A new species of the family Polydesmidae (Diplopoda: Polydesmida) from Vietnam

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Abstract

Polydesmus vietnamicus sp. nov. is described from northern Vietnam. The new species is closely related to a geographically relatively remote congener *P. liber* Golovatch, 1991, from Hong Kong, China, differing in minor details of gonopod structure.

Keywords

Vietnam, Polydesmidae, *Polydesmus*, new species

Introduction

Polydesmidae is almost strictly Holarctic, encompassing more than 60 nominal genera or subgenera and nearly 400 species and subspecies (Hoffman 1980, Golovatch 1991). Most species are found in the Mediterranean area, whereas Central and East Asia, as well as the entire Nearctic region, have lower generic, and to a lesser degree, species diversity (Golovatch 1991, Djursvoll et al. 2001).

Larger species of Polydesmidae seem to be particularly rare in Asia. The family is only represented there by a few species of the diverse, mainly East Asian genus *Epanerchodus* Attems, 1901 from southern and eastern China, Japan and the Korean peninsula (Golovatch 1991, Murakami 1968, Mikhaljova & Lim 2006); by three species of *Pacidesmus* Golovatch, 1991 in southern China and one more in northern Thailand (Golovatch 1991, Golovatch & Geoffroy 2006); and by one species each in *Usbekodesmus* Lohmander, 1933 and *Polydesmus* Latreille, 1802/1803 from southern China (Golovatch 1991, Geoffroy & Golovatch 2004, Golovatch & Geoffroy 2006, Golovatch et al. 2007). Unlike *Pacidesmus* which seems to be endemic to the East

Asian region, *Usbekodesmus* also has several species in Central Asia and the Himalayas of Nepal. *Polydesmus* is certainly the largest genus in the family, with over 200 species and subspecies known, mainly in Europe and the Mediterranean west of the central Caucasus (Hoffman 1980, Djursvoll et al. 2001), plus four in Japan: *Polydesmus japonicus* Miyosi, 1956, *P. miyosii* Murakami, 1966, *P. tanakai* Murakami, 1970 and *P. tangonis* Murakami, 1973; two in eastern China: *P. moorei* Pocock, 1895, *P. paludicola* Pocock, 1895; and one, *P. liber* Golovatch, 1991, in Hong Kong, southern China (Golovatch 1991). The distribution of *Polydesmus* therefore seems to be amphipalaearctic (Golovatch, 1991).

Although Vietnam is known to support a very rich millipede fauna (Enghoff et al. 2004), no species of the family Polydesmidae has heretofore been recorded in this country. The gap between southern China and Thailand has now been filled with a new species of Polydesmidae, described below. The new species is closest to its geographically relatively remote congener, *P. liber* Golovatch, 1991, from Hong Kong.

All type material has been deposited in the collection of the Institute of Ecology and Biological Resources (IEBR) in Hanoi, Vietnam.

Taxonomy

Order POLYDESMIDA Pocock, 1887

Family Polydesmidae Leach, 1815

Genus *Polydesmus* Latreille, 1802/1803

Polydesmus vietnamicus sp. nov.

Figs 1-5.

Holotype: 1 male, Vietnam, Vinhphuc Province, Tamdao National Park, 100 km northwest of Hanoi, secondary subtropical forest, 1000 m a.s.l., 21°27'22"N; 105°38'50"E, 1 October 2005, leg. Nguyen Duc Anh. – Paratypes: 1 female, same data, together with holotype; 1 female, same locality, head damaged, 22 March 2005, leg. Nguyen Duc Anh.

Diagnosis: A typical polydesmid with 20 body rings and three transverse rows of bosses with setae on metaterga. Gonopodal solenomere rather well-developed, conspicuously shaped. Endomere very long and strongly falcate, directed caudally, starting laterally and basally of recurvature point of seminal groove, set off from femorite by a sulcus. Seminal groove largely mesal, crossing femorite diagonally, terminal lateral loop relatively short and turning around a distofemoral process. Differs from morphologically closely related *Polydesmus liber* Golovatch, 1991 in the larger size and gonopod endomere with a pair of teeth at about its midlength.

Description: Holotype male ca 33.2 mm, width of midbody pro- and metaterga 2.8 and 5.4 mm, respectively. Corresponding measurements for female paratypes: ca. 38.4 mm in length, width of midbody pro- and metaterga 3.0 and 6.0 mm, respectively.

