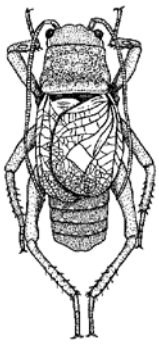

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DATA ON THE FAUNA OF PYRGOTIDAE (DIPTERA, CYCLORRHAPHA) OF THE RUSSIAN FAR EAST

E. P. Nartshuk[1)] and V. A. Korneyev[2)]

1) Zoological Institute of Russian Academy of Sciences, Universitetskaya naberezhnaya 1, 199034, St-Petersburg, Russia

2) I. I. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Bogdan Chmielnicky str. 15, 01601 MSP Kiev-30, Ukraine

Nine species of Pyrgotidae are listed for the Far East Russia based on the material from the collection of the Zoological Institute, St-Petersburg, the Zoological Museum, Moscow University and Institute of Biology and Soil Science, Vladivostok. Notes on taxonomical position of *Adapsilia microcera* (Portschinsky) are given and two species: *Parageloemyia quadriseta* (Hendel, 1933) and *P. wonjuensis* Kim et Han, 2001 are recorded from Russia for the first time. The beetle *Serica koltzei* Reitter (Scarabaeidae, Melolonthinae, Sericini) is recorded for *P. quadriseta* as a host for the first time. In addition, *A. coarctata* Waga is recorded for the first time from Belarus'.

KEY WORDS: Diptera, Cyclorrhapha, Acalyptrata, Tephritoidea, Pyrgotidae, Palaearctic, fauna, Russian Far East.

Э. П. Нарчук[1)], В. А. Корнеев[2)]. Материалы по фауне Pyrgotidae (Diptera, Cyclorrhapha) Дальнего Востока России // Дальневосточный энтомолог. 2005. N 147. С. 1-10.

На основании изучения коллекций Зоологического института РАН (Санкт-Петербург), Зоологического музея Московского университета и Биолого-почвенного института ДВО РАН (Владивосток) для Дальнего Востока России указаны 9 видов Pyrgotidae. Приведены замечания о систематическом положении *Adapsilia microcera* (Portschinsky). Два вида: *Parageloemyia quad-*

riseta (Hendel, 1933) и *P. wonjuensis* Kim et Han, 2001 впервые указываются для фауны России. Для *P. quadriseta* впервые приводится хозяин - жук *Serica koltzei* Reitter (Scarabaeidae, Melolonthinae, Sericini). *A. coarctata* Waga впервые указывается для Беларуси.

1) Зоологический институт РАН, Университетская наб., 1, Санкт-Петербург, 199034, Россия.

2) Институт зоологии им. И.И. Шмальгаузена НАНУ, ул. Б. Хмельницкого, 15, МСП Киев-30, 0160, Украина.

INTRODUCTION

Pyrgotidae is a relatively small family (about 330 species worldwide) of acalyptrate flies included in the superfamily Tephritoidea (McAlpine, 1989). The larvae parasitize adult lamellicorn beetles (Scarabaeidae); adult flies are commonly active in the dusk and attracted at light. Hosts are known for a few species. The family includes 2 subfamilies, Teretrurinae, with 5 species occurring in Argentina and Chile, and Pyrgotinae, distributed over all the zoogeographical regions (mainly in tropical and subtropical areas) and contains vast majority of the family.

The pyrgotids are medium-sized or large flies (wing length 3.5–19.0 mm), usually with yellow or brown body and patterned wing with dark spots or crossbands, pale grey with hyaline spots, or, rarely, uniformly hyaline or greyish microtrichose. Females have the ovipositor strong, highly specialized, consisting of the cone-shaped oviscape with a large mobile ventro-basal apodeme, which can completely close the anterior aperture of the oviscape (except in the South American subfamily Teretrurinae), the eversible membrane (lacking the typical paired sclerotized taeniae in the subfamily Pyrgotinae) and the short stiletto-like aculeus, a derivative of highly modified tergosternite 8, cerci and remainders of tergite 9. The Catalogue of Palaearctic Diptera includes 17 species of 8 genera (Soós, 1984), but this list is not complete and needs correction. Only 3 species were listed for the Russian Far East: *Adapsilia coarctata* Waga (as *Adapsila*), *A. microcera* (Portschinsky) (as *Epicerella*) and *Porpomastix fasciolata* Enderlein, 1942. Two additional species, *Parageloemyia nigrofasciata* (Hendel, 1933) and *Adapsilia dorsocentralis* Hering, 1940, were recorded by Korneyev (2004).

