

On the Fauna and Taxonomy of Click-Beetles (Coleoptera, Elateridae) of the Sikhote-Alin Nature Reserve and Adjacent Areas

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Abstract—The fauna of the click-beetles of the Sikhote-Alin Nature Reserve and adjacent areas is listed and analyzed. The current checklist of the Elateridae of this territory comprises 77 species of 36 genera, 11 tribes, and 5 subfamilies. Several species are recorded for the first time in the following territories: 54 species in the fauna of the Sikhote-Alin Nature Reserve and adjacent areas, 7 species in Primorskii Territory, 5 in the mainland Far East of Russia. Two species are recorded by us in the Sikhote-Alin Nature Reserve and adjacent areas only from published data without examination of the material; the doubtful records of 4 species require confirmation and are not included in the checklist. Notes on the distribution and taxonomy and new data on the morphology, including the genital characters, of a number of the species are also given. The following new synonymy is established: *Cardiophorus inflatus* Candèze, 1882 = *Cardiophorus heydeni* Buysson, 1915, **syn. n.** The following new combination is proposed: *Pseudocrepidophorus laetus* (Candèze, 1879), **comb. n.** (ex *Crepidophorus*).

Keywords: Coleoptera, click-beetles, Elateridae, fauna, taxonomy, Sikhote-Alin Nature Reserve

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The fauna of the click-beetles of the Russian Far East includes over 200 species, being among the richest regional faunas in Russia (Gurjeva, 1989a; Cate et al., 2007; Prosvirov, 2013, 2015; Platia, 2014, 2016; Prosvirov, 2017a). The peculiarity and poor knowledge of the Elateridae of this region are evidenced by regular descriptions of new species and by new faunal records (Dolin, 2003; Platia and Gudenzi, 2005, 2006; Platia, 2010, 2013; Prosvirov and Savitsky, 2011; Prosvirov, 2014). Nevertheless, the summarizing faunistic publications on the Elateridae of various territories of the Russian Far East are very few (Gurjeva and Krivolutskaya, 1968; Ivliev and Kononov, 1970; Averensky and Gurjeva, 1975; Katjucha, 1977; Matis, 1980; Prosvirov, 2009), and those on the reserved areas, the fauna of which is of the greatest interest, are almost absent.

The same holds for the fauna of the click-beetles of the Sikhote-Alin Nature Reserve and its environs (Pri-

morskii Territory). There are only fragmentary data on the Elateridae of this territory scattered in the publications (Denisova, 1948; Ivliev and Kononov, 1970; Gurjeva, 1979, 1987, 1989b; Gromyko, 1982; Gromyko and Potikha, 2006; Platia, 2010; Schimmel et al., 2015; Platia et al., 2020). In total, about 20 species of click-beetles are listed in the literature for the Sikhote-Alin Nature Reserve and its environs, whereas 93 species are recorded (Prosvirov, 2009, 2014) in the rather thoroughly studied Lazovskii Nature Reserve, also in Primorskii Territory. Such a difference demonstrates quite a low level of knowledge of the Elateridae fauna of the Sikhote-Alin Nature Reserve and suggests a need for its inventarization.

The click-beetles were collected by the second author from various sites of the nature reserve and adjacent territories since 2015 and up to 2019. The material obtained is summarized in the present study.

MATERIALS AND METHODS

K.G. Abramov Sikhote-Alin State Nature Biosphere Reserve is situated in the eastern and central watershed parts of the the Sikhote Alin Mt. Range, within three administrative districts of Primorskii Territory: Terneiskii, Krasnoarmeiskii, and Dalnegorskii. The territory of the nature reserve extends from the shores of the Sea of Japan for more than 90 km inland, also including the eastern and western spurs of the Sikhote-Alin Mts.; the area of the nature reserve is 387284 ha, including the territory of the separate locality Abrek—4220 ha; the geographical coordinates of the main part are 44°49'13"—45°41'25"N; 135°48'46"—136°34'23"E, and those of Abrek are 45°02'53"—45°09'38"N, 136°40'14"—136°46'51"E.

The material was collected by M.E. Sergeev from 28 sites in 20 localities of the nature reserve and in the adjacent territories, in the environs of Ternei Vill., Artemovo Vill., and in the "Udegeiskaya Legenda" National Park ("UL" below) (Fig. 1), and is deposited in the collection of the Department of Entomology, Faculty of Biology, M.V. Lomonosov Moscow State University (Moscow).

Collecting sites. Terneiskii District. Abrek locality: **1** – Upolnomochennyi spring-well (45°11'6.88"N, 136°47'1.12"E), **2** – Skrytaya River floodland (45°05'46"N, 136°41'09"E); environs of Ternei Vill.: **3** – Serebryanka River floodland (45°03'12.06"N, 136°37'16.3272"E) (Fig. 2, 3), **4** – oak forests on the hills (45°01'54.9006"N, 136°38'3.7824"E); Blagodatnoe locality: **5** – Cape Severnyi (44°57'17.84"N, 136°33'55.92"E) (Fig. 2, 1), **6** – environs of Lake Blagodatnoe (44°57'12"N, 136°32'48"E), **7** – valley of the Sukhoi spring-well (44°58'57"N, 136°31'09"E); Golubichnoe locality: **8** – environs of Lake Golubichnoe (44°54'30"N, 136°31'36"E); Kunaleika locality: **9** – Khanov spring-well (44°53'25"N, 136°20'18"E); Nevidimka locality: **10** – Lianovaya River floodland (44°55'57.53"N, 136°05'50.47"E); Ust'-Serebryanyi locality: **11** – middle course of the Serebryanka River (45°8'25"N, 136°22'43"E); Zimoveinyi locality: **12** – Zimoveinyi spring-well (45°08'29"N, 136°18'33"E); Terneiskii District: **13** – environs of Artemovo Vill., Serebryanka River floodland (45°06'39.2"N, 136°31'43.7"E); Yasnaya locality: **14** – middle course of the Zabolochennaya River (45°19'6.19"N, 136°28'38.08"E) (Fig. 2, 6); Beloborodovskii locality:

15 – valley of the Beloborodovskii spring-well, upper course of the Yasnaya River (45°15'11.6"N, 136°27'02.5"E) (Fig. 2, 2); Ust'-Solontsovyi locality: **16** – Zabolochennaya River floodland (45°18'44.8"N, 136°28'40.9"E); Solontsovyi locality: **17** – Solontsovyi spring-well (45°18'46"N, 136°28'42"E). **Dalnegorskii District.** Kabanii locality: **18** – Kabanii spring-well, upper course of the Dzhigitovka River (45°06'36"N, 135°51'59"E) (Fig. 2, 5); Spornyi locality: **19** – Spornyi spring-well, upper course of the Serebryanka River (45°09'47.2"N, 135°53'25.7"E). **Krasnoarmeiskii District.** Venera locality: **20** – Venera spring-well (45°25'43"N, 135°45'47"E); Yupiter locality: **21** – Yupiter spring-well (45°31'57"N, 135°54'36"E), **22** – Kolumbe River floodland (45°31'10.5"N, 135°54'55.9"E); Snezhnaya locality: **23** – upper course of the Serokamenka River (45°32'27"N, 135°59'05"E); Svetlaya locality: **24** – the Serokamenka River mouth (45°32'52.1"N, 136°05'16.7"E), **25** – Kolumbe River floodland (45°33'15.4"N, 136°08'22.2"E); Ust'-Prokhodnaya locality: **26** – Kaplanovskie solontsy (45°32'10.6548"N, 136°13'27.912"E) (Fig. 2, 4); Teremok locality: **27** – Gorelyi spring-well (45°37'06.4"N, 136°12'27.8"E); Pereval'naya locality: **28** – upper course of the Kolumbe River, Tazhnaya River floodland (45°35'52.4"N, 136°24'54.0"E).

All the localities are the conventionally distinguished areas of the nature reserve, which are attached to the permanent study areas and include parts of the basins of the main rivers or large brooks (Pimenova, 2016).

The material was examined under a Motic SMZ-143-N2GG binocular microscope and a Mikromed 3 var. 3-20 M trinocular microscope. For taking the photographs of the habitus, the specimens examined were mounted on transparent rectangular plates. The photographs were taken using a Canon EOS-6D camera with a Canon MP-E 65 mm objective. The shooting was done using the "extended focus" technology. The photographs of the genitalia were taken with a Mikromed 3 var. 3-20 M microscope with a ToupCam 16 MP video eyepiece. All the photographs of the genitalia were taken from slides in glycerol; the method of slide making had been described earlier (Prosvirov and Savitsky, 2011). In view of the scarcity of the illustrative material and sketchiness of the published drawings of the habitus and the genital structures (see notes below) of the Far Eastern Elateridae, we give here figures of all the species exam-

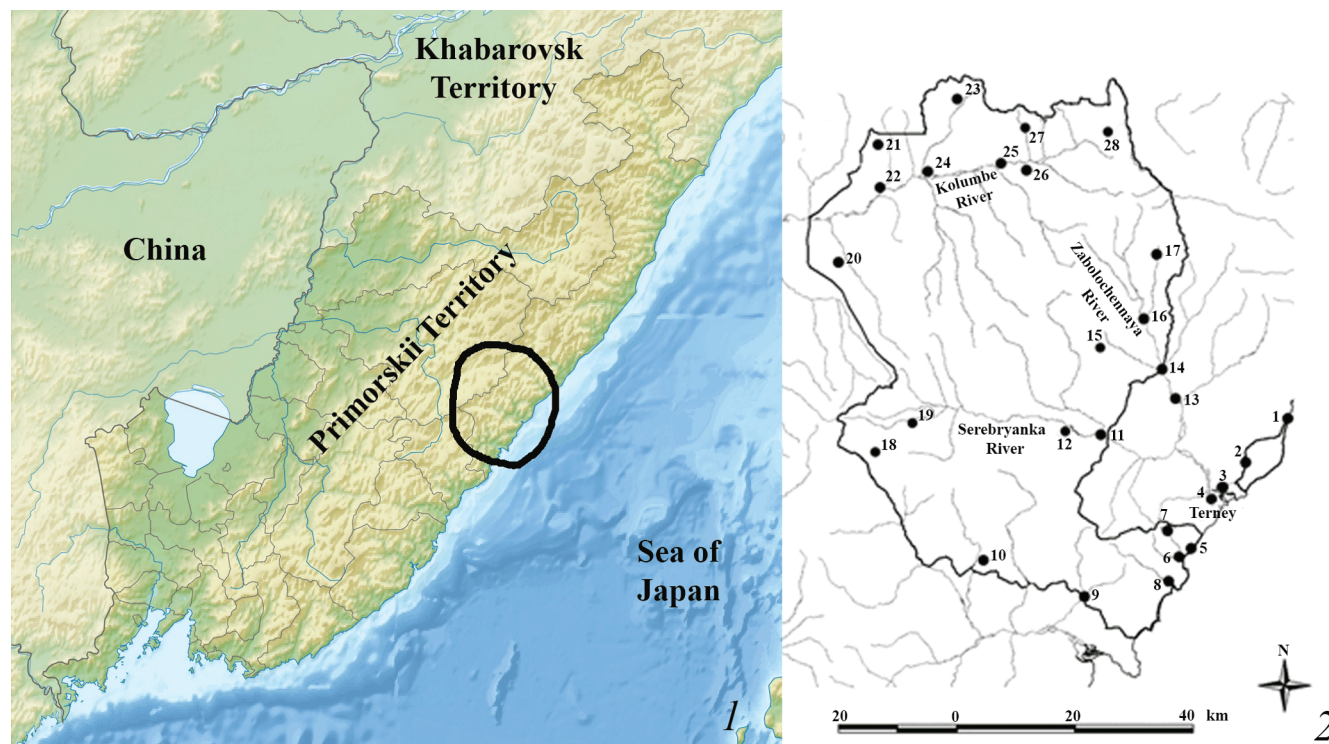


Fig. 1. Territory under study: (1) map of Primorsky Territory (the investigated area is marked with a black line); (2) map-scheme of the Sikhote-Alin Nature Reserve (for the collections sites numbers (1–28) see text).

ined. Photographs of the habitus are usually given for common and easily recognized species; photographs of the genitalia are additionally given for habitually very similar and poorly known species.

The body length of the specimens was measured using the eyepiece-micrometer along the midline from the anterior margin of the frons to the elytral apex.

For each species, the material is listed according to the collecting site numbers and, within each site, in chronological order. For all the species, data on the general distribution and the literature data on their records in the territory of the nature reserve and in the environs and also on the biology are given. Additional notes on the morphology and systematics are given for some rare and poorly known species. The numbering of the species in the list is consecutive; the numbers of the species known from the territory based only on the literature data are italicized; the doubtful published records requiring verification are designated with an asterisk; these species are not numbered and not included in the check-list.

The classification of the suprageneric taxa of the family follows that of Bouchard et al. (2011) with sub-

sequent supplements and modifications (Schimmel et al., 2015) taken into account. The terminology of parts of the genitalia follows that in the publications of Mardzhanian (1987) and Prosvirov and Savitsky (2011).

ANNOTATED LIST OF THE SPECIES OF THE FAMILY ELATERIDAE OF THE SIKHOTE-ALIN NATURE RESERVE

Family **ELATERIDAE** Leach, 1815

Subfamily **AGRYPNINAE** Candèze, 1857

Tribe **AGRYPNINI** Candèze, 1857

1. *Agrypnus argillaceus argillaceus* (Solsky, 1871) (Fig. 3, 1)

Material. 7 specimens. **6:** 19.VII.2018, 1 specimen. **7:** 23.VI.2018, 1 specimen. **8:** 4.VI.2018, 1 specimen. **9:** 6.VI.2018, 1 specimen; 21.VI.2018, 1 specimen; 17.VII.2018, 1 specimen. **13:** 15.V.2015, 1 specimen.

Distribution. Russia: the south of the Far East (including the islands). Mongolia, China, North and South Korea, Northern India, Cambodia, Vietnam (Fleutiaux, 1947; Mukhopadhyay and Chakraborty, 2003; Prosvirov, 2009).



Fig. 2. Collecting sites of the material in the Sikhote-Alin Nature Reserve: (1) Blagodatnoe locality, Cape Severnyi, the sea coast; (2) forest in Beloborodovskii locality; (3) meadow in the environs of Ternei Vill.; (4) Ust'-Prokhnodnaya locality, Kaplanovskie solontsy; (5) Kabanii locality, Kabanii spring-well; (6) Yasnaya locality, Zabolochnennaya River.

Biology. The adults occur on various plants, and the larvae live in the rotten wood of oaks (Gurjeva, 1989a). This species is common in the south of the Russian Far East and seems to be rare in the territory of the nature reserve.

2. *Danosoma fasciatum* (Linnaeus, 1758) (Fig. 3, 2)

Material. 9 specimens. **11:** 26.VI.2018, 1 specimen. **14:** 15.IV.2015, 1 specimen; 10.V.2018, 1 specimen; 30.V–1.VI.2017, 1 specimen. **18:** 29.V.2015, 1 specimen.



Fig. 3. Elateridae, habitus, dorsal (1–4), lateral (5), and ventral (6) view [(1) *Agrypnus argillaceus argillaceus* (Sols.), male (11.7 mm; 9); (2) *Danosoma fasciatum* (L.), male (13.7 mm; 14); (3) *Lacon altaicus* (Cand.), female (13.8 mm; 24); (4–6) *Agriotes zinovjevi* Gur., male (8.8 mm; 9)]. Hereinafter the body length and collecting site number of a specimen are given in brackets (for abbreviations of the collecting sites see text).

20: 15.IV.2016, 1 specimen; 1–4.VII.2019, 1 specimen
27: 15.V.2017, 1 specimen; 17.V.2018, 1 specimen.

Distribution. The taiga and mixed forests zones of the temperate regions of Eurasia (Medvedev, 2005; Cate et al., 2007).

Biology. This species inhabits coniferous and mixed forests; the larvae develop under the bark and in the rotten wood of coniferous or, less frequently, deciduous trees (Matis, 1980; Gurjeva, 1989a; Medvedev, 2005). A relatively rare species.

3. *Lacon altaicus* (Candèze, 1857) (Fig. 3, 3)

Material. 9 specimens. **7:** 23.VI.2018, 1 specimen.
14: 18.V.2016, 1 specimen; 5.VII.2015, 1 specimen.
18: 4.VII.2017, 1 specimen. **20:** 15.IV.2016, 2 specimens; 20.VI.2017, 1 specimen. **24:** 9–10.VI.2017, 1 specimen. **26:** 18.VI.2015, 1 specimen.

Distribution. Russia: Siberia, the Far East. Kazakhstan, Mongolia, Northwestern China, South Korea (Prosvirov, 2009; Han and Lee, 2016).

Biology. This species inhabits coniferous forests; the larvae develop in the rotten wood of coniferous trees (Cherepanov, 1957; Gurjeva, 1989a). A relatively rare species.

Subfamily ELATERINAE Leach, 1815

Tribe AGRIOTINI Laporte, 1840

Subtribe AGRIOTINA Laporte, 1840

4. *Agriotes (Agriotes) zinovjevi* Gurjeva, 1967 (Fig. 3, 4–6; Fig. 7, 1; Fig. 8, 1)

Material. 2 specimens. **1:** 7.VII.2017, 1 specimen.
9: 6.VI.2018, 1 specimen.

Distribution. Russia: Eastern Siberia, the south of the Far East (including the islands). Mongolia, Northern China, North Korea (Prosvirov, 2009).

Biology. The adults occur in forest glades and in meadows near forests; the larva is unknown (Gurjeva, 1989a). A rare species.

Taxonomic notes. This species is very similar in habitus to *A. obscurus* (Linnaeus, 1758) widely distributed in Russia, but clearly differs in features of the biology

and in some morphological characters. *Agriotes zinovjevi* mainly inhabits forest biotopes, whereas *A. obscurus* is a species more typical of meadows and very frequently occurring on croplands (Cherepanov, 1957; Medvedev, 2005). *Agriotes zinovjevi* differs from *A. obscurus* in a noticeably denser punctuation of the pronotum, a darker pubescence of the body, narrower femoral plates, and in the structure of the aedeagus. The shape of the aedeagus in the specimens of *A. zinovjevi* (Fig. 7, 1) examined by us noticeably differs from that shown for *A. zinovjevi* in illustrations in the description and in the subsequent Gurjeva's (1967, 1972b, 1979, 1989a) publications. This may be caused by a considerable individual variability of this species in the structure of the aedeagus or by a distortion of proportions in the illustrations; to clarify the issue, a larger number of the specimens of *A. zinovjevi* from various parts of the range should be examined.

The drawing of the female genital tract of *A. zinovjevi* (Fig. 8, 1) is given for the first time.

5. *Agriotes (Tinecoides) koltzei* Reitter, 1890 (Fig. 4, 1–4; Fig. 7, 2; Fig. 8, 2)

Material. 8 specimens. **1:** 7.VII.2017, 2 specimens.
4: 14.VI.2015, 3 specimens. **13:** 15.V.2015, 1 specimen.
14: 9.VII.2018, 1 specimen. **18:** 3.VII.2017, 1 specimen.

Distribution. Russia: Eastern Siberia, the south of the Far East. North-Eastern China, North Korea (Prosvirov, 2009).

Biology. This species inhabits broadleaf and coniferous-broadleaf forests; the larva is unknown (Gurjeva, 1989a). A rare species.

Taxonomic notes. At present, this species is placed in the monotypical subgenus *Tinecoides* Gurjeva, 1979 due to the particular structure of its mesothorax and aedeagus, which sharply distinguishes it from the other species of *Agriotes*. *Agriotes koltzei* also clearly differs from its congeners in the structure of the bursa copulatrix; however, the drawing of sclerites of the bursa copulatrix of *A. koltzei* in Gurjeva's publications (1972a, 1979) seems to be made from a slide of the genitalia of another species. The armament of the bursa copulatrix in the specimens of *A. koltzei* examined by us is formed by 6 sclerites (among which 4 are symmetrical) (Fig. 8, 2), while in the species of the subgenus *Agriotes*



Fig. 4. Elateridae, habitus, dorsal (1, 2, 5–7), lateral (3), and ventral (4) view [(1, 3, 4) *Agriotes koltzei* Rtt., male (7.3 mm; 4); (2) *A. koltzei*, female (7.7 mm; 18); (5) *Dalopius singeri* Brančsik, male (6 mm; 24); (6) *D. singeri*, female (6.7 mm; 24); (7) *D. puerilis* (Cand.), female (6.8 mm; 14)].

s. str., it is formed by 2 or 3 asymmetrical sclerites (Becker, 1956; Gurjeva, 1979; fig. 8, 1). It was the latter variant of the structure which was represented by Gurjeva in the drawing of the sclerites of *A. koltzei*. The features of the external morphology and the structure of the aedeagus and also the armament of the bursa copulatrix of *A. koltzei* are very similar to those of *Ectinus insidiosus* (Lewis, 1894) which occurs on Kunashir Island and in Japan and rather clearly differs in morphology from the other species of the genus *Ectinus* Eschscholtz, 1829 (Kishii, 1979, 1984). At the same time, both these species are rather similar in a complex of characters to the Chinese and South-East Asian species of the genus *Rainerus* Platia, 2007 (Platia, 2007). Thus, the status of the subgenus *Tinecoides* should be verified, which requires examination of additional material, including the still unknown larvae of *A. koltzei*, *E. insidiosus*, and species of *Rainerus*.

The drawing of the female genital tract of *A. koltzei* (Fig. 8, 2) is given for the first time.

6. *Dalopius puerilis* (Candèze, 1879) (Fig. 4, 7; Fig. 7, 3; Fig. 8, 3)

Gromyko and Potikha, 2006 : 241 (*D. puerillus* [sic!]) – Sikhote-Alin Nature Reserve; Platia et al., 2020 : 22 (as *D. naomii* Kishii, 1981) – Cape Severnyi (44°57'29"N, 136°33'24"E).

Material. 52 specimens. **1:** 7.VII.2017, 1 specimen. **2:** 24.VI.2015, 4 specimens. **4:** 14.VI.2015, 4 specimens. **6:** 13.V.2016, 2 specimens; 28.V.2017, 1 specimen; 2–21.VI.2016, 8 specimens; 16.VI.2017, 10 specimens; 8.VII.2015, 3 specimens; 19.VII.2018, 1 specimen. **8:** 28–30.VI.2016, 2 specimens; 14–17.VII.2017, 1 specimen. **9:** 6.VI.2018, 1 specimen. **11:** 29.VI.2018, 1 specimen. **14:** 18.V.2016, 1 specimen; 30.V–1.VI.2017, 4 specimens; 1–3.VII.2015, 3 specimens. **18:** 29.V.2015, 3 specimens; 4.VII.2017, 1 specimen. **UL:** 23–27.VII.2015 1 specimens.

Distribution. Russia: Eastern Siberia, the south of the Far East. Mongolia, North-Eastern China, North and South Korea (Prosvirov, 2009; Platia and Németh, 2011 (as *D. naomii*)). The record of *D. puerilis* for Eastern China (Platia, 2009) is most likely erroneous and refers to another species (see below).

Biology. This species inhabits coniferous-broadleaf forests; the larvae develop in forest soil and litter (Dolin, 1978; Gurjeva, 1989a). A common species.

Taxonomic notes. The shape of the aedeagus in the specimens of *D. puerilis* examined by us noticeably differs from that represented by Gurjeva (1979) for *D. puerilis*. This may be caused by a strong distortion of proportions in the drawing or by sketching from a slide of the genitalia of another species, possibly *D. singeri* (Brančsik, 1914), as the drawings of the aedeagi of these species in this publication are very similar. The absence of a faithful image of the aedeagus of *D. puerilis* in the literature might be the reason why the European specialists (Platia and Németh, 2011; Platia et al., 2020) erroneously attributed the records of *D. puerilis* from the Russian Far East and Korea to *D. naomii*. The latter species is known only from Japan (the central mountain areas of Honshu Island) and though it has the aedeagus and the sclerites of the bursa copulatrix rather similar to those of *D. puerilis*, it noticeably differs from this species in the proportions of the body, in the coloration, and in the structure of the antennae (Kishii, 1981, 1984). The photographs of the habitus and aedeagus of “*D. naomii*” from North and South Korea in the publication of Platia and Németh (2011) perfectly correspond to the Russian Far Eastern specimens of *D. puerilis* examined by us (Fig. 4, 7; 7, 3). At the same time, the record of *D. puerilis* from Eastern China (Platia, 2009) probably refers to a different species, as the structure of the aedeagus shown in a photograph in this publication noticeably differs from that in the specimens of *D. puerilis* examined by us.

The drawing of the female genital tract of *D. puerilis* (Fig. 8, 3) is given for the first time.

7. *Dalopius singeri* Brančsik, 1914 (Fig. 4, 5, 6; Fig. 7, 4; Fig. 8, 4)

Material. 3 specimens. **24:** 9–10.VI.2017, 2 specimens; **27:** 17.V.2018, 1 specimen.

Distribution. Russia: the south of Eastern Siberia and the Far East (Bessolitsyna, 1974; Gurjeva, 1979). In the Russian Far East, this species was known earlier only from Khabarovsk Territory and Amurskaya Province; here it is recorded for the first time for Primorskii Territory.

Biology. The biology has not been investigated; the larva is unknown. The species seems to be very rare and locally distributed in the south of the Russian Far East (it is known from the territory of the nature reserve only from two sites in Krasnoarmeiskii District).

