RHYSODIDAE, CICINDELIDAE AND CARABIDAE (COLEOPTERA) FROM THE BÜKK NATIONAL PARK

By

GY. SZÉL

Locality and collecting data of one species of Rhysodidae, three species of Cicindelidae and 268 species of Carabidae known to occur in the Bükk National Park (NE Hungary) and the adjacent non-protected areas of the Bükk Mts. are presented, complemented with notes on their distribution in Hungary. *Harpalus roubali* Schauberger, 1928, *Pterostichus rhaeticus* Heer, 1837, *Amara cursitans* Zimmermann, 1831, *Amara gebleri* Dejean, 1831 and *Dromius fenestratus* (Fabricius, 1794) are new to the fauna of Hungary. An outline of the Hungarian distribution of *Harpalus roubali* Schauberger, 1928 and *Harpalus dimidiatus* (Rossi, 1790) is given for the first time. In the case of 34 species the whole Hungarian material was revised and their distribution is depicted in maps. With 39 figures.

Table 1 summarizes the number of species of terrestrial Caraboidea found in the Bükk National Park and five thoroughly investigated areas of Hungary (Bakony Mts., Börzsöny Mts., Kiskunság National Park, Hortobágy National Park and Békés county) (Fig. 1). The number of recorded species exceeds 200 in all of these areas and the data were accumulated quite recently since the oldest account dealing with the ground beetles of the Bakony Mts. was published by Tóth in 1973. The number of species found in the vicinity of the national parks, though outside their boundaries is in parentheses.

Table 1. Comparison of available data

Families	Number of species in											
	Hungary	Hortobágy NP		Kiskunság NP		Bükk NP		Börzsöny Mts.	Bakony Mts.	Békés county		
Rhysodidae	2	–	–	–	–	1	–	–	2	–		
Cicindelidae	8	2	(4)	6	–	2	(1)	5	7	2		
Carabidae	cca 480	169	(61)	282	(54)	237	(28)	231	323	241		
Total	cca 490	171	(65)	288	(54)	240	(29)	236	332	243		

Table 1 was compiled on the basis of the following sources:
Hungary: Horvatovich (1993);
Hortobágy National Park: Hieke (1983), Nyilas (1991);
Kiskunság National Park: Ádám and Merkl (1986);
Békés county: Ádám (1981, 1983); Ádám and Rudner (personal communication);
Börzsöny Mts.: Endrődi (1974);
Bakony Mts.: Tóth (1973).

The exact number of carabid species of Hungary is not yet known because the most recent account (Horvatovich 1993) includes 25 species of uncertain occurrence. On the other hand, several species were encountered after the publication of Horvatovich's paper.

The carabid collection of the Hungarian Natural History Museum constitutes the core of the material investigated. The greatest part of this material was collected in 1981–1985 by the museum staff. Another considerable amount of the specimens was captured by Zoltán Kaszab and Vilmos Székessy in 1954–56 around Nagyvisnyó and by István Vásárhelyi in 1958 in the valley of the Garadna Stream and at Lillafüred. Two amateur coleopterists, Tibor Wirth and Gyula Holéczy, collected long series of *Carabus* species in the 1950s and 1960s. As for the areas outside the boundaries of the present-day Bükk National Park, Sándor Tóth was the most important collector who gathered remarkable material from the vicinity of the village Tard in the late 1950s. The lepidopterist Miklós Reskovits made collectings around Eger and found many species which are known only from his collection. Furthermore, I have written up the collections deposited in the Mátra Museum at Gyöngyös and the Herman Ottó Museum at Miskolc. The amateur coleopterists István Rozner and Imre Retezár were kind enough to let me include their data into this paper. My sincere thanks are due to them for their generosity.

The collections in which the studied material is deposited are indicated with the following acronyms:

HNHM: Hungarian Natural History Museum, Budapest.
MMGY: Mátra Museum, Gyöngyös.
KFMS: Kazinczy Ferenc Museum, Sátoraljaújhely
BNHM: Bakony Natural History Museum, Zirc.
SMSZ: Savaria Museum, Szombathely
CRO: private collection of I. Rozner, Budapest.
CRE: private collection of I. Retezár, Budapest.

The overwhelming majority of the specimens was determined by myself with the help of the following identification keys: Csiki (1946), Freude (1976), Lindroth (1985, 1986), Lompe (1989), Müller-Motzfeld (1989) and Sciaky (1987). I thank the subsequent persons for identifying the following species: L. Ádám (*Rhysodes sulcatus*); J. Janák, K. Hůrka, J. Pulpán, P. Moravec and O. Merkl (*Duvalius gebhardti*); M. Fassati (*Bembidion subcostatum javurkovae*, in part); J. Muilwijk (*Asaphidion flavipes*); R. Sciaky (*Ophonus schaubergerianus*, in part); B. M. Kataev (*Harpalus scytha*); B. Jaeger (*Bradycellus caucasicus* and *B. csikii*); J. Schmidt (*Agonum afrum*, *A. duftschmidi* and *A. permoestum*); F. Hieke (*Amara* species, in part).

Subgeneric names, which are quite doubtful and used inconsistently in many papers, are omitted from the List of species so the species are given in alphabetical order. Synonyms are given only in a few cases when these are widely used in the papers listed in the References. The sequence of the genera follows the second volume of "Die Käfer Mitteleuropas" (Freude 1976). The localities are followed by the number of specimens known from the Bükk National Park, the habitats in which the specimens were captured and the methods of collecting. These data usually appear on the labels of the specimens collected between 1981 and 1985. Most often, the habitat means the plant association but sometimes only more generalized terms (e.g. "found in various forest associations").

The labels of specimens collected in the 1950s and 1960s generally do not have references to habitat and collecting methods. In the case of these old specimens I indicated the time of collecting and the name of collector. For most species I outlined the distribution and habitats in Hungary based on specimens of the HNHM as well as the above-mentioned and the subsequent literature sources: Csiki (1946), Kaszab and Székessy (1953), Horvatovich (1974*a*, 1974*b*, 1975, 1978, 1979, 1980*a*, 1980*b*, 1981*a*, 1981*b*, 1982, 1989, 1990, 1991, 1992*a*, 1992*b*, 1992*c*, 1992*d*), Horvatovich and Szarukán (1986), Loksa (1962), Kádár and Szél (1989), Szél in Merkl (1991) and Spielmann (1992).

There is no monographic or comprehensive account in the Hungarian literature as far as the carabid fauna of the Bükk is concerned. A variable number of locality data are found in the following works: Csiki (1946), Frivaldszky (1874), Horvatovich (1974*b*), Kempelen (1868), Kuthy (1897), Loksa (1962 and 1966), Siroki (1964), Tóth (1973) and Vajon (1983). A part of these data (Csiki 1946, Horvatovich 1974*b*, Loksa 1966, Tóth 1973) are included in the "List of species" since I examined the voucher specimens. In the case of other authors (Frivaldszky 1874, Kempelen 1868, Kuthy 1897, Vajon 1983) the voucher specimens were either destroyed or unavailable, so these data were left inconsidered. *Trechus austriacus* (cited in Loksa 1962) is the only species which is listed without studying any voucher specimen. Loksa mentioned that the specimens were determined by Z. Kaszab and this determination is considered reliable. *Scarites terricola* Bonelli, 1813 listed in Siroki (1964) is mentioned here as its occurrence in the Bükk is quite doubtful and needs confirmation.

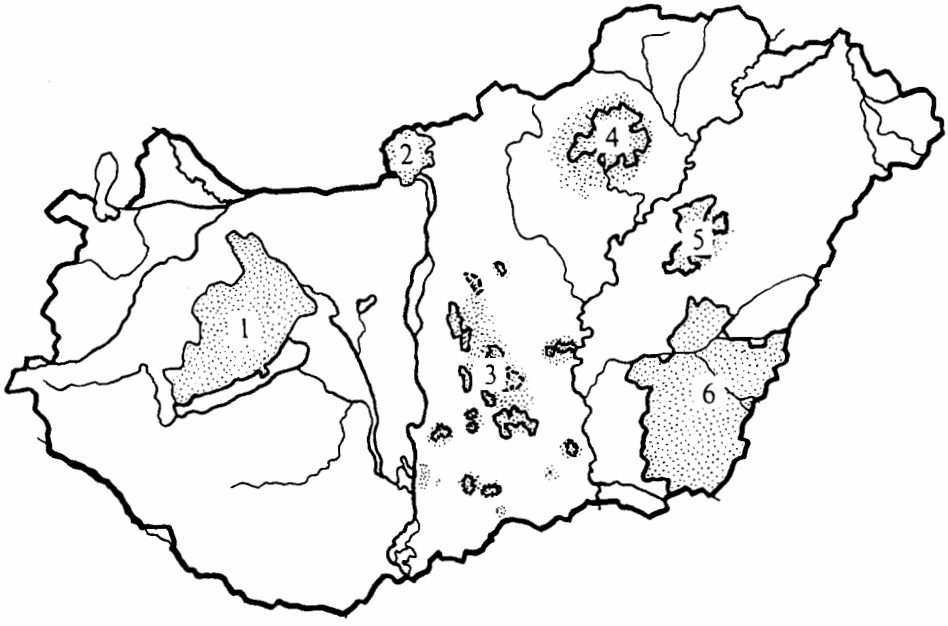


Fig. 1. Six thouroughly investigated area in Hungary. 1. Bakony, 2. Börzsöny, 3. Kiskunság NP., 4. Bükk NP., 5. Hortobágy NP. and Békés county

Of the 256 species written up in this contribution, only *Duvalius gebhardti* is endemic to the Bükk Mountains. Until now, it was found in four caves but further occurrences are expected in other sites of the system of the carstic caves.

Most of the surface of the Bükk Mountains is covered with beech and oak forests. Their species assemblages include very rare mountainous elements such as *Bembidion doderoi*, *Amara cursitans* and *Dromius fenestratus*. Apart from the Bükk, these species are known by only one more locality each in Hungary. *Notiophilus germinyi*, *Harpalus quadripunctatus*, *Pterostichus aethiops* and *Agonum antennarium* are also rarities which are known to occur only in a few localities of Hungary. The most characteristic species (or subspecies) of the canopied deciduous (and also coniferous) forests of the hills and mountains are *Rhysodes sulcatus*, *Carabus glabratus glabratus*, *C. hortensis hortensis*, *C. intricatus intricatus*, *C. problematicus*, *Cychrus caraboides*, *Leistus piceus*, *Trechus pilisensis*, *Bembidion tibiale*, *Pterostichus melas*, *Molops piceus*, *Abax parallelus* and *Aptinus bombarda*. Of the forest-inhabiting and montane species, *Carabus arcensis carpathus*, *C. coriaceus pseudorugifer*, *C. violaceus pseudoviolaceus*, *C. scheidleri pseudopreyssleri* and *Abax schueppeli* occur exclusively in the Northern Mountains. The rare and sporadic *Amara lunicollis* and *A. nitida* were found in open plant associations of the higher regions of the Bükk. In the Carpathian Basin, the two last-mentioned species are known to occur only in a few spots in the Carpathian Range and in the Great Plain. *Carabus montivagus blandus* is a sporadic carabid beetle of the forest steppe habitats in the Northern Range and the Gödöllő Hills. Apart from Hungary, it is known only from a few localities in Slovakia and Transylvania.

The most remarkable carabid species of the Bükk are the montane-sylvicolous elements. Although these are the most characteristic for the National Park, their number is no more than 32 (12% of the whole fauna). The majority of the remaining 233 species (88%) are widely distributed and common, ubiquistic species, e.g. *Pterostichus melanarius*, *Harpalus rufipes* and *Amara aenea*. *Carabus convexus*, *Tachyta nana* and *Harpalus atratus* are examples of the sylvicolous species which occur both in the lowland and mountain forests. A total of 30 species are typical of the dry steppe habitats of the plains; these were found mainly outside the National Park. Examples include *Cicindela soluta*, *Calosoma auropunctatum*, *Harpalus albanicus*, *H. flavescens*, *H. pygmaeus* and *H. scytha* (apart from the Bükk, the last two species are known only from the Kiskunság and Hortobágy National Parks). About 80 species (30%) are strongly associated with watersides and quite independent of the height above sea level and plant associations, e.g. species of the genera *Elaphrus*, *Dyschirius*, *Chlaenius* and *Oodes*. The last group is constituted by species which are unassociated with any particular plant community or height but which are uncommon all over Hungary (e.g. *Ophonus schaubergerianus*, *Callistus lunatus* and *Panagaeus bipustulatus*).

The following species were collected in the Bükk Mts. in the geographical sense but beyond the boundary of the Bükk National Park:

Cicindela soluta Dejean, 1822 — Eger. VI. — One specimen was collected in 1961. A typical inhabitant of the steppe belt. It lives in sandy regions of the Great Hungarian Plain, the Gödöllő Hills and Transdanubia where the sandy ground is more or less overgrown by the vegetation. Unlike *Cicindela hybrida*, it avoids barren sand.

Carabus arcensis carpathus Born, 1902 — Eger. — One specimen is known from the area without closer locality. In present-day Hungary, stronger populations of this subspecies breed in the Zemplén Mts. and the Aggtelek National Park while specimens are known from the Mátra Mts. as well (Fig. 2). A protected species.

Carabus clathratus auraniensis J. Müller, 1902 — Eger: Pap-hegy. VI. — One specimen was captured by M. Reskovits in 1955. It is sporadic in the reeds, hummocks and fenwoods of the plains and hilly areas; more numerous around the Lake Fertő, in the Kis-Balaton, in the Danube-Tisza Mid-Region and at Bátorliget. A protected species.

Leistus rufomarginatus (Duftschmid, 1812) — Tard. IV. — One specimen was collected by S. Tóth in 1957. While it was collected in a number of localities of forest associations in Transdanubia (mainly in the Bakony and Mecsek Mts.), Lakitelek is the only locality in the Danube-Tisza Mid-Region (Ádám and Merkl 1986). A few specimens deposited in the HNHM are known from the Börzsöny (Endrődi 1974) and the Zemplén Mts.

Dyschirius gibbifrons Apfelbeck, 1899 — Egerbakta: Baktai-tó. IV. — Two specimens were collected by treading the soil in a blanket bog. It is said to be halophilous, found in numbers on overgrown watersides and on the shores of sodic lakes of the Great Hungarian Plain and Transdanubia.

Ophonus cribricollis (Dejean, 1829) — Eger: Szőlőcskepuszta. VI. — One specimen was collected by M. Reskovits in 1956. It is a thermophilous species of the open plant associations in the forest steppe belt. Uncommon, it is known from sandy grasslands of the Danube-Tisza Mid-Region and from rock swards of the hills.

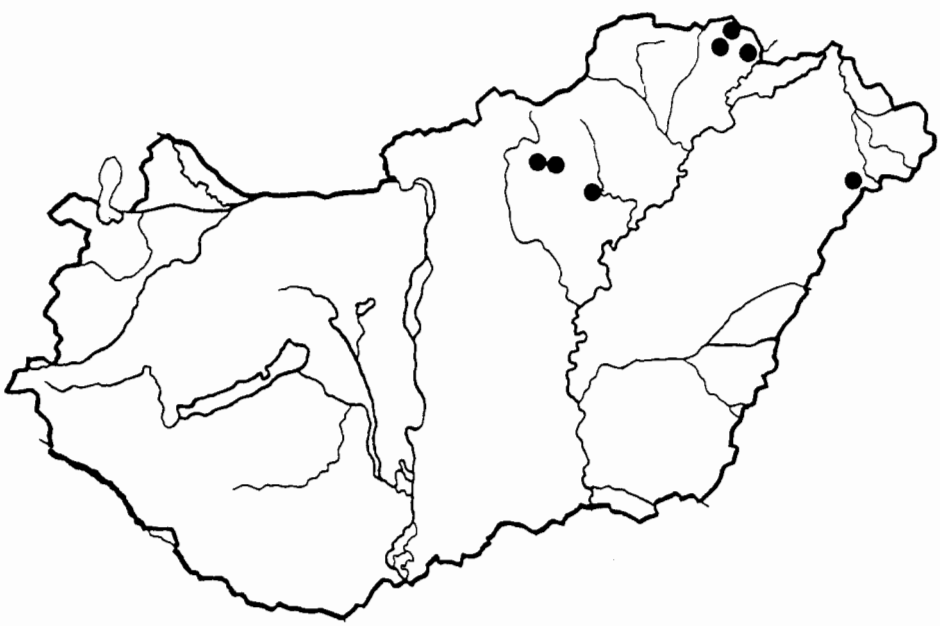


Fig. 2. Localities of *Carabus arcensis carpathus* in Hungary

Ophonus gammeli (Schauberger, 1932) — Eger. V. — One specimen was collected by M. Reskovits in 1955. A very rare species in Hungary, merely a few localities are known from Buda Mts. (János-hegy), Pilis Mts., Vértes Mts., Gödöllő Hills and Siófok (specimens in the HNHM and CRE) (Fig. 3).

Ophonus melletii (Heer, 1837) — Eger; Eger: Almár. VII. — Three specimens are known, two from light traps (Eger, collected by F. Kádár in 1982), one supposedly also from light trap, collected by M. Reskovits in 1953. Only a few reliable locality records are known from Hungary: Ásványráró in the Szigetköz, Vásárosbéc (Dióspuszta) in the Zselic (Horvatovich 1990), Ipolytarnóc in the Karancs Mts. as well as Lakitelek (Tőserdő) and Ócsa (Nagy-erdő) in the Kiskunság National Park. The specimens from the Kiskunság National Park were published by Ádám and Merkl (1986) under the name *Metophonus schaubergerianus* (Puel, 1937). All the specimens were collected by artificial light. It is most likely that this species is widely distributed in Hungary. However, only a few data should be regarded as verified because only the males can be identified with absolute certainty. Owing to the difficulties in the determination the formerly published locality data should be considered as dubious.

Harpalus albanicus Reitter, 1900 — Eger: Nagy-Eged, Pap-hegy; Tard: Tardi-patak. IV, VII. — Four specimens were collected by M. Reskovits and S. Tóth in 1952 and 1957. An uncommon, thermophilous species of the open plant associations of the forest steppe belt. It is known from Transdanubia, the Great Hungarian Plain and the Börzsöny Mts. At Mosonszolnok in the Moson Plains it was found also in arable lands.

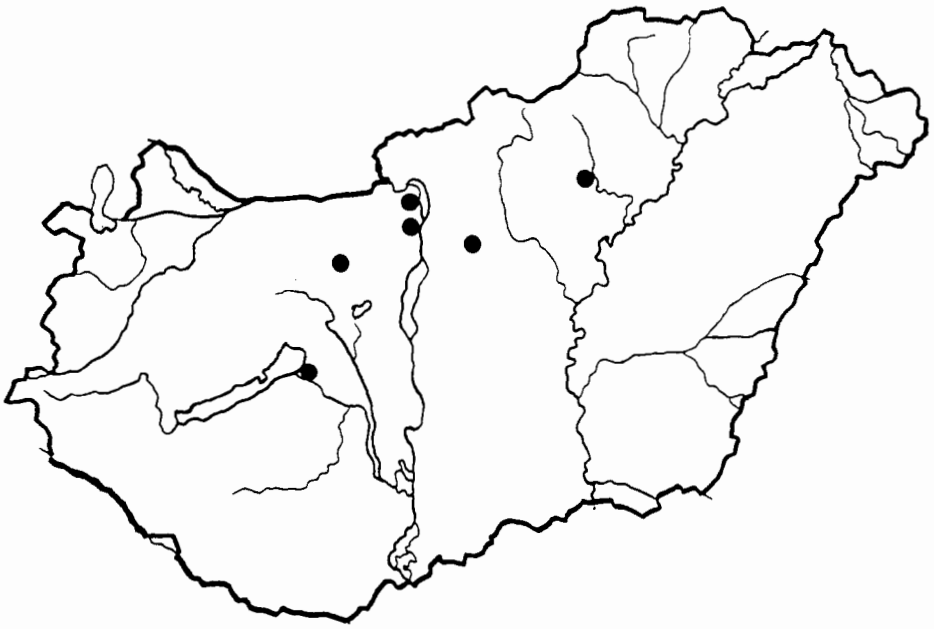


Fig. 3. Localities of *Ophonus gammeli* in Hungary

Harpalus flavescens (Piller et Mitterpacher, 1783) — Eger. IV. — One single specimen was collected by M. Reskovits in 1959. A characteristic and locally frequent inhabitant of the sandy regions of the Danube-Tisza Mid-Region but sporadic elsewhere, e.g. in the vicinity of Budapest and Debrecen (specimens in HNHM) and in the Bakony Mts. (Tóth 1973).

Harpalus flavicornis Dejean, 1829 — Tard. IV–V. — Five specimens were collected by S. Tóth in 1957. A thermophilic species of the forest steppe belt. A number of localities are known from the Great Hungarian Plain. It was collected also in the Buda Mts., around the Lake Balaton (Siófok, Berhida, Vászoly,) in the Börzsöny Mts. (Nógrádverőce) and in the Aggtelek National Park (Aggtelek, Jósvafő). It should be mentioned that the records from the Börzsöny (Endrődi 1974) and the Hortobágy National Park (Hieke 1983) under the name *H. politus* are based on misidentifications and the specimens in reality belong to *H. flavicornis*. The only specimen of "*H. politus*" from the Kiskunság National Park (Ádám and Merkl 1986) is a misidentified *H. froelichi*. Most probably, the data of *H. politus* from the Bakony (Tóth 1974), Southern Transdanubia (Horvatovich 1980) and Kötegyán in Békés county (Horvatovich and Szarukán 1986) are also issues of misidentification. Similarly, specimens identified by E. Csiki as *H. politus* belong to *H. flavicornis*. Thus, at the moment, the rare *H. politus* has no voucher specimen from Hungary.

Harpalus froelichi Sturm, 1818 — Eger: Felnémet. VIII. — One specimen was captured by M. Reskovits in 1954. A species of the forest steppe belt, it is found in dry grasslands, mainly on sandy soil, often in mass. The majority of the specimens is from the Great Hungarian Plain and Transdanubia.

