The diving beetles (Coleoptera, Dytiscidae) of Sakhalin – an annotated checklist

ANDERS N. NILSSON & SERGEY KHOLIN


A list of 36 species of diving water beetles (Dytiscidae) recorded from the North Pacific island of Sakhalin in the Far East of Russia is given. The records were based on own collections, museum material, or literature information. The Sakhalin records of two of the species not examined by us are regarded as doubtful and three literature records as erroneous. For each species all known localities are listed and assigned to one of 15 districts. Information on habitats and general distributions are also given. The following species are recorded from Sakhalin for the first time: Hydroborus fuscipennis Schaum, H. acutangulus Thomson, H. uenoi Nakane, H. tristis (Paykull), H. breviusculus Poppius, H. laticollis Zimmermann, Agabus matsumotoi M.Satô & Nilsson, A. aequalis Sharp, A. erichsoni Gemminger & Harold, Ilybius poppisus Zaitzev, and Colymbetes toli Zaitzev. The Sakhalin fauna is most similar to the fauna of Hokkaido, with 26 species known from both islands.

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Introduction

The first records of Dytiscidae from Sakhalin were published by Zaitzev (1905, 1908) based on material collected by Suprunenko. A relatively rich material was collected between 1905-1946, when South Sakhalin (Karafuto, south of 50°N latitude) belonged to Japan, and reported on by Matsumura (1911). Kamiya (1932, 1934, 1938a-b, 1940) and Takizawa (1933). A few additional records from North Sakhalin were published by Zaitzev (1953). A more comprehensive list of Sakhalin Dytiscidae was not given until Lafer's (1989) treatment of the fauna of the Far East of Russia.

In order to get a better picture of the Sakhalin fauna we have now revised all previous records available. Moreover, we have collected a rich material of Dytiscidae on Sakhalin, including 11 species not previously known from the island.

Geography, climate and nature

Sakhalin is one of the largest islands of the North Pacific. It covers a total area of 76,400 km². It is about 950 km long and is situated between 141°38' and 144°55'N along the eastern coast of Asia. In the north, Sakhalin is separated from the continent by the 7.5 km wide Nevelskoy Channel. South Sakhalin is separated from Hokkaido by the 37.5 km wide Laperuz Passage.

Geomorphologically, Sakhalin consists of two longitudinal middle altitude mountain ridges that reaches elevations of 1000 to 1300 m a.s.l (maximum 1609 m). Extensive lowlands are found in the northern part, and in the south along the coasts and also between the ridges (Figs 1-3).

The Sakhalin climate is moderately maritime and affected by the monsoons, i.e. with cool and long winters and rainy summers. The pronounced latitudinal extension, the complex topography,
and the different temperature regimes of the surrounding seas create a variety of climatic conditions. Generally, the east coast has a colder climate than the west coast due to effects from different ocean currents, i.e. the cold Sakhalin Current and the warm Tsushima Current, respectively.

Sakhalin has a rich system of permanent rivers and small streams, with chiefly clear water. Small lakes are found chiefly in plains and lowlands. Isolated lagoons are characteristic for the sea shores.

Extensive areas of peat bogs and wetlands have developed on the north plain. In the south these biotopes are restricted to coastal lowlands, especially adjacent to river outlets.

Most of Sakhalin is covered with coniferous forest (taiga), representing three major types. The northern taiga is dominated by *Larix cajanderi* Mayr and *Pinus pumila* (Pall.) Regel. In the central parts, the forests are formed chiefly by *Picea ajanensis* (Lindl & Gord.) Fisch. ex Carr. and *Abies sachalinensis* Fr. Schmidt. To the south the taiga is partly replaced by deciduous forest and elements of the south flora.

**Material and methods**

This study is based on own collections in combination with the examination of literature records and museum collections, chiefly in the Institute of Biology and Pedology, Vladivostok. We collected together on Sakhalin on 18-24 June 1993 and the junior author collected alone in September the same year. We spent most of our time in the Kholmsk District, visiting also the Korsakov and Aniva Districts briefly. All records cited below without reference to any other collector or collection refer to our own material, and the number of specimens are given within parenthesis. This material will be split between the Vladivostok Institute and coll. Nilsson, Umeå. We have chosen not to cite the Sakhalin records given in Kamiya (1938b) as they are identical with those in Kamiya (1938a).

