

New or Little Known Species of Ground Beetles (Coleoptera, Carabidae) from Sakhalin Island

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Abstract—Data on 20 new or little known species of ground beetles found in the south of Sakhalin are presented. Two of these species, *Bembidion pliculatum* Bates, 1883 and *Apristus grandis* Andrewes, 1937, are new to the fauna of Russia, and five other species are formally recorded for the first time from Sakhalin Island: *Dyschirius tristis* Stephens, 1827, *Bembidion pseudolucillum* Netolitzky, 1938, *Trechus nigricornis arsenjevi* (Jeannel, 1962), *Harpalus nigrans* A. Morawitz, 1862, and *Lebia bifenestrata* A. Morawitz, 1862. The earlier records of 13 species from Sakhalin are supported by additional material: *Carabus canaliculatus sichotensis* Born, 1914, *Dyschirius aeneus ovicollis* Putzeys, 1873, *Eobroschus lutshniki* (Roubal, 1928), *Bembidion hiogoense* Bates, 1873, *B. lucillum lucillum* Bates, 1883, *B. varium* (Olivier, 1795), *Pterostichus longinquus* Bates, 1873, *Agonum consimile* (Gyllenhal, 1810), *Amara erratica* (Duftschmid, 1812), *A. hicksi* Lindroth, 1968, *Harpalus platynotus* Bates, 1873, *Chlaenius inops inops* Chaudoir, 1856, and *Parena tripunctata* (Bates, 1873).

Keywords: Carabidae, fauna, distribution, new records, Russian Far East, Sakhalin Island

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This paper contains data on the new and little known species of Carabidae from Sakhalin Island. The beetles were collected mainly by Yu.N. Sundukov, M.E. Sergeev (Federal Scientific Center of East Asia Terrestrial Biodiversity, Far East Branch of the Russian Academy of Sciences, Vladivostok), and L.A. Sundukova (Lazo, Primorskii Territory) in the south of Sakhalin in 2018, 2019, and 2022. The material is deposited at the Federal Scientific Center of East Asia Terrestrial Biodiversity, Far East Branch of RAS, Vladivostok.

ANNOTATED SPECIES LIST

Family Carabidae

Tribe Carabini

Carabus (Aulonocarabus) canaliculatus sichotensis
Born, 1914

Material. Sakhalin: Okhinskii District, Piltun lighthouse, 52.85153°N, 143.30851°E, VII.2016, M. Morozova, 1 ♂.

Distribution. Russia: Northern Sikhote-Alin (north of the Bikin River), mountains of the Lower Amur basin including the Stanovoy Range, Northern Sakhalin, Bolshoy Shantar Island (Sundukov et al., 2021).

Habitats. Dark coniferous forests and shrub tundra.

Notes. The species was previously known (Deuve, 1991) based on 1 spm. from the northwest of Sakhalin: “Sakhaline: Pol. Smidta, côte orientale, vallée de la rivière Langri (B. Brezina, 20 juillet 1990).” In fact, however, the Langry River valley is located on the western coast of Sakhalin, opposite the Amur River delta.

Tribe Dyschiriini

Dyschirius (Dyschiriodes) aeneus ovicollis
Putzeys, 1873

Material. Sakhalin: Vakhrushevka River near Troitskoe, 4.VIII.2018, Yu. Sundukov, L. Sundukova, 2 ♂♂, 5 ♀♀.

Distribution. Russia: South Kuril Islands (Kunashir) (Lafer, 1989), Southern Sakhalin, Primorskii Territory (Lafer, 1989). Japan (Hokkaido, Honshu, Kyushu), North Korea, Northeastern and Eastern China.

Habitats. Collected on sand deposits 2 m from the river bank.

Notes. The species was earlier recorded from Novoaleksandrovsk as *D. aeneus aeneus* (Dejean, 1825) (Fedorenko, 1995, 1996) and as *D. ovicollis* Putzeys, 1873 (Berlov and Berlov, 1997). I identify the collected specimens as *D. aeneus ovicollis* Putzeys, 1873 based on the reddish coloration of the apical third of the elytra.

Dyschirius (Dyschiriodes) tristis Stephens, 1827

Material. Sakhalin: Vakhrushevka River near Troitskoe, 4.VIII.2018, Yu. Sundukov, L. Sundukova, 1 ♂, 2 ♀♀.