Harpalus modestus Dejean, 1829 — Egerbakta: Baktai-tó. IV. — One specimen was singled in *Alopecuro-Arrhenatheretum* association. A very rare species, its localities in the Great Hungarian Plain are Szigethalom (CRE), Kalocsa (Ádám and Merkl 1986), *Puccinellio-Salicornion* association of the Hortobágy National Park (Nyilas 1991), Mérk (Horvatovich and Szarukán 1986) Bátorliget (Szél in Merkl 1991) and Békéscsaba (Ádám 1981). It was found also in the Börzsöny Mts. (Endrődi 1974), in Gödöllő (CRE) and in Szakonyfalu (HNHM) (Fig. 4).

Harpalus pygmaeus Dejean, 1829 — Tard: Tardi-patak. IV–V. — Three specimens were collected by S. Tóth in 1957. It is a thermophilous species of the forest steppe habitats in the plains and hills. In the Great Hungarian Plain, it was captured in short grassy (mostly sodic) places. A lot of specimens were collected at the Lake Velence. In the Bakony Mts., it was found in moister environment of forests and forest margins (Tóth 1973).

Harpalus scytha Tschitschérine, 1899 (= *Harpalus angulatus scytha* Tschitschérine, 1899) — Tard. IV. — One specimen was collected by S. Tóth in 1957. In Hungary, it was recorded for the first time from the Kiskunság National Park (Ádám and Merkl 1986). However, it occurs also in the Hortobágy National Park (Egyek, Nagyiván, Újszentmargita) (Fig. 5) even though not mentioned by Hieke (1983). Four of the 12 Hortobágy specimens identified by Hieke as *H. distinguendus* were proved to be *H. scytha*. It differs from the quite similar *H. distinguendus* in having the legs, including femora, red and the humeral angle absent. Aedeagus was depicted by Mlynař (1979).

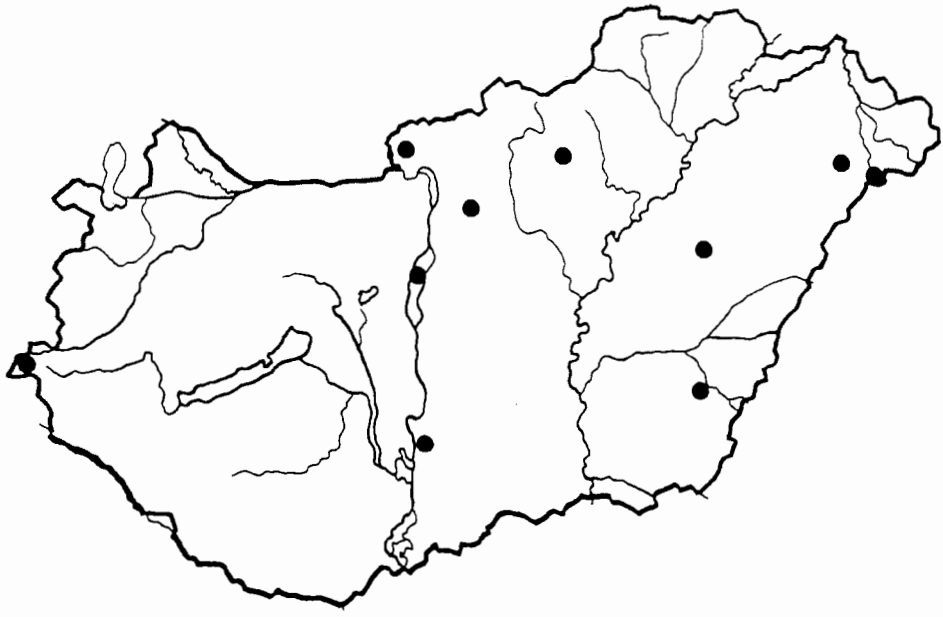


Fig. 4. Localities of *Harpalus modestus* in Hungary

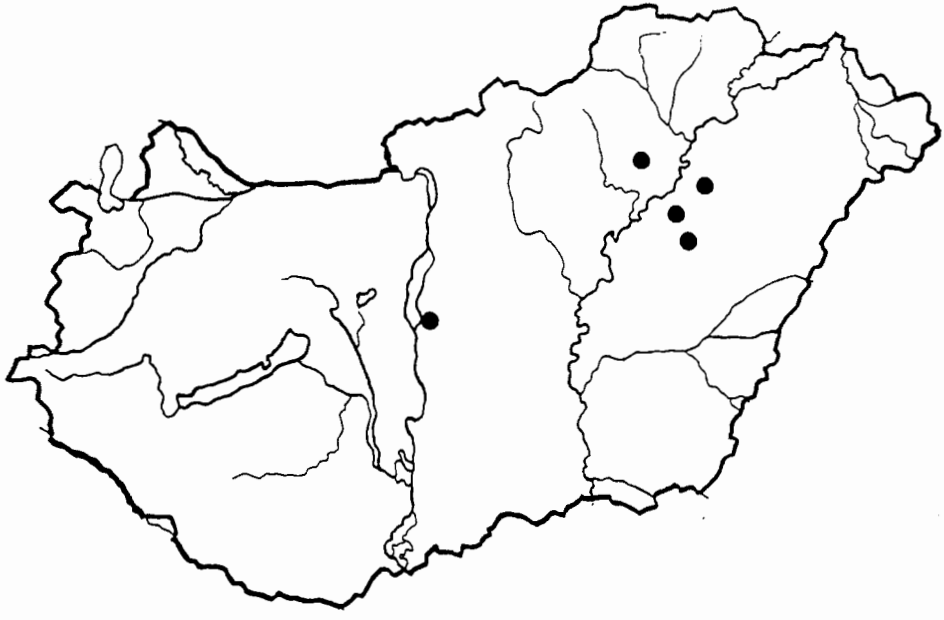


Fig. 5. Localities of *Harpalus scytha* in Hungary

Acupalpus luteatus (Duftschmid, 1812) — Tard. IV. — One specimen was collected by S. Tóth in 1957. The majority of its localities are in Transdanubia and the Great Hungarian Plain where it was found in plant debris in moist places.

Pterostichus cylindricus (Herbst, 1784) — Eger; Tard: Tardi-patak. V, XI. — Three specimens were collected by M. Reskovits in 1956 and S. Tóth in 1957. In Hungary, it is distributed from the flatland meadows to the lower forest regions of the mountains (Bokor 1922). It is sporadic and rare in most parts of Hungary with larger populations only in the southern part of the country (Csongrád and Békés counties). In Szeged and Mezőhegyes it was captured several times in the inner town (J. Rudner and L. Ádám, personal communication). Based on 31 specimens deposited in the HNHM, its Hungarian localities are the following: Somogy county: Dombóvár; Baranya county: Pellérd (Horvatovich 1980), Pécs, Szentlőrinc, Szigetvár; Fejér county: Kápolnásnyék; Pest county: Galgamácsa, Nógrádverőce, Söregpuszta, Naszály; Nógrád county: Cserhátszentiván; Heves county: Eger, Mezőtárkány, Tard; Jász-Nagykun-Szolnok county: Jászberény; Hajdú-Bihar county: Debrecen, Zsáka; Csongrád county: Kiszombor (J. Rudner, personal communication), Szeged; Békés county: Mezőhegyes (Fig. 6).

Pterostichus macer (Marsham, 1802) — Tard. III. — One specimen was collected by S. Tóth in 1956. An uncommon species, most of its localities are in the marshy and sodic areas of the Great Hungarian Plain and around Lake Velence and Lake Fertő. It was found in the Börzsöny and Mátra Mts. (Galya-tető) as well.

Dolichus halensis (Schaller, 1783) — Tard. VII. — One specimen was collected by S. Tóth in 1956. It is widely distributed in the lowlands and hills, including agricultural lands.

Agonum livens (Gyllenhal, 1810) — Tard. VIII. — One specimen was collected by S. Tóth in 1956. It is a rare, psychrophilous species of swampy forests (Horvatovich 1992*a*). It is known mainly from the Great Hungarian Plain and the hilly regions but also from the lower places of the mountains.

Amara fulva (O. F. Müller, 1776) — Eger. VI–VII. — Two specimens were caught by M. Reskovits (MMGY). A typical inhabitant of the sandy regions of the Little and Great Plain including the dry places of river-banks.

Amara gebleri Dejean, 1831 (= *Amara helleri* Gredler, 1868) — Tard. VII. — Only two specimens were collected by S. Tóth in 1956. This species was formerly regarded as synonym (Freude 1976) or subspecies (Csiki 1946) of *Amara aulica* (Panzer, 1797). Now it is treated as a separate species, the characters distinguishing it from *A. aulica* are given by Hieke (1989). In the collection of HNHM, the voucher specimens come from the following localities: Mosonmagyaróvár, Nagybajom, Budapest, Isaszeg and Kalocsa.

Amara ingenua (Duftschmid, 1812) — Eger. — Two specimens are known from the area which were collected in 1905. It occurs mainly in the Great Hungarian Plain and the hilly regions with sporadic data from the mountains. According to Lindroth (1986), this is a synanthropic species preferring ruderal habitats.

Zabrus spinipes (Fabricius, 1798) — Bükkmogyorósd; Eger. VII. — Three specimens were collected, the one from Bükkmogyorósd was captured by J. Jablonkay in 1965. It is distributed in the Great Hungarian Plain and in the hills and mountains, mainly in dry grasslands (often in barren sand), steppic slopes and agriculture lands.

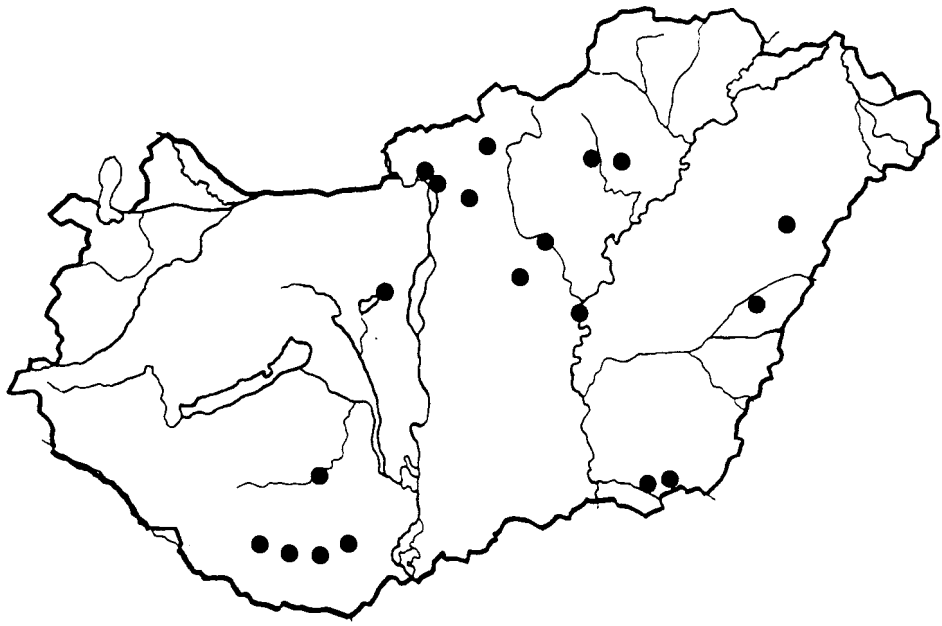


Fig. 6. Localities of *Pterostichus cylindricus* in Hungary

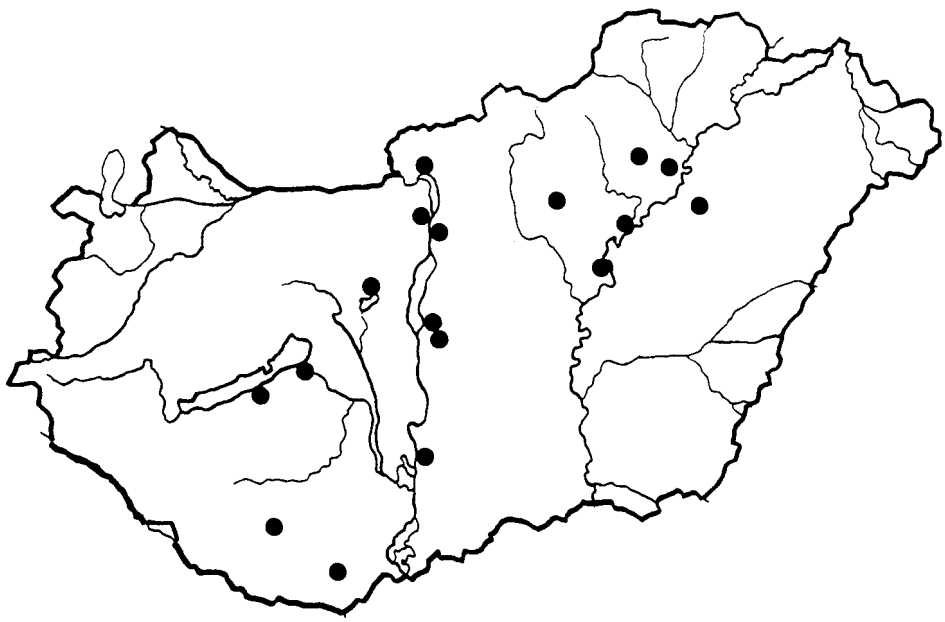


Fig. 7. Localities of *Chlaenius decipiens* in Hungary

Oodes gracilis A. Villa et J. B. Villa, 1833 — Egerbakta: Baktai-tó. IV. — One specimen was collected by treading the soil in a blanket bog. It occurs in soggy places, mostly along with *Oodes helopioides*, but rarer than the latter.

Chlaenius decipiens (Dufour, 1820) — Tard. IV–V, VII. — Three specimens were collected by S. Tóth in 1957. A rare species of wet and/or sodic areas. It is known from the Great Hungarian Plain (Dömsöd, Kalocsa, Kunszentmiklós, Karácsond, Tiszasüly, Tiszanána, Mezőcsát, Hortobágy), Transdanubia (Mecsek Mts., Bakony Mts., Balatonőszöd, Siófok, Lake Velence) and the Börzsöny Mts. (Fig. 7).

Badister unipustulatus Bonelli, 1813 — Tard. IV. — One specimen was collected by S. Tóth in 1957. It occurs in wet places of the lower regions of Hungary. It was found mainly along the shore of larger water bodies in Transdanubia and around sodic lakes in the Great Hungarian Plain.

Lebia cyanocephala (Linnaeus, 1758) — Bükkszentmárton; Tard. III–V. — Two specimens were collected by J. Jablonkay in 1964 and six by S. Tóth in 1957–58. A sporadic species becoming rarer in the last decades. Most of the specimens were collected both in drier and moist places of Transdanubia and the Great Hungarian Plain (Fig. 8) by sweep-netting and beating from shrubs and trees or from beneath stones. Most of the data are older than 30 years.

Lebia trimaculata (Villers, 1789) — Tard. VII. — One specimen was collected by S. Tóth in 1956. Apart from Tard, it is known from Budapest (Gellért-hegy [hill]) and Kamara-erdő [forest], the Velence Hills and Pécs (Fig. 9). The few specimens of this quite rare species housed in the HNHM result exclusively from old collectings. Its occurrence in Budapest was mentioned by Kuthy (1896 [1897]) and Csiki (1946).

List of species

Rhysodidae

Rhysodes sulcatus (Fabricius, 1787) — Miskolc: Garadna-völgy; Nagyvisnyó: Hármas-teber. V–VII, IX. — Fifty-seven of the known 58 specimens were collected from decaying wood of beech on the very same spot at Nagyvisnyó (850 m, *Lolio-Cynosuretum* association), the remaining single specimen was captured by I. Vásárhelyi in 1958. A rare species, it is associated with slime moulds in old, decaying wood. Specimens from the following localities are deposited in the HNHM: Zirc (Bakony), Cserénfa (from decaying wood of alder), Csurgó and Kaposgyarmat (Somogy county), Dobogókő (Pilis Mts.), Parád (Mátra Mts.), Istvánkút (Zemplén Mts.) (Fig 10).

Cicindelidae

Cicindela campestris Linnaeus, 1758 — Cserépváralja; Kisgyőr: Bekény; Miskolc: Hámor, Hosszú-bérc, Jávorkút; Nagyvisnyó: Bálvány. IV, VI–VII. — A few specimens were singled in forest paths and clearings. It lives on bound soil covered by vegetation of the lowlands and hills, avoids dense forests and barren places.

Cicindela sylvicola Dejean, 1822 — Bélapátfalva: Gilitka-kápolna; Cserépfalu: Hór-völgy; Miskolc: Garadna. V, VII. — Three specimens are old (collected by N. Vámos in 1951 and I. Vásárhelyi in 1958). The fourth specimen was found at 250 m in *Pastinaco-Arrhenatheretum* association. A typically montane species, it is known from Western Transdanubia as well as from several spots of the Northern Mountains (Bakony, Börzsöny, Zemplén Mts.). It prefers forest paths.

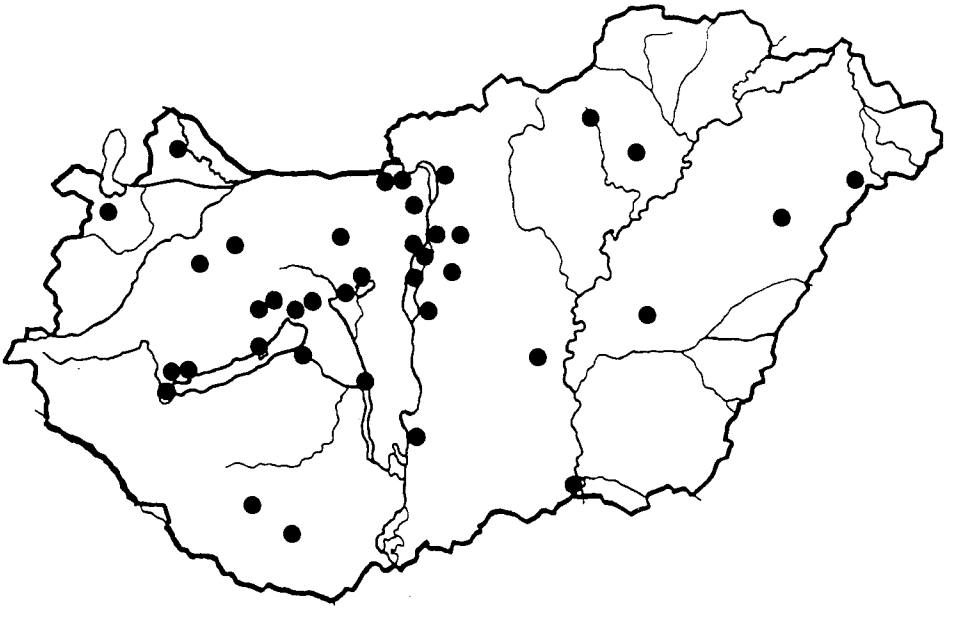


Fig. 8. Localities of *Lebia cyanocephala* in Hungary

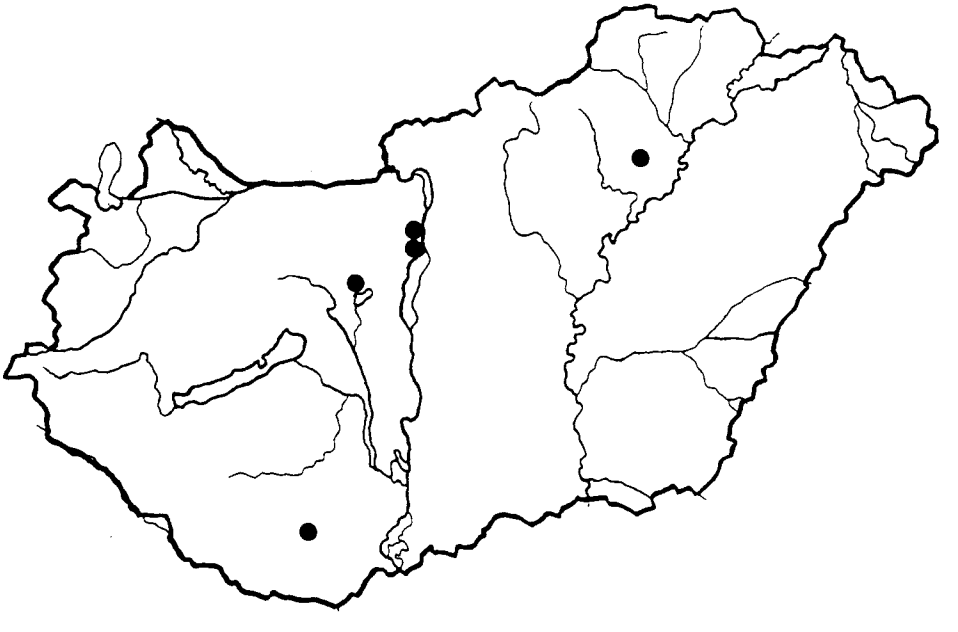


Fig. 9. Localities of *Lebia trimaculata* in Hungary

Calosoma auropunctatum (Herbst, 1784) — Miskolc: Garadna-völgy. V. — One specimen without other data was collected by M. Reskovits in 1955. A characteristic steppe species inhabiting xerothermic grasslands formed on sand, loess and sodic soil, mainly in the Great Hungarian Plain. It is frequent in agricultural lands, too. A protected species.

Calosoma inquisitor (Linnaeus, 1758) — Bélapátfalva: Melés-domb; Bükkszentkereszt: Hór-völgy; Bükkzsérc: Hosszú-völgy; Cserépfalu: Derda-kaszáló, Hór-völgy, Közép-szék, Perpác; Felsőtárkány: Hereg-rét, Tar-kő, Várhegy; Miskolc: Garadna, Hámori-tó, Lillafüred. V–VII. — The specimens were collected between 350 and 900 m in oak and beech forests and dry steppe meadows by singling and beating. It is common in the forests of the hilly and mountainous regions, often in masses. Sporadic in the Great Hungarian Plain.

Calosoma sycophanta (Linnaeus, 1758) — Felsőtárkány: Tar-kő; Nagyvisnyó: Elza-lak. VI–VII. — Only three old specimens are known from the area investigated, collected by P. Jakucs (Tar-kő, 1954), Z. Kaszab and V. Székessy (Elza-lak, 1956). Most of its localities are in Transdanubia and the Northern Mountains (in oak forests); it is sporadic in the Great Hungarian Plain (both in hard- and soft-wood riverine forests). Its populations decreased in the last decades; however, in 1994, it was regularly observed in the hilly forests, sometimes in masses. A protected species.

