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# Centipedes and Millipedes (Chilopoda, Diplopoda) of the Khentey Mountain Range, Northern Mongolia

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# Centipedes and millipedes (Chilopoda, Diplopoda) of the Khentey Mountain Range, northern Mongolia

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## Abstract

We sampled 99 plots in three locations in the West, South and East Khentey, each consisted of both pitfall traps and soil and litter sampling. We were able to establish the occurrence of ten species of Chilopoda from three genera, three families and three orders and three species of Diplopoda also from three genera, three families and three orders in the Khentey Mountain region. Among the Chilopoda were found eight Lithobiomorpha: *Lithobius* (*Ezembius*) *giganteus*, *L.* (*E.*) *sibiricus*, *L.* (*E.*) *ostiacorum*, *L.* (*E.*) *rapax*, *L.* (*E.*) *mongolellus*, *L.* (*Monotarsobius*) *alticus*, *L.* (*M.*) *crassus* and *L.* (*M.*) *curtipes* and two Geophilomorpha: *Escaryus chadaevae* and *Strigamia pusilla*. *L. giganteus* and *L. alticus* were by far the most widespread Chilopoda species. Three Diplopoda species were *Angarozonium amurense*, *Orinisobates microthylax* and *Uniramidesmus perplexus*, with *A. amurense* as the most abundant species. Both, the genus *Orinisobates* with *O. microthylax*, as well as the family Nemasomatidae they belong to, are new to the millipede fauna of Mongolia. Being the southernmost find of *U. perplexus*, the current record is new to the Mongolian millipede species list, likewise the genus *Uniramidesmus*, the family Polydesmidae and the order Polydesmida to which it belongs. The Chilopoda communities in the western Khentey were more species-rich than those in the south and east, which is caused by the higher precipitation and hence resulting higher diversity of the forest. Within the western and southern Khentey, was found a simultaneously increase in the richness of Chilopoda and tree species. Generally, was found the highest diversity of Chilopoda in the higher altitudes, which corresponds with the increasing precipitation. Lithobiomorpha, however, had their highest diversity in the floodplain forests. Geophilomorpha were absent in the alluvial forests and were only found in the hill forests. Diplopoda occurred only within the West and East Khentey, while in the dry southern Khentey no Diplopoda were found and their occurance seems lacking or very rare.

**Key words:** Lithobiomorpha, Geophilomorpha, Nemasomatidae, Polydesmidae, new records, distribution areas

## 1. Introduction

Scientific works dealing with myriapods within Mongolia are scarce. SSELIWANOFF (1881) described *Lithobius giganteus* from material collected in the Khangai region. DOBRORUKA (1960, 1969) displayed the variability of *L. giganteus* with material from central Mongolia. LOKSA (1965, 1978) investigated material collected from widespread localities in Mongolia and described several new species, among them *Lithobius alticus* collected from the vicinity of Ulaanbaatar. ULYKPAN (1988) reviewed the myriapodological research in Mongolia and presented a species list from different habitats (forest-steppe, steppe, desert-steppe and desert), including a number of invalid species. Earlier we were able to establish the occurrence of ten species of Chilopoda in the Khentey Mountain region (POLOCZEK et al. 2016). The previously known species diversity of millipedes in Mongolia was restricted to nine species from five genera, three families and three orders (MIKHALJOVA 2012, NEFEDIEV et al. 2015). Here we provide detailed descriptions of every chilopod and diplopod species found during our studies including their ecology and distribution.

## 2. Material and methods

The present work was conducted in different types of forest and forest-steppe around the Khentey Mountain Range in northern Mongolia, which can be described as the southern edge of the Siberian taiga. We investigated how different types of forest influence the distribution of soil invertebrate species within this specific region. We sampled myriapods at 99 plots in three locations in the West, South and East Khentey (Khonin Nuga, Bogd Khan Uul and Mongonmorit) with pitfall traps and soil and litter samplings (POLOCZEK et al. 2016).

SEM micrographs were taken at the Laboratory of Phylogeny and Faunogenesis of the Institute of Systematics and Ecology of Animals, Siberian Branch, Russian Academy of Sciences (Novosibirsk, Russia) using a Hitachi TM-1000 scanning electron microscope.

