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The diving beetles of the Kuril Archipelago in the Far East of Russia

(Coleoptera: Dytiscidae)

With 1 figure and 1 table

ANDERS N. NILSSON, NOBORU MINAKAWA & PONTUS B. H. OBERG

Summary

The species of predaceous diving beetles (Coleoptera, Dytiscidae) occurring in the Kuril Archipelago in the northwest Pacific are reviewed. Based on literature records, the study of museum collections, and material from recent expeditions 24 species are known from the archipelago. A detailed report is given on the 357 adult and 50 larval specimens collected in the South and Mid Kuril Islands by the joint American-Japanese-Russian expeditions in 1994 and 1995. The following five species are here recorded from the Kurils for the first time: *Hydroporus uenoi* NAKANE, *Platambus pictipennis* (SHARP), *Agabus japonicus* SHARP, *Ilybius nakanei* NILSSON, and *Graphoderus zonatus* (HOPPE). The number of species recorded on individual islands ranged from 1 to 11, with the largest islands at either end of the Greater Kuril Ridge being the most diverse. The South Kurils are dominated by Ussurian-Japanese species known also from Sakhalin and Hokkaido, whereas the North Kuril fauna includes a high proportion of Holarctic or Palearctic species known also from Kamchatka.

Zusammenfassung

Nach Literaturangaben sowie Untersuchungen von Museumsmaterial und Ausbeuten der in den letzten Jahren durchgeführten Expeditionen sind die Schwimmkäfer (Dytiscidae) auf den Kurilen im Nordwest-Pazifik mit 24 Arten vertreten. Über die 357 adulten und 50 larvalen Dytisciden, die während der gemeinsamen amerikanisch-japanisch-russischen Expedition 1994 und 1995 auf den südlichen und mittleren Kurilen gesammelt wurden, wird detailliert berichtet. Die folgenden fünf Arten werden erstmals für die Kurilen nachgewiesen: *Hydroporus uenoi* NAKANE, *Platambus pictipennis* (SHARP), *Agabus japonicus* SHARP, *Ilybius nakanei* NILSSON, und *Graphoderus zonatus* (HOPPE). Die Zahl der auf den einzelnen Inseln festgestellten Arten lag zwischen 1 und 11; den höchsten Artenreichtum zeigen die größten Inseln auf beiden Seiten des Großen Kurilen-Kamms. Auf den südlichen Kurilen dominieren die ussurisch-japanischen Arten, die auch von Sakhalin und Hokkaido bekannt sind, während sich die Fauna der nördlichen Kurilen durch einen hohen Anteil holarktischer und paläarktischer Arten auszeichnet, die auch in Kamtschatka vorkommen.

Acknowledgements

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Introduction

The Kuril Island Archipelago form the eastern boundary of the Okhotsk Sea and a bridge between Hokkaido (43°23'N, 145°49'E), the northernmost island of Japan, and the Russian peninsula of Kamchatka (50°52'N, 156°32'E). The island chain consists of 34 islands, ranging in size from 0.15 to 3200 km². All of the Kuril Islands are volcanic in origin, ranging in age from the Upper Cretaceous to the late Pleistocene. The islands are often covered with fog in summer and by snow the rest of year. Each island's fauna is shaped by its own geological history, channel depths and currents, as well as the proximity to mainland biota.

The first reports of diving beetles from the Kuril Islands were published by KANO (1933), KAMIYA (1935) and KÔNO (1944), based on material from the northernmost islands Paramushir and Shumshu. More recently, LAFER (1989) added several records from the southern islands Kunashir and Iturup. As could be expected, the fauna of these islands is seemingly poor in species. KAMIYA (1938) gave records of 13 species from the north islands, whereas KRYVOLUTSKAJA (1973) listed 8 species from the south islands. Totally, we have found records of 19 species of Dytiscidae from the Kurils Islands in the literature. We here provide records of five additional species, increasing the total number to 24 species.