Carabus cancellatus durus Reitter, 1896 — Bükkszentkereszt; Bükkzsérc: Hosszú-völgy; Cserépfalu: Hór-völgy; Felsőtárkány: Pes-kő; Kisgyör: Bekény; Miskolc: Alsó-Borovnyák, Borókás-teber, Garadna-völgy, Lillafüred, Lyukas-gerinc, Vadász-völgy; Nagyvisnyó: Huta-rét; Varbó: Örvény-kő. IV–IX. — Many specimens were taken at 250 to 850 m in *Aegopodio-Alnetum*, *Aconito-Fagetum* and *Lolio-Cynosuretum* associations by pitfall traps, from beneath stones or around light. This subspecies is distributed in forests from the Buda Mts. to the Bükk (Szél 1985). A protected species.

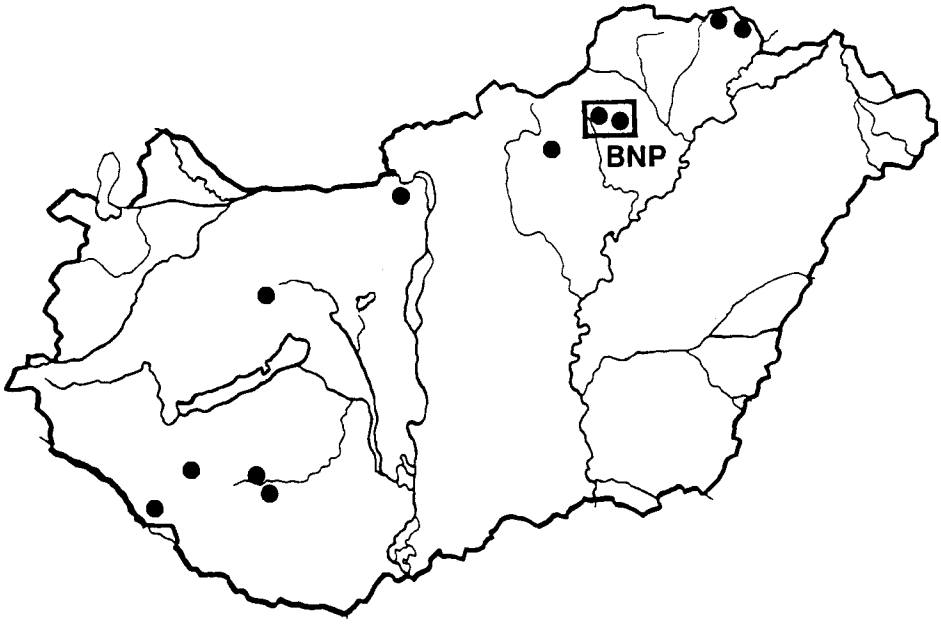


Fig. 10. Localities of *Rhysodes sulcatus* in Hungary

Carabus convexus convexus Fabricius, 1775 — Bükkzsérc: Hosszú-völgy; Cserépfalu: Derda-kaszáló, Hór-völgy; Miskolc: Forrás-völgy, Garadna-völgy, Hámori-tó, Hosszú-bérc, Jávorkút, Köpűs-tető, Látó-kövek, Létrás, Lillafüred, Lusta-völgy, Nagy-mező, Svéd-fenyves, Szentlélek; Nagyvisnyó: Ablakos-kő-völgy, Diabáz-barlang, Elza-lak, Huta-rét, Taró-fő; Répáshuta: Szász-orom; Szarvaskő: Új-határ-völgy; Szilvásvárad: Szalajka-völgy, Virágos-sár-hegy. IV–X. — It was found between 250 and 900 m in various forest associations as well as dry and wet meadows and even in a cave. Many specimens were collected by singling, and pitfall traps, from beneath logs and stones and around light. It is widely distributed and frequent in forests and forest margins. A protected species.

Carabus coriaceus pseudorugifer Sokolar, 1906 — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Rejtek; Bükkzsérc: Hosszú-völgy, Odor-hegy; Cserépfalu: Hór-völgy; Felsőtárkány: Bányahegy erőse, Tar-kő; Miskolc: Borókás-teber, Forrás-völgy, Garadna, Hámor, Hámori-tó, Jávorkút, Lillafüred, Lusta-völgy, Lyukas-gerinc, Molnár-szikla, Nagy-mező, Nyár-Új-hegy, Ómassa, Sugaró, Svéd-fenyves, Szentlélek, Vadász-völgy, Vesszős-völgy; Nagyvisnyó: Diabáz-barlang, Elza-lak, Hármaskút, Leány-völgy, Taró-fő; Répáshuta: Csúnya-völgy; Szarvaskő: Eger, Tardos-hegy; Szilvásvárad: Köves-gerinc, Őserdő, Tar-kő; Varbó: Dobrica, Lenke-forrás, Örvény-kő. IV–X. — A vast number of specimens were found between 250 and 900 m in various forest associations, rock swards, meadows and cave entrances. It was collected by pitfall traps, singling, from beneath logs and stones and from decaying woods. In Hungary, it is distributed in the Northern Mountains (Szél 1993). A protected species.

Carabus glabratus glabratus Paykull, 1790 — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Hollóstető; Cserépfalu: Hór-völgy; Felsőtárkány: Tar-kő; Mályinka: Odvas-kő; Miskolc: Borókás-teber, Farkas-nyaki-völgy, Garadna-völgy, Hosszú-bérc, Jávorkút, Kurta-bérc, Lillafüred, Lyukas-gerinc, Ómassa, Svéd-fenyves, Szent István lápa, Szentlélek; Nagyvisnyó: Bálvány, Bánkút, Leány-völgy; Szilvásvárad: Köves-gerinc, Őserdő, Tar-kő; Varbó: Örvény-kő. IV–VIII, X. — Many specimens were collected between 250 and 900 m, mainly in beech associations (*Aconito-Fagetum*, *Seslerio-Fagetum*), but also in other forest types (*Carici acutiformis-Alnetum*, *Mercuriali-Tilietum*) by pitfall traps and singling. It is characteristic for the closed beech, oak and conifer forests of the mountainous areas of Hungary but never abundant. It occurs mostly above 300–400 m except in the westernmost part of Transdanubia, where specimens are known from 200 m. It is unknown from the Great Hungarian Plain and Southern Transdanubia. A protected species.

Carabus granulatus granulatus Linnaeus, 1758 — Miskolc: Garadna, Garadna-völgy, Lillafüred. II, VI–VII. — Nine old specimens are known from the Bükk National Park collected by J. Fodor (1961), D. Kanabé and Z. Nározsny. All were encountered in the vicinity of water. One of the most common *Carabus* species occurring everywhere in soft-wood riverine forests. A protected species.

Carabus hortensis hortensis Linnaeus, 1758 — Bélapátfalva: Felső-erdő, Ravaszlyuk; Bükkszentkereszt: Hollóstető; Bükkzsérc: Hosszú-völgy, Kis-rét; Cserépfalu: Hór-völgy, Ódorvári rom; Felsőtárkány: Tar-kő; Miskolc: Alsó-Borovnyák, Borókás-teber, Forrás-völgy, Garadna, Hámor, Hosszú-bérc, Jávorkút, Létrás, Lillafüred, Lusta-völgy, Lyukas-gerinc, Nagy-mező, Nyár-Új-hegy, Sugaró, Svéd-fenyves, Szentlélek; Nagyvisnyó: Elza-lak, Huta-rét, Leány-völgy; Répáshuta: Szász-orom; Szarvaskő: Új-határ-völgy; Szilvásvárad: Köves-gerinc, Őserdő, Szalajka-völgy, Tar-kő; Varbó: Örvény-kő. IV–X. — A great number of specimens were collected between 250 and 850 m, mainly in closed forests (plantations of Norway spruce, hornbeam-oak forests) but also in *Spiraea* bush (*Waldsteinio-Spiraeetum*) and in mountain pastures from beneath stones, logs and loose bark or by pitfall traps. One of the most common *Carabus* species in the forests of the hilly and mountainous regions of Hungary but absent from the Great Hungarian Plain. A protected species.

Carabus intricatus intricatus Linnaeus, 1761 — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy, Ódorvári rom; Felsőtárkány: Pes-kő-barlang, Tar-kő; Miskolc: Alsó-Borovnyák, Borókás-

teber, Disznós-patak, Garadna, Hámor, Jávorkút, Látó-kövek, Lillafüred, Lusta-völgy, Nagymező, Ómassa, Svéd-fenyves, Szentlélek, Szinva-forrás, Vesszős-völgy; Nagyvisnyó: Ablakos-kő-völgy, Bálvány, Bánkút, Elza-lak, Gerennavár, Taró-fő; Répáshuta; Szarvaskő: Eger, Új-határ-völgy; Szilvásvárad: Gerennavár, Szalajka-völgy, Tar-kő; Varbó: Örvény-kő. II–XI. — Many specimens were singled between 250 and 900 m from decaying wood, beneath stones or captured by pitfall traps. In Hungary, it is a characteristic species of closed deciduous forests (beech and hornbeam-oak) in Transdanubia and the Northern Mountains. The record in the Great Hungarian Plain (Debrecen and Isaszeg) is unreliable and needing confirmation. A protected species.

Carabus montivagus blandus I. Frivaldszky, 1865 — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Hór-völgy; Cserépfalu: Hór-völgy; Miskolc: Csipkéskút, Garadna, Lillafüred, Lusta-völgy, Molnár-szikla, Vesszős-völgy; Szarvaskő: Tardos-hegy, Új-határ-völgy, Veres-oldal. IV–VI, VIII–IX. — At Szarvaskő, it was collected between 300 and 350 m in siliceous rock swards (*Potentillo-Festucetum pseudodalmaticae*) and shrubby forest (*Poo pannonicae-Quercetum petraeae*) by pitfall traps or from beneath stones. At the other sites, it was found in hornbeam-oak forests, at 300 to 400 m. Sporadic in Hungary, its localities are the following: Budapest (Cinkotai-kiserdő), Gödöllő Hills (Pécel, Isaszeg, Mende, Gyömrő), the Northern Mountains (Börzsöny, Mátra, Bükk, Zemplén Mts.) and Kerecsend (Fácános-berek) (Fig. 11). The latter locality lies at the meeting line of Bükkalja (the foothills of the Bükk) and the Great Hungarian Plain where the forest association is *Aceri tatarico-Quercetum*, the climax community of loess vegetation. It is worth mentioning that while it was abundant at Kerecsend, Mende and Szarvaskő, only a very few voucher specimens are known from the other localities. A protected species.

Carabus nemoralis nemoralis O. F. Müller, 1764 — Bélapátfalva: Ördög-hegy, Ravaszlyuk; Bükkzsérc: Hosszú-völgy, Odor-hegy; Cserépfalu: Hór-völgy; Kisgyőr: Bekény; Miskolc: Alsó-Borovnyák, Borókás-teber, Disznós-patak, Garadna-völgy, Lillafüred, Lyukas-gerinc, Vesszős-völgy; Nagyvisnyó: Elza-lak, Huta-rét; Szarvaskő; Szilvásvárad: Köves-gerinc, Őserdő, Tar-kő.

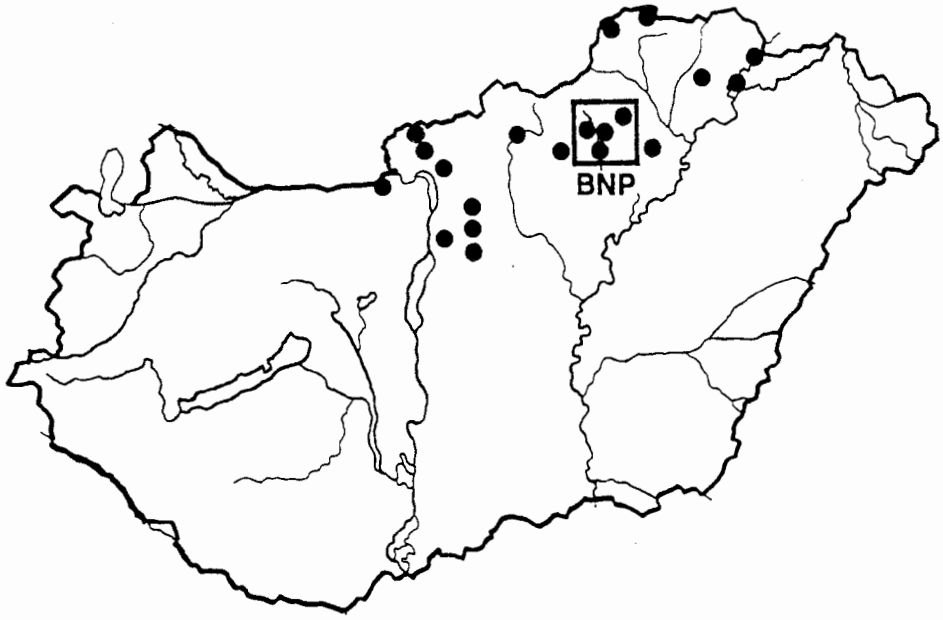


Fig. 11. Localities of *Carabus montivagus* in Hungary

II–IX. — Many specimens were collected between 250 and 900 m in oak and beech forests and mountain pastures by pitfall traps and singling from beneath stones and logs. A species of the canopied forests. It is known from Transdanubia and the Northern Mountains but apparently absent from the Great Hungarian Plain. A protected species.

Carabus problematicus problematicus Herbst, 1786 — Felsőtárkány: Lők-völgy; Miskolc: Lillafüred, Lusta-völgy, Szentlélek; Nagyvisnyó: Bálvány, Bánkút, Taró-fő; Varbó: Örvény-kő. IV, VI–X, XII. — The bulk of the specimens was collected above 400 m in beech and oak forests growing on acidic soil (*Luzulo-Fagetum* and *Luzulo-Quercetum* associations) by pitfall traps and singling. In Hungary this species is distributed in the Alpokalja, the Bakony and the Keszthely Mts. as well as in the Zemplén Mts. (Fig. 12), in beech, oak and conifer forests, everywhere in small numbers. In contrast to the majority of localities, in the Vár-völgy at Várpalota it was found on dolomite and not on acidic basement rock (I. Retezár, personal communication). A protected species.

Carabus scabriusculus scabriusculus Olivier, 1795 — Bélapátfalva: Mész-völgy, Ravaszlyuk; Miskolc: Garadna, Garadna-völgy, Lyukas-gerinc; Nagyvisnyó: Bálvány, Elza-lak; Répáshuta; Szilvásvárad: Őserdő. III–IV, VI–IX. — During the recent collectings only three specimens were secured: at 300 m from *Carici acutiformis-Alnetum* and at 850 m from *Aconito-Fagetum* association (by pitfall traps). The old specimens were collected by Z. Kaszab and V. Székessy in 1953, M. Reskovits in 1954 and T. Wirth in 1955 and 1959. A forest steppe species known to occur in several localities of Transdanubia, the Gödöllő Hills and the Northern Mountains (Fig. 13). In most cases it was collected in dolomitic slopes (e.g. in the Buda Mts.) but found also in dry grasslands and agricultural lands. A protected species.

Carabus scheidleri pseudopreyssleri Breuning, 1932 — Miskolc: Alsó-Borovnyák, Farkasnyaki-völgy, Garadna, Garadna-völgy, Hámor, Jávorkút, Látó-kövek, Lillafüred, Nyár-Új-hegy, Szentlélek; Nagyvisnyó: Bánkút; Szilvásvárad: Tar-kő; Varbó: Örvény-kő. IV–IX. — It was col-

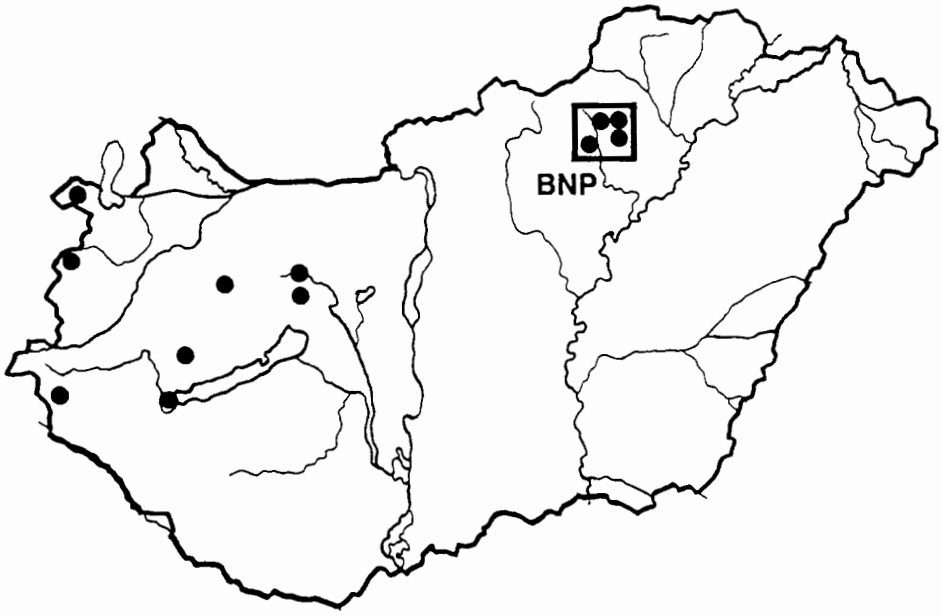


Fig. 12. Localities of *Carabus problematicus* in Hungary

lected between 700 and 900 m in beech forests and mountain grasslands by pitfall traps and from beneath stones. In Hungary this subspecies is distributed from the Börzsöny to the Aggtelek National Park, the Bódva river being the eastern border of its range. It inhabits mountain forests, forest margins and clearings. A protected species.

Carabus ullrichi ullrichi Germar, 1824 — Miskolc: Forrás-völgy, Garadna, Garadna-völgy. IV–VII, XII. — A number of specimens were collected in the Bükk but only a few in the National Park itself. An important part of the collected material comes from the town Miskolc taken by T. Wirth in the 1950s and 1960s. Only one specimen bears more exact locality data and collecting method (250 m, *Melittidi-Fagetum*, pitfall trap). In Hungary this subspecies occurs in the Northern Mountains, the Buda Mts. and sporadically in the Great Hungarian Plain. Its habitats include hard-wood riverine forests of the lowlands to beech forests of the mountains. A protected species.

Carabus violaceus pseudoviolaceus Kraatz, 1886 — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Hosszú-völgy, Odor-hegy; Felsőtárkány: Pes-kő-hegy, Tar-kő; Miskolc: Alsó-Borovnyák, Borókás-teber, Farkas-nyaki-völgy, Forrás-völgy, Garadna-völgy, Hámor, Hámori-tó, Hosszú-bérc, Lillafüred ("tógazdaság"), Lusta-völgy, Lyukas-gerinc, Nagy-mező, Ómassa, Svéd-fenyves, Szent István lápa, Szentlélek; Nagyvisnyó: Ablakos-kő-völgy, Bálvány, Bánkút, Bán-patak, Diabáz-barlang, Hármaskút, Hármas-teber, Huta-rét, Leány-völgy, "Nagybérc" (= Ágazat-bérc), Nagy-mező, Pipis-hegy, Taró-fő; Szarvaskő: Tardos-hegy, Új-határ-völgy; Szilvásvárad: Keskeny-rét, Köves-gerinc, Őserdő, Tar-kő; Varbó: Dobrica, Örvény-kő. III–X. — As in the case of *Carabus coriaceus*, it was found at 250 to 900 m in most forest and grassland associations. Many specimens were collected by pitfall traps, singling from dead wood or from beneath bark, at light and at the entrance of the Diabáz-barlang (cave). In Hungary this subspecies is distributed in the Northern Mountains. A protected species.

Cychrus caraboides (Linnaeus, 1758) (= *Cychrus rostratus* (Fabricius, 1775)) — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Lófő-tisztás; Cserépfalu: Hór-völgy; Felsőtárkány: Tar-kő;

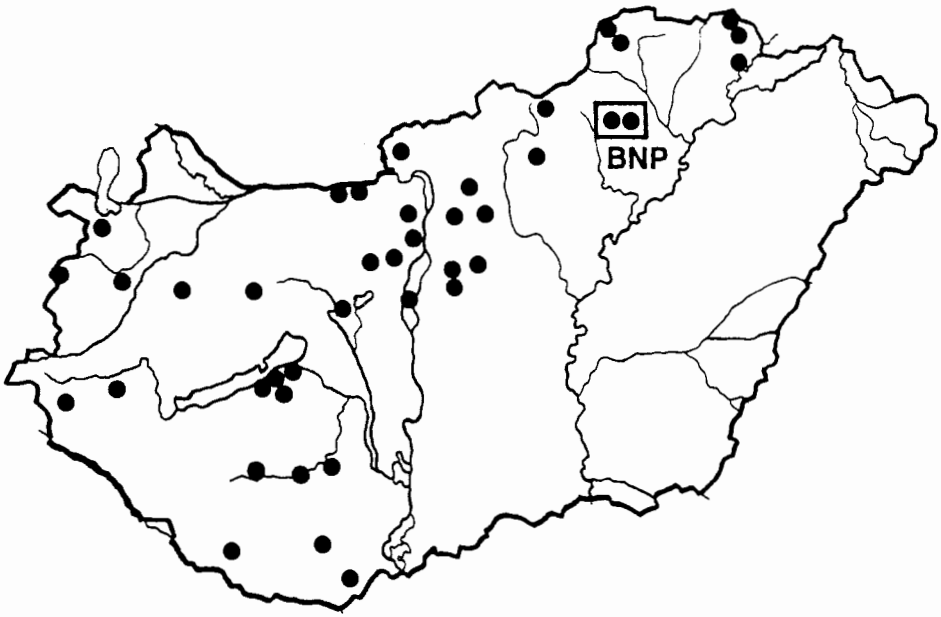


Fig. 13. Localities of *Carabus scabriusculus* in Hungary

Miskolc: Alsó-Borovnyák, Felső-Sebes-víz, Forrás-völgy, Garadna-völgy, Jávorkút, Látó-kövek, Lillafüred, Lyukas-gerinc, Nyár-Új-hegy, Ómassa, Sugaró, Svéd-fenyves; Nagyvisnyó: Ablakos-kő-völgy, Bálvány, Bánkút; Parasznya: Sziklakapus-víznyelő, Soros-teber; Répáshuta: Pénzpatak; Szilvásvárad: Keskeny-rét, Őserdő, Szalajka-völgy, Tar-kő. IV–XI. — Many specimens were collected between 300 and 900 m in a variety of forest associations (*Melittidi-Fagetum*, *Aconito-Fagetum*, *Phyllitidi-Aceretum*, *Piceetum excelsae cultum*, *Querco petraeae-Carpinetum*, *Carici acutiformis-Alnetum*) and mountain meadows (*Anthyllido-Festucetum rubrae* association) by pitfall traps and singling from beneath bark and logs. It is an inhabitant of the cooler parts of the mountain regions, mainly in beech forests. At Nagybajom (Homokpuszta) in Southern Transdanubia it was found in streamside alder wood but known also from Scotch pine (Horvatovich 1978). No locality is known from the Great Hungarian Plain. A protected species.

