

On some Smaller Latvian Coleoptera

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Abstract: During a 7-day field trip in the spring of 2005 the authors collected 524 species of Coleoptera of which 65 species are here reported for the Latvian fauna for the first time. The largest number of “new” species is amongst Staphylinidae (42 species), Hydraenidae (7 species) and Hydrophilidae (6 species). Most remarkable is the discovery of the ptiliid *Actidium reticulatum* BESUCHET a species hitherto only known from the type series from Switzerland. Statistical analysis revealed a strong correlation between body size and novelty: species “new” to the faunal list being significantly smaller than the species already known from Latvia.

Key words: Coleoptera, Latvia, faunistics, body size, abundance, microcoleoptera.

Introduction

During the spring of 2005 the authors attended the yearly meeting of the Balfour-Browne Club, an international society promoting the study of aquatic Coleoptera, held at Sigulda, Latvia, from 10 to 12 June. The conference program, which included several field trips, offered ample opportunity to collect aquatic and other beetles at several sites of importance. On 10 June the Gauja National Park in the direct vicinity of Sigulda was surveyed by foot, including sampling at the banks of the Gauja River, some of its oxbow lakes and the old broad-leaved forests. On 11 June the Gauja NP was traversed by bus and sampling took place at some lakes and the Amata River at Cēsis. The next day's field trip to the Ķemeri National Park included a visit to a peat bog and the Lake Kaņieris. After the end of the conference the authors were able to visit several other interesting sites in Latvia. During these four days the focus was mostly on habitats for aquatic and riparian Coleoptera: rivers and wetlands. On 13 June the Gauja River near Sigulda was revisited; on 14 June the Rauza River valley near Mežmuiža and the valley of the Pēdēze River near Daugasne village were studied; 15 June was spent at the Baltic coast

near Klapkalnciens and Mērsrags; on 16 June the surroundings of Slītere and the valley of the Irbe River near Lielirbe were visited.

Aware of the still imperfect knowledge of the Latvian Coleoptera fauna we decided to collect extensively and to take large samples with us for further study. The senior author (Oscar Vorst) collected beetles of all families focusing on the riparian fauna, mainly by flushing banks of water bodies and sifting of leaf litter. Samples taken by those methods were brought home in cloth bags and processed further within a few days. All Coleoptera present in these samples were then, irrespective of body size, stored in tubes for subsequent identification. Collecting activities of Gert van Ee and André van Nieuwenhuijzen were mainly restricted to aquatic Coleoptera using a water net.

List of species

In the following list, the 64 species not in Telnov (2004) are presented, although some have been reported as new to the Latvian fauna since. This is mentioned whenever known to us. In addition a single species collected by André van Nieuwenhuijzen that is “new” as well, is included: *Laccobius decorus*. Unless stated

otherwise, identification was by the senior author. Of each species material is preserved in his collection. The occurrence in Fennoscandia, Estonia and Lithuania is based on Silfverberg (2004), in Belarus on Alexandrovitch et al. (1996). Coordinates are in UTM using WGS84 in MGRS notation.

Dytiscidae

Hydroporus scalesianus STEPHENS, 1828

Ķemeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 4 ind.

Collected from a small strip of marshland vegetated with sedges and mosses along the shore of a large lake by trampling the soil. Also known from Estonia.

Hydraenidae

Hydraena britteni JOY, 1907

Klapkalnciens, UTM FJ448245, 15.06.2005, 1 male, 1 female.

Sifted from refuse on the beach at the Gulf of Riga. Also known from Estonia and Lithuania.

Hydraena flavipes STURM, 1836

= *minutissima* auct.

Cēsis, Amata River, UTM LD876480, 11.06.2005, 1 female.

A typical species of running water. Not known from Fennoscandia, the Baltic States or Belarus (Hansen 1998, Ryndevich & Moroz 2000). Reported from Poland (Hansen 1998). The Latvian site is at the northern limit of the known distribution.

Ochthebius bicolon GERMAR, 1824

Sigulda, Gauja River, UTM LD684357, 10.06.2005, 2 male 2 females, 11 ind; Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 3 male 8 females, 56 ind; Lielirbe, Irbe River, UTM EJ645856, 16.06.2005, 1 male 2 females.