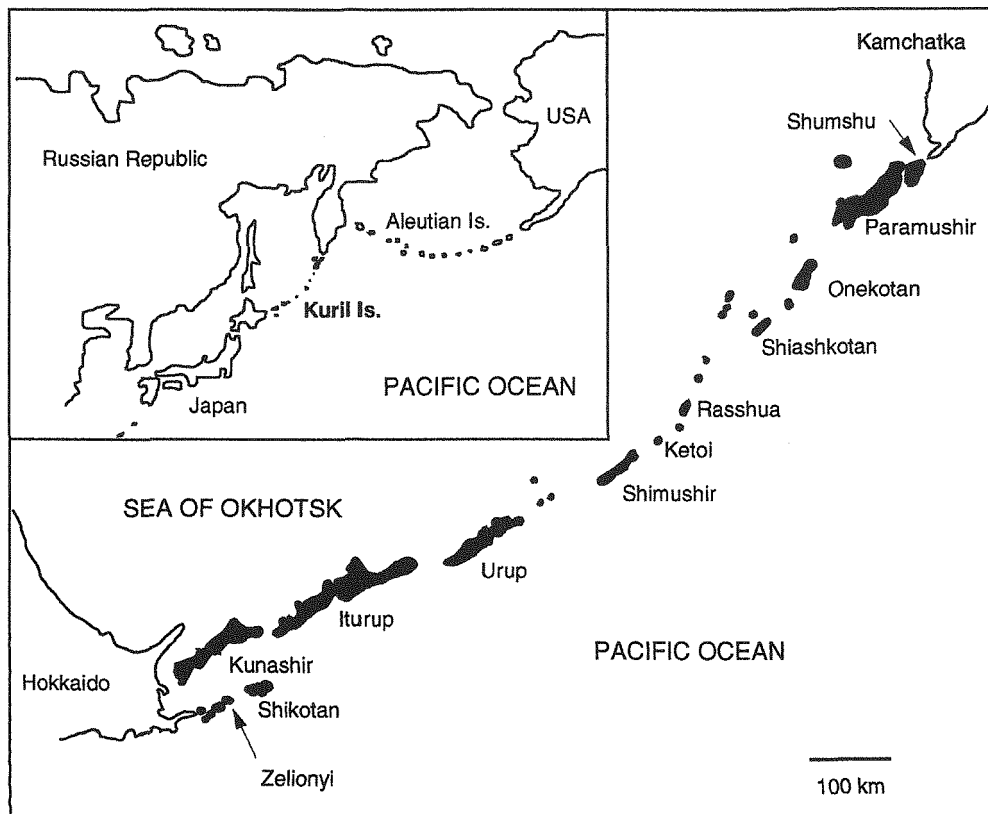


Fig. 1: The Kuril Archipelago.

Materials and methods

The following list is based on a combination of literature records and the examination of the specimens collected by the 1994 and 1995 American-Japanese-Russian Kuril Expeditions. This material is deposited chiefly in the Fish Collection, University of Washington, Seattle, and the locality data are given below. Additional specimens were studied in the collections of the Institute of Biology and Soil Science, Vladivostok, the Entomological Institute of the Hokkaido University, Sapporo, and Prof. T. NAKANE, Chiba. The list includes all species of Dytiscidae so far recorded from the Kurils. For each species are listed the synonyms of species interest with references to all literature records from the Kuril Archipelago.