Leistus ferrugineus (Linnaeus, 1758) — Cserépfalu: Hór-völgy; Szilvásvárad. V, IX. — Three specimens are known from the area investigated. The data of the specimen from Hór-völgy: 350 m, *Pastinaco-Arrhenatheretum* association, singling. Found beneath stones and leaf litter in moist places of forests and meadows, it is distributed mainly in Transdanubia and the Great Hungarian Plain. In the Northern Mountains, it is known from the Bükk, the Börzsöny and the Mátra.

Leistus piceus piceus Frölich, 1799 — Bükkszentkereszt: Lófő-tisztás; Miskolc: Forrás-völgy, Garadna, Lillafüred, Nagy-mező; Nagyvisnyó: Ablakos-kő-völgy, Diabáz-barlang, Hármaskút; Szilvásvárad: Őserdő. IV–IX. — Twenty specimens were collected between 250 and 900 m in beech, alder and spruce forests as well as mountain meadows and caves by sweep-netting and singling from beneath stones and leaf litter. A psychrophilous species, it is distributed in the Alpokalja, the Bakony, Southern Transdanubia and the Northern Mountains. The specimens in Transdanubia were collected mostly in deep valleys while those in the Northern Mountains from the highest points (e. g. Mátra: Kékes-tető, 1000 m; Bükk: Diabáz-barlang, 900 m). The isolated population at Bátorliget in the Great Hungarian Plain represents a different subspecies, *Leistus piceus kaszabi* Horvatovich, 1972. These specimens were sifted from the leaf litter of birch. The altitudinal distribution of the species includes habitats above tree line in the Carpathians. Kaszab (1953) considered it a glacial relict and this statement remained irrefuted by Szél in Merkl (1991). It is listed in the Hungarian Red Data Book (Varga, Kaszab and Papp 1990) but not a protected species.

Nebria brevicollis (Fabricius, 1792) — Miskolc: Forrás-völgy, Hámor; Répáshuta: Csúnya-völgy. V, IX. — Five specimens are known, four without closer data, one taken at 350 m in *Phyllitidi-Aceretum* association from beneath pieces of wood. Uncommon, it lives mainly in our hilly and mountainous regions but it is known from the Great Hungarian Plain (Ádám and Merkl 1986) and from Budapest (Népliget), too.

Notiophilus aesthuans Motschulsky, 1864 (= *Notiophilus pusillus* Waterhouse, 1833) — Bélapátfalva: Ravaszlyuk; Varbó: Dobrica. IV, VII. — One specimen was singled at 300 m in *Cynodonto-Festucetum pseudovinae*, another at 350 m in *Querco petraeae-Carpinetum* association from dead wood. It was found quite sporadically in Transdanubia, the Great Hungarian Plain and the Gödöllő Hills. Apart from the above-mentioned localities in the Bükk, no other record is known from the Northern Mountains.

Notiophilus biguttatus (Fabricius, 1799) — Cserépfalu: Hór-völgy, Szarba-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás; Miskolc: Disznós-patak, Jávorkút, Nagy-mező; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Sinkó-bérc; Szilvásvárad: Tar-kő. IV–VI, IX, XI. — Many specimens were collected between 250 and 800 m in beech, oak and spruce forests, in *Phyllitidi-Aceretum* association and hayfields by treading waterside and by singling from beneath stones and loose bark. It occurs mainly in the hilly and mountainous regions, rarer in the Great Hungarian Plain.

Notiophilus germinyi Fauvel, 1863 (= *Notiophilus hypocrita* Curtis, 1829) — Nagyvisnyó: Bálvány. VIII. — Only two old specimens are known from the area investigated. The first was collected by Z. Kaszab in 1953 at 900 m from beneath stones. The other is without data other than

locality. It is definitely a montane species which was known so far only from the Kőszeg Mts., the Börzsöny and the Zemplén Mts. (Fig. 14). Further specimens come from the Carpathians (HNHM).

Notiophilus palustris (Duftschmid, 1812) — Miskolc: Disznós-patak, Garadna; Szarvaskő: Tardos-hegy; Szilvásvárad: Keskeny-rét, Szalajka-völgy; Varbó: Dobrica. IV–VII, IX. — Six specimens are known from the area investigated. These were collected between 300 and 500 m in beech and oak forests as well as mountain meadows by treading the ground, from beneath stones and from decaying wood. A hygrophilous species, it is widely distributed in the lowlands and hills but rarer in the mountains.

Notiophilus rufipes Curtis, 1829 — Felsőtárkány: Lők-völgy, Tar-kő; Nagyvisnyó: Ágazat-bérc, Elza-lak, Gerennavár; Szarvaskő: Tardos-hegy. IV–VII. — Twelve specimens were collected between 350 and 850 m in *Tilio-Sorbetum* and oak associations as well as open moist places by sweep-netting and singling from beneath stones. In Hungary, it is generally distributed in the forested regions and rarer in the open habitats of the Great Hungarian Plain.

Omophron limbatum (Fabricius, 1776) — Miskolc: Lillafüred; Nagyvisnyó: Elza-lak. VI. — Ten old specimens are known from the area investigated which were collected by Z. Kaszab and I. Peregi in 1956. Uncommon, it occurs on sandy shore of running and still waters of the Great Hungarian Plain and the lower hilly regions.

Blethisa multipunctata (Linnaeus, 1758) — Miskolc: Garadna-völgy, Hámori-tó, Jávorkút; Répáshuta: Tebepuszta. V–VIII. — Six specimens were collected between 300 and 650 m in densely overgrown watersides by singling and treading the ground. Hygrophilous species, rare in Hungary, only a few localities are known: Pinnye, Lake Fertő, Győr, Mosonmagyaróvár, Ikrény (Oszhely), Budapest (Lágymányos), Székesfehérvár, Siófok, Simontornya, Vértes (Csókakő), Kalocsa, Börzsöny and the Zemplén Mts. (HNHM and KFMS) (Fig. 15).

Elaphrus riparius (Linnaeus, 1758) — Felsőtárkány: Lőki-patak; Miskolc: DIMÁVAG-üdülő, Garadna-völgy, Hámori-tó, Jávorkút, Lillafüred; Nagyvisnyó: Elza-lak; Varbó: Fónagyság. V–IX. — A total of 77 specimens were collected between 300 and 650 m in marshy, more or less densely overgrown watersides by treading the ground. This is the most frequent *Elaphrus* species, common in marshy and muddy places, mainly in the Great Hungarian Plain and the lower hills.

Elaphrus uliginosus Fabricius, 1792 — Bélapátfalva: Ravaszlyuk; Cserépváralja: Török-rét; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó: Elza-lak; Répáshuta: Tebepuszta. IV–VIII, X. — Many specimens were collected, mostly along with the previous species. Rarer and less distributed than *Elaphrus riparius*, it is found mainly around the Lake Balaton and Lake Velence. Only a few localities are known from the Northern Mountains.

Loricera pilicornis (Fabricius, 1775) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás, Lőki-patak; Miskolc: Hámori-tó, Lyukas-gerinc; Parasznya: Soros-teber; Varbó: Fónagyság. V–VI. — A number of specimens were collected at 250 to 850 m in waterside associations, mountain meadows, alder groves, montane beech forests (*Aconito-Fagetum*) and also in lime stands (*Mercuriali-Tilietum*). Collecting methods include treading the ground, sweep-netting and singling from beneath stones. A sporadically occurring species, it was collected in forests, forest margins and riversides (e. g. Szigetköz) in Transdanubia, but also on sand dunes and near sodic lakes in the Great Hungarian Plain. Only a few localities are known in the Northern Mountains (Bükk, Aggtelek National Park and the Zemplén Mts. (KFMS)).

Clivina collaris (Herbst, 1784) (= *Clivina contracta* (Forcroy, 1785)) — Felsőtárkány: Lőki-patak; Miskolc: DIMÁVAG-üdülő, Garadna; Nagyvisnyó: Elza-lak. IV–VII. — Six specimens were found, the recently collected specimens were taken between 350 and 550 m in streamside alder groves (*Carici acutiformis-Alnetum*) and in *Chaerophyllo-Petasitetum* associations by treading the ground. In Hungary, it is known both in the Great Hungarian Plain and the mountain regions. Riverine forest is its most typical habitat.

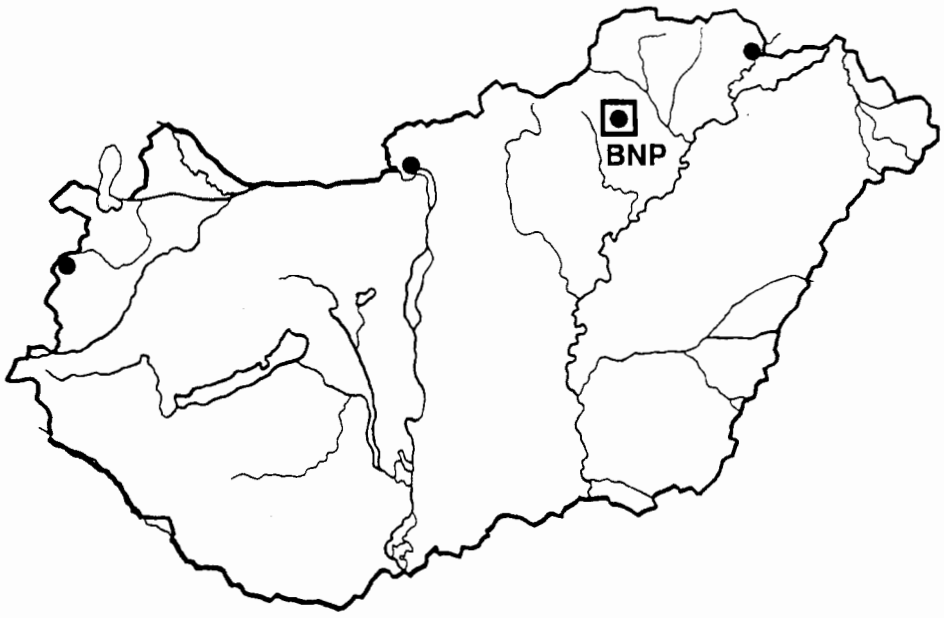


Fig. 14. Localities of *Nothiophilus germinyi* in Hungary

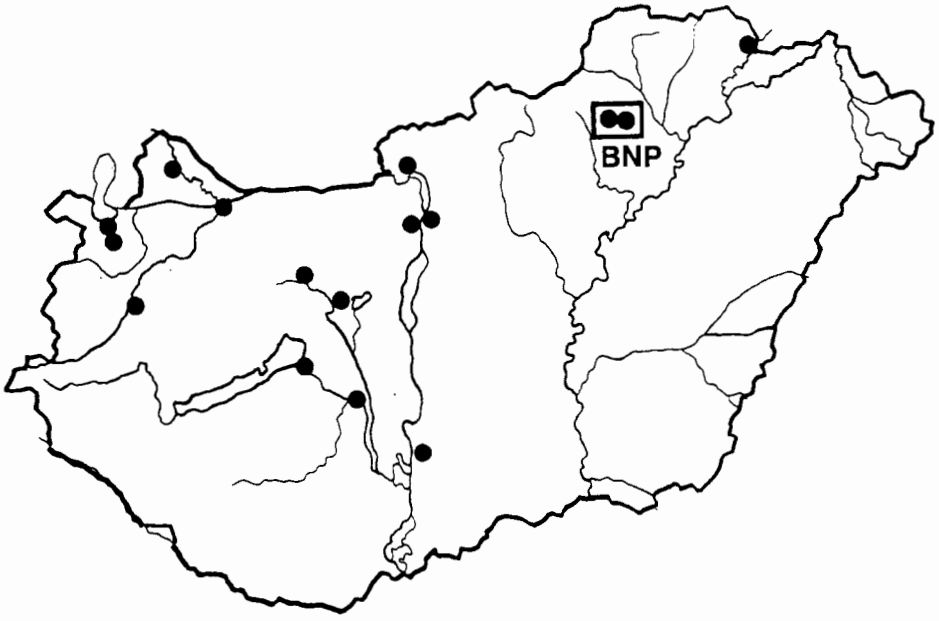


Fig. 15. Localities of *Blethisa multipuctata* in Hungary

Clivina fossor (Linnaeus, 1758) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Nagyvisnyó: Bán-patak. V–VII. — The specimens were collected between 350 and 650 m in soggy places of *Querco petraeae-Carpinetum*, *Mercuriali-Tilietum* associations, hayfields and *Chaerophyllo-Petasitetum* by pitfall traps, sweeping and at light. It is more widely distributed and more frequent than the preceding species but lives under similar circumstances; frequent also in agricultural fields.

Dyschirius aeneus (Dejean, 1825) — Miskolc: Garadna-völgy; Nagyvisnyó: Elza-lak. IV–VI. — Eleven old specimens are known from the protected area which were collected by Z. Kaszab and V. Székessy in 1956 and by I. Vásárhelyi in 1959. In Hungary, it is found mainly in overgrown watersides of larger lakes and rivers. Only a few localities are known in the mountains.

Dyschirius globosus (Herbst, 1784) — Felsőtárkány: Hárs-kút, Lénárt-forrás; Miskolc: Jávorkút, Nagy-mező; Nagyvisnyó: Elza-lak; Szilvásvárad: Keskeny-rét. IV–VII. — Many specimens were collected between 500 and 850 m in overgrown watersides, mountain meadows and pastures by treading the ground and sweeping. This is the most common species of *Dyschirius*, widely distributed along waters in the lowlands, hills and mountains.

Dyschirius nitidus (Dejean, 1825) — Miskolc: Lillafüred; Nagyvisnyó: Elza-lak. VI, VIII. — Six specimens are known from the protected area collected by Z. Kaszab and V. Székessy in 1956 and by I. Vásárhelyi in 1958. Widely distributed in the lowlands and hilly regions, it is frequent in watersides (also in sodic places in the Kiskunság National Park).

Dyschirius pusillus (Dejean, 1825) — Miskolc: Garadna-völgy. VII. — The single specimen was collected by I. Vásárhelyi in 1958. In Hungary, it was found mainly in sodic places around the Lake Fertő, at Siófok, Dinnyés, Sárkeresztúr (Transdanubia), in several localities of the Danube-Tisza Mid-Region and at Hajdúhadház. It is known from the Bakony (Zirc) and the Jászság (Kompolt) as well.

Dyschirius rufipes (Dejean, 1825) — Felsőtárkány: Tar-kő; Szarvaskő: Veres-oldal. IV, VII. — Three specimens were singled at 350 m in siliceous rock swards and at 900 m in *Spiraea* bush. Only a few localities are known in Hungary: Mosonmagyaróvár, Pápa, Balatonszárszó, Zamárdi, Siófok, Kaposvár (Transdanubia); Budapest; Kalocsa (Danube-Tisza Mid-Region) and Gyula (Békés county). It lives in ant's nests and burrows of suslik (Kirschenhofer 1989).

Dyschirius salinus (Schaum, 1843) — Miskolc: Garadna-völgy. VII. — Three specimens were collected by I. Vásárhelyi in 1959. A halophilous species, frequent in sodic regions and calcareous alluvial soil. Apart from this record, no other locality is known from the mountains.

Broscus cephalotes (Linnaeus, 1758) — Felsőtárkány: Oldalvölgy; Miskolc: Garadna-völgy. V. — Two old specimens are known from the area collected by J. Jablonkay in 1965 and I. Vásárhelyi in 1958. In Hungary, it lives mainly in the Great Hungarian Plain and the hilly regions, in sparsely vegetated places of loose (usually sandy) soil. Only a few localities are known from the Northern Mountains (Bükk, Börzsöny and Jászberény).

Trechus austriacus Dejean, 1831 — Miskolc: Forrás-barlang. I–IV. — A total of 18 specimens were collected by I. Loksa in 1959 with pitfall traps in many places of the cave under genuine cave circumstances: temperature is permanently 10 °C, with nearly 100% humidity (Loksa 1962). In Hungary, it is known mainly from caves: Mecsek Mts. (Abaligeti-barlang), Tapolca (Tavas-barlang), Aggtelek (Baradla-barlang) and limestone caves of Buda Mts. Besides these caves it was collected in the Vértes Mts. (Csókakő). Specimens were captured outside the caves in Békés county (Battonya in forest and Kétegyháza), at Siófok and Budapest. These records suggest that the species is troglophilous but not truly troglobiont.

Trechus pilisensis Csiki, 1917 — Cserépfalu: Szarba-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás; Miskolc: Felső-forrás, Forrás-völgy, Hámori-tó, Jávorkút, Kecske-lyuk, Lillafüred, Lyukas-gerinc; Nagyvisnyó: Ablakos-kő-völgy; Parasznya: Soros-teber, Sziklakapus-víznyelő; Répáshuta: Csúnya-völgy; Szarvaskő: Veres-oldal; Varbó: Dobrica. IV–VI, VIII–X. — A total of 118 specimens were captured between 250 and 800 m from *Aconito-Fagetum*, *Phyllitidi-Acere-*

tum, *Chaerophyllo-Petasitetum*, *Anthyllido-Festucetum* associations, in caves and stables. The collecting methods include sifting, sweep-netting, attracting by light, singling from beneath stones, rotten wood, bark and gravel deposit. This apterous species is known mainly in beech and hornbeam-oak forests of Western and Southern Transdanubia (Kőszeg Mts., Mecsek Mts., Villány Mts., Zselic and Bakony Mts.). Buda Mts. and Pilis Mts. constitute the centre of the disjunct area of the species. In this region it was collected at higher peaks (János-hegy and Dobogókő), presumably also in beech forests. The species is very rare in the Northern Mountains; apart from the Bükk, only a few data are known from the Börzsöny and Zemplén Mts.

Trechus quadristriatus (Schrank, 1781) — Bükkzsérc; Cserépfalu: Hór-völgy, Ódorvári rom, Szarba-völgy; Miskolc: Hosszú-bérc; Nagyvisnyó: Elza-lak; Noszvaj: Síkfőkút. III–X. — Twenty-five specimens were captured between 250 and 800 m in *Phyllitidi-Aceretum*, *Corno-Quercetum*, *Pastinaco-Arrhenatheretum* associations and in cereal fields, mainly at light. It occurs almost everywhere in Hungary from the Great Hungarian Plain to the hilltops (e.g. Kékestető in the Mátra Mts.). It is one of the most common carabids in agricultural lands (Horvatovich and Szarukán 1986).

Epaphius secalis (Paykull, 1790) — Bükkzsérc: Hosszú-völgy; Varbó: Dobrica. V–IX. — Thirty-one specimens were collected between 250 and 300 m in *Querco petraeae-Carpinetum* and *Aegopodio-Alnetum* associations by pitfall traps, sifting and singling from beneath bark. An apterous species. It is known mainly from the canopied forests of the hills and mountains (Transdanubia: Kisbodak, Máriakálnok, Győr, Zirc, Pétfürdő, Siófok, Cserfekvés, Lipótfa, Esztergom; Danube-Tisza Mid-Region: Kalocsa; environs of Budapest; Northern Mountains: Börzsöny, Mátra, Zemplén Mts.; Nyírség: Bátorliget). At Bátorliget it was collected among hummocks in a fen while at Kisbodak in the Szigetköz from *Salicetum albae fragilis* association.