All specimens were collected by flushing river banks, the typical habitat of this species. Probably a common species but overlooked. Not known from Estonia, Lithuania or Belarus (Ryndevich & Moroz 2000).

Ochthebius flavipes DALLA TORRE, 1877

Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 male; Sigulda, UTM LD690375,

13.06.2005, 1 male.

A single male was flushed from a sandy river bank, and another one was collected from a nearby forest pond. Females cannot reliably be separated from *O. minimus* (FABRICIUS). Not known from Fennoscandia, the Baltic states or Belarus (Hansen 1998, Ryndevich & Moroz 2000). Reported from Poland (Jäch 1990). The Latvian site is at the northern edge of the known distribution. The identification was confirmed by Dr. M.A. Jäch.

Ochthebius hungaricus ENDRÖDY-YOUNGA, 1967

Sigulda, UTM LD690375, 13.06.2005, 1 male.

A single male in a forest pond, together with *O. flavipes*. A species with an East-European distribution (Hansen 1998). Also reported from Estonia. Dr. M.A. Jäch confirmed the identification.

Limnebius aluta BEDEL, 1881

Sigulda, UTM LD688360, 10.06.2005, 1 female; Ķemeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 2 male, 1 female, 13 ind. Not known from Estonia, Lithuania. Reported from Belarus (Ryndevich & Moroz 2000).

Limnebius atomus (DUFTSCHMID, 1805)

Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 male; Sigulda, UTM LD690375, 13.06.2005, 1 male, 1 female, 1 ex.

Collected from a sandy river bank and from a forest pond. Not known from Fennoscandia and the Baltic states. Hansen (1998), however, cites "Balticum" without further precision. Reported from Belarus (Ryndevich & Moroz 2000) and Poland (Hansen 1998). The Latvian site is at the northern edge of the known distribution.

Hydrophilidae

Helophorus arvernensis MULSANT, 1846

Sigulda, Gauja River, UTM LD684357, 10.06.2005, 6 ind; Sigulda, Gauja River, UTM LD693378, 13.06.2005, 3 ind; Cēsis, Amata River, UTM LD876480, 11.06.2005, 11 ind; Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 11 ind; Lielirbe, Irbe River, UTM EJ645856, 16.06.2005, 14 ind.

A typical inhabitant of river banks. In Latvia apparently common in this type of habitat. Also

known from Estonia and Lithuania. Already reported from Latvia by Silfverberg (2004).

Helophorus pumilio ERICHSON, 1837

Daugasne, Pededze River, UTM MD924179, 14.06.2005, 1 male, 7 females.

Collected in wet, riverine forest. So far not known from Fennoscandia, the Baltic States or Belarus. Hansen (1999), however, does mention Finland, as does Silfverberg (1992).

Helophorus croaticus KUWERT, 1886

Sigulda, UTM LD690375, 13.06.2005, 4 male, 3 females, 6 ind.

Collected from a shaded pond in a riverine forest. Not known from Fennoscandia, the Baltic States or Belarus (Hansen 1999). The Latvian site is at the northern limit of its distribution.

Cryptopleurum subtile SHARP, 1884

Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 ind.

A single specimen from this synanthropic species was flushed from a river bank. Usually associated with decaying vegetable matter or dung. So far not known from the Baltic States, but has been reported from Belarus.

Laccobius albipes KUWERT, 1890

Lielirbe, Irbe River, UTM EJ645856, 16.06.2005, 20 males, 21 females, 135 ind.

Along the sandy banks of the Irbe River where this species was collected it was the most common *Laccobius* species, accompanied by *L. minutus* (Linnaeus) (44 ind.). Not recorded from Fennoscandia, the Baltic States or Belarus. Hansen (1999) mentions "Russian Fed. (Balticum)", probably referring to old records from Königsberg (= Kaliningrad) and Rauschen (= Svetlogorsk) (Horion 1949).

Laccobius decorus (GYLLENHAL, 1827)

Bērciems, 16.06.2005, 1 male, 1 female (leg. & det. André van Nieuwenhuijzen).

