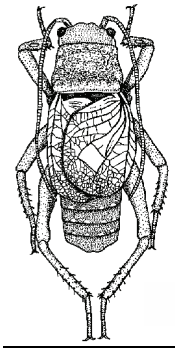

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MILLIPEDES OF THE ORDER CHORDEUMATIDA (DIPLOPODA) FROM THE RUSSIAN FAR EAST AND SIBERIA IN THE COLLECTION OF THE NATURAL HISTORY MUSEUM OF DENMARK

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Summary. A small material of diplopods of the order Chordeumatida from Far East of Russia and Siberia housed in the Natural History Museum of Denmark (Copenhagen, Denmark) appears to contain four known species, i.e. *Hoffmaneuma exiguum* Golovatch, 1978, *Diplomaragna konyukhovi* Mikhaljova, 2016, *Diplomaragna terricolor* (Attems, 1899) and *Underwoodia kurtschevae* Golovatch, 1980, and two new species, *Altajosoma kultukensis* Mikhaljova **sp. n.** and *Pacifiosoma koiensis* Mikhaljova **sp. n.** from Irkutskaya oblast and Khabarovskii krai respectively. Remarks are provided for all species studied.

Key words: diplopods, new species, description, faunistics, Russia.

Е. В. Михалёва. Двупарноногие многоножки отряда Chordeumatida (Diplopoda) с Российского Дальнего Востока и Сибири в коллекции Музея естественной истории Дании // Дальневосточный энтомолог. 2019. N 374. С. 1-9.

Резюме. Небольшой материал по двупарноногим многоножкам отряда Chordeumatida с территории Российского Дальнего Востока и Сибири, хранящийся в Музее естественной истории Дании, содержит, кроме четырех известных видов, а именно: *Hoffmaneuma exiguum* Golovatch, 1978, *Diplomaragna konyukhovi* Mikhaljova, 2016, *Diplomaragna terricolor* (Attems, 1899) и *Underwoodia kurtschevae* Golovatch, 1980, два новых для науки вида: *Altajosoma kultukensis* Mikhaljova **sp. n.** и *Pacifiosoma koiensis* Mikhaljova **sp. n.** из Иркутской области и Хабаровского края, соответственно. Для всех исследованных видов даны примечания.

INTRODUCTION

Recently, through the kind assistance of Dr. H. Enghoff, of the Natural History Museum of Denmark, Copenhagen, Denmark, I was privileged to receive for study a small collection of millipedes of the order Chordeumatida from Russian Far East (Plus one sample from Siberia). This material appears to be important enough, for it contains two new species.

The main information on the millipede fauna of the Siberia and Russian Far East can be obtained from a recent review covering the diplopods of the Asian part of Russia (Mikhaljova, 2017).

MATERIAL AND METHODS

Except for the holotypes and 2 paratypes retained in the collections of the Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, Russia (FSCB) and 1 paratype deposited in the Zoological Museum of the Moscow State University, Moscow, Russia (ZMUM), all the materials have been returned to the collection of the Natural History Museum of Denmark, Copenhagen, Denmark (ZMUC). Specimens were collected in 70–75% ethanol. During the study, the gonopods and some other parts were dissected from a male and mounted in glycerin as temporary micropreparations. Specimens were studied and illustrated using standard stereomicroscopic and drawing equipments.

LIST OF THE SPECIES WITH DESCRIPTIONS OF NEW SPECIES

Oder Chordeumatida Pocock, 1894

Family Hoffmaneumatidae Golovatch, 1978

Genus *Hoffmaneuma* Golovatch, 1978

Hoffmaneuma exiguum Golovatch, 1978

MATERIAL. **Russia:** Primorskii krai (southern): Shkotovskii District, 5 km NE of Mt. Pidan (=Livadijskaya), Pryamoi Kluch river valley, 320–350 m, 43,111° N

132,729° E, mixed forest, leaf litter, 15–16.V.2015, 5 males, 12 females (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov.