Below, a list of all species sampled within the Khentey Mountain range is given, together with a short description of their morphology. The important characters for determination were the number of antennal segments (given as number left + number right), the number of the ocelli per side, the number of the small teeth on the forcipular coxosternite (given as no. right + no. left; see fig. 4), and the number and shape of the coxal pores on the last four pairs of legs (given in the form XXXX indicating the number of pores per leg from 12$^{th}$ to 15$^{th}$). A very useful character is the form of the female gonopod (see fig. 3), the shape of the gonopodal claw and the number and form of the small spines on the first article of the gonopod (given as number right + number left).

The Chilopoda material treated herein has been deposited in the collection of the first author (AP), while Diplopoda material deposited in the collection of the Altai State University (Barnaul, Russia).

## 3. Results

So far, we identified 13 species of larger myriapods (Chilopoda and Diplopoda) within the Khentey Mountain Range (table 1).

Table 1: Species richness (number of found species) within the different regions

| taxa | East Khentey | South Khentey | West Khentey | total |
|---|---|---|---|---|
| Chilopoda | 6 | 5 | 10 | **10** |
| Lithobiomorpha | 5 | 5 | 8 | **8** |
| Geophilomorpha | 1 | 0 | 2 | **2** |
| Diplopoda | 1 | 0 | 3 | **3** |
| **Myriapoda** [1)] | **7** | **5** | **13** | **13** |

[1)] Chilopoda and Diplopoda

### 3.1. Chilopoda

Chilopoda or centipedes are a well-defined group of arthropods with relatively homogenous ecological requirements that has been sparsely investigated in Mongolia. They are all unspecific predators and their occurrence is closely related to the humidity of the habitat (ZENKOVA & PETRASHOVA 2008).

#### 3.1.1. Lithobiomorpha

Strong and compact centipedes. Living on the ground-surface or in the upper litter-layer. Colour mostly brownish. Adults always with exactly 15 leg-bearing segments.

*Lithobius* (*Monotarsobius*) *alticus* (LOKSA, 1965)

**Description**: Comparably small lithobiid, usually less than 1 cm in size. 7 – 10 mm. Coloration is pale brown. Antenna consists of 18+18 segments; 5 ocelli; prosternum with 2+2 teeth; female

gonopod with a double-headed claw and 4+4 spines, sometimes 3+3 spines; coxapores round and small, mostly 3332.

**Literature**: LOKSA (1965), EASON (1976).


Fig. 1: *Lithobius* (*M.*) *alticus*, habitus.

**Ecology**: More hypogenous than all the other *Lithobius* – species. The only *Lithobius* found regularly in the soil and litter samples. Despite its more soil dwelling mode of life, *L. alticus* seems to be comparably drought-resistant, as shown by its regular occurrence within the dry southern Khentey. There we found this species in pitfall traps as well as within soil samples. *L. alticus* seems to prefer light and mixed taiga stands, but occurs throughout the Khentey Mountains.

**Distribution**: Together with *L. giganteus* the most widespread Lithobiomorpha in the Khentey Mountains. It occurs within all the sampling regions throughout the area. According to ZALESSKAJA (1990) the distribution of *L. alticus* is Central Asia, widespread within Siberia, from the regions around Lake Baikal to the tundra zone in the north (ZALESSKAJA 1975). In Mongolia, this species also occurs in various locations within the Tov Aimag, west and south of Ulaanbaatar (LOKSA 1965).

*Lithobius* (*Monotarsobius*) *crassus* (LOKSA, 1965)

**Description**: The size is comparable to *L. alticus*. Antennal segments 17+17; 4 ocelli; prosternum with 2 + 2 teeth, coxapores round and small, mostly 3332. Females are unknown so far.
**Literature**: LOKSA (1965).
**Ecology**: Two males were found in pitfall traps within the western Khentey Mountains, in the riverine forest and mixed taiga.
**Distributio**n: Very rare within Mongolia. Loksa (1965) gives no information on the sampling site, which is probably the Tov Aimag. This species is mentioned within a list of Chinese myriapods (WANG & MAURIÈS 1996).