From a coastal marsh. Also known from Estonia. The World catalogue of Hydrophiloidea by Hansen (1999) does also mention Latvia.

Leiodidae

Ptomaphagus sericatus (CHAUDOIR, 1845)

Klapkalnciens, UTM FJ448245, 15.06.2005, 3 females.

Sifted from refuse on the beach at the Gulf of Riga. Also known from Estonia and Lithuania.

Ptiliidae

Ptenidium fuscicorne ERICHSON, 1845

Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 ind; Sigulda, UTM LD690375, 13.06.2005, 1 ind; Ķemeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 31 ind.

A wetland species. Also known from Lithuania.

Ptenidium punctatum (GYLLENHAL, 1827)

Klapkalnciens, UTM FJ448245, 15.06.2005, 1 ind.

A halophylic species, sifted from refuse on the beach at the Gulf of Riga. Also recorded from Estonia.

Actidium reticulatum BESUCHET, 1971

Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 3 males, 2 females, 6 ind.

This species was flushed from the steep banks of a small river situated in an open *Alnus* forest. A very rare species, until now only known from the type series from Switzerland, where it was collected from a sandbank along the Venoge near Bussigny (Besuchet 1976, Johnson 2004). The identification could be confirmed by comparison with syntypic material.

Staphylinidae

Micropeplus longipennis KRAATZ, 1859

Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 1 male.

A single male of this species was collected by flushing the steep banks of the Rauza river in an open *Alnus* forest. Not known from Fennoscandia, the Baltic states or Belarus. In Poland only known from unconfirmed record(s) (Mroczkowski & Stefanska 1991). Horion (1963) reports the species from flood refuse from mountain streams.

Eucnecosum brachypterum (GRAVENHORST, 1802)

Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 1 male.

Mainly a northern species. Silfverberg (2004)

reported this species from the Baltic states, including Latvia.

Carpelimus subtilis (ERICHSON, 1839)
Sigulda, Gauja River, UTM LD684357, 10.06.2005, 2 males, 1 female; Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 males, 1 female; Lielirbe, Lielirbe, Irbe River, UTM EJ645856, 16.06.2005, 4 females.
Collected from several sandy river banks. Also recorded from Estonia and Lithuania.

Carpelimus similis (SMETANA, 1967)
Sigulda, Gauja River, UTM LD684357, 10.06.2005, 3 males, 4 females; Sigulda, Gauja River, UTM LD693378, 13.06.2005, 6 males, 10 females.
A typical inhabitant of sandy shores along running water. So far not reported from Fennoscandia, the Baltic States or Belarus, but its distribution is still insufficiently known. Recently discovered in Poland (Staniec 2000).

Thinodromus arcuatus (STEPHENS, 1834)
Cēsis, Amata River, UTM LD876480, 11.06.2005, 1 male, 3 females.
From a shaded river bank. Also known from Estonia.

Bledius cf. *annae* SHARP, 1911
Sigulda, Gauja River, UTM LD684357, 10.06.2005, 1 ind; Sigulda, Gauja River, UTM LD693378, 13.06.2005, 4 ind; Daugasne, Pededze River, UTM MD924179, 14.06.2005, 5 males, 3 females, 27 ind.
The identity of this species here tentatively named *B. annae* remains uncertain. It is also rather close in general appearance and size to *B. defensus* FAUVEL, from which it seems to differ by the less dense puncturation and stronger microreticulation on head and thorax. In this respect is very similar to *B. annae*, from which it seems to differ in the shape of the thorax that is more parallel than in the British material of *B. annae* I have at hand. The specific status of *B. annae* is under debate: it is often considered a synonym of *B. pallipes* (GRAVENHORST). *Bledius defensus* was also collected from two Latvian sites (Mežmuiža, Rauza River and Cēsis, Amata River) but never together with *B. cf. annae*. *Bledius annae* but not *B. defensus* has

been recorded from Belarus.