DISTRIBUTION. Russia: Far East (Primorskii krai); ? North Korea.

REMARKS. The original interpretation of gonopod structure in *Hoffmaneuma* by Golovatch (1978) was corrected two times (Shear, 1992; Shear *et al*., 1997). In North Korea only females have been found (Mikhaljova, 2004); however, in the absence of adult males it appears impossible to verify this record.

Family Diplomaragnidae Attems, 1907

Genus *Altajosoma* Gulička, 1972

***Altajosoma kultukensis* Mikhaljova, sp. n.**
http/urn:lsid:zoobank.org:act:A17B6265-B2BD-40CC-97D6-0B5328307009
Figs 1–5

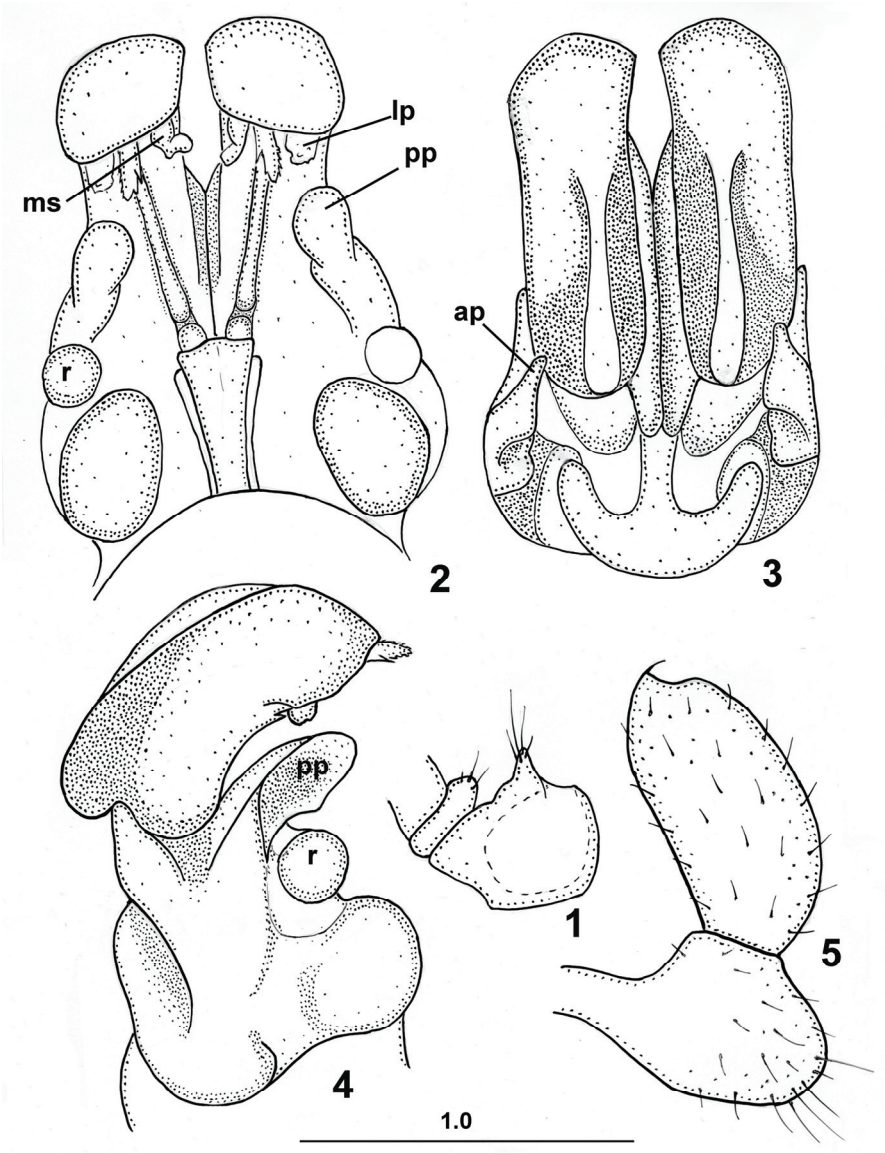
MATERIAL. Holotype – ♂ (FSCB), Rio Bistraya, 10.IX. 95, Kurtuk, Rusia, F. Ruano leg. (=**Russia:** Irkutskaya oblast: Slyudyanskii District, environs of Kultuk village and Bistraya River, 10.IX 1995, leg. F. Ruano).