*Lithobius* (*Monotarsobius*) *curtipes* C.L. KOCH, 1847

**Description**: 11 to 13 mm in length. 20+20 antennal articles. 6 – 13 ocelli, usually 7 or 8. Female gonopod with a three-peaked claw and 2+2 spurs. Prosternum with 2+2 teeth. 2 – 4 pores on the posterior coxae, round and ± small.
**Literature**: FARZALIEVA & ESYUNIN (2008).

**Ecology**: Found within traps and soil samples. Restricted to the western Khentey. Absent within dark taiga stands.

**Distribution**: Rare species within the western Khentey Mountains.

Widely distributed in the European parts of Russia and southern Siberia (ZALESSKAJA 1975, FARZALIEVA & ESYUNIN 2008). ZENKOVA & PETRASHOVA (2008) consider this species to be panpalaearctic but more common in Europe. Found in various locations in central Siberia from the coast of the Arctic Ocean to the southern edge of the taiga belt (NEFEDIEV et al. 2016). DOBRORUKA (1960) describes this species from material collected in the surrounding of Ulaanbaatar. According to ULYKPAN (1988) *L. curtipes* occurs within the Mongolian steppe region. Mongolia seems to be the easternmost limit of its range.

*Lithobius* (*Ezembius*) *giganteus* SSELIWANOFF, 1881 (fig. 2 – 5)

**Description**: Big and strong habitus, high variability in length (14 - 50 mm), in the Khentey usually 20 – 25 mm, the Mongolian individuals seem to be smaller than others. 20 + 20 antennal articles. 6 – 10 ocelli. Female gonopod with a simple claw and 2+2 spurs. 3 to 5 round and regular - shaped pores on the posterior coxae, often 4444 or 3445. 2+2 teeth on prosternum.

**Literature**: DOBRORUKA (1960, 1969), LOKSA (1965), EASON (1986a, b).

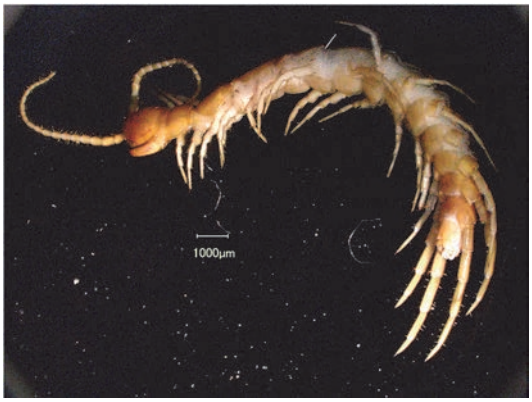


Fig. 2: *Lithobius* (*E.*) *giganteus*, habitus.

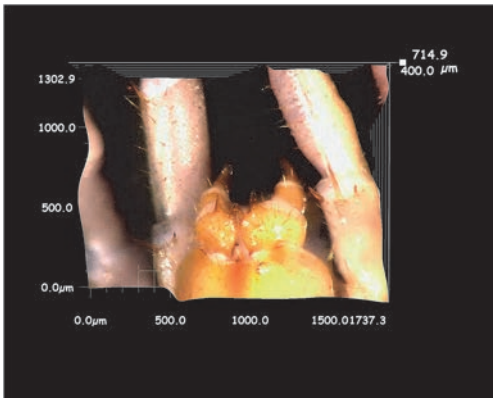


Fig. 3: Female gonopod, ventral view.

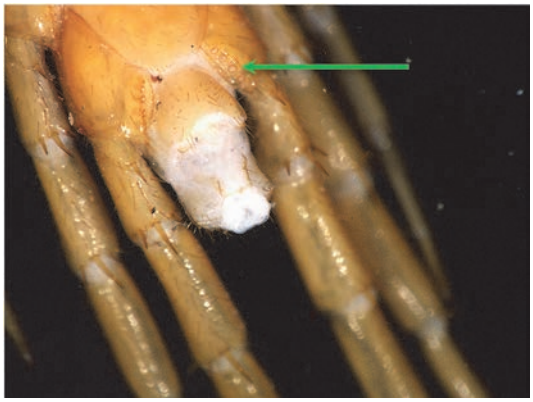

Fig. 4: Male gonopod, ventral view; recognizable are the 4 pores on the 15th coxa.