Thinobius flagellatus LOHSE, 1984
Lielirbe, Irbe River, UTM EJ645856, 16.06.2005, 7 males, 6 females, 46 ind.
This minute species was collected from within exposed sandbanks along the Irbe River. So far not known from the Baltic States or Belarus. Reported from Finland and the Russian part of Fennoscandia (Silfverberg 2004); recently discovered in Poland (Staniec 2002).

Stenus gallicus FAUVEL, 1873
Kēmeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 1 male.
Collected from a small strip of marshland vegetated with sedges and mosses along the shore of a large lake by trampling the soil. So far not known from the Baltic States or Belarus.

Stenus glabellus THOMSON, 1870
Kēmeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 1 male, 1 female, 11 ind.
Together with the previous species. Also known from Lithuania.

Stenus cf. *formicetorum* MANNERHEIM, 1843
Daugasne, Pededze River, UTM MD924179, 14.06.2005, 1 female.
A single female probably belonging to this species was collected from a river bank. Also known from Estonia and Lithuania.

Euaesthetus laeviusculus MANNERHEIM, 1844
Kēmeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 1 female.
Also known from Estonia and Lithuania.

Lathrobium cf. *rufonitidum* REITTER, 1809
Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 female.
A single female probably belonging to this species was collected along the Gauja River. Also known from Estonia.

Neobisnius lathrobioides (BAUDI, 1848)
Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 male.
Collected from a river bank. Also known from Estonia.
Sepedophilus marshami (STEPHENS, 1832)

Sigulda, UTM LD6937, 13.06.2005, 2 males, 1 female.

Collected from dead *Salix* trees, both standing and fallen, along the Gauja River. A widespread species often confused with *S. testaceus* (FABRICIUS). Already mentioned for Latvia by Telnov et al. (2005). Also known from Estonia and Lithuania.

Myllaena kraatzii SHARP, 1871

Ķēmeri, Lielais Ķēmeru Tīrelis, FJ495092, 12.06.2005, 1 female.

Collected from *Sphagnum* in a peat bog, the typical habitat of this species. Silfverberg (2004) already mentioned Latvia, and the other Baltic States.

Myllaena gracilis (MATTHEWS, 1838)

Daugasne, Pededze River, UTM MD924179, 14.06.2005, 1 male.

Flushed from the steep bank of a river. Also known from Estonia.

Cypha suecica (PALM, 1936)

Straupe, Lielstraupe, UTM LD773537, 11.06.2005, 1 male.

Sifted from humid woodland on the shores of a lake. Widespread in Fennoscandia (Lundberg 1995), but so far not known from the Baltic States or Belarus.

Gyrophæna munsteri STRAND, 1935

Sigulda, UTM LD681363, 10.06.2005, 1 male.

A single male of this species was collected from the large fruiting bodies of *Polyporus squamosus*, together with eight other species of *Gyrophæna*. Also known from Estonia and Lithuania.

Gyrophæna joyioides WÜSTHOFF, 1937

Sigulda, UTM LD681363, 10.06.2005, 8 males.

Together with the previous species. Also known from Estonia and Lithuania.

Gyrophæna strictula ERICHSON, 1839

Sigulda, UTM LD6937, 13.06.2005, 7 males, 7 females, 10 ind.

Collected from dead *Salix* trees, both standing and fallen, along the Gauja River. Also known from Estonia and Lithuania.

Dasygnypeta velata (ERICHSON, 1837)

Sigulda, Gauja River, UTM LD684357, 10.06.2005, 1 male; Sigulda, Gauja River, UTM LD693378, 13.06.2005, 2 females, 2 ind; Cēsis, Amata River, UTM LD 876480, 11.06.2005, 1 ind.

This typical species from river bank seems not uncommon along Latvian rivers. Silfverberg (2004) already mentioned Latvia, and the other Baltic states.

Gnypeta carbonaria (MANNERHEIM, 1830)

Mērsrags, UTM FJ283570, 15.06.2005, 2 males, 6 females, 35 ind.

Sifted from coastal refuse in a wetland on the Gulf of Riga. Also known from Estonia.

Schistoglossa aubei (BRISOUT, 1860)

Straupe, Klamani, UTM LD809570, 11.06.2005, 3 males, 4 females.

