HALIPLIDAE, GYRINIDAE, NOTERIDAE, DYTISCIDAE, LACCOPHILIDAE AND HYDROPORIDAE (COLEOPTERA) OF THE BÜKK NATIONAL PARK

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Locality data of 11 species of Haliplidae, 4 species of Gyrinidae, 2 species of Noteridae, 28 species of Dytiscidae, 2 species of Laccophilidae and 20 species of Hydroporidae collected in the Bükk National Park are presented, complemented with notes on their biology. *Haliaplus* gen. n., a new genus is described. *Scaphinectes* nom. n., a new name is proposed for *Trochalus* Dejean, 1833, a junior primary homonym of *Trochalus* Castelnau, 1832. *Heteroelytrus* nom. n., a new name is proposed for *Acilius* Leach, 1817, a junior primary homonym of *Acilius* Rafinesque, 1815. *Hydroporus ponticus* Zaitzev, 1927 is new to the fauna of Hungary.

A total of 67 species belonging to the aquatic families of Caraboidea are known to occur in the Bükk National Park (Haliplidae: 11, Gyrinidae: 4, Noteridae: 2, Dytiscidae: 28, Laccophilidae: 2, Hydroporidae: 20). A further 7 species were collected in the Bükk Mts. but outside the territory of the national park. These are as follows:

Gyrinus paykulli Ochs, 1927 – Tard: Bála-völgy. III.

Dytiscus dimidiatus Bergsträsser, 1778 – Eger. IX.

Asternus chalconatus (Panzer, 1797) – Tard: Bála-völgy, Tardi-patak. III, V, IX.

Hydroporus scalesianus Stephens, 1828 – Egerbakta: Baktai-tó. IV.

Hydroporus tristis (Paykull, 1798) – Egerbakta: Baktai-tó. IV.

Hygrotus decoratus (Gyllenhal, 1810) – Egerbakta: Baktai-tó. IV.

Hygrotus versicolor (Schaller, 1783) – Eger: Szőlőcskepuszta. VII.

Kempelen (1868) listed 50 species (Haliplidae: 3, Gyrinidae: 2, Noteridae: 1, Dytiscidae: 28, Laccophilidae: 3, Hydroporidae: 13) from the counties "Heves and külső Szolnok". Owing to the lack of more exact localities and original material his data have not been included in the present paper although the majority of the species were collected most likely in Eger.

Members of the Haliplidae feed on algae while the species belonging to the other families are predaceous. All the species are associated with aquatic habitats.

The small, temporary waters are characterized by loose communities that may be very diverse even in similar conditions. Water coming from thawing snow or rainfall in drinking troughs, wheeltracks, etc. dries out soon. The conditions here preclude development of higher plants; water is colonized mostly by algae; species-poor, edaphic vegetation (e.g. *Junco-Tussilaginetum farfarae*) on the soaked soil might appear only in regularly flooded places. These waters are most often inhabited by minute-bodied, highly euryoecic

water-beetles (e.g. *Laccophilus minutus*, *Hydroporus ater*, *Hydroglyphus geminus*, *Coelambus impressopunctatus*, *Hygrotus inaequalis*).

Species diversities in the habitats of constant waters are more or less similar if the conditions are also similar. In adverse ecological situation, the communities are poor in species. Dominant elements are a few species which are decidedly adapted to the extreme conditions and only a few, highly euryoecious generalists may join them. In the cold, stony-bedded streams of the Bükk National Park the dominating species are members of the genus *Dichonectes* (mainly *D. guttatus*); of the generalists, mostly *Hydroporus ater* occurs here. The communities are rich in species in favourable ecological conditions with the dominance of generalists.

In running waters, the most important factors are drift speed and temperature. In the upper (mountain) reaches of the streams and in the springs the temperature is constantly low, more or less independently of season. The current does not allow sedimentation; bottom is usually stony or pebbled. Aquatic vegetation is represented by algal and moss associations (e.g. *Barbuletum tophacei*, *Cinclidotetum fontinaloidis*, *Fontinalidetum antipyreticae*, *Rhynchostegielletum jacquinii*) growing on stones lying in the bed or sprinkled by water and on sopped rubble or calc tuff. The aquatic beetles living here (*Dichonectes biguttatus*, *D. guttatus*, *Hydroporus ferrugineus*) are found in the spring basin or in places protected from the current, in washed-out depressions, beneath stones, branches and leaves, etc. and only accidentally in the quickly running or torrential parts.

In the lower reaches the temperature of the running waters displays important seasonal fluctuation. The slowly running water allows some sedimentation but the accumulated debris is removed again and again by the inundation; bottom is sandy and muddy. On the humus-rich soil sopped or covered by water, vegetation types of streamside marshes (*Alismato-Eleocharidetum palustris*, *Sparganio-Glycerietum fluitantis*) or altoherbosa vegetation (*Filipendulo-Geranietum palustris*, *Filipendulo-Cirsietum oleracei*, *Chaerophyllo-Petasitetum hybridi*) are developed. Typical water beetles of these running waters are *Gyrinus colymbus*, *G. distinctus*, *Gyrinulus minutus*, *Gaurodytes paludosus*, *Platambus maculatus*. In the meadow-like (flooded at high tide but usually dried out) habitats of the altoherbosa vegetation, merely small, euryoecic species may occur (e.g. *Hydroporus ater*, *Coelambus impressopunctatus*, *Hygrotus inaequalis*).