Distribution. Russia: South Kuril Islands (Kunashir), Southern Sakhalin, Magadan Province, Khabarovsk Territory, Primorskii Territory, Amur Province; Yakutia, Transbaikalia, Siberia, the Urals, the Caucasus, European Russia. Japan (Hokkaido, Honshu, Kyushu), Korea, Mongolia, Middle Asia, Transcaucasia, Western Europe.

Habitats. Collected on riverside sand deposits in floodplain willow shrubs.

Notes. The species is recorded here for the first time for the fauna of Sakhalin.

Tribe **Broscini**

Eobrosca lutshniki (Roubal, 1928)

Material. Sakhalin: Yasnomorskoe, N of Nevelsk, Yasnomorka River valley, 23.VII.2019, M. Sergeev, 1 ♂.

Distribution. Russia: South Kuril Islands (Kunashir), Southern Sakhalin, Primorskii Territory, south of Khabarovsk Territory. Japan (Hokkaido, Honshu), North Korea, Northeastern and Central China.

Habitats. Attracted to electric light.

Notes. The previous records of *E. lutshniki* for Sakhalin (Lafer, 1989, 1998; Morita, 1990; Kryzhanovskij et al., 1995; Sundukov and Makarov, 2016) did not include the exact finding localities.

Tribe **Bembidiini**

Bembidion (Notaphus) varium (Olivier, 1795)

Material. Sakhalin: Lyutoga River, 2 km S of Petropavlovskoe, river bank, 6.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♀.

Distribution. A polyzonal trans-Palaearctic species, distributed from Sakhalin Island and the lower reaches of the Amur River in the east to the Atlantic coast in the west; from the middle reaches of the Lena, Yenisei, and Ob rivers and the Scandinavian Peninsula in the north to Taiwan, Sichuan Province of China, Afghanistan, Iran, the north of the Arabian Peninsula, and North Africa in the south.

Habitats. Collected on a silty river bank.

Notes. The species was earlier recorded from Yuzhno-Sakhalinsk and from a tributary of the Susuya River (Kryzhanovskij and Molodova, 1973; Yokoyama and Kano, 1927). It was later excluded from the list of the Sakhalin fauna by Lafer (2011), who supposed that “the Japanese researchers erroneously used this name for *B. pochlai* Kirschenhofer, 1984 (according to the collection of the Biology and Soil Science Institute), and O.L. Kryzhanovskij, for *B. (Notaphus) fasciatum* Motschulsky, 1844 (according to the collection of the Zoological Institute).”

Bembidion (Plataphus) lucillum lucillum

Bates, 1883

Material. Sakhalin: Lyutoga River, 2 km S of Petropavlovskoe, river bank, 6.VIII.2022, Yu. Sundukov, L. Sundukova, 4 ♂♂, 3 ♀♀; Susuya River, near Maiskoe (N of Novotroitskoe), river bank, 5.VIII.2022, Yu. Sundukov, L. Sundukova, 2 ♂♂, 1 ♀; Belaya River, W of Sokol, river bank, 9.VIII.2022, Yu. Sundukov, L. Sundukova, 22 ♂♂, 31 ♀♀.

Distribution. Russia: South Kuril Islands (Kunashir), Sakhalin. Japan (Hokkaido, Honshu, Shikoku, Kyushu).

Habitats. Collected on pebbly river banks.

Notes. The previous records (Morita, 1991; Berlov and Berlov, 1997) were made in the more northern parts of the island: Makarovskii District (Porechye) and Dolinskii District (Firsovo).

Bembidion (Plataphus) pseudolucillum

Netolitzky, 1938

Material. Sakhalin: Belaya River W of Sokol, river bank, 9.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♀.

Distribution. Russia: South Kuril Islands (Kunashir, Shikotan), Southern Sakhalin. Japan (Hokkaido, Honshu, Shikoku, Kyushu).

Habitats. Collected on a pebbly river bank.

Notes. The species is recorded here for the first time for the fauna of Sakhalin.