This typical wetland species was collected from the *Carex*-dominated vegetation on the shores of a shallow lake, together with *S. viduata* (ERICHSON). Also known from Estonia.

Schistoglossa curtipennis (SHARP, 1869)

Cēsis, Amata River, UTM LD876480, 11.06.2005, 1 female; Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 1 female.

Two examples were flushed from shaded river banks. Also known from Estonia and Lithuania.

Hydrosmecta longula (HEER, 1839)

Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 male, 3 females.

Flushed from the sandy banks of a large river. Also known from Estonia.

Aloconota sulcifrons (STEPHENS, 1832)

Sigulda, Gauja River, UTM LD693378, 10.06.2005, 1 male.

Also known from Estonia and Lithuania.

Aloconota insecta (THOMSON, 1856)

Cēsis, Amata River, UTM LD876480, 11.06.2005, 3 males, 5 females.

Also known from Estonia.

Atheta harwoodi WILLIAMS, 1930

Gulbene, UTM MD852346, 14.06.2005, 1 male. Collected from debris in a hole in a *Fraxinus* tree inhabited by an *Apis* colony. Also known

from Estonia and Lithuania.

Atheta pallidicornis (THOMSON, 1856)

Sigulda, UTM LD681363, 10.06.2005, 5 males; Slītere, UTM EJ7788, 16.06.2005, 1 male, 1 female, 1 ind.

Fungus inhabiting species that was collected from the fruiting bodies of *Polyporus squamosus* in mixed forest and *Laetiporus sulphureus* in ancient broad-leaved forest. Also known from Estonia and Lithuania.

Atheta myrmecobia (KRAATZ, 1856)

Cēsis, Amata River, UTM LD876480, 11.06.2005, 1 male, 1 female.

Flushed from the bank of a shaded river. Also known from Estonia and Lithuania.

Atheta autumnalis (ERICHSON, 1839)

Klapkalnciens, UTM FJ448245, 15.06.2005, 2 males, 4 females, 1 ind.

Sifted from refuse on the beach at the Gulf of Riga. Also known from Estonia and Lithuania.

Atheta liturata (STEPHENS, 1832)

Sigulda, UTM LD681363, 10.06.2005, 20 males, 27 females; Slītere, UTM EJ7788, 16.06.2005, 1 male, 1 female, 8 ind.

A fungus-dwelling species that was collected from *Polyporus squamosus* in mixed forest and *Laetiporus sulphureus* in ancient broad-leaved forest. Also known from Estonia and Lithuania.

Dochmonota clancula (ERICHSON, 1837)

Sigulda, UTM LD688360, 10.06.2005, 1 male, 1 female, 3 ind; Sigulda, UTM LD690375, 13.06.2005, 1 female; Daugasne, Pededze River, UTM MD924179, 14.06.2005, 4 females. A typical species from forested wetland. Collected from the marshy edges of a shaded oxbow lake, the edge of a pond in a *Salix* forest and leaf litter in a dense riverine forest. Also known from Estonia.

Acrotona obfuscata (GRAVENHORST, 1802)

Sigulda, Gauja River, UTM LD684357, 10.06.2005, 1 male; Sigulda, UTM LD6937, 13.06.2005, 1 female; Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 2 females.

Also known from Estonia and Lithuania.

Acrotona convergens (STRAND, 1958)

Sigulda, UTM LD690375, 13.06.2005, 1 male.

A single example was sifted from leaf litter in a riverine *Salix* forest. Not known from Estonia and Lithuania, but reported from Belarus.

Alianta incana (ERICHSON, 1837)

Sigulda, UTM LD688360, 10.06.2005, 1 ind; Cēsis, Amata River, UTM LD876480, 11.06.2005, 1 ind.

A wetland species. Collected from the edge of a shaded oxbow lake and from a shaded river bank. Also known from Estonia and Lithuania.

Pachnida nigella (ERICHSON, 1837)

Sigulda, UTM LD688360, 10.06.2005, 3 ind; Straupe, Klāmaņi, UTM LD809570, 11.06.2005, 2 ind; Ķemeri, Lake Kaņieris, UTM FJ500187, 12.06.2005, 1 ind; Klapkalnciens, UTMFJ448245, 15.06.2005, 2 ind.