Taxonomic notes. *Dalopius singeri* clearly differs from *D. puerilis*, which is common in the Russian Far East, in a wider body, paler coloration, coarser and denser punctuation of the pronotum, wider femoral plates, and in the shape of the aedeagus and the sclerites in the bursa copulatrix.

The drawing of the female genital tract of *D. singeri* (Fig. 8, 4) is given for the first time.

8. *Ectinus dahuricus dahuricus* (Candèze, 1863)
(Fig. 5, 1)

Gromyko and Potikha, 2006 : 241 – Sikhote-Alin Nature Reserve.

Material. 92 specimens. **1:** 7.VII.2017, 2 specimens. **2:** 23–24.VI.2015, 6 specimens. **3:** 23.VI.2016, 1 specimen. **4:** 28.V.2018, 3 specimens; 14.VI.2015, 2 specimens; 21.VI.2015, 1 specimen. **5:** 21.VI.2016, 1 specimen. **6:** 26.V.2016, 5 specimens; 28.V.2017, 2 specimens; 3–7.VI.2018, 6 specimens; 16.VI.2017, 2 specimens; 8.VII.2015, 1 specimen. **7:** 23.VI.2018, 1 specimen. **8:** 28–30.VI.2016, 2 specimens; 5.VII.2019, 1 specimen; 14–17.VII.2017, 3 specimens. **9:** 23.V.2017, 7 specimens; 21.VI.2018, 1 specimen; 17.VII.2018, 1 specimen. **11:** 11.V.2018, 1 specimen; 15.VI.2018, 1 specimen; 26.VI–2.VII.2018, 5 specimens. **12:** 18.V.2017, 1 specimen. **13:** 15.V.2015, 4 specimens. **14:** 18–21.V.2016, 6 specimens; 18–29.V.2017, 3 specimens; 1–4.VII.2015, 10 specimens; 9.VII.2018, 1 specimen. **15:** 16.V.2017, 7 specimens. **18:** 29.V.2015, 3 specimens; 25.VI.2019, 1 specimen. **26:** 18.VI.2015, 1 specimen.

Distribution. Russia: the south of the Far East (including the islands). Northern and North-Eastern China, North and South Korea, Japan (Platia, 2007; Prosvirov, 2009; Platia and Han, 2010).

Biology. This species inhabits broadleaf and coniferous-broadleaf forests; the larvae develop in forest soil and litter (Gurjeva, 1979). A common species.

9. *Ectinus piloselloides* (Schwarz, 1891)
(Fig. 5, 2)

Material. 3 specimens. **4:** 14.VI.2018, 1 specimen; 21.VI.2015, 1 specimen. **8:** 14–17.VII.2017, 1 specimen.

Distribution. Russia: the south of the Far East. Northern China, South Korea (Prosvirov, 2009; Platia and Han, 2010). The records of *E. piloselloides* for Kunashir Island (Gurjeva, 1979, 1989a) most likely refer to the closely related *E. puberulus* (Miwa, 1928) (Prosvirov, 2013).

Biology. This species inhabits broadleaf forests; the larvae develop in forest soil and litter (Dolin, 1978; Gurjeva, 1989a). A rare species.

* *Ectinus sericeus sericeus* (Candèze, 1878)

Gurjeva, 1979 : 361 – Kuznetsovo [Terneiskii District, Kuznetsovo Vill.].

Material. This species has not been found by us in the Sikhote-Alin Nature Reserve and the environs.

Distribution. Russia: the islands of the south of the Far East. China, North Korea, Japan (Gurjeva, 1989a; Cate et al., 2007). Only one location of *E. sericeus* in the mainland Russian Far East is known: Kuznetsovo Vill., Terneiskii District (Gurjeva, 1979). Taking into consideration the fact that, according to our observations, the species is common in the islands of the south of the Russian Far East, it cannot be ruled out that this record is erroneous.

Tribe AMPEDINI Gistel, 1848

10. *Ampedus (Ampedus) adrastoides* (Reitter, 1896)
(Fig. 11, 2; Fig. 12, 2; Fig. 13, 2)

Material. 6 specimens. **1:** 21.IV.2016, 1 specimen. **5:** 21.VI.2016, 1 specimen. **6:** 19.VII.2018, 1 specimen. **7:** 23.VI.2018, 1 specimen. **11:** 1.VII.2018, 1 specimen. **UL:** 23–27.VII.2015, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (Gurjeva, 1989a).

Biology. The biology of the adults and larvae has not been investigated. A rare species.

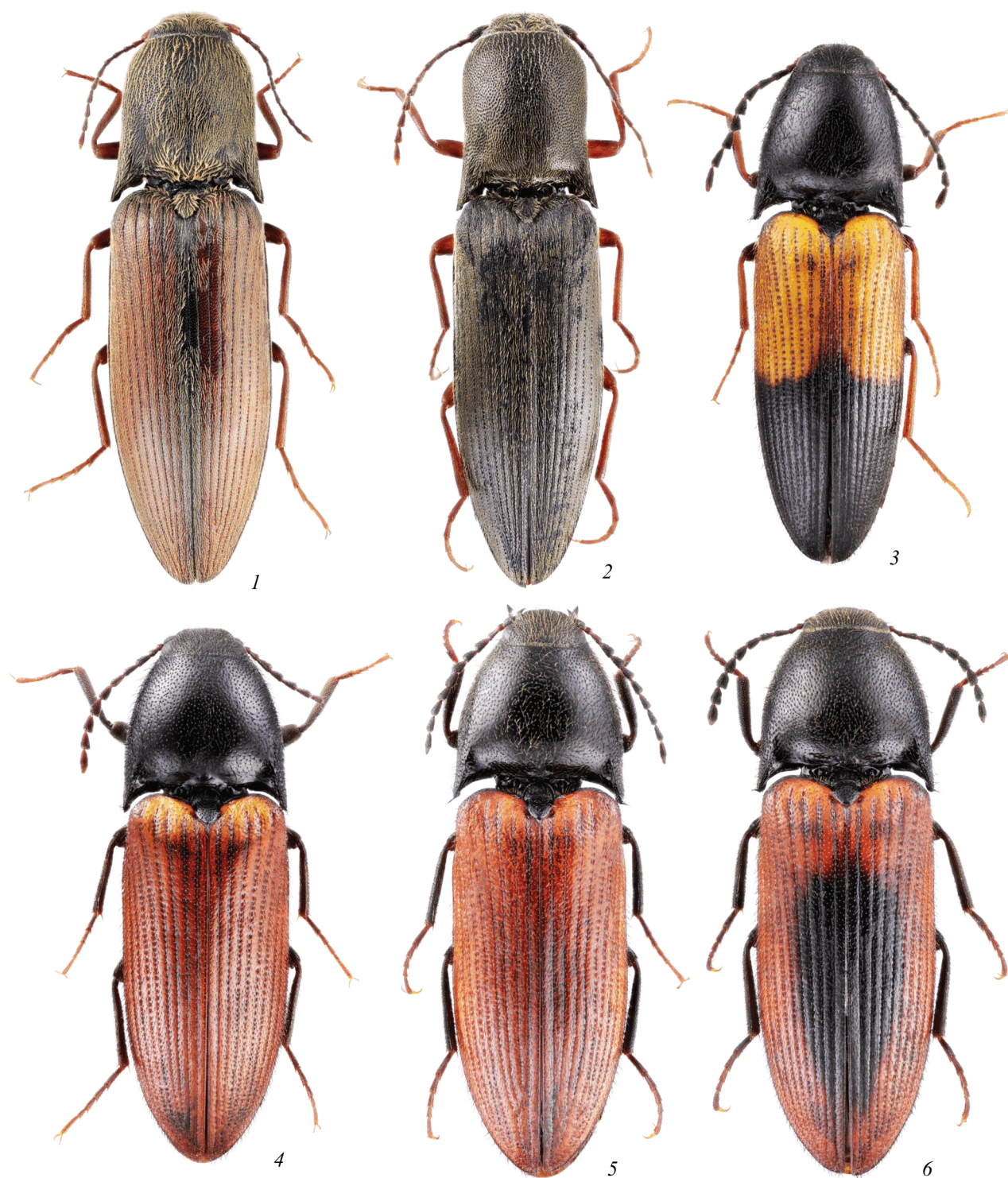


Fig. 5. Elateridae, habitus, dorsal view: (1) *Ectinus dahuricus dahuricus* (Cand.), female (13.1 mm; 6); (2) *E. piloselloides* (Schw.), female (14.4 mm; 8); (3) *Ampedus patricius* (Gur.), female (9.4 mm; 6); (4) *A. pomorum* (Hbst.), male (9.8 mm; 6); (5) *A. sanguinolentus sanguinolentus* (Schrnk.), male (10.7 mm; 1); (6) *A. sanguinolentus sanguinolentus*, female (10.5 mm; 6).

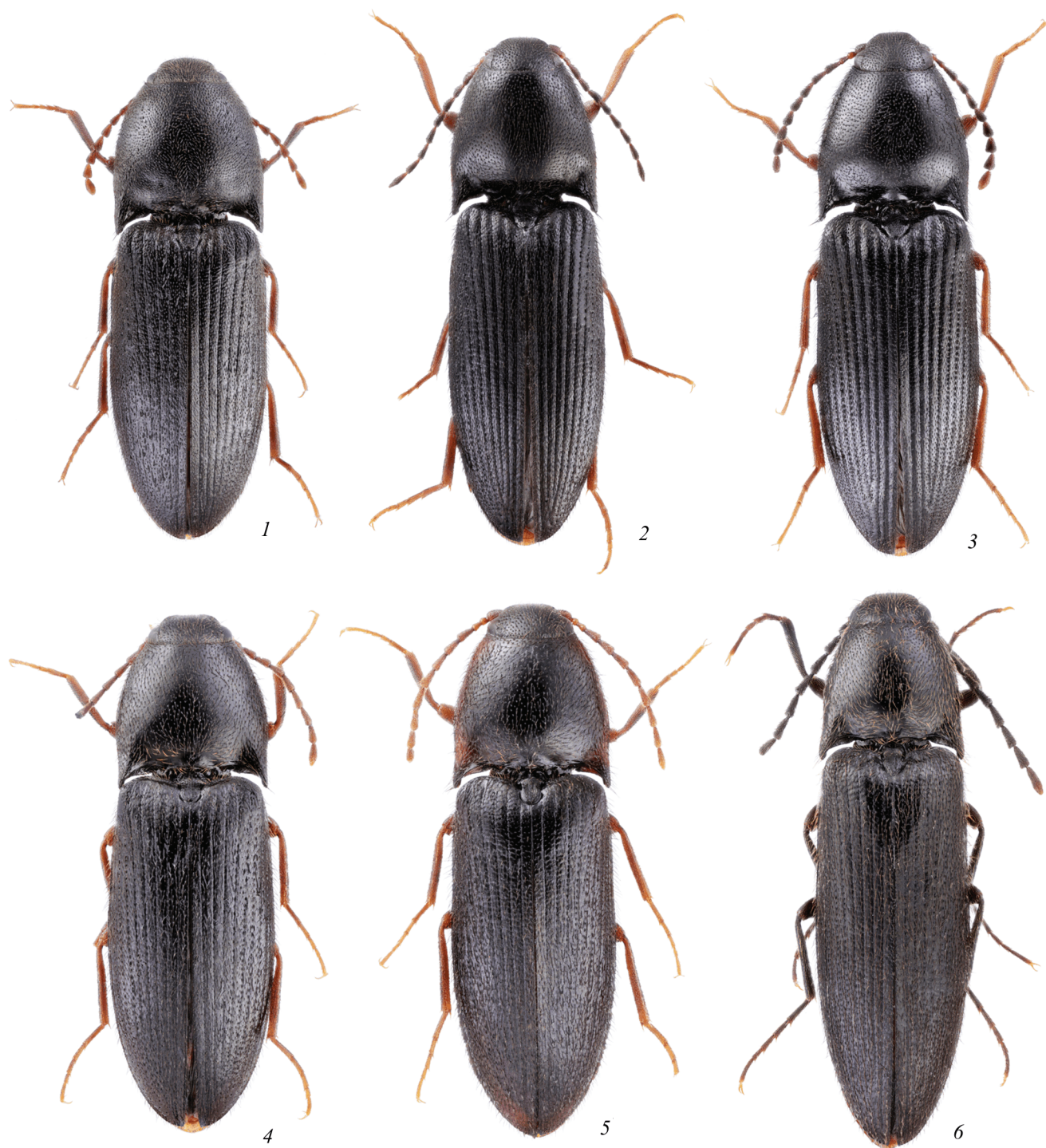


Fig. 6. *Ampedus* spp., males, habitus, dorsal view: (1) *A. sobrinus* (Motsch.) (8.3 mm; 18); (2) *A. dilutipes* (Motsch.) (8.1 mm; 14); (3) *A. dilutipes* (9.3 mm; 12); (4) *A. silvaticus* Gur. (7 mm; 25); (5) *A. silvaticus* (7 mm; 15); (6) *A. nigror* (Rtt.) (7.2 mm; 18).

Taxonomic notes. *Ampedus adrastoides* clearly differs from the closely related species (*A. nigrinus* (Herbst, 1784), *A. gurjevae* Dolin et Ôhira, 1976, and *A. saghalensis* Dolin et Ôhira, 1976) in a less elongate body,

a round scutellum, and reddish brown legs. The structure of the aedeagus (Fig. 12, 2) and the arrangement of the sclerites in the bursa copulatrix of *A. adrastoides* (Fig. 13, 2) also noticeably differ from those of these

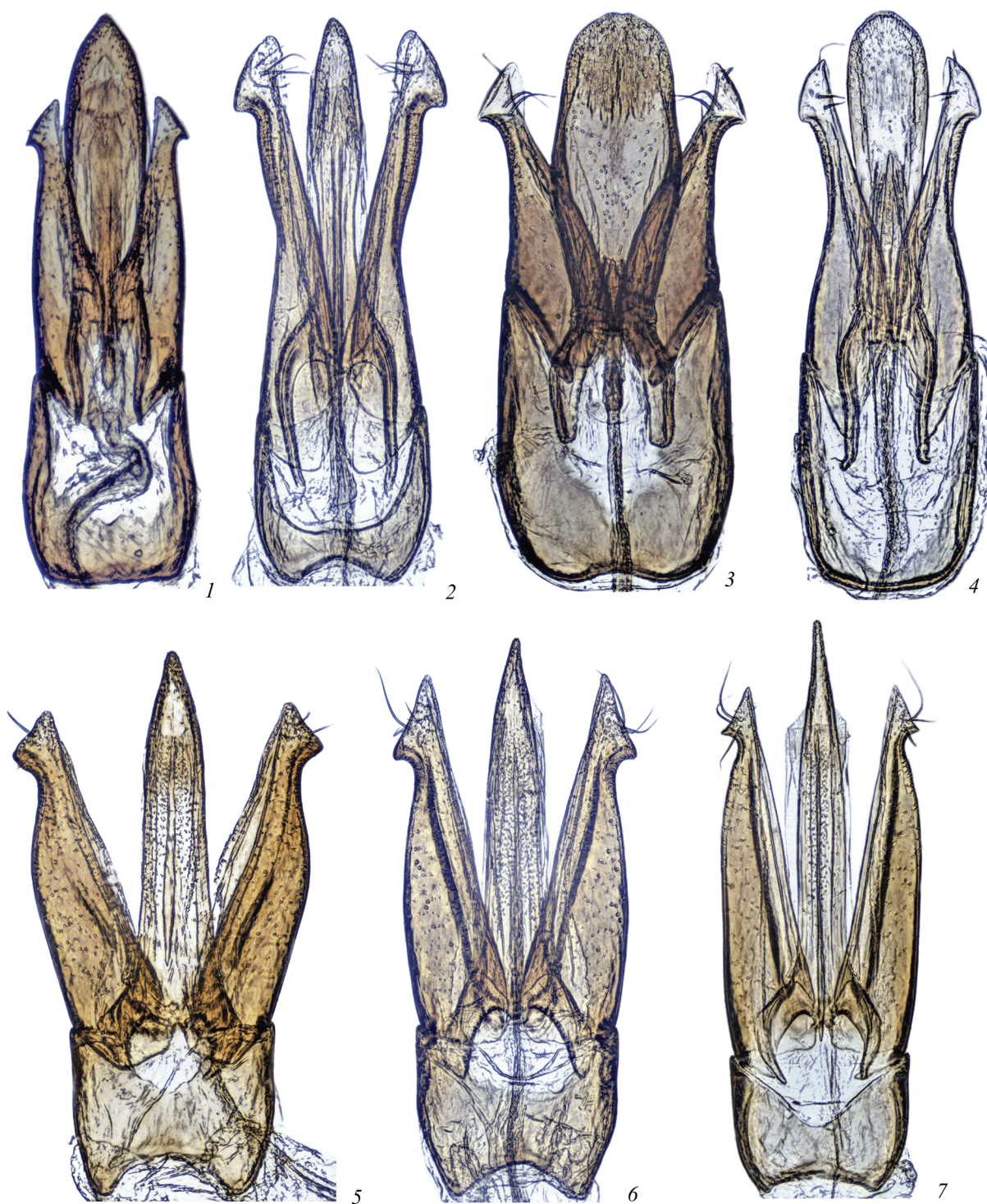


Fig. 7. Elateridae, aedeagus, ventral view: (1) *Agriotes zinovjevi* Gur. (8.8 mm; 9); (2) *A. koltzei* Rtt. (7.3 mm; 4); (3) *Dalopius puerilis* (Cand.) (6.9 mm; (Primorskii Territory, Lazovskii Nature Reserve); (4) *D. singeri* Brančsik (6 mm; 24); (5) *Ampedus sobrinus* (Motsch.) (8.3 mm; 18); (6) *A. dilutipes* (Motsch.) (9.3 mm; 12); (7) *A. nigror* (Rtt.) (7.2 mm; 18).

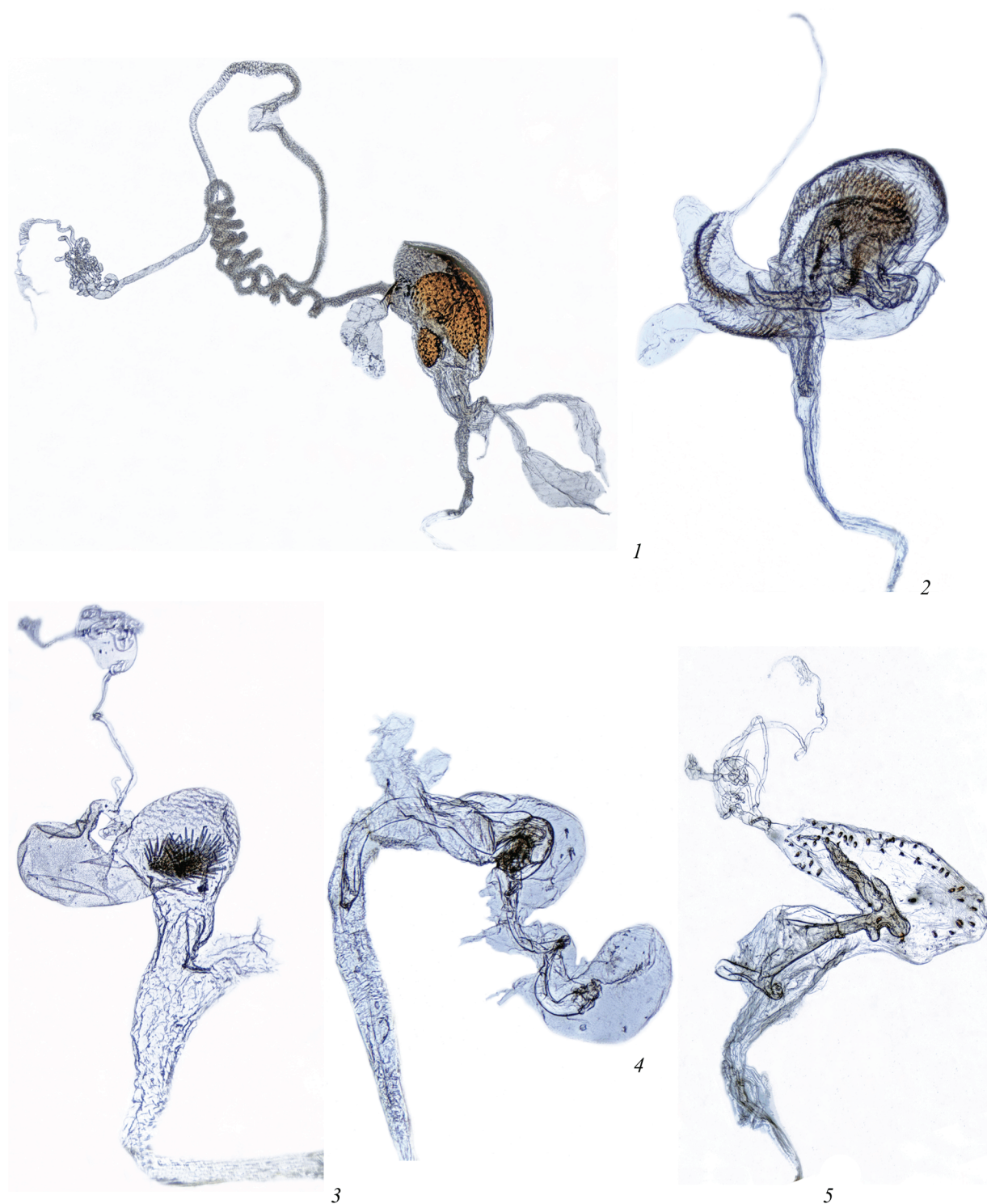


Fig. 8. Elateridae, female genital tract, general view: (1) *Agriotes zinovjevi* Gur. (9.3 mm; Primorskii Territory, Lazovskii Nature Reserve); (2) *A. koltzei* Rtt. (7.7 mm; **18**); (3) *Dalopius puerilis* (Cand.) (6.8 mm; **14**); (4) *D. singeri* Brančsik (6.7 mm; **24**); (5) *Ampedus dilutipes* (Motsch.) (9.6 mm; **8**).

species. It cannot be ruled out that *A. adrastoides* should be attributed to the *A. balteatus* species-group, as it is similar in a number of characters to *A. lepidus* (Mäklin, 1878) and *A. silvaticus* Gurjeva, 1977 which are included in this species-group (see below). To clarify the position of *A. adrastoides* in the classification of the genus, the characters of the genitalia in the species of these groups should be examined in detail, and the taxonomic significance of the characters traditionally used for distinguishing species-groups in the genus *Ampedus* should be carefully estimated. The disputable taxonomic significance of some of these characters was noted earlier (Vuataz et al., 2019).

The drawing of the female genital tract of *A. adrastoides* (Fig. 13, 2) is given for the first time.

11. *Ampedus (Ampedus) alinensis*

Platia et Pulvirenti, 2020

Platia et al., 2020 : 21 – environs of “Yasnaya” cordon (45°14'N, 136°31'E).

Material. This species has not been found by us in the Sikhote-Alin Nature Reserve.

Distribution. Endemic to Primorskii Territory. The species is known based only on two females collected in the territory of Terneiskii District (the environs of “Yasnaya” cordon).

Biology. The biology has not been investigated; the larva is unknown. Most likely, a very rare species.

Taxonomic notes. According to the characters listed in the description, this species belongs to the *A. balteatus* group and is most closely related to *A. silvaticus* from which it differs in more elongate and bicolored elytra. However, it is known that the elytra in a number of the species of *Ampedus* vary rather widely in coloration and shape (Gurjeva, 1979). The status of *A. alinensis* can be clarified after examination of additional material and the characters of the genital structure of this species, which were not considered in the description.

12. *Ampedus (Ampedus) cognatus* Gurjeva, 1977 (Fig. 9, 5; Fig. 11, 4; Fig. 12, 6; Fig. 13, 6)

Material. 5 specimens. **4:** 14.VI.2018, 1 specimen. **6:** 16.VI.2017, 1 specimen. **8:** 14–17.VII.2017, 1 specimen.

cimen. 26: 17.VI.2015, 1 specimen. **UL:** 22.VII.2015, 1 specimen.

Distribution. Endemic to Primorskii Territory (Prosvirov, 2009). It is not excluded that it is this species that is indicated as *Ampedus* sp. for Jeju Island (South Korea) (Kishii and Paik, 2002); however, the data given in this publication are insufficient for accurate identification of the taxon.

Biology. The biology has not been investigated; though the larvae are unknown, judging by the records of overwintering adults, they develop in rotten wood and under the bark of deciduous trees (Gurjeva, 1979). A rare species.

Taxonomic notes. The body lengths of the specimens examined by us are noticeably smaller (about 8.5–10 mm long) than that indicated in the literature (11–11.5 mm) (Gurjeva, 1977, 1979, 1989a); the coloration of the antennae is also somewhat different from that indicated for this species: they are not uniformly yellowish red but darkened to a certain extent. Judging by this data, the length of the body and coloration of the antennae of *A. cognatus* vary rather widely.

The drawings of the aedeagus (Fig. 12, 6) and the female genital tract (Fig. 13, 6) of this species are given for the first time.