In the Palaearctic Region Pyrgotidae occur mainly in the east. Only one species, *Adapsilia coarctata* Waga, occurs in Europe. Two species, *A. coarctata* and *Eupyrgota wagae* (Bigot), were recorded from the European part of the former USSR and Caucasus (Stackelberg, 1970); these two species were listed by Zimina (1985) based on material of the Zoological Museum of the Moscow University. Six species are known from Japan (Hirashima, 1989), 38 from China (Shi, 1996) and 14 from Korean Peninsula (Kim, Han, 2000, 2001; Korneyev, 2004).

A key to genera and species occurring in the Russian Far East (Korneyev, Nartshuk, 2004) includes distributional data partially based on published material (Korneyev, 2004), but some data remained hitherto unpublished, and we consider them in this paper.

Nine species from the south part of the Russian Far East based on the material from the collections of the Zoological Institute, Russian Academy of Sciences, St-Petersburg (ZISP), Zoological Museum of the Moscow University (ZMMU) and the Institute Biology and Soil Sciences, Far East Branch of Russian Academy of Sciences, Vladivostok (IBSS) are listed below. Three species, *Adapsilia myopoides* Chen, 1947, *Parageloemyia quadriseta* (Hendel, 1933) and *Parageloemyia wonjuensis* Kim et Han, 2001 are recorded from Russia for the first time.

In Russia Pyrgotidae occur almost exclusively in the Far East, and only 2 species are known beyond Primorskii krai. *A. coarctata* has amphipalaearctic distributional range, which consists of two isolated populations, European and east Asian (the westernmost location is Kerulen River in Mongolia). *Porpomastix fasciolata* Enderlein reaches Svobodnyi (Amurskaya oblast') in the northwest. Three species, *Adapsilia myopoides* Chen, *Parageloemyia nigrofasciata* (Hendel, 1933) and *Eupyrgota flavopilosa* Hendel occur the southern part of Primorskii krai approximately to Khanka Lake in the north, and the other three species are not known northwards of Khasan district and southern vicinity of Vladivostok.

A. coarctata is very rare in Europe, and for this reason we consider a few newly recorded localities based on material from the Royal Museum of Natural History, Brussels (KBIN); hitherto, it was listed from Austria, Hungary, Italy, Poland (Soós, 1984), Switzerland (Merz, 1996) and the south of European Territory of the USSR, without more detailed geographical data (Stackelberg, 1970). In this paper it is recorded for the first time from Belarus'.

The investigative responsibilities were distributed between the authors as follows: EPN determined and listed the material, whereas VAK added comments on taxonomy of some species, prepared figures, translated the text into English and edited it.

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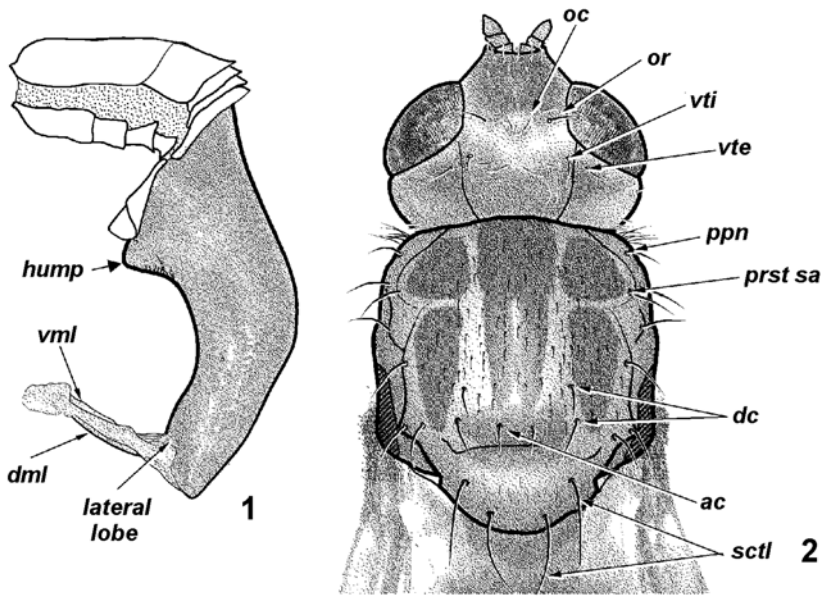
Adapsilia coarctata Waga, 1842

Fig 1

Korneyev, 2004: 24 (synonymy); Nartshuk, 2004: 47 (distribution, variability); Korneyev & Nartshuk, 2004: 405 (key; distribution).

