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NEW AND LITTLE-KNOWN MILLIPEDES (DIPLOPODA) FROM THE RUSSIAN FAR EAST

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Uniramidesmus constrictus **sp. n.** is described from Khabarovskii krai. New synonymy is proposed: *Pacifiulus amurensis* (Gerstfeldt, 1859), **comb. n.** = *Pacifiulus imbricatus* Mikhaljova, 1982, **syn. n.** Genus *Cylindroiulus* is firstly recorded from the Russian Far East, *C. latestriatus* - for Asia, *Orinisobates microthylax* - for Khabarovskii krai and *O. soror* - for Middle Kuril Islands.

KEY WORDS: Diplopoda, Russia, taxonimy, faunistics, new species.

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С юга Хабаровского края описан *Uniramidesmus constrictus* **sp. n.** Установлена новая синонимия: *Pacifiulus amurensis* (Gerstfeldt, 1859), **comb. n.** = *Pacifiulus imbricatus* Mikhaljova, 1982, **syn. n.** Род *Cylindroiulus* впервые указан для Дальнего Востока, *C. latestriatus* - для Азии, *Orinisobates microthylax* - для Хабаровского края и *O. soror* - для Средних Курил.

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INTRODUCTION

Materials treated here are deposited in the Zoological Museum of the Moscow State University and in the Institute of Biology and Pedology, Far Eastern Branch of the Russian Academy of Sciences (Vladivostok). They have been collected by B. Urbain (USA, Seattle), L. D. Filatova (Vladivostok), G. G. Ganin (Khabarovsk), S. I. Golovatch (Moscow), M. A. Konyukhova (Vladivostok), V. A. Konyukhova (Vladivostok), A. S. Lelej (Vladivostok), Yu. M. Marusik (Magadan), W. Schawaller (Germany, Stuttgart), E. A. Shushunova (Vladivostok), J. Schweikert (USA, Seattle), S. Yu. Storozhenko (Vladivostok), T. S. Vshivkova (Vladivostok), V. A. Teslenko (Vladivostok), M. P. Tiunov (Vladivostok) and by the author. The holotype and part of paratypes of a new species deposited in the Zoological Museum of the Moscow State University, other paratypes in collection of Institute of Biology and Pedology (Vladivostok).

ORDER POLYDESMIDA Family Polydesmidae

Uniramidesmus constrictus Mikhajlova sp. n.

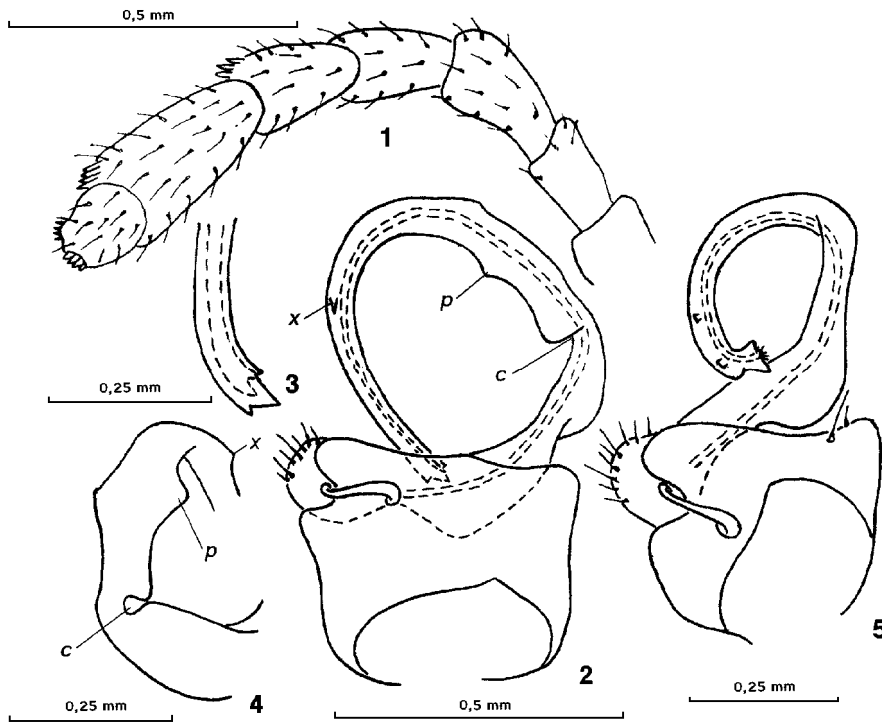
Figs 1-4

MATERIAL. Holotype: ♂, Russia: Khabarovskii krai: 12 km NE Bikin, Boitsovo, 250-350 m, forest (*Betula*, *Quercus*, *Populus*), 26.V-4.VI 1990 (Golovatch, Schawaller). Paratypes: 26♂, 69♀, the same locality and habitat as holotype.

