

## On several new or poorly-known Oriental Paradoxosomatidae (Diplopoda: Polydesmida), X

### О нескольких новых или плохоизученных ориентальных Paradoxosomatidae (Diplopoda: Polydesmida), X

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КЛЮЧЕВЫЕ СЛОВА: Diplopoda, Polydesmida, Paradoxosomatidae, таксономия, новые виды, Вьетнам.

ABSTRACT. This contribution is devoted to descriptions of two new species from the Nam Cat Tien National Park, southern Vietnam: *Touranella cattiensis* sp.n. and *Anoplodesmus anichkini* sp.n. A key is given to all six species of *Anoplodesmus*, including the new congener, showing particularly long solenomeres. *Nedyopus dawydoffiae* (Attems, 1953) is recorded from Nam Cat Tien for the first time.

РЕЗЮМЕ. Данное сообщение посвящено описаниям двух новых видов и Национального парка Кат-Тьен (Южный Вьетнам): *Touranella cattiensis* sp.n. и *Anoplodesmus anichkini* sp.n. Предложен ключ для всех шести видов *Anoplodesmus*, включая новый вид, отличающихся особенно длинным соленомером. Вид *Nedyopus dawydoffiae* (Attems, 1953) впервые зарегистрирован в Кат-Тьене.

#### Introduction

This paper continues the series devoted to the paradoxosomatid faunas of Oriental countries published in «Arthropoda Selecta» [Golovatch, 1993, 1995a, b, 1996, 1997, 1998, 2000, 2009a, b]. The present contribution deals with three additional samples deriving from a national park in southern Vietnam, all belonging to the collection of the Zoological Museum, Moscow State University, Russia.

#### Taxonomic part

##### *Nedyopus dawydoffiae* (Attems, 1953)

MATERIAL. 1 ♂, 1 ♀, Vietnam, Dongnai Prov., Nam Cat Tien National Park, deciduous tropical forest, litter, ca 250 m a.s.l., 17.XI.–22.XII.2009, leg. A. Tiunov. 4 ♂♂, same locality, Lake Bau Sau, 11°27'42.96"N, 107°20'26.13"E, 17.XII.2009, leg. A. Tiunov.

REMARKS. This species has recently been re-described in due detail, based on material from Bi Doup – Nui Ba Nature Reserve at 1,400–1,900 m a.s.l. [Golovatch, 2009a], a place lying quite close to the type locality, Peak Lang Biang near Dalat, 2,200 m a.s.l. The above represents the third formal record of this conspicuous, apparently forest-dwelling species which occurs in southern Vietnam not only at high, but also at low elevations.