Localities: Zelionyi (ZE): (2) Lake Utinoye 5.viii.94; (5) Lake Kamenskoye 6.viii.94. - Shikotan (SH): (1) Svobodnaya River, tributary, 8.viii.94; (2) Otradnaya Bay, ephemeral roadside pool, 8.viii.94; (3) Delfin Bay, stream, 11.viii.94. - Kunashir (KU): (3) Roadside pond between Lake Aliger and Lake Lagunnoye, 31.vii.94; (10) Ilyushina River 1.viii.94; (11) Rikorda River, headwater stream, 2.viii.94; (20) Kislyi River 4.viii.94; (126) Roadside pond between Lake Aliger and Lake Lagunnoye, 1.ix.95; (131) Kislyi River, surrounding bog, 2.ix.95. - Iturup (IT): (7) Lake Lebedinoye, 17.viii.94. - Urup (UR): (9) Bystraya River, near mouth, 9.viii.95; (11) Otkrytyi Bay, lake, 5.viii.95; (53) Vstrechnyi River, small pond, 29.viii.95; (68) Tokotan River, Lopuhovaya River, pond in bog, 28.viii.95; (101) Katayeva Bay, stream, 26.viii.95; (102-103) Katayeva Bay, lake, 26.viii.95; (108-109, 111) Lopukhovaya, ponds, 28-29.viii.95; (114, 116) Vstrechnyi, lake, 29.viii.95. - Chirpoi (CH): (85) Peschnaya Bay, coastal grassland, 23.viii.95. - Simushir (SI): (71) Malaya Bay, small pond, 18.viii.95; (83) Srednaya Bay, marsh, 22.viii.95. - Ketoi (KE): (25) Storzheva, 15.viii.95; (35) Stochnyy River, near mouth, 19.viii.95; (62) Cape Storzheva, marsh, 15.viii.95; (76-77) Stochnyi River, pool, 19.viii.95. - Rasshua (RAS): (13) Belaya Lake and Tikohoye Lake, surroundings of, 12.viii.95; (48) Tikhoeye Lake 12.viii.95; (50) Tikhoeye Lake, small lakes and ponds, 12.viii.95.

Collectors: BOGATOV, V.V. & SAYENKO, E.M.: UR-11. GARA, R.I. & MINAKAWA, N.: ZE-2, 5, SH-1, 3, KU-10, 11, IT-7. GARA, R.I., MINAKAWA, N. & TESLENKO, V.V.: KU-3. MINAKAWA, N.: SH-2, KU-20, 126, 131, UR-102, SI-83, KE-77, RAS-48. MINAKAWA, N. & OBERG, P.: UR-103, 109, 111, 116, CH-85, KE-62, 76. MINAKAWA, N., OBERG, P. & LOPEZ, J.A.: RAS-50. OBERG, P.: UR-101, 108, 114, SI-71. OHARA, M.: UR-9, 68, KE-25, 35, RAS-13. PIETSCH, T.W., LOPEZ, J.A. & AMAOKA, K.: UR-53.

List of species

For each collecting record is given the code of the sample followed by no. of adults/no. of larvae.

Subfamily Hydroporinae

Hygrotus impressopunctatus (SCHALLER, 1783)

Dytiscus impressopunctatus SCHALLER, 1783:312 (orig. descr.).

Coelambus impressopunctatus (SCHALLER, 1783): LAFER 1989:236 (key, Kunashir).

Hygrotus impressopunctatus (SCHALLER, 1783): NILSSON & KHOLIN 1994:146 (Sakhalin).

New records: KU: 126(2).

A widespread Holarctic species known also from Primorye, Chabarovsk Terr., Sakhalin, and Hokkaido. In the Kuril Archipelago known only from Kunashir.

***Hydroporus morio* AUBÉ, 1838**

Hydroporus melanocephalus (Marsham, 1802): KAMIYA 1935:504 (misident., Shumshu, Paramusir).

Hydroporus morio AUBÉ, 1838:307 + pl. 36:1 (orig. descr.); NILSSON & NAKANE 1993:421 (syn.); NILSSON & KHOLIN 1994:146 (Sakhalin).

Hydroporus watanabei TAKIZAWA, 1933:174 (orig. descr.); KAMIYA 1938:20 (Shumshu, Paramusir); LAFER 1989:240 (key, Kuril Islands).

Hydroporus tartaricus LÉCONTE, 1850: KÔNO 1944:79 (misident., Shumshu, Paramusir).

Hydroporus sp.: KANO 1933:98 (Paramusir).

New records: KE: 62(6), 77(4). - RAS: 13(10), 50(48/1).

The world distribution is northern circumboreal and it is known also from the Magadan Terr., Kamchatka, Sakhalin and Hokkaido. We give the first records from the Mid Kuril islands of Ketoi and Rasshua.

***Hydroporus saghaliensis* TAKIZAWA, 1933**

Hydroporus saghaliensis TAKIZAWA, 1933:173 (orig. descr.); NILSSON & NAKANE 1993:424 (descr.); NILSSON & SATÔ 1993:91 (faun.); NILSSON & KHOLIN 1994:146 (Sakhalin).