13. *Ampedus (Ampedus) dilutipes*

(Motschulsky, 1860)

(Fig. 6, 2, 3; Fig. 7, 6; Fig. 8, 5; Fig. 10, 1)

Material. 17 specimens. **1:** 6.VII.2017, 1 specimen. **3:** 13.VI.2015, 1 specimen. **4:** 14.VI.2015, 1 specimen. **6:** 28.V.2017, 1 specimen; 2.VI.2016, 1 specimen; 3.VI.2018, 1 specimen. **8:** 4.VI.2018, 1 specimen; 14–17.VII.2017, 1 specimen. **9:** 26.VII.2018, 1 specimen. **11:** 11.V.2018, 1 specimen; 15.VI.2018, 1 specimen; 27.VI.2018, 1 specimen. **12:** 18.V.2017, 1 specimen. **13:** 15.V.2015, 2 specimens. **14:** 30.V–1.VI.2017, 1 specimen; 11.VII.2018, 1 specimen.

Distribution. Russia: the south of the Far East (including the islands). North-Eastern China, North Korea (Prosvirov, 2009; Platia and Németh, 2011).

Biology. The adults were recorded in oak-larchen and coniferous-broadleaf forests; the larva is unknown (Gurjeva, 1989a). A common species.



Fig. 9. *Ampedus* spp., males, habitus, dorsal view: (1) *A. saghaliensis* Dol. et Ôh. (7.2 mm; 27); (2) *A. picitarsis* (Motsch.) (6.7 mm; 13); (3) *A. nigrinus* (Hbst.) (6.2 mm; 18); (4) *A. pallipes* (Kr.) (10 mm; 14); (5) *A. cognatus* Gur. (8.6 mm; UL); (6) *A. gagatinus* (Cand.) (12 mm; 8).

Taxonomic notes. Among the specimens examined by us, some had partly darkened antennal segments, whereas they are uniformly reddish brown in *A. dilutipes*, according to the literature (Gurjeva, 1979, 1989a).

The drawing of the female genital tract of this species (Fig. 8, 5) is given for the first time.

14. *Ampedus (Ampedus) fulvipes* (Motschulsky, 1860)
(Fig. 13, 5; Fig. 16, 1, 2)

Material. 2 specimens. 5: 21.VI.2016, 1 specimen. 6: 28.V.2017, 1 specimen.

Distribution. Russia: the south of the Far East. North Korea (Prosvirov, 2009; Platia and Németh, 2011).

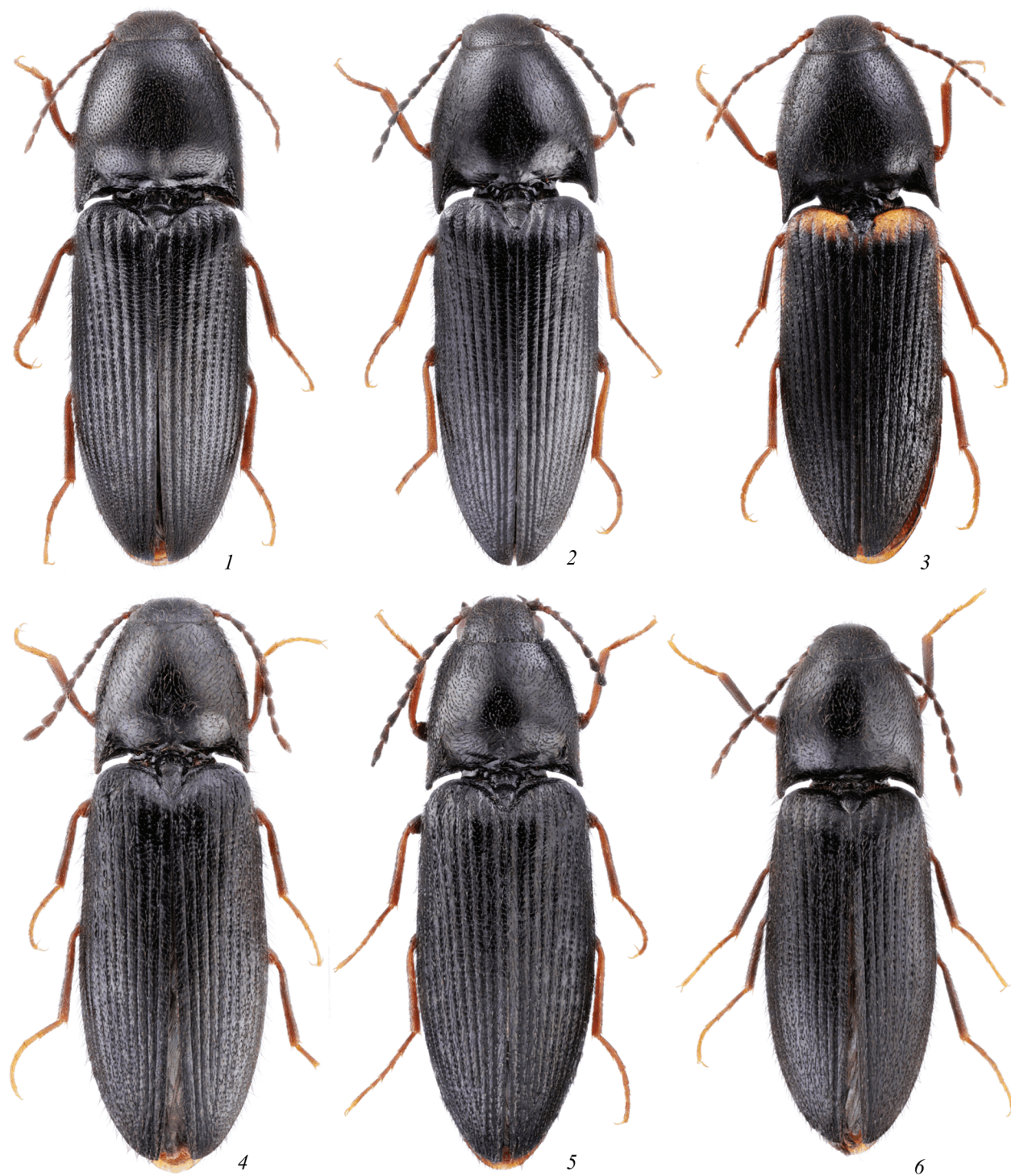


Fig. 10. *Ampedus* spp., females, habitus, dorsal view: (1) *A. dilutipes* (Motsch.) (9.6 mm; 8); (2) *A. mamajevi* Dol. et Ôh. (9.3 mm; UL); (3) *A. mannerheimi* Suz. (9.4 mm; 20); (4) *A. saghaliensis* Dol. et Ôh. (7 mm; 18); (5) *A. picitarsis* (Motsch.) (7.8 mm; 13); (6) *A. nigrinus* (Hbst.) (6.4 mm; 14).

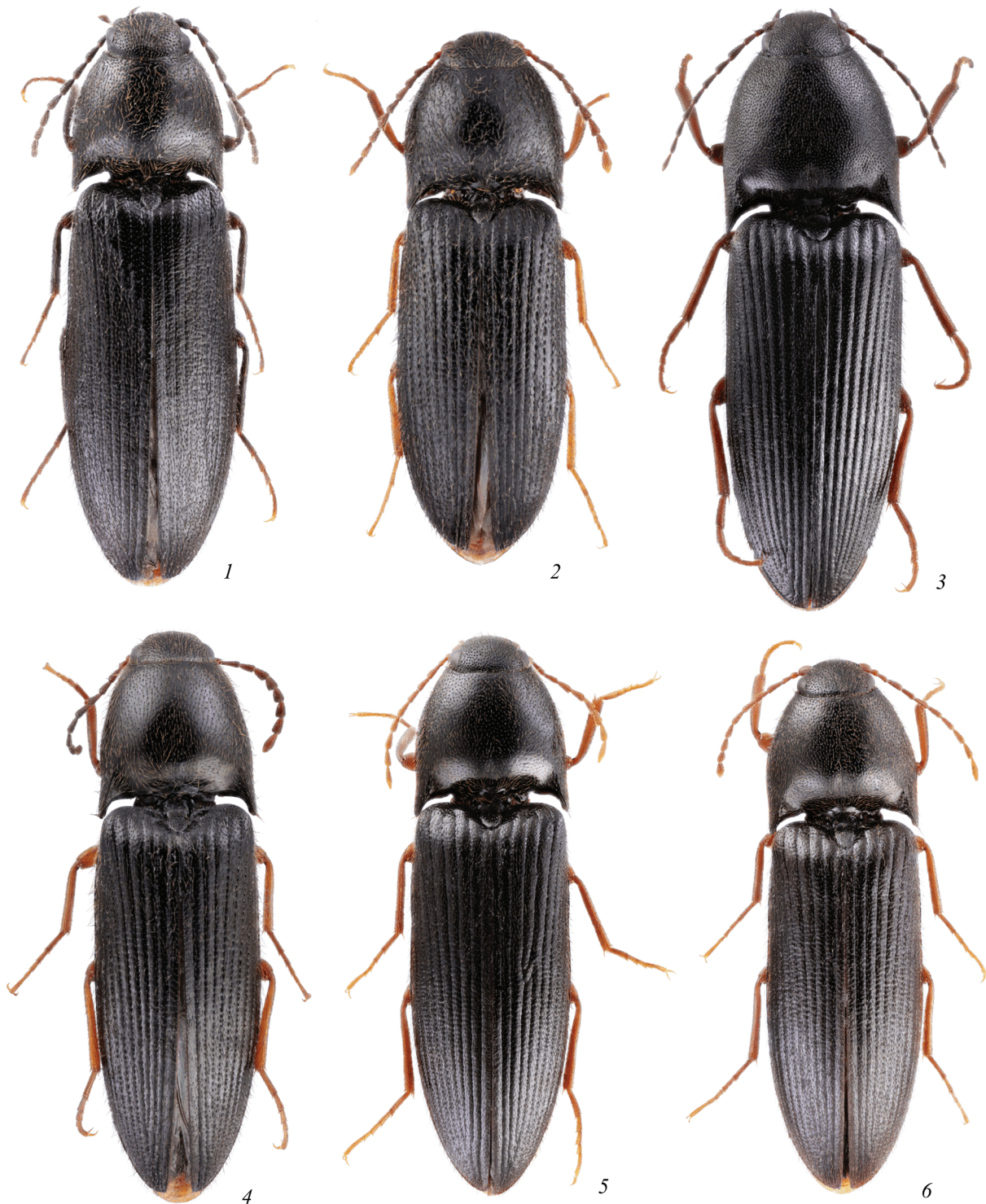


Fig. 11. *Ampedus* spp., females, habitus, dorsal view: (1) *A. nigror* (Rtt.) (8.5 mm; 26); (2) *A. adrastoides* (Rtt.) (5.6 mm; 11); (3) *A. gagatinus* (Cand.) (14.4 mm; 20); (4) *A. cognatus* Gur. (10 mm; 8); (5) *A. pallipes* (Kr.) (10.5 mm; 28); (6) *A. pallipes* (10.5 mm; 23).

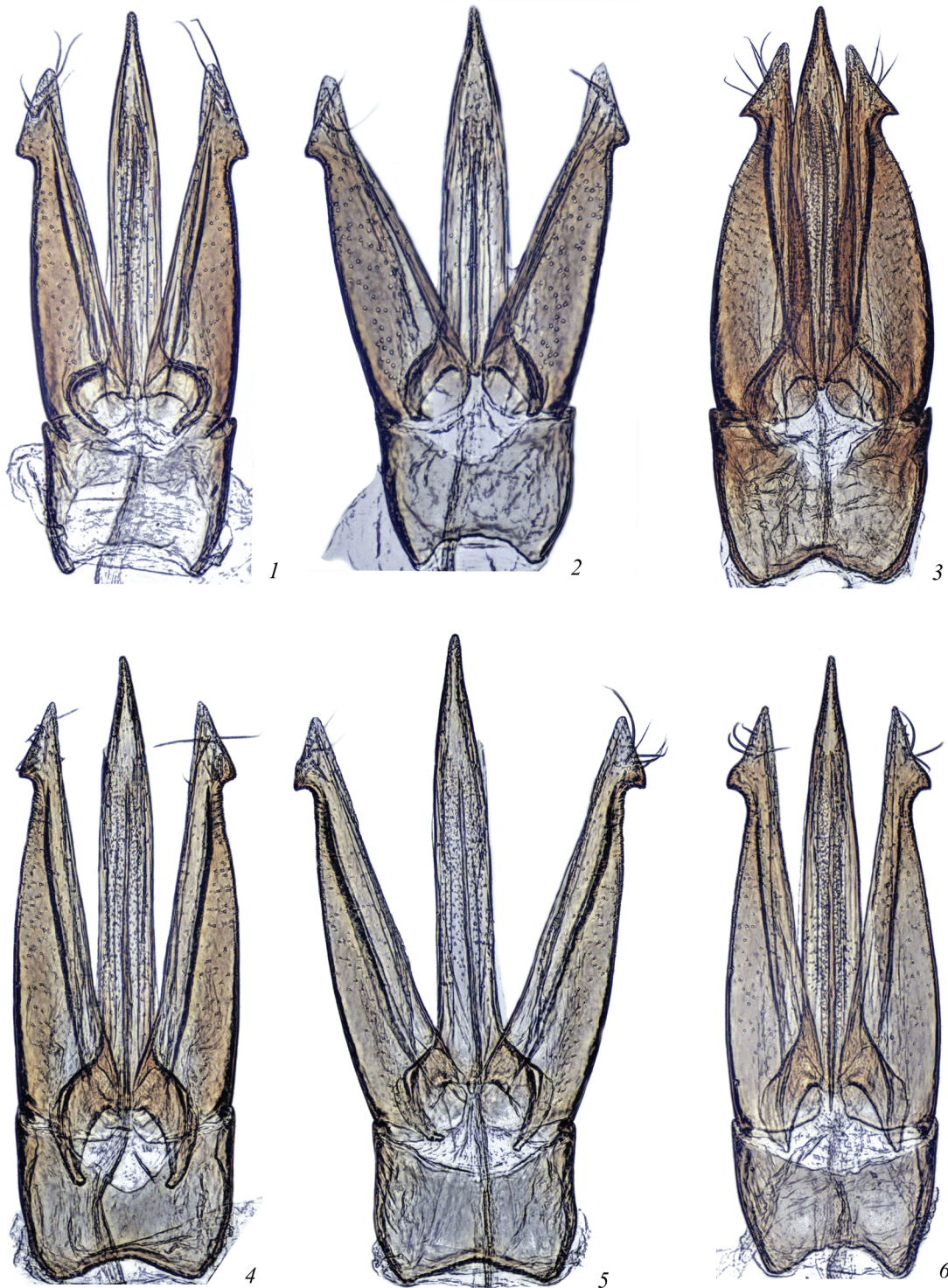


Fig. 12. *Ampedus* spp., aedeagus, ventral view: (1) *A. silvaticus* Gur. (7 mm; 25); (2) *A. adrastoides* (Rtt.) (5.4 mm; Primorskii Territory, Ussuri Nature Reserve); (3) *A. gagatinus* (Cand.) (12 mm; 8); (4) *A. pallipes* (Kr.) (10 mm; 14); (5) *A. pallipes* (9.6 mm; 26); (6) *A. cognatus* Gur. (8.6 mm; UL).

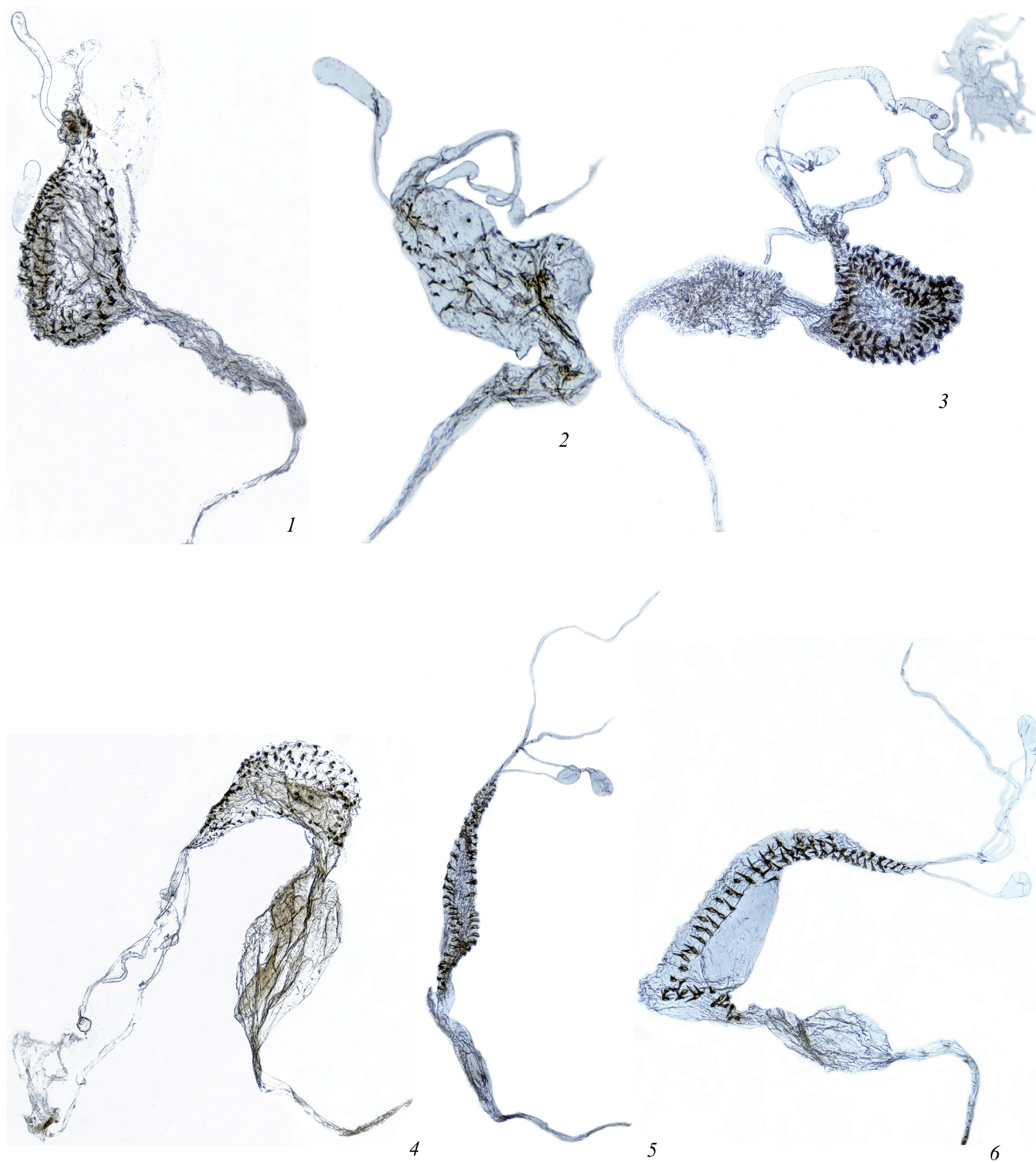


Fig. 13. *Ampedus* spp., female genital tract, general view: (1) *A. nigror* (Rtt.) (8.3 mm; 22); (2) *A. adrastoides* (Rtt.) (5.8 mm; 7); (3) *A. gagatinus* (Cand.) (14.4 mm; 20); (4) *A. pallipes* (Kr.) (10.5 mm; 28); (5) *A. fulvipes* (Motsch.) (11.8 mm; 6); (6) *A. cognatus* Gur. (10 mm; 8).

Biology. The biology has not been investigated; the larva is unknown. A rare species.

Taxonomic notes. One of the specimens examined by us has partly darkened antennal segments, whereas, according to the literature data (Gurjeva, 1979, 1989a), they are uniformly brownish red in *A. fulvipes*. *Ampedus sanorum* Kishii, 2002 described from Jeju Island (South Korea) (Kishii and Paik, 2002) is very closely related to *A. fulvipes* in a number of characters. These taxa may be conspecific.

The drawing of the female genital tract of *A. fulvipes* (Fig. 13, 5) is given for the first time.

15. *Ampedus (Ampedus) gagatinus* (Candèze, 1895)
(Fig. 9, 6; Fig. 11, 3; Fig. 12, 3; Fig. 13, 3)

Gurjeva, 1979 : 237 – Podnebesnyi spring-well in Terneiskii District.

Material. 10 specimens. **8:** 9.VIII.2018, 1 specimen. **11:** 15.VI.2018, 1 specimen. **14:** 18.V.2016, 1 specimen. **18:** 29.V.2015, 1 specimen. **20:** 1–4.VII.2019, 1 specimen. **23:** 19.VII.2016, 1 specimen. **26:** 15.VI.2016, 1 specimen; 17.VI.2015, 1 specimen; 18.VI.2015, 1 specimen. **27:** 17.V.2018, 1 specimen.

Distribution. Russia: Southwestern and Eastern Siberia, the south of the Far East. Kazakhstan, Mongolia, North-Eastern China (Gurjeva, 1989a; Cate et al., 2007; Jarzabek-Müller and Németh, 2014).

Biology. This species inhabits mountain coniferous forests; the larva is unknown (Gurjeva, 1989a; Jarzabek-Müller and Németh, 2014). A relatively rare species.

Taxonomic notes. It is noteworthy that the outer part of the parameres of *A. gagatinus* is covered with small setae below the subapical tooth (Fig. 12, 3), which extremely rarely occurs in the species of *Ampedus*. In addition to *A. gagatinus*, a similar chaetotaxy of the parameres is also characteristic of *A. nigerrimus* (Lacordaire, 1835) distributed in the Western Palearctic Region and of the Japanese *A. hypogastricus* (Candèze, 1873), *A. japonicus* Silfverberg, 1977, and *A. vestitus* (Lewis, 1894) (Kishii, 1961, 1988; Dajoz, 1962; Ôhira, 1974). All these species are also closely related to *A. gagatinus* in the external characters and may constitute one phylogenetic group.

A detailed drawing of the female genital tract of *A. gagatinus* (Fig. 13, 3) is given for the first time.

16. *Ampedus (Ampedus) mamajevi* Dolin et Ôhira, 1976 (Fig. 10, 2; Fig. 14, 1; Fig. 15, 1)

Material. UL: 23–27.VII.2015, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (including the islands) (Gurjeva, 1989a).

Biology. The biology of the adults and larvae has not been investigated. A rare species.

Taxonomic notes. The diagnostic characters of this species indicated in the original description and in the subsequent publications differ in some details. The authors of the description (Dolin and Ôhira, 1976) compare *A. mamajevi* to *A. nigrinus* from which they distinguish it by a finer and sparser punctuation of the pronotum, distinctly serrate antennae, and smooth elytra intervals. According to Gurjeva (1979, 1989a), *A. mamajevi* differs from the closely related species (*A. ordinarius* Gurjeva, 1970 and *A. picitarsis* (Motschulsky, 1860)) in the presence of a raised longitudinal carina in the posterior 1/3 of the scutellum, in a dense punctuation of the pronotum, and in the shape of the aedeagus. The female examined by us has a relatively sparse punctuation of the pronotum and no pronounced carina on the scutellum; the other characters fit the description of the species. To clarify the diagnosis of *A. mamajevi* and the degree of its variability in some characters, additional material should be examined.

The drawing of the female genital tract of *A. mamajevi* (Fig. 14, 1) is given for the first time.

17. *Ampedus (Ampedus) mannerheimi*
W. Suzuki, 2013
(Fig. 10, 3)

Material. 5 specimens. **6:** 19.VIII.2016, 1 specimen. **14:** 5.VII.2015, 1 specimen. **18:** 27.IV.2015, 1 specimen; 27.V.2015, 1 specimen. **20:** 1–4.VII.2019, 1 specimen.

Distribution. Russia: Eastern Siberia, the south of the Far East (including the islands). Mongolia, North-Eastern China, South Korea, Japan (Prosvirov, 2009, as *A. basalis* (Mannerheim, 1852); Suzuki, 2013).