##### *Touranella cattiensis* sp.n. Figs 1–7.

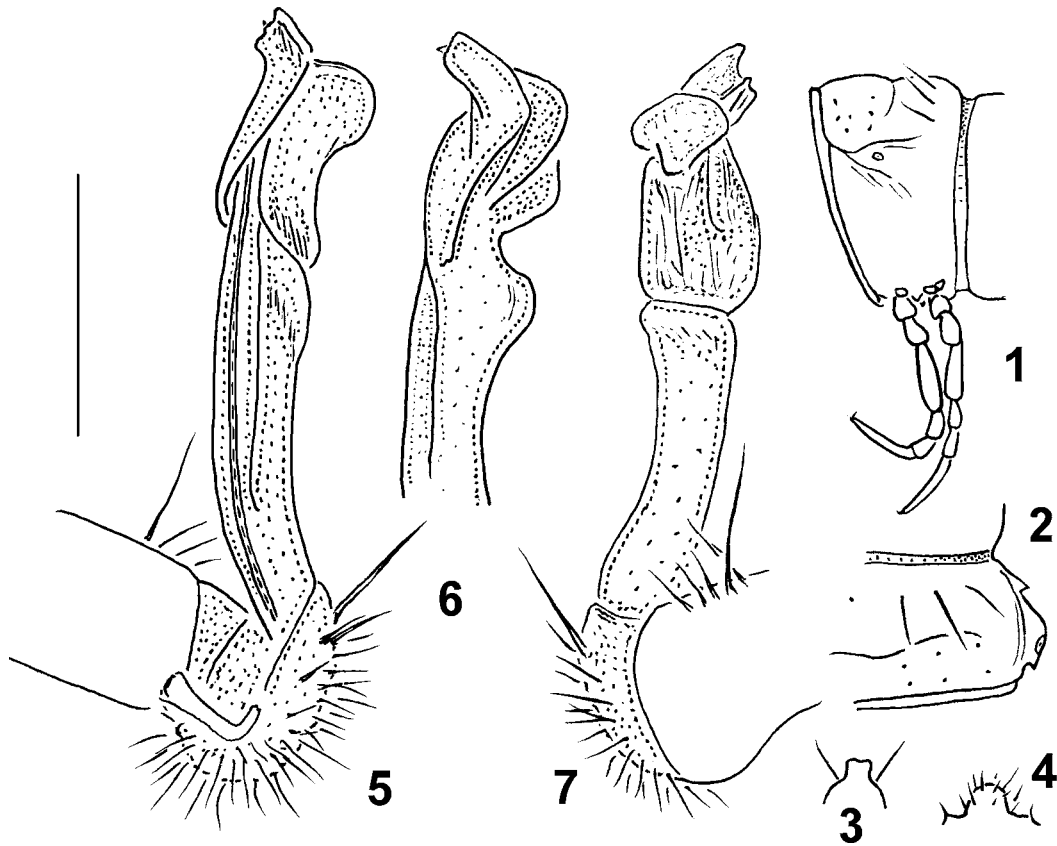
HOLOTYPE ♂, Vietnam, Dongnai Prov., Nam Cat Tien National Park, 11°26'48.2"N, 107°26'26.2"E, 137 m a.s.l, deciduous tropical, mainly *Dipterocarpus*, riverside forest at Dongnai River, sandy soil, litter, 15.VII.2005, leg. A. Anichkin. — PARATYPES: 1 ♀, same place and date; 1 ♂, same place, 01.VI.2005, both leg. A. Anichkin.

NAME. To emphasize the type locality.

DIAGNOSIS. Differs from all congeners except *T. hirsuta* Golovatch, 2009, in the absence of a basal process on a very short gonopod femorite, from *T. hirsuta* in the shape of the solenophore and in the less hirsute appearance.

DESCRIPTION. Length ca 9 (♂) to 10 mm (♀), width of midbody pro- and metazona 0.7 and 0.8 (♂), and 0.8 and 0.9 mm (♀), respectively. General coloration in alcohol rather uniformly light (grey-)brown to brown, pattern modestly cingulate due to usually darker metazona and lighter prozona; head usually a little darker than background, both antennomere 7 and venter usually only slightly infuscate; remaining antennomeres, tergal setae and legs contrastingly pallid, whitish.

Body modestly moniliform. In width, head > col- lum = segment 4 > 2–3 < 5(6)–16 (♀); thereafter body gently and gradually tapering towards telson. Head modestly setose, setae being only slightly shorter than



Figs 1–7. *Touranella cattiensis* sp.n., ♂ holotype: 1 — body segment 10, lateral view; 2 — right half of metatergum 10, dorsal view; 3 — epiproct, dorsal view; 4 — sternal lamina between coxae 4, caudal view; 5–7 — left gonopod, mesal, dorsal and lateral views, respectively. Scale bar: 1.0 (1–4) and 0.5 mm (5–7).

Рис. 1–7. *Touranella cattiensis* sp.n., голотип ♂: 1 — туловищный сегмент 10, вид сбоку; 2 — правая половина метатергита 10, вид сверху; 3 — эпипрокт, вид сверху; 4 — стеральная пластина между тазиками 4; 5–7 — левый гонопод, соответственно изнутри, сверху и сбоку. Масштаб: 1,0 (1–4) и 0,5 мм (5–7).

tergal ones; epicranial suture evident. Antennae relatively short and clavate, reaching behind midway of segment 3 dorsally (♂), slightly shorter in ♀; antennomeres 2, 3 and 6 subequal in length, but 6<sup>th</sup> thickest. Paraterga very modest (Figs 1 & 2), subhorizontal, low, mostly lying at about 1/3 midbody height; calluses bordered both dorsally (fully) and ventrally (only in caudal 1/3), present already on collum; with a setigerous knob at about 1/3 on poriferous segments, with two such knobs (at 1/3 and 2/3rds) on poreless ones; caudal corner narrowly rounded only on a few anterior poreless segments, onward evidently pointed, spiniform, but not surpassing rear tergal contour. Ozopores lateral, lying at bottom of an ovoid groove (Figs 1 & 2). Body surface smooth and shining even below paraterga. Axial line evident, like a modest impression only on postsulcus halves of metaterga. Transverse metatergal sulcus on segments 5–18, very faint on segment 19, usually reaching an impressed base of paraterga. Collum virtually smooth, with three transverse rows of long and dense setae. Following metaterga with three transverse, regular rows of 3+3 (sometimes 3+4 or