In stagnant water bodies, depth, temperature, oxygen content and supply of nutrients are of major importance to life. The small lakes and ponds (most of them are artificially created) of the Bükk National Park are most often revived by a stream running through them. Water is usually properly oxygenated, poor or moderately rich in nutrients and relatively cool even in the summertime; sedimentation is as a rule unimportant. The vegetation of the water and waterside is poor, besides the flowering plants algae may gain dominance (*Chara*, *Cladophora*, *Conferva*, *Enteromorpha*, *Spirogyra*, *Ulothrix*, *Vaucheria*, *Zygnema*, etc.), often in homogenous growth. Typical stands of unrooted floating associations (*Lemnetum minoris*, *Lemno-Spirodeletum polyrhizae*) are rarely formed; their initial stages consist mainly of filamentous algae. Submerged algal associations (e.g. *Charetum braunii-globularis*) form loose "meadows" in the bottom or, in deeper lakes, near the shore. Submerged crowfoot and water starwort associations (*Batrachietum trichophylli*, *Callitrichetum cophocarpae-palustris*) are rare, restricted mainly to the still waters of the

foothills. Submerged pondweed associations (*Potamogetetum graminei*, *Potamogetetum lucentis*, *Potamogetetum natantis*) are more frequent, forming the bulk of the submerged vegetation in the Bükk National Park. On the shore of cooler lakes, mostly riverside marsh (*Alismato-Eleocharidetum palustris*) is found. Reed-belt (*Phragmitetum australis*) or similar associations (*Glycerietum maximae*, *Schoenoplectetum lacustris*, *Typhetum angustifoliae*, etc.) occur merely in broad valleys (beyond the boundary of the national park) that deeply enchroach the mountains and which are in connection with the Great Hungarian Plain. In eutrophic marshes the stagnant, barely oxygenated water contains plenty of nutrients; seasonal temperatures fluctuate greatly; organic sediment is formed in considerable amount.

The majority of the water beetles occurring in the mesotrophic-oligotrophic water bodies of the Bükk Mts. belong to widely distributed and euryoecious species. Species chracteristic of eutrophic marshes of the Great Hungarian Plain are of minor importance here; thermophilous elements of shallow lowland waters are rare or lacking; species of cool, humid forested regions and higher mountains are even more occasional (e.g. *Colymbetes striatus*). In the shallow water of the lakeside zone whose level fluctuates and which is densely overgrown, the most characteristic species are the minute-bodied generalists (e.g. *Laccophilus minutus*, *Hydroporus ater*, *Hydroglyphus geminus*, *Coelambus impressopunctatus*, *Hygrotus inaequalis*). Most of the water beetles are found in the deeper places of the lakeside zone, in the belt of the marshy and submerged weeds. *Haliplus obliquus* and *Liaphlus flavicollis* live on *Chara* species while *Haliplinus heydeni* and *Haliaplus laminatus* on filamentous algae. The last species is especially sensitive to limpidity and content of oxygen. Characteristic but rarer predaceous species are *Dytiscus circumflexus*, *Graphoderus zonatus*, *Colymbetes striatus*, *Idiolybius fenestratus*, *Hydroporus palustris*, etc. In the belt of submerged rooted plants of the greater depth, only medium-sized and large species roam, small species are occasional here. On the contrary, among floating plants of the surface, small species are exclusive. In the plantless open water and in the greatest depth water beetles are accidentally found.

In eutrophic stagnant waters similar zonation and habitats have been formed. Widely distributed euryoecic species play the most important role here, too. The more characteristic species of the eutrophic waters (e.g. *Scaphinectes lateralimarginalis*, *Hydaticus seminiger*, *Ilybius quadriguttatus*, *Eriglenus labiatus*) are, however, rather rare in the mountains.

Boggy areas in the Bükk Mts. have been formed under the influence of local bog-making agents in silted up lake depressions and in valleys with springs and without appropriate water outlet. The bogs around springs (*Cardaminetum amarae*, *Carici-Cratoneuretum filicini*) have rather a meadow-like character; soil is barely oxygenated, soggy but less peaty. These places are seemingly lacking in distinctive water beetles; the tiny-bodied species collected here are commonplace everywhere in stagnant water. An intermediary peatbog spot at Egerbakta (*Salici-Sphagnetum recurvi*) was formed by the silting up of an oligotrophic lake. The former lake is filled up by peaty sediment and densely overgrown by plants; open water surface is negligible. Its water is cool, acid, poor in calc but rich in dissolved humus compounds that give a brownish colour. Characteristic water beetles are *Hydroporus scalesianus*, *H. tristis*, *Hygrotus decoratus*.

In the course of the identification of the collected material I have encountered a few taxonomic and nomenclatorial problems; the solution of them is proposed hereunder.

Important external features of *Liaphlus laminatus* differ considerably from those of congeners. The 2nd segment of labial palps is cylindrical and prosternal sides are subparallel. Moreover, it differs in feeding habits: it feeds on filamentous algae while all other *Liaphlus* species on Characeae. Therefore, the proposal of a new genus for this species seems reasonable.