Fig. 5: Head, ventral view.

**Ecology**: Clearly epigeous, only a few individuals found in soil samples. Well adapted to the dry Mongolian climate, widespread throughout the study area, including the *Betula fusca* shrublands and the dry mountain forests in the southern Khentey (together with *L. giganteus* being the only myriapod sampled with pitfall traps).

**Distribution**: Probably the most widespread species within Mongolia (LOKSA 1965). Together with *L. alticus* by far the most frequent sampled lithobiomorph within the study area, according to ULYKPAN (1988) the only Mongolian lithobiomorph occurring in desert-steppe habitats. Also known from the Khangai mountain range and steppe areas in central Mongolia (DOBRORUKA 1960; LOKSA 1965), in southern Mongolia (EASON 1986a) and from the eastern Mongolian aimags: Khovd and Bayan-Ölgii (DYACHKOV 2017). *L. giganteus* is also known from Kyrgyzstan (EASON 1986a) and Afghanistan (EASON 1986b), Zalesskaja considers its distribution as central Asiatic (ZALESSKAJA 1990).

*Lithobius* (*Ezembius*) *sibiricus* GERSTFELDT, 1858 (fig. 6, 7)

**Description**: Size and shape comparable to *L. giganteus*, probably on average a little bit smaller. Antennae with 21 to 23 articles each. 9 - 10 ocelli. Prosternum with 2+2 teeth. Female gonopod with a simple claw and 3+3 spurs. Coxapores big and sometimes oval or irregular shaped, mostly 6666.

**Literature**: LOKSA (1965), EASON (1976).


Fig. 6: *Lithobius* (*E.*) *sibiricus,* habitus.


Fig. 7: Female gonopod, ventral view.

**Ecology**: Clearly epigeous, only a few individuals found in soil samples. Occurs within the whole area and in all sampled vegetation types, except the mountain forests in the South. Numerous findings within alluvial forests beside the Tuul River.

**Distribution**: Rather common throughout the Khentey Mountain range. LOKSA (1965) describes it from the vicinity of Ulaanbaatar, recently it was found within the Bayan Ölgii Aimag in eastern Mongolia (DYACHKOV 2017). This species seems to be widespread within the Siberian taiga belt. NEFEDIEV et al. (2016) give various sampling localities within Central Siberia. According to ZALESSKAJA (1990) its range reaches from Novosibirsk to Sakhalin. We consider northern Mongolia to be the southern edge of its distribution.

*Lithobius* (*Ezembius*) *ostiacorum* STUXBERG, 1876

**Description**: Relatively small, ± 1.5 cm in length. Antennae usually with 20+20 articles. 8 – 12 ocelli. Female gonopod with a simple claw and 2+2 spurs of remarkably different size. Prosternum with 2+2 teeth. Coxapores small and round, often 3443, sometimes up to 5 per coxa.

**Literature**: EASON (1976).

**Ecology**: Epigeous. The occurrence of *L. ostiacorum* seems to be moisture dependent, it shows a weak positive correlation of abundance with altitude, but is absent within dark taiga stands.

**Distribution**: The occurrence of *L. ostiacorum* within the Khentey Mountains seems to be limited to the western parts, where it is rather uncommon. Its distribution within forest-steppe habitats of Mongolia is noted by ULYKPAN (1988). *L. ostiacorum* was sampled in the Yenisei valley in Siberia (EASON 1976), and within the Russian Altai (NEFEDIEV et al. 2017).

*Lithobius* (*Ezembius*) *rapax* MEINERT, 1872

**Description**: Size and shape comparable to *L. giganteus*. Antennae with 20 – 23 articles each, usually 20+20. 8 – 11 ocelli. Female gonopod with a simple claw and 2+2 spurs. Prosternum with 2+2 or 3+3 teeth. Usually 9 or 10. 4 to 5 round coxapores, mostly 4444 or 4544.