The administrative districts of Sakhalin are abbreviated as follows (Fig. 1): KO= Korsakov,

We collected this species among gravel in more slowly flowing water in a river. It is known from Korea, Sakhalin, Hokkaido, Honshu and the Kuril Island of Kunashir.

Platambus pictipennis (Sharp)

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

Platambus pictipennis (Sharp, 1873): Kamiya 1932:20, 1934:5 (Sakhalin); Kamiya 1938a:31 (Kimunai); Brancucci 1988:184 (Nowoalexandrowsk); Lafer 1989:248 (key, Sakhalin).


Our single specimen of P. pictipennis was collected in a small stream. This species is known from Sakhalin and Japan (from Hokkaido to Kyushu). An old record is known from Korea.

Agabus congner (Thunberg)

Dytiscus congner Thunberg, 1794:75 (orig. descr.).


KO: Okhotskoye 20.vi.93 (15); NW of Lake Tunaycha 20.vi.93 (2); 13 km W of Okhotskoye 20.vi.93 (1). KH: Kostromskoye 18-24.vi.93 (2), 8.ix.93 (1); Pionery 23.vi.93 (20), 9.ix.93 (5), 17.ix.93 (2).

This species was most abundant in temporary Carex-fens. Occasional specimens were collected in various ponds.

The Agabus congner complex includes several forms of unknown taxonomic status. The situation in the Far East has never been analysed in detail,
A widespread Palearctic species that occurs also in Primorye and Hokkaido.

**Hygrotrus impressopunctatus** (Schaller)

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

Coelambus impressopunctatus (Schaller, 1783): Takizawa 1933:172 (Toyohara, Ikusagawa); Kamiya 1934:3, 1940:139 (Sakhalin), 1938a:17 (Konuma, Kashio); Lafer 1989:236 (key, Sakhalin).


We collected this species in various ponds, from permanent detritus ponds to temporary rainwater pools with sand-bottom.

Common on Sakhalin north to MA. A widespread Holarctic species known also from Primorye and Hokkaido.

**Hydroporus fuscipennis** Schaum

Hydroporus puberulus Mannerheim, 1853:163 (orig. descr.); preocc. by LeConte, 1850.


Hydroporus criniticollis Larson, 1975:301 (orig. descr.).


This species was chiefly collected in larger Carex-fens (Fig. 4), and a few specimens were taken in bog pools. A Holarctic species that is transcontinental in North America. The Palearctic range extends from Germany, Austria and Fennoscandia via northern Russia to Kamchatka, Sakhalin and Hokkaido. We have also seen one specimen from Primorye (Vladivostok, Sputnik Station 6.x.93 leg. S.Kholin).

**Hydroporus acutangulus** Thomson

Hydroporus acutangulus Thomson, 1856:202 (orig. descr.).

NO: Nogliki, upper reaches of Dagi River 23-25.ix.93 (2) V.N. Kuznetsov.

This species is seemingly confined to North Sakhalin. Our single record was from a small bog pool in larch-lichen-moss forest.

**Hydroporus acutangulus** belongs to a Holarctic complex of forms or species that needs to be revis- ed. The two Sakhalin males studied have a distinctly shorter penis than material from northern Sweden. A male from Primorye (Ussuriyiski Pres. IBPV) examined agrees in penis shape with the Sakhalin material.

**Hydroporus morio** Aubé


Hydroporus watanabei Takizawa, 1933:174 (orig. descr.).


This species is seemingly confined to the north half of Sakhalin, south to PO.

The world distribution is northern circumboreal and it is known also from the Magadan Prov and from Hokkaido.

**Hydroporus submuticus** Thomson

Hydroporus submuticus Thomson, 1874:537 (orig. descr.); Nilsson & Nakane 1993:421 (syn.).

Hydroporus konot Nakane, 1963:25 (orig. descr.).

DO: Anna River, 20 km SE of Dolinsk (IBPV).

The only record of this species known from Sakhalin is from 28.vii.1977, when it was collected by G. Lafer in a small pool on rock near the mouth of the Anna River.

This northern Palearctic species is known also from Primorye and Hokkaido.

**Hydroporus sagaliensis** Takizawa


AN: Dalneye (ELM).

This species is on Sakhalin only known from the holotype, collected at Dalneye. Kamiya’s (1938a) record from Novo-Aleksandrovsk is doubtful.

Outside Sakhalin, *H. sagaliensis* is only known from Hokkaido (Nilsson & Satō 1993). It
is seemingly endemic to Hokkaido and South Sakhalin.