Haliaplus gen. n.

Type species: *Dytiscus laminatus* Schaller, 1783; present designation.

Second segment of labial palpi somewhat depressed, with inner anterior angle dentiform. Humerus strongly convex; meeting point of elytral side and posterior margin of pronotum distinctly angulate. Prosternal process widening toward apex.

Brinck (1945) divided the genus *Cybister* into subgenera, based on external features and designated *Dytiscus lateralimarginalis* De Geer, 1774 as type species of the genus and the nominotypic subgenus. Curtis (1827) introduced *Cybister* as a replacement name for *Trogus* Leach, 1817. Consequently, the type species of *Cybister*, namely *Dytiscus lateralis* Fabricius, 1798, is identical with that of *Trogus*, as emphasized by Curtis himself. Despite all subsequent statements this species must be the type of the genus and the nominotypic subgenus. Brinck designated *Dytiscus tripunctatus* Olivier, 1795 as the type species of the subgenus *Gschwendtnerhydrus*. As *Dytiscus lateralis* and *Dytiscus tripunctatus* are objective synonyms, *Cybister* and *Gschwendtnerhydrus* must be the same.

Cybister Curtis, 1827

Trogus Leach, 1817: 73. (a junior primary homonym of *Trogus* Panzer, 1806; Hymenoptera). Type species: *Dytiscus lateralis* Fabricius, 1798 (*Dytiscus tripunctatus* Olivier, 1795); designated by Leach, 1817: 73., by monotypy.

Cybister Curtis, 1827: 151. (a replacement name of *Trogus* Leach, 1817). Type species: *Dytiscus lateralis* Fabricius, 1798 (*Dytiscus tripunctatus* Olivier, 1795); designated by Leach, 1817: 73., by monotypy.

Gschwendtnerhydrus Brinck, 1945: 13. (a junior objective synonym of *Cybister* Curtis, 1827). Type species: *Dytiscus tripunctatus* Olivier, 1795; designated by Brinck, 1945: 13., by original designation.

Owing to the incorrect type designation *Cybister* cannot be applied to the taxon which is represented by *Dytiscus lateralimarginalis*. Neither can be *Trochalus* Dejean, 1833 proposed by Nilsson et al. (1989) as this is inapplicable because of primary homonymy. In the lack of other available names a new name is proposed for the taxon.

Scaphinectes nom. n.

For *Trochalus* Dejean, 1833: 53. (a junior primary homonym of *Trochalus* Castelnau, 1832; Coleoptera). Type species: *Dytiscus röeselii* Fuesslin, 1775 (*Dytiscus lateralimarginalis* De Geer, 1774); designated by Hope, 1838: 131., by subsequent designation.

Owing to primary homonymy, the name *Acilius* Leach, 1817 is also inapplicable; for its replacement the following name is proposed.

Heteroelytrus nom. n.

For *Acilius* Leach, 1817: 72. [a junior primary homonym of *Acilius* Rafinesque, 1815 (an emendation of *Symethus* Rafinesque, 1814); Crustacea]. Type species: *Dytiscus sulcatus* Linnaeus, 1758; designated by Leach, 1817: 72., by monotypy.

LIST OF SPECIES

HALIPLIDAE

Haliplus obliquus (Fabricius, 1787) – Miskolc: Jávorkút. V–IX, XI. – A typical species of forested landscape of mountainous and hilly regions, in well-oxygenated meso- and oligotrophic stagnant water. In cooler and more humid climate it may be found even in lower regions but usually sporadic and rare in the lowlands. Feeds on *Chara* species.

Neohaliplus lineatocollis (Marsham, 1802) – Miskolc: Garadna-völgy, Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta. V–XI. – Distributed in the plains and hilly areas and in the lower regions of the mountains, with expressed preference for eutrophic waters but frequent also in meso- and oligotrophic waters. Rarely found in puddles and drinking troughs when their water is clear. Feeds on filamentous algae.

Haliplinus furcatus (Seidlitz, 1887) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. V–VI. – Distributed from the lowlands to the mountains, in stagnant water. Frequent in lakes, marshes and bogs of lower regions but quite rare in oligotrophic waters of the higher mountains. Feeds on filamentous algae.

Haliplinus heydeni (Wehncke, 1875) – Miskolc: Garadna-völgy, Hámori-tó, Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta. V–XI. – Distributed from the lowlands to the mountains, in fresh, well-oxygenated still water. Sometimes found in puddles and drinking troughs when their water is clear. Feeds on filamentous algae.

Haliplinus immaculatus (Gerhardt, 1877) – Miskolc: Jávorkút, Pisztrángkeltető Állomás. VI–VII, IX, XI. – An inhabitant of the lowlands as well as hilly and mountainous regions. Frequent in stagnant water (lakes, backwaters, marshes, etc.) but rare in the oligotrophic water of the upper regions. Feeds on filamentous algae.

Haliplinus ruficollis (De Geer, 1774) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. V–VIII. – Common everywhere in the stagnant waters of the lower regions but rarer in higher mountains. Feeds on filamentous algae.

Haliaplus laminatus (Schaller, 1783) – Miskolc: Garadna-völgy, Hámori-tó, Jávorkút, Pisztrángkeltető Állomás. V, VII–IX. – A characteristic species of the forested regions of hills and mountains, in clear, fresh, well-oxygenated meso- and oligotrophic water. In the countries of cool and humid climate it extends to the lowlands but sporadic and very rare there. Feeds on filamentous algae.