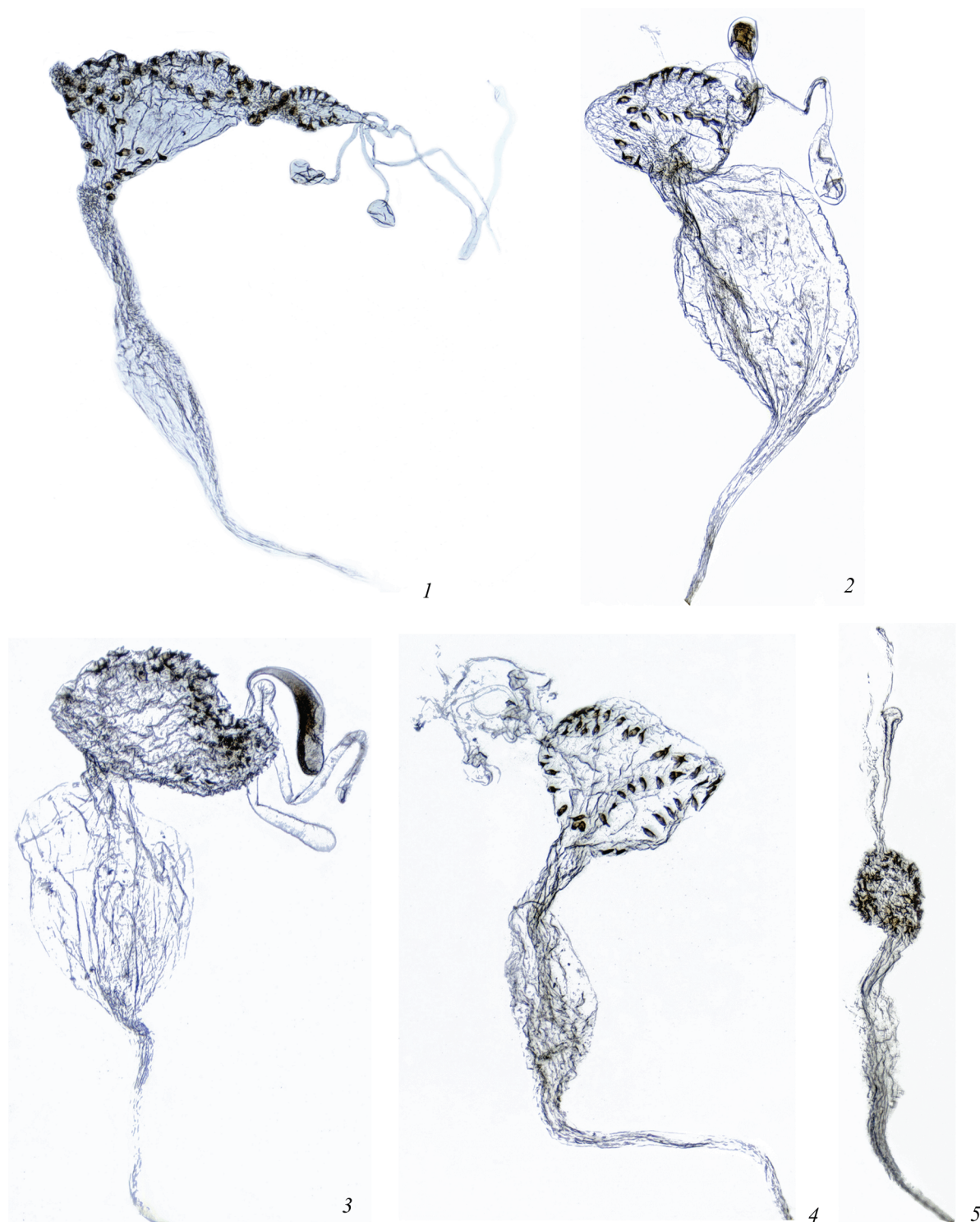


Fig. 14. *Ampedus* spp., female genital tract, general view: (1) *A. mamajevi* Dol. et Ôh. (9.3 mm; **UL**); (2) *A. ordinarius* Gur. (7.9 mm; **6**); (3) *A. saghalensis* Dol. et Ôh. (7 mm; **18**); (4) *A. picitarsis* (Motsch.) (7.8 mm; **13**); (5) *A. nigrinus* (Hbst.) (6.4 mm; **14**).

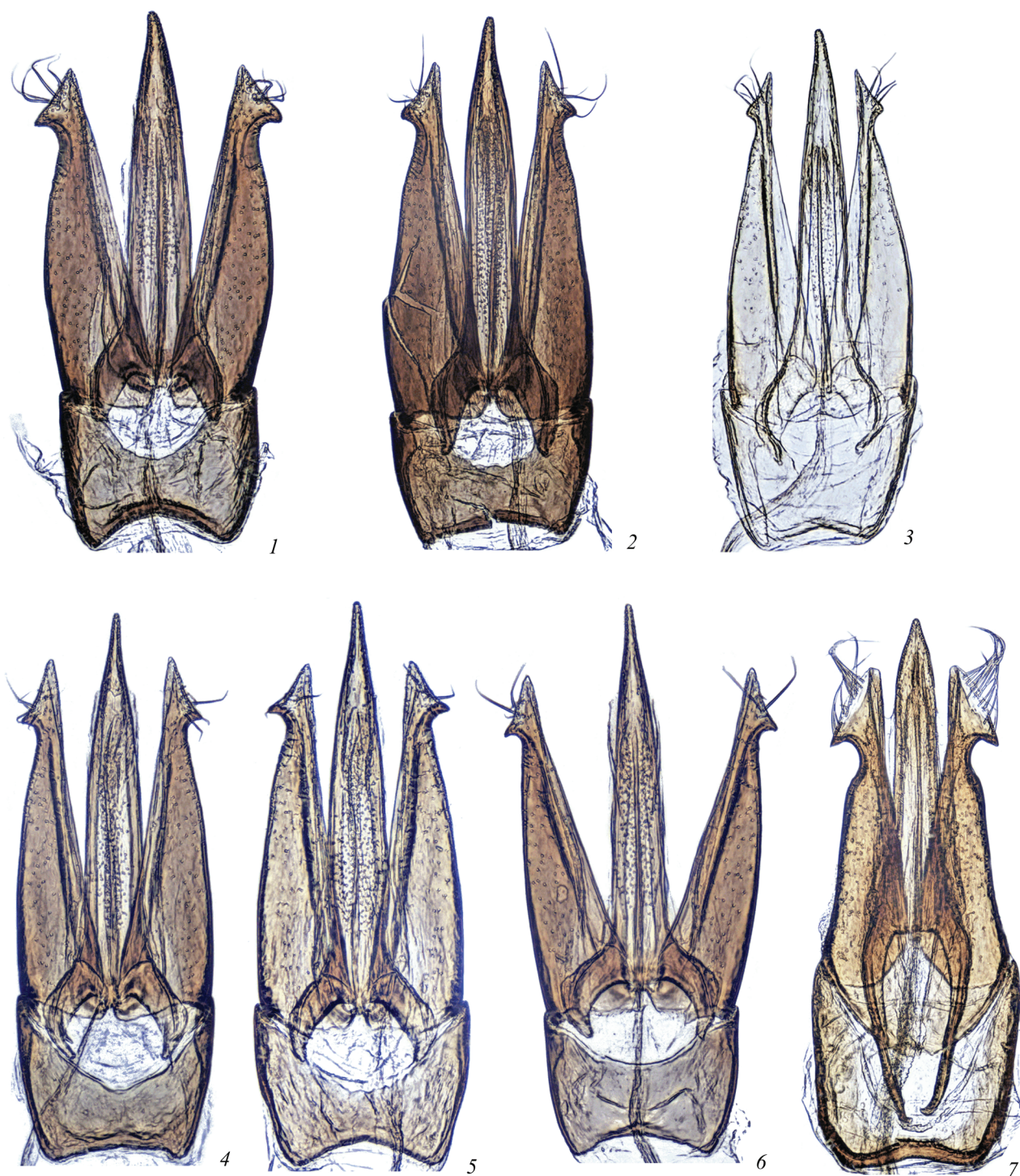


Fig. 15. Elateridae, aedeagus, ventral view: (1) *Ampedus mamajevi* Dol. et Ôh. (7.5 mm; Primorskii Territory, Lazovskii Nature Reserve); (2) *A. ordinarius* Gur. (11.9 mm; Primorskii Territory, Lazovskii Nature Reserve) [slide is partly damaged]; (3) *A. picitarsis* (Motsch.) (6.7 mm; 13); (4) *A. saghaliensis* Dol. et Ôh. (6.6 mm; 18); (5) *A. saghaliensis* (7.2 mm; 27); (6) *A. nigrinus* (Hbst.) (6.2 mm; 18); (7) *Melanotus pygmaeus* Step. (8.6 mm; 6).

Biology. This species inhabits coniferous and mixed forests; the larvae develop in the rotten wood of coniferous trees (Gurjeva, 1989a). A rare species.

18. *Ampedus (Ampedus) motschulskyi* Gurjeva, 1979

Gurjeva, 1979 : 215 – Krasnoarmeiskii District, Sibichi [Sibichi Vill. (now Glubinnoe Vill.)].

Material. This species has not been found by us in the Sikhote-Alin Nature Reserve.

Distribution. Endemic to the south of the Russian Far East (Prosvirov, 2009).

Biology. The biology has not been investigated; the larva is unknown. A rare species.

19. *Ampedus (Ampedus) nigrinus* (Herbst, 1784)

(Fig. 9, 3; Fig. 10, 6; Fig. 14, 5; Fig. 15, 6)

Gromyko and Potikha, 2006 : 241: Sikhote-Alin Nature Reserve.

Material. 17 specimens. **3:** 10.VIII.2018, 1 specimen. **5:** 21.VI.2016, 2 specimens. **9:** 1.V.2018, 1 specimen. **11:** 1.VII.2018, 1 specimen. **13:** 15.V.2015, 1 specimen. **14:** 19.IV.2015, 1 specimen; 18–29.V.2017, window trap, 1 specimen; 2–5.VI.2017, window trap, 1 specimen; 4.VII.2015, 1 specimen; 5.VII.2015, 1 specimen. **18:** 25.VI.2019, 1 specimen. **23:** 19.VII.2016, 1 specimen. **25:** 22.V.2018, 1 specimen. **27:** 17.V.2018, 2 specimens. **28:** 22.V.2018, 1 specimen.

Distribution. The taiga zone of Eurasia and North America (Cate et al., 2007; Németh et al., 2017).

Biology. This species mainly inhabits coniferous forests; the larvae develop in the decaying wood of mainly coniferous trees, less frequently, in litter (Gurjeva, 1989a). A common species.

Taxonomic notes. The shape of the aedeagus in the specimens examined by us (Fig. 15, 6) noticeably differs from that of *A. nigrinus* represented in Gurjeva's (1979) and Platia's (1994) monographs, but corresponds to that of *A. nigrinus* in the drawings given in the other publications (Gurjeva, 1957; Leseigneur, 1972; Laibner, 1979; Dolin, 1988; Wurst and Kaupp, 1995), which may be caused by individual variability of this species in the structure of the genitalia or by a distortion of proportions

in the drawings. To clear this question additional material should be examined.

The drawing of the female genital tract of *A. nigrinus* (Fig. 14, 5) is given for the first time.

20. *Ampedus (Ampedus) nigror* (Reitter, 1896)

(Fig. 6, 6; 7, 7; 11, 1; 13, 1)

Gurjeva, 1979 : 191 – Zimoveinyi spring-well of Krasnoarmeiskii District [the following toponym may be meant: Terneiskii District, Zimoveinyi spring-well].

Material. 5 specimens. **14:** 18–29.V.2017, window trap, 1 specimen. **18:** 3–4.VII.2017, 2 specimens. **22:** 12.VI.2017, 1 specimen. **26:** 17.VI.2015, 1 specimen.

Distribution. Russia: Siberia, the south of the Far East (including the islands) (Prosvirov, 2009).

Biology. This species mainly inhabits coniferous forests; the larvae develop in the rotten wood of firs and larches, less frequently in litter (Gurjeva, 1989a). A rare species.

Taxonomic notes. The shape of the aedeagus in the specimens examined by us (Fig. 7, 7) noticeably differs from that of *A. nigror* represented in the drawings in Gurjeva's publications (1979, 1989a), but, at the same time, corresponds to that in a drawing given in an earlier publication of the same author (Gurjeva, 1957). This may be caused by individual variability of this species in the structure of the genitalia or by a distortion of proportions in the drawings. This question may be clarified after examination of additional material.

The drawing of the female genital tract of *A. nigror* (Fig. 13, 1) is given for the first time.

21. *Ampedus (Ampedus) ordinarius* Gurjeva, 1970

(Fig. 14, 2; Fig. 15, 2; Fig. 16, 3, 4)

Material. 6 specimens. **3:** 23.VI.2016, 1 specimen. **6:** 8.VII.2015, 1 specimen. **14:** 5.VII.2015, 3 specimens; 12.VII.2017, window trap, 1 specimen.

Distribution. Endemic to Primorskii Territory (earlier it was known only based on two males from the type locality).

Biology. The biology has not been investigated; the larva is unknown. A rare species.

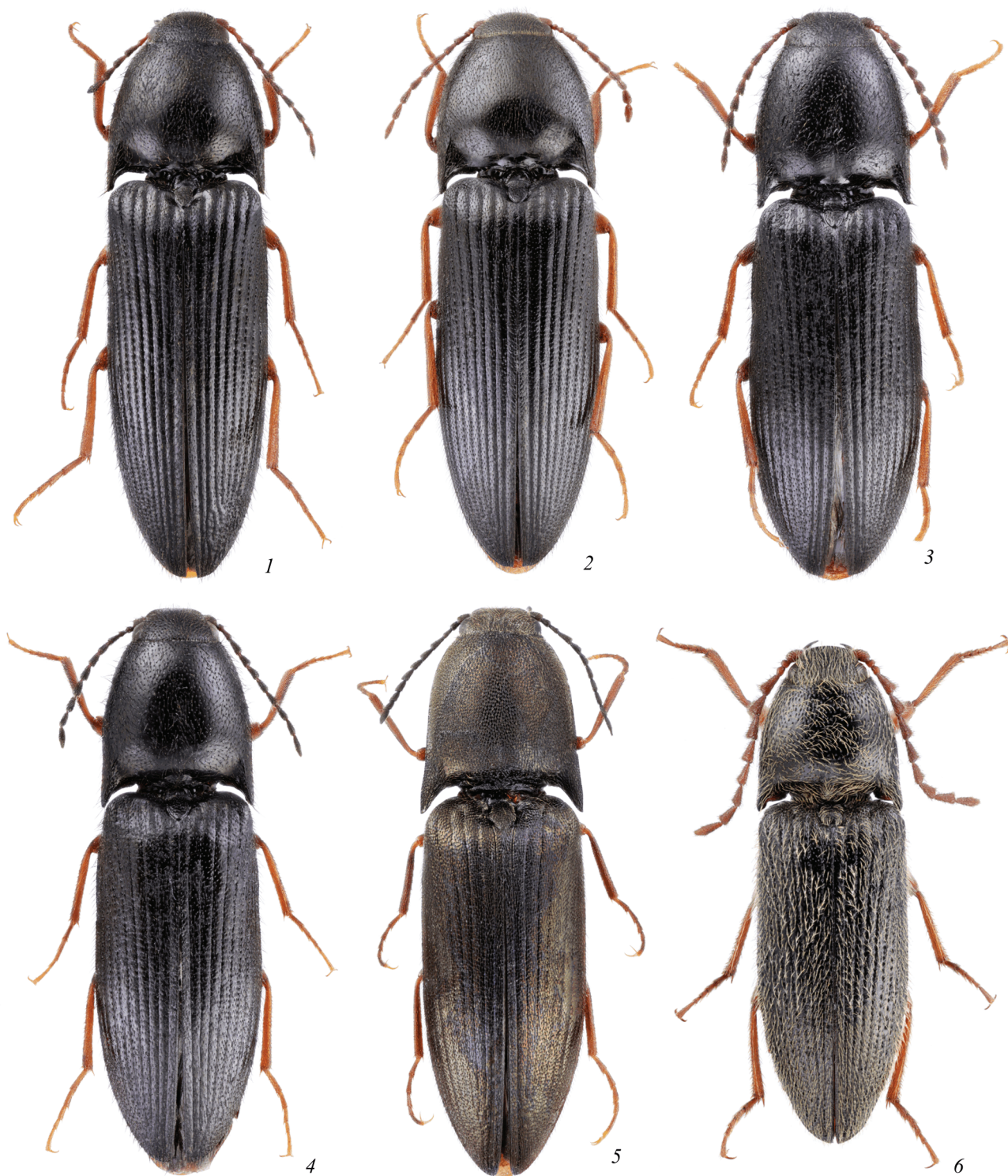


Fig. 16. Elateridae, habitus, dorsal view: (1) *Ampedus fulvipes* (Motsch.), female (10.9 mm; 5); (2) *A. fulvipes*, female (11.8 mm; 6); (3) *A. ordinarius* Gur., female (8.7 mm; 14); (4) *A. ordinarius*, female (8.9 mm; 3); (5) *Sericus fujisanus* (Lew.), female (8.7 mm; 1); (6) *Melanotus pygmaeus* Step., male (8.6 mm; 6).

Taxonomic notes. All the specimens collected in the territory of the nature reserve are females and fit the diagnosis of *A. ordinarius* in a complex of characters. They differ from the males in a more convex body, shorter antennae (not reaching the apices of the posterior angles of the pronotum by about the length of 1.5 segments), in the pronotum more regularly narrowed anteriorly, and in shorter elytra (less than 3 times as long as the pronotum). The antennal segments in the specimens examined by us are noticeably darkened, whereas, according to the literature data (Gurjeva, 1979), the antennae in this species are reddish yellow. It is also noteworthy that the aedeagus in the specimen of *A. ordinarius* from the Lazovskii Nature Reserve examined by us noticeably differs in structure from that represented in a drawing in the original description of *A. ordinarius* (Dolin and Gurjeva, 1970). This may be caused by individual variability of this species in the structure of the genitalia or by a distortion of proportions in the drawing. This question can be clarified after examination of additional material.

The drawing of the female genital tract of *A. ordinarius* (Fig. 14, 2) is given for the first time.

22. *Ampedus (Ampedus) pallipes* (Kraatz, 1879)
(Fig. 9, 4; Fig. 11, 5, 6; Fig. 12, 4, 5; Fig. 13, 4)

Material. 24: 9.VI.2016, 1 specimen. 26: 17.VI.2015, 1 specimen; 18.VI.2015, 1 specimen. 27: 17.V.2018, 1 specimen.

Distribution. Russia: Southwestern and Eastern Siberia, the south of the Far East (including the islands). Mongolia, Northern China, North Korea (Gurjeva, 1989a; Cate et al., 2007).

Biology. This species inhabits coniferous forests; the larvae develop in the rotten wood of coniferous trees; they have not been described (Gurjeva, 1989a). A relatively rare species.

Taxonomic notes. In the specimens of *A. pallipes* examined by us the apical part of the parameres varies in shape (Fig. 12, 4, 5). In addition, some of these specimens have darkened antennal segments, whereas, according to the literature data (Gurjeva, 1979, 1989a), the antennae of *A. pallipes* are uniformly pale brown.

The drawing of the female genital tract of this species (Fig. 13, 4) is given for the first time.

23. *Ampedus (Ampedus) patricius* (Gurjeva, 1957)
(Fig. 5, 3)

Gurjeva, 1979 : 190 – Perevalnaya River valley in Krasnoarmeiskii District; Gromyko, 1982 : 178 (*A. patricius* [sic!]) – Sikhote-Alin Nature Reserve.

Material. 6: 13.V.2016, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (Gurjeva, 1989a).

Biology. This species inhabits coniferous-broadleaf forests, the ecology of the larvae is unknown (Gurjeva, 1989a). A rare species.

Taxonomic notes. Along with the typically bicolored elytra, some specimens have unicolored red-orange elytra.

24. *Ampedus (Ampedus) picitarsis*
(Motschulsky, 1860)

(Fig. 9, 2; Fig. 10, 5; Fig. 14, 4; Fig. 15, 3)

Material. 13: 15.V.2015, 3 specimens.

Distribution. Endemic to the south of the Russian Far East (Prosvirov, 2009).

Biology. The biology has not been investigated; the larva is unknown. A rare species.

Taxonomic notes. In the two specimens of *A. picitarsis* from the Sikhote-Alin Nature Reserve examined by us and also in some specimens from other sites, the scutellum has a more or less pronounced carina in the apical 1/3. According to Gurjeva (1979), among the members of this species-group, this feature is characteristic of only *A. mamajevi*; however, the presence of a carina in the apical part of the scutellum is most likely a character subjected to a considerable individual variability and expressed in some specimens of *A. mamajevi* as well as in some *A. picitarsis* (see above). To clarify this matter, additional material should be examined. It is noteworthy that the structure of the apical part of the paramere in the male of *A. picitarsis* examined by us (Fig. 15, 3) somewhat differs from that of *A. picitarsis* shown by Gurjeva (1979). This also may be associated with individual variability.

The drawing of the female genital tract of *A. picitarsis* (Fig. 14, 4) is given for the first time.

25. *Ampedus (Ampedus) pomorum* (Herbst, 1784)
(Fig. 5, 4)

Material. 5 specimens. **6:** 13.V.2016, 1 specimen; 8.VII.2015, 1 specimen. **8:** 28.VI.2016, 1 specimen; 5.VII.2019, 1 specimen. **14:** 11.VII.2018, 1 specimen.

Distribution. The forest and forest-steppe zones of the temperate regions of Eurasia (Gurjeva, 1979; Cate et al., 2007).

Biology. This species inhabits various types of forests; the larvae develop in the strongly decomposed wood of a great number of coniferous and deciduous trees (Cherepanov, 1965; Gurjeva, 1989a). A rare species.

Taxonomic notes. In the Far East, some taxa are similar to *A. pomorum* in many characters (Kishii, 1977b, 1992, 1994). To clarify the diagnostic characters and status of these taxa, the species of *Ampedus* of Russia and adjacent countries should be revised in detail.

26. *Ampedus (Ampedus) saghaliensis* Dolin et Ôhira, 1976 (Fig. 9, 1; Fig. 10, 4; Fig. 14, 3; Fig. 15, 4, 5)

Platia et al., 2020 : 22 – environs of “Yasnaya” cordon (45°14'N, 136°31'E).

Material. 4 specimens. **14:** 18.V.2016, 1 specimen. **18:** 3.VII.2017, 1 specimen; 4.VII.2017, 1 specimen. **27:** 17.V.2018, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (including the islands) (Gurjeva, 1979; Platia et al., 2020).

Biology. The biology of the adults and larvae has not been investigated. A rare species.

Taxonomic notes. The apical part of the parameres of this species varies in structure (Fig. 15, 4, 5); that in the specimens examined by us differs from that of *A. saghaliensis* shown in a figure in the original description (Dolin and Ôhira, 1976).

The drawing of the female genital tract of *A. saghaliensis* (Fig. 14, 3) is given for the first time.

27. *Ampedus (Ampedus) sanguinolentus sanguinolentus* (Schränk, 1776)
(Fig. 5, 5, 6)

Gromyko and Potikha, 2006 : 241 (*A. sanguinolentus* [sic!]) – Sikhote-Alin Nature Reserve.

Material. 27 specimens. **1:** 7–8.VII.2017, 2 specimens. **2:** 23.VI.2015, 1 specimen. **3:** 23.VI.2016, 1 specimen; 12.VII.2017, 1 specimen. **5:** 21.VI.2016, 2 specimens. **6:** 26.V.2016, 1 specimen; 3.VI.2018, 1 specimen; 16.VI.2017, 1 specimen. **8:** 4.VI.2018, 1 specimen; 28–30.VI.2016, 1 specimen; 5.VII.2019, 1 specimen. **9:** 25.V.2017, 1 specimen; 21.VI.2018, 3 specimens. **10:** 4.VIII.2016, 1 specimen. **11:** 15.VI.2018, 1 specimen. **14:** 16.V.2017, 1 specimen; 18–21.V.2016, 2 specimens; 1–5.VII.2015, 2 specimens; 9.VII.2018, window trap, 1 specimen; 11.VII.2018, 1 specimen. **18:** 25.VI.2019, 1 specimen.

Distribution. The forest and forest-steppe zones of the temperate regions of Eurasia (Gurjeva, 1979; Cate et al., 2007).

Biology. This species mainly inhabits deciduous lowland and floodland forests; the larvae develop in the rotten wood of deciduous trees (Gurjeva, 1989a). A common species.

Taxonomic notes. Along with the typically bicolored elytra (Fig. 5, 6), some specimens of *A. sanguinolentus* can have uniformly colored elytra or those darkened along the suture (Fig. 5, 5).

28. *Ampedus (Ampedus) silvaticus* Gurjeva, 1977
(Fig. 6, 4, 5; Fig. 12, 1)

Material. 2 specimens. **15:** 19.V.2016, 1 specimen. **28:** 22.V.2018, 1 specimen.

Distribution. Endemic to the Russian Far East (Gurjeva, 1989a). It was considered earlier that the range of this species in the south reached only the north of Primorskii Territory; however, the new records show that the range of *A. silvaticus* in the south of the region is wider.

Biology. This species inhabits inundated valleys with woody vegetation in the north of the range (the Okhotsk-Kolyma Upland) (Matis, 1980). The larva is unknown. A rare species.

Taxonomic notes. This species is similar to *A. adrastoides* (see above) in the habitus and in the structure of the aedeagus, but differs in a larger size, more elongate middle antennal segments, a narrower pronotum, and a weakly elongate scutellum. The coloration of one of the specimens is atypical: the sides and posterior angles of the pronotum and the bases of the propleura are reddish brown (Fig. 6, 5), while the body of *A. silvaticus* is usually uniformly black (Fig. 6, 4).

The drawing of the aedeagus of this species (Fig. 12, 1) is given for the first time.

29. *Ampedus (Ampedus) sobrinus*
(Motschulsky, 1860)
(Fig. 6, 1; Fig. 7, 5)

Gurjeva, 1979 : 214 – Dalnii Kut Vill. of Krasnoarmeiskii District.

Material. 2 specimens. **18:** 27.V.2015, 1 specimen. **27:** 17.V.2018, 1 specimen.

Distribution. Russia: Siberia and the Far East (including the islands). Kazakhstan, Mongolia (Cate et al., 2007; Gabdullina, 2016).

Biology. This species inhabits coniferous forests of various types and stone-birch forests; the larvae develop in rotten wood and under the bark of larch, fir, and stone birch (Matis, 1980; Gurjeva, 1989a). A rare species.

Tribe ELATERINI Leach, 1815

30. *Sericus (Sericus) fujisanus* (Lewis, 1894)
(Fig. 16, 5)

Material. 5 specimens. **1:** 7–8.VII.2017, 3 specimens. **4:** 28.V.2018, 1 specimen. **6:** 19.VII.2018, 1 specimen.

Distribution. Russia: the south of the Far East (including the islands). Japan (Prosvirov, 2009).