Figures 1-5. *Polydesmus vietnamicus* sp. nov., right antenna (1); segments 8-9, dorsal view (2); telson, ventral view (3); right gonopod, lateral view (4) and postero-mesal view (5). Scale lines = 1 mm

Figures 6-7. *Polydesmus liber* Golovatch, 1991, gonopod, mesal view (6), lateral view (7). Scale 0.5 mm (After Golovatch 1991)

Male: Coloration generally pale gray-yellowish. Lateral parts of paraterga yellow, their basal parts like the metaterga pale gray-yellowish with some yellow spots. Antennae, legs and sterna yellow.

Head a little broader than collum, densely setose below antennal sockets. Frons rather smooth, a little convex, with fine microgranulation. Epicranial suture very deep and evident, dividing frons into two inflated polygons.

Antennae rather slender, clavate; in situ reaching the posterior end of ring 2. Length of antennomeres $3 > 4 \approx 5 \approx 6 > 2 > 7$ (Fig. 1). Antennomeres 5 and 6 each with a distodorsal group of minute bacilliform sensilla, antennomere 7 with a dorsal parabasal knob.

Body of typical polydesmoid form, adults with 20 rings (18 podous + 1 apodous ring + Telson). Body gently and gradually broadening until ring 6, thence parallel-sided up to ring 14, onward first gradually and delicately, but from ring 17 abruptly tapering. Dorsum a little convex and rather flattened in lateral view, posteriormost rings somewhat more convex.

Paraterga small and subtriangular on collum and ring 2, well-developed on subsequent rings, subrectangular on rings 3-10, parallelogram-shaped on rings 11-17, subhorizontal, elevated a little above dorsum; distinctly rimmed anteriorly; collum with one lateral incision, rings 2-4 and other pore-bearing rings with four incisions, poreless rings with three indentations; incision somewhat better developed on several anteriormost rings.

Anterior corner of paraterga 2 strongly acuteangular while of paraterga 3 and 4 slightly squared, subsequent paraterga slightly obtuse. Rear corner of paraterga 2-5 somewhat acutangular, thereafter rear corner strongly acutangular, beak-like pointed, increasingly projecting caudad beyond hind tergal contour, slightly so until rings 14, more so onward, clearly so on ring 19. Ozopore formula normal, pores dorsolateral, placed near last paratergal indentation at about 1/3 of paratergal width.

Metaterga with three transverse rows of well-developed, polygonal bosses (Fig. 2). Metatergal setae minute, bacilliform, somewhat longer and more distinct on metaterga 18 and 19. Limbus finely but distinctly spinulate.

Metatergal surface smooth, finely shagreened. Waist between pro- and metazona deep, evident and with fine longitudinal striations, reduced laterad. Pleurites dull. Pleurosternal carinae absent.

Epiproct short, broadly truncated and a little curved down, with two long setae at tip. Paraprocts semi-circular; hypoproct subtrapeziform (Fig. 3). Legs rather long and slender, somewhat incrassate compared to those of female, devoid of sphaerotrichomes. Prefemora swollen dorsally.

Sterna without processes, densely and delicately setose.

Gonopod coxae large, subglobose, without setae on lateral side, but with dense long setae at distal edges and on mesal side. Telopodite suberect; its basal, prefemoral part typically densely setose. Endomere subfalcate, high, approximately 1/2 full length of telopodite, set off from femorite by a suture, with a pair of strong teeth at about midway, tip curved down, unciform. Seminal groove running along mesal side dorso-laterad, loop lying laterally before terminating in a well-developed accessory seminal chamber provided with a hairy pulvillus at base of solenomere. The latter short but evident, bifid, with a well-developed, oblique, additional spine (Figs 4-5).

Female. Slightly larger than male, up to 38.4 mm long. Paraterga slightly less strongly developed. Legs unmodified, somewhat shorter and more slender. Vulvae highly elevated. Epigynial ridge low.

Etymology: The name *vietnamicus* refers to the terra typica.

Remarks. As can be seen in Figures 6-7, this new species is similar in gonopod shape to *Polydesmus liber* Golovatch, 1991 from Hong Kong, China. Both species have similar densely setose gonocoxae, devoid of sphaerotrichomes on legs, simple endomere in comparison with other *Polydesmus* species. Differences between the two species are:

<i>Polydesmus vietnamicus</i> sp. nov.	<i>Polydesmus liber</i> Golovatch, 1991
Body length 33-38.4 mm	Body length 21-23 mm
Gonopod endomere with only a pair of teeth at about midlength.	Gonopod endomere with two pairs of moderate teeth at about 1/3 and 2/3 of its length.

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