This typical wetland species seems not uncommon in Latvia [this seems to be unsupported, given that you only collected 6 specimens. But from 4 sites!]. Also known from Estonia.

Meotica exilis (GRAVENHORST, 1806)

Straupe, Klāmaņi, UTM LD809570, 11.06.2005, 2 females; Cēsis, Amata River, UTM LD876480, 11.06.2005, 1 female; Mežmuiža, Rauza River, UTM MD399592, 14.06.2005, 1 female.

Also known from Estonia.

Meotica finnmarkica BENICK, 1954

Sigulda, Gauja River, UTM LD693378, 13.06.2005, 1 female.

A single female of this species was flushed from the sandy banks of a larger river. Not known from Estonia, Lithuania or Belarus.

Batrisodes adnexus (HAMPE, 1863)

Dundaga, UTM EJ8175, 15.06.2005, 1 male.

From a decaying trunk of a *Salix* tree in an ancient park. Also known from Estonia.

Bryaxis clavicornis (PANZER, 1805)

Sigulda, UTM LD690375, 13.06.2005, 3 females.

Sifted from leaf litter in a wet riverine *Salix* forest. Not known from Estonia, Lithuania or Belarus. In Fennoscandia only reported from the

extreme south of Sweden (Lundberg 1995).

Brachygluta haematica (REICHENBACH, 1816)
Daugasne, Pededze River, UTM MD924179,
14.06.2005, 7 males, 18 females.

Not known from Fennoscandia, Estonia, Lithuania or Belarus. The Latvian occurrence is at the northern limit of its known distribution (Sabella et al. 2004). The closely related *B. sinuata* (AUBÉ) that has formerly been treated as a subspecies of *B. haematica* has been reported from Latvia (Telnov 2004) and Estonia.

Clambidae

Clambus nigrellus REITTER, 1914
Cēsis, Amata River, UTM LD876480,
11.06.2005, 1 male; Daugasne, Pededze River,
UTM MD924179, 14.06.2005, 1 female.

A typical species of shaded river banks (Johnson 1992). Not known from Estonia, Lithuania and Belarus. Only recently discovered in Finland, where the species had been overlooked (Mannerkoski 2000).

Byrrhidae

Simplocaria maculosa ERICHSON, 1847
Sigulda, Gauja River, UTM LD693378,
13.06.2005, 1 male, 1 female.

Flushed from the sandy banks of a large river. Not known from Fennoscandia, the Baltic States or Belarus. The nearest localities of this species are in southern Poland (Burakowski et al. 1983).

Curculionidae

Bagous cf. collignensis (HERBST, 1797)
Sigulda, UTM LD688360, 10.06.2005, 1
female.

A female specimen probably belonging to this species was collected from the marshy edges of a shaded oxbow lake. Not known from Estonia, Lithuania or Belarus.

Bagous puncticollis BOHEMAN, 1845
Straupe, Klamani, UTM LD809570,
11.06.2005, 2 females.

Collected from the shores of a shallow lake. Not known from Estonia and Lithuania, but recorded from Belarus.

Ceutorhynchus scapularis GYLLENHAL, 1837
Sigulda, Gauja River, UTM LD693378,

13.06.2005, 2 males, 1 female.
Also known from Estonia.

Discussion

The material collected by the first author is here analyzed in some detail. During seven field days 40 samples were taken. All 5608 collected specimens (1016 records [locality x species]) were identified at the species level (except for a few problematic specimens). Twenty-one samples had more than 10 species. A total of 524 species was collected. Of these 64 species (12%) were not known from Latvia according to Telnov (2004).