Duvalius gebhardti (Bokor, 1926) — Miskolc: István-cseppkőbarlang (= Szent István-barlang, István-barlang): Gizella-terem and Szent László-terem, István-lápai-barlang, Kecske-lyuk (= Kecske-barlang), Parasznya: Sziklakapus-víznyelő (= Udvar-kő-barlang). II, IV–XI. — Seventy-four specimens (including the lectotype and 23 paralectotypes) are housed in the HNHM. Of them, forty-seven specimens were collected from the type locality, the cave named Kecske-lyuk. These specimens were collected by E. Bokor in 1924, 1925 and 1927 (29 specimens); I. Peregi, presumably in 1938 (nine specimens); L. Ádám in 1981–1983 (nine specimens). Further three specimens are known from the István-cseppkőbarlang collected by I. Peregi in 1938 and 24 specimens from the István-lápai-barlang collected by E. Spielmann in 1991–1992. A number of further specimens were captured in the Kecske-barlang by Czech entomologists, K. Hůrka, J. Janák, R. Mlejnek and P. Moravec in 1979, 1980, 1985 and 1987 (published data), in recent years (unpublished data) which are deposited in their collections (Hůrka, Janák and Moravec 1989). I. Loksa collected 20 specimens in the István-cseppkőbarlang in 1958–59 (Loksa 1962) but the whereabouts of these specimens are unknown to me (perhaps in the Department of Zoosystematics and Ecology of the Eötvös Loránd University, Budapest). In 1985, J. Janák captured a female specimen in the Udvar-kő-barlang and it was published by Hůrka, Janák and Moravec (1989). The second specimen from the same locality was captured by R. Mlejnek (J. Janák, personal communication). E. Bokor collected the specimens from beneath loose gravely debris in a narrow side branch, at 100 m from the entrance (Bokor 1926). L. Ádám singled the specimens under similar circumstances at 320–350 m from the entrance while the Czech colleagues found specimens also at a temporal underground water course in the rear of the cave (Hůrka, Janák and Moravec 1989). The singling method resulted in only one specimen in every case but L. Ádám applied a mixture of soil and leaf-litter as bait and in this way he managed to collect more specimens (L. Ádám, personal communication). In the István-cseppkőbarlang, I. Loksa collected specimens by pitfall traps filled with ethylene glycol in several sites of the cave where the temperature varied between 7.2 and 10 °C and the humidity was nearly 100%. In the István-lápai-barlang (a cave accessible only with special climbing equipment), E. Spielmann did collectings with pitfall traps filled with ethyl-

ene glycol and baited with cheese or liver. The temperature in this cave was 8 °C and the humidity was nearly 100% (Spielmann 1992). The traps were placed in several spots in the depth of 200–230 m. *Duvalius gebhardti* was captured in most parts of the main gallery system. The two specimens of the Udvar-kő-barlang were taken from beneath large stones deeply embedded into the soil in two different places. The Udvar-kő-barlang is in fact a deep, rocky hole which works as an active swaller. The bottom of the hole is covered by clayey humus overgrown by liverworts and ferns. The habitat is permanently cool and wet but has a direct connection with the outside world and consequently, it is not completely dark (Hůrka and Pulpán 1980, J. Janák, personal communication). Apart from the two specimens of the Udvar-kő-barlang, the nearly 200 captured specimens were collected under true spelaean circumstances (complete darkness, permanent temperature, high humidity). Based on these facts and the nearly complete reduction of the eyes the species can be regarded as a true troglobiont (Loksa 1962). L. Ádám attempted to bring out living specimens from the cave but his efforts proved to be unsuccessful, since the beetles died at the entrance or immediately before it; this supports Loksa's opinion. On the contrary, E. Bokor, who despite any efforts, did not find the larvae and pupae of the species in the cave, was of the opinion that *Duvalius gebhardti* is simply a subterranean animal, not a troglobiont, and only the adults can be found temporarily in caves while the permanent habitat should be in rock crevices above the level of the carst water (Bokor 1926). The occurrence in the Udvar-kő-barlang supports Bokor's theory since this locality is merely a rock hole, not a true cave, above the level of the carst water and is subject to temperature fluctuation. According to J. Janák (personal communication), *Duvalius gebhardti* is troglophilic and not troglobiont. To make a long story short, of the *Duvalius* species occurring in Slovakia and Hungary, *Duvalius gebhardti* is most associated with true cave situations (Hůrka and Pulpán 1980). — *Duvalius gebhardti* is an endemic species of the Bükk Mts. It is listed in the Hungarian Red Data Book (Varga, Kaszab and Papp 1990) but not a protected species. Two larvae (which were undescribed so far) were collected by E. Spielmann in the István-lápai-barlang. These will be described later.

Tachys bistriatus (Duftschmid, 1812) — Cserépfalu: Hór-völgy; Miskolc: Hámori-tó, Lillafüred; Nagyvisnyó: Elza-lak, Leány-völgy; Szarvaskő: Eger. IV–VI. — Specimens were collected between 250 and 700 m in *Phyllitidi-Aceretum*, *Aegopodio-Alnetum*, *Chaerophyllo-Petasitetum* and *Anthyllido-Festucetum rubrae* associations (collecting methods: treading the ground, netting at twilight swarming, singling from the carcass of a dead fox). Collected in moist places (usually waterside) both in the lowlands and mountains, it is the most common and widely distributed *Tachys* species in Hungary.

Tachys diabrachys bisbimaculatus (Chevrolat, 1860) (= *Tachys inaequalis* Kolenati, 1845) — Cserépfalu: Hór-völgy. V. — One single specimen was found at 250 m in *Quercetum petraeae-cerris* association by singling from beneath wood-stack. Distributed sporadically in Hungary, it is known from Transdanubia (Csepreg, Siófok, Révfülöp, Tihany, Sárpentele, Érd, Pilis Mts.). At Pécs (Horvatovich 1981*a*) and in the Szigetköz (mainly in sandy waterside at Lipót and Dunasziget) it was found in greater numbers. Apart from the Bükk, it is known in the Northern Mountains from the Börzsöny Mts. (Nógrádveröce) and the Bodrogköz (Bodrogszegi (KFMS)).

Tachys micros (Fischer, 1828) — Nagyvisnyó: Elza-lak. VI. — One specimen was collected by Z. Kaszab in 1956 from waterside. Much rarer than *Tachys bistriatus*. It was found sporadically all over Hungary, mainly by singling in moist places or at light. Its localities are: Alpokalja (Csepreg, one specimen), Szigetköz (Mosonmagyaróvár, Dunakiliti, Győr and Dunaremete, in the riverside of the Danube), the environs of Budapest, Esztergom (most probably the bank of the Danube), the Great Hungarian Plain (Kalocsa, Szeged, Békés, Gyula, in the riverside of the Danube and the Körös), around the Lake Balaton (Zamárdi, Siófok, Vörs), the Börzsöny (Endrődi 1974), Bükk and Zemplén Mts. (Pálháza: Kemence-völgy, Bodrogszegi).

Tachyta nana (Gyllenhal, 1810) — Miskolc: Alabástrom-hegy, Bolhás, Csipkéskút, Disznóspatak, Forrás-völgy, Hársas-bérc, Jávor-hegy, Jávorkút, Kecskeláb-rét, Kurta-bérc, Létrás, Szinva-

forrás; Nagyvisnyó: Bálvány, Hármas-teber, Huta-rét, Sinkó-bérc; Parasznya: Kőlyuk-tető; Szilvásvárad: Őserdő, Szalajka-völgy, Tar-kő. IV, VI–IX. — A considerable number of specimens was collected between 250 and 900 m in *Aconito-Fagetum*, *Aegopodio-Alnetum*, various oak associations, plantations of Norway spruce, *Lolio-Cynosuretum* and forest clearings, mostly from beneath bark or (rarely) by sweeping. It is widely distributed in the forests of hills and mountains while sporadic in the lowlands, mostly under loose bark.

Bembidion articulatum (Panzer, 1796) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút, Lőki-patak; Miskolc: Garadna, Garadna-völgy, Hámori-tó, Jávorkút, Lillafüred, Ómassa, Szentlélek; Nagyvisnyó; Szarvaskő: Eger; Varbó: Dobrica. IV–X. — More than 200 specimens were collected in the National Park between 250 and 650 m in *Aegopodio-Alnetum* as well as in various open, moist associations, mainly by treading the ground and singling. It is widely distributed and frequent in the Great Hungarian Plain and at higher elevations, mainly in muddy and densely overgrown watersides.

Bembidion assimile (Gyllenhal, 1810) — Répáshuta: Tebepuszta; Szarvaskő: Eger. IV, VII. — Two specimens were collected by treading the ground (350 m, *Aegopodio-Alnetum* and *Typhaetum latifoliae* associations). In Hungary, it was collected in densely overgrown watersides (often by light) of the Great Hungarian Plain, the hilly regions and in the lower parts of the mountains.

Bembidion azurescens (Dalla Torre, 1877) — Miskolc: DIMÁVAG-üdülő, Lillafüred ("tógazdaság"). VII. — Two specimens are known: the old one was collected by I. Vásárhelyi in 1958, the new one was found at 550 m in *Chaerophylletum aromatici* association by treading the ground. Most specimens were collected in marshy forests of Southern Transdanubia (Horvatovich 1992*a*, 1992*b*), but it is not uncommon in the Szigetköz and there are records from the Börzsöny Mts. (Endrődi 1974), Bátorliget (Szél in Merkl 1991), Gyula in Békés county (Ádám 1981) and Hódmezővásárhely in Csongrád county. A few specimens were found in the Lake Velence region (Gárdony: Tükröspuszta and Zichyújfalu) where they were collected by light trap erected in a maize field.

Bembidion biguttatum (Fabricius, 1779) — Cserépfalu: Hór-völgy; Cserépváralja: Török-rét; Miskolc; Szarvaskő: Eger. IV, VI. — Three specimens were collected between 200 and 350 m in *Aegopodio-Alnetum* and in open wet association from beneath stones and by treading the ground. In Hungary, it is known mainly from marshy gallery forests (mainly willows) of the Great Hungarian Plain and hilly regions.

Bembidion dalmatinum Dejean, 1831 — Miskolc: Lillafüred; Nagyvisnyó: Elza-lak. III, VI, IX–X. — Three specimens were collected in the National Park, two at Lillafüred (by I. Peregi, presumably in the 1930s and by I. Vásárhelyi in 1959), one at Elza-lak (by Z. Kaszab and V. Székessy in 1956). Most of the specimens housed in the collection of the HNHM come from the Buda Mts. and the Pilis Mts. Other localities are: Bakony, Vállus, Balatonederics, Siófok, Velence Hills and Mecsek (Misina, Tubes) in Transdanubia; Dömsöd and Kecskemét in the Danube-Tisza Mid-Region; Isaszeg in the Gödöllő Hills; Börzsöny (Nógrád), Mátra (Kékes-tető, Mátrafüred, Kállók-völgye), Bükk (apart from the above localities, from Tard), Aggtelek National Park (Perkupa: Telekes-völgy), Zemplén Mts. (Sátoraljaújhely, Pálháza, Nagy-Péter-ménkő). Further localities mentioned in the literature include the following: mire and oak forest at Barcs (Horvatovich 1981*b*); Abaliget, Melegmányi-völgy (Horvatovich 1978) in the Mecsek Mts.; Balatonalmádi in the Balaton Highland; Padragkút and Veszprém (Tóth 1973) in the Bakony Mts.; Szalafő in the Alpokalja (Horvatovich 1992*c*) (Fig. 16). It is a higrophilous species which was collected near waters.

Bembidion decorum (Panzer, 1800) — Nagyvisnyó: Elza-lak. VI–VII. — A series consisting of 48 specimens was collected at waterside by Z. Kaszab and V. Székessy in 1956. This montane species is quite sporadic in Hungary. Most of the specimens were collected on the shore of the Danube and the Rába in Transdanubia. *Bembidion fulvipes* Sturm, 1827 was mentioned from

Rum (the bank of the Rába river) as new to Hungary by Horvatovich (1992*d*) but this record is incorrect since the 19 voucher specimens were misidentified and actually belong to *B. decorum*. In the HNHM, specimens are known from the following localities: Kőszeg Mts., Őrség, Szigetköz (here it is a characteristic, dominant, common inhabitant of the gravely bank of the Danube), Szentendre, Visegrád, Dömös, Zebegény, Mecsek (Zobákpuszta), Börzsöny Mts. (Jánospuszta), Mátra (Parád), Bükk and Zemplén Mts. (Pálháza) (Fig. 17). A specimen bearing "Siófok" as locality is in all probability a result of mislabelling.

Bembidion deletum Audinet-Serville, 1821 (= *Bembidion nitidulum* (Marsham, 1802)) — Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás, Lők-völgy, Lőki-patak; Miskolc: Csipkéskút, Disznós-patak, Fekete-sár, Felső-Sebes-víz, Forrás-völgy, Garadna, Hámori-tó, Jávorkút, Közép-forrás, Lillafüred, Lyukas-gerinc; Nagyvisnyó: Bánkút, Gerennavár, Veres-sár-bérc; Parasznya: Kőlyuk-tető, Soros-teber; Répáshuta: Csúnya-völgy; Szarvaskő: Eger; Szilvásvárad: Büszkés-hegy, Őserdő; Varbó: Örvény-kő. IV–IX, XI. — Fifty-seven specimens were collected between 250 and 900 m in *Aconito-Fagetum*, *Aegopodio-Alnetum*, *Tilio-Sorbetum*, *Chaerophyllo-Petasitetum*, *Anthyllido-Festucetum rubrae* and other wet, open associations. The collecting methods included treading the ground, sweep-netting, singling from stones, logs and mouldy leaf-litter. Apart from the Bükk, this montane species is known from the Alpokalja (Horvatovich 1992*c*), the Őrség, the Bakony, Vértes, Mecsek, Pilis and Zemplén Mts. (Fig. 18), mainly from moist places under waterside stones or plant debris.

Bembidion dentellum (Thunberg, 1787) — Felsőtárkány: Lénárt-forrás; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred. V, VIII–IX. — Seven specimens were collected between 300 and 500 m in densely overgrown watersides (associations: *Urtico-Aegopodietum* and *Chaerophyllo-Petasitetum*) by treading the ground. It is widely distributed in Hungary, mainly in more or less overgrown watersides of the Great Hungarian Plain and the hilly regions. In the Szigetköz, it is a characteristic and frequent species of muddy banks. In the Kiskunság National Park, it was collected mainly in marshy places, sometimes in the shore of sodic lakes (Ádám and Merkl 1986).

Bembidion doderoi (Ganglbauer, 1892) — Miskolc: Felső-Sebes-víz, Forrás-völgy, Hámori-tó; Nagyvisnyó: Sinkó-bérc; Parasznya: Soros-teber. V–VI, IX. — Sixteen specimens were collected between 250 and 600 m in *Phyllitidi-Aceretum*, *Chaerophyllo-Petasitetum* and *Anthyllido-Festucetum rubrae* associations by treading the ground, sweep-netting and singling from beneath stones. A very rare species, it is distributed in the Alps and the Carpathians. In Hungary, it was collected, apart from the Bükk, at Bakonybél in the Bakony Mts. (Tóth 1973).

Bembidion ephippium (Marsham, 1802) — Miskolc: Garadna-völgy. VII. — One single specimen was collected by I. Vásárhelyi in 1959. A halophilous species of the sodic regions of the Great Hungarian Plain. It is known also from Transdanubia (Fertő, Balatonőszöd, Siófok, Dinnyés, Székesfehérvár, Sárkeresztúr, the Bakony and Mecsek Mts.).

Bembidion guttula (Fabricius, 1792) — Felsőtárkány: Hárs-kút. V. — One single specimens was collected at 500 m in *Aegopodio-Alnetum* by treading the ground. Only a few localities are known from Hungary: Buda Mts., Pilis, Győr, Mosonmagyaróvár, Baláta-tó at Somogyszob, Kóspallag in the Börzsöny Mts. and Kompolt (specimens deposited in the HNHM), Márkó (Tóth 1973), Mecsek (Horvatovich 1978), Barcs (Horvatovich 1981*b*), Bátorliget (Kaszab and Székessy 1950, Szél in Merkl 1991). It was found usually in wet places, in hummocks or in willow and hornbeam forests.

Bembidion inoptatum (Schaum, 1857) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Hámori-tó. IV–V, IX. — Sixteen specimens were found between 250 and 300 m in *Carici acutiformis-Alnetum*, *Chaerophyllo-Petasitetum* and *Cuscuto-Calystegietum* associations. The collecting methods were treading the ground and singling from beneath stones. It is widely distributed all over the country in wet places, mainly in open associations and forest edges.

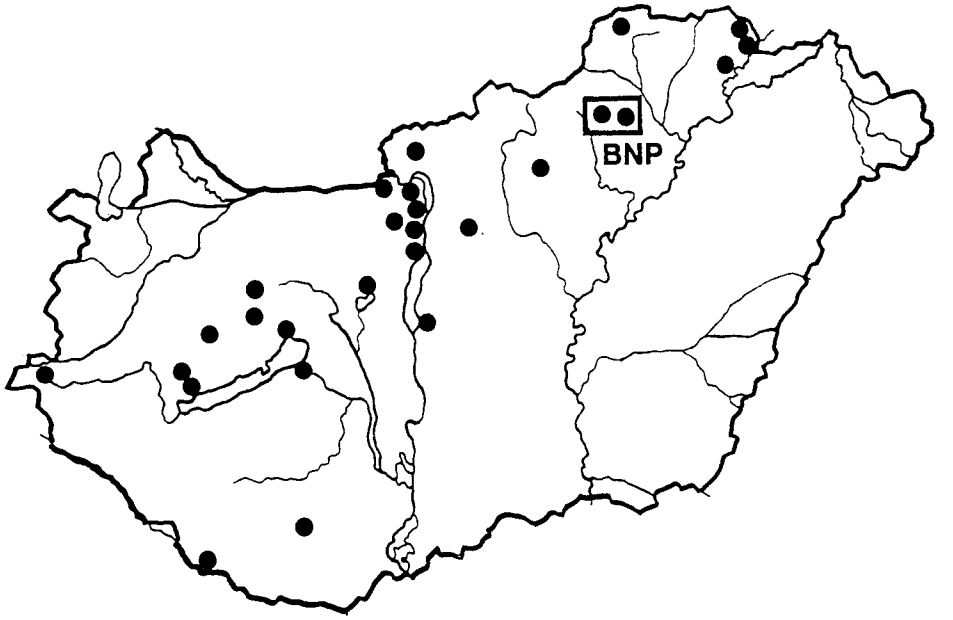


Fig. 16. Localities of *Bembidion dalmatinum* in Hungary

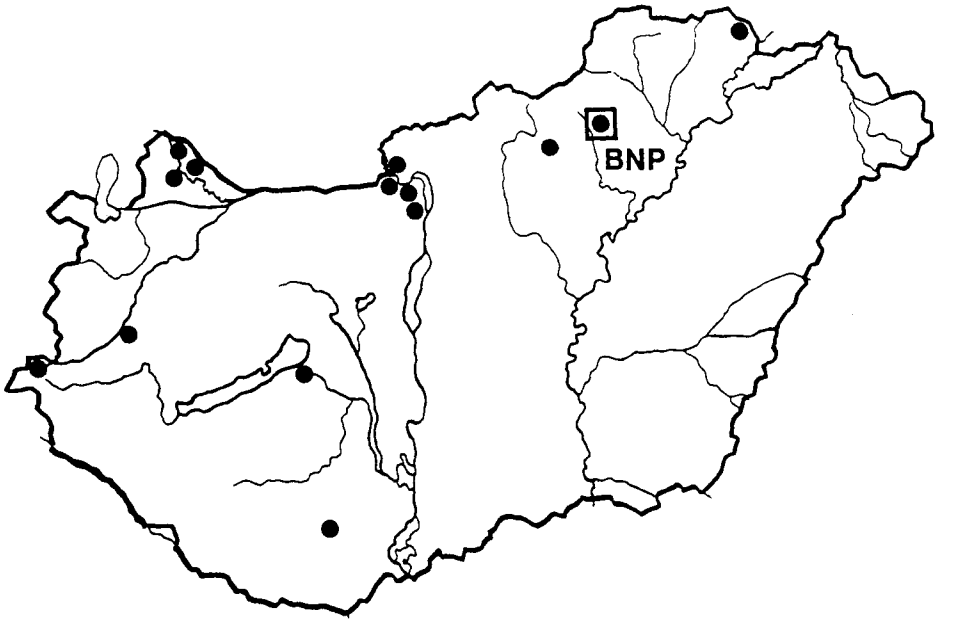


Fig. 17. Localities of *Bembidion decorum* in Hungary

Bembidion lampros (Herbst, 1784) — Bükkszentkereszt: Kerek-hegy; Cserépfalu: Hór-völgy, Szarba-völgy; Felsőtárkány: Hárs-kút; Miskolc: Disznós-patak, Hársas-bérc, Jávorkút, Közép-forrás, Lillafüred; Nagyvisnyó: Elza-lak, Huta-rét; Parasznya: Kőlyuk-tető, Sinkó-bérc, Soros-teber; Répáshuta: Tebepuszta; Szilvásvárad: Keskeny-rét; Varbó: Dobrica. IV–X. — A total of 60 specimens were collected between 250 and 800 m in various forests, in *Anthyllido-Festucetum rubrae* and *Lolio-Cynosuretum* by pitfall traps, treading the ground, at light and by singling from beneath stones and logs. It is widely distributed and frequent in moist forests and open associations of Hungary but less common than the similar *B. properans*.

Bembidion laticolle (Duftschmid, 1812) — Miskolc: Garadna-völgy. V. — One specimen was collected by I. Vásárhelyi in 1958. It occurs in great numbers in the bank of the Danube (Szigetköz: muddy shore at Ásványráró) and the Tisza (Tivadar — Horvatovich 1992*a*). It is rare in the Great Hungarian Plain (Hortobágy National Park and Debrecen). In Transdanubia it is known from Tihany (Tóth 1973) and several localities of the Southern and Western Transdanubia (Horvatovich 1990, 1992*a*).

Bembidion lunulatum (Fourcroy, 1785) — Miskolc: Hámori-tó; Nagyvisnyó: Bán-patak. V, VII. — One specimen was collected at 300 m in *Chaerophyllo-Petasitetum* association by treading the ground. It occurs more frequently in the Great Hungarian Plain and the hilly regions, in moist (sometimes sodic) meadows, watersides and forest edges.

Bembidion mannerheimi (Sahlberg, 1827) (= *Bembidion unicolor* (Chaudoir, 1850)) — Bélapátfalva: Ravaszlyuk; Felsőtárkány: Hárs-kút, Hereg-rét, Lénárt-forrás, Lőki-patak; Miskolc: Garadna-völgy; Nagyvisnyó: Elza-lak; Varbó: Dobrica. V–VII, IX. — Thirty-eight specimens were captured between 350 and 500 m in *Querco petraeae-Carpinetum*, *Carici acutiformis-Alnetum* and *Chaerophyllo-Petasitetum* associations by treading the ground, pitfall traps, sifting and singling from rotten wood. Sporadic in Hungary, it lives mainly in moist forests. Its localities are: Cserhát Mts. (Alsótold: Sás-tó), Mátra Mts. (Mátrafüred: Rákóczi-forrás; Mátraszentimre: Ván-

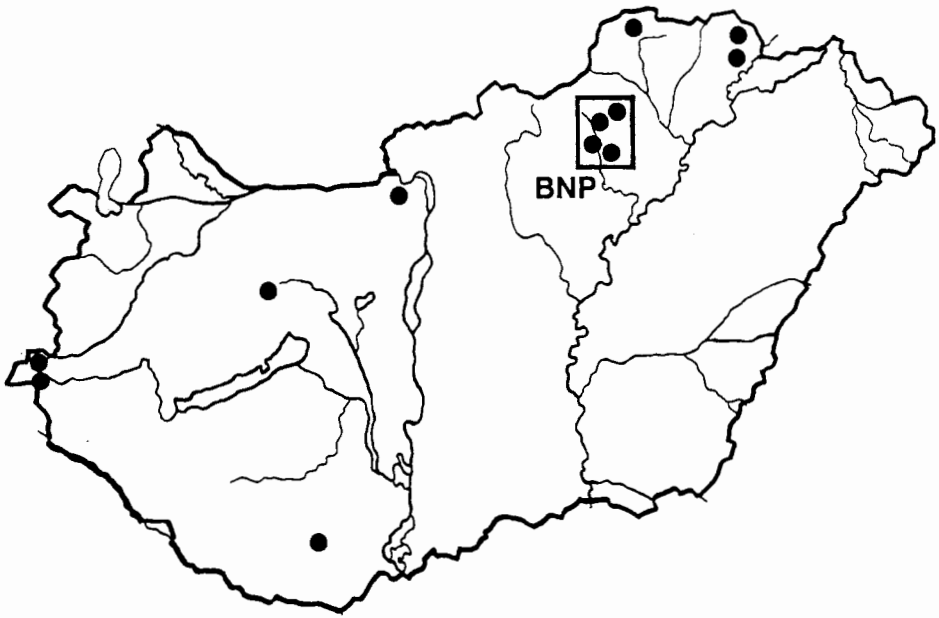


Fig. 18. Localities of *Bembidion deletum* in Hungary

dor-forrás), Zemplén Mts. (Pálháza), the Great Hungarian Plain (Újszentmargita: Hortobágyi NP; Bátorliget, Gyula); Transdanubia (Mesztegnyő; Nagybajom; Somogyszob: Baláta-tó).