Bembidion (Blepharoplataphus) hiogoense

Bates, 1873

Material. Sakhalin: Novikovo, river bank, 5.VIII.1977, G. Lafer, *Bemb. hiogoense* Bat., G. Lafer det., 1 ♂, 1 ♀; Susuya River near Viktoriya villa community (W of Troitskoe), river bank, 17.VI.2018, Yu. Sundukov, 1 ♀; Susuya River near Maiskoe (N of Novotroitskoe), river bank, 5.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♀; Srednyaya River near Troitskoe, 29.VII.2022, Yu. Sundukov, L. Sundukova, 2 ♂♂, 1 ♀; Belaya River W of Sokol, river bank, 9.VIII.2022, Yu. Sundukov, L. Sundukova, 2 ♂♂, 2 ♀♀.

Distribution. Russia: South Kuril Islands (Urup, Iturup, Kunashir, Shikotan), Southern Sakhalin. Japan (the entire territory), Korean Peninsula, Mongolia.

Habitats. Collected on pebbly river banks.

Notes. The species was previously known from Sakhalin based on 1 spm. collected on the Firsovka River near Firsovo, in the south of the island (Morita, 1991; Berlov and Berlov, 1997).

Bembidion (Hirmoplastaphus) pliculatum

Bates, 1883 (Fig. 1, A–C)

Material. Sakhalin: Susuya River near Viktoriya villa community (W of Troitskoe), river bank, 17.VI.2018, Yu. Sundukov, 4 ♂♂, 1 ♀; same locality, 31.VII.2022, Yu. Sundukov, L. Sundukova, 5 ♂♂, 1 ♀; Susuya River near Maiskoe (N of Novotroitskoe), river bank, 5.VIII.2022, Yu. Sundukov, L. Sundukova, 7 ♂♂, 2 ♀♀; Srednyaya River near Troitskoe, 29.VII.2022, Yu. Sundukov, L. Sundukova, 3 ♂♂, 5 ♀♀.

Distribution. Russia: South Sakhalin. Japan (Hokkaido, Honshu, Shikoku, Kyushu).

Habitats. Collected on pebbly river banks.

Notes. The species is new to the fauna of Russia. The previous records of *B. pliculatum* for the Russian Far East in the *Catalogue of Palaearctic Coleoptera* (Marggi et al., 2003, 2017) were based on misidentification of a specimen from Kunashir: “Tretyakovo, near mountain stream, VI, 1 spm., Dolin leg. (ZIN)” (Kryzhanovskij et al., 1975). Subsequent examination of the specimen showed that it belonged to *B. hiogoense* Bates, 1873 (Sundukov and Makarov, 2016). Thus, no valid records of *B. pliculatum* for the fauna of Russia have been published until the present paper.

In the *Catalogue of Palaearctic Coleoptera* (Marggi et al., 2017), *B. pliculatum* was included in the subgenus *Plataphus* Motschulsky, 1864, despite the fact that as early as the middle of the last century, F. Netolitzky (1943) established the subgenus *Hirmoplastaphus* Netolitzky, 1943 with three species: *B. pliculatum* Bates, 1883, *B. hirmocaelum* Chaudoir, 1850, and *B. friebi* Netolitzky, 1914.

The first member of the subgenus *Hirmoplastaphus* to be found on Sakhalin was *B. hirmocaelum* Chaudoir, 1850, collected in the central part (Tymovskii District, Voskhod) and the south of the island (Anivskii District, Novoaleksandrovsk) (Lafer and Kuznetsov, 1996; Berlov and Berlov, 1997). In the opinion of G.Sh. Lafer, “the beetles from the south of Sakhalin are intermediate between *hirmocaelum* and *pliculatum*, so that the two species may be mere geographic forms” (Lafer and Kuznetsov, 1996: 316). However, my analysis of the collection material and the literature data (Bates, 1883; Netolitzky, 1943; Mori, 2016) has shown that these taxa, though closely related, still deserve the status of separate species. Comparison of the specimens of *B. pliculatum* from Sakhalin and *B. hirmocaelum* from mainland Asia (Primorskii Territory, Chuguevskii District, Ussuri River near Koksharovka, 23–24.VII.2004, Yu. Sundukov, L. Sundukova, 47 spms.; Primorskii Territory, Khansanskii District, Barabashevka River near Barabash, 7.VIII.2020, Yu. Sundukov, 48 spms.; Khabarovsk Territory, Komsomolsky Nature Reserve, cordon Tikhaya on Gorin River, 2.VIII.2021, Yu. Sundukov, L. Sundukova, 31 spms.; Khabarovsk Territory, Ulchskii District, Byst-rinsk, Amur River bank, 12–15.VI.2014, O. Kuberskaya,