**Hydroorus uenoii Nakane**


*Hydroorus striola* (Gyllenhal, 1826): Balfour-Browne 1947:439 (misident.).


We collected this species in various ponds, fens and bogs. It occurs chiefly among dense vegetation.

Together with *H. iijimai* Nilsson & Nakane, this species forms a complex that is known from NE China, Primorye, South Sakhalin, South Kurils, Hokkaido and Honshu.

**Hydroorus tristis** (Paykull)

*Dytiscus tristis* Paykull, 1798:232 (orig. descr.).


KO: NW of Lake Tunaycha 20.vi.93 (7). KH: Kostromskoe 19.vi.93 (27); Pionery 22.vi.93 (1).

This species was chiefly collected among *Sphagnum* moss in bog pools. The distribution of *H. tristis* is Holarctic, and it is known from the Magadan Prov. and Hokkaido.

**Hydroorus breviusculus** Poppius

*Hydroorus striola* var. *breviusculus* Poppius, 1905:14 (orig. descr.).


AN: 15 km E of Aniva 20.vi.93 (33).

On Sakhalin known only from AN, where it was collected among floating *Drepanoclados* moss in a pond close to a river mouth.

This East Palearctic species is known from Yakutia, Amur Region, Khabarovsk Terr., Primorye and Sakhalin in Russia.

**Hydroorus laticollis** Zimmermann


AN: 15 km E of Aniva 20.vi.93 (1).

The unique Sakhalin specimen was collected in a bog pool close to a river mouth.

This species was described from Kamchatka. We have seen material also from South Primorye. It was identified by Dr R.E. Roughley, Winnipeg, who is preparing a revision of the *sibiricus*-group.

**Oreodytes alpinus** (Paykull)

*Dytiscus alpinus* Paykull, 1798:226 (orig. descr.).


MA: Makarov (IBPV).

The only record of this species from Sakhalin dates back to 1932. Habitat preferences of European populations suggest that it was collected in a larger river on sand-bottom.

This northern Palearctic species is known from Primorye to Kamchatka in the Far East.

**Oreodytes sanmarkii** (C.R. Sahberg)

*Hyphorus sanmarkii* C.R. Sahberg, 1826:172 (orig. descr.).

*Hyphorus rivalis* Gyllenhal, 1827:384 (orig. descr.).


We collected this rheophilous species among gravel in more slowly running water in a river, and in a smaller stream.

This Holarctic species is known from Primorye and Hokkaido. Four females from Honshu (Daibosatsu Mts., 2.ix.1987, leg. T. Abe) in coll. Nilsson differ from other Palearctic specimens in the much coarser punctuation on the metasternum and metacoxal plates. The taxonomic status of the Japanese populations of *O. sanmarkii* needs re-evaluation.

**Nebriopus simplicipes** (Sharp)

*Deronectes simplicipes* Sharp, 1884:442 (orig. descr.).


*Nebriopus simplicipes* (Sharp, 1884): Nilsson & Angus 1992:288 (class.).
AN= Aniva, NE= Nevelsk, KH= Kholmsk, DO= Dolinsk, TO= Tomari, MA= Makarov, UG= Uglegorsk, PO= Poronaysk, SM= Smirnykh, AS= Aleksandrovsk-Sakhalskiy, TY= Tymovsk, NO= Nogliki, and OK= Okha district. The general description of Sakhalin is based on Atlas of Sakhalin Region (1967).

Collections are abbreviated as: CWW= coll. G. Wewalka, Wien, EIM= Entomological Institute, Hokkaido University, IBPV= Institute of Biology and Pedology, Vladivostok.

We here give the current Russian names of the Japanese localities cited from the literature: Esutoru= Uglegorsk, Hoegawa= unknown river, Horo= Dudo, Horonai= Poronai River, Ikusagawa= Dalneye, Kashiio= Zaazemoye, Kimunai= Poronai River, Konuma= Novo-Aleksandrovo, Maoka= Kholmsk, Minakishi= Podorozhnaya, Naifuchi= Ust-Dolinka, 10 km N of Starodubskoye, Nokoro= Vladimirovo, Sakaihama= Starodubskoye, Shikuka= Poronaysk, Shiritori (-ru)= Makarov, Solowiyofka= Solovyovka, Tomunai= Okhotskoye, Toyohara= Yuzhno-Sakhalinsk.