4+3) setae: one row in front (presulcus) half, two rows behind sulcus. Tergal setae very long, simple, mostly retained. Stricture dividing pro- and metazona deep, narrow, evidently ribbed at bottom down to about 1/2 body height (Figs 1 & 2). Pleurosternal carinae present as small flaps only on segment 2. Epiproct short, flattened dorsoventrally, narrowly truncate, subapical papillae rudimentary (Fig. 3). Hypoproct roundly subtriangular, caudal 1+1 setae virtually without knobs and very evidently separated.

Sternites without modifications, sparsely setose, cross-impressions very modest; a high, rounded, linguiform and setose lamina only between ♂ coxae 4 (Fig. 4). Legs slender, short (Fig. 1), ca 1.2–1.3 (♂) or 1.0–1.1 times (♀) as long as midbody height; ♂ prefemora without evident lateral bulges; ventral brushes absent, even though ventral setation on ♂ tarsi often rather thick; adenostyles on ♂ leg 1 absent, but each ♂ coxa 2 with an evident ventro-apical process carrying a vas deferens.

Gonopods (Figs 5–7) not quite typical of the genus; coxite long, subcylindrical, setose distodorsally; femo-

rite very short, devoid both of a basal process and torsion; solenophore composed of several lobes, suberect, sheathing much of a ribbon-shaped solenomere, without a shoulder near base.

REMARKS. The genus *Touranella* Attems, 1937 has hitherto been known to comprise only four species: the type-species *T. gracilis* Attems, 1937, from Danang, southern Vietnam [Attems, 1937, 1938], *T. himalayaensis* Golovatch, 1994, from Nepal, and *T. peculiaris* Golovatch, 2009 and *T. hirsuta* Golovatch, 2009, both from Bi Doup, southern Vietnam [Golovatch, 1994, 2009a, b]. Based on its peculiar gonopod conformation, such as the lack of a femoral process and the presence of a very short femorite, the new species seems to be especially similar to *T. hirsuta*, also sharing a highly hirsute appearance.

*Anoplodesmus anichkini* sp.n.

Figs 8–16.

HOLOTYPE ♂, Vietnam, Dongnai Prov., Nam Cat Tien National Park, 11°26'48.2"N, 107°26'26.2"E, 137 m a.s.l., deciduous tropical, mainly *Dipterocarpus*, riverside forest at Dongnai River, sandy soil, litter, 01.VI.2005, leg. A. Anichkin. — PARATYPE: 1 ♂, same locality, 15.V.2005, leg. A. Anichkin.

NAME. Honours Dr. Alexander Anichkin, the collector.

DIAGNOSIS. Differs from all congeners in the extremely complex and peculiar shape of the solenophore which is supplied with five knife-shaped processes (see also key below).

DESCRIPTION. Length ca 20 mm, width of pro- and metazona 1.9 and 2.0 mm, respectively. General coloration light brown with a slightly cingulated pattern due to somewhat darker prozona and region of stricture between pro- and metazona, and lighter collum and following metazona (in holotype, the pattern more vivid); legs (in holotype distal podomeres a little infuscate), venter and either antennomeres 7 and 8 (holotype) or entire antennae (paratype) contrastingly pallid to yellow.