**Literature**: LOKSA (1965), EASON (1974, 1976).

**Ecology**: Epigeous. Absent within dark taiga stands. Abundant within alluvial forests beside the Tuul River.

**Distribution**: Rather common throughout the Khentey Mountain range. LOKSA (1965) describes it from the vicinity of Ulaanbaatar, EASON (1974) from Sakhalin and from central Siberia (EASON 1976). The general distribution seems to be similar to that of *L. sibiricus* (ZALESSKAJA 1990).

*Lithobius* (*Ezembius*) *mongolellus* LOKSA, 1978

**Description**: Mostly less than 2 cm in length. 20+20 antennal articles. 7 ocelli. Female gonopod with a slightly three-peaked claw and 2+2 spurs. Prosternum with 2+2 teeth. Coxapores big and round, 4454 or similar.

**Literature**: Loksa 1978.

**Ecology**: Found within traps and soil samples. Restricted to the western Khentey. Absent within dark taiga stands.

**Distribution**: Very rare species within the western Khentey Mountains. Only one elaborate description is dealing with samples from the Khangai Mountains (LOKSA 1978). Recorded from China (WANG & MAURIÈS 1996). Very similar to *L. rapax,* the possibility of *L. mongolellus* being a slightly smaller subspecies of *L. rapax* cannot be excluded.

### 3.1.2. Geophilomorpha

Long, worm-shaped, mostly yellowish or orange coloured Centipedes. Soil-dwelling and blind. So far, two species were identified from northern Mongolia.

*Escaryus chadaevae* TITOVA, 1972

**Description**: “tiny and frail habitus”, usually less than 2 cm in length, 33 – 41 (usually 37 or 39) leg bearing segments. Head elongated, poison claw with just a tiny spur on the tooth-base.

**Literature**: TITOVA (1972).

**Ecology**: Mostly hypogenous, sparsely sampled with pitfall traps. Absent within dark taiga stands.

**Distribution**: Widespread within the West Khentey and very rare in the east. Due to its very patchy distribution an occurrence within the southern Khentey cannot be excluded. Reported from European Russia to southwest Siberia (TITOVA 1972).

*Strigamia pusilla* (SSELIWANOFF, 1884)

**Description**: “a big and strong habitus”, sometimes more than 2 cm in length, 33 – 39 (usually 35) leg bearing segments. Head ± as long as wide, poison claw with a big spur on the tooth-base.

**Literature**: BONATO et al. (2012).

**Ecology**: Exclusively hypogeous. Restricted to the western Khentey, 6 of 7 specimens (86 %) were sampled within mixed taiga stands.

**Distribution**: Rare species within the West Khentey. Its wide range reaches from Central Europe to Siberia (BONATO et al. 2012). Recently found in the Russian Altai (NEFEDIEV et al. 2017).

### 3.2. Diplopoda

Diplopoda or millipedes as primary destructors of plant debris play an important role within the soil - ecosystem (MIKHALJOVA 2004).

Diplopoda occurred only within the West and East Khentey, while in the dry South Khentey, no Diplopoda were found and their occurrence seems lacking or very rare.

#### 3.2.1. Polyzoniida

*Angarozonium amurense* (GERSTFELDT, 1859) (fig. 8)

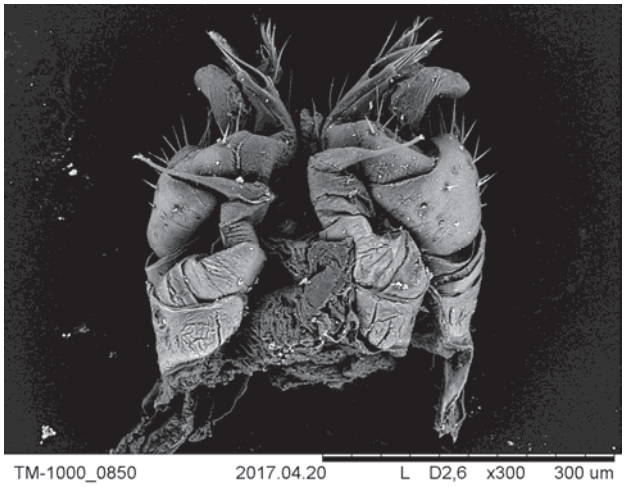


Fig. 8: *Angarozonium amurense*, gonopod, caudal view.