A closer look revealed that these “new” species were not randomly distributed among the different families. Of the 81 species of Carabidae collected (25% of the Latvian fauna) not a single one was “new”, while of the 200 species of Staphylinidae s.l. (31% of the fauna) 42 were “new”, that is, 21% of the staphylinid species collected [?]. For the Hydraenidae, with seven out of 14 species “new”, this number is even higher: 50%. This clearly shows that not all Latvian beetle families are equally well known. The popular Carabidae are much better known than less studied families such as Staphylinidae and Hydraenidae; also, the body size of most members of the latter two families is much less than in Carabidae. This also might explain to some extent the observed difference. The median body length of the 81 species of Carabidae in this study is 5.5 mm (range 2.4-35 mm), of the Staphylinidae 3.1 mm (range 0.9-16). This number is 1.8 mm (1.0-2.3 mm) for the Hydraenidae. So, it seems there is a correlation between body size and the chance that a species has been overlooked until now and thus reported here as “new”.

For all 524 species collected in this study, body size, as extracted from literature, is plotted against the number of specimens collected (Figure 1). The 64 species “new” to the Latvian fauna (not in Telnov 2004) are indicated. It appears that the size of “new” species is significantly smaller than that of the other (“known”) species collected: average 2.4 mm versus 4.8 mm (Student's criteria $t = 4.74$, $P < 0.0001$). Especially among larger species there are very few additions to the fauna. Out of

140 species larger than 5.0 mm only a single species is potentially “new”: a female identified as *Lathrobium* cf. *rufonitidum*. This is further illustrated when the collected species are classified in ten size classes, each with an equal

number of species (Figure 2). “New” species are most frequent (27%) in the class of species with the smallest body size (<1.6 mm).

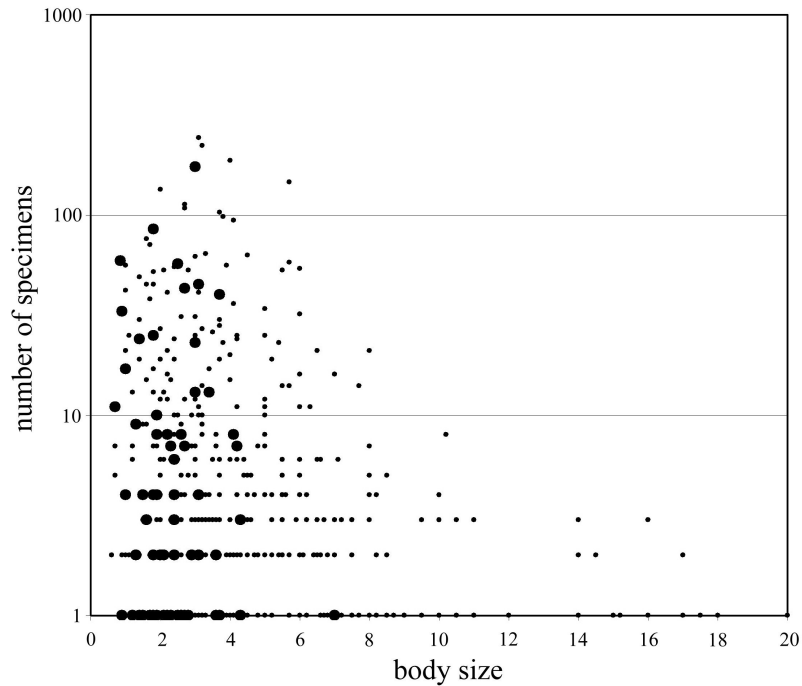


Figure 1. Scatter plot of all 524 species collected during this study. For each species the number of specimens collected is plotted versus body size. Species possible new to the Latvian fauna are indicated with large symbols.