DIAGNOSIS. New species differs from all other species of genus *Uniramidesmus* Golovatch, 1979 by the ring-shaped, coiled gonopods with a deep sulcus between the femorite and postfemur.

DESCRIPTION. Male. Holotype 7 mm long, 0.5 mm wide. Paratypes 7-8 mm long, 0.5-0.6 mm wide. Body colouration beige, antennae and legs beige too. Head densely covered with short pubescence. Antennae short, clavate. Distal parts of antennomeres 5 and 6 dorsally with a group by small bacilli; distal part of antennomere 7 dorsally with a very small knob bearing the bacilli (Fig. 1). Bases of antennae very poorly separated. Length ratios of antennomeres 2-7 as 1.2:1.8:1.5:1.4:2.1:1, width ratios as 1.1:1.1:1.1:1.3:1.5:1. Body substrongiloso-moid. Collum ovoid, slightly narrower than head. Segment 2 somewhat narrower than head but nearly equal in length to segment 3. Body growing in width toward segment 5 or 6, onward parallelsided until segment 18, further on tapering caudally. Metatergal polygonal sculpture as three transverse rows of low bosses with setae, all rows equally developed. Lateral boss of caudal row indistinguishable. Polygonal sculpture best developed on segments 1-4 and 17-19, being strongly obliterated in 5-16 segments. Tergal setae short, thin, apically pointed, longer on segments 1-4 and 17-19.

Paraterga very small, laterally poorly rounded except for paraterga 2-4 with arcuate lateral edges. Caudolateral corners of paraterga obtuse. Legs and



Figs 1-5. Millipedes. 1-4) *Uniramidesmus constrictus* sp. n., paratype, male: 1) antenna, 2) gonopod (mesal view), 3) distal part of gonopod telopodite, 4) medial part of gonopod telopodite; 5) *Uniramidesmus aberrans*, gonopods of male from Boitsovo; *c* - sulcus; *p* - prominence of postfemur; *x* - external outgrowth of telopodite.

body rings finely alveolate; metazonal fields smooth. Epiproct long, cylindrical, apically blunt. Anal valves with a gutter and sparse setae along mesal margin. Subanal scale with two setae along caudal margin.

Legs relatively long, claws normal. Legs 1-2 slightly reduced as compared to subsequent pairs. Vasa deferentia opening upon coxal outgrowths of male leg pair 2.

Gonopods (Fig. 2) ring-shaped, coiled caudad. Telopodites in situ crossing each other. Coxite globose, with a strong seta ventrally. Coxal horn present. Subreminal orifice of seminal groove opening upon very small bare pulvillus (Fig. 3). Distal part of telopodite with a small external outgrowth (*x*). Femur with a prominence (*p*), set off from postfemoral portion by a deep sulcus (*c*) (Fig. 4). Angle between basal and apical parts of telopodite obtuse. Prefemoral portion usual, setose distally.

Female. Length 7-8 mm, width 0.5-0.6 mm. Sternite 3 with a very low eminence, without ridge. Other nonsexual characters as in male.

ETYMOLOGY. The specific name originated from Latin adjective *constrictus*, emphasizing the sulcus between the gonopod femorite and postfemur.

***Uniramidesmus aberrans* Mikhaljova, 1979**

Fig. 5

MATERIAL. Russia: Khabarovskii krai: 12 km NE Bikin, Boitsovo, 250-350 m, forest (*Betula*, *Quercus*, *Populus*), 26.V-4.VI 1990, 19♂, 27♀ (Golovatch, Schawaller).

DISTRIBUTION. Russia: Primorskii krai (Golovatch & Mikhaljova, 1979; Mikhaljova & Bakurov, 1989; Mikhaljova, 1993).

REMARKS. Population from Khabarovskii krai contains the distinct morphological male form with gonopod solenomerite subapically with very broad sulcus and two small ventral outgrowths (Fig. 5) (in specimens from Primorskii krai gonopod solenomerite subapically without sulcus and with one small ventral outgrowth).