**Material examined**: 2 ♂♂, 1 ♀, 1 juv: Mongonmorit (East Khentey) 48° 27.526 N/108° 45.553 E, *Betula-Larix* forest, 1602 m a.s.l., 19.08.2013. 5 ♂♂, 3 ♀♀: Mongonmorit 48°25.813 N/ 108°47.872 E, *Salix-Populus* shrubs, 1464 m a.s.l., 17.08.2013. 4 ♂♂, 2 ♀♀: Mongonmorit 48°25.772 N/ 108°47.929 E, *Populus-Salix* shrubs, 1449 m a.s.l., 17.8.2013. 3 ♂♂, 1 ♀: Mongonmorit 48°27.294 N/ 108°46.125 E, *Larix-Betula* forest, 1588 m a.s.l., 17.08.2013. 1 ♂, 1 ♀: Mongonmorit 48°28.145 N/ 108°45.198 E, *Larix* forest, 1836 m a.s.l., 21.08.2013. 1 ♂, 1 ♀: Mongonmorit 48°25.848 N/ 108°46.331 E, *Larix* forest, 1584 m a.s.l., 23.08.2013. 12 ♂♂, 5 ♀♀: 48°27.280 N/108°46.152 E, *Betula-Larix* forest, 1588 m a.s.l., 17.08.2013. 1 ♂: Mongonmorit 48°27.508 N/ 108°45.554 E, *Betula-Larix-Pinus sibirica* forest, 1608 m a.s.l., 19.08.2013. 3 ♂♂, 1 ♀: Mongonmorit 48°27.306 N/108°46.102 E, *Betula-Larix-Pinus sibirica* forest, 1589 m a.s.l., 19.08.2013. 3 ♂♂, 6 ♀♀: Mongonmorit 48°27.536 N/108°45.571 E, *Larix-Betula* forest, 1597 m a.s.l., 19.08.2013. 1 ♂: Mongonmorit 48°25.870 N/108°46.372 E, *Larix-Betula* forest, 1589 m a.s.l., 23.08.2013. 1 ♂: Khonin Nuga (West Khentey) 49°04.207 N/107°18.070 E, *Pinus sylvestris-Betula-Larix* forest, 1204 m a.s.l., 02.09.2012. 3 ♀♀: Khonin Nuga 49°05.108 N/107°17.526 E, *Betula fusca* shrubs, 927 m a.s.l., 01.09.2012. 1 ♂, 1 ♀: Khonin Nuga 49°05.387/N 107°18.498 E, *Salix-Betula-Populus* forest, 924 m a.s.l., 04.08.2012. 1 ♂, 2 ♀♀: Khonin Nuga 49°05.373 N/ 107°18.476 E, *Salix-Betula-Populus* forest, 926 m a.s.l., 04.08.2012. 1 ♂, 2 ♀♀: Khonin Nuga 49°05.218 N/107°17.128 E, *Larix-Betula-Pinus sylvestris* forest, 929 m a.s.l., 16.07.2012. 3 ♂♂, 1 ♀: Khonin Nuga 49°05.185 N/107°17.131 E, *Betula-Larix-Salix* forest, 923 m a.s.l., 05.08.2012. 1 ♂: Khonin Nuga 49°04.978 N/107°18.300 E, *Betula-Larix* forest, 987 m a.s.l., 23.07.2012. 1 ♀: Khonin Nuga 49°05.224 N/107°17.068 E, *Larix-Betula-Pinus sylvestris-Salix* forest, 929 m a.s.l., 11.07.2012. 1 ♀: Khonin Nuga 49°04.479 N/107°17.872 E, *Betula* forest, 1102 m a.s.l. 03.09.2012. 2 ♂♂, 2 ♀♀: Khonin Nuga 49°05.131 N/107°17.083 E, *Betula-Larix* forest, 920 m a.s.l., 05.08.2012. 1 ♂: Khonin Nuga 49°05.183 N/107°17.166 E, *Betula-Larix-Salix* forest, 923 m a.s.l., 05.08.2012. 1 ♂: Khonin Nuga 49°04.443 N/107°17.875 E, *Betula-Larix* forest, 1125 m a.s.l., 03.09.2012. 2 ♀♀: Khonin Nuga 49°06.105 N/107°16.452 E, Larix-Betula forest, 1103 m a.s.l., 11.07.2013. 1 ♂: Tunkhel (West Khentey) 48°38.984 N/106°55.180 E, *Pinus sibirica-Picea-Larix* forest, 1688 m a.s.l., 17.08.2012. 1 ♀: Barchuluut Gol (West Khentey) 48°59.305 N/106°56.698 E, *Betula-Pinus sibirica-Larix* forest, 1157 m a.s.l., 30.07.2012. 1 ♀: Barchuluut Gol 48°59.461 N/ 106°56.753 E, *Betula-Pinus sibirica-Larix-Picea* forest, 1140 m a.s.l., 30.07.2012. All leg. AP.