Liaphlus flavicollis (Sturm, 1834) – Miskolc: Jávorkút. IV–IX, XI. – A characteristic inhabitant of the forested regions in the lowlands, hills and mountains, in clear, fresh, well-oxygenated meso- and oligotrophic water. Feeds on Characeae.

Liaphlus fulvus (Fabricius, 1801) – Miskolc: Hámori-tó, Jávorkút. V–VII. – Frequent in the eutrophic waters of the lowlands and hills, rare in meso- and oligotrophic mountain lakes. Feeds on Characeae.

Liaphlus variegatus (Sturm, 1834) – Miskolc: Jávorkút. VII. – Distributed in the lowlands, hills and mountains but rare or missing in the uppermost regions. Frequent and characteristic in eutrophic lakes, rare in meso- and oligotrophic water. Feeds on Characeae.

Peltodytes caesus (Duftscmid, 1805) – Miskolc: Jávorkút. VII. – Typical for the lowlands and hills, sporadic in the mountains and usually missing from the uppermost regions. Frequent in eutrophic lakes, rare in meso- and oligotrophic water. Feeds on filamentous algae.

GYRINIDAE

Gyrinus colymbus Erichson, 1837 – Felsőtárkány: Tárkányi-patak; Szarvaskő: Margit-forrás. VII, IX. – Distributed in the forested regions of the lowlands, hills and mountains, sporadic in the lower areas and rare in the plains. A typical but comparatively rare inhabitant of spring basin, streams, etc. with sandy or muddy bottom.

Gyrinus distinctus Aubé, 1836 – Miskolc: Garadna-völgy, Jávorkút; Nagyvisnyó: Elza-lak; Szarvaskő: Margit-forrás. VI–VII. – A characteristic but rather rare inhabitant of the forested regions in the lowlands, hills and mountains, in sandy or muddy running waters. Occurs also in cool and clear still water.

Gyrinus substriatus Stephens, 1828 – Miskolc: Forrás-völgy, Garadna-völgy, Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta; Szarvaskő: Margit-forrás. III–IX. – A generalist species colonizing all types of stagnant and running water in the lowlands, hills and mountains, even seasonal waters.

Gyrinulus minutus (Fabricius, 1798) – Nagyvisnyó: Elza-lak. V. – Very rare in Hungary. Apart from the above locality, it is known only from the Mecsek Mts. and the Szigetköz (Mosonmagyaróvár: Magyaróvár). A characteristic inhabitant of sandy or muddy running waters.

NOTERIDAE

Noterus clavicornis (De Geer, 1774) – Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Jávorkút; Répáshuta: Tebepuszta; Szarvaskő: Veres-oldal. V–VII, XI. – Distributed from the lowlands to the mountains, everywhere in still water, sometimes also in seasonal habitats.

Noterus crassicornis (O. F. Müller, 1776) – Répáshuta: Tebepuszta. VII. – A typical inhabitant of eutrophic stagnant water in the plains, hills and lower mountains. Rare in meso- and oligotrophic waters.

DYTISCIDAE

Dytiscus circumflexus Fabricius, 1801 – Miskolc: Garadna-völgy, Jávorkút. VI–VIII. – A species of the forested regions with cool and humid climate. Occurs in meso- and oligotrophic waters.

Dytiscus marginalis Linnaeus, 1758 – Felsőtárkány: Oldalvölgy; Miskolc: Garadna-völgy, Jávorkút; Répáshuta: Tebepuszta. III–IX, XI. – Distributed from the plains to the mountains, everywhere in larger and deeper stagnant water bodies, rarely in sandy or muddy running water.

Scaphinectes lateralimarginalis (De Geer, 1774) – Miskolc: Garadna-völgy. IV, VI, IX. – Typical for the eutrophic stagnant waters of the plains and the hills; in mountains only in the lower regions.

Heteroelytrus canaliculatus (Nicolai, 1822) – Miskolc: Jávorkút. VII. – Occurs in the forested regions of the lowlands, hills and mountains, in cool meso- and oligotrophic lakes and bogs.

Heteroelytrus sulcatus (Linnaeus, 1758) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. IV–V, VIII–IX, XI. – Distributed from the lowlands to the mountains, everywhere in stagnant water; sometimes in running waters with sandy or muddy bottom.

Graphoderus austriacus (Sturm, 1834) – Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Jávorkút; Répáshuta: Tebepuszta. V–IX, XI. – Quite tolerant species, frequent in stagnant water allover the lowlands, hills and mountains. Sometimes in seasonal water habitats or in running waters with sandy or muddy bottom.

Graphoderus cinereus (Linnaeus, 1758) – Miskolc: Garadna-völgy, Hámori-tó, Jávorkút. V–VII. – An inhabitant of the lowlands, hills and mountains, preferring cool, densely overgrown stagnant waters.

Graphoderus zonatus (Hoppe, 1795) – Miskolc: Jávorkút. VII. – A typical species of the oligotrophic stagnant waters in the forested regions of the lowlands, hills and mountains.