***Epanerchodus bifidus* Takakuwa, 1954**

MATERIAL. Russia: Primorskii krai: Ryazanovka, 13.VIII 1986, 1♀ (Shatrovsky); Kiparisovo, broadleaved forest, litter, VII-VIII. 1997, 3♂ (Mikhaljova, M.Konyukhova, V.Konyukhova); same locality, 28.IX 1997, 1♂, 1♀, 2 juveniles (Mikhaljova); Vladivostok, Okeanskaya Station, broadleaved forest, 2.X 1997, 21 juveniles (Marusik).

DISTRIBUTION. Russia: south part of Primorskii krai. Korea, Japan (Murakami & Paik, 1968; Golovatch & Mikhaljova, 1979; Mikhaljova, 1988, 1996; Mikhaljova & Kim, 1993;).

REMARKS. Single colour form (bright pink with a broad brown stripe and spots on the dorsum) was known. Second colour form (pink-beige, without stripe and spots) in the fresh samples of both males and females is found. The dull and bright individuals was discovered in July (dull) and August-September (bright), so, it is possible to suppose this colour forms are seasonal ones. But bright individuals has been recorded in July from "Kedrovaya Pad" Reserve, Primorskii krai (Mikhaljova, 1988). In addition, the dull form represent no freshly molted adult, since last instars has the same colour form, but vague in comparison with adults. The gonopod structure and other peripheral characters remain stable in both color forms. *E. bifidus* may be a junior synonym of *E. koreanus* Verhoeff, 1937 from Korea (Mikhaljova, 1993), but this question can be resolved after examination of the types of the latter species.

ORDER POLYZONIIDA

Family Polyzoniidae

***Angarozonium amurense* (Gerstfeldt, 1859)**

Platydesmus amurensis: Gerstfeldt, 1859: 27 (holotype - macerated specimen, China: near the mouth of Sungari River; in Zoological Institute, St. Petersburg; studied).

Polyzonium amurense: Mikhaljova, 1979: 1591.

Polyzonium cyathiferum: Mikhaljova, 1981: 781 (holotype - ♂, Russia: Kamchatka, Kozyrevsk; in Zoological Museum of Moscow State University; studied).

Angarozonium amurense: Shelley, 1997: 29.

MATERIAL. Russia: Khabarovskii krai: Pashkovo, forest (*Quercus*, *Betula*), 13.VII 1978, 1♂, VII. 1979, 1♂ (collector unknown); Bolshe-Khekhtsyrskii Reserve, 400-450 m, forest (*Abies*, *Pinus*, *Betula*), 6-10.VI 1990, 25♂, 7♀, 49 juveniles (Golovatch, Schawaller); Komsomolskii Reserve, forest (*Larix dahurica* with *Ledum*), VII. 1991, 7♂, 4♀, 3 juveniles (Ganin).

DISTRIBUTION. Russia: Siberia, Far East. North-East China.

REMARKS. Insufficiently and briefly described *Platydesmus amurensis* has been suspected to actually represent a senior synonym of *Polyzonium cyathiferum* (Mikhaljova, 1993). However, the formal synonymy has been advanced only recently (Shelley, 1997), though without study of holotype. The above material agrees with the detailed description and drawing of *Polyzonium cyathiferum* and derive from an area lying nearly opposite the mouth of Sungari River, the type locality of *Platydesmus amurensis*. Therefore I accept and reconfirm the Shelley's synonymy.

ORDER JULIDA Family Julidae

Pacifiulus amurensis (Gerstfeldt, 1859), comb. n.

Julus amurensis: Gerstfeldt, 1859: 17 (holotype - juvenile, Russia: lower flow of Amur River between the mouths of Ussuri River and Gorin River; in Zoological Institute, St. Petersburg; probably lost).

Pacifiulus imbricatus: Mikhaljova, 1982: 212 (holotype - ♂, Russia: Primorskii krai, Ussuriiskii Reserve; in Zoological Museum of Moscow State University; studied), **syn. n.**