Biology. This is a forest species; the larvae develop under the moss cover (Gurjeva, 1979). A rare species.

Tribe MELANOTINI Candèze, 1859 (1848)

31. *Melanotus (Melanotus) castanipes*
castanipes (Paykull, 1800)
(Fig. 17, 1)

Material. 17 specimens. **3:** 7.V.2016, 1 specimen; 17.V.2017, 1 specimen; 7.VI.2015, 1 specimen;

1.VII.2017, 1 specimen; 17.VII.2016, 1 specimen. **6:** 7.VI.2018, 1 specimen. **8:** 4.VI.2018, 1 specimen; 14–17.VII.2017, 1 specimen. **13:** 15.V.2015, 1 specimen. **14:** 18–29.V.2017, window trap, 1 specimen; 2–5.VI.2017, window trap, 2 specimens. **18:** 25.VI.2019, 1 specimen. **20:** 1–4.VII.2019, 1 specimen. **22:** 12.VI.2017, 1 specimen. **24:** 9–10.VI.2017, 1 specimen. **26:** 18.VI.2015, 1 specimen.

Distribution. The forest zone of Eurasia and North America (Gurjeva, 1989a; Cate et al., 2007).

Biology. This is a forest species; flying at light was observed (Dolin, 1988). The larvae develop in litter and under the bark and in the decaying wood of various trees (Gurjeva, 1989a; Medvedev, 2005). A common species.

32. *Melanotus (Melanotus) pygmaeus* Stepanov, 1930
(Fig. 15, 7; Fig. 16, 6)

Material. **6:** 26.V.2016, 1 specimen.

Distribution. Endemic to the Russian Far East (Gurjeva, 1989a).

Biology. The biology has not been investigated; the larva is unknown. A rare species.

Taxonomic notes. This particular species belongs to the *M. fornumi* species-group and is very closely related in the external characters and in the structure of the aedeagus to *M. coreanus* Lee, 1999 known from Korea and North-Eastern China (Ôhira, 1992; Kishii, 1998; Lee et al., 1999). These taxa are probably conspecific, but this issue can be clarified after examination of material from North and South Korea.

The drawing of the aedeagus *M. pygmaeus* (Fig. 15, 7) is given for the first time.

Subfamily DENDROMETRINAE Gistel, 1848

Tribe HYPNOIDINI Schwarz, 1906 (1860)

33. *Ascoliocerus basalis* (Motschulsky, 1859)
(Fig. 17, 2)

Material. 3 specimens. **6:** 21.IX.2016, 1 specimen. **18:** 25.VI.2019, 1 specimen. **27:** 17.V.2018, 1 specimen.

Distribution. Russia: Siberia, the Far East. China, the Korean Peninsula (Prosvirov, 2009; Park et al., 2019). In the literature, this species was conventionally



Fig. 17. Elateridae, habitus, dorsal (1–5), lateral (6), and ventral (7) view [(1) *Melanotus castanipes castanipes* (Payk.), male (17.2 mm; 3); (2) *Ascoliocerus basalis* (Motsch.), female (7.8 mm; 18); (3) *Ligmargus depressus* (Geb.), male, (7.8 mm; 9); (4) *Hypolithus littoralis littoralis* Esch., male (8.2 mm; 1); (5–7) *Hypnoidus koltzei* (Rtt.), male (5.3 mm; 6)].

recorded only for Siberia and the north of the Russian Far East (Cherepanov, 1957; Stibick, 1979; Matis, 1980; Gurjeva, 1989a; Medvedev, 2005); however, the records and material from the Lazovskii Nature Reserve (Prosvirov, 2009) show that *A. basalis* is noticeably more widely distributed in the Russian Far East than it was considered earlier.

Biology. This species occurs along the banks of rivers and brooks under stones; it can also be found on the slopes of hills with lichen and moss. The larva has not been described (Matis, 1980; Gurjeva, 1989a). A rare species.

34. *Hypnoidus koltzei* (Reitter, 1910)
(Fig. 17, 5–7; Fig. 24, 1)

Material. 6: 10.VII.2015, 1 specimen.

Distribution. Russia: Eastern Siberia, the south of the Far East. Mongolia, North-Eastern China (Reitter, 1910; Gurjeva, 1989a; Mertlik and Cooter, 2007). In the Russian Far East this species was known earlier only from Khabarovsk Territory and Amurskaya Province (Reitter, 1910; Stibick, 1979; Gurjeva, 1989a); here it is recorded for the first time for Primorskii Territory.

Biology. This species occurs in the floodlands of rivers on drained grassy areas and sandy-pebble spits under stones and on the soil surface (Matis, 1980). The larva is unknown. A rare species.

Taxonomic notes. The structure of the aedeagus of the specimen examined by us (Fig. 24, 1) somewhat differs from that of *H. koltzei* in a drawing in Stibick's publication (1981), but corresponds to that of *H. koltzei* shown in photographs by Ôhira et al. (2006). This may be caused by individual variability of this species in the structure of the genitalia or by a distortion of proportions in the drawing. This question can be clarified after examination of additional material.

35. *Hypolithus littoralis littoralis* Eschscholtz, 1829
(Fig. 17, 4)

Gromyko and Potikha, 2006 : 241 – Sikhote-Alin Nature Reserve.

Material. 29 specimens. 1: 8.VII.2017, 9 specimens. 6: 7.VI.2018, 3 specimens. 8: 4.VI.2018, 15 specimens; 28–30.VI.2016, 1 specimen; 5.VII.2019, 1 specimen.

Distribution. This is an Amphi-Pacific subspecies. Russia: Kamchatka, the south of the Far East (including

the islands). The Northwest of the USA, Japan (Prosvirov, 2009).

Biology. This species occurs on the sandy shores of water bodies, including seas and oceans; the larvae and adults hide in various shelters; the larvae also occur in sandy soil (Dolin, 1978; Stibick, 1978; Gurjeva, 1989a). *Hypolithus littoralis* is locally distributed and forms aggregations.

36. *Ligmargus depressus* (Gebler, 1847)
(Fig. 17, 3)

Material. 17 specimens. 2: 23.VI.2015, 1 specimen. 9: 1.V.2018, 2 specimens; 17.VII.2018, 4 specimens. 13: 22.IV.2015, 1 specimen. 14: 3.VII.2015, 1 specimen. 15: 19.V.2016, 7 specimens. 27: 17.V.2018, 1 specimen.

Distribution. Russia: Siberia, the Far East. Kazakhstan, Mongolia, North-Eastern China (Prosvirov, 2009; Platia, 2018).

Biology. The adults and larvae inhabit the shores of various water bodies; the larvae occur under stones and in coastal sediments (Cherepanov, 1965; Dolin, 1978; Gurjeva, 1989a). A common species.

Tribe **DENDROMETRINI** Gistel, 1848

Subtribe **DENDROMETRINA** Gistel, 1848

37. *Gambrinus kraatzi kraatzi* (Candèze, 1879)
(Fig. 18, 7)

Material. 2 specimens. 2: 24.VI.2015, 1 specimen. 14: 1.VII.2015, 1 specimen.

Distribution. Russia: the south of the Far East. North-Eastern China, North and South Korea (Prosvirov, 2009; Platia, 2018).

Biology. The biology of the species in the territory of Russia has not been investigated; the larva is unknown. A rare species.

38. *Limonius koltzei* Reitter, 1895
(Fig. 18, 5; Fig. 24, 2; Fig. 25, 1)

Material. 8: 14–17.VII.2017, 6 specimens.

Distribution. Russia: Siberia, the Far East (including the islands). Mongolia (Gurjeva, 1989a).



Fig. 18. Elateridae, habitus, dorsal (1, 2, 5–7), lateral (3), and ventral (4) view [(1, 3, 4) *Limonius obiensis* Tsher., male (5.7 mm; 14); (2) *L. obiensis*, female (6.1 mm; 14); (5) *L. koltzei* Rtt., male (6 mm; 6); (6) *L. scutellaris* (Dol.), male (6.5 mm; 11); (7) *Gambrinus kraatzi* (Cand.), male (9.9 mm; 14).

Biology. This is a forest species; in the west of the range, it occurs in forest-steppe and steppe biotopes; the larvae develop in soil (Matis, 1980; Gurjeva, 1989a). A rare species.

Taxonomic notes. This species was placed earlier in the genus *Cidnopus* C.G. Thomson, 1859 (Gurjeva, 1989a; Han et al., 2012b; Prosvirov, 2017a), but in connection with revision of the generic classification of *Limoni* Eschscholtz, 1829 and the closely related taxa, it was again attributed to *Limoni* (Etzler, 2019). At present, *L. koltzei* is considered within the *L. consimilis* species-groups, based on the external characters and the morphology of the genitalia; however, the status of this species-group requires further clarification.

The drawing of the female genital tract of *L. koltzei* (Fig. 25, 1) is given for the first time.

39. *Limoni obiensis* Tsherepanov, 1966
(Fig. 18, 1–4; Fig. 24, 3; Fig. 25, 2)

Material. 3 specimens. **11:** 26.VI.2018, 1 specimen. **14:** 18–29.V.2017, window trap, 2 specimens.

Distribution. The northeast and the east of the European part of Russia, Western Siberia (Cherepanov, 1966; Dedyukhin, 2007; Tselishcheva et al., 2018). This species is recorded for the first time for the Russian Far East and Primorskii Territory. Preliminary analysis of the material collected has shown that this species is rare but widely distributed in Siberia and the Russian Far East. It cannot be ruled out that some faunal records from these regions for species similar to *L. obiensis* have resulted from misidentification and actually refer to this species.

Biology. This species inhabits coniferous and deciduous forests; the larva is unknown (Cherepanov, 1966). A rare species.

Taxonomic notes. According to the complex of the features of the external morphology and the structure of the genitalia, this species should be attributed to the *L. parvulus* species-group (Etzler, 2019); the status of this species-group should be clarified.

The drawing of the female genital tract of *L. obiensis* (Fig. 25, 2) is given for the first time.

* *Limoni parallelus* Motschulsky, 1860

Gromyko and Potikha, 2006 : 241 (*Cydnopus* [sic!]) – Sikhote-Alin Nature Reserve.

Material. This species has not been found by us in the Sikhote-Alin Nature Reserve. It cannot be ruled out that the record of *L. parallelus* for the territory of the reserve has resulted from misidentification (see below).

Distribution. Russia: Siberia, the Far East (including the islands). Kazakhstan, Mongolia (Prosvirov, 2017a).

Taxonomic notes. The records of *L. parallelus* for the Russian Far East should be verified. It cannot be ruled out that they actually refer to the closely related *L. obi*ensis or *L. koltzei*. In particular, Gurjeva (1989a) gives for *L. parallelus* a drawing of the aedeagus which is either actually better suited to the aedeagus of *L. obi*ensis, or is a strongly deformed image of the aedeagus of *L. koltzei* (see also Prosvirov, 2017a).

40. *Limoni scutellaris* (Dolin, 2003)
(Fig. 18, 6; Fig. 24, 4)

Material. **11:** 15.VI.2018, 1 specimen.

Distribution. Russia: Primorskii Territory. South Korea (Prosvirov, 2009; Han et al., 2012b).

Biology. The biology has not been investigated; the larva is unknown. A rare species.

Taxonomic notes. According to the complex of external morphological characters and to the structure of the genitalia, this species belongs to the *L. minutus* species-group (Etzler, 2019). The distinctive structure of the scutellum bearing a transverse carina is characteristic of *L. scutellaris* and several Japanese species (Kishii, 1989, 1993a). These species are also very similar in some other characters and probably form a common phylogenetic group.

* *Nothodes sinensis* Platia, 2009

Platia et al., 2020 : 21 – environs of “Yasnaya” cordon (45°14'09"N, 136°30'42"E).

Material. This species has not been found by us in the Sikhote-Alin Nature Reserve.

Distribution. This species is known from Central China (Platia, 2009; Platia et al., 2020); the record for the Sikhote-Alin Nature Reserve is doubtful and may result from misidentification of *L. obiensis* closely related to *N. sinensis* in the external characters and in the structure of the aedeagus.

Subtribe DENTICOLLINA
Stein et J. Weise, 1877 (1848)

41. *Denticollis cinctus* (Candèze, 1863)
(Fig. 19, 5–7)

Material. 59 specimens. **2:** 23–24.VI.2015, 3 specimens. **6:** 21.VI.2016, 1 specimen. **7:** 23.VI.2018, 1 specimen. **8:** 28–30.VI.2016, 1 specimen; 14–17.VII.2017, 1 specimen. **14:** 30.V–1.VI.2017, 4 specimens; 1–5.VII.2015, 12 specimens. **18:** 25.VI.2019, 3 specimens; 3–4.VII.2017, 6 specimens. **19:** 29–30.VI.2017, 6 specimens. **20:** 20.VI.2017, 1 specimen; 1–4.VII.2019, 4 specimens. **22:** 12.VI.2017, 7 specimens. **24:** 9–10.VI.2017, 4 specimens. **26:** 17.VI.2015, 1 specimen; 18.VI.2015, 4 specimens.

Distribution. Russia: Siberia, the Far East. Mongolia, North-Eastern China (Prosvirov, 2009). The record of *D. versicolor* (Lewis, 1894) for North Korea (Platia and Németh, 2011) may also refer to this species, as *D. versicolor* is similar to *D. cinctus* in appearance but inhabits the mountain regions of Japan (Kishii and Jiang, 1996).

Biology. This is a forest species; the larvae develop in rotten wood (Gurjeva, 1989a). A common species.

Taxonomic notes. Similarly to the other species of the genus, *D. cinctus* widely varies in coloration, manifesting both individual variability and sex dimorphism (Fig. 19, 5–7). The status of *D. cinctus* should be clarified, since it is most probably conspecific with *D. nigricollis* (Gebler, 1830), *D. dilutiangulus* (Motschulsky, 1860), and *D. inaequalis* (Candèze, 1879) known from the same territory. All these taxa demonstrate a similar set of features and mainly differ, according to the original descriptions, in details of the coloration and in the shape and sculpture of the pronotum (Gebler, 1830; Motschulsky, 1860; Candèze, 1863, 1879). As these features are subject to wide individual variability in many species of *Denticollis* Piller et Mitterpacher, 1783 (Cherepanov, 1957; Medvedev, 2005),

they are not taxonomically significant. In this connection, for clarification of the status of *D. cinctus* and the closely related taxa, their type specimens should be examined. The synonymy of *D. inaequalis* and *D. nigricollis* was already established by Candèze (1891); however, *D. inaequalis* is considered a valid taxon in a number of subsequent publications (Schenkling, 1927; Kishii and Jiang, 1996; Kishii, 2000; Ôhira et al., 2005; Cate et al., 2007).

42. *Denticollis flavipes* (Germar, 1846)
(Fig. 19, 1–4; Fig. 24, 5; Fig. 25, 3)

Material. 5 specimens. **6:** 8.VII.2015, 1 specimen. **9:** 23.V.2017, 1 specimen. **14:** 30.V–1.VI.2017, 1 specimen. **18:** 25.VI.2019, 1 specimen. **22:** 12.VI.2017, 1 specimen.

Distribution. Russia: the Far East. Mongolia (Prosvirov, 2009; Jarzabek-Müller and Németh, 2014).

Biology. This is a forest species; the larva is unknown (Gurjeva, 1989a). A rare species.

Taxonomic notes. *Denticollis flavipes* belongs to the *D. borealis* species-group which strongly differs from the other *Denticollis* in the structure of the aedeagus (Becker, 1952; Leseigneur, 1972; Schimmel, 2006, 2007; fig. 24, 5), which may testify to its phylogenetic distinctness. It cannot be ruled out that this species-group deserves separation in a taxon of the generic rank; however, this assumption can be confirmed after complex analysis of the taxonomic importance of various characters of *Denticollis*.

The drawing of the female genital tract of *D. flavipes* (Fig. 25, 3) is given for the first time.

43. *Denticollis linearis* (Linnaeus, 1758)
(Fig. 20, 1–3)

Material. 27 specimens. **1:** 7.VII.2017, 1 specimen. **2:** 24.VI.2015, 1 specimen. **8:** 5.VII.2019, 1 specimen. **9:** 6.VI.2018, 1 specimen. **14:** 3–4.VII.2015, 6 specimens. **18:** 25.VI.2019, 4 specimens; 4.VII.2017, 1 specimen. **19:** 29–30.VI.2017, 2 specimens. **20:** 20.VI.2017, 1 specimen; 1–4.VII.2019, 3 specimens. **26:** 15.VI.2016, 1 specimen; 18.VI.2015, 5 specimens.



Fig. 19. *Denticollis* spp., habitus, dorsal (1, 2, 5–7), lateral (3), and ventral (4) view [(1, 3, 4) *D. flavipes* (Germ.), male (9.9 mm; 9); (2) *D. flavipes*, female (10.3 mm; 6); (5) *D. cinctus* (Cand.), male (12.4 mm; 18); (6) *D. cinctus*, male (12.5 mm; 18); (7) *D. cinctus*, female (13.8 mm; 19)].

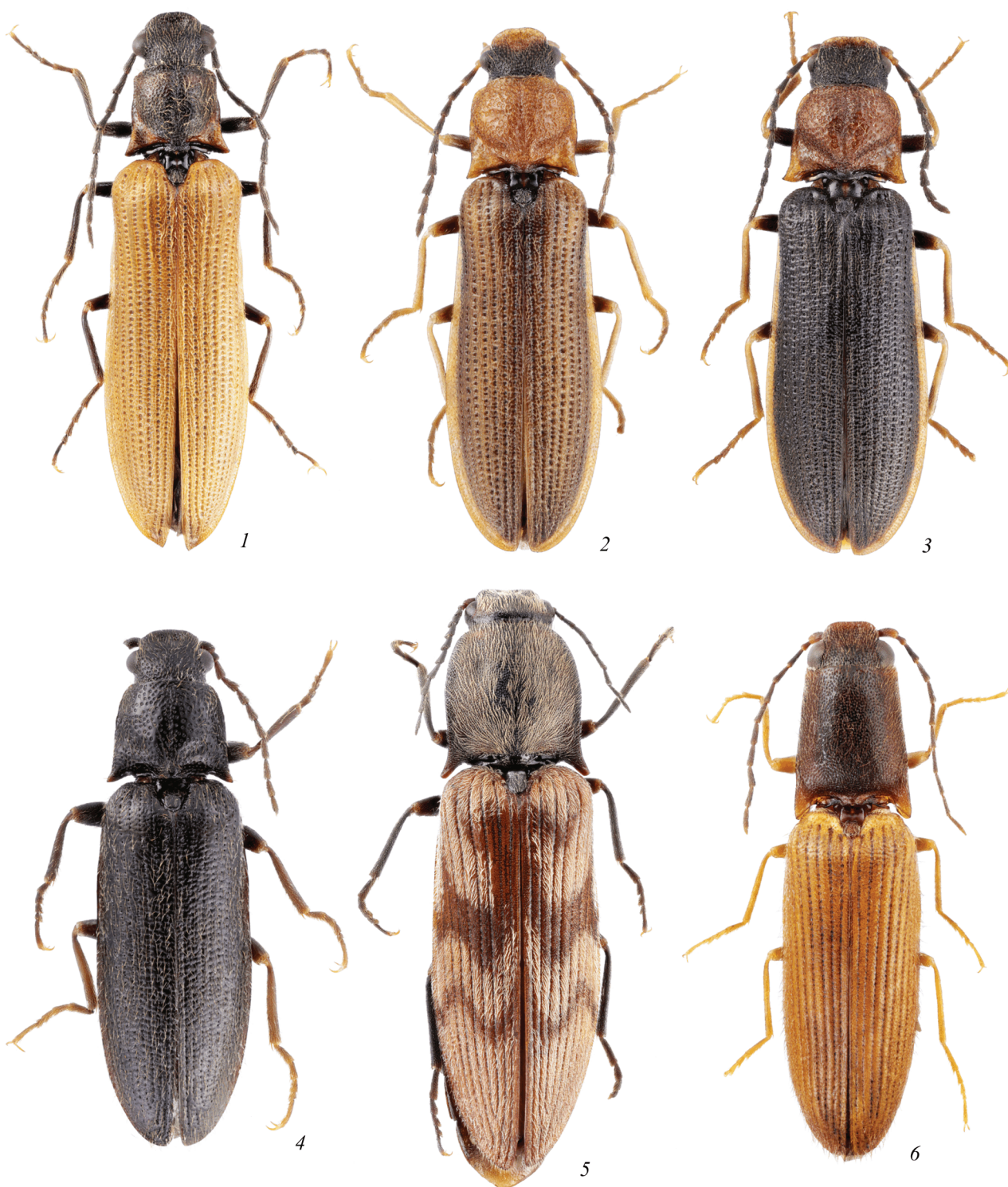


Fig. 20. Elateridae, habitus, dorsal view: (1) *Denticollis linearis* (L.), male (11.4 mm; **1**); (2) *D. linearis*, female (9.3 mm; **20**); (3) *D. linearis*, female (11.6 mm; **14**); (4) *D. varians varians* (Germ.), male (7.3 mm; **20**); (5) *Diacanthous undulatus* (Deg.), female (15 mm; **18**); (6) *Pseudocrepidophorus filicollis* (Rtt.), male (8 mm; **6**).

Distribution. The forest and forest-steppe zones of the temperate regions of Eurasia (Medvedev, 2005; Cate et al., 2007).

Biology. This is a forest species; the larvae develop in the rotten wood of various trees (Matis, 1980; Gurjeva, 1989a). A common species.

Taxonomic notes. Similarly to *Denticollis cinctus*, this species widely varies in coloration of the body and in the shape of the pronotum (Fig. 20, 1–3). *Denticollis mongolicus* (Motschulsky, 1860) inhabiting Mongolia and Northern China is very similar to *D. linearis* (Motschulsky, 1860; Gurjeva, 1975); these taxa may be conspecific.

44. *Denticollis varians varians* (Germar, 1846)
(Fig. 20, 4)

Material. 20: 1–4.VII.2019, 1 specimen.

Distribution. Russia: Siberia, the Far East (including the islands). The Northwest of the USA, Canada, Mongolia, North-Eastern China (Becker, 1952; Prosvirov, 2009).

Biology. This is a forest species; the larvae develop in forest soil and litter (Gurjeva, 1989a). A rare species.

Subtribe HEMICREPIDIINA Champion, 1896

45. *Diacanthous undulatus* (DeGeer, 1774)
(Fig. 20, 5)

Ivliev and Kononov, 1970 : 74 (*Harminius*) – [Krasnoarmeiskii District] Armu River basin.

Material. 7 specimens. **9:** 1.V.2018, 2 specimens. **14:** 3.VII.2015, 1 specimen. **18:** 29.V.2015, 1 specimen; 3.VII.2017, 2 specimens. **19:** 30.VI.2017, 1 specimen.

Distribution. The taiga and mixed forests zones of the temperate regions of Eurasia (Prosvirov, 2009; Han and Lee, 2016). This species was also recorded for North America (Matis, 1980; Gurjeva, 1989a; Cate et al., 2007; Prosvirov, 2009), though it has been noted for long enough that the records of *D. undulatus* from this territory refer to the closely related *D. triundulatus* (Mannerheim, 1853) (Becker, 1974, 1979).

Biology. This species mainly inhabits coniferous forests; the larvae develop under the bark of dead trees

(Gurjeva, 1989a; Medvedev, 2005). A relatively rare species.

Taxonomic notes. Another closely related species (*D. amurensis* Platia et Gudenzi, 1999) is known in the south of the Russian Far East; according to the literature data, it differs from *D. undulatus* in more thickened antennal segments, a wider pronotum, and in the structure of the aedeagus (Platia and Gudenzi, 1999; Kishii, 2000; Ôhira et al., 2005). It is noteworthy that most of the external morphological characters of *D. undulatus* demonstrate a considerable individual variability; therefore, the status of *D. amurensis* should be clarified.

46. *Hemicrepidius (Hemicrepidius)*
oblongus (Solsky, 1871)
(Fig. 21, 1, 2)

Gromyko and Potikha, 2006 : 241 (*Athous*) – Sikhotealin Nature Reserve.

Material. 16 specimens. **4:** 14.VI.2015, 1 specimen. **6:** 16.VII.2018, 6 specimens; 3–11.VIII.2016, 2 specimens. **9:** 15–17.VII.2018, 5 specimens (2 specimens – window trap). **11:** 2.VII.2018, 1 specimen. **UL:** 23–27.VII.2015 1 specimens.

Distribution. Russia: the south of the Far East. North-Eastern China, North Korea (Prosvirov, 2009). The record of *H. niger* (Linnaeus, 1758) for Primorskii Territory (Kishii, 2000) is erroneous and also refers to this species.

Biology. This is a forest species; the larvae develop in forest soil and litter (Gurjeva, 1989a). A common species.