Hydroporus saghalienus TAKIZAWA: GSCHWENDTNER 1939:34 (descr.) incorrect subsequent spelling; ZAITZEV 1953:166 (descr.); LAFER 1989:240 (key, Iturup).

H. saghaliensis is known with certainty from Sakhalin and Hokkaido (NILSSON & SATÔ 1993). LAFER (1989) recorded it from the South Kuril island of Iturup.

***Hydroporus uenoi* NAKANE, 1963**

Hydroporus uenoi NAKANE, 1963:25 (orig. descr.); NILSSON & NAKANE 1993:424 (descr.); NILSSON & SATÔ 1993:92 (Sakhalin); NILSSON & KHOLIN 1994:147 (Sakhalin).

New records: UR: 108(3).

Together with *H. ijimai* NILSSON & NAKANE, this species form a complex that is known from NE China, Khabarovsk Terr., Primorye, Kamchatka, South Sakhalin, South Kurils, Hokkaido and Honshu. Our record is the first one from the Kuril Archipelago, where it is known only from Urup.

***Hydroporus umbrosus* (GYLLENHAL, 1808)**

Hyphydrus umbrosus GYLLENHAL, 1808:538 (orig. descr.).

Hydroporus umbrosus (GYLLENHAL, 1808): KAMIYA 1938:19 (Shumshu); KÔNO 1944:79 (Paramusir).

The distribution covers most of North and Central Europe and Siberia to Primorye and Kamchatka. In the Kuril Archipelago it is known only from the two northernmost islands.

***Hydroporus* sp.**

Hydroporus planus (FABRICIUS, 1781): KAMIYA 1935:505 (misident., Paramusir).

Without examination of KAMIYA's specimens, it is impossible to give their correct identity. Based on the *Hydroporus* specimens known from Kamchatka (NILSSON 1995), *H. fuscipennis* SCHAUM or *H. nigellus* MANNERHEIM seem most plausible.

***Oreodytes sanmarkii* (C.R. SAHLBERG, 1826)**

Hyphydrus sanmarkii C.R. SAHLBERG, 1826:172 (orig. descr.).

Hyphydrus rivalis GYLLENHAL, 1827:384 (orig. descr.).

Oreodytes rivalis (GYLLENHAL, 1827): LAFER 1989:242 (key, Kunashir).

Oreodytes sanmarkii (C.R.SAHLBERG, 1826): NILSSON & KHOLIN 1994:147 (Sakhalin).

New records: SH: 1(24), 3(11/2). - KU: 10(3).

This Holarctic species is known from Primorye, Sakhalin, Hokkaido, South Kurils and Kamchatka in the Far East. It was recorded from Kunashir by LAFER (1989) and is here recorded for the first time from Shikotan.

***Stictotarsus multilineatus* (FALKENSTRÖM, 1922)**

Potamodytes griseostriatus Var. *multilineatus* FALKENSTRÖM, 1922:16 (orig. descr.).

Deronectes griseostriatus (DE GEER, 1774): KAMIYA 1938:22 (Shumshu, Paramusir); KÔNO 1944:80 (Shumshu, Paramusir).

Potamonectes griseostriatus (DE GEER, 1774): LAFER 1989:242 (key, Paramusir).

Deronectes dauricus (MOTSCHULSKY, 1860): KAMIYA 1935:505 (misident., Shumshu, Paramusir).

?*Coelambus* sp.: KANO 1933:98 (Paramusir).

This species belongs to a complex of cryptic species recognized primarily on karyotypic characters. No chromosome studies have so far been performed on Asian populations, and it can only be assumed that the Kuril records refer to *S. multilineatus* as this species seems to be distributed along the northernmost Palearctic from Scandinavia to Kamchatka. In the Kurils known only from the two northernmost islands.

***Nebrioporus simplicipes* (SHARP, 1884)**

Deronectes simplicipes SHARP, 1884:442 (orig. descr.); KAMIYA 1938:23 (Kunashir).

Potamonectes simplicipes (SHARP, 1884): LAFER 1989:242 (key, Kunashir).