MATERIAL. Russia: Amurskaya oblast': Khingan Reserve, Malyi Khingan Mt. Range, forest (*Quercus*), VII 1991, 3♀, 15 juveniles (Ganin). Khabarovskii krai: 12 km NE Bikin, Boitsovo, 250-350 m, forest (*Betula*, *Quercus*, *Populus*), 26.V-4.VI 1990, 17♀, 16 juveniles (Golovatch, Schawaller); Bolshe-Khekhtsyrsky Reserve, 400-450 m, forest, 6-10.VI 1990, 1♀ (Golovatch, Schawaller); Slavyanka, 20 km N Troitskoye, right Amur bank, forest (*Quercus*, *Betula*), 14-19.VI 1990 (Golovatch, Schawaller); mouth of Tumnin River, Asket Spring, 29.VI 1997, 1♀ (Tiunov); ring Tumnin River bank, near Chichimar River, 26.VI 1997, 1♀ (Tiunov); environs of Tumnin River, between Slyudyanoi Spring and Tun River, 27.VI 1997, 1♀ (Tiunov); Komsomolsky Reserve, forest (*Larix* with *Ledum*), VII. 1991, 4♀, 4 juveniles, (Ganin); Pashkovo, VIII. 1991, 3♀, 15 juveniles, (Ganin); same locality, forest (*Acer*, *Quercus*, *Tilia*, *Betula*), 23.VII 1978, 1♀ (collector unknown); same locality, *Pinus*-broadleaved forest, 21.VI 1978, 4♀ (collector unknown); Pompeevka, glade of 1976, 5.VII 1978, 1 juvenile (collector unknown); Primorskii krai: between Ternei and Krasnoarmeisk, forest (*Pinus*), 27-28.VI, 1-2.VII 1983, 12♀, 7 juveniles (Filatova); Kiparisovo, broadleaved forest, 28.IX 1997, 1♀ (Mikhaljova); De-Livrona Island, 2.VII 1997, 2♂, 1♀ (Vshivkova); Vladivostok, Akademgorodok, 3-5.X 1997, 5♀ (Marusik); Vladivostok, Amurskii Zaliv Station, 3.X 1997, 1♀, 3 juveniles (Marusik).

DISTRIBUTION. Russia: Siberia, Far East.

REMARKS. *Julus amurensis* has remained among *nomina dubia* (Mikhaljova, 1993). Only three juliform species, *Pacifiulus imbricatus* (Julidae), *Skleprotopus coreanus* (Mongoliulidae) and *Orinisobates microthylax* (Nemasomatidae) which more or less match the original description of *J. amurensis*,

were found from the south part of Khabarovskii krai including the Khekhtsyur Nature Reserve (mouth of Ussuri River), village Troitskoe (between the mouths of Ussuri and Gorin rivers) and the Komsomolskii Nature Reserve (mouth of Gorin River). Single damaged (not belonging to *P. imbricatus*) specimen of Julidae was found in environs of Khabarovsk only. This specimen has been excepted from examination, since it is solely single amongst numerous samples of many years. According to original description (Gerstfeldt, 1859) *J. amurensis* is similar with European *Cylindroiulus londiensis* (Leach, 1815) which characterized by dorsal striate. Whereas *S. coreanus* and *O. microthylax* are non-striate dorsally. So, a realistic candidate in synonym of *J. amurensis* is *P. imbricatus*. Comparing of description of *J. amurensis* with adults and various instars of *P. imbricatus* show the general morphological and colour resemblance except the light legs of *P. imbricatus* and dark legs of *J. amurensis*. This may be the misrepresent description of *J. amurensis* leg coloration by Gerstfeldt (1859). Taking into account the variability, vast geographical distribution and euryoky of *P. imbricatus*, this species is considered as a subjective junior synonym of *J. amurensis*.

***Cylindroiulus latestriatus* (Curtis, 1845)**

MATERIAL. Russia: Kuril Islands: Kunashir, Yuzno-Kurilsk, Golovnina Bay, sandy seashore hill with grasses and *Rosa* bushes, 30.VIII-7.IX 1997, 2♂, 1♀, 1 juvenile (Marusik).

DISTRIBUTION. Europe; introduced into Canada, USA, Mexico, Peru, Chile, St.Paul Island and Gough Island (Blower, 1985). It is the first record from Asia.

REMARKS. Genus *Cylindroiulus* Verhoeff, 1894 is widespread in Europe, but few species was introduced in North and South America, Africa, Australia, India. The easternmost record of a *Cylindroiulus* species is the East Kazakhstan (Read, 1994). So, this is the first record of *Cylindroiulus* in Russian Far East.