**Description**: body strongly flattened, 4-12 mm in length, 1-2 mm in width; head small, subtriangular with rostrum; body segments gradually tapering toward both head and telson; in males coxal process of anterior gonopods cyathiform, cup-shaped (MIKHALJOVA 2004).

**Ecology**: The most widespread and abundant diplopod in the study area. Found in the East and West Khentey in all types of forest, both in pitfall traps and soil samples.

**Distribution**: Very widespread millipede in Central and eastern Siberia, Russia (Krasnoyarsk and Zabaikalskii provinces, Irkutsk Area, Republic of Buryatia and Republic of Sakha (Yakutia)) and the Russian Far East (Khabarovsk and Kamchatka provinces, Sakhalin Area and Jewish Autonomous Region), likewise from northern China and northern Mongolia (MIKHALJOVA 2004, 2012). In Mongolia it has previously been recorded in the environs of Ulaanbaatar (MIKHALJOVA & MARUSIK 2004).

### 3.2.2. Julida

*Orinisobates microthylax* ENGHOFF, 1985 (fig. 9, 10)

First record of this species within Mongolia.

**Material examined**: 2 ♀♀: Barchuluut Gol (West Khentey) 48° 59.423' N/106° 56.682' E, *Betula-Pinus sibirica-Larix-Picea* forest, 1162 m a.s.l., 30.07.2012. 1 ♀: Khonin Nuga (West Khentey) 49° 04.978' N/107° 18.300' E, *Betula-Larix* forest, 987 m a.s.l., 22.07.2012. 1 ♀, 1 juv.: Khonin Nuga 49° 04.993' N/107° 18.390' E, *Betula-Larix* forest, 979 m a.s.l., 23.07.2012. All leg. AP.

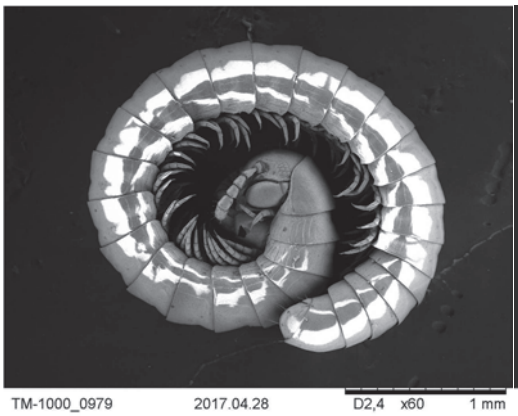


Fig. 9: *Orinisobates microthylax,* habitus, lateral view.

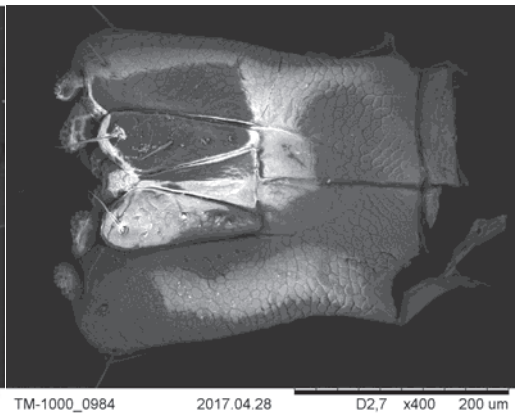


Fig. 10: *Orinisobates microthylax*, gnathochilarium, ventral view.