DESCRIPTION. MALE. The specimen is broken into four separate body portions. Length about 19, width 2.0 mm with paraterga. Coloration in alcohol including legs and antennae uniformly dark brown (probably the color was distorted by prolonged storage). Eyes black.

Body with 32 segments. Head covered both with relatively long and short setae. Eye patches subtriangular, with 28–29 ocelli. Collum semicircular. Both collum and somite 2 narrower than head with genae. Somite 2 wider than collum. Body width gradually increasing until somite 6–7, body parallel-sided on somites 21–22, thereafter gradually tapering. Paraterga beginning on collum, well developed on somites 6–26, reduced on somite 27, onward missing. Metazonital macrochaetae in a transverse row on somites 28–31, like an extended triangle on preceding somites. Anterolateral and medial macrochaetae subequal in length, caudolateral ones longest, distal part of all macrochaetae filiform, apex pointed. Axial suture well developed.

Legs long and slender. Leg pairs 1–2 typically reduced in size, with tarsal brushes as usual. Legs 3–7 increasingly enlarged toward gonopods. Femora 5–7 swollen and curved.

Leg pairs 3–7 with a small group of funnel–shaped tarsal papillae apically near claw. Claw of leg pairs 3–7 at base with a long setoid outgrowth ventrally but without additional claws dorsally. Postgonopodal legs (including leg pairs 10 and 11) with small group of funnel-shaped tarsal papillae apically near claw, however tarsal papillae gradually reduced toward posterior part of body. Claws of postgonopodal legs (including leg pairs 10 and 11) at base with two small additional claws dorsally and a relatively long setoid outgrowth ventrally, but small additional claws gradually missing toward posterior part of body; at least claws of hindmost legs at base devoid of such additional claw.



Figs 1–5. *Altajosoma kultukensis* **sp. n.**, male holotype. 1 – coxa and trochanter 10; 2 – gonopods (caudal view, telopodites of posterior gonopod omitted); 3 – gonopods (front view, telopodites of posterior gonopod omitted); 4 – gonopods (lateral view, telopodites of posterior gonopod omitted); 5 – telopodite of posterior gonopod; **pp** – posterior angiocoxal process of posterior gonopod; **ap** – anterior angiocoxal process of posterior gonopod; **ms** – mesal sheath process of colpocoxite; **lp** – lateral sheath process of colpocoxite; **r** – remnant of posterior gonopod telopodite. Scale in mm.

Legs 10 and 11 with coxal glands. Coxa 10 with a caudoventral conical process setose apically; trochanter 10 with a ventral low setose outgrowth (Fig. 1). Coxa 11 with a caudoventral low setose outgrowth. Trochanter 11 without processes.

Gonopods large, curved posteriad distally (Figs 2–4; posterior gonopod telopodites broken). Anterior gonopods with subflagelliform 2-segmented telopodites, latter not hidden inside a narrow sheath groove; pointed tips of second telopoditomeres beset with cuticular spinules. Posterior gonopod colpocoxites fused to 2/3 extent. Colpocoxites entire. Each angiocoxite with a globule in posterior view. Posterior angiocoxal processes (**pp**) large, curved posteriad, rounded at tip, lacking teeth. Mesal (**ms**) and lateral **(lp**) sheath processes of colpocoxite small, originating near apex (see Remarks). Angiocoxites with depressions and ridges in anterior view, each supplied with digitiform process (**ap**) blunted apically. Each colpocoxite in anterior view with longitudinal crest with broad apical portion. Posterior gonopod telopodite 2-segmented, setose, with a long femur and claw vestige (Fig. 5).