**List of species**

*Hygrotrus inaequalis* (Fabricius)

*Dytiscus inaequalis* Fabricius, 1777:239 (orig. descr.).


KH: Kostromskoye 18.vi.93 & 8.ix.93; Pionery 23.vi.93 & 9.ix.93; totally ca. 150 inds.

This species was abundant in two ponds each near Kostromskoye and Pionery, respectively. All four ponds were sun-exposed and situated among coastal sand-dunes. The ponds had more or less well-developed marginal erect vegetation and the bottom was covered with fine detritus.

On Sakhalin known only from the coast of KH.
chiefly due to the scanty material available. The correspondence between material of *A. congener* from Fennoscandia and Sakhalin is fairly good. We have seen very few specimens from Hokkaido, but suggest that they are conspecific with the Sakhalin population. Some females from Mt. Daisetsu are narrow and coarsely sculptured, thus very similar to *A. thomsoni* (J. Sahlberg). We have also Sakhalin females that show this tendency.

A series from Primorye (Ussuriyski Pres.) average somewhat smaller than the Sakhalin specimens, and have somewhat shorter male protarsal claws.

*Agabus matsumotoi* M. Satô & Nilsson


We collected this species in a small shaded pond adjacent to a stream. It lives in backwaters of streams on Hokkaido (M. Satô pers. comm.).

This rare species is seemingly endemic to Hokkaido and South Sakhalin.

*Agabus japonicus* Sharp

*Agabus japonicus* Sharp, 1873:50 (orig. descr.);

Kamiya 1932:20, 1934:6 (Sakhalin); Kamiya 1938a:35

(Konuma, Shikuka).

*Gaurodotes japonicus* (Sharpl, 1873): Lafer 1989:247

(key, Sakhalin).


NO: Nogliki, upper reaches of Dagi River 23-25.ix.93 (2) V.N. Kuznetsov.

This species is seemingly widespread on Sakhalin, where it occurs in various ponds and fens. *Agabus japonicus* belongs to a very difficult com-
plex of species or forms that is distributed in Primorye, Korea, China and throughout Japan.

**Agabus aequalis** Sharp

*Agabus aequalis* Sharp, 1882:501 (orig. descr.).
AN: Kirillovo (IBPV).

The only specimens known from Sakhalin were collected in a coastal bog at Kirillovo near Aniva (23.vii.1993) (3, leg. V. Kuznetzov) (G. Lafer, pers. comm.).

This East Palearctic species is known from Transbaikalia, Primorye and South Sakhalin.

**Agabus coxalis** Sharp

*Agabus coxalis* Sharp, 1882:535 (orig. descr.).


We know this species from Sakhalin only by Zaitzev’s (1953) record without detailed locality information. *Agabus coxalis* is probably confined to the northern part of the island.

**Agabus conspicuus** Sharp

*Agabus conspicuus* Sharp, 1873:48 (orig. descr.).

*Gauroydies conspicuus* (Sharp, 1873): Lafer 1989:246 (key, South Sakhalin).


We collected this species in larger ponds with various development of vegetation. *Agabus conspicuus* occurs throughout Japan, on South Sakhalin, South Kurils, and in Korea.

**Agabus labiatus** (Brahm)

*Dyticus labiatus* Brahm, 1790:27 (orig. descr.).


We know this species from Sakhalin only by Zaitzev’s (1953) record without detailed locality information. *Agabus labiatus* is probably confined to the northern part of the island.

**Agabus opacus** Aubé

*Agabus opacus* Aubé in Dejean, 1837:173 (orig. descr.).


*Agabus sharpi* Jacobson, 1908:430 (replacement name); Larson & Nilsson 1985:124 (syn.).

*Agabus sachalinensis* Kamiya, 1938a:37 (orig. descr., Horo, Konuma).

AN: Novo-Aleksandrovsk (IBPV). DO: Dudino (Kamiya 1938a); Dolinsk 10.ix.93 (3) V.N. Kuznetzov. SM: Smirnykh (IBPV).

In North Europe, this species prefers temporary forest pools. The world distribution is northern Holarctic. It is known in the Far East from Primorye to Magadan Prov.

**Agabus erichsoni** Gemminger & Harold

*Agabus nigroaeneus* (Marsham) sensu Erichson, 1837:157, 158 (misident.).

*Agabus erichsoni* Gemminger & Harold, 1868: 454 (replacement name); Fery & Nilsson 1993:101 (key, distr., syn.).


