboratory, Hanzhong, China.

Etymology. — The species is dedicated to Professor Z h u Hui-qian (Shanxi University, Taiyuan, China)* in recognition of her magnanimous support of our odonatological research.

MALE holotype. — **H e a d** (Fig. 1). — Labium, anteclypeus, postclypeus, mandible and genae (upward to posterior ocelli) orange-yellow, apart from an isolated, transverse black stripe at the base of antennae. Posterior to ocelli, occiput and ventrum black with prominent yellow stripe at sides, lightly yellow elongate triangular lateral spot on outer sides of oculus. The first two segments of antenna yellow; flagellum dark, orange-yellow to brownish-black.

T h o r a x. — Prothorax and synthorax black (Fig. 2), marked with orange stripes. Prothorax with a circular yellow spot at side of mid-lobe, adjacent to a small yellow spot at scarf of synthorax. Isolated orange antehumeral stripes. Metepisternum with thin yellow band crossing spiracle, the band broadest anteriorly and narrowed posteriorly. Second suture with broad black stripes, the rest of metepimeron light yellow. Mesinfraepisternum and metinfraepisternum dark yellow, thinly pruinose at underside.

Legs: coxa and trochanter yellowish-brown, femur black with yellow spot at sub-base, tibia outer side orange, inner side black. Tarsus and claw dark orange-yellow, claw at top black.

Wings hyaline. Venational characters as in the congeners. Fw 18 Px, 16 in Hw. Pt. dark yellow, diamond-shaped, covering 1.5 cells.

A b d o m e n. — Segment 1 light yellow at sides, dorsum black with terminal black ring. Segments 2-10 red, segments 2-6 with thin black terminal ring, 7-10 terminal ring not obvious, but gradually dull, red to dark orange.

Anal appendages dark orange (Figs 3-5). Superiors slightly longer than segment 10; tip obtuse and slightly curved downwards, and two huge ventro-basal teeth; the interior tooth flat with several small teeth, outer tooth tapered in lateral view. Inferiors slightly longer than the superiors, with slight ventro-basal prominence, wide boot-shaped subapically and upwardly curved at tip. Viewed dorsally, anal appendages are pincer-shaped; superiors slightly broadened in middle interiorly, with dull teeth at tip. Inferiors broadened basally at inner side, with black thorn at tip (dorsal view).

Penile organ (Figs 6-7): terminal lobe slightly concave, forming wing and slightly curved ahead.

* Shanxi and Shaanxi are two different Chinese provinces.

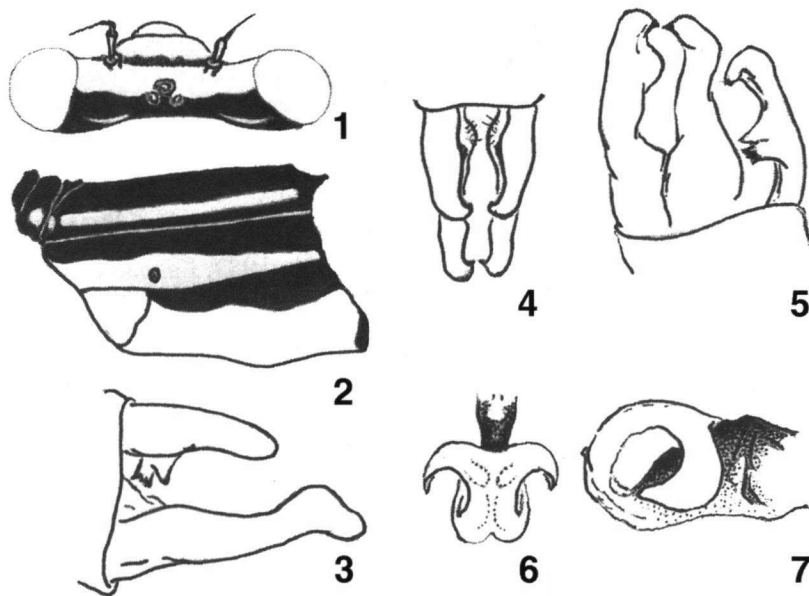
Measurements (in mm). — Abdomen + appendages length 30; hw length 23.

FEMALE. — Similar to male. Differences include: black stripe widest at base of antenna around ocellus, forming dumbbell shape; yellow elongate triangular spot expanding at inner side of oculus, and joined with yellow spot at base of mandible and genae. Black short stripes at sides of orange-yellow anteclypeus. Yellow spot larger at sides of prothorax, but antehumeral and second suture black stripe thinner. Segments 2-5 laterally yellowish, segments 8-10 darker and dull brown laterally, almost black dorsally. Cerci black. Ovipositor brownish-black and longer than segment 10. Legs pale, mainly yellow, outer femora and claws black, tarsi dark yellow.

Measurements (in mm). — Abdomen length 27; hw length 23.

DISCUSSION

Based on the structure of the penile organ, LIEFTINCK (1984) divided the genus into two species-groups. In group I the recurved penis lobe is narrow, ribbon-like or filamentous apically, whereas in group II it is broad, variously expanded and lacking filaments. *Calicnemia zhuae* sp. n. is referable to group II, but it can be distinguished from the other species of the group (*C. chaoi*, *C. haksik*, *C. miles*, *C. miniata*) by colour pattern, and by the structure of anal appendages and



Figs. 1-7 *Calicnemia zhuae* sp. n., male: (1) head, dorsal view; — (2) thorax, lateral view; — (3) caudal appendages, dorsal view; — (4) caudal appendages, dorsal view; — (5) caudal appendages, ventral view; — (6) penile organ, dorsal view; — (7) penile organ, lateral view.

Table I
Comparison of structural features in *Calicnemia zhuae* sp. n. and *C. miles*

Feature	<i>zhuae</i> sp. n.	<i>miles</i>
Mid lobe	Black on sides, with a circle	Orange-yellow on sides, no spot
Prothorax	Yellow spot	
Antehumeral stripes	Orange yellow	Brick-red
Segments 2-6	with thin black terminal ring	No such ring
Anal appendages	End of superiors and inferiors strongly recurved, pincer-shaped; Superiors with obtuse teeth, inferiors with a thorn at tip; superiors with 2 huge teeth, inferior tooth flat with several small teeth in lateral view, the tips of which are definitely curved, but not swollen in dorsal view (Figs 3-5)	End of superiors and inferiors not pincer-shape, and no teeth; superiors with 2 teeth, the tips of which are definitely swollen, but not curved in dorsal view
Penile organ	In dorsal view, terminal lobe is curled at side, forming sharply-pointed triangle. In lateral view, the apical tip of terminal lobe forms at ventral edge a broad edge, with cornuted tip (Figs 6-7)	In dorsal view, terminal lobe forms a broad triangle, which is not curled at side. In lateral view, the apical tip of terminal lobe at ventral edge is rounded, without cornuted tip

penile organ. The pattern of head and synthorax of the new species are similar to those of *C. miles*, from which it is differentiated by the pattern of the top of abdomen and by structure of anal appendages and penis (cf. FRASER, 1933; LIEFTINCK, 1977; ASAHINA, 1985, 1997). A comparison of the two species is presented in Table I.

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