MATERIAL. Belarus': Polykovichi, Mogilyowskii district, 1893, ♀ (Zubovsky) (ZISP); Russia: Northern Caucasus: Yessentuki, 15.XI 1926, ♀ (ZISP); Kislovodsk, VIII 1886, ♀ (Pervokonov) (ZMMU); Amurskaya oblast': Blagoveshchensk, 22.VII



Figs 1, 2 *Adapsilia*: 1) *A. coarctata*, ♂ from Switzerland, preabdomen and oviscape, lateral, 2) *A. microcera*, ♀ from Maikhe: 1) head and mesonotum, dorsal. *ac* – acrostichal, *dc* – dorsocentral, *dml* – dorso-medial lobe of oviscape, *oc* – ocellar, *or* – orbital, *ppn* – postpronotal, *prst sa* – presutural supraalar, *vml* – ventro-medial lobe of oviscape, *vte* – lateral and *vti* – medial vertical setae.

1928, ♀ (Vereshchagin) (ZMMU), idem, 28.VIII 1907, ♂, (ZISP); idem, 16.VIII 1982, ♂ (Lelej) (IBSS, Makarkin det.); Arkhara, 14.IX 1972, ♀ (Zherikhin); Khabarovskii krai: Vyazemskaya, Ussuri Railway, no date (Borzov), 2 ♀ (ZMMU); vic. of Khabarovsk, 08.VI 1969, ♂ (Esipenko) (ZISP); Primorskii krai: Novokachalinsk, 02.IX 1986, ♀ (Storozhenko) (IBSS, Makarkin det.); Ussuriysk, Ussuriyaskaya op. st., 03.IX 1937, ♂ (Mishchenko); Spasskoye, Odark. zavod, 17.VIII 1910, ♂, ♀ (Chersky, Berger) (ZISP); Chernigovka, 22.VIII 1912, ♀ (Emeljanov); Khanka Lake, Kameh'-Rybolov, 03-07.IX 1908, 2 ♀ (Chersky); Suifun River, 09.VIII 1915, ♀ (Rimsky-Korsakov); Gornotayozhnoye, 20 km SE of Ussuriysk, 30.VIII, 02.IX 1962 (Borisova-Zinonieva), 4 specimens (ZMMU), 58 specimens (ZISP); Suchan district, Sitsa River sources, 30.VIII 1928, 2 ♂ (Kurentzov) (IBSS); Shkotovo district, 01-15.IX (no year), ♂ (Malinova); Yakovlevka, Spassk district, 12, 14.IX 1926, 3♀ (Djakonov, Filipjev); Vladivostok, 28.VII 1900, ♂ (Derben), idem, 20.VIII 1903, ♂ (Gavronsky); idem, 08.IX 1909, ♂ (Berger); idem, The Navy Cemetery, 22.VI 2003, 15 specimens (Belokobylskij) (ZISP), idem, Akademgorodok, 23.VI 1991, ♂ (Makarkin) (IBSS, Makarkin det.); Kedrovaya Pad' Natural Reserve, Hackel Mountain Ridge, 18.IX 1971, ♂, ♀ (Keleinikova) (ZMMU); Ryazanovka, Khasan

district, 05.VIII, 08.IX 1987, ♂, ♀ (Makarkin); Kievka, Lazo district, VIII.1978, 01.X 1981 (Oliger), ♂ and 1 specimen (abdomen lost) (IBSS); vic. of Lazo, 23, 26.VIII 1987, ♂, ♀ (Ozerov) (ZMMU); Sudzukhe Natural Reserve, 21-25.IX 1971, ♂, 3 ♀ (Tanasijtshuk) (ZISP). Mongolia: Kerulen and Khalka Rivers, 1990, ♂ (Palibin) (ZISP).