KH: Pionery 22.vi.93 (1).

The unique male known from Sakhalin was collected in wheel-track pools on a wet meadow surrounded by coastal forest.

This widespread Holarctic species is known also from Primorye and Hokkaido.

**Ilybius apicalis** Sharp

*Ilybius apicalis* Sharp, 1873:51 (orig. descr.); Kamiya 1932:20 (Sakhalin); Lafer 1989:249 (key, South Sakhalin).


We collected this species in larger ponds with various development of vegetation. *Ilybius apicalis* occurs in Korea, Primorye, South Sakhalin, South Kurils, throughout Japan, and in China south to Taiwan.

**Ilybius poppii**us Zaitzev


AN: 15 km W of Aniva 20.vi.93 (4). KH: Kostromskoye 18-24.vi.93 (12); 8-9.ix.93 (6); Pionery 9.ix.93 (1).

We collected this species in ponds with dense marginal vegetation, frequently with *Drepanocladus* moss.

*Ilybius poppii**us is widespread in East Siberia
and the Far East of Russia including Primorye, and also recorded from Mongolia, North China and Hokkaido.

_Ilybius nakanei_ Nilsson


_Ilybius nakanei_ Nilsson, 1994:58 (orig. descr.).


We collected this species chiefly in shallow or shaded ponds with seeping water, frequently near streams. It seems to prefer colder water than _I. apicalis_ or _I. poppiusi_.

_Ilybius nakanei_ is seemingly endemic to South Sakhalin and Hokkaido.

_Rhantus suturalis_ (MacLeay)


KO: Lake Busse (IBPV); 13 km W of Okhotskoye 20.vi.93 (3). KH: Kholmsk (IBPV); Kostromskoye 24.vi.93 (1). DO: Dolinsk 10.ix.93 (1) V.N. Kuznetsov; Firsovo (IBPV). PO: Poronaysk (Kamiya 1938a).

Both our records of this species are from larger ponds with sparse vegetation.

This species is widely distributed in the Palearctic, Oriental and Australian Regions. It is known from Primorye and Hokkaido, and is on Sakhalin seemingly confined to the south half.

[Rhantus erraticus_ Sharp]

_Rhantus erraticus_ Sharp, 1884:446 (orig. descr.); Kamiya 1932:20 (Sakhalin).

We have not seen any specimens of _R. erraticus_ from Sakhalin, and the single literature record (Kamiya 1932) is viewed as erroneous and was deleted by Kamiya in his own copy of this work (M. Satô in litt.). Moreover, Kamiya (1934) did not record this species from Sakhalin. This Japanese species is confined to Hokkaido and Honshu.

_Rhantus notaticollis_ (Aubé)


Two males of this species from Sakhalin in IBPV from Japanese collections were misidentified by Kamiya as _R. exsoletus_, and later identified as _R. notaticollis_ by G. Lafer. We collected this species in five different ponds among coastal sand-dunes.

This widespread Palearctic species is known also from Primorye and Hokkaido.

_Colymbetes tolle_ Zaitzev


Our only specimen was collected in a large pond with sparse marginal vegetation close to the seashore. A female of this species in IBPV was misidentified as _C. dolabratus_ (Saghalien Cent. Exp. Sta. Konuma 11.vi.1938). The _C. dahuricus_ of Kamiya (1938a-b, 1940) is identical with _C. tolle_ as evidenced by his habitus drawings.

As only two females from Sakhalin were studied, our identification is tentative. _C. tolle_ was described from Yakutia. Most likely the species occurring on Sakhalin is identical with the "_Colymbetes sp._" recorded from Hokkaido and Honshu (Mori & Kitayama 1993). If not identical with _C. tolle_ this is an undescribed species, as suggested by Dr M. Satô (pers. comm.).

_Colymbetes dahuricus_ Aubé

_Colymbetes dahuricus_ Aubé, 1837:99 (orig. descr.); Zaitzev 1905:17 (W coast of Sakhalin); Lafer 1989:250 (Sakhalin).

Of this species, we have only seen one female from Sakhalin (Saghalien Central Experimental Station 28.v.1936 leg. M. Yoshikura IBPV). This northern Holarctic species is widespread in East
and bog-pools, always among dense vegetation. Our Sakhalin males have chiefly fasciate elytra, but the non-fasciate and vittate morphs were also found. All Sakhalin females have vittate elytra and lack dorsal rugosity. The few Primorye specimens seen are all non-fasciate, and the females lack rugosity (Figs 5-6).