Nebrioporus simplicipes (SHARP, 1884): NILSSON & ANGUS 1992:288 (class.); NILSSON & KHOLIN 1994:147 (Sakhalin).

New records: KU: 20(2/1).

This species is known from Korea, Sakhalin, Hokkaido, Honshu and the Kuril Island of Kunashir.

Subfamily Colymbetinae

Platambus pictipennis (SHARP, 1873)

Agabus pictipennis SHARP, 1873:49 (orig. descr.).

Platambus pictipennis (SHARP, 1873): NILSSON & KHOLIN 1994:148 (Sakhalin).

New record: Kunashir: Lesnaya River, 2.ix.1995, 1 female, leg. V.A. TESLENKO, det. G. LAFER.

This species is known from Sakhalin and Japan (from Hokkaido to Kyushu). An old record is known from Korea. The record from Kunashir is the first one from the Kuril Archipelago.

Agabus japonicus SHARP, 1873

Agabus japonicus SHARP, 1873:50 (orig. descr.); NILSSON & KHOLIN 1994:149 (Sakhalin).

Gaurodytes japonicus (SHARP, 1873): LAFER 1989:247 (key, Sakhalin).

New records: UR: 9(5), 101(15/3), 102(1/1), 103(14/2), 108(5). - CH: 85(3/2). - SI: 83(3). - KE: 25(13), 35(16), 62(9), 76(9/8). - RAS: 13(26), 48(2/1), 50(32/4).

Agabus japonicus belongs to a very difficult complex of species or forms that is distributed in Primorye, Korea, China, Sakhalin and throughout Japan. It is here recorded from the Kurils for the first time, where it was found on five islands in the central part of the archipelago.

Agabus thomsoni (J. SAHLBERG, 1871)

Gaurodytes thomsoni J.SAHLBERG, 1871:409 (orig. descr.).

Gaurodytes congener (THUNBERG, 1794): KÔNO 1944:81 (Shumshu, Paramusir).

Agabus congener (THUNBERG, 1794): KAMIYA 1935:506 (Shumshu), 1938:33 (Shumshu).

Agabus thomsoni (J.SAHLBERG, 1871): SATÔ & NILSSON 1990:195 (Paramusir).

Agabus sp.: KANO 1933:98 (Shumshu).

This Holarctic species belongs to a difficult complex of intergrading forms. We here follow SATÔ & NILSSON (1990) who reidentified the specimens from Paramusir and Shumshu listed by KAMIYA (1935, 1938) and KÔNO (1944) as *A. congener* (THUNBERG).

Agabus conspicuus SHARP, 1873

Agabus conspicuus SHARP, 1873:48 (orig. descr.); KAMIYA 1938:33 (Kunashir); NILSSON & KHOLIN 1994:150 (Sakhalin).

Gaurodytes conspicuus (SHARP, 1873): LAFER 1989:246 (key, Iturup, Kunashir).

New records: KU: 11(/1), 126(5), 131(1). - UR: 9(3), 102(4), 108(1/6), 109(16), 111(2), 114(/4), 116(1). - SI: 71(1). - KE: 25(18), 62(9).

Agabus conspicuus occurs throughout Japan, on South Sakhalin, South and Mid Kurils, and in Korea. It was previously known from Kunashir and Iturup, and is here recorded for the first time from Urup, Simushir and Ketoi in the Mid Kurils.

***Agabus tristis* AUBÉ, 1838**

Agabus tristis AUBÉ, 1838:356 (orig. descr.); NILSSON 1990:159 (syn.).

Agabus kurilensis KAMIYA, 1938:35 (orig. descr., Shumshu).

Gaurodytes kurilensis (KAMIYA, 1938): KÔNO 1944:81 (Shumshu, Paramusir).

This Holarctic species was recorded from Paramusir and Shumshu by KAMIYA (1938) and KÔNO (1944) as *A. kurilensis*, later synonymized with *A. tristis* by NILSSON (1990). It is widespread in Siberia and known also from Magadan and Chukotka (LAFER 1989).

***Agabus arcticus* (PAYKULL, 1798)**

Dytiscus arcticus PAYKULL, 1798:201 (orig. descr.).

Gaurodytes punctipennis J. SAHLBERG, 1880:56 (orig. descr.).