Bembidion minimum (Fabricius, 1792) — Cserépfalu: Hór-völgy; Miskolc: DIMÁVAG-üdülő, Garadna, Garadna-völgy, Hámori-tó, Jávorkút; Nagyvisnyó: Elza-lak; Szilvásvárad: Keskeny-rét; Varbó: Fónagyság. IV–VI, IX–X. — Twenty-five specimens were collected between 250–850 m in various wet, open associations, in *Anthyllido-Festucetum rubrae* as well as in *Aconito-Fagetum* by treading the ground and singling from beneath stones and rotten wood of beech. It is widely distributed in Hungary, especially common in open, plantless (often sodic) watersides of the Great Hungarian Plain.

Bembidion octomaculatum (Goeze, 1777) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Cserépváralja: Török-rét; Felsőtárkány: Hárs-kút, Lőki-patak; Miskolc: Garadna-völgy, Hámori-tó, Jávorkút, Lillafüred; Nagyvisnyó: Elza-lak; Szarvaskő: Eger. IV–VII, IX. — A great number of specimens were collected between 300 and 650 m in *Aegopodio-Alnetum*, *Alismato-Eleocharidetum* and *Urtico-Aegopodietum* associations by sweep-netting, treading the ground and singling from beneath stones. It is widely distributed and common all over the country in wet, overgrown treeless associations and forest margins.

Bembidion properans (Stephens, 1828) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Derda-kaszáló, Hór-völgy; Miskolc: Bolhás, Disznós-patak, Jávorkút, Közép-forrás, Újmassa; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Hármas-teber; Répáshuta; Szarvaskő: Veres-oldal. IV–IX. — A total of 42 specimens were collected between 250 and 850 m in *Melittidi-Fagetum*, *Aconito-Fagetum*, *Mercuriali-Tilietum* associations, in wet and dry meadows by treading the ground, sweep-netting and singling from beneath stones and from rotten wood. It is one of the most common species of *Bembidion* in our country, often in agricultural lands.

Bembidion quadrimaculatum (Linnaeus, 1761) — Bükkzsérc: Bocfa-lápa; Cserépfalu: Hór-völgy, Ódorvári rom; Miskolc: Bolhás, Felső-Sebes-víz, Garadna-völgy, Hámori-tó, Jávorkút, Közép-forrás, Lillafüred, Ómassa; Szarvaskő: Veres-oldal; Szilvásvárad: Tar-kő. IV–XI. — Fifty-four specimens were collected between 250 and 650 m in *Melittidi-Fagetum*, *Phyllitidi-Aceretum*, *Corno-Quercetum pubescentis*, *Chaerophyllo-Petasitetum*, *Alopecuro-Arrhenatheretum* and *Anthyllido-Festucetum rubrae* associations by treading the ground, sweep-netting, singling from rotten wood, from beneath stones and at light. Widely distributed and frequent in Hungary, it prefers overgrown watersides but occurs in forests and sodic places as well.

Bembidion quadripustulatum Audinet-Serville, 1821 — Varbó: Dobrica. VII. — One single specimen was collected at 350 m in *Alismato-Eleocharidetum* association by treading the ground. A frequent but not common species occurring in wet places.

Bembidion semipunctatum (Donovan, 1806) — Miskolc: Garadna, Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó: Bán-patak; Szarvaskő: Eger. IV–V, VIII–IX. — Twenty-one specimens were collected between 250 and 300 m in *Aegopodio-Alnetum* and waterside associations by treading the ground. Widely distributed and frequent mainly in the Great Hungarian Plain and the hills. It is typical for the more or less densely overgrown muddy watersides.

Bembidion subcostatum javurkovae Fassati, 1944 — Cserépfalu: Hór-völgy; Cserépváralja: Felső-szoros; Felsőtárkány: Lőki-patak; Miskolc: Forrás-völgy, Garadna-völgy, Hámori-tó, Közép-forrás, Lillafüred; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Huta-rét; Szarvaskő: Eger; Szilvásvárad: Szalajka-völgy. IV–XI. — Nineteen specimens were collected between 250 and 850 m, in *Querco petraeae-Carpinetum*, *Mercuriali-Tilietum*, *Carici acutiformis-Alnetum*, *Chaerophyllo-Petasitetum* and other wet open associations by treading the ground, sweep-netting and singling from beneath stones. This species is extremely similar to *B. tetracolum*, only the study of the hind wings and male genitalia provides reliable distinction. Apart from the Bükk Mts., the following localities are known in Hungary: Buda Mts.: Hűvösvölgy; Siófok; Bakony Mts.: Pápa; Őrség: Rátót, Rába-part; Mecsek Mts.: Pécs; Börzsöny Mts.: Nógrádverőce; Mátra Mts.: Parádsasvár; Kalocsa; Kiskunsági NP: Tabdi. The single specimen from the last mentioned locality was erro-

neously reported under the name *Bembidion ustulatum* (= *B. tetracolum*) by Ádám and Merkl (1986). The first Hungarian record of *B. subcostatum* from the bank of the Rába river by Horvatovich (1992*c*) is based on misidentified specimens of *B. testaceum* (Duftschmid, 1812). The localities of the available specimens suggest a montane distribution in Hungary. It is locally frequent in the mountains, sporadic in the Great Hungarian Plain.

Bembidion tenellum (Erichson, 1837) — Miskolc: Garadna-völgy; Nagyvisnyó: Elza-lak. V–VII. — Two specimens were collected by I. Vásárhelyi in 1959 and Z. Kaszab and V. Székessy in 1956 (in waterside). It is widely distributed in Hungary but much rarer than the very similar *Bembidion minimum*. In the Great Hungarian Plain, it proved to be characteristic for sodic areas (Hieke 1983, Ádám and Merkl 1986).

Bembidion tetracolum Say, 1823 (= *Bembidion ustulatum* (Linnaeus, 1758)) — Nagyvisnyó: Huta-rét. VI. — One specimen was taken at 850 m from under stone in *Lolio-Cynosuretum* association. In Hungary, it is most numerous in the Szigetköz, along the shore of the Danube. Other reliable localities are Rátót: Rába-part (Vas county) Kalocsa (Danube-Tisza Mid-Region), Tiszacsege (Hortobágy National Park) and Gyula: bank of Fekete-Körös (Békés county). As it differs from *B. subcostatum* only in the structure of the male genitalia and the length of the hind wings, the former records of *B. tetracolum* (e. g. Tóth 1973, Endrődi 1974) need a thorough revision.

Bembidion tetragrammum illigeri Netolitzky, 1914 (= *Bembidion illigeri* Netolitzky, 1914) — Bélapátfalva: Ravaszlyuk; Felsőtárkány: Hárs-kút; Miskolc: DIMÁVAG-üdülő, Jávorkút; Nagyvisnyó: Bán-patak, Elza-lak. V–VII, IX. — Twenty specimens were collected between 300 and 650 m in *Aegopodio-Alnetum*, *Carici acutiformis-Alnetum*, *Chaerophyllo-Petasitetum* and *Anthyllido-Festucetum rubrae* associations by treading the ground and singling. Widely distributed but relatively rare in Hungary. It is found in watersides, wet places and forest margins.

Bembidion tibiale (Duftschmid, 1812) — Miskolc: Felső-Sebes-víz, Forrás-völgy, Garadna-völgy, Hámori-tó; Nagyvisnyó: Elza-lak; Szarvaskő: Tardos-hegy, Veres-oldal. V–IX. — A total of 94 specimens were collected between 250 and 550 m in overgrown streamsides by treading the ground, in *Potentillo-Festucetum pseudodalmaticae* and *Poo pannonicae-Quercetum petraeae* associations by sweep-netting and singling from beneath stones. In Hungary, it was collected in the Alpokalja, in various localities of the mountains and in Southern Transdanubia (Dombóvár; Mecsek: Mánfa, Melegmányi-völgy, Mély-völgy) (Fig. 19). It is a montane species, absent from the Great Hungarian Plain.

Bembidion varium (Olivier, 1795) — Cserépfalu: Hór-völgy; Cserépváralja: Török-rét; Felsőtárkány: Hárs-kút, Lénárt-forrás, Lőki-patak; Miskolc: Barátság-kert, DIMÁVAG-üdülő, Garadna-völgy, Hámori-tó, Jávorkút, Lillafüred; Nagyvisnyó: Elza-lak; Répáshuta; Szarvaskő: Eger, Veres-oldal; Varbó: Dobrica, Fónagyság. IV–X. — A total of 188 specimens were collected between 250 and 650 m in *Aegopodio-Alnetum*, in various wet, open associations by treading the ground and in *Potentillo-Festucetum pseudodalmaticae* by singling from beneath stones. It is one of the most common species of *Bembidion* in Hungary, being most common in more or less densely overgrown muddy watersides.

Asaphidion flavipes (Linnaeus, 1761) — Cserépfalu: Hór-völgy; Miskolc: Disznós-patak, Hámori-tó, Jávorkút, Közép-forrás; Nagyvisnyó: Elza-lak; Parasznya: Kőlyuk-tető, Soros-teber; Szarvaskő: Eger; Varbó: Dobrica. IV–VII. — Twenty-one specimens were collected in *Aconito-Fagetum*, *Querco petraeae-Carpinetum*, *Aegopodio-Alnetum*, *Chaerophyllo-Petasitetum* and in other waterside associations as well as in *Anthyllido-Festucetum rubrae* by treading the ground, sweep-netting and singling from rotten wood. It is widely distributed in forests, forest edges and watersides.

Patrobus atrorufus (Strøm, 1768) — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Hosszú-völgy; Felsőtárkány: Lőki-patak; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó: Elza-lak. V–VII, IX. — Thirty-one specimens were collected between 250 and 350 m in *Carici acutiformis-Alnetum*, *Aegopodio-Alnetum* and *Chaerophyllo-Petasitetum* associations by pitfall traps and

treading the ground (old specimens also by sifting). It occurs mainly in the mountains and hills of Transdanubia, in the flood-plains of the Danube and the Tisza (Solt, Kalocsa, Lakitelek: Tőserdő, Szeged). In Transdanubia it reaches the beech zone. In the Szigetköz its typical habitat is the soft-wood riverine forest. Apart from the Bükk, it is known from the Börzsöny Mts. (Nógrádverőce, Nógrád) and the Gödöllő Hills (Isaszeg) and it may occur in other parts of the Northern Mountains, too.

Anisodactylus binotatus (Fabricius, 1787) — Bükkzsérc: Varga-lápa; Miskolc: Garadna, Garadna-völgy, Hámori-tó, Jávorkút. V–VII, IX. — Twelve specimens were found between 350 and 650 m in *Quercetum petraeae-cerris*, *Chaerophyllo-Petasitetum* and in *Alismato-Eleocharidetum* associations. It is widely distributed in Hungary, more frequent in the marshy places of the lowlands and hills.

Anisodactylus nemorivagus (Duftschmid, 1812) — Felsőtárkány: Hárs-kút; Nagyvisnyó: Ágazat-bérc (= "Nagy-bérc"), Elza-lak, Nagy-völgy; Varbó: Dobrica. III, V–VII. — Five specimens were collected between 500 and 820 m in *Querco petraeae-Carpinetum*, *Aegopodio-Alnetum* and *Chaerophyllo-Petasitetum* associations by treading the ground, from rotten wood and from beneath stones. It is distributed in the lowlands, hills and mountains but rarer and more sporadic than the previous species.

Anisodactylus signatus (Panzer, 1797) — Cserépfalu: Hór-völgy, Kis-Piliske; Felsőtárkány: Hereg-rét, Tar-kő; Miskolc: Garadna-völgy, Hámori-tó, Újmassa; Nagyvisnyó: Csurgói erdészlak; Répáshuta: Pénzpatak; Szarvaskő: Tardos-hegy; Szilvásvárad: Keskeny-rét. IV–VII, IX. — Twenty-nine specimens were collected between 250 and 900 specimens in *Mercuriali-Tilietum*, *Tilio-Fraxinetum*, *Querco petraeae-Carpinetum* and various wet and dry open associations by sweep-netting, singling and from beneath stones. It occurs almost everywhere in Hungary, one of the most constant members of the carabids in agricultural lands (Horvatovich and Szarukán 1986).

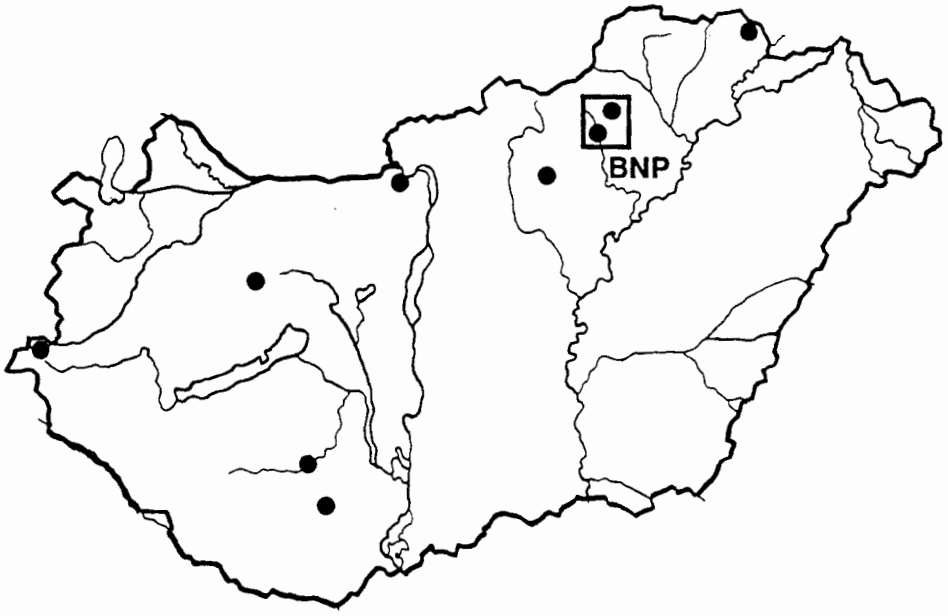


Fig. 19. Localities of *Bembidion tibiale* in Hungary

Diachromus germanus (Linnaeus, 1758) — Cserépfalu: Hór-völgy; Miskolc: Hámori-tó. V–IV. — Four specimens were collected between 250 and 350 m in *Querco petraeae-Carpinetum*, *Mercuriali-Tilietum* and *Chaerophyllo-Petasitetum* associations by sweeping, singling and treading the ground. It is locally frequent in wet forests and other wet places of the lowlands and hilly regions.

Ophonus azureus (Fabricius, 1775) — Répáshuta: Pénzpatak; Varbó: Dobrica. V, VIII. — Three specimens were collected, partly at 350 m from beneath stones in *Alismato-Eleocharidetum* association. A thermophilous species occurring mainly in open associations of the lowlands and hills; a typical element of the rock and sand swards and dry pastures.

Ophonus cordatus (Duftschmid, 1812) — Nagyvisnyó: Nagy-völgy. VII. — One specimen was collected by M. Reskovits in 1955. Rare in Hungary, its localities are the following: Transdanubia: Mosonmagyaróvár, Döbrönte (Vár-hegy), Öcs (Kab-hegy), Kádárta, Gárdony: Tükröspuszta, Budapest, Budatétény, Nagykovácsi (Nagy-szénás and Julianna-major); Danube-Tisza Mid-Region: Bugac; Northern Mountains: Mátra (Parád), Bükk, Zemplén Mts., (Nagy-Milic), Sátoraljaújhely (collection of HNHM, Tóth 1973, Ádám and Merkl 1986, Kádár and Szél 1989) (Fig. 20). It was collected in dry, warm grasslands in the hilly regions and on sand dunes in the Danube-Tisza Mid-Region. The locality at Tükröspuszta was a maize field, while at Julianna-major was an apple plantation. A light trap was operated in these localities (Kádár and Szél 1989).

Ophonus diffinis (Dejean, 1829) — Répáshuta: Pénzpatak. V. — One specimen was captured by light trap in 1964. An inhabitant of the short-grassy dry steppic meadows, it was encountered in several localities of Transdanubia and the Great Hungarian Plain. The above-mentioned specimen from Répáshuta represents the only record from the Northern Mountains.

Ophonus nitidulus Stephens, 1828 (= *Ophonus punctatulus* (Duftschmid, 1812)) — Miskolc: Garadna, Garadna-völgy, Hársas-hegy, Lillafüred; Nagyvisnyó: Elza-lak; Szarvaskő: Tardos-hegy. V–VI. — Fifteen specimens were collected between 350 and 820 m in *Atropetum belladonnae*,

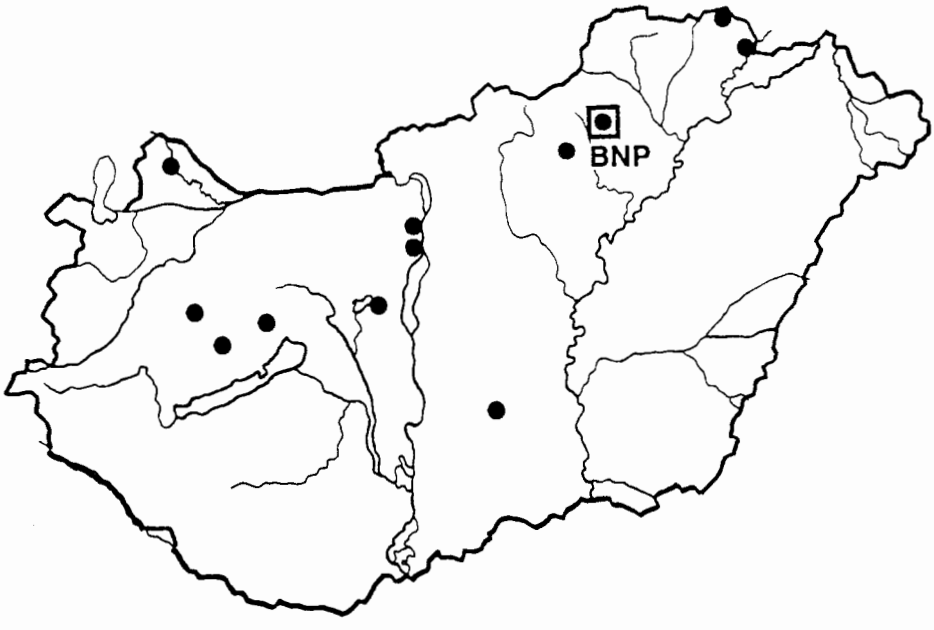


Fig. 20. Localities of *Ophonus cordatus* in Hungary

Fragario-Rubetum, *Poo pannonicae-Quercetum petraeae* and *Chaerophyllo-Petasitetum* associations from beneath stones and by sifting. Sporadic in Hungary. It is known from wet and dry places all over the country.

Ophonus puncticeps Stephens, 1828 — Cserépfalu: Ódorvári rom; Miskolc: Bánkút; Szilvásvárad: Tótfalu-völgy; Varbó: Dobrica. V, VIII–IX. — Ten specimens were collected between 350 and 550 m in *Corno-Quercetum* and *Alismato-Eleocharidetum* associations by singling, from beneath stones and at light. It is not uncommon in wet and drier places of the lowlands and hills as well as at lower altitudes of the mountains.

Ophonus rufibarbis (Fabricius, 1792) (= *Ophonus brevicollis* (Audinet-Serville, 1821)) — Bükkzsérc: Hosszú-völgy; Cserépfalu: Alsó-Csákány; Miskolc: Hámori-tó; Répáshuta: Pénzpatak. V–VI. — Four specimens were collected between 300 and 500 m in *Aegopodio-Alnetum*, *Ceraso-Quercetum pubescentis* and *Chaerophyllo-Petasitetum* associations by sweep-netting, treading the ground and by singling. It is distributed in the forests and open associations in the Great Hungarian Plain and the hilly regions.

Ophonus rupicola (Sturm, 1818) — Bélapátfalva: Ravaszlyuk; Parasznya: Soros-teber; Szilvásvárad: Szalajka-völgy. IV–V, VIII. — Seven specimens were swept and singled, partly between 350 and 450 m in *Anthyllido-Festucetum rubrae* and *Cynodonto-Festucetum pseudovinae* associations. In Hungary, it was collected in various forests, dry and waterside meadows.

Ophonus sabulicola (Panzer, 1796) — Répáshuta: Pénzpatak. V. — One specimen was captured by light trap. Outside the boundaries of the National Park, it was captured at Tard, too. Most of the other known localities are in Transdanubia: Budapest: Hárs-hegy; Velence Lake; Berhida, Csopak, Tihany, Vászoly (specimens in CRE), Balatonederics (Tóth 1973), Balatonőszöd; Mecsek (Horvatovich 1978); Ikrény: Ószhelypuszta. In the Great Hungarian Plain, it is known only from Kalocsa (Ádám and Merkl 1986), Dömsöd, Kisújszállás and Mezőberény (Ádám 1981).