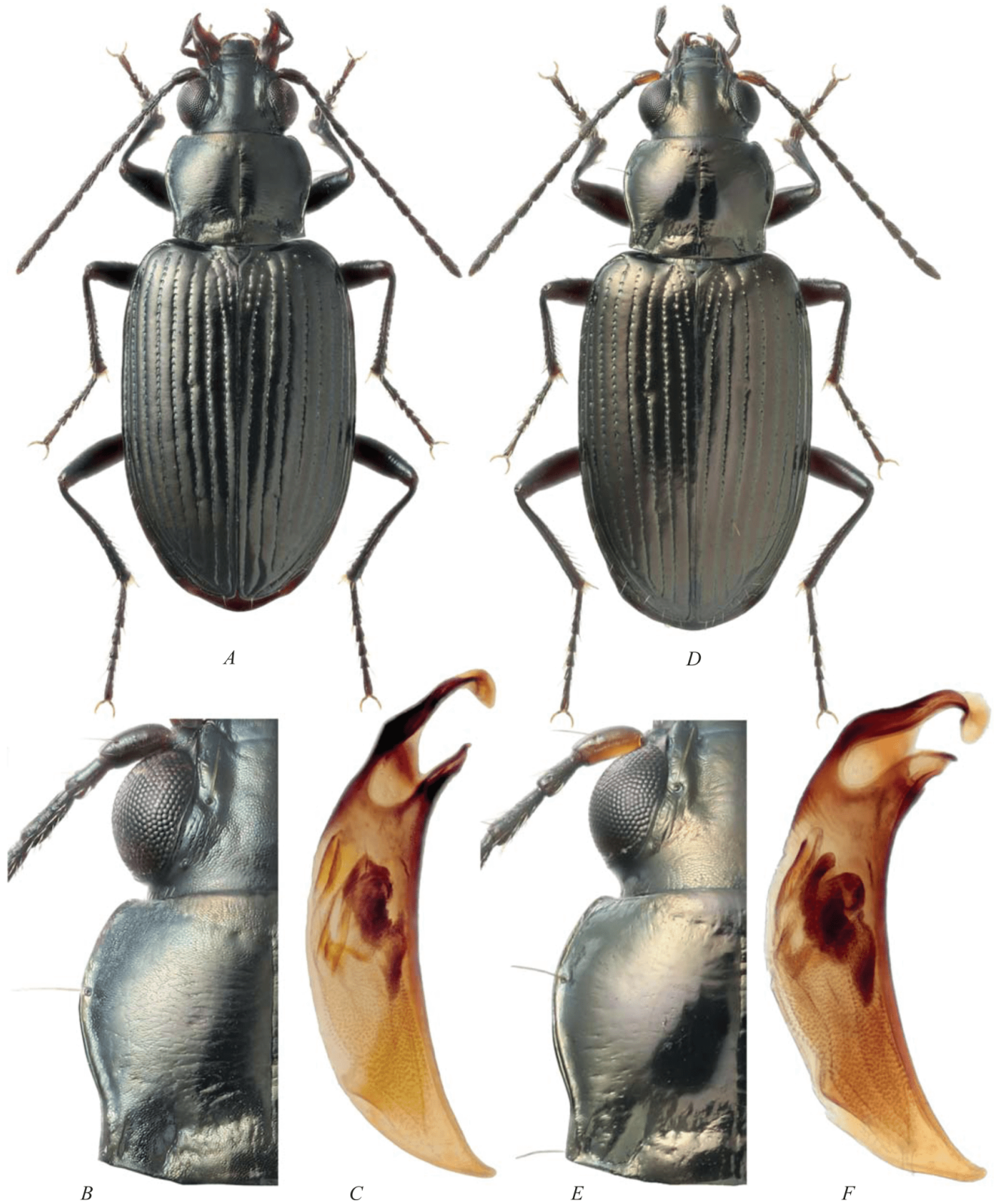


Fig. 1. Far Eastern species of ground beetles of the subgenus *Hirmoplataphus* Netolitzky, 1943: (A–C) *Bembidion pliculatum* Bates, 1883, male, Susuya River, Southern Sakhalin; (D–F) *B. hirmocaelum* Chaudoir, 1850, male, Kedrovaya River, Primorskii Territory; (A, D) habitus; (B, E) left half of the head and pronotum; (C, F) aedeagus.