Amphipalaearctic species, which is rare in Europe, but common and moderately abundant in the Far East, occurring from Amurskaya oblast' to south of Primorskii krai, and also in South Korea (Kim & Han, 2001), China (Hering, 1940, as *Adapsilia alini*) and Mongolia. European and Asian specimens slightly differ in the wing pattern, but are pretty similar in other characters, including the presence of anteroventral cone-like process, or hump, on oviscape (Fig. 1), the character omitted in all descriptions. *A. coarctata* is closely related to *A. longifasciata* Kim et Han, but probably not to many other species currently assigned to *Adapsilia*. It is possible, that forthcoming analysis of phylogenetic relationships in the tribe Pyrgotini (Korneyev, in press) can show that at least some of them belong elsewhere. See also discussions under *A. microcera* (Portschinsky) below.

***Adapsilia dorsocentralis* Hering, 1940**

Korneyev, 2004: 24 (redescription; type data); Korneyev & Nartshuk, 2004: 402 (key; distribution).

MATERIAL. Primorskii krai: Gornotayozhnoye, 20 km SE of Ussuriysk, 02.IX 1962, at light, ♀ (Borisova-Zinovieva) (ZISP); Ryazanovka, Khasan district, 21.VI 1987, at light, 2 ♂, 9 ♀ (Makarkin) (IBSS).

Described from Heilongjiang, but not listed by Shi (1996) for China. Korneyev (2004) recorded this species from Gornotayozhnoye and Kamenushka, both localities SE of Ussuriysk.

***Adapsilia microcera* (Portschinsky, 1892)**

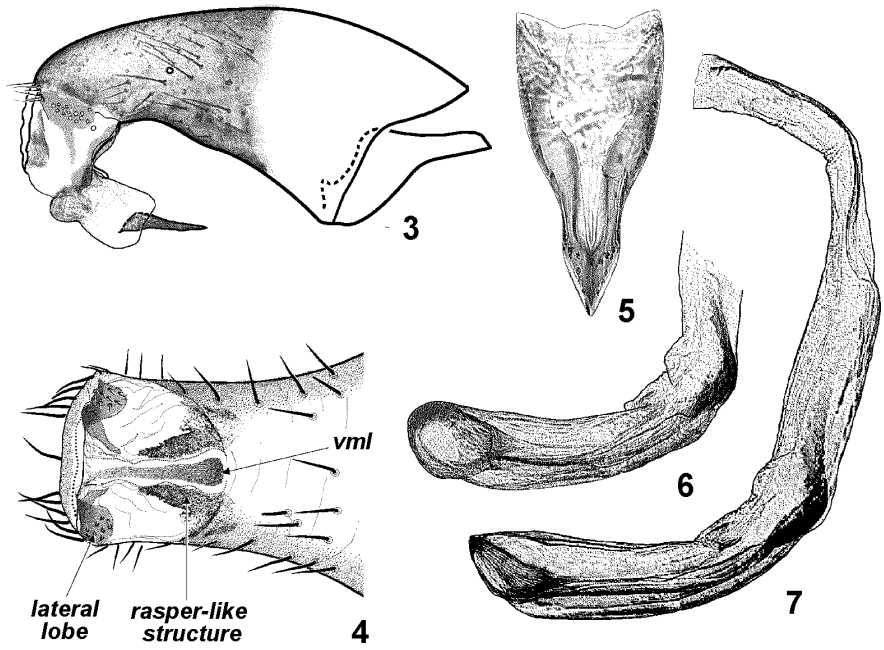
Figs 2-7

Korneyev, 2004: 32 (synonymy, redescription; type data); Korneyev & Nartshuk, 2004: 402 (key; distribution).

MATERIAL. Primorskii krai: "Wladiwostok", holotype ♂ (ZISP); Ryazanovka, Khasan district, 08.VI 1989, ♂ (Shatalkin) (ZMMU); Maikhe in vic. of Shkotovo, 03-05.VI 1927, 2 ♂, ♀, Vladivostok, Basargin Cape, 25.V 1927, ♂ (Stackelberg) (ZISP).

In the keys to both genera and species (Korneyev & Nartshuk, 2004), this species was considered as if it has no prescutellar acrostichal seta. However, a male from Maikhe has well-developed *ac* (Fig. 2); this specimen was dissected; its genitalia are as figured by Kim & Han (2001) for "*A. tenebrosa*" (junior synonym of *A. microcera*) and is therefore conspecific with the specimens that have no acrostichal setae.