Hydaticus seminiger (De Geer, 1774) – Répáshuta: Tebepuszta. VII. – Occurs mainly in the lowlands and hills; in the mountains, only in the lower regions. A typical and common inhabitant of eutrophic stagnant waters, rare in meso- and oligotrophic waters.

Hydaticus transversalis (Pontoppidan, 1763) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. VII–VIII. – Distributed from the lowlands to the mountains, in stagnant waters. Frequent in eutrophic, rarer in meso- and oligotrophic habitats.

Colymbetes fuscus (Linnaeus, 1758) – Miskolc: Garadna-völgy, Jávorkút, Lillafüred; Répáshuta: Tebepuszta. IV–XI. – Common everywhere in stagnant waters of the lowlands, hills and mountains; sometimes in running waters with sandy or muddy bottom.

Colymbetes striatus (Linnaeus, 1758) – Miskolc: Jávorkút. X. – Characteristic for the cool and humid forested regions and higher mountains, in meso- and oligotrophic lakes. Only one very old literature reference was known so far from our country (Debrecen: Kuthy 1897).

Rantus bistriatus (Bergsträsser, 1778) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. V–VI. – Occurs in stagnant waters of the lowlands, hills and mountains but rather rare everywhere.

Rantus roridus (O. F. Müller, 1776) – Miskolc: Jávorkút; Répáshuta: Pénzpatak. V, VII. – Occurs everywhere in stagnant waters of the lowlands, hills and mountains; frequent in eutrophic, rarer in meso- and oligotrophic habitats.

Rantus suturalis (MacLeay, 1825) – Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Jávorkút; Nagyvisnyó: Elza-lak; Répáshuta: Tebepuszta; Szilvásvárad; Varbó: Harica. V–IX, XI. – Distributed from the lowlands to the mountains. An euryoecious species, occurs everywhere in lakes, bogs, seasonal waters but exceptional in runnig waters (streams or springs with sandy or muddy bottom).

Ilybius fuliginosus (Fabricius, 1792) – Miskolc: Garadna-völgy, Hámori-tó, Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta; Szilvásvárad. VI–IX. – Common everywhere in stagnant waters of the lowlands, hills and mountains; sometimes in running waters with sandy or muddy bottom.

Ilybius quadriguttatus (Lacordaire, 1835) – Répáshuta: Tebepuszta. VII. – A characteristic species of the stagnant waters and marshes of the lowlands and hills. In the mountains, only in the lower regions.

Ilybius ungularis LeConte, 1862 – Miskolc: Jávorkút; Répáshuta: Tebepuszta; Szilvásvárad. VI–VII. – Distributed from the lowlands to the mountains, in still waters. More frequent in eutrophic than in meso- and oligotrophic waters.

Idiolybius fenestratus (Fabricius, 1781) – Miskolc: Jávorkút. VI–VII. – A characteristic water beetle of the forested regions of the lowlands, hills and mountains, in meso- and oligotrophic stagnant waters.

Dichonectes biguttatus (Olivier, 1795) – Felsőtárkány: Barát-völgy, Lénárt-forrás; Miskolc: Jávorkút, Kecske-lyuk; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak; Szarvaskő: Margit-forrás. IV–VII, IX, XI. – Typical for the running waters of the mountains. Its life history and ecological demands are similar to those of the next species. The two species often co-exist.

Dichonectes guttatus (Paykull, 1798) – Bélapátfalva: Ravaszlyuk; Cserépváralja: Felső-szoros; Felsőtárkány: Lénárt-forrás; Miskolc: Forrás-völgy, Garadna-völgy, Jávorkút, Kecske-lyuk, Létrási-vizesbarlang, Szentléleki-völgy; Nagyvisnyó: Ablakos-kő-völgy; Parasznya: Soros-teber; Szarvaskő: Margit-forrás. IV–VI, VIII–XI. – Members of the genus *Dichonectes* are the most characteristic water beetles of the mountain running waters. Low temperature and high content of oxygen are necessary for the larvae living in stone-bedded, cold springs and streams. They are rare in running waters with muddy or sandy bottom. Sometimes in streams of caves and accidentally in fresh, clear puddles.

Gaurodytes bipustulatus (Linnaeus, 1767) – Miskolc: Garadna-völgy, Hámori-tó, Jávorkút, Látó-kövek; Nagyvisnyó: Elza-lak; Répáshuta: Tebepuszta. IV–IX, XI. – Distributed from the lowlands to the mountains. Frequent in stagnant waters, occasionally in seasonal habitats or in running waters with sandy or muddy bottom.

Gaurodytes paludosus (Fabricius, 1801) – Miskolc: Jávorkút. IV, VIII, XI. – Occurs mainly in the forested regions of the hills and mountains, sporadic and rare in the lowlands. Typical for running waters with sandy or muddy bottom.

Xanthodytes nebulosus (Forster, 1771) – Miskolc: Jávorkút. V. – Lives in the meso- and oligotrophic stagnant waters of the lowlands, hills and mountains.

Eriglenus labiatus (Brahm, 1790) – Miskolc: Hámori-tó; Répáshuta: Tebepuszta. VII–VIII. – Distributed from the plains to the lower regions of the mountains, in eutrophic, shallow lakes and marshes; rare in meso- and oligotrophic waters.