Agabus arcticus (PAYKULL, 1798): KAMIYA 1935:505 (Shumshu, Paramusir), 1938:38 (Shumshu, Paramusir).

Gaurodytes arcticus (PAYKULL, 1798): KÔNO 1944:81 (Shumshu, Paramusir).

A circumboreal to -polar species that in North America is known from western Alaska to Labrador and northern Newfoundland. The Palearctic range extends from NW Europe and eastwards to Mongolia and Kamchatka. In the Kurils it is known from Paramusir and Shumshu in the north part.

***Ilybius apicalis* SHARP, 1873**

Ilybius apicalis SHARP, 1873:51 (orig. descr.); LAFER 1989:249 (key, Iturup, Kunashir); NILSSON & KHOLIN 1994:150 (Sakhalin).

New records: IT: 7(3). - UR: 11(1), 109(28), 111(4), 114(6), 116(43).

Ilybius apicalis occurs in Korea, Primorye, South Sakhalin, South and Mid Kurils, throughout Japan, and in China south to Taiwan. It was recorded from Iturup and Kunashir by LAFER (1989), and is here recorded also from Urup.

***Ilybius nakanei* NILSSON, 1994**

Ilybius nakanei NILSSON, 1994:58 (orig. descr.); NILSSON & KHOLIN 1994:151 (Sakhalin).

New record: KU: 3(1).

Ilybius nakanei is seemingly endemic to South Sakhalin, South Kurils and Hokkaido. Our record of this species from Kunashir is the first from the Kuril Archipelago.

***Ilybius chishimanus* KÔNO, 1944**

Ilybius ater (DE GEER, 1774): KANO 1933:97 (misident., Paramusir); KAMIYA 1935:506 (misident., Paramusir), 1938:40 (in part, misident., Paramusir).

Ilybius crassus THOMSON, 1856: SATÔ & NILSSON 1988:126 (misident., Paramusir).

Ilybius chishimanus KÔNO, 1944:80 (orig. descr., Paramusir); NILSSON 1994:57 (syn.).

Ilybius weymarni J. BALFOUR-BROWNE, 1947:446 (orig. descr.).

This species was first described from Paramusir. It occurs from Irkutsk and eastwards to North China, Primorye and North Kurils (NILSSON 1994).

***Ilybius angustior* (GYLLENHAL, 1808)**

Dytiscus angustior GYLLENHAL, 1808:500 (orig. descr.).

Ilybius angustior (GYLLENHAL, 1808): KAMIYA 1935:506 (Shumshu), 1938:39 (Shumshu); KÔNO 1944:80 (Shumshu, Paramusir).

Ilybius ovalis GSCHWENDTNER, 1934: KÔNO 1944:80 (misident., Paramusir).

Ilybius sp.: KANO 1933:97 (Paramusir).

A Holarctic species with a chiefly boreal range. In North America transcontinental, known from Alaska to Newfoundland and south along the Rocky Mountains to New Mexico. In the Palearctic known from Fennoscandia and eastwards to North Sakhalin, Kamchatka and North Kurils.

***Colymbetes dolabratus* (PAYKULL, 1798)**

Dytiscus dolabratus PAYKULL, 1798:204 (orig. descr.).

Colymbetes groenlandicus AUBÉ, 1838:233 (orig. descr.).

Colymbetes thomsoni SHARP, 1882:628 (orig. descr.).

Colymbetes dolabratus (PAYKULL, 1798): KAMIYA 1935:507 (Shumshu), 1938:44 (Paramusir); KÔNO 1944:82 (Shumshu, Paramusir); LAFER 1989:250 (key, Paramusir).

Colymbetes striatus (LINNAEUS, 1758): KAMIYA 1935:507 (misident., Shumshu).

Colymbetes sp.: KANO 1933:97 (Shumshu, Paramusir).

A circumpolar species that in North America occurs along the northern edge of the continent from Alaska to Quebec. On Greenland north to about 75°N. In Eurasia it ranges from Iceland and Fennoscandia to Kamchatka, Komandorskiye Islands, and North Kurils, in arctic and northern boreal regions.