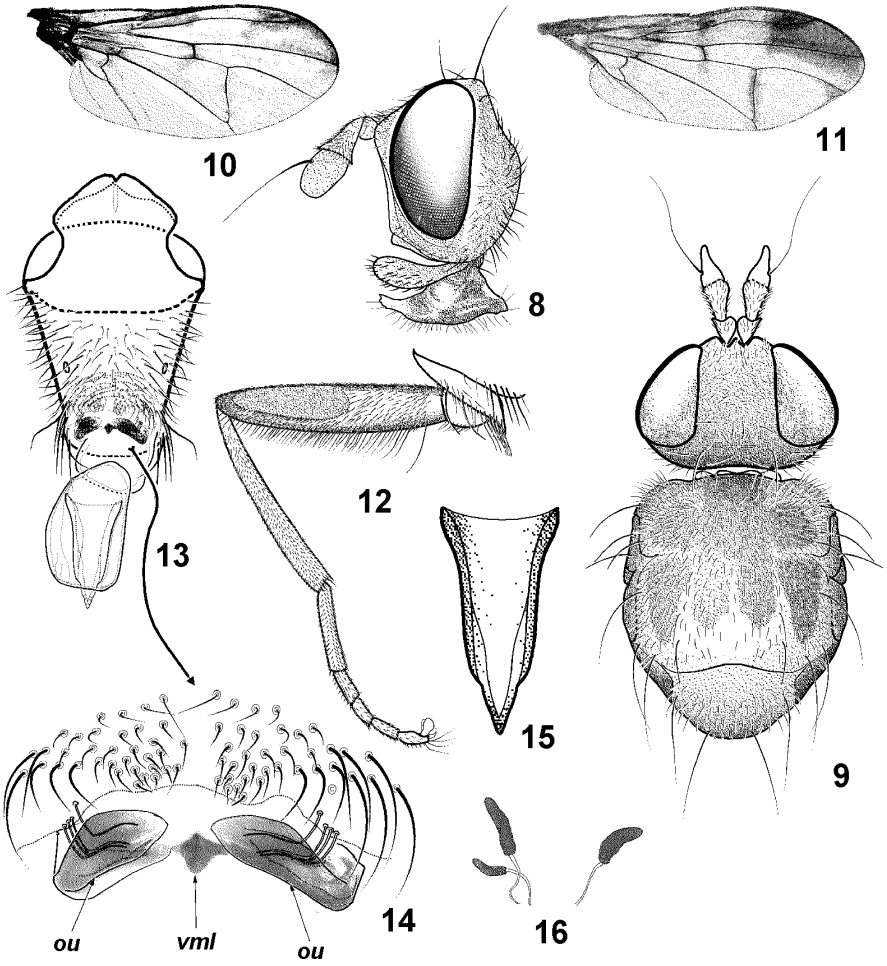
The statement "wing gray with hyaline spots; *prsc ac* present" in the key to genera (Korneyev & Nartschuk, 2004) therefore misleads to the genus *Tephritopyrgota*



Figs 3-7. *Adapsilia microcera*: 3) ovipositor, lateral, partially everted, 4) apex of oviscape, ventral, enlarged, 5) aculeus, enlarged, 6, 7) glans of phallus: 6) ventral, 7) lateral. *vml* – ventro-medial lobe of oviscape.

Hendel for such a specimen. The reference to an "undescribed species of *Tephritopyrgota* from Far East Russia (Nartschuk, in press)" (Korneyev & Nartshuk, 2004: 408) is based on misidentified specimens of *A. microcera*, which are listed above.

Further dissection of female terminalia (Figs 3-5) shows that *A. microcera* has the structures on the border of the oviscape and eversible membrane similar to those figured for *A. dorsocentralis* Hering (Korneyev, 2004: fig. 5), except the rasper-like structure larger and less convex and the ventro-medial lobe longer and narrower, without hook-like apical sclerite, which is typical for *Tephritopyrgota* and probably being a synapomorphy of the latter genus (Korneyev, unpublished data). However, some species of non-Palaearctic *Tephritopyrgota* also do not have such a hook-like structure; for instance, *T. gowdeyi* Malloch from Uganda and some undescribed species related to it have both stripe-like ventro-medial lobe and flat, but clearly expressed paired rasper-like structures (Korneyev, in prep.). No comprehensive analysis of phylogenetic relationships among *Adapsilia*, *Tephritopyrgota*, and closely related genera (*Apyrgota* Hendel*, Eupyrgota* Hendel*, Pyrgotina* Malloch, *Trichopeltia* Enderlein, *Tylotrypes* Bezzi, etc.) has been ever provided, so concepts of these genera are very poorly defined and can be revised in the future, as more species are examined.