In width, head > collum = segments 5–16 > 2–4; on segments 19–20, body gradually tapering towards telson. Body submoniliform, tegument generally smooth and shining. Labrum and frons densely setose up to isthmus between antennal sockets, vertex nearly bare. Antennae long and slender, slightly clavate, reaching behind end of segment 3 dorsally. Collum without paraterga, setae (3+3?) in anterior row slightly longer than on following metaterga. Paraterga beginning only from segment 2, almost missing, traceable as very low, rounded swellings supporting an ozopore centrally at about 1/3 metazonal height (Figs 8 & 9). Surface below paraterga modestly and arcuately rugulose. Transverse metatergal sulcus wanting. Pleurosternal carinae evident on segments 2–18, especially well-delimited dorsally, arcuate, mostly with a very small caudal tooth (Fig. 8). Epiproct (Fig. 10) rather long, digitiform, flattened dorsoventrally, tip gently rounded, subapical papillae very small. Hypoproct semi-

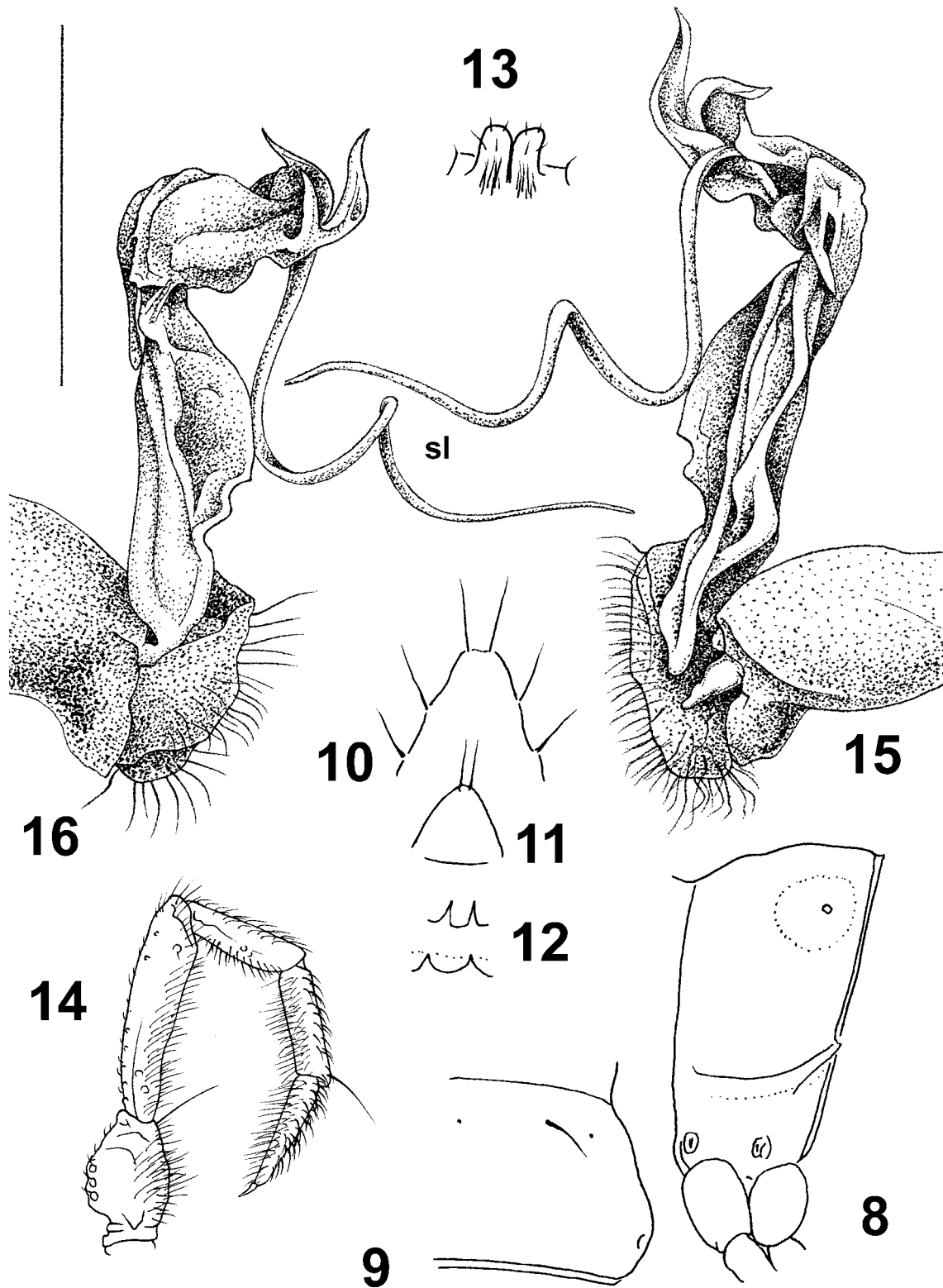
circular (Fig. 11), caudal margin with a paramedian pair of nearly contiguous setae not borne on knobs.

