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Review of the millipede genus *Epanerchodus* Attems, 1901 in continental China, with descriptions of new species (Diplopoda: Polydesmidae)

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Abstract

Four new species of *Epanerchodus* are described from mainland China: *E. jaegeri* **sp. nov.** and *E. martensi* **sp. nov.**, both sympatric and even partly syntopic in Shaanxi, *E. schawalleri* **sp. nov.**, from Sichuan, and *E. yunnanensis* **sp. nov.**, from Yunnan. In addition, *E. koreanus* Verhoeff, 1937 is formally new to the fauna of China due to fresh samples from Jilin. A key is presented to all 14 unquestioned species of *Epanerchodus* currently known from mainland China.

Key words: *Epanerchodus,* taxonomy, key, China

Introduction

Since the synonymization of *Usbekodesmus* Lohmander, 1933 and *Prionomatis* Miyosi, 1956 with *Epanerchodus* Attems, 1901 (Golovatch 1991; Golovatch *et al*. 2011), this eastern Palaearctic genus has become one of the most speciose amongst the diplopod genera in the region, at present counting 70+ nominate species. Most of the species diversity is restricted to Japan, whereas the remaining areas like Central Asia (Uzbekistan and Tajikistan), Afghanistan, Pakistan, the Russian Far East (Maritime Province, Sakhalin and Kurile Islands), Korea, China (together with Taiwan) and the Himalayas each support but a handful of species. Discarding the still enigmatic, female-based *Polydesmus moorei* Pocock, 1895, from Da-zeh Valley, ca 60 mi inland from Sam-Moom Bay, and *P. paludicola* Pocock, 1895, from We Lee Lake, 25 mi S of Ningpo, Chekiang Province, eastern China (Pocock 1895), both or either of which may well appear to represent *Epanerchodus* (Golovatch 1991), only the following nine unquestioned congeners have hitherto been reported from mainland China:

Epanerchodus draco Geoffroy & Golovatch, 2004, from a cave in Yunnan (Geoffroy & Golovatch 2004);
E. eurycornutus Zhang & Wang, 1992, from Zhejiang (Zhang & Wang 1992);
E. frater Geoffroy & Golovatch, 2004, from a few caves in Yunnan, occurring sympatrically with *E. soror* (Geoffroy & Golovatch 2004);
E. orientalis Attems, 1901, apparently the most polymorphous and widespread congener currently reported from nearly all over Japan (except for Kyushu and the Ryukyus) and Taiwan, as well as from a cave in Guangxi, southern China (Golovatch *et al*. 2011, 2012);
E. potanini Golovatch, 1991, from Sichuan and Gansu provinces (Golovatch 1991);
E. soror Geoffroy & Golovatch, 2004, from a few caves in Yunnan (Geoffroy & Golovatch 2004);
E. sphaerisetosus Zhang & Chen, 1983, from Zhejiang (Zhang & Chen 1983);
E. stylotarseus Chen & Zhang, 1990, from a few caves in Guizhou Province (Chen & Zhang 1990; Golovatch *et al*. 2007, 2012);
E. varius (Geoffroy & Golovatch, 2004), from several caves in Hubei and Sichuan provinces (Geoffroy & Golovatch 2004; Golovatch *et al.* 2007).

Prompted by a few more *Epanerchodus* found recently in continental China, not only their records or descriptions are provided below, but also a key to all of them is given.

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3 Gonopods highly variable even between syntopic males, mostly much like in Fig. 6, a small exomere often present, but sometimes totally suppressed, 2–3 processes or evident, elaborate outgrowths at base of an elongated endomere. Guangxi. At least two males are thus necessary to secure a correct identification . . . . . *E. orientalis*

- Gonopods far more stable, truly species-characteristic; endomere stout 4

4 Body ca 15–16 mm long, brown. Sphaerotrichomes present on male postfemora, tibiae and tarsi. Gonopod with a small dentiform exomere . . . . . *E. sphaerisetosus*

- Body considerably smaller, at most ca 12 mm long. Sphaerotrichomes absent. Exomere either absent or a prominent ancoriform structure 5

5 Adult body ca 8–12 mm long, 1.1–1.5 mm wide. Gonopod endomere ancoriform, an exomere totally absent (Fig. 19). Sichuan. . . . . *E. schawalleri* **sp. nov.**

- Body ca 6 mm long, 0.7 mm wide. Gonopod deeply bifid, exomere prominent and ancoriform. Mt Tianmu, Zhejiang. . . . . *E. eurycornutus*

6 Collum and head subequal in width 7

- Collum considerably broader than head 8

7 Paraterga clearly upturmed, mostly elevated above dorsum. Antennae very long and slender, reaching behind segment 4 when stretched dorsally. Sphaerotrichomes absent. Yunnan. . . . . *E. draco*

- Paraterga at most only faintly upturmed, mostly only reaching level of dorsum even in male (Figs 7 & 8). Antennae shorter, slightly clavate (Fig. 7), at most reaching behind segment 3 (male) when stretched dorsally. Sphaerotrichomes present on male femora, postfemora, tibiae and tarsi (Fig. 10). Shaanxi . . . . . *E. jaegeri* **sp. nov.**

8 Exomere spiniform, at least half as long as a slender endomere, the latter with a rounded subterminal lobule. Caves in Hubei and Sichuan . . . . . *E. varius*

- Exomere either totally wanting or relatively small, endomere devoid of a round subterminal lobule. 9

9 Body larger, width of adults > 3.0 mm. Two long processes at base of endomere 10

- Body smaller, width of adults ≤ 2.5 mm. One or two processes at base of endomere 13

10 Male prefemora slender, not bulging laterally (Figs 14 & 23) 11

- Male prefemora stouter, at least slightly bulging laterally (Figs 5 & 10). 12

11 Sphaerotrichomes present (Fig. 23). Exomere absent (Fig. 24). Yunnan . . . . . *E. yunnanensis* **sp. nov.**

- Sphaerotrichomes absent (Fig. 14). Exomere present (Fig. 15). Shaanxi. . . . . *E. martensi* **sp. nov.**

12 All male telopoditomeres with sphaerotrichomes. Exomere clearly bifid. Jilin . . . . . *E. koreanus*

- Only male postfemora, tibae and tarsi with sphaerotrichomes (Fig. 5). Exomere (**ex**) a uniramous spine (Fig. 6). Gansu and Sichuan . . . . . *E. potanini*

13 Body smaller, width ca 1.0 mm. Midbody paraterga relatively narrow, barely broader than prozona. A cave in Yunnan. . . . . *E. frater*

- Body larger, width ca 2.2 mm. Midbody paraterga considerably broader than prozona. Caves in Guizhou . . . . . *E. stylotarseus*

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