**Description**: males unknown; females 11-14.5 mm long, 1-1.8 mm width; pale-brown to brown coloration; head with 2+2 epicranial setae; lamellae linguales of gnathochilarium each with 4-5 setae; metazonites striate only below ozopore level; telson without dorsocaudal process (MIKHALJOVA 2004).

**Ecology**: In the study area *O. microthylax* was found exclusively within soil samples in light and mixed taiga. Both, the genus *Orinisobates* Lohmander, 1933 and *O. microthylax*, as well as the family Nemasomatidae they belong to, are new to the millipede fauna of Mongolia. This record clarifies the SE border of distribution area of this species.

**Distribution**: This species has previously been known to occur in eastern Siberia, Russia (Republic of Buryatia) and the Russian Far East (Kamchatka, Maritime and Khabarovsk provinces, Sakhalin Area and southern Kuriles) (ENGHOFF 1985; MIKHALJOVA 2004).

### 3.2.3. Polydesmida

*Uniramidesmus perplexus* MIKHALJOVA, 1984 (fig. 11, 12)

First record of this species within Mongolia.

**Material examined**: 1 ♀: Khonin Nuga (West Khentey) 49° 06.099' N/107° 16.439' E, *Betula-Larix* forest, 1091 m a.s.l., 18.07.2013, leg. AP.


Fig. 11: *Uniramidesmus perplexus*, habitus, front body part, lateral view.

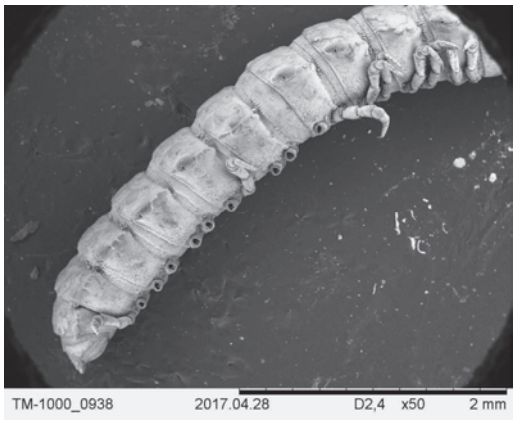


Fig. 12: *Uniramidesmus perplexus*, habitus, rear body part, lateral view.

**Description**: body length 10-13 mm, width 1-1.3 mm; coloration pinkish or yellowish; metazonites 3 and 4 somewhat shorter than subsequent ones; paraterga very narrow, rounded laterally, caudolateral; telopodite of gonopods with one long process in middle portion; gonopod femorite with a large lobe-shaped process with corners blunt (MIKHALJOVA 2004).

**Ecology**: Only one specimen recorded from the Light Taiga in the west Khentey.

**Distribution**: This species has previously been known from the Irkutsk Area, Russia, its *terra typica* (MIKHALJOVA 2004).

**Remarks:** In the study area, a single female found from the light taiga in the western Khentey. Being the southernmost find of this species, the current record is new to the Mongolian millipede species list, likewise the genus *Uniramidesmus* GOLOVATCH, 1979, the family Polydesmidae and its order Polydesmida.

## 4. Discussion

The Chilopoda-communities in the West Khentey were more species-rich than those in the South and East, which is caused by the higher precipitation and hence resulting higher diversity of the forest. Even within the western and southern Khentey, we found a simultaneously increase in the species richness of Chilopoda and tree species. Generally, we found the highest species diversity of Chilopoda in the higher altitudes, which corresponds with the increasing precipitation, and, exclusively for the Lithobiomorpha, in the floodplain forests. Geophilomorpha were absent in the alluvial forests and were only found in the hill forests (POLOCZEK et al., 2016).

The occurrence of Diplopoda is much more scarce and restricted to the East and West, with a clear domination of the Western parts. The following diplopod taxa are new to Mongolia: *Orinisobates microthylax* ENGHOFF, 1985 (with the genus *Orinisobates* LOHMANDER, 1933 and the family Nemasomatidae) and *Uniramidesmus perplexus* MIKHALJOVA, 1984 (with the genus *Uniramidesmus* GOLOVATCH, 1979, the family Polydesmidae and the order Polydesmida).

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