***Anaulaciulus golovatchi* Mikhailjova, 1982**

MATERIAL. Russia: Primorskii krai: Kiparisovo, broadleaved forest, 28.IX 1997, 2♀, 1 juvenile (Mikhailjova); Vladivostok, Amurskii Zaliv Station, 3.X 1997, 3♂, 4♀, 2 juveniles (Marusik); Vladivostok, Okeanskaya Station, broadleaved forest, 2.X 1997, 3♂, 5♀ (Marusik); Vladivostok, Akademgorodok, 30.IX 1997, 3♀ (Marusik); Vladivostok, Sedanka Station, in mashrooms, 13.IX 1997, 2♂, 1 juvenile (Tiunov); Furugelma Island, 1.VII 1997, 3 juvenoles (Vshivkova).

DISTRIBUTION. Russia: Primorskii krai (Mikhailjova, 1993; 1996). Korea (Mikhailjova & Kim, 1993).

Family Blaniulidae

***Nopoiulus kochii* (Gervais, 1847)**

MATERIAL. Russia: Primorskii krai: Vladivostok, Akademgorodok, 3-5.X 1997, 1♀ (Marusik); Vladivostok, Sedanka Station, kitchen-gardens, on shoots of onion and haricot, 18.VI 1995, 6♂, 17♀, 2 juveniles (Shushunova).

DISTRIBUTION. Europe, Asia, North and South America, New Zeland.

REMARKS. This species is ubiquitous. Undoubtedly, part of its distribution is due to human transport. The inhabitant of different natural and anthropogenic biotopes is known as the pest of some agricultural plants. In Russian Far East this species has been reported from hothouses and in a coniferous-broadleaved forest of Vladivostok Botanical Garden (Golovatch & Enghoff, 1990). It is the first record of *N. kochii* in kitchen-gardens.

Family Nemasomatidae

Orinisobates soror Enghoff, 1985

MATERIAL. Russia: Kuril Islands: Rasshua Island, 12-13.VIII 1995, 3 ♀, 1 juvenile (Teslenko); Brat Chirpoev Island, 20.VIII 1997, 1 ♂, 5 ♀ (Urbain, Lelej, Storozhenko); Ushishir Islands, Yankicha Island, under stone and wood, 1.VIII 1997, 1 ♂, 1 ♀, 1 juvenile (Schweikert); Shikotan Island, east coast, small bay opposite to Isl. of Greag., 146°47'19"E, 43°45'80"N, pebbles and seashore vegetation, 16.VII 1997, 3 ♂, 12 ♀ (Marusik); Kunashir Island, south-east shore, Kosmodemyanskaya Bay, 145°53'70"E, 44°05'75"N, small (0.5 m) "cliff", 3.IX 1997, 33 ♀ (Marusik); Kunashir Island, south-west part, seashore rocks E of Lagunnoye, 145°44'50"E, 44°03'30"N, 24.IX 1997, 1 ♂, 3 ♀ (Marusik).

DISTRIBUTION. Russia: Sakhalinskaya oblast' (Sakhalin: Korsakov and Aniva, Kuril Islands: Kunashir I., Zelyonyi I.) (Mikhaljova & Basarukin, 1995). This is the first records of *O. soror* from Shikotan I., Brat Chirpoev I., Ushishir I. and Rasshua I.

Orinisobates microthylax Enghoff, 1985

MATERIAL. Russia: Khabarovskii krai: 12 km NE Bikin, Boitsovo, 250-350 m forest (*Betula*, *Quercus*, *Populus*), 26.V-4.VI 1990, 2 ♀, 3 juveniles (Golovatch, Schawaller); Slavyanka, 20 km N Troitskoye, right Amur bank, forest (*Quercus*, *Betula*), 14-19.VI 1990, 4 juveniles (Golovatch, Schawaller). Primorskii krai: Ussuriiskii Reserve, Turova Pad, rotten wood, 30.VI 1979, 9 ♀ (Mikhaljova).

Distribution. Russia: Transbaikalia, Kamchatka, Primorskii krai, Sakhalinskaya oblast' (Mikhaljova & Basarukin, 1995). Here it is firstly recorded from Khabarovskii krai.

ORDER CHORDEUMATIDA

Family Hoffmaneumatidae

Hoffmaneuma exiguum Golovatch, 1978

MATERIAL. Russia: Primorskii krai: Kiparisovo, broadleaved forest, 28.IX 1997, 2 juveniles (Mikhaljova); Vladivostok, Okeanskaya Station forest (*Quercus*), litter, 20.V.1979; 1 ♀ (Mikhaljova); Popova Island, broadleaved forest, litter, 9.X.1979 1 ♂, 5 ♀ (Mikhaljova).

DISTRIBUTION. Russia: Primorskii krai (Mikhaljova, 1993).

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