10 spms.; Krasnoyarsk Territory, Ploskoe, 30 km N of Krasnoyarsk, 7.VIII.1996, L. Sundukova, 2 spms.; Kemerovo Province, Osinniki, upper reaches of Krasnaya Kaltanka River, 400–500 m, 28.V.2003, Yu. Sundukov, 4 spms.) has shown these taxa to be stably different both in external morphology and in the aedeagus shape. The key for differentiating *B. pliculatum* and *B. hirmocaelum* based on the studied material is given below.

1(2) Smaller (body length 4.5–4.8 mm); dorsum black with greenish-bluish sheen in foveae on head and pronotum; legs black; head appendages black or 1st antennal segment slightly reddish ventrally (Fig. 1, *A*); base of pronotum with distinct microsculpture (Fig. 1, *B*); aedeagus as in Fig. 1, *C*
..... *B. pliculatum* Bates, 1883

2(1) Larger (body length 4.8–5.8 mm); dorsum black-bronze or pitch-bronze, less often blue, dark crimson, or with greenish sheen in elytral striae and foveae on head and pronotum; legs cherry-black or dark reddish; head appendages black, 1st antennal segment distinctly reddish, especially ventrally (Fig. 1, *D*); base of pronotum without microsculpture (Fig. 1, *E*), rarely very weakly reticulate; aedeagus as in Fig. 1, *F*
..... *B. hirmocaelum* Chaudoir, 1850

Tribe Trechini

Trechus (Epaphius) nigricornis arsenjevi

(Jeannel, 1962)

Material. Sakhalin: Lake Dlinnoe near Aniva, 3.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♀.

Distribution. Russia: South Kuril Islands (Kunashir, Yuri), Southern Sakhalin, Primorskii Territory, south of Khabarovsk Territory, Amur Province (Sundukov and Makarov, 2021).

Habitats. Collected in a sedge-reed swamp.

Notes. The species is recorded here for the first time for the fauna of Sakhalin.

Tribe Pterostichini

Pterostichus (Phonias) longinquus Bates, 1873

Material. Sakhalin: Lake Lebyazhye NW of Starodubskoe, 29.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♂, 2 ♀♀.

Distribution. Russia: South Kuril Islands (Urup, Iturup, Kunashir), Southern Sakhalin, Primorskii Territory. Japan (Hokkaido, Honshu, Shikoku), South Korea, Eastern China.

Habitats. Collected in a humid meadow in the lake basin.

Notes. The species was earlier recorded from the southwest coast of Sakhalin: Nevelskii District, Gornozavodsk and Shebunino (Vertyanin and Shabalin, 2013; Vertyanin, 2014).

Tribe Platynini

Agonum (Europhilus) consimile

(Gyllenhal, 1810)

Material. Sakhalin: Lake Dlinnoe near Aniva, 3.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♀.

Distribution. A boreal trans-Holarctic species, its Palaearctic range extending from Kamchatka and Sakhalin in the east to the Scandinavian Peninsula in the west, from the Arctic tundra in the north to the south of Primorskii Territory, the Lake Baikal region, Altai, the Middle Urals, and Latvia in the south.

Habitats. Collected in reed thickets on the lake shore.

Notes. The previous records of *A. consimile* for Sakhalin (Lafer, 1989; Kryzhanovskij et al., 1995) did not include the exact data on the finding localities and the studied specimens.

Tribe Zabrinini

Amara (Amarocelia) erratica (Duftschmid, 1812)

Material. Sakhalin: floodplain of Bolshoi Takoi River near Sokol, 29.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♂.