Ophonus schaubergerianus Puel, 1937 (= *Ophonus seladon* (Schauberger, 1927)) — Mónosbél: Tardos; Varbó: Dobrica. VII. — Three specimens were taken at 300 m in *Querco petraeae-Carpinetum* association from rotten wood (in wet place) and singled in *Cardarietum drabae* association. Voucher specimens in the HNHM are known from the following localities: Budapest: Buda Mts., Kelenföld; Budaörs: Csíki-hegyek; Törökbálint; Velence Lake; Balatonőszöd; Tata; Csepreg; Ikrény: Ószhelypuszta; Kalocsa; Szeged; Zemplén Mts. and Bátorliget (a specimen in CRE). It is obvious from these localities that *Ophonus schaubergerianus* is an inhabitant of the plains, the hills and the lower regions of the mountains. This is the first authentic record of its Hungarian occurrence, since the former records from Kétegyháza in Békés county (Ádám 1983), Lakitelek and Ócsa in the Kiskunság National Park (Ádám and Merkl 1986) proved to be misidentifications of *Ophonus melletii*. It is not impossible that Tóth's (1973) record of "*H.* (*Metophonus* BED.) *seladon* SCHAUBG." from Balatonederics and Bodajk refers to *O. schaubergerianus* because the description of *O. seladon* in Csiki's (1946) monograph fits well *O. schaubergerianus* (Tóth most likely used this monograph during the identification of his specimens). Although Horvatovich (1982) recognized the two closely related species (*"O. rufibarbis"* and *"brevicollis"*), and gave a correct diagnosis, he incorrectly used the names: under *rufibarbis* he described *schaubergerianus*. At the same time he (Horvatovich 1982) refers to 30 *rufibarbis* (= *brevicollis*) specimens collected in the Hortobágy National Park (Egyek: Ohati erdő) and correctly identified by L. Ádám which were misidentified by him as *schaubergerianus* (= *rufibarbis* sensu Horvatovich). Therefore, it cannot be decided to which species belong the specimens published by him under the name *rufibarbis* in his subsequent papers. It should be noted that a thorough revision of an important part of the distributional data of the Hungarian *Ophonus* species is badly needed.

Ophonus signaticornis (Duftschmid, 1812) — Szarvaskő: Veres-oldal. V. — One single specimen was swept at 400 m in *Potentillo-Festucetum pseudodalmaticae* association. A forest

steppe species, it was collected in the Great Hungarian Plain and the hills, in dry grasslands and agricultural lands (Horvatovich and Szarukán 1986).

Harpalus affinis (Schrank, 1781) (= *Harpalus aeneus* (Fabricius, 1775)) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy, Közép-szék; Cserépváralja: Kaptárkövek; Felsőtárkány: Tar-kő; Miskolc: Bolhás, Jávorkút, Nagy-mező; Nagyvisnyó: Ablakos-kő-völgy, Hármaskút, Nagy-István erőse; Répáshuta: Pénzpatak; Szilvásvárad; Varbó: Dobrica. III–VIII. — It was singled between 250 and 850 m in *Querco petraeae-Carpinetum*, *Robinietum pseudoacaciae*, *Pastinaco-Arrhenatheretum*, *Lolio-Cynosuretum* and *Alismato-Eleocharidetum* associations from beneath stones, from rotten wood and at light. It is distributed all over the country from the Great Hungarian Plain to the mountains, collected in short-grassy swards and pastures, often from beneath dung. It occurs in sodic areas as well.

Harpalus anxius (Duftschmid, 1812) — Bélapátfalva: Melés-domb, Ravaszlyuk. IV. — Two specimens were singled at 350 m from *Cynodonto-Festucetum pseudovinae* association. Distributed in the Great Hungarian Plain, the hilly regions and in the lower parts of the mountains, it is a thermophilous species. It was collected in short-grassy places including sodic pusztas of the lowlands and in rock swards of the hills.

Harpalus atratus Latreille, 1804 — Cserépfalu: Hór-völgy, Ódorvári rom; Miskolc: Garadna-völgy, Hámori-tó; Parasznya: Soros-teber; Szarvaskő: Eger, Tardos-hegy. III–VII, IX. — The specimens were collected between 250 and 400 m in *Melittidi-Fagetum*, *Querco petraeae-Carpinetum*, *Aegopodio-Alnetum*, *Ceraso-Quercetum pubescentis* and *Chaerophyllo-Petasitetum* associations by pitfall traps, sweep-netting and singling from beneath stones and logs. It is widely distributed and relatively frequent in various forest associations all over the country.

Harpalus calceatus (Duftschmid, 1812) — Répáshuta: Pénzpatak; Mónosbél: Tardos. V–VI. — Two specimens are known from this area. The first was captured by light trap in 1964 at Répáshuta, the other by M. Reskovits in 1954. A forest steppe species, it is frequent or locally common in the open habitats of the lowlands and hills, often in agricultural lands.

Harpalus distinguendus (Duftschmid, 1812) (= *Harpalus psittaceus* (Fourcroy, 1785)) — Bélapátfalva: Ravaszlyuk; Cserépfalu: BNP-kutatóház, Hór-völgy; Cserépváralja: Kaptárkövek; Felsőtárkány: Hereg-rét; Nagyvisnyó: Elza-lak, Nagy-völgy; Szilvásvárad. III–VI. — The specimens were collected between 250 and 500 m in *Chaerophyllo-Petasitetum*, *Cynodonto-Festucetum pseudovinae* and *Cuscuto-Calystegietum* associations by singling from beneath stones and accidentally in puddles. It is one of the most common species of *Harpalus* in Hungary, very often in agricultural lands (Horvatovich and Szarukán 1986).

Harpalus griseus (Panzer, 1797) — Bélapátfalva: Ravaszlyuk; Felsőtárkány: Lők-völgy; Miskolc: Garadna-völgy; Nagyvisnyó: Ablakos-kő-völgy, Ágazat-bérc (= "Nagy-bérc") Elza-lak, Bánkút; Szarvaskő; Szilvásvárad: Szalajka-völgy; Varbó: Dobrica. IV–VIII. — It was singled between 300 and 400 m in various forest associations as well as wet and dry open habitats from beneath stones and logs. It is widely distributed and common in Hungary, one of the most common ground beetles in agricultural lands (Horvatovich and Szarukán 1986).

Harpalus honestus (Duftschmid, 1812) — Bükkszentkereszt; Miskolc: Garadna-völgy, Hosszú-bérc; Nagyvisnyó: Elza-lak, Faktor-rét. IV–VI. — Nine specimens were collected in the 1950s and 1960s by I. Allodiatoris, Z. Kaszab, V. Székessy and M. Reskovits. A rare species. It is known, besides the Bükk Mts., from the following localities: environs of Budapest (mainly the Buda Mts.), Pilis Mts., Érd, the Lake Balaton area, the Velence Hills, Mecsek Mts., Villány Mts., Mátra and Zemplén Mts. as well as in the Great Hungarian Plain (Tatárszentgyörgy and Mezőcsát) (Fig. 21). Literature data include the Bakony (Tóth 1973) and the Börzsöny Mts. (Endrődi 1974). A detailed zoogeographical evaluation of this species was given by Tóth (1968).

Harpalus hospes Sturm, 1818 — Bélapátfalva: Ravaszlyuk. V. — One specimen was singled from sheep droppings at 300 m in *Cynodonto-Festucetum pseudovinae* association. A sporadic,

thermophilous forest steppe species. It was collected locally in numbers, e.g. at Tiszasüly in the Great Hungarian Plain and in the Aggtelek National Park.

Harpalus latus (Linnaeus, 1758) (= *Harpalus fulvipes* (Fabricius, 1801)) — Bélapátfalva: Ravaszlyuk; Cserépfalu; Miskolc: Forrás-völgy, Garadna; Nagyvisnyó: Bálvány; Szilvásvárad: Keskeny-rét; Varbó: Dobrica. V–VII. — Nine specimens were collected between 250 and 850 m in *Melittidi-Fagetum*, *Querco petraeae-Carpinetum*, *Cynodonto-Festucetum pseudovinae* and *Chaerophyllo-Petasitetum* associations by sweep-netting and singling from beneath stones and rotten wood. It occurs mainly in various forest associations all over the country. The Hungarian localities are as follows: Transdanubia: Velence Hills, Bakony Mts. (Tóth 1973), environs of Hévíz, the Béda-Karapancsa Landscape Protection Area (Horvatovich 1992*a*), the Kiskunság and Hortobágy National Parks, Békés county (L. Ádám, personal communication) and Bátorliget (Szél in Merkl 1991); Northern Mountains: Börzsöny Mts. (Endrődi 1974), Mátra, Bükk and Zemplén Mts. and Aggtelek National Park.

Harpalus marginellus Dejean, 1829 — Cserépfalu: Derda-kaszáló; Felsőtárkány: Fekete-len, Vörös-kő-völgy; Miskolc: Disznós-patak, Garadna-völgy, Három-kúti-völgy, Lillafüred, Lyukasgerinc; Nagyvisnyó: Bánkút, Hármaskút, Nagy-völgy; Szilvásvárad: Keskeny-rét; Varbó: Dobrica. IV–IX. — Twenty-seven specimens were collected between 300 and 850 m in *Aconito-Fagetum*, *Melittidi-Fagetum*, *Querco petraeae-Carpinetum*, *Anthyllido-Festucetum rubrae*, *Pulsatillo-Festucetum rupicolae* and *Lolio-Cynosuretum* associations by treading the ground and singling from beneath stones and rotten wood. Sporadic in Hungary, it is known from various forests of Transdanubia in the Alpokalja, the Mecsek Mts. and several localities in Southern Transdanubia (Horvatovich 1992*a*). Apart from the Bükk, it is known in the Northern Mountains only from the Börzsöny Mts. (Endrődi 1974).

Harpalus quadripunctatus Dejean, 1829 — Bükkszentkereszt; Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Jávorkút, Sugaró, Újmassa; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Hár-

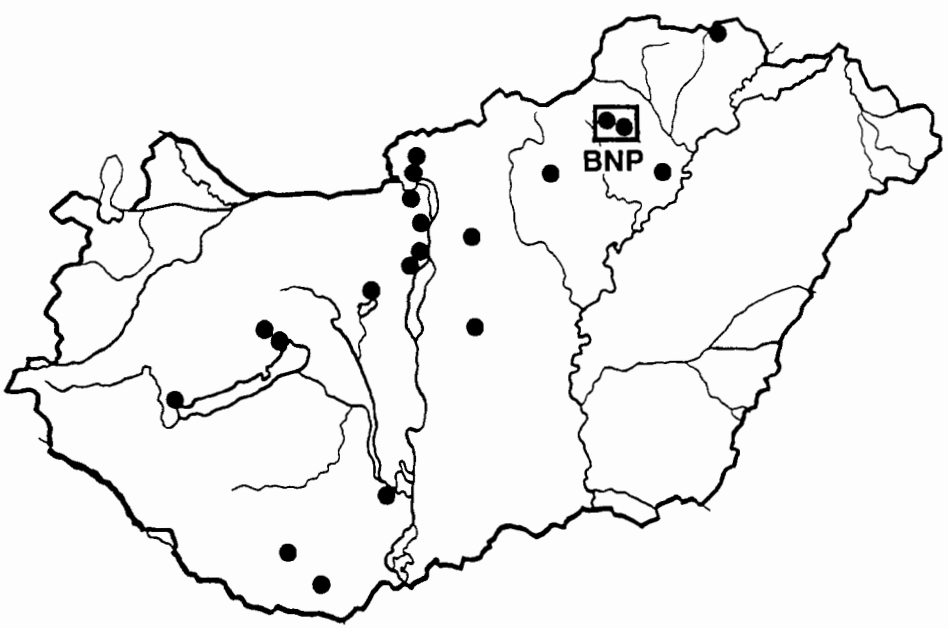


Fig. 21. Localities of *Harpalus honestus* in Hungary

maskút, Huta-rét; Parasznya: Soros-teber. V–VIII. — Thirteen specimens were collected between 250 and 850 m in various forest associations and mountain meadows by sweeping, pitfall traps and singling from beneath stones. Only a few localities are known in Hungary, exclusively in the mountains: Írott-kő in the Kőszeg Mts. (Horvatovich 1992*c*), Zirc, Veszprémvarsány (hornbeam-oak forest) (BNHM), Kőris-hegy at Bakonyszűcs (beech forest), Mátra, Bükk and Zemplén Mts. (Nagy-Milic) (Fig. 22).

Harpalus roubali Schauberger, 1928 (= *Harpalus caspius roubali* Schauberger, 1928) — Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Nagyvisnyó: Elza-lak. III–VI. — Seven specimen are known from the area investigated. The new specimens were collected at 250 m in *Cuscuto-Calystegietum* association from beneath stones. This species is extremely similar to *Harpalus dimidiatus* (Rossi, 1790) but clearly differs in the shape of the apex of aedeagus as well as the angle of the basal and lateral margins of the elytra (Figs. 23–26). A revision of the specimens from the Carpathian Basin deposited in the HNHM revealed that the two species were formerly confused. Csiki (1946) described the differences in the aedeagus but did not provide figures. Obviously, the separation of the two species is quite difficult when using the most widely accepted identification book (Freude 1976) where the misleading drawings of *dimidiatus* and *roubali* are not in harmony with the text. As a result, Hungarian faunists mentioned only *H. dimidiatus*. Horvatovich (1993) listed *H. roubali* as a species of uncertain occurrence. In Hungary, however, *H. roubali* is the more frequent and more widely distributed species. It is found in the larger part of Transdanubia, the Northern Mountains and sporadically in the Great Hungarian Plain (Fig. 27). On the contrary, *Harpalus dimidiatus* occurs only in Transdanubia (Fig. 28) but uncommon even there (mainly in dolomite and limestone rock swards of the Mecsek and Bakony Mts. as well as Buda Mts.).

Harpalus rubripes (Duftschmid, 1812) — Bélapátfalva: Ravaszlyuk; Felsőtárkány: Hereg-rét; Miskolc: Garadna-völgy, Jávorkút; Mónosbél: Tardos; Nagyvisnyó: Bálvány, Elza-lak, Veres-sárbérc; Szilvásvárad: Bácsó-völgy. IV–VII. — Fifteen specimens were singled and swept between

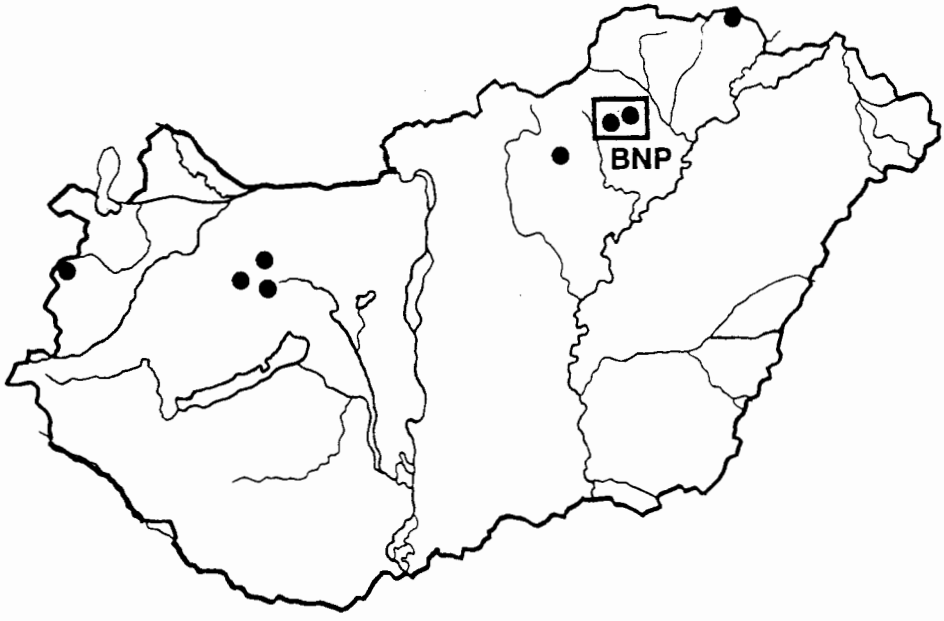


Fig. 22. Localities of *Harpalus quadripunctatus* in Hungary

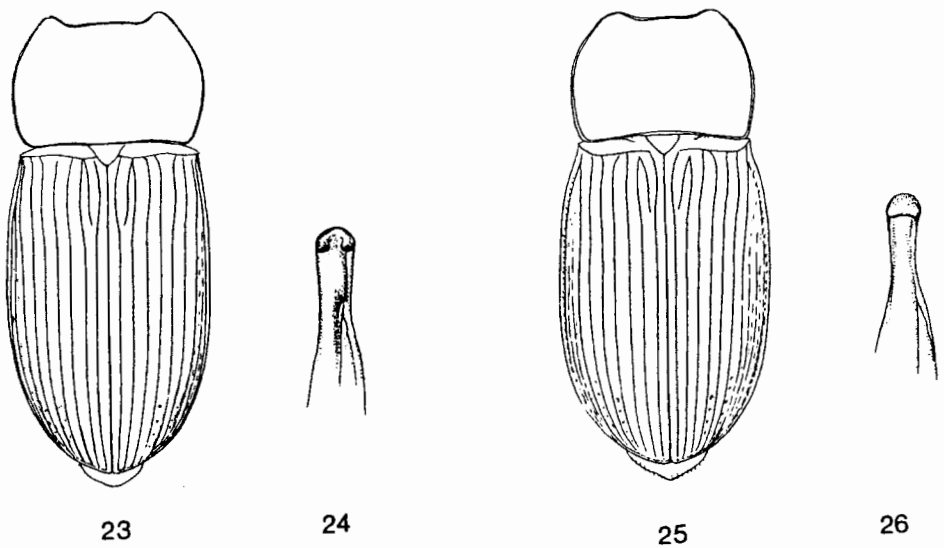
300 and 800 m in various open associations. It was found mainly in wet and dry grasslands of the hilly and mountainous regions but specimens are known from the Great Hungarian Plain (Kiskunság and Hortobágy National Parks, Bátorliget) as well.

Harpalus rufipalpis Sturm, 1818 (= *Harpalus rufitarsis* (Duftschmid, 1812)) — Bükkzsérc: Bánya-hegy. VII. — One specimen was collected by M. Reskovits in 1955. This species is sporadic in the Carpathian Range. Apart from the Bükk Mts., only a few localities are known in Hungary: Bakony Mts. (Tóth 1973), Érd (collection of HNHM), Börzsöny Mts. (Endrődi 1974). Kuthy (1896 [1897]) mentioned it from Pellérd (Baranya county) and from the environs of Lake Fertő. In his hand-written glossaries, E. Csiki listed the environs of Szeged.

Harpalus rufipes (De Geer, 1774) — Cserépfalu: Hór-völgy, Kis-Piliske; Felsőtárkány: Peskő-völgy, Tar-kő, Vörös-kő-völgy; Miskolc: Disznós-patak, Garadna, Garadna-völgy, Jávorkút, Lillafüred; Nagyvisnyó: Ablakos-kő-völgy, Bálvány, Bánkút, Elza-lak, Nagy-mező; Répáshuta: Pénzpatak; Parasznya: Soros-teber; Varbó: Dobrica. IV–VIII. — One hundred specimens were collected between 250 and 900 m in various forest associations as well as in a number of wet and dry habitats by sweeping, treading the ground and singling from beneath stones and rotten wood. It is one of the most ubiquitous ground beetles from the agricultural lands of the plains to the hilltops.

Harpalus serripes (Quensel, 1806) — Miskolc: Hosszú-bérc. VI. — One single specimen was singled on road by Z. Kaszab in 1954. Widely distributed and common in Hungary. It occurs mainly in dry, warm places of the Great Hungarian Plain and the hills, mostly under stones and dry dung in sandy spots.

Harpalus smaragdinus (Duftschmid, 1812) — Felsőtárkány: Hereg-rét; Miskolc: Hosszú-bérc; Nagyvisnyó: "Nagybérc" (= Ágazat-bérc); Szarvaskő. V–VI. — Four old specimens are known from the area which were collected by J. Jablonkay in 1961, Z. Kaszab and V. Székessy in 1954 and M. Reskovits in 1950. It is widely distributed and locally common in Hungary, mainly in dry and warm places (e. g. rock swards).