Figs 8-16. *Adapsilia myopoides*: 8) head, lateral, 9) head and mesonotum, dorsal, 10–11) wings: 10) female, 11) male, 12) midleg, anterior, 13) ovipositor ventral, partially everted, 14) apex of oviscape, ventral, enlarged, 15) aculeus, enlarged, 16) spermathecae. *ou* – ovipositunguis; *vml* – ventro-medial lobe of oviscape.

***Adapsilia myopoides* Chen, 1947**
Figs 8-16

Korneyev & Nartshuk, 2004: 405 (key; distribution).

MATERIAL. Primorskii krai: Yakovlevka, 28,31.VIII, 2,7.IX 1926, 6 ♀ (Djakonov, Filipjev) (ZISP); 32 km SE of Ussuriysk, 21.VIII 1988, ♀ (Antropov); Kamenushka, Ussuriysk district, 12.VII 1970, at light, 2 ♀ (Krivolutskaya) (IBSS); same

locality, 19.VIII 1984, ♀ (Shatalkin) (ZMMU); Lianchikhe River, 16.VII 1963, at light, ♀ (Falkovich) (ZISP); De-Friz Peninsula, 19, 25.VII, 08.VIII 1955, 3 ♀ (Kurentzov) (IBSS); Melkovodnaya, 2 km of mouth of Kievka River, 11.VIII 1987, ♂ (Ozerov) (ZMMU).

This species can be recognized from other Asian species of *Adapsilia* by setulose pleura with brown vertical spot on anterior portion of anepisternum and katepisternum, no katepisternal seta, midfemur ventrally long and uniformly setulose, without outstanding setae except ventrobasal seta (Fig. 12). It is closely related to *A. hirtoscutellata* Hendel in wing venation and pattern, body coloration and chaetotaxy, oviscape and aculeus shape, having a pair of mesally directed sclerotized ventro-apical hook-like processes (Fig. 14: *ou*; "ovipositungues" sensu Steyskal, 1972), short, rudimentary ventro-medial lobe (Fig. 14: *vml*), no dorso-medial and lateral lobes on oviscape apex and basal part of eversible membrane, and differing from it by having base of scutellum yellow rather than dark brown and with large, half as long as midfemur, femoral organ (Fig. 6), sparsely and uniformly microsetulose over whole surface. In addition, examined females of *A. myopoides* have yellow face without black marks and mediotergite reddish yellow, whereas in females of *A. hirtoscutellata* they are completely or partially dark brown.

This species was described by Chen (1947) in details based on the holotype female from north-eastern China (Jilin). Korneyev & Nartshuk (2004) included it to the key and mentioned that it occurs in Primorskii krai. Herewith, the material is listed. The only male here determined as *A. myopoides* is conspicuously darker than the females (face with dark brown mark along lateral side of antennal grove; legs brown; wings with blackish-brown apical spot, short discal crossband and darkened crossvein *dm-cu*) (Fig. 11). Syntype male of *A. hirtoscutellata* from Sichuan is, similarly, darker than females, having entirely dark brown face, legs and dark wing pattern similar to that in males of *A. verrucifer* Hendel and *A. myopoides*. Males of *A. myopoides* differ from males of *A. verrucifer* by the absence of katepisternal setae and long erect setulae on abdominal sternite 2, and from males of *A. hirtoscutellata* by completely yellow scutellum and at least partially yellow face. More extensive material must be examined, however, to see how variability of coloration overlaps in two species. At least, females without the femoral organ and light colored like *A. myopoides* from Sri Lanka (BMNH), and females with the femoral organ dark colored like *A. hirtoscutellata* from Laos (BBMH) otherwise very similar to both species were examined by the junior author (VAK). It shows that the color characters may be unreliable in this group of species.

Korneyev & Nartshuk (2004) erroneously stated that *A. myopoides* has prescutellar acrostichal seta, but Chen (1947) originally did not mention this seta, and it is absent in all specimens from Primorskii krai (Fig. 9).

***Eupyrgota flavopilosa* Hendel, 1914**

Korneyev & Nartshuk, 2004: 405 (key; distribution).