Distribution. A boreal trans-Holarctic species, its Palaearctic range extending from Kamchatka, the Kuril Islands, and Japan in the east to Iceland and France in the west, from the Asian tundra zone, the Polar Urals, the Kola Peninsula, and Scandinavia in the north to the Japanese island of Honshu, North Korea, Tibet, the Tien Shan, Asia Minor, and Southern Europe in the south.

Habitats. Collected by the roadside in a river floodplain with tall herbaceous vegetation.

Notes. The species was earlier recorded for Sakhalin in the *Checklist of the Ground Beetles of Russia* (Kryzhanovskij et al., 1995) without specifying the collection localities or the specimens studied.

Amara (Xenocelia) hicksi Lindroth, 1968

Material. Sakhalin: Lake Lebyazhye NW of Starodubskoe, 29.VIII.2022, Yu. Sundukov, L. Sundukova, 4 ♂♂, 1 ♀.

Distribution. A boreal Asian-Nearctic species, its Palaearctic range extending from Chukotka, Kamchatka, and Sakhalin in the east to the Urals and Altai in the west; from the tundra zone in the north to Southern Sakhalin, the Amur River valley, Northern China, and Southern Altai in the south.

Habitats. Collected in a maritime sedge meadow on sandy soil.

Notes. The species was earlier recorded only for the central part of Sakhalin: Tymovskii District, Zonalnoe (Wrase, 1995; Hieck, 2001).

Tribe **Harpalini**

Harpalus (Harpalus) nigrans

A. Morawitz, 1862

Material. Sakhalin: Lyutoga River 2 km S of Petropavlovskoe, river bank, 6.VIII.2022, Yu. Sundukov, L. Sundukova, 1 ♂.

Distribution. Russia: South Kuril Islands (Iturup), Southern Sakhalin, Primorskii Territory, south of Khabarovsk Territory, Amur Province; Buryatia, Irkutsk and Kemerovo provinces, Altai. North Korea, Northeastern China.

Habitats. Collected on the boundary between riverside sand deposits and willow-alder shrubs.

Notes. The species is recorded here for the first time for the fauna of Sakhalin.

Harpalus (Loboharpalus) platynotus

Bates, 1873

Material. Sakhalin: Lyutoga River 2 km S of Petropavlovskoe, river bank, 6.VIII.2022, Yu. Sundukov, L. Sundukova, 7 ♂♂, 13 ♀♀.

Distribution. Russia: Southern Sakhalin. Japan (Hokkaido, Honshu, Shikoku, Kyushu), Korea (Kwon and Lee, 1986).

Habitats. Collected on riverside sand deposits among sparse willow shrubs.

Notes. The species was first discovered in Russia in 1995 and was recorded for the south of Sakhalin (Kryzhanovskij et al., 1995; Wrase, 1995; Lafer, 1996; Berlov and Berlov, 1997; Kataev, 1997).

Tribe **Chlaeniini**

Chlaenius (Chlaeniellus) inops inops

Chaudoir, 1856

Material. Sakhalin: Srednyaya River near Troitskoe, 29.VII.2022, Yu. Sundukov, L. Sundukova, 2 ♀♀.

Distribution. Russia: South Kuril Islands (Kunashir), Southern Sakhalin, "Amur region" (Jacobson, 1906). Japan (Hokkaido, Honshu, Shikoku, Kyushu), Korea, Taiwan, Eastern China, Vietnam.

Habitats. Collected on a pebble sandy river bank.

Notes. The species was earlier recorded for Sakhalin based on 1 spm. collected at the junction of the Kamenska River (a tributary of the Lyutoga River) near Pozharskoe on 4.VI.1988 by E. Berlov (Kryzhanovskij et al., 1995; Lafer and Kuznetsov, 1996; Berlov and Berlov, 1997).

Tribe **Lebiini**

Parena tripunctata (Bates, 1873)

Material. Sakhalin: Yasnomorskoe, N of Nevelsk, Yasnomorka River valley, 20.VII.2019, M. Sergeev, 1 ♀; same locality, 21–23.VII.2019, M. Sergeev, 1 ♂.

Distribution. Russia: South Kuril Islands (Iturup, Kunashir, Shikotan), Southern Sakhalin, Primorskii Territory, south of Khabarovsk Territory. Japan (the entire territory), Korea, Northeastern and Central China.

Habitats. A dendrophilous species inhabiting tree crowns in forests. The beetles were attracted to electric light.