Sternites modestly setose, cross-impressions moderate; sternal cones very evident, slightly stouter and stronger in front pairs of sterna, somewhat slenderer and longer in caudal pairs of sterna (Fig. 12). A pair of contiguous rounded lobes between coxae 4, with a bunch of setae behind each lobe (Fig. 13). Legs densely setose and slender, generally long, very evidently growing increasingly longer toward telson so that caudal legs nearly twice as long as anterior ones; adenostyles missing; in front body half, prefemora clearly swollen dorsally while tarsi with ventral brushes (Fig. 14).

Gonopods (Figs 15 & 16) very complex; coxite long, subcylindrical, bare, nearly as long as femorite; prefemur medium-sized, as usual densely setose; femorite complex, with a ventral, bisinuate lobe at about midway, two longitudinal crests on median face and another crest on lateral face; seminal groove on femorite running entirely mesally; postfemoral sulcus evident on lateral side; solenophore with three dentiform processes distally and another two parasally on lamina medialis; solenomere (sl) flagelliform, extremely long, about as long as telopodite.

REMARKS. Only four species of *Anoplodesmus* Pocock, 1895, a large South to Southeast Asian genus which has only very recently been rediagnosed [Chen et al., 2010], have hitherto been known to show especially long solenomeres: *A. elongissimus* (Golovatch, 1984), from Darjeeling District, the Himalaya of India, *A. perplexus* (Golovatch, 1993), from northern Thailand, as well as *A. spiniger* Chen, Golovatch, Mikhailjova & Chang, 2010 and *A. aspinosus* Chen, Golovatch, Mikhailjova & Chang, 2010, both latter species from Taiwan [Golovatch, 1984, 1993; Chen et al., 2010]. Considering *A. anichkini* sp.n. which joins them, the following key can be proposed for their discrimination.

1. Mostly 2+2 tergal setae arranged in a rear row. Both solenophore and solenomere subequally slender and extremely long. Himalaya of India ..... *A. elongissimus*  
– Metatergal setae arranged either in two rows (fore and rear) or in a single fore row. Solenophore much shorter, distal half of a free solenomere exposed, not sheathed by solenophore ..... 2
2. Metatergal setae in two rows (2+2 and 4+4). A cristate lamina each between ♂ coxae 4 and 5. Northern Thailand ..... *A. perplexus*  
– Metatergal setae in a single fore row (2+2). Either a single lamina or two contiguous laminae between ♂ coxae 4 alone ..... 3
3. Sternal lamina between ♂ coxae 4 double (Fig. 12). Solenophore with five evident spines (Figs 15 & 16). Southern Vietnam ..... *A. anichkini* sp.n.  
– Sternal lamina between ♂ coxae 4 single. Solenophore without evident spines. Taiwan ..... 4
4. Sternal lamina between ♂ coxae 4 emarginate. Gonopod distofemoral part with a lateral retrorse spine. Southern Taiwan ..... *A. spiniger*



Figs 8–16. *Anoplodesmus anichkini* sp.n., ♂ holotype: 8 — body segment 10, lateral view; 9 — leg 9; 10 — right half of metatergum 10, dorsal view; 10 — epiproct, dorsal view; 11 — subanal scale (=hypoproct), ventral view; 12 — midbody sterna, ventral view (lower sterna front ones); 13 — sternal lamina between coxae 4, caudal view; 14 — leg 9; 15 & 16 — right gonopod, mesal and lateral views, respectively. Scale bars: 2.0 (8–12) and 1.0 mm (13–16).

Рис. 8–16. *Anoplodesmus anichkini* sp.n., голотип ♂: 9 — туловищный сегмент 10, вид сбоку; 10 — правая половина метатергита 10, вид сверху; 11 — эпипрокт, вид сверху; 12 — субанальная чешуйка, вид снизу; 13 — стерральная пластина между тазиками 4, вид сзади; 14 — нога 9; 15 и 16 — правый гонопод, соответственно изнутри и сбоку. Масштаб: 2,0 (9–12) и 1,0 мм (13–16).

- Sternal lamina between ♂ coxae 4 truncate. Gonopod distofemoral part without such spine. Northern and central Taiwan ..... *A. aspinosus*

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