Taxonomic notes. This species may be conspecific with *H. consors* (Heyden, 1884) described from Askold Island. The characters listed in the description of *H. consors* are very similar to those of *H. oblongus*, but this species was apparently unknown to Heyden as he did not mention it in differential diagnosis (Heyden, 1884). Resolution of this issue requires examination of the type material of *H. consors*, as several species and subspecies of *Hemicrepidius* similar in a number of characters are known from the adjacent regions (Kishii and Jiang, 1996; Kishii and Paik, 2002). The status of these taxa should also be clarified. *Hemicrepidius oblongus* is characterized by a variability of coloration: along with uniformly black specimens (Fig. 21, 1), bicolored ones

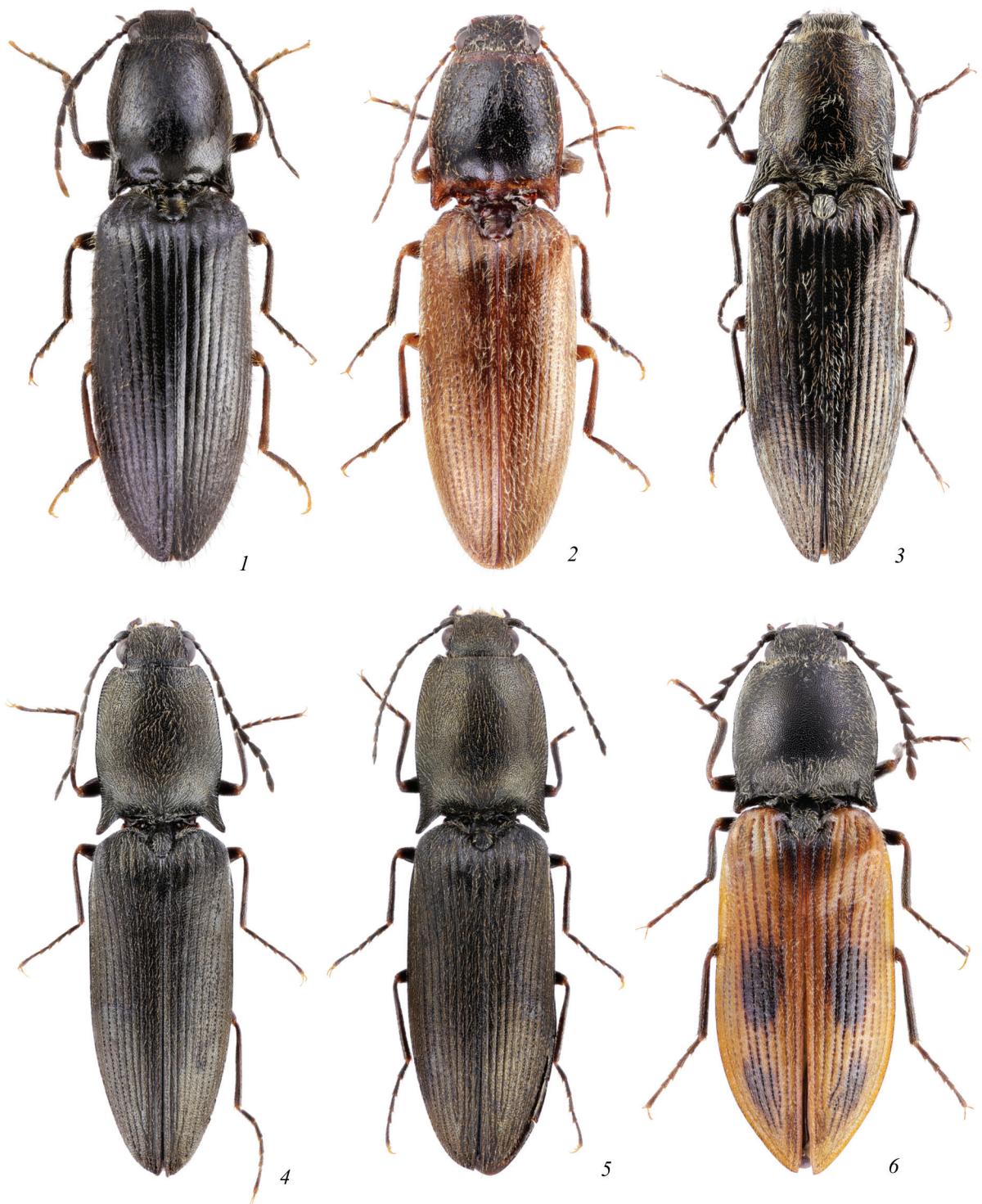


Fig. 21. Elateridae, habitus, dorsal view: (1) *Hemicrepidius oblongus* (Sols.), male (11.5 mm; 9); (2) *H. oblongus*, male (11.5 mm; 6); (3) *Actenicerus alternatus* (Heyd.), male (13.5 mm; 6); (4) *Aplotarsus imperceptus* Gur., male, (9 mm; 23); (5) *A. imperceptus*, female (9.7 mm; 23); (6) *Anostirus boeberi* (Germ.), female (9.7 mm; 9).

also occur, though less frequently (Fig. 21, 2). A similar variability of the coloration is also observed in other species of the genus, in particular, in *H. niger* (Dolin, 1982; Medvedev, 2005).

47. *Pseudocrepidophorus filicollis* (Reitter, 1890)
(Fig. 20, 6)

Material. 6 specimens. **5:** 21.VI.2016, 1 specimen. **6:** 20.VIII.2016, 3 specimens. **14:** 9.VII.2018, 1 specimen. **UL:** 22.VII.2015, 1 specimen.

Distribution. Russia: the south of the Far East. North-Eastern China, North Korea (Prosvirov, 2009; Németh, Platia, 2014).

Biology. This is a forest species; the larvae develop in the rotten wood of deciduous trees (Gurjeva, 1989a). A relatively rare species.

Taxonomic notes. In the south of the Russian Far East, *Ps. laetus* (Candèze, 1879) comb. n. is closely related to this species; it was described in the genus *Athous* Eschscholtz, 1829 and later attributed to the genus *Crepidophorus* Mulsant et Guillebeau, 1853 (Candèze, 1879; Reitter, 1905; Gurjeva, 1989a). Placement of *Athous laetus* to the genus *Pseudocrepidophorus* Dolin et Agajev, 1988 is substantiated by a photograph of the type specimen of *Athous jocosus* Candèze, 1882 (deposited in Institut royal des Sciences naturelles de Belgique, Brussels, RBINS) which was compared to *Ps. laetus* in the course of the description and later synonymized with it (Candèze, 1882; Reitter, 1905). According to the literature data, *Ps. filicollis* and *Ps. laetus* differ in the coloration, length of the body, and proportions of the pronotum (Reitter, 1905; Gurjeva, 1989a); however, these differences may be associated with individual variability or with sex dimorphism. The status of both the taxa can be clarified after examination of their type specimens. It is also noteworthy that *Ps. filicollis* is similar in some characters to *Scutellathous porrecticollis* (Lewis, 1894) known from Japan and South Korea (Han et al., 2016a). It cannot be ruled out that these taxa are conspecific; the decision of this question requires examination of the type specimens of these taxa and additional material from the territory of Japan and Korea. In this connection, the status of the genera *Scutellathous* Kishii, 1955 and *Pseudocrepidophorus* should also be clarified. The species of both the genera are similar in the external characters and in the structure of the ae-

deagus (Wurst, 1994; Kishii, 2001); however, a number of other characters of these groups, including the larval morphology and the structure of the female genitalia, need further comparative examination.

Tribe **PROSTERNINI** Gistel, 1856

48. *Actenicerus (Acnitecerus) alternatus*
(Heyden, 1886)
(Fig. 21, 3)

Material. 5 specimens. **5:** 21.VI.2016, 1 specimen. **6:** 2.VI.2016, 1 specimen; 8.VII.2015, 1 specimen; 19.VII.2018, 1 specimen. **7:** 23.VI.2018, 1 specimen.

Distribution. Russia: the south of Eastern Siberia and the Far East. China, North and South Korea (Prosvirov, 2009).

Biology. This species inhabits sparse forests and humid meadows; the larva is unknown (Gurjeva, 1989a, 1989b). A rare species.

49. *Anostirus boeberi* (Germar, 1824)
(Fig. 21, 6)

Material. 3 specimens. **1:** 6.VII.2017, 1 specimen. **4:** 14.VI.2015, 1 specimen. **9:** 26.VII.2018, 1 specimen.

Distribution. Russia: Siberia, the Far East. Kazakhstan, Northern Mongolia, Northwestern China, North Korea (Cate et al., 2007).

Biology. This species inhabits forests and meadows near forests; the larvae develop in soil and litter (Gurjeva, 1989a, 1989b). A rare species.

50. *Anostirus castaneus castaneus* (Linnaeus, 1758)
(Fig. 23, 6)

Material. 3 specimens. **14:** 18.V.2016, 2 specimens. **18:** 29.V.2015, 1 specimen.

Distribution. The forest and forest-steppe zones of the temperate regions of Eurasia (Gurjeva, 1989a, 1989b; Cate et al., 2007).

Biology. This is a forest species; it also occurs in meadows near forests; the larvae develop in forest soil, litter, and rotten wood (Gurjeva, 1989a, 1989b). A rare species.

51. *Aplotarsus imperceptus* Gurjeva, 1987
(Fig. 21, 4, 5; Fig. 24, 6; Fig. 25, 4)

Gurjeva, 1987 : 47 – Krasnoarmeiskii District, Armu River.

Material. 5 specimens. **20:** 20.VI.2017, 2 specimens; 1–4.VII.2019, 1 specimen. **23:** 21.VII.2016, 2 specimens.

Distribution. Russia: the south of the Far East (including the islands). South Korea (Gurjeva, 1989a; Han and Lee, 2016).

Biology. The mode of life and larva are unknown. A rare species.

Taxonomic notes. *Aplotarsus sladkovi* Dolin et Katjucha, 1987 described from material collected in Southern Sakhalin and Primorskii Territory seems to be conspecific with *A. imperceptus*, because it is characterized by the same characters (Dolin and Katjucha, 1987).

The drawing of the female genital tract of *A. imperceptus* (Fig. 25, 4) is given for the first time.

52. *Aplotarsus sachalinensis* Dolin et Katjucha, 1987
(Fig. 22, 1–4; Fig. 24, 7; Fig. 25, 5)

Material. 7 specimens. **9:** 23.V.2017, 1 specimen. **19:** 29.VI.2017, 1 specimen. **24:** 9.VI.2016, 1 specimen; 9–10.VI.2017, 1 specimen. **26:** 17.VI.2015, 2 specimens. **27:** 17.V.2018, 1 specimen.

Distribution. Russia: Southern Sakhalin (Dolin and Katjucha, 1987). The species is recorded for the mainland Russian Far East and Primorskii Territory for the first time.

Biology. This is a forest species; the larva is unknown (Dolin and Katjucha, 1987). A rare species.

The drawing of the female genital tract of *A. sachalinensis* (Fig. 25, 5) is given for the first time.

53. *Calambus jureceki* Stepanov, 1930
(Fig. 23, 5)

Material. 3 specimens. **8:** 28–30.VI.2016, 1 specimen; 14–17.VII.2017, 1 specimen. **9:** 23.V.2017, 1 specimen.

Distribution. Endemic to Primorskii Territory (Prosvirov, 2009).

Biology. This is a forest species; the larvae develop in the bark of oaks (Gurjeva, 1989b). A rare species.

54. *Calambus ussuriensis* (Denisova, 1948)
(Fig. 23, 1–4; Fig. 24, 8; Fig. 25, 6)

Gromyko, 1982 : 178 (*Selatosomus*) – Sikhote-Alin Nature Reserve.

Material. 6 specimens. **6:** 20.VIII.2016, 1 specimen. **8:** 4.VI.2018, 1 specimen. **14:** 2–5.VI.2017, window trap, 2 specimens; 1.VII.2015, 1 specimen. **18:** 27.V.2015, 1 specimen.

Distribution. Russia: Eastern Siberia, the south of the Far East (including the islands) (Gurjeva, 1989a).

Biology. This is a forest species; the larvae develop under and within the bark of various trees (Gurjeva, 1989b). A rare species.

The drawing of the female genital tract of *C. ussuriensis* (Fig. 25, 6) is given for the first time.

55. *Corymbitodes christophi* (Kiesenwetter, 1879)
(Fig. 22, 6; Fig. 33, 5)

Material. 2 specimens. **6:** 28.V.2017, 1 specimen. **9:** 1.V.2018, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (Prosvirov, 2009).

Biology. This is a forest species; the larva is unknown (Gurjeva, 1989a, 1989b). A rare species.

The detailed drawing of the female genital tract of *C. christophi* (Fig. 33, 5) is given for the first time.

56. *Corymbitodes epipedus* Gurjeva, 1985
(Fig. 22, 5; Fig. 32, 1)

Material. **3:** 13.VI.2015, 1 specimen.

Distribution. Endemic to Primorskii Territory (Prosvirov, 2009).

Biology. This is a forest species; the larva is unknown (Gurjeva, 1989a, 1989b). A rare species.



Fig. 22. Elateridae, habitus, dorsal (1, 2, 5, 6), lateral (3), and ventral (4) view [(1, 3, 4) *Aplotarsus sachalinensis* Dol. et Kat., male (7 mm; 26); (2) *A. sachalinensis*, female (8.2 mm; 26); (5) *Corymbitodes epipedus* Gur., male, (7.9 mm; 3); (6) *C. christophi* (Ksw.), female (9.9 mm; 9)].



Fig. 23. Elateridae, habitus, dorsal (1, 2, 5, 6), lateral (3), and ventral (4) view [(1, 3) *Calambus ussuriensis* (Den.), male (9 mm; 8); (2, 4) *C. ussuriensis*, female (9.7 mm; 6); (5) *C. jureceki* Step., female (7.2 mm; 8); (6) *Anostirus castaneus castaneus* (L.), female (10 mm; 14)].

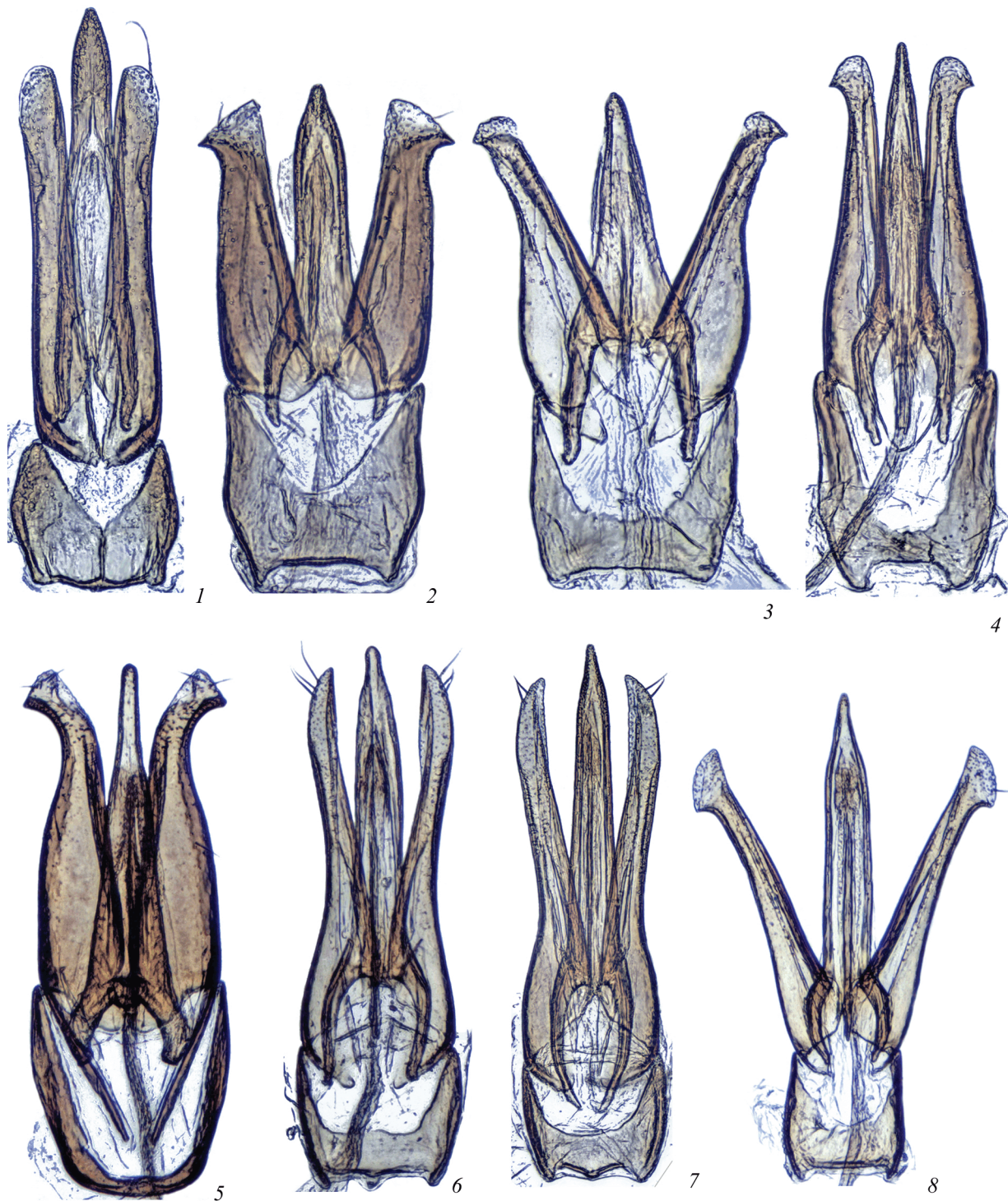


Fig. 24. Elateridae, aedeagus, ventral view: (1) *Hypnoidus koltzei* (Rtt.) (5.3 mm; 6); (2) *Limenius koltzei* Rtt. (5.6 mm; 6); (3) *L. obiensis* Tsher. (5.7 mm; 14); (4) *L. scutellaris* (Dol.) (6.5 mm; 11); (5) *Denticollis flavipes* (Germ.) (9.9 mm; 9); (6) *Aplotarsus imperceptus* Gur. (9 mm; 23); (7) *A. sachalinensis* Dol. et Kat. (7 mm; 26); (8) *Calambus ussuriensis* (Den.) (9 mm; 8).

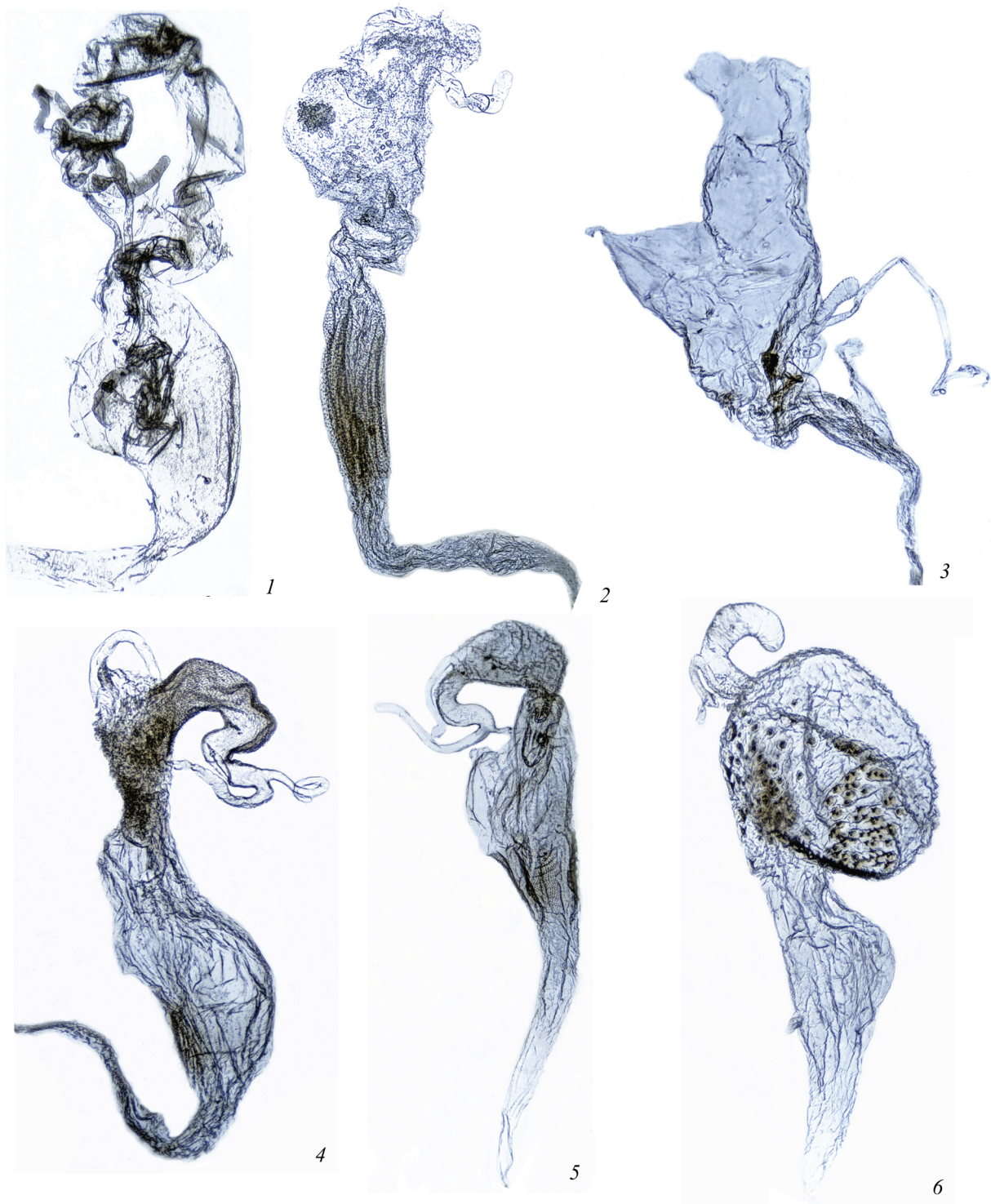


Fig. 25. Elateridae, female genital tract, general view: (1) *Limonius koltzei* Rtt. (6.4 mm; 6); (2) *L. obiense* Tsher. (5.6 mm; 11); (3) *Denticollis flavipes* (Germ.) (10.3 mm; 6); (4) *Aplotarsus imperceptus* Gur. (10 mm; 20); (5) *A. sachalinensis* Dol. et Kat. (8.2 mm; 26); (6) *Calambus ussuriensis* (Den.) (9.7 mm; 6).

57. *Eanus (Eanus) singularis* (Mannerheim, 1852)
(Fig. 26, 2; Fig. 32, 2)

Material. 14 specimens. **25:** 9.VI.2016, 12 specimens. **28:** 22.V.2018, 2 specimens.

Distribution. Endemic to the south of the Russian Far East (including the islands) (Gurjeva, 1989b).

Biology. This species inhabits humid forests and open biotopes; the larva is unknown (Gurjeva, 1989a, 1989b). A rare species.

* *Eanus (Pareanus) costalis costalis* (Paykull, 1800)

Gromyko, 1982 : 178 (*Selatosomus*) – Sikhote-Alin Nature Reserve.

Material. It has not been found by us in the Sikhote-Alin Nature Reserve.

Distribution. The taiga zone of Eurasia and North America (Cate et al., 2007; Jarzabek-Müller and Németh, 2014). According to the literature data, this species reaches only the Amur River Region in the Russian Far East (Gurjeva, 1989b); therefore, the record of *E. costalis* for the Sikhote-Alin Nature Reserve requires confirmation. It cannot be ruled out that it resulted from misidentification and actually refers to *E. singularis*.

58. *Hypoganomorphus laevicollis*
(Mannerheim, 1852)
(Fig. 26, 1)

Gromyko and Potikha, 2006 : 241 – Sikhote-Alin Nature Reserve.

Material. 77 specimens. **1:** 7.VII.2017, 2 specimens. **2:** 24.VI.2015, 2 specimens. **4:** 28.V.2018, 1 specimen; 14.VI.2015, 1 specimen. **5:** 21.VI.2016, 1 specimen. **6:** 26.V–2.VI.2016, 2 specimens; 3–7.VI.2018, 2 specimens; 8.VII.2015, 2 specimens. **7:** 23.VI.2018, 2 specimens. **8:** 28–30.VI.2016, 7 specimens; 14–17.VII.2017, 1 specimen. **9:** 23.V.2017, 2 specimens; 21.VI.2018, 2 specimens. **11:** 15.VI.2018, 2 specimens; 1.VII.2018, 2 specimens. **14:** 18–29.V.2017, 1 specimen; 30.V–1.VI.2017, 4 specimens; 1–4.VII.2015, 4 specimens; 9.VII.2018, 1 specimen. **18:** 27–29.V.2015, 10 specimens; 25.VI.2019, 3 specimens; 3.VII.2017, 1 specimen. **20:** 1–4.VII.2019, 1 specimen. **22:** 12.VI.2017, 4 specimens. **23:** 9.VI.2016, 2 specimens; 19–21.VII.2016, 3 specimens. **24:** 9–10.VI.2017, 7 specimens. **26:** 15.VI.2016, 1 specimen; 17.VI.2015, 2 specimens; 18.VI.2015, 1 specimen. **27:** 17.V.2018, 1 specimen.

Distribution. Russia: the northeast of the European part, Siberia, the south of the Far East (including the islands). Mongolia, North-Eastern China, the Korean Peninsula, Japan (Mochizuki, 1937 (as *Hypoganus suyamanus* (Matsumura, 1911)); Medvedev, 2005; Prosvirov, 2009).

Biology. This species inhabits various types of forests and also occurs in meadows and tundra. The larvae develop in forest soil and litter and can also occur in soil and under stones along the banks of rivers and brooks (Gurjeva, 1989b). A common species.

59. *Liotrichus (Acteniceromorphus) ferrugineipennis*
(Candèze, 1879)
(Fig. 26, 5)

Gurjeva, 1989b : 47 – Terneiskii District, the Serebryanka River.