FEMALE unknown.

DIAGNOSIS. New species closely related to *Altajosoma shilenkovi* (Shear, 1990), but distinguished by the presence of anterior angiocoxal processes, configuration of posterior gonopod colpocoxites, telopodites without subapical triangular lamella, colpocoxites fused to 2/3 extent, small lateral sheath processes of colpocoxites.

DISTRIBUTION. Russia: Irkutskaya oblast.

ETYMOLOGY. The specific epithet refers to the type locality.

REMARKS. It should be noted that distal parts of colpocoxites of a single examined male-holotype are dark brown and look worn like those of old specimens. As result the shape of mesal and lateral sheath processes of colpocoxite of young individuals may be some differ from that described above. However, to estimate the possible variations of the gonopod processes, additional material needs to be studied.

Altajosoma kultukensis **sp. n.** can be conspecific with the *Craspedosoma armatus* (Gerstfeldt, 1859). Latter was very poorly described from Irkutsk (Gerstfeldt, 1859) and recorded from Kultuk (Haase, 1880). But in the absence of type material of *Craspedosoma armatum*, ultimate solution can be achieved only when strict topotypes and material studied by Haase become available for examination.

Genus *Pacifiosoma* Mikhaljova, 2000

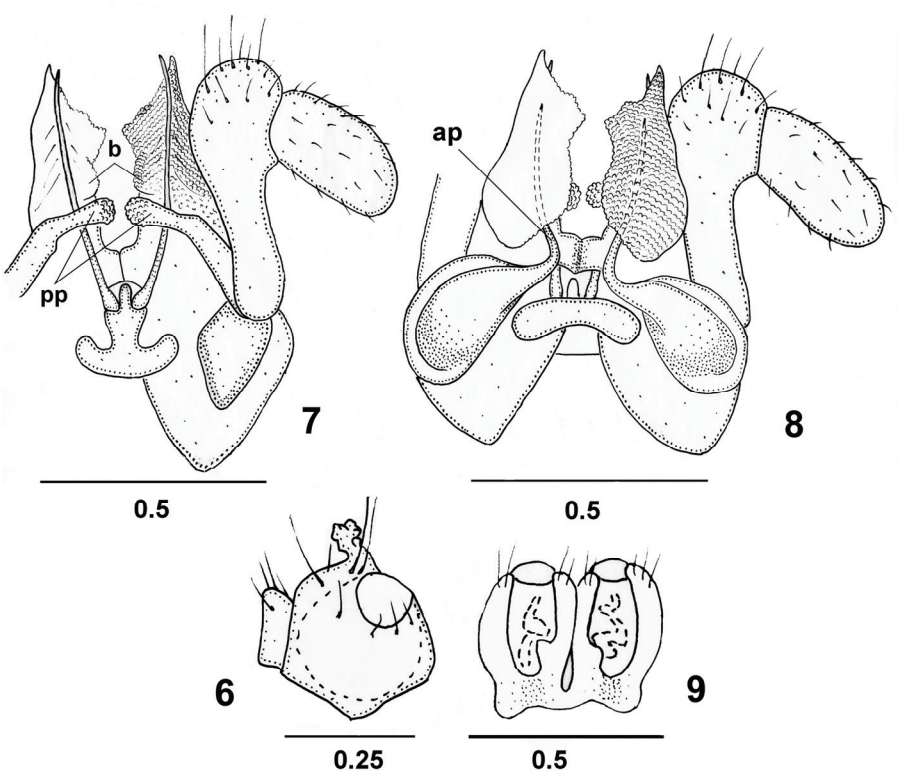
Pacifiosoma koiensis Mikhaljova, sp. n.