MATERIAL. Primorskii krai: Chernigovka, 05.VII 1912, ♀ (Emeljanov) (ZISP); De-Friz Peninsula, 05.VIII 1954, ♂ (Kononov) (IBSS, Makarkin det.); Ryazanovka,

Khasan district, 18,19.VII 1987, 2 ♂ (Makarkin); Zanadvorovka, Khasan district, 23.VII 1987, ♀ (Lelej); Kedrovaya Pad' Natural Reserve, 18.VII 1976, ♀ (Chistyakov, Kononenko) (IBSS); idem, 09.VIII 1976, ♂ (Berezantsev) (IBSS, Makarkin det.); idem, 28.VII 1982, ♂ (Rasnitsyn, Sulimov); Adimi, 13.VI 1904, ♂ (Emeljanov); Posiyet, 06.VII 1907, ♀ (Pulezo) (ZISP).

Described from Japan (Honshu). Korneyev & Nartshuk (2004) included it to the key and mentioned that it occurs in Primorskii krai. Herewith, the examined material is listed here.

***Parageloemyia nigrofasciata* (Hendel, 1933)**

Korneyev, 2004: 43 (type data; comments on identity); Korneyev & Nartshuk, 2004: 408 (key; distribution).

MATERIAL. Primorskii krai: Ryazanovka, Khasan district, 08.VI 1989, ♀ (Shatalkin) (ZMMU); idem, 22.VI 1987, ♀ (Makarkin); De-Friz Peninsula, 08.VIII 1955, ♀ (Kurentzov) (IBSS).

Described from China (Szechuan). Korneyev (2004) recorded this species from Suchan and Gornotayozhnoye (Russian Far East).

***Parageloemyia quadriseta* (Hendel, 1933)**

Korneyev, 2004: 43 (type data; comments on identity); Korneyev & Nartshuk, 2004: 408 (key; distribution).

MATERIAL. Primorskii krai: Ussuriysk, ex adult beetle *Serica koltzei* Reitter, coll. 29.VI 1962, exit 23.III 1963, ♀; Gornotayozhnoye, 20 km SE of Ussuriysk, 07.VIII 1962, at light, ♀; upstream of Chapigou River, Shufan River, 31.VII 1962, ♀ (Borisova-Zinovieva); Yakovlevka, 29.VII 1926, ♀ (Djakonov, Filipjev); idem, 12.VII 1962, ♀ (Borisova-Zinovieva) (ZISP); Kedrovaya Pad' Natural Reserve, 06.VIII 1976, ♀ (Berezantsev) (IBSS).

This species was known from China and South Korea. The first record from Russia. Two females have short spur vein on *M* distal to *r-m*. Reared from adult beetles *Serica koltzei* Reitter (Scarabaeidae: Melolonthinae). The first record of host-parasitic association of this species and the genus *Parageloemyia*.

***Parageloemyia wonjuensis* Kim et Han, 2001**

Korneyev, 2004: 44; Korneyev & Nartshuk, 2004: 408 (key; distribution).

MATERIAL. Primorskii krai, Vinogradovka, 27-28.V 1929, 2 ♂ (Djakonov, Filipjev) (ZISP).

Described from South Korea. The first record from Russia.

***Porpomastix fasciolata* Enderlein, 1942**

Korneyev & Nartshuk, 2004: 408 (key; distribution).

MATERIAL. Amurskaya oblast': Klimoutsy, 40 km W of Svobodnyi, at light, 4,6.VII 1958, 2 ♀ (Kuznetsov); idem, at light, 7,16.VII 1958, 3 ♀ (Zinoviev) (ZISP).

Khabarovskii krai: Komsomol'sk-na-Amure, Silinskiy Park, 13.VII 1977, ♀ (Mutin) (IBSS). Primorskii krai: 20 km W of Kamen'-Rybolov, 5,12.VI 1977, ♂, ♀ (Lelej) (IBSS); Chernigovka, 25.V 1914, ♀ (Emeljanov); Vinogradovka, 7.VII 1929, ♂ (Djakonov, Filipjev) (ZISP); Anisimovka, 30.V 1975, ♀ (Berezantsev); De-Friz Peninsula, 16.VI 1957, 1 specimen (abdomen lost) (Omel'ko) (IBSS); Pogranichnaya, 5.VI 1902, ♀ (Wagner) (ZISP).

Recorded also from Japan, Korea and China.

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