Material. 4 specimens. **5:** 21.VI.2016, 1 specimen. **6:** 16.VI.2017, 1 specimen. **13:** 15.V.2015, 1 specimen. **18:** 27.V.2015, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (Prosvirov, 2009).

Biology. The ecology has not been investigated; the larva is unknown. A rare species.

60. *Liotrichus (Liotrichus) affinis* (Paykull, 1800)
(Fig. 26, 4)

Material. 17 specimens. **6:** 16.VI.2017, 1 specimen. **14:** 18.V.2016, 3 specimens; 30.V–1.VI.2017, 1 specimen. **15:** 19.V.2016, 4 specimens. **18:** 27–29.V.2015, 4 specimens. **22:** 12.VI.2017, 1 specimen. **25:** 22.V.2018, 2 specimens; 9–10.VI.2017, 1 specimen.

Distribution. The taiga and mixed forests zones of the temperate regions of Eurasia (Gurjeva, 1989b; Cate et al., 2007).

Biology. In the Russian Far East, this species inhabits coniferous-broadleaf forests; the larvae develop in wet forest soil, in litter, and under moss (Gurjeva, 1989b). A common species.

61. *Metanomus infuscatus* (Eschscholtz, 1829)
(Fig. 26, 6)

Material. 3 specimens. **14:** 18.V.2016, 2 specimens. **18:** 27.V.2015, 1 specimen.

Distribution. The mountain forests of the temperate regions of Eurasia (Gurjeva, 1989b). The record of

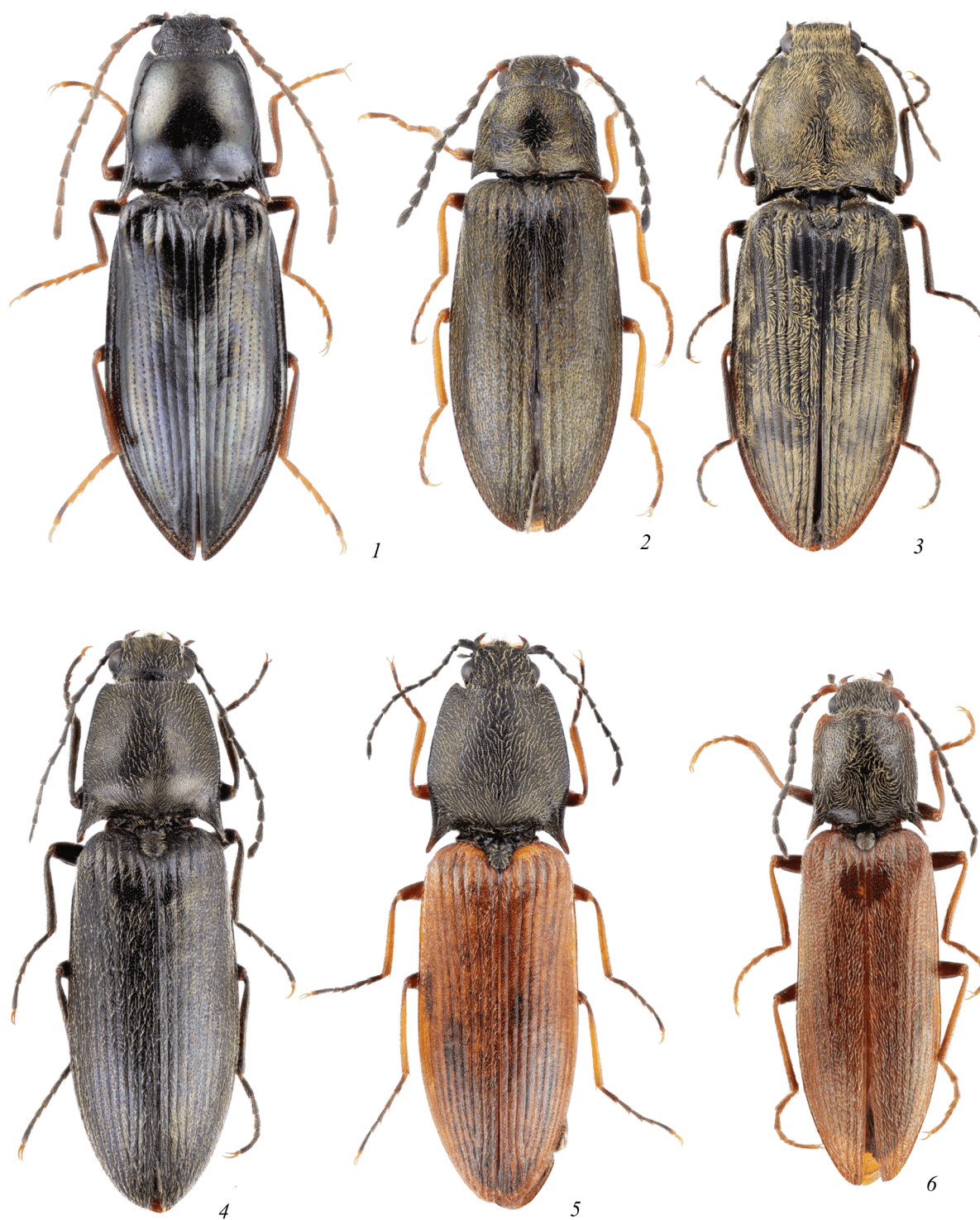


Fig. 26. Elateridae, habitus, dorsal view: (1) *Hypoganomorphus laevicollis* (Mnnh.), male (9.5 mm; **24**); (2) *Eanus singularis* (Mnnh.), male (5.6 mm; **25**); (3) *Prosternon sericeum* (Gehl.), male (11.3 mm; **1**); (4) *Liotrichus affinis* (Payk.), male (11.3 mm; **14**); (5) *L. ferrugineipennis* (Cand.), female (12.3 mm; **6**); (6) *Metanomus infuscatus* (Esch.), male (9 mm; **18**).

M. infuscatus for North America (Cate et al., 2007) is erroneous and refers to the Nearctic *M. insidiosus* (LeConte, 1853) (Majka and Johnson, 2008).

Biology. In the Russian Far East, it inhabits mountain forests; it was also found in mountain tundra. The larvae develop in forest soil and litter (Gurjeva, 1989b). A rare species.

62. *Prosternon sericeum* (Gebler, 1824)
(Fig. 26, 3)

Material. 6 specimens. **1:** 6.VII.2017, 2 specimens. **6:** 26.V.2016, 2 specimens. **8:** 14–17.VII.2017, 2 specimens.

Distribution. Russia: the south of Western and Eastern Siberia, the Far East (including the islands). The Northwest of the USA, Kazakhstan, Mongolia, North-Western China, South Korea (Gurjeva, 1989b; Cate et al., 2007; Platia and Han, 2010).

Biology. This is a mountain-forest species; the larvae develop in forest soil and litter and in the biotopes adjoining forests, also occur under moss and stones (Gurjeva, 1989b). A relatively rare species.

63. *Pseudanostirus ecarinatus* (Stepanov, 1930)
(Fig. 27, 1–3; Fig. 32, 3)

Gurjeva, 1989b : 165 – Dalnegorsk.

Material. 2 specimens. **15:** 19.V.2016, 1 specimen. **18:** 29.V.2015, 1 specimen.

Distribution. Russia: Siberia, the Far East. Mongolia, Northern China, South Korea (Prosvirov, 2009; Han et al., 2012a).

Biology. This species inhabits various types of forests; the larva is unknown (Gurjeva, 1989b). A rare species.

Tribe SELATOSOMINI Schimmel, Tarnawski,
Han et Platia, 2015

Subtribe MOSOTALESINA Schimmel, Tarnawski,
Han et Platia, 2015

64. *Mosotalesus (Mosotalesus) baerii*
(Kuschakewitsch, 1861)
(Fig. 27, 6)

Material. 2 specimens. **18:** 29.V.2015, 1 specimen. **19:** 30.VI.2017, 1 specimen.

Distribution. Russia: Siberia, the Far East (including the islands). North Korea (Gurjeva, 1989b).

Biology. This species inhabits the mountain-forest belt; the larva is unknown (Gurjeva, 1989b). A rare species.

65. *Mosotalesus (Mosotalesus) impressus impressus*
(Fabricius, 1792)
(Fig. 27, 5)

Gromyko and Potikha, 2006 : 241 (*Mesotalesus* [sic!]) – Sikhote-Alin Nature Reserve.

Material. **14:** 12.VII.2017, 1 specimen.

Distribution. The taiga and mixed forests zones of the temperate regions of Eurasia (Gurjeva, 1989b; Cate et al., 2007).

Biology. This species inhabits coniferous and mixed forests; the larvae develop in litter, under moss mats, and in fungi (Gurjeva, 1989b). A rare species.

Subtribe SELATOSOMINA Schimmel, Tarnawski,
Han et Platia, 2015

66. *Selatosomus (Selatosomus) coreanus*
(Miwa, 1928)
(Fig. 27, 4)

Denisova, 1948 : 43 (original description of *S. reichardti* Denisova, 1948) – upper course of the Ioldzikhe River, Sikhote-Alin Mts., Ussuriisk Territory [Dzhigitovka River in Terneiskii District (Gurjeva, 1989b : 243)]; Gromyko and Potikha, 2006 : 241 (as *S. reichardti* [sic!]) – Sikhote-Alin Nature Reserve; Schimmel et al., 2015 : 93 (as *S. reichardti*) – Sikhote Alin North, Dalyj [sic!] Kut [Krasnoarmeiskii District, Dalnii Kut Vill.]; Ussuri, Terney [Terneiskii District, ? Ternei Vill.].

Material. 24 specimens. **3:** 13.VI.2015, 1 specimen; 23.VI.2016, 1 specimen. **4:** 1.VI.2015, 6 specimens. **5:** 21.VI.2016, 1 specimen. **6:** 3–7.VI.2018, 2 specimens; 8.VII.2015, 2 specimens; 16.VII.2018, 1 specimen. **8:** 14–17.VII.2017, 1 specimen. **9:** 23.V.2017, 1 specimen. **11:** 26.VI.2018, 2 specimens. **14:** 21.V.2016, 2 specimens. **18:** 29.V.2015, 1 specimen; 25.VI.2019, 1 specimen; 3.VII.2017, 1 specimen. **28:** 22.V.2018, 1 specimen.

Distribution. Russia: the south of Eastern Siberia, the Far East. Mongolia, Northern China, North and

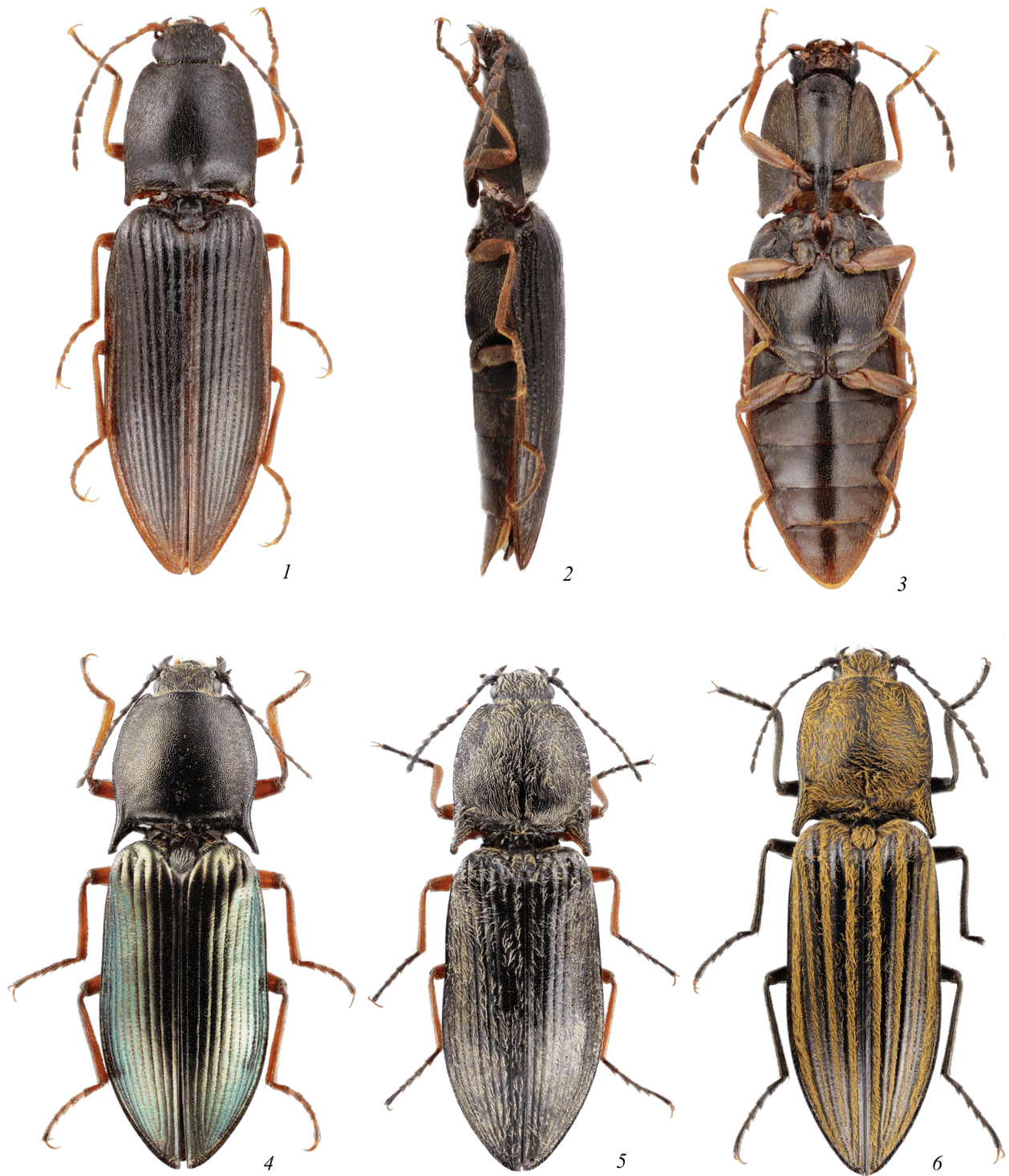


Fig. 27. Elateridae, habitus, dorsal (1, 4–6), lateral (2), and ventral (3) view [(1–3) *Pseudanostirus ecarinatus* (Step.), male (13.2 mm; 15); (4) *Selatosomus coreanus* (Miwa), female (15.7 mm; 18); (5) *Mosotalesus impressus impressus* (F.), female (14 mm; 14); (6) *M. baerii* (Kusch.), female (17.8 mm; 18)].

South Korea (Gurjeva, 1989b; Cate et al., 2007; Schimmel et al., 2015). The records of this species for Western Siberia (Cherepanov, 1957), Kazakhstan (Gabdullina, 2016), and Central China (Jiang, 1993) should be verified; the records for Sakhalin Island, the Southern Kuriles, and Japan (Denisova, 1948; Bessolitsyna, 1974; Tarnawski, 1995) are most likely erroneous and may refer to *S. puncticollis* Motschulsky, 1866.

Biology. This species inhabits various types of forests; the larvae develop in forest soils and litter and also occur in the soil of open biotopes near forests (Gurjeva, 1989b). A common species.

Taxonomic notes. It is widely believed (Ôhira and Yamauchi, 2000, 2005; Ôhira et al., 2005, 2006; Schimmel et al., 2015) that *S. coreanus* and *S. reichardti* reduced earlier to its synonyms (Kishii, 1993b) are two different species. However, the indicated difference in the morphological characters of these taxa (the structure of the antennae, the punctuation of the pronotum, and the structure of the aedeagus) is too insignificant for such a conclusion. At the same time, preliminary analysis of the material of this taxon testifies to the existence of at least two different morphotypes of *S. coreanus*, among which one occurs only in the eastern part of the range. Similar data were also obtained after the molecular genetic testing *S. coreanus* which has shown that the populations of this taxon in the Far East are genetically non-uniform and fall into two clades rather far distant from each other (Han et al., 2016b). In this connection, the status of *S. coreanus* and *S. reichardti* should be clarified.

Subfamily NEGASTRIINAE Nakane et Kishii, 1956

Tribe NEGASTRIINI Nakane et Kishii, 1956

67. *Fleutiauxellus (Fleutiauxellus) parvus*

Kim et Han, 2000

(Fig. 28, 1; Fig. 29, 1; Fig. 32, 7; Fig. 33, 6)

Material. 3 specimens. 6: 19.VII.2018, 1 specimen; 2.VIII.2018, 1 specimen. 11: 2.VII.2018, 1 specimen.

Distribution. Russia: Primorskii Territory. South Korea (Prosvirov, 2014).

Biology. This species inhabits shingle beach of rivers and brooks (unpublished data); the larva is unknown. This species seems to be locally distributed, but is rather common in its habitats.

The drawing of the female genital tract of *F. parvus* (Fig. 33, 6) is given for the first time.

68. *Fleutiauxellus (Migiwa) curatus septentrionalis*

Kishii, 1976

(Fig. 28, 3; Fig. 32, 6)

Material. 23: 21.VII.2016, 1 specimen.

Distribution. Japan (Hokkaido Island) (Kishii, 1999). The record of *Negastrius curatus* for Sakhalin Island (Katjuha, 1977) also seems to refer to this subspecies. It is recorded for the mainland Russian Far East and Primorskii Territory for the first time.

Biology. The ecology has not been investigated (apparently, the species inhabits the pebbly shores of water bodies, similarly to most of the closely related species); the larva is unknown. Probably, it is locally distributed in Primorskii Territory.

Taxonomic notes. The status of *F. curatus septentrionalis* should be clarified: at present, 4 subspecies of *F. curatus* (Candèze, 1873) distributed in Japan and adjacent regions are known (Cate et al., 2007); however, all they rather strongly differ from one another, including the structure of the aedeagus (Kishii, 1976; Kim et al., 2000b), which can be indicative of their species rank.

69. *Oedostethus aerarius* (Reitter, 1895)

(Fig. 29, 4, 5; Fig. 34, 1)

Material. 23: 21.VII.2016, 2 specimens.

Distribution. Russia: Siberia. Mongolia (Cate et al., 2007). It is recorded for the Russian Far East and Primorskii Territory for the first time.

Biology. This species inhabits shingle beach of rivers and brooks; the larva is unknown. Apparently, it is locally distributed in Primorskii Territory.

Taxonomic notes. *Oedostethus curticornis* Dolin et Bessolitzina, 1983 and *Oe. minutulus* (Tsherepanov, 1957) are most likely conspecific with this species, being characterized by similar features. Clarification of the status of these taxa requires examination of their type specimens and additional material from Siberia and the Russian Far East. As well as in many species of Negastriinae, the coloration and size of the body in *Oe. aerarius* demonstrate wide individual variability (Fig. 29, 4, 5).



Fig. 28. Elateridae, males, habitus, dorsal view (1–5) and anal ventrite, ventral view (6, 7) [(1) *Fleutiauxellus parvus* Kim et Han (3.3 mm; 11); (2) *Oedostethus pektusanicus* Ném. et Plat. (3.2 mm; 6); (3) *F. curatus septentrionalis* Kishii (3.5 mm; 23); (4, 6) *Oe. petrenkoi* Dol. (3.3 mm; 9); (5, 7) *Oe. problematicus* Dol. (3 mm; 18)].

The drawing of the female genital tract of this species (Fig. 34, 1) is given for the first time.

70. *Oedostethus graniger* (Tsherepanov, 1956)
(Fig. 30, 4; Fig. 34, 3)

Material. 23: 21.VII.2016, 2 specimens.

Distribution. Russia: Siberia, Primorskii Territory. Mongolia (Prosvirov, 2009).

Biology. The adults and larvae occur along the banks of rivers and brooks; they also inhabit littoral biotopes (Cherepanov, 1965; Gurjeva, 1975; Matis, 1980). Apparently, this species is rare in Primorskii Territory.



Fig. 29. Elateridae, females, habitus, dorsal view: (1) *Fleutiauxellus parvus* Kim et Han (3.6 mm; **6**); (2) *Oedostethus pektusanicus* Ném. et Plat. (3.9 mm; **6**); (3) *Oe. pektusanicus* (3.5 mm; **9**); (4) *Oe. aerarius* (Rtt.) (3.8 mm; **23**); (5) *Oe. aerarius* (3.3 mm; **23**); (6) *Oe. petrenkoi* Dol. (3.9 mm; **9**).

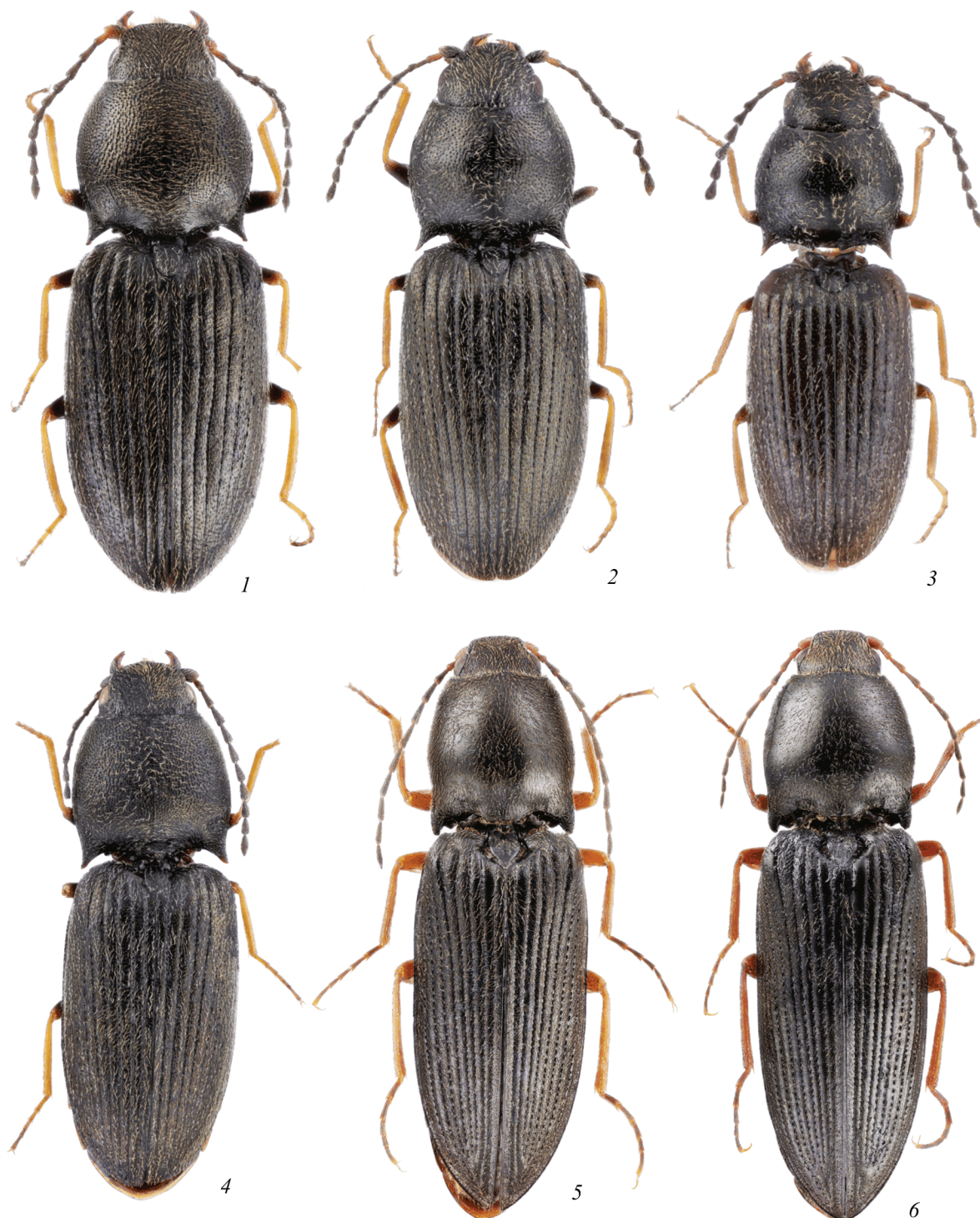


Fig. 30. Elateridae, habitus, dorsal view: (1) *Oedostethus petrenkoi* Dol., female (4.6 mm; **9**); (2) *Oe. problematicus* Dol., female (4 mm; **18**); (3) *Oe. problematicus*, female (3.2 mm; **11**); (4) *Oe. graniger* (Tsher.), female (4.2 mm; **23**); (5) *Cardiophorus aenigmatus* Dol. et Šauš., male (7.9 mm; **14**); (6) *C. aenigmatus*, female (9.7 mm; **UL**).