***Rhantus suturalis* (MACLEAY, 1825)**

Colymbetes suturalis MACLEAY, 1825:31 (orig. descr.).

Colymbetes pulverosus STEPHENS, 1828:69 (orig. descr.).

Rhantus pulverosus (STEPHENS, 1828): LAFER 1989:250 (key, Kunashir).

Rhantus suturalis (MACLEAY, 1825): NILSSON & KHOLIN 1994:151 (Sakhalin).

New records: SH: 2(3). - KU: 126(1).

This species is widely distributed in the Palearctic, Oriental and Australian Regions. It is known from Primorye, South Sakhalin, Hokkaido, and South Kurils. In the Kurils it was first recorded from Kunashir by LAFER (1989), and we here add a record also from Shikotan.

***Rhantus notaticollis* (AUBÉ, 1837)**

Colymbetes notaticollis AUBÉ, 1837:107 (orig. descr.).

Rhantus bistriatus (BERGSTRÄSSER, 1778): KÔNO 1944:81 (misident., Paramusir).

Rhantus exsoletus (FORSTER, 1771): KAMIYA 1935:507 (misident., Paramusir), 1938:42 (misident., Paramusir).

Rhantus notaticollis (AUBÉ, 1837): LAFER 1989:250 (key, Kunashir); NILSSON & KHOLIN 1994:151 (Sakhalin).

Rhantus sp.: KANO 1933:98 (Paramusir).

This widespread Palearctic species is known also from Primorye, Kamchatka, Sakhalin and Hokkaido. We have not seen any Kuril specimens, but suggest that the old records from Paramusir represent misidentifications of *R. notaticollis*, later reported from Kunashir by LAFER (1989).

Rhantus suturellus (HARRIS, 1828)

Colymbetes suturellus HARRIS, 1828:164 (orig. descr.).

Rhantus suturellus (HARRIS, 1828): KÔNO 1944:81 (Paramusir).

A circumboreal species that is transcontinental in North America where it is known from Alaska to Nova Scotia and south to New Jersey, Wyoming and Washington. In the Palearctic known from France and Austria to Great Britain and Fennoscandia, and eastwards to East Siberia, Magadan and North Kurils.

Subfamily Dytiscinae

Graphoderus zonatus (HOPPE, 1795)

Dytiscus zonatus HOPPE, 1795:33 (orig. descr.).

Graphoderus zonatus (HOPPE, 1795): NILSSON & KHOLIN 1994:152 (Sakhalin).

New records: UR: 68(/1), 109(12), 111(11).

A widespread Palearctic species known from North and Central Europe to Siberia, Magadan and Sakhalin. The record from the Central Kurils was unexpected. As all females seen from Urup belong to the granulate morph, the population is assigned to the subspecies *G. z. verrucifer* (C.R. SAHLBERG).

Dytiscus dauricus GEBLER, 1832

Dytiscus marginalis LINNAEUS, 1758: KANO 1933:97 (misident., Shumshu, Paramusir); KAMIYA 1935:508 (misident., Shumshu, Paramusir), 1938:56 (misident., Shumshu, Paramusir).

Dytiscus dauricus GEBLER, 1832:29 (orig. descr.); KÔNO 1944:82 (Shumshu, Paramusir); ROUGHLEY 1990:483 (syn.); NILSSON & KHOLIN 1994:152 (Sakhalin).

Dytiscus czerskii ZAITZEV, 1953: LAFER 1989:252 (in part, Kunashir).

Dytiscus obscurus GSCHWENDTNER, 1922:93 (orig. descr.); LAFER 1989:253 (key, Kunashir).

New records: ZE: 2(/1), 5(/1). - SH: 1(1). - KU: 3(2), 11(/2). - IT: 7(/2). - UR: 53(/1), 68(1/1), 109(1/3), 111(1/3), 116(3).

This Holarctic species is widespread in the East Palearctic. It is known from Primorye, Kamchatka, Sakhalin, Hokkaido, and the Kurils. KAMIYA's (1935, 1938) Kuril records of *D. marginalis* are viewed as erroneous as these two species were never separated in KAMIYA's works (T. NAKANE in litt.). We here provide the first records from Zelionyi, Shikotan, Iturup and Urup.