This widespread Holarctic species is known also from Hokkaido.

[Glydotes zonatus (Hoppe)]

Dytiscus zonatus Hoppe, 1795:33 (orig. descr.).
Glydotes zonatus (Hoppe, 1795); Kamiya 1938a:53 (Sakhalama, Naifuchi), 1940:139 (Sakhalin).

DO: Starodubskey; Ust-Dolinka (Kamiya 1938a).

We have not been able to verify Kamiya's (1938a) record of this species from Sakhalin. Most likely it is correct as this widespread Palearctic species is known from both Primorye and Hokkaido.

Acilius sulcatus (Linnaeus)

Acilius sulcatus Linnaeus, 1758:412 (orig. descr.).
Acilius sulcatus (Linnaeus, 1758); Kamiya 1932:17, 1934:8 (Sakhalin); Kamiya 1938a:55 (Minakshi); Lafer 1989:252 (key, Sakhalin).


We collected adults of this species in one large pond with sparse marginal vegetation near the seashore. This widespread Palearctic species is known also from Primorye, but not from Japan.

Dytiscus dauricus Gebler

Dytiscus marginals Linnaeus, 1758; Kamiya 1932:20, 1934:8, 1940:139 (misident., Sakhalin); Kamiya 1938a:56 (misident., Tomunai, Naifuchi).
Dytiscus dauricus Gebler, 1832:29 (orig. descr.); Roughley 1990:483 (syn., map, Sakhalin).

KO: Okhotskoye (Kamiya 1938a); 13 km W of Okhotskoye 20.vi.93 (5). NE: Kuznetsovo (IBPV). KH: Pionery 22-23.vi.93 (5). DO: Firsovo; Uglazovskoye (IBPV); Ust-Dolinka (Kamiya 1938a). ?: Kamyshovyi Mt. Range (IBPV).
We collected adults of *D. dauricus* in large ponds and small lakes with sparse to dense marginal vegetation.

This Holarctic species is widespread in the East Palearctic. It is known both from Primorye and Hokkaido. Kamiya’s (1932, 1934, 1938a, 1940) Sakhalin records of *D. marginalis* are viewed as erroneous. One male in IBPV collected by M. Yoshikura and identified as *D. marginalis* is in fact *D. dauricus*. Moreover, these two species were never separated in Kamiya’s works (T. Nakane in litt.).

[Cybister japonicus Sharp]

*Cybister japonicus* Sharp, 1873:45 (orig. descr.); Zaitzev 1908:65 (Sakhalin).

According to Zaitzev (1908) one specimen was collected on Sakhalin by Suprunenko. This species is distributed from Primorye to China and throughout Japan. As all Suprunenko’s specimens were without locality labels and some of them were collected in Primorye, the record of *C. japonicus* from Sakhalin may be wrong (G. Lafer, pers. comm.).

**Discussion**

We have recorded 36 dytiscid species from Sakhalin, of which two should be considered as doubtful. No doubt, the Sakhalin fauna includes several additional species that not yet have been found. Especially the northern districts have been very poorly collected.

About half of the Sakhalin species are widely distributed in the Palearctic or Holarctic Regions (Tab. 1), with boreal affinities. The wide distributional range of many species is illustrated by the occurrence of 19 of the Sakhalin species also in NW Europe and Sweden. Five species classified as East Palearctic occur in East Siberia or

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<th>Distribution &amp; species</th>
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Transbaikalia. About ten of the Sakhalin species represent the Japanese element, of which four species also occur on the continent north to Primorye.

Sakhalin shares most species with Hokkaido (26 species) and Primorye (25 species), whereas the faunal similarity on the continent decreases sharply both north- and southwards from Primorye (Tab. 1).

A rough classification of habitat preferences into lentic or lotic shows that a large majority of Sakhalin Dytiscidae prefer stagnant waters as ponds, fens or bogs (Tab. 1). The high proportion of lentic species contrasts with the extreme richness of lotic habitats on Sakhalin (Fig. 7). A high proportion of the lotic species belong to the Japanese element.

No species of Dytiscidae is endemic to Sakhalin. The three species Hydroporus sahaghiensis, Agabus matsumotoi, and Ilybius nakanei are seemingly endemic to Hokkaido plus South Sakhalin.

Acknowledgements

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Sammanfattning