Notes. The previous publications (Lafer, 1989; Kryzhanovskij et al., 1995; Kirschenhofer, 2006) included

no data on the collection localities and the studied specimens of *P. tripunctata* from Sakhalin.

Lebia (Poecilothais) bifenestrata

A. Morawitz, 1862

Material. Sakhalin: Yasnomorskoe, N of Nevelsk, Yasnomorka River valley, 20.VII.2019, M. Sergeev, 2 ♂♂, 1 ♀; same locality, 23.VII.2019, M. Sergeev, 3 ♀♀.

Distribution. Russia: South Kuril Islands (Kunashir, Shikotan), Southern Sakhalin, Primorskii Territory, south of Khabarovsk Territory, Jewish Autonomous Okrug, south of Amur Province. Japan (the entire territory), Korea, Northeastern China.

Habitats. A dendrophilous species inhabiting the crowns of trees and shrubs in forests. The beetles were attracted to electric light.

Notes. The species is recorded here for the first time for the fauna of Sakhalin.

Apristus grandis Andrewes, 1937

(Fig. 2)

Material. Sakhalin: Susuya River near Viktoriya villa community (W of Troitskoe), river bank, 17.VI.2018, L. Sundukova, 1 ♀; Susuya River near Maiskoe (N of Novotroitskoe), river bank, 5.VIII.2022, Yu. Sundukov, L. Sundukova, 18 ♂♂, 19 ♀♀.

Distribution. Russia: Southern Sakhalin. Japan (the entire territory).

Habitats. Collected on a sand-pebbly river bank.

Notes. The species is new to the fauna of Russia. Its finding on Sakhalin determines the need to verify the identification of *A. striatus* (Motschulsky, 1844), widespread on the mainland and also recorded from the Susuya River at its confluence with the Khomutovka River in the south of Sakhalin (Vertyanin and Lafer, 2012). The key to the Far Eastern species of the genus *Apristus* Chaudoir, 1846, based on the material from Sakhalin and Primorskii Territory, is given below.

1(2) Elytral intervals rather densely punctated along striae, densely pubescent at apical margin of elytra (Fig. 2, B); elytral apex roundly convex (Fig. 2, A); dorsum black; larger, body length 3.8–5.0 mm *A. grandis* Andrewes, 1937

2(1) Elytral intervals not punctated along striae, not pubescent or, rarely, with single hairs at apical margin; elytral apex straightly truncate or slightly concave; dorsum with distinct bronze sheen; smaller, body length 3.3–4.0 mm *A. striatus* (Motschulsky, 1844)

CONCLUSIONS

The ground beetle fauna of Sakhalin is one of the least studied in the south of the Russian Far East (Sundukov, 2022). Analysis of the available literature shows that 279 species of Carabidae have been recorded for the island, not counting the current subspecies and synonyms. Thirteen of them (except for *B. varium* reported herein) were excluded from the Sakhalin fauna by Lafer (2011): *Amara aenea* (De Geer, 1774), *A. ampliata* (Bates, 1873), *A. curta* Dejean, 1828, *Carabus smaragdinus* Fischer von Waldheim, 1823, *Chaetodera laetescripta* (Motschulsky, 1860), *Cicindela gemmata* Faldermann, 1835, *Clivina niponensis* Bates, 1873, *Dyschirius nitidus* (Dejean, 1825), *Elaphrus lapponicus* Gyllenhal, 1810, *Harpalus brevis* Motschulsky, 1844, *Nebria chinensis* Bates, 1872, *Platynus protensus* (A. Morawitz, 1863), and *Pterostichus oblongopunctatus* (Fabricius, 1787). One more species listed for Sakhalin, *Badister nigriceps* A. Morawitz, 1863 was excluded from the fauna of Russia by Kataev (1995) and Sundukov (2008). As a result, considering the new finds, the Sakhalin fauna currently includes 271 species of Carabidae, some of which remain to be confirmed by new material, re-identified, or excluded from the fauna.