Eriglenus undulatus (Schrank, 1776) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. VII, XI. – Distributed from the plains to the mountains, in cooler and deeper stagnant water; frequent in eu- and mesotrophic, rarer in oligotrophic water.

Platambus maculatus (Linnaeus, 1758) – Miskolc: Lillafüred. – Occurs in the forested regions of the lowlands, hills and mountains, in running waters with sandy or muddy bottom.

Liopterus haemorrhoidalis (Fabricius, 1787) – Miskolc: Jávorkút; Répáshuta: Pénzpatak, Tebepuszta; Szarvaskő: Eger. IV–V, VII. – An inhabitant of the lowlands, hills and mountains. An euryoecic species, tolerating extreme conditions. Frequent in stagnant waters, sometimes on seasonal habitats and running waters with sandy or muddy bottom.

Laccophilidae

Laccophilus minutus (Linnaeus, 1758) – Miskolc: Garadna-völgy, Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta. V–IX, XI. – Distributed from the plains to the mountains, everywhere in stagnant waters, also in seasonal habitats.

Laccophilus obsoletus Westhoff, 1888 – Miskolc: Garadna-völgy, Jávorkút. VI–VII. – Widely distributed and frequent in the lowlands, hills and lower mountains; sporadic and rare in the upper regions. Prefers densely overgrown eutrophic stagnant waters; occasional in meso- and oligotrophic waters.

Hydroporidae

Hydroporus angustatus Sturm, 1835 – Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Répáshuta: Tebepuszta. V, VII. – A quite euryoecic species, living in stagnant waters of the lowlands, hills and mountains; frequent also in seasonal waters.

Hydroporus ater (Forster, 1771) – Cserépfalu: Hór-völgy; Felsőtárkány: Lénárt-forrás, Lők-völgy; Miskolc: Bolhás, Felső-Sebes-víz, Garadna-völgy, Hollós-patak, Jávorkút, Lillafüred, Lyukas-gerinc, Nagy-mező, Pisztrángkeltető Állomás; Nagyvisnyó: Ablakos-kő-völgy, Huta-rét; Répáshuta: Tebepuszta; Szilvásvárad: Vörös-sár-hegy. IV–XI. – In Hungary, this is the most common and most undemanding water beetle. Occurs everywhere from the lowlands to the mountains.

Inhabits all kinds of seasonal and permanent water bodies, except open and very deep regions of lakes and rivers as well as larger streams with fast current.

Hydroporus discretus Fairmaire et Brisout, 1859 – Miskolc: Lyukas-gerinc; Nagyvisnyó: Nagy-völgy. V, X. – Characteristic for the cool and humid arboreal regions and high mountains. In Hungary, it is definitely forest-dwelling; occurs in riverine and bog forests, in hornbeam-oak and beech woods. Inhabits wheeltracks, clear puddles, inlets of brooks, etc. Apart from the Bükk National Park, no more than 3 localities are known from our country: Darány (Horvatovich 1981); Kőszegi-hegység; Siófok.

Hydroporus ferrugineus Stephens, 1829 – Miskolc: Létrási-vizesbarlang. VIII. – Typical for the permanently cold springs and streams with stony bottom in the mountain regions. In carstic areas, it frequently occurs in waters of caves. The specimen of the Bükk National Park was found in the stream of the "Hágcsós-terem" of the Létrási-vizesbarlang (=watered cave). Four more localities are known from Hungary: Füzér: Nagy-Milic; Jósvafő: Alsó-barlang; Komló: Kőlyuk; Sopron.

Hydroporus fuscipennis Schaum, 1868 – Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Répáshuta: Tebepuszta. V, VII, IX. – Occurs in shallow, densely overgrown littoral zone of stagnant waters, bogs, also in seasonal waters. Widely distributed and frequent in the lowlands, hills and mountains of Hungary. The species was formerly confused with *Hydroporus pubescens* (Gyllenhal, 1808). The latter is, however, has not been found so far within the present boundaries of Hungary; all localities published previously are based on misidentification (cf. Ádám 1992).

Hydroporus palustris (Linnaeus, 1761) – Miskolc: Garadna-völgy, Jávorkút; Répáshuta: Tebepuszta. V–IX, XI. – Characteristic for meso- and oligotrophic stagnant waters in the lowlands, hills and mountains. Frequent also in seasonal habitats (clear puddles, drinking-troughs, etc.).

Hydroporus ponticus Zaitzev, 1927 – Miskolc: Jávorkút. IV. – While elaborating the Hungarian hydroporid material I came across specimens which were similar to, but clearly different from, *Hydroporus discretus*. What descriptions fit most are those of *Hydroporus discretus* ssp. *ponticus* Zaitzev, 1927 and (to a less extent) *Hydroporus discretus* var. *pescheti* Guignot, 1930. Without studying types, however, clear-cut identification was impossible. The following other localities of *H. ponticus* are known from Hungary: Balatonalmádi; Budapest: Hűvösvölgy, Szabadsághegy; Érd; Kőszegi-hegység; Siófok; Tihany. Further specimens are known from Slovakia (Bolesó; Trencsén) and Transylvania (Dicsőszentmárton; Kolozsvár: Szénafüvek). For the time being, in the lack of sufficient data we cannot delineate its ecological demands, but it presumedly prefers meso- and oligotrophic waters of the hilly and mountainous regions.