Table 1. Distribution of the species of Dytiscidae recorded from the Kuril Islands, coded as: (ZE) Zelionyi, (ST) Shikotan, (KU) Kunashir, (IT) Iturup, (UR) Urup, (CH) Chirpoi, (SI) Simushir, (KE) Ketoi, (RA) Rasshua, (PA) Paramusir, and (SS) Shumshu. Adjacent regions coded as: (SA) Sakhalin, (HK) Hokkaido, and (KA) Kamchatka. Species numbers of these three regions include only the species known from the Kurils. New records are given as N.

Distribution & species	South		Central				North		Other					
	ZE	ST	KU	IT	UR	CH	SI	KE	RA	PA	SS	SA	HK	KA
Kosmopolitan														
<i>Rhantus suturalis</i>		N	X									X	X	
Holarctic														
<i>Hygrotus impressopunctatus</i>				X								X	X	
<i>Hydroporus morio</i>								N	N	X	X	X	X	X
<i>Oreodytes sanmarkii</i>		N	X									X	X	X
<i>Stictotarsus multilineatus</i>										X	X			X
<i>Agabus tristis</i>										X	X			
<i>Agabus arcticus</i>										X	X			X
<i>Agabus thomsoni</i>										X	X			
<i>Ilybius angustior</i>										X	X	X		X
<i>Colymbetes dolabratus</i>										X	X			X
<i>Rhantus suturellus</i>										X				
<i>Dytiscus dauricus</i>	N	N	X	N	N					X	X	X	X	X
Palaearctic														
<i>Hydroporus umbrosus</i>											X			X
<i>Rhantus notaticollis</i>			X							X		X	X	X
<i>Graphoderus zonatus</i>					N							X	X	
East Palaearctic														
<i>Ilybius chishimanus</i>										X				
East Asiatic														
<i>Agabus japonicus</i>					N	N	N	N	N			X	X	
<i>Ilybius apicalis</i>			X	X	N							X	X	
Ussurian-Japanese														
<i>Hydroporus uenoi</i>					N							X	X	X
<i>Platambus pictipennis</i>			N									X	X	
Japanese														
<i>Hydroporus saghaliensis</i>				X								X	X	
<i>Nebrioporus simplicipes</i>			X									X	X	
<i>Agabus conspicuus</i>			X	X	N		N	N				X	X	
<i>Ilybius nakanei</i>			N									X	X	
No. of species	1	3	10	4	6	1	2	3	2	11	9	16	15	10

Discussion

In spite of the many new species records for specific islands presented here, we feel that the faunistic knowledge of the Kuril Dytiscidae is still relatively poor when specific islands are considered. Moreover, as some of the literature records have been interpreted without the possibility to examine the actual specimens, some errors may be found in our list, as summarized in Table 1.

Generally, the South Kuril Islands have been colonized from Hokkaido, and the North islands from Kamchatka, whereas the few insect species endemic to the archipelago are found on the central islands (KHOLIN 1994). The islands on the Lesser Kuril Ridge plus Kunashir are landbridge islands that were in contact with Hokkaido some 18,000 YBP.

Of the 24 species of Dytiscidae recorded from the Kuril Archipelago, 15 species are also known from Hokkaido and Sakhalin, including all species with East Asiatic, Ussurian-Japanese and Japanese distributions. On the contrary, nine of the 12 species recorded from the two northernmost islands are also known from Kamchatka, and have Holarctic or Palearctic distribution patterns. The remaining three species are expected to occur also in Kamchatka, which is faunistically poorly known.

Looking at species richness of individual islands, the larger islands at either end of the Greater Kuril Ridge are the richest, viz. Kunashir with 10 species and Paramusir and Shumshu with 11 and 9 species, respectively. A deeper analysis of such patterns cannot be done until the fauna of the separate islands are better known.

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Authors' addresses:

ANDERS N. NILSSON
Department of Biology, BIG
University of Umeå
S-901 87 Umeå
Sweden

NOBORU MINAKAWA & PONTUS B. H. OBERG
College of Forest Resources
University of Washington
Seattle, Washington 98105
USA

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