In my opinion, such species are: *Amara aeneola* Poppius, 1906, recorded by Molodova (1973) but not found subsequently; *A. praetermissa* (C.R. Sahlberg, 1827), recorded from the south of Sakhalin by Kryzhanovskij and Molodova (1973) and by Molodova (1973) as *Amara* sp. pr. *praetermissa*, but possibly belonging to *A. sichotana* Lafer, 1978 or *A. fujii* Tanaka, 1959; *A. similata* (Gyllenhal, 1810), recorded by Vertyanin and Shabalin (2013) and Vertyanin (2014, 2015) and replaced by the closely related *A. chalcites* Dejean, 1828 in the Far East; *Apristus striatus* (Motschulsky, 1844), recorded by Vertyanin and Lafer (2012) (see the above comment); *Badister bullatus* (Schrank, 1798), recorded by Lafer (1989) and Berlov and Berlov (1997) as *B. bipustulatus* (Fabricius, 1792) and, according to the modern views, distributed as far eastwards as West Siberia; *Bembidion captivorum* Netolitzky, 1943, recorded by



Fig. 2. *Apristus grandis* Andrewes, 1937, female, Susuya River, Southern Sakhalin: (A) habitus; (B) apical part of elytra.

Kryzhanovskij and Molodova (1973), Molodova (1973), and Pavlova (1979) as *Bembidion* sp. pr. *captivorum*, as well as by Kryzhanovskij and co-authors (Kryzhanovskij et al., 1995) (in Sakhalin, the species is replaced by the closely related *B. poppii pohlai* Kirschenhofer, 1984, and remains to be confirmed); *B. difficile* (Motschulsky, 1844), recorded by Lafer and Kuznetsov (1996) as *B. ?difficile*; *B. oxyglymma* Bates, 1883, recorded by Yokoyama and Kano (1927) but not found subsequently; *B. quadrimaculatum* (Linnaeus, 1760), recorded by Berlov and Berlov (1997) as *B. mandli* Netolitzky, 1932 (on Sakhalin, the species is replaced by the closely related *B. paediscum* Bates, 1883 and remains to be confirmed); *Carabus latreillei* Fischer von Waldheim, 1820, recorded by Berlov and Berlov (1997) as “1 spm. from Sakhalin, obtained from Pervukhin, remains to be confirmed”; *Chlaenius insularis* (Uéno, 1964), recorded by Vertyankin and Shabalin (2013) (the erroneous name *Ch. insularis* Kryzhanovskij, 1973 = *Ch. circumductus* A. Morawitz, 1862); *Elaphrus comatus* Goulet, 1983, recorded by the Japanese authors (Yoshimatsu et al., 2018) based on the material “S. Saghaliën: Saghaliën

Toyohara, 20.07.1937, N. Hirose leg.” and remaining to be confirmed; *Harpalus tardus* (Panzer, 1796), recorded by Pavlova (1979), even though the species absent in the Far East and distributed as far eastwards as West Siberia; *Nebria catenulata* Fischer von Waldheim, 1820, recorded by Berlov and Berlov (1997) and remaining to be confirmed, since the closely related species *N. baicalopacifica* Dudko et Shilenkov, 2006 and *N. banksii* Crotch, 1871 are known from Sakhalin (Dudko, 2006); *Poecilus lamproderus* (Chaudoir, 1868), recorded by Kryzhanovskij and Molodova (1973) and Molodova (1973), but possibly corresponding to *P. samurai* (Lutshnik, 1916); *Pterostichus mandzhuricus* (Lutshnik, 1916), recorded by Pavlov (1979) but absent in the fauna of Russia; *P. patruelis* (Dejean, 1831), recorded by Pavlov (1979) as *Pterostichus* sp. pr. *patruelis* Dej., possibly due to misidentification of *Pterostichus diligens* (Sturm, 1824), since *P. patruelis* is an American species; *P. eschscholtzii* (Germar, 1823), recorded by Nemoto (1989) as *Pterostichus fortis* (A. Morawitz, 1862) and by Mikhailov (1996), and replaced on Sakhalin by the closely related *P. leptis* Bates, 1883.

In addition, 41 species have been recorded for Sakhalin without specifying the collection sites and the specimens studied. Some of them also need to be confirmed, indicating the insufficient level of knowledge of the Sakhalin fauna of Carabidae.

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Statement on the welfare of animals. All the applicable international, national, and/or institutional guidelines for the care and use of animals were followed. All the 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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