http/urn:lsid:zoobank.org:act:5EF3325E-59A5-4028-8FD4-8BAE8EF711D1
Figs 6–9

MATERIAL. Holotype – ♂ (FSCB), **Russia:** Khabarovskii krai (southern): Sikhote-Alin (Central) range, upper course of River Ko, 47,074° N 136,478° E, 700–800 m, fir-birch forest, wet leaf litter, 23–25.V 2015, leg. A. Hansen, M. Justesen, A. Solodovnikov. Paratypes: 1 male, 1 female (FSCB), 1 male (ZMUM), 2 males, 1 female, 1 fragment (ZMUC), the same label as in holotype; 1 male, 1 juv. (ZMUC), Khabarovskii krai (southern): Sikhote-Alin (Central) range, upper course of River Ko, 47,074° N 136,478° E, 700–800 m, fir-birch forest, 23–25.V 2015, leg. A. Hansen, M. Justesen, A. Solodovnikov.

DESCRIPTION. MALE. Length 11–12 mm, width 1.0–1.1 mm with paraterga. Coloration in alcohol light brown. Venter and lower portion of pleura pale. Legs marbled brownish, darker distad. Antennae brown. Eyes black.

Body with 32 segments. Head covered both with relatively long and short setae. Eye patches subtriangular, with 27–28 ocelli. Collum semicircular. Both collum and somite 2 narrower than head with genae. Somite 2 wider than collum. Body width gradually increasing until somite 7, body parallel-sided on somites 20–21, thereafter gradually tapering. Paraterga beginning on somite 4(5), well developed on somites 6–27, reduced on somite 28, onward missing. Metazonital macrochaetae in a transverse row on somites 29–31, like an extended triangle on preceding somites. Antero-lateral macrochaetae shortest, caudolateral ones longest, all macrochaetae pointed apically, but not very sharply so. Axial suture well developed.



Figs 6–9. *Pacifiosoma koiensis* **sp. n.**, male paratype. 6 – coxa and trochanter 10; 7 – gonopods (caudal view); 8 – gonopods (front view); 9 – vulvae; ; **pp** – posterior angiocoxal process of posterior gonopod; **ap** – anterior angiocoxal process of posterior gonopod; **b** – blade of colpocoxite. Scales in mm.

Legs long and slender. Leg pairs 1–2 typically reduced in size, with tarsal brushes as usual. Other pregonopodal legs slightly enlarged, otherwise unmodified. Claw of leg pairs 1–2 at base with one small additional claw dorsally and relatively short setiform outgrowth ventrally. Leg pairs 3–7 with a group of funnel–shaped tarsal papillae in the last third of the tarsus; size of papillar tarsal field gradually somewhat increasing toward gonopods. Claw of leg pairs 3–7 at base with a long setoid outgrowth ventrally but without additional claws dorsally. Postgonopodal legs (including leg pairs 10 and 11) without tarsal papillae. Claws of postgonopodal legs (including leg pairs 10 and 11) at base with two small additional claws dorsally and a long setoid filament ventrally, but small additional claws gradually missing toward posterior part of body; at least claws of hindmost legs at base devoid of such additional claws.

Legs 10 and 11 with coxal glands. Coxae 10 with a caudoventral, finger-shaped process covered with tiny knobs (Fig. 6). Coxae 11 without processes. Trochanter 11 with a caudal process rounded apically.

Gonopods as in figs 7–8. Telopodite flagelliform, its distal part with a pointed apex positioned inside sheath groove with elevated edges. Posterior gonopod colpocoxites fused basally, their apices pointed. Each colpocoxite entire. Mesal edge of colpocoxite drawn out into subtriangular blade (**b**). Colpocoxites densely covered with low papillae. Colpocoxite sheath groove without evident processes. Posterior gonopod angiocoxite with a globule in posterior view. Posterior angiocoxal process (**pp**) large, with rounded papillate apex. Angiocoxites with depressions and ridges in front view, each supplied with anterior flagelliform process (**ap**); distal portion of **ap** placed inside fold of colpocoxite. Posterior gonopod telopodite 2-segmented; distal segment large, basal segment with a relatively thick stem.