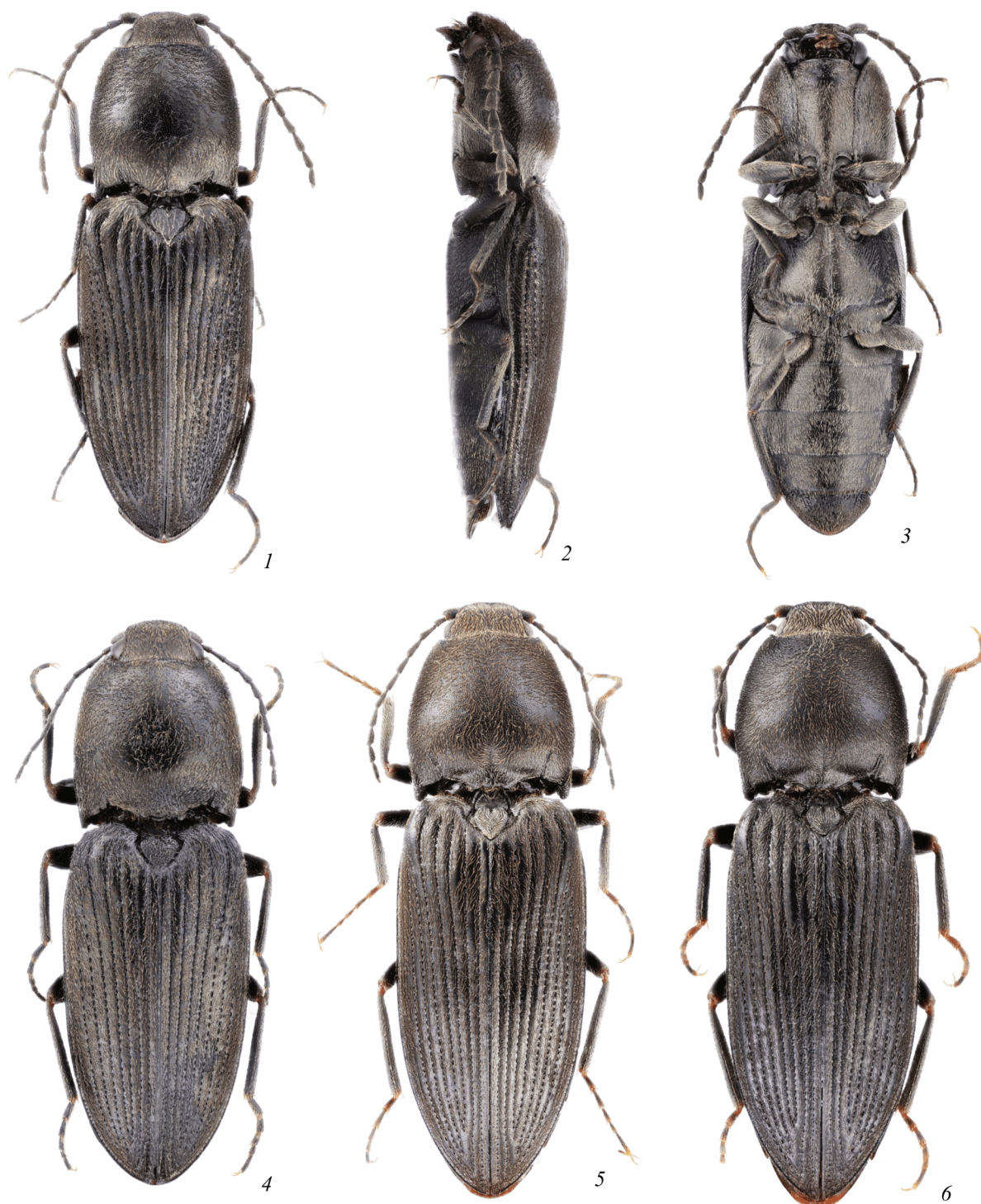


Fig. 31. Elateridae, habitus, dorsal (1, 4–6), lateral (2), and ventral (3) view [(1–3) *Cardiophorus pinguis* Lew., male (6.6 mm; 13); (4) *Paracardiophorus curtulus* (Motsch.), female (7 mm; 4); (5) *C. inflatus* (Cand.), male (9.7 mm; 8); (6) *C. inflatus*, female (10.3 mm; 6)].

The drawing of the female genital tract of *Oe. graniger* (Fig. 34, 3) is given for the first time.

71. *Oedostethus pektusanicus* Németh et Platia, 2014 (Fig. 28, 2; Fig. 29, 2, 3; Fig. 32, 8; Fig. 33, 7)

Platia et al., 2020 : 26 – “Khanov” cordon (44°54'N, 136°20'E); the environs of Lake Blagodatnoe (44°57'N, 136°33'E).

Material. 20 specimens. **6:** 16–19.VII.2018, 15 specimens. **9:** 17.VII.2018, 1 specimen; 26.VII.2018, 2 specimens; 13.VIII.2015, 1 specimen. **10:** 4.VIII.2016, 1 specimen.

Distribution. Russia: Primorskii Territory. North Korea (Platia et al., 2020). The record of *Fleutiauxellus quadrillum* (Candèze, 1873) (Prosvirov, 2014) also refers to this species; the same may also concern Gurjeva's publication (1967). It cannot be ruled out that the record of *Oe. quadripustulatus* (Fabricius, 1792) for Primorskii Territory (Bessolitsyna, 1974) also refers to *Oe. pektusanicus*.

Biology. This species is closely related to *Oe. quadripustulatus* in peculiarities of its biology: it occurs in various meadows and fields and also in sparse forest biotopes (unpublished data). The larva is unknown. It cannot be ruled out that it is this larva that was described as a larva of *F. quadrillum* in the material from the south of Primorskii Territory (Dolin and Kurcheva, 1975); however, in order to solve this problem, the material should be re-examined. This species is locally distributed, but rather common in the habitats.

Taxonomic notes. *Oedostethus pektusanicus* is closely related to the species of the subgenus *Fleutiauxellus* (*Neomigiwa*) in a complex of external characters and in the structure of the aedeagus; however, in connection with the overall underdevelopment of the generic classification of Negastrinae of the Far East and with the existing disagreements in understanding of it (Kishii, 1976, 1999; Ôhira, 1988; Jarzabek-Müller, 2015), we maintain the current generic combination. Similarly to many species of Negastrinae, *Oe. pektusanicus* demonstrates a wide individual variability in coloration and size of the body (Fig. 29, 2, 3).

The drawing of the female genital tract of *Oe. pektusanicus* (Fig. 33, 7) is given for the first time.

72. *Oedostethus petrenkoi* Dolin, 1992 (Fig. 28, 4, 6; Fig. 29, 6; Fig. 30, 1; Fig. 32, 5; Fig. 34, 2)

Material. 27 specimens. **9:** 6.VI.2018, 15 specimens; 17.VII.2018, 5 specimens. **11:** 15.VI.2018, 1 specimen; 29.VI–1.VII.2018, 3 specimens. **14:** 9.VII.2018, 3 specimens.

Distribution. Russia: Siberia, the Far East. Kazakhstan, Mongolia, North-Eastern China (Prosvirov, 2009; Jarzabek-Müller, 2015).

Biology. This species inhabits the pebbly banks of rivers and streams (unpublished data); the larva is unknown. A common species.

Taxonomic notes. *Oedostethus koreanus* Kim, Han et Lee, 2000 described from South Korea (Kim et al., 2000a) is very similar to *Oe. petrenkoi*. These taxa may be conspecific. The coloration and size of the body of *Oe. petrenkoi* are noticeably variable (Fig. 29, 6; Fig. 30, 1), as well as in many species of Negastrinae.

The drawing of the female genital tract of *Oe. petrenkoi* (Fig. 34, 2) is given for the first time.

73. *Oedostethus problematicus* Dolin, 1992 (Fig. 28, 5, 7; Fig. 30, 2, 3; Fig. 32, 4; Fig. 33, 8)

Material. 11 specimens. **8:** 4.VI.2018, 1 specimen. **11:** 29.VI.2018, 1 specimen. **18:** 25.VI.2019, 9 specimens.

Distribution. Endemic to Primorskii Territory (Prosvirov, 2009).

Biology. This species inhabits the shores of water bodies (Dolin, 1992; unpublished data); the larva is unknown. It seems to be locally distributed, but is rather common in the habitats.

Taxonomic notes. The females of *Oedostethus problematicus* had been unknown and were found in the material collected in the Sikhote-Alin Nature Reserve. They differ from the males in a larger size, a wider body, and shorter antennae. The coloration and size of the body of *Oe. problematicus* are noticeably variable (Fig. 30, 2, 3), as well as in many species of Negastrinae.

The drawing of the female genital tract of this species (Fig. 33, 8) is given for the first time.

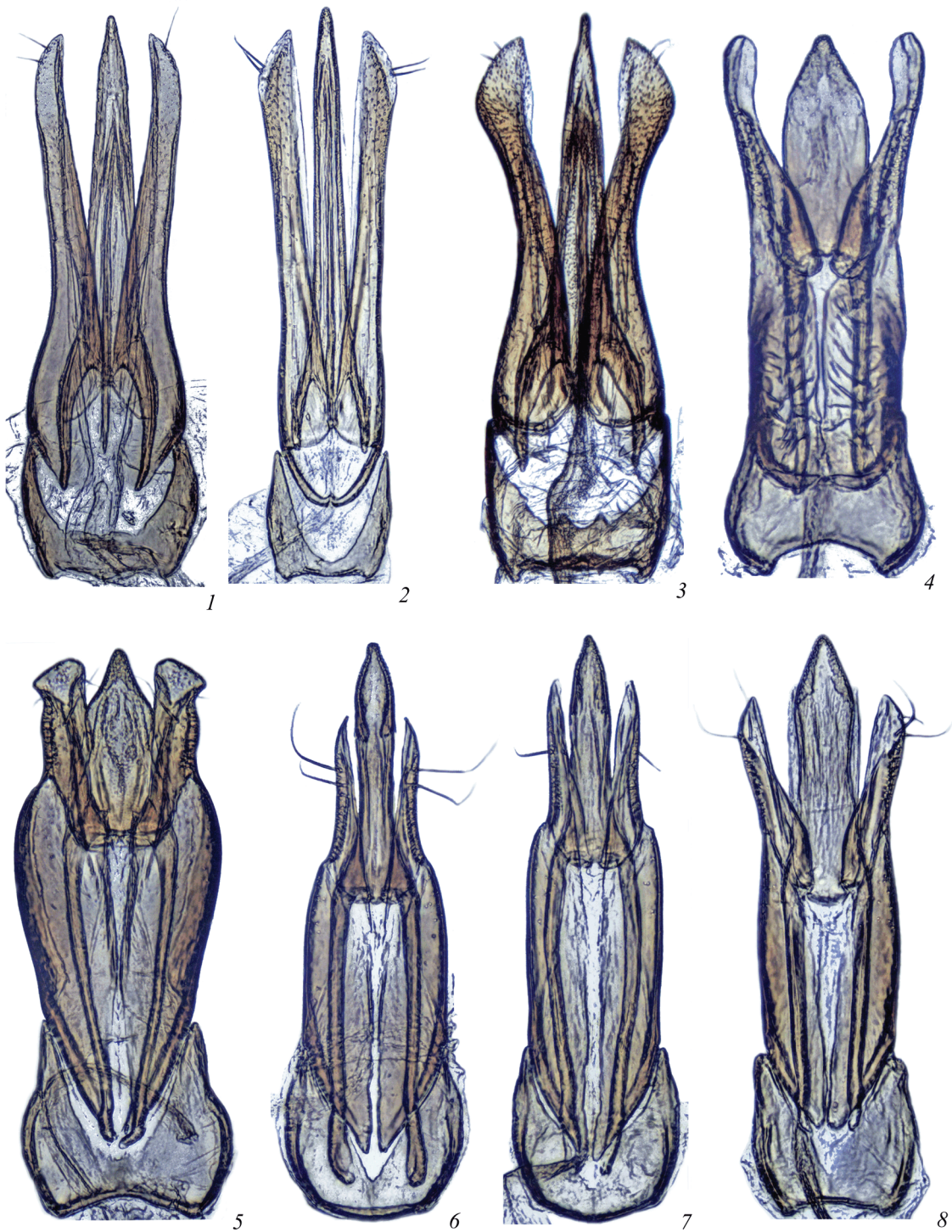


Fig. 32. Elateridae, aedeagus, ventral view: (1) *Corymbitodes epipedus* Gur. (7.9 mm; 3); (2) *Eanus singularis* (Mnnh.) (5.6 mm; 25); (3) *Pseudanostirus ecarinatus* (Step.) (13.2 mm; 15); (4) *Oedostethus problematicus* Dol. (3 mm; 18); (5) *Oe. petrenkoi* Dol. (3.5 mm; 9); (6) *Fleutiauxellus curatus septentrionalis* Kishii (3.5 mm; 23); (7) *F. parvus* Kim et Han (3.3 mm; 11); (8) *Oe. pektusanicus* Ném. et Plat. (3.8 mm; 9).

Subfamily CARDIOPHORINAE Candèze, 1860

Tribe CARDIOPHORINI Candèze, 1860

74. *Cardiophorus (Cardiophorus) aenigmatosus*

Dolin et Šauša, 1997

(Fig. 30, 5, 6; Fig. 33, 2; Fig. 34, 4)

Material. 10 specimens. **2:** 23.VI.2015, 1 specimen. **9:** 21.VI.2018, 1 specimen. **11:** 27.VI.2018, 1 specimen. **14:** 9.V.2016, 1 specimen; 9.VII.2018, window trap, 1 specimen. **15:** 19.V.2016, 1 specimen. **22:** 12.VI.2017, 3 specimens “**UL**”: 22.VII.2015, 1 specimen.

Distribution. Endemic to the south of the Russian Far East (Prosvirov, 2009).

Biology. The ecology has not been investigated; the larva is unknown. A relatively rare species.

Taxonomic notes. The body length of this species was not indicated in the original description and constituted about 8–10 mm in the specimens examined by us. It is noteworthy that the image of the aedeagus of *C. aenigmatosus* given in the original description is rather schematic (Dolin and Šauša, 1997).

Detailed drawings of the aedeagus (Fig. 33, 2) and female genital tract of *C. aenigmatosus* (Fig. 34, 4) are given for the first time.

75. *Cardiophorus (Cardiophorus) inflatus* Candèze, 1882 (Fig. 31, 5, 6; Fig. 33, 3; Fig. 34, 5)

Cardiophorus heydeni Buysson, 1915, syn. n.

Material. 6 specimens. **6:** 26.V.2016, 1 specimen; 8.VII.2015, 1 specimen. **8:** 28–30.VI.2016, 1 specimen; 5.VII.2019, 1 specimen; 14–17.VII.2017, 2 specimens.

Distribution. Russia: the south of the Far East. North-Eastern China (Prosvirov, 2009).

Biology. The ecology of the adults has not been investigated; the larvae develop in soil in sparse forests and open biotopes and near water bodies (Dolin and Kurcheva, 1975; Dolin, 1978). A rare species.

Taxonomic notes. This species was earlier included into the genus *Platynychus* Motschulsky, 1858 (Cate et al., 2007; Prosvirov, 2009); however, according to a complex of external morphological characters and to

the structure of the genitalia, it belongs to the genus *Cardiophorus* Eschscholtz, 1829.

Cardiophorus heydeni was described from “Ussuriisk Territory” [“Ussuri, Amour”] without an exact designation of the locality (Buysson, 1915). The features characterizing this taxon correspond to those of *C. inflatus*. Examination of the lectotype of *C. inflatus* (deposited in RBINS) and the published data on new records of *C. heydeni* from the south of the Russian Far East (Platia, 2013; this material was compared with the holotype of *C. heydeni*) has substantiated conspecificity of these two taxa.

The drawings of the aedeagus (Fig. 33, 3) and female genital tract of *C. inflatus* (Fig. 34, 5) are given for the first time.

76. *Cardiophorus (Cardiophorus) pinguis* Lewis, 1894 (Fig. 31, 1–3; Fig. 33, 1)

Material. 2 specimens. **6:** 2.VI.2016, 1 specimen. **13:** 15.V.2015 1 specimen.

Distribution. Russia: Sakhalin Island. North-Eastern China, the Korean Peninsula, Japan (Cate et al., 2007; Platia, 2016). It is recorded for the mainland Russian Far East and Primorskii Territory for the first time.

Biology. The mode of life and larva are unknown. A rare species.

Taxonomic notes. This species is similar to *C. vulgaris* Motschulsky, 1860 in the habitus but clearly differs in the pubescence of the body and in the structure of the aedeagus and sclerites in the bursa copulatrix. It cannot be ruled out that part of the records of *C. vulgaris* for the Russian Far East actually refer to *C. pinguis*.

77. *Paracardiophorus curtulus* (Motschulsky, 1860) (Fig. 31, 4; Fig. 33, 4; Fig. 34, 6)

Platia, 2010 : 128 – Sikhote-Alin Range, Terney env. [Terneiskii District, ? the environs of Ternei Vill.].

Material. 6 specimens. **4:** 21.VI.2015, 1 specimen. **6:** 16.VI.2017, 1 specimen; 8.VII.2015, 4 specimens.

Distribution. Russia: Eastern Siberia, the south of the Far East. North-Eastern China (Cate et al., 2007 (as *Cardiophorus motschulskyi*); Platia, 2010, 2016).



Fig. 33. Elateridae, aedeagus, ventral view (1–4); female genital tract, general view (5–8) [(1) *Cardiophorus pinguis* Lew. (7.2 mm; 6); (2) *C. aenigmatus* Dol. et Šauš. (9.4 mm; 15); (3) *C. inflatus* (Cand.) (9.7 mm; 8); (4) *Paracardiophorus curtulus* (Motsch.) (6.6 mm; 6); (5) *Corymbitodes christophi* (Ksw.) (12 mm; 9); (6) *Fleutiauxellus parvus* Kim et Han (3.6 mm; 6) [slide is partly damaged]; (7) *Oedostethus pektusanicus* Ném. et Plat. (3.9 mm; 6); (8) *Oe. problematicus* Dol. (4 mm; 18).

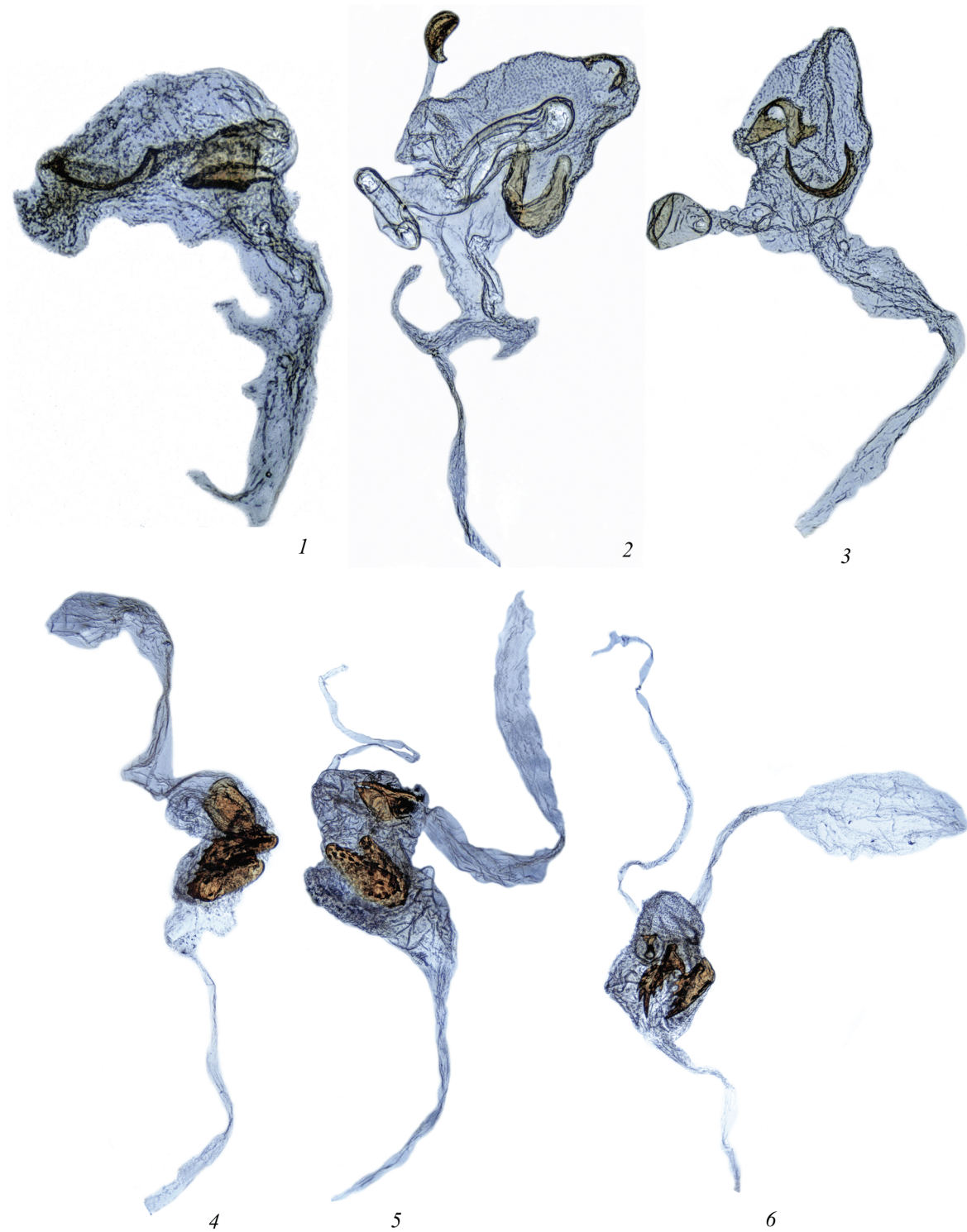


Fig. 34. Elateridae, female genital tract, general view: (1) *Oedostethus aerarius* (Rtt.) (3.8 mm; 23) [slide is partly damaged]; (2) *Oe. petrenkoi* Dol. (3.9 mm; 9); (3) *Oe. graniger* (Tsher.) (4.2 mm; 23); (4) *Cardiophorus aenigmatus* Dol. et Šauš. (9.4 mm; 9); (5) *C. inflatus* (Cand.) (10.3 mm; 6); (6) *Paracardiophorus curtulus* (Motsch.) (7 mm; 6).

Biology. The ecology has not been investigated; the larva is unknown. A rare species.

Taxonomic notes. This species is very closely related to *P. coreanus coreanus* Kishii, 1977 known from the Russian Far East, South Korea, and Northern China (Kishii, 1977a; Ôhira, 1986, 1997; Ôhira et al., 2006) in the structure of the male and female genitalia. The status of the latter can be clarified only after a detailed revision of the *Paracardiophorus* species of the Russian Far East and adjacent regions.

Thus, the fauna of the click-beetles of the Sikhote-Alin Nature Reserve and adjacent territories now includes 77 species belonging to 36 genera, 11 tribes, and 5 subfamilies (which constitutes about 65% of the number of all the Elateridae species known from Primorskii Territory). Fifty-four species are recorded for the area under study for the first time; two species included in the list are known to us only from the literature data. Among the species recorded by us, 7 are new to the fauna of Primorskii Territory and 5, for the mainland Russian Far East. Records of 4 Elateridae species for the fauna of the Sikhote-Alin Nature Reserve and adjacent territories should be verified and, thus, are not yet included in the general list of the species.

The present list still is far from being complete and will be significantly supplemented in the future. In particular, the list does not include over 20 species known from the Lazovskii Nature Reserve (Prosvirov, 2009, 2014), though at least part of them may also occur in the investigated territory. In addition, the species inhabiting Eastern Siberia and the north of the Russian Far East may also be recorded here. In this regard, we can assume that the complete list of the Elateridae of the Sikhote-Alin Nature Reserve and adjacent territories should include about 90–100 species.

As the distribution and peculiarities of the ecology of most of the Elateridae species of the Far East have been insufficiently studied, we cannot yet perform detailed zoogeographical and ecological analysis of the Elateridae fauna of the Sikhote-Alin Nature Reserve and adjacent territories. Nevertheless, some main peculiarities of the click beetle fauna of the study region can be preliminarily listed even at this stage of investigation. In particular, the Elateridae of the Sikhote-Alin Nature Reserve and adjacent territories are formed by two main faunal complexes: the Siberian–Far Eastern species with

wide distribution ranges and the East Asian species with narrower ranges. The number of the species endemic to the south of the Russian Far East in this fauna is also considerable and constitutes about 1/5 of all the fauna. Based on these data, we can conclude that a rather wide variety of the biotopes represented in the territory under study provides conditions for the existence of both the common Siberian–Far Eastern and East Asian species and the more narrowly distributed species probably including relict ones. Records of several click-beetle species previously known only from the island Far East of Russia (*Aplotarsus sachalinensis*, *Fleutiauxellus curatus*, and *Cardiophorus pinguis*) are of interest in the faunal aspect and once again confirm a considerable affinity between the island and the mainland faunas of Elateridae of the Russian Far East. Records of such species as *Limonium obiense* and *Oedostethus aerarius* in the territory of the Sikhote-Alin Nature Reserve testify to the necessity of further investigation and clarification of the borders of the distribution ranges of the Euro-Siberian and Siberian species of Elateridae.

Examination of the characters of the genital structure in a number of the species discussed has reaffirmed the validity of the critical comments expressed earlier by us with regard to the quality and informativeness of the images of the genitalia of Elateridae given in the literature (Prosvirov and Savitsky, 2011; Prosvirov, 2017a). Unfortunately, the drawings of the genitalia in most of the publications dealing with the click-beetles of the Russian Far East are frequently inaccurate or too schematic and, thus, should be used with caution. A notable range of the variability in the structure of separate parts of the aedeagus and the bursa copulatrix (Mardzhanjan, 1977; Prosvirov, 2017b) should also be taken into consideration.

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COMPLIANCE WITH ETHICAL STANDARDS

The authors declare that they have no conflict of interest. All applicable international, national, and institutional guidelines for the care and use of animals were followed. All procedures performed in studies involving animals were in accordance with the ethical standards of the institution or practice at which the studies were conducted.

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