Scarodytes halensis (Fabricius, 1787) – Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Répáshuta: Tebepuszta. V–VI, IX, XI. – Lives in meso- and oligotrophic waters of the hilly and mountainous regions. Frequent also in seasonal habitats: inlets of streams, fresh puddles, drinking-troughs, etc.

Porhydrus lineatus (Fabricius, 1775) – Miskolc: Jávorkút; Répáshuta: Tebepuszta. V, VII. – Distributed from the lowlands to the mountains; frequent in lower, rarer in upper regions. Prefers eutrophic stagnant waters but not uncommon in meso- and oligotrophic and seasonal waters, either.

Porhydrus obliquesignatus (Bielz, 1852) – Miskolc: Jávorkút. VII, XI. – Widely distributed and frequent in the lowlands, hills and lower mountains. Sporadic and rare in the upper regions. Its ecological demands are similar to those of the previous species.

Graptodytes bilineatus (Sturm, 1835) – Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Répáshuta: Tebepuszta; Szarvaskő: Eger. IV–V, VII–VIII. – An euryoecic inhabitant of the lowlands, hills and mountains. Lives in permanent and seasonal stagnant waters, occasionally in running waters with sandy or muddy bottom.

Graptodytes pictus (Fabricius, 1787) – Miskolc: Jávorkút. IX. – Occurs in the arboreal regions of the lowlands, hills and mountains. Uncommon everywhere and definitely rarer in the lowlands. Prefers cool, meso- and oligotrophic lakes.

Hydroglyphus geminus (Fabricius, 1792) – Miskolc: Hámori-tó, Jávorkút, Pisztrángkeltető Állomás; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak; Répáshuta: Tebepuszta; Szarvaskő: Eger; Szilvásvárad: Vörös-sár-hegy. V–VI, IX, XI. – Distributed from the lowlands to the mountains, it is nearly as euryoecic as *Hydroporus ater*. Avoids permanently cold, stone-bedded springs and streams of the mountain regions.

Bidessus nasutus Sharp, 1887 – Miskolc: Jávorkút; Nagyvisnyó: Elza-lak. VI–VII. – Typical for the eutrophic stagnant waters of the lowlands and hills. Thermophilous, it inhabits mostly alkaline lakes, marshes and puddles; rare in meso- and oligotrophic waters.

Bidessus unistriatus (Schrank, 1781) – Répáshuta: Tebepuszta. V. – Ditributed in the eutrophic stagnant waters of the lowlands, hills and lower mountains. Rare in meso- and oligotrophic waters.

Hyphydrus ovatus (Linnaeus, 1761) – Miskolc: Jávorkút, Pisztrángkeltető Állomás. IV–V, VII–IX, XI. – An inhabitant of the lowlands, hills and mountains, in densely overgrown, cool stagnant waters.

Coelambus confluens (Fabricius, 1787) – Miskolc: Jávorkút. V–VI, XI. – Occurs in the lowlands and hills and rarely in the mountains, mainly in lower regions. Thermophilous, it is frequent in alkaline lakes, marshes and puddles; rare in meso- and oligotrophic waters.

Coelambus impressopunctatus (Schaller, 1783) – Miskolc: Hámori-tó, Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta; Szilvásvárad: Vörös-sár-hegy. V–VII, IX, XI. – Distributed from the lowlands to the mountains. Highly euryoecic, it lives mainly in seasonal and permanent still waters, occassional in running waters with sandy or muddy bottom.

Coelambus parallellogrammus (Ahrens, 1812) – Répáshuta: Tebepuszta. V. – Typical for the lowlands and the hills; sporadic in the mountains, missing from the uppermost regions. Thermophilous, it is frequent in alkaline lakes, marshes and puddles; rare in meso- and oligotrophic waters.

Hygrotus inaequalis (Fabricius, 1776) – Miskolc: Jávorkút, Pisztrángkeltető Állomás; Répáshuta: Tebepuszta. V–IX, XI. – Occurs everywhere in the lowlands, hills and mountains; frequent also in seasonal habitats.

Literature

Ádám, L. (1983a): Békés megye bogárfaunája II. Dytiscidae–Staphylinidae 1. (Coleoptera) [The Coleoptera fauna of the county Békés (SE Hungary) II. Dytiscidae–Staphylinidae 1.]. – *Folia ent. hung.* **44**: 315–323.

Ádám, L. (1983b): The species of Hydroadephaga, Clambidae, Orthoperidae and Diversicornia (in part) of the Hortobágy (Coleoptera). – In: Mahunka, S. (ed.): *The Fauna of the Hortobágy National Park*, II. Budapest, pp. 155–166.

Ádám, L. (1986): Adephaga of the Kiskunság National Park, II: Dytiscidae–Gyrinidae (Coleoptera). – In: Mahunka, S. (ed.): *The Fauna of the Kiskunság National Park*, I. Budapest, pp. 143–151.

Ádám, L. (1992): Faunaterületünk ritkább vízibogarai (Coleoptera: Haliplidae, Gyrinidae, Dytiscidae, Hydroporidae [Rare water beetles of the Carpathian Basin (Coleoptera: Haliplidae, Gyrinidae, Dytiscidae, Hydroporidae.]. – *Folia ent. hung.* **52**: 189–195.