FEMALE. Length about 12 mm, width 1.0–1.2 mm with paraterga. Body with 32 segments. Ocelli 27–28. Other nonsexual characters as in male. Vulvae poorly sclerotized (Fig. 9). One of the two females is only anterior body portion (13 somites).

DIAGNOSIS. Differs from congeners mainly by the flagelliform anterior angiocoxal processes of the posterior gonopods with distal parts placed inside folds on colpocoxite's front surface as well as by the pointed apices of colpocoxites.

DISTRIBUTION. Russia: Khabarovskii krai (southern).

ETYMOLOGY. The specific epithet refers to the type locality.

Genus *Diplomaragna* Attems, 1907

Diplomaragna konyukhovi Mikhaljova, 2016

MATERIAL. **Russia:** Primorskii krai (southern): Shkotovskii District, 5 km NE of Mt. Pidan (=Livadijskaya), Pryamoi Kluch river valley, 320–350 m, 43,111° N 132,729° E, mixed forest, leaf litter, 15–16.V 2015, 1 male, 4 females, 10 juveniles (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov; Primorskii krai (southern): Shkotovskii District, NE slopes of Mt. Pidan (=Livadijskaya), Pryamoi Kluch river source, 500–700 m, 43,089° N 132,717° E, mixed/fir forest, leaf litter, 16–17.V 2015, 1 female, 7 juveniles (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov.

DISTRIBUTION. Russia: Far East (Primorskii krai).

REMARKS. The species is only known from the original description from Far East of Russia: Primorskii krai, Shkotovskii District.

***Diplomaragna terricolor* (Attems, 1899)**

MATERIAL. **Russia:** Khabarovskii krai (southern): Sikhote-Alin (Central) range, upper course of River Ko, 47,037° N 136° E, 580 m, mixed forest, 22.V 2015, 1 male (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov; Sikhote-Alin (Central) range, upper course of River Ko, 47,074° N 136,478° E, 700–800 m, fir-birch forest, wet leaf litter, 23–25.V 2015, 4 juv. (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov; Sikhote-Alin (Central) range, upper course of River Ko, 47,0716° N 136,4572° E, 750 m, fir-birch forest, kurum (rock slides), 26.V 2015, 2 female, 1 juvenile (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov.

DISTRIBUTION. Russia: Far East (Primorskii krai, southern part of Khabarovskii krai).

REMARKS. This species is rather common in the southern part of Primorskii krai (Mikhaljova, 2017). In the Khabarovskii krai it is known only from the vicinity of the River Ko (Mikhaljova, 2016).

Family Caseyidae Verhoeff, 1909

Genus *Underwoodia* Cook et Collins, 1895

***Underwoodia kurtschevae* Golovatch, 1980**

MATERIAL. **Russia:** Primorskii krai (southern): Shkotovskii District, 5 km NE of Mt. Pidan (Livadijskaya), Pryamoi Kluch river valley, 320–350 m, 43,111° N 132,729° E, mixed forest, leaf litter, 15–16.V 2015, 1 male, 7 females (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov; Shkotovskii District, NE slopes of Mt. Pidan (Livadijskaya), Pryamoi Kluch river source, 500–700 m, 43,089° N 132,717° E, mixed/fir forest, leaf litter, 16–17.V 2015, 1 female (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov; Khabarovskii krai (southern): Sikhote-Alin (Central) range, upper course of River Ko, 47,074° N 136,478° E, 700–800 m, fir-birch forest, wet leaf litter, 23–25.V 2015, 9 females (ZMUC), leg. A. Hansen, M. Justesen, A. Solodovnikov.

DISTRIBUTION. Russia: Far East (Amurskaya oblast, Jewish Autonomous Region, Primorskii krai, southern half of Khabarovskii krai including Bolshoy Shantar Island, Kamchatka Peninsula, Sakhalin Island, Moneron Island, Kurile Islands: Kunashir, Shikotan, Zelyonyi, Iturup, Urup, Chirpoi, Ketoi); North Korea.

REMARKS. This species is characterized by parthenogenesis, males being extremely rare.

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