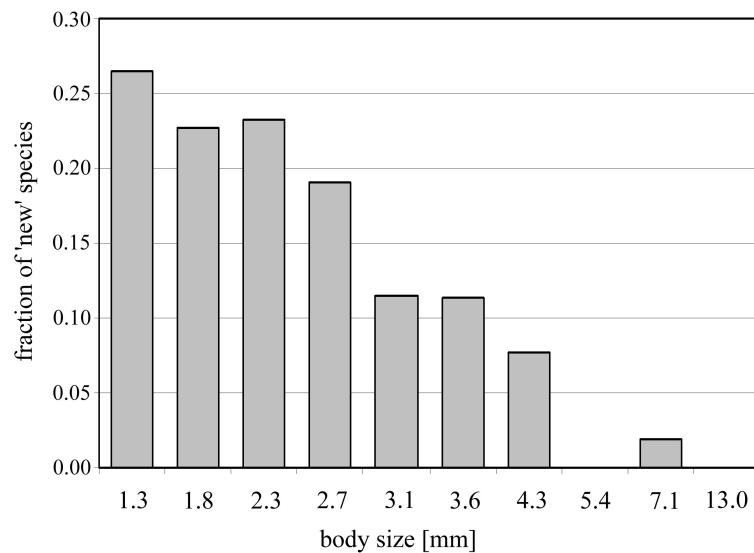


Figure 2. Body size and “new” species. Indicated is the fraction of “new” species for ten size classes with an equal number of species. The average body size in mm is given for each class.

An analysis of the number of specimens collected of each species did not reveal a significant difference between the “new” species and the 'old' species: the average number of collected specimens being 12.6 versus 10.4 respectively ($t = 0.67, P > 0.1$). The

distribution of “new” species over different abundance classes is shown in figure 3. The above results suggest that the newly discovered species do not necessarily represent species that are less abundant or rare at sites where they occur.

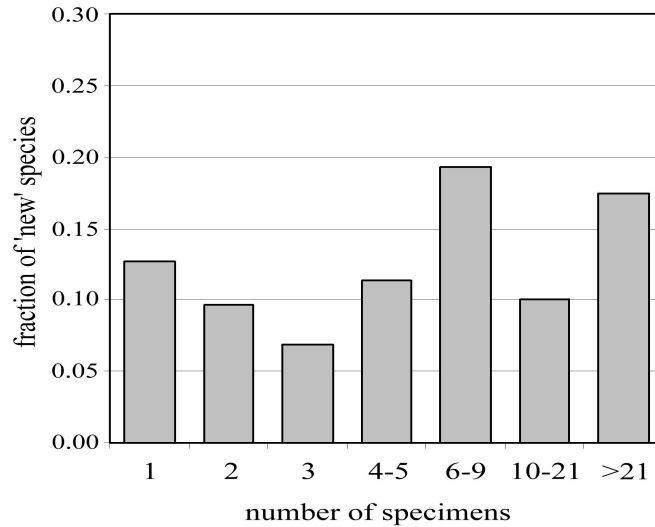


Figure 3. Number of specimens collected and “new” species. Indicated is the fraction of “new” species for classes based on the total number of specimens collected of each species.

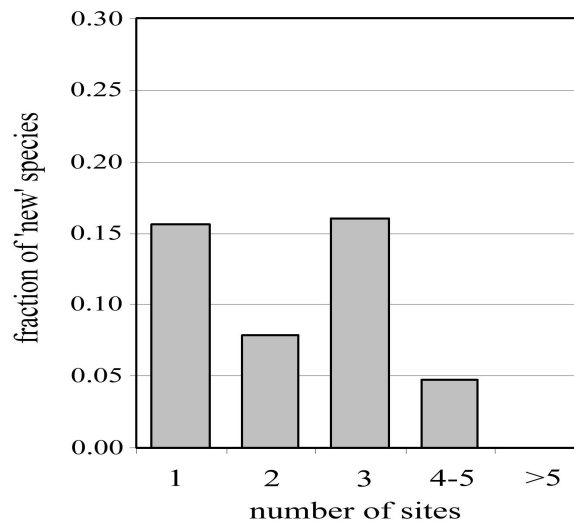


Figure 4. Number of collecting sites and “new” species. Indicated is the fraction of “new” species for classes based on the number of collecting sites for each species.

Whether there exists a correlation with the number of sites at which a species was collected is not easily tested with the current data set: the majority of species (295) was collected at a

single site only and eleven out of 40 sites had ten species or fewer. Figure 4 shows the fraction of “new” species in relation the number of collection sites. Amongst the 295 species that

were collected from one site only, 46 (16%) were “new”. Of the 230 remaining species (2-13 sites) only 19 were “new”, a significant difference ($\chi^2 = 6.41$, $P < 0.025$). These results show that “new” species are in general rare and are encountered on fewer sites than are “known” ones.

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