Angus, R. B. and Carr, R. (1982): Gyrinus natator (Linnaeus) and G. substriatus Stephens (Coleoptera: Gyrinidae) as British species. – *Entomologist's gazette* **33**: 223–229.

Balfour-Browne, F. (1961): Acilius Leach, 1817 (Insecta, Coleoptera); preservation by use of the plenary powers to vary the ruling given in opinion 522. – *Bull. zool. Nomencl.* **18**: 369–371.

Brinck, P. (1940): Gyrinus natator L. und G. substriatus Steph. als gute Arten. – *Opusc. ent.* **5**: 3–6.

Brinck, P. (1945): Nomenklatorische und systematische Studien über Dytisciden. III. Die klassifikation der Cybisterinen. – *Acta Univ. lund.* **41**: 3–20.

[Castelnau], F. [L. N. de Caumont] de Laporte (1832): Trochale. Trochalus. – *Magasin de Zoologie* **2**: tab. 44.

Csiki, E. (1908): *Magyarország bogárfaunája*, I., 5. [The beetle fauna of Hungary, I., 5.]. Budapest, pp. 353–546.

Csiki, E. (1946): Die Käferfauna des Karpaten-Beckens. – In: Tasnádi-Kubacska, A. (ed.): *Naturwissenschaftliche Monographien*, IV. Budapest, 798 pp.

Curtis, J. (1827): *British entomology; being illustrations and descriptions of the genera of Insects found in Great Britain and Ireland: containing coloured figures from nature of the most rare and beautiful species, and in many instances of the plants upon which they are found.* Vol. IV. London, tt. 147–194.

Dejean, [P. F. M. A.] (1833): *Catalogue des Coléoptères de la collection de M. le comte Dejean.* 1[e] Livraison. Paris, 96 pp.

Endrődi, S. (1974): A Börzsöny-hegység bogárfaunája. V. [The beetle fauna of the Mts. Börzsöny, V. Adephaga.]. – *Fol. Hist.-nat. Mus. Matr.* **2**: 67–97.

Guignot, F. (1930): Notes sur deux espèces d'Hydroporus: H. Guernei Reg. et H. discretus Fairm. [Col. Dytiscidae]. – *Bull. Soc. ent. Fr.*: 186–191.

Guignot, F. (1931–1933): *Les Hydrocanthares de France*. Toulouse, 1057 pp.

Guignot, F. (1946): Génotypes des Dytiscoidea et des Gyrinoidea. – *Revue fr. Ent.* **13**: 112–118.

Hope, F. W. (1838): *The coleopterist's manual, part the second, containing the predaceous land and water beetles of Linneus and Fabricius.* London, 168 pp.

Horvatovich, S. (1981): A barcsi borókás tájvédelmi körzet Cicindelái, Carabidái és Dytiscidái (Coleoptera) [The cicindelid, carabid and dytiscid fauna of the Juniper Woodland of Barcs, Hungary.]. – *Dunánt. dolgoz.* **2**: 65–79.

Kaszab, Z. and Székessy, V. (1953): Bátorliget bogár-faunája, Coleoptera [The beetle fauna of Bátorliget, Coleoptera.]. – In: Székessy, V. (ed.): *Bátorliget élővilága*. Budapest, pp. 194–285.

Kempelen, R. (1868): III. Heves és külső Szolnok t. e. vármegyék állattani leírása. [Zoological description of the counties Heves and külső Szolnok.] – In: Albert, F. (ed.): *Heves és külső Szolnok törvényesen egyesült vármegyéknek leírása*. Eger, pp. 175–226.

Kuthy, D. (1896 [1897]): Coleoptera. – In: *A Magyar Birodalom Állatvilága (Fauna Regni Hungariae)*. Budapest, pp. 1–213.

Leach, W. E. (1817): *The zoological miscellany; being descriptions of new or interesting animals.* Vol. III. London, i–v, 1–151 pp.

Merkl, O. (1991): Reassessment of the beetle fauna of Bátorliget, NE Hungary (Coleoptera). – In: Mahunka, S. (ed.): *The Bátorliget Nature Reserves – after forty years*, I. Budapest, pp. 381–498.

Nilsson, A. N., Roughley, R. E. and Brancucci, M. (1989): A review of the genus- and family-group names of the family Dytiscidae Leach (Coleoptera). – *Ent. scand.* **20**: 287–316.

Rafinesque, C. S. (1815): *Analyse de la nature ou tableau de l'univers et des corps organisés*. Palermo, 224 pp.

Zaitzev, Ph. (1927): Die Dytiscidenfauna von Kaukasusländern. – *Rab. sev.-kavk. gidrobiol. Sta. gorsk. sel'.-khoz. Inst.* **2**: 1–42.

Zimmermann, A. und Gschwendtner, L. (1930–1939): Monographie der paläarktischen Dytiscidae. – In: *Bestimmungs-Tabellen der europäischen Coleopteren*, 99 (1930); 101 (1931); 103 (1932); 111 (1933); 113 (1934); 114 (1935); 118 (1936); 120 (1937); 121 (1938); 122 (1939). Troppau, 86; 63; 43; 41; 78; 32; 42; 36; 44; 47 pp.