Figs. 23–26. *Harpalus roubali* and *H. dimidiatus*. 23: Habitus, 24: end of penis, view from above, of *H. roubali*. 25: Habitus, 26: end of penis, view from above, of *H. dimidiatus*

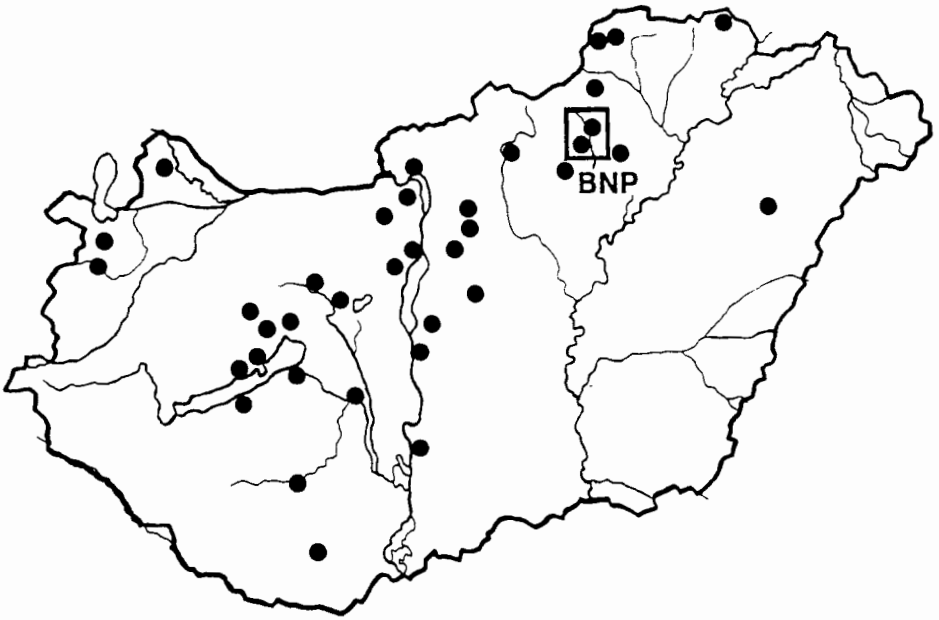


Fig. 27. Localities of *Harpalus roubali* in Hungary

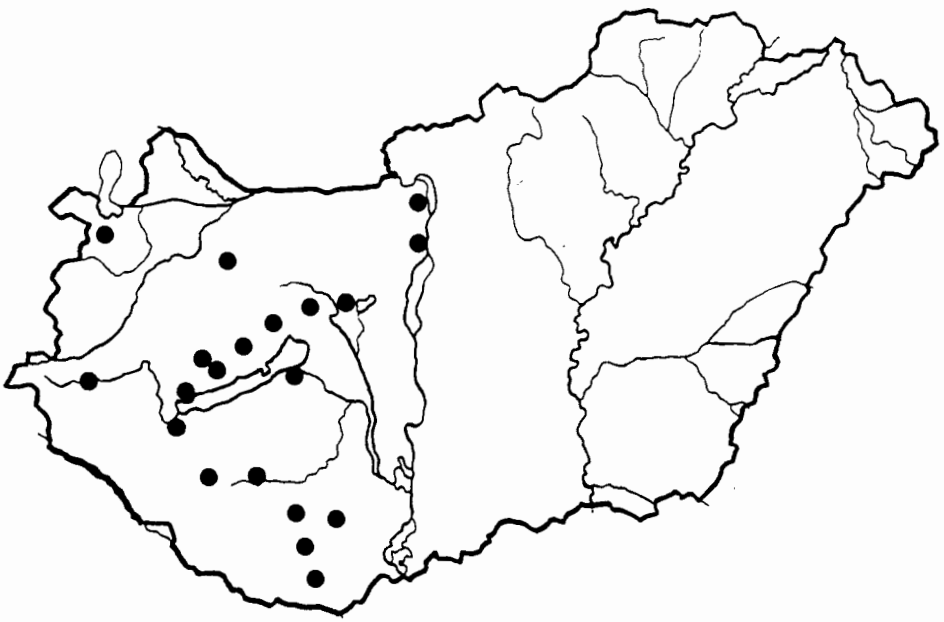


Fig. 28. Localities of *Harpalus dimidiatus* in Hungary

Harpalus tardus (Panzer, 1797) — Cserépfalu: Derda-kaszáló; Miskolc: Garadna-völgy, Jávorkút, Lillafüred; Nagyvisnyó: Bálvány; Varbó: Dobrica. VI–VIII. — Eleven specimens were captured between 300 and 900 m in various forest associations and streamside vegetation from decaying woods, from beneath stones and by singling. An ubiquistic, widely distributed and frequent species occurring from lowlands steppes to wet, open or forested associations of the mountains.

Harpalus tenebrosus Dejean, 1829 — Miskolc: Bánkút. VIII. — One specimen was collected by M. Reskovits in 1959. Sporadic in Hungary. It is known from the warm slopes of the mountains (Mecsek, Bakony, Mátra, Bükk, Zemplén) and the Transdanubian Hills as well as in a few localities of the Hungarian Plains (Fertő, Tatárszentgyörgy, Kalocsa and Debrecen) (its distribution in more details see Horvatovich 1982 and 1992*b*). The specimens were collected mostly by light traps. The single specimen from Tatárszentgyörgy was collected in *Festucetum vaginatae danubiale* while the habitats of the specimens found at Püspökszentlászló were beech and hornbeam-oak forests (Horvatovich 1991). The bulk of the localities fall into the forest steppe belt.

Harpalus pumilus (Sturm, 1818) — Cserépfalu: Kis-Piliske; Répáshuta; Szarvaskő: Veres-oldal. IV, VI, VIII. — Ten specimens were collected between 300 and 400 m in *Potentillo-Festucetum pseudodalmaticae* association from beneath stones. It is widely distributed in the lower regions but uncommon in Hungary. The specimens were collected mainly in grasslands and forest margins beneath stones, dry dung and tussocks. In the Kiskunság National Park, it was found in sodic pusztas (Ádám and Merkl 1986), at Budaörs (Odvas-hegy) in dolomitic rock sward.

Harpalus xanthopus winkleri Schauberger, 1923 — Miskolc: Garadna-völgy, Jávorkút. V–VI. — Three old specimens are known from the area collected by I. Vásárhelyi in 1958 and Z. Kaszab and V. Székessy in 1954. This species is quite similar to *H. luteicornis* (Duftschmid, 1812) so the former records of *H. luteicornis* refer, at least in part, to *H. xanthopus*. Its certain localities in Hungary are Porva in the Bakony Mts. (Horvatovich 1992*d*), Bükk Mts., Füzér in the Zemplén Mts. and Bátorliget. The three specimens from the latter locality were listed under the name *H. luteicornis* by Szél in Merkl (1991). The known localities suggest a montane distribution. The species is rare but, in most probability, widely distributed in Hungary. *H. luteicornis* is known from Csepreg, Győr (Western Transdanubia), Cegléd, Lakitelek, Ócsa (Danube-Tisza Mid-Region), Nagyhegyes, Újszentmargita (Hortobágy National Park) and the Aggtelek National Park.

Harpalus zabroides Dejean, 1829 — Répáshuta: Pénzpatak. III–VII. — One single specimen was captured by light trap in 1964. An uncommon inhabitant of the forest steppe belt. It was collected in dry, warm places (mainly in open habitats) of the Great Hungarian Plain, the hills and the southern slopes of the mountains. It is known from short-grassy sodic pastures of the Kiskunság National Park (Ádám and Merkl 1986), from agricultural lands at Sárrétudvari in Hajdú-Bihar county (Horvatovich and Szarukán 1986) and from *Festucetum vaginatae danubiale* in Örkény (Pest county).

Stenolophus discophorus Fisher, 1824 — Felsőtárkány; Miskolc: Garadna-völgy. VI–VII. — Three old specimens are known which were collected in 1964 (Felsőtárkány) and in 1958 by I. Vásárhelyi (Garadna-völgy). In Hungary, it was collected in wet places of the Great Hungarian Plain, the hills and the lower parts of the mountains, mostly at light and/or by treading the ground. One datum is known from Scotch pine forest mixed with birch at Darány (Horvatovich 1981*b*) and another from dry steppic slope of the Villány Mts. (Horvatovich 1989).

Stenolophus mixtus (Herbst, 1784) — Cserépfalu: Hór-völgy; Felsőtárkány; Miskolc: Hámori-tó; Répáshuta: Tebepuszta. IV–VII. — A total of 18 specimens were collected between 250 and 350 m in wet, open associations by sweep-netting, treading the ground and from beneath stones. It is widely distributed in wet and marshy places, mainly in the Great Hungarian Plain and the hills.

Stenolophus skrimshiranus Stephens, 1828 — Miskolc: Hámori-tó. V. — One specimen was taken at 300 m in *Chaerophyllo-Petasitetum* association by treading the ground. Much rarer than

the previous species, it was collected along watersides and other wet habitats of the Great Hungarian Plain and the hills, mostly by light traps.

Stenolophus teutonus (Schrank, 1781) — Felsőtárkány: Lők-völgy; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó; Répáshuta: Tebepuszta. V–VII, IX. — Seventeen specimens were swept and singled from the ground between 300 and 800 m in wet, open habitats. It lives mainly on wet places of the Great Hungarian Plain and the hilly regions, but a few data are known from the mountains as well, e. g. in hornbeam-oak forests of the Eastern Mecsek (Horvatovich 1991).

Bradycellus caucasicus (Chaudoir, 1846) (= *Bradycellus collaris* (Paykull, 1798)) — Nagyvisnyó: Nagy-mező; Varbó: Dobrica. VII, IX. — Two specimens were collected: the first was beaten from Norway spruce at 850 m in *Piceetum excelsae cultum* association, the other was singled from rotten wood at 300 m in *Querco petraeae-Carpinetum*. Only the examination of the aedeagus provides reliable identification of this species. Females usually cannot be distinguished from those of the closely related *Bradycellus harpalinus* (Audinet-Serville, 1821) and *B. csikii* Laczó, 1912. Kuthy (1896 [1897]) listed only four Hungarian localities (Budapest, Pécel, Kalocsa and Sátoraljaújhely). According to Csiki (1946) this species is widely distributed but rare in our country. Tóth (1973) published three localities from the Bakony Mts. (Cuha-völgy, Hódos-ér, Pápasalamon: Kupi-erdő). These records need a thorough revision because the identifications were done without the examination of the genitalia. In the last 30 years no record was published on this species but on *Bradycellus harpalinus* (Audinet-Serville, 1821).

Bradycellus csikii Laczó, 1912 — Cserépfalu: Hór-völgy; Kisgyör: Gyertyán-völgy. IX–X. — Two specimens were swept: the first at 250 m in *Sambucetum ebuli* association, while the other at 450 m in *Querco petraeae-Carpinetum*. Apart from the above records, only three localities are known from Hungary: Fertő (Csiki 1946), Nagykovácsi: Julianna-major (Kádár and Szél 1989) and Inárcs in the Danube-Tisza Mid-Region (Ádám and Merkl 1986).

Acupalpus exiguus Dejean, 1829 — Bélapátfalva: Felső-erdő; Cserépfalu: Hór-völgy, Kis-Piliske, Perpác; Nagyvisnyó: Bán völgye. VI. — Six specimens were collected between 250 and 850 m in *Melittidi-Fagetum*, *Querco petraeae-Carpinetum* and *Ceraso-Quercetum pubescentis* associations by sweeping, beating and singling. It is widely distributed in Hungary, mostly in marshy places.

Acupalpus interstitialis Reitter, 1884 — Cserépfalu: Derda-kaszáló, Hór-völgy; Miskolc: Lillafüred; Szilvásvárad: Bácsó-völgy, Virágos-sár-hegy. IV–V. — Six specimens were collected in *Cuscuto-Calystegietum* and *Pulsatillo-Festucetum rupicolae* associations by sweeping and singling from beneath stones. Scarcely any data are known from the Danube-Tisza Mid-Region and the northern part of Transdanubia but, though sporadically and in small numbers, the species is known from the other regions of Hungary. Horvatovich (1981*a*) published the locality data in detail and remarked that the species was widely distributed in agricultural lands. This statement was not confirmed later since *A. interstitialis* was not mentioned at all in a comprehensive study on the carabid fauna of the Hungarian arable lands (Horvatovich and Szarukán 1986). In the Villány Mts., it was found in *Querco-Carpinetum tilietosum argenteae* association (Horvatovich 1989), at Kétegyháza in Békés county (Ádám 1981) it was beaten from shrubs in oak forest. In the other localities, it was collected mostly in marshy, open habitats.

Acupalpus meridianus (Linnaeus, 1767) — Bélapátfalva: Felső-erdő, Ravaszlyuk; Nagyvisnyó: Elza-lak; Szarvaskő: Veres-oldal. V–VI. — Twenty-one specimens were collected between in 300 and 800 in *Melittidi-Fagetum*, *Carici acutiformis-Alnetum* and *Potentillo-Festucetum pseudodalmaticae* associations by sweeping and treading the ground. It is known from various habitats, including marshy, open vegetation, forests, but also from sandpits and sodic grasslands of the Great Hungarian Plain, the hills and the mountains. It was frequently found in arable lands as well (Horvatovich and Szarukán 1986).

Acupalpus parvulus (Sturm, 1825) (= *Acupalpus dorsalis* (Fabricius, 1787)) — "Bükk-hegység"; Nagyvisnyó: Elza-lak. V–VI. — Only two old specimens are known from the area. The first was collected by E. Csiki in 1936, the other by Z. Kaszab and V. Székessy in 1956. A few specimens are known from Egerbakta and Miskolc. The specimens from the latter locality may have been collected in the what is now the protected area. Widely distributed in Hungary, it occurs in wet areas, near waters, mainly in overgrown places (e.g. on the ground among reeds). Most of the specimens deposited in the HNHM were collected around the Kis-Balaton and the Velence Lake.

Anthracus consputus (Duftschmid, 1812) — Miskolc: Jávorkút. V. — One specimen was collected in the protected area at 650 m in *Junco-Tussilaginetum* association by treading the ground. Another specimen from the Bükk but beyond the borders of the National Park was collected at Egerbakta, in *Carici acutiformis-Alnetum* association by treading the ground. It occurs mainly in the Great Hungarian Plain and the hills, in wet habitats (forests, forest margins, open associations, including sodic grasslands). Only a few data are known from the mountains (Bakony, Mecsek, Börzsöny, Bükk).

Amblystomus metallescens (Dejean, 1829) — Cserépfalu: Hór-völgy. IV. — One specimen was collected at 250 m in *Cuscuto-Calystegietum* association from beneath stones. It is distributed mainly in the lowlands, mostly in open habitats (various grasslands, wet meadows, marshes, often under reed debris). On the contrary, it was sifted from leaf-litter of dry oak forest at Bátorliget (Kaszab and Székessy 1950). A few specimens are known from the hilly and mountainous regions as well (Kőszeg Mts., Pilis Mts., Buda Mts., Börzsöny Mts., Zemplén Mts.). A considerable number of the literature data concerning *Amblystomus niger* Heer, 1838 are based on the misidentification of *A. metallescens*. Of 250 *Amblystomus* specimens deposited in the HNHM, collected in different times and in various localities, only a single specimen proved to be *A. niger* of which the locality is Pécs. According to my revision of the Hungarian *Amblystomus* material the data of *A. niger* from Bátorliget (Székessy and Kaszab 1950) and Hortobágy (Hieke 1983) are surely erroneous but the following records are quite doubtful as well: Tóth (1973), Horvatovich (1978, 1982, 1988, 1992*a*) and Nyilas (1991).

Stomis pumicatus (Panzer, 1796) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Miskolc: Felső-forrás, Forrás-völgy, Lyukas-gerinc; Szarvaskő: Tardos-hegy; Szilvásvárad: Tar-kő. IV–VIII. — Nineteen specimens were collected between 250 and 950 m in various oak and beech associations as well as in *Cuscuto-Calystegietum*, mainly by pitfall traps but also from under stones and by sifting. Widely distributed but uncommon all over the country, it prefers wet forests (from soft- and hard-wood lowland forests to montane hornbeam-oak forests) but occurs also in open associations and even in arable lands (Horvatovich and Szarukán 1986).

Poecilus cupreus (Linnaeus, 1758) — Bélapátfalva: Melés-domb; Cserépfalu: Hór-völgy, Kis-Piliske, Közép-szék; Felsőtárkány: Oldalvölgy; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred; Szarvaskő; Veres-oldal; Szilvásvárad. III–VII, X–XI. — Many specimens were collected between 250 and 400 m in various wet and dry associations by sweep-netting, by treading the ground and from beneath stones and tussocks. It is an ubiquistic species, widely distributed in Hungary, mainly in densely vegetated wet and dry habitats. It is one of the most common ground beetles in agricultural lands (mainly in cereal fields), often in mass.

Poecilus punctulatus (Schaller, 1783) — Miskolc: Sugaró. VI. — One old specimen is known from the National Park which was collected by M. Reskovits in 1957. A xerophilous species, it occurs mainly in Transdanubia and the Great Hungarian Plain. The dry, sunny, barren or sparsely vegetated sand is its typical habitat. In the Szigetköz and around the Balaton, it was found near the water under stones and reed debris, in the Hortobágy in loess grassland (Nyilas 1991). It is frequent in agricultural lands (cereals, pea) but rare in the Northern Mountains.

Poecilus striatopunctatus (Duftschmid, 1812) — Bélapátfalva: Gilitka-kápolna; Miskolc: Sugaró; Szarvaskő: Rocska-völgy. VI. — Four specimens were collected by M. Reskovits in the 1950s. A rare species, it was collected mainly along the Tisza and Danube (Fig. 29), usually in or

near watersides. The specimen from Cigánd was found on clayey ground of waterside (G. Hegyessy, personal communication). Its occurrence at Pécs and in the Bakony Mts. is proved by only one specimen each. Most of the 60 specimens deposited in the HNHM were collected in the early years of this century.

Poecilus versicolor (Sturm, 1824) (= *Poecilus coerulescens* (Linnaeus, 1758)) — Bükkszentkereszt: Kerek-hegy; Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Jávorkút, Kecskeláb-rét, Lillafüred; Nagyvisnyó: Elza-lak, Veres-sár-bérc; Répáshuta: Pénzpatak; Szilvásvárad. IV–VII, IX–X. — Twenty-six specimens were collected between 250 and 850 m in *Aconito-Fagetum*, *Melittidi-Fagetum*, *Anthyllido-Festucetum rubrae*, *Lolio-Cynosuretum* and *Pastinaco-Arrhenatheretum* associations by pitfall traps, sweep-netting, from beneath stones and bark. It is as widely distributed as *Poecilus cupreus* but less frequent. Apart from the Great Hungarian Plain and the hills, it occurs also in the mountains where it is more frequent and occurs at higher elevations than *P. cupreus*. It is not typical in agricultural lands.

Poecilus virens (O. F. Müller, 1776) (= *Poecilus lepidus* (Leske, 1785)) — Bélapátfalva: Berva-patak völgye; Miskolc: Garadna-völgy. VI. — Only two specimens are known from the National Park which were collected by M. Reskovits in 1952 and by I. Vásárhelyi in 1959. A rare species, it occurs mainly in the Alpokalja and the Transdanubian Central Mountains and Northern Mountains (Fig. 30), mostly in the beech and oak zones. Most of the known specimens are old. According to Tóth (1973) it is a hygrophilous species.

Pterostichus aethiops (Panzer, 1797) — Nagyvisnyó: Bálvány. IV. — One specimen is known which was collected by R. Lenci in 1940. A montane species, it is distributed in the Carpathians but very rare in Hungary. Apart from the Bükk, it is known from the Bakony Mts., (Tóth 1973), the Keszthely Mts. (SMSZ), the Somogy Hills (Kaposgyarmat), the Buda Mts., the Börzsöny Mts. (Királyháza; Csóványos: Endrődi 1974) and the Mátra Mts. (Galya-tető, CRE) (Fig. 31).

Pterostichus anthracinus (Illiger, 1798) — Cserépfalu: Hór-völgy, Kis-Piliske; Miskolc: Garadna-völgy, Hámori-tó, Kecske-lyuk, Lillafüred; Szarvaskő: Eger. IV–X. — Seventeen specimens were collected between 250 and 800 m in *Querco petraeae-Carpinetum*, *Aegopodio-Alnetum*, *Pastinaco-Arrhenatheretum* and *Chaerophyllo-Petasitetum* associations by pitfall traps, sifting, treading the ground and singling. It is widely distributed in Hungary, both in forests and open but densely vegetated habitats. Hygrophilous, it occurs in sodic areas as well.

Pterostichus aterrimus (Herbst, 1784) — Répáshuta: Tebepuszta. VII. — One specimen was collected at 350 m in *Typhaetum latifoliae* association by treading the ground. A hygrophilous species strictly associated with watery habitats, mostly reeds, hummocks and willow stands. Nyilas (1991) collected it also in sodic habitats (*Achilleo-Festucetum pseudovinae* and *Camphorosmetum annuae* associations). In Hungary, it was found almost everywhere in the appropriate habitats of the lowlands and hilly areas but usually in small numbers. However, it was abundant under reed in marshy forests of the Kiskunság National Park (Ádám and Merkl 1986) and the Kis-Balaton.

Pterostichus cursor (Dejean, 1828) — Miskolc: Garadna-völgy. VII–VIII. — Two specimens were collected by I. Vásárhelyi in 1958. It is uncommon in the wet (marshy or sodic) habitats of the lowlands and the hills. Only a few data are known from the Northern Mountains.

Pterostichus diligens (Sturm, 1824) — Felsőtárkány: Lénárt-forrás; Miskolc: Lyukas-gerinc; Répáshuta: Tebepuszta. V. — Four specimens were collected between 350 and 850 m in *Aconito-Fagetum* association and in wet, open habitats by treading the ground. A hygrophilous species, it was collected mainly in watersides, at base of trees, in the reeds, hummocks and sometimes in various forests. Although its localities are scattered, it is presumably widely distributed both in the lowlands and the mountains.

Pterostichus elongatus (Duftschmid, 1812) — Szilvásvárad: Szalajka-völgy. — Only one old specimen is known. Sporadic in Hungary, it is most numerous around the Lake Velence and the Lake Sós at Székesfehérvár. A few specimens were found in the Great Hungarian Plain, around

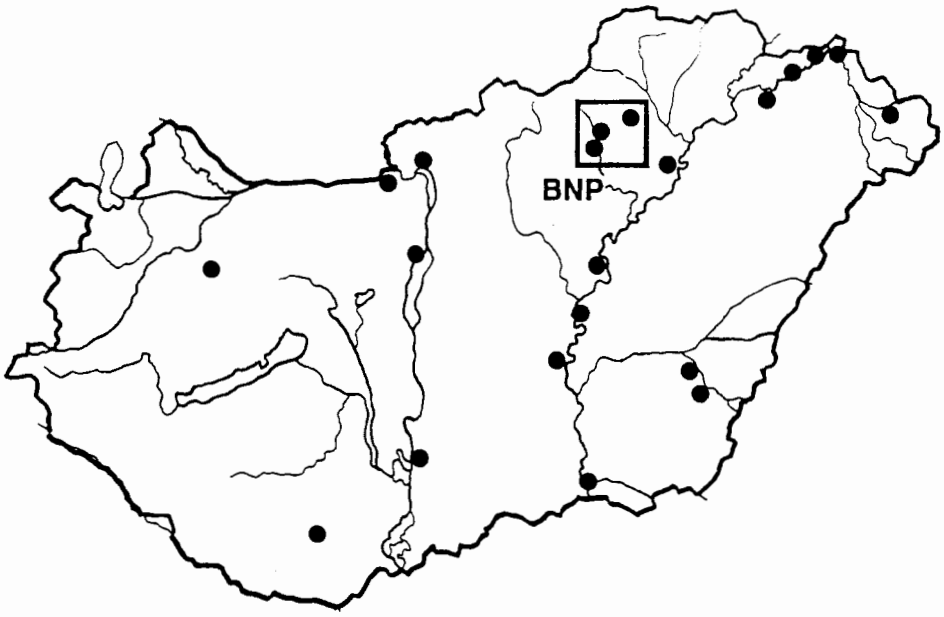


Fig. 29. Localities of *Poecilus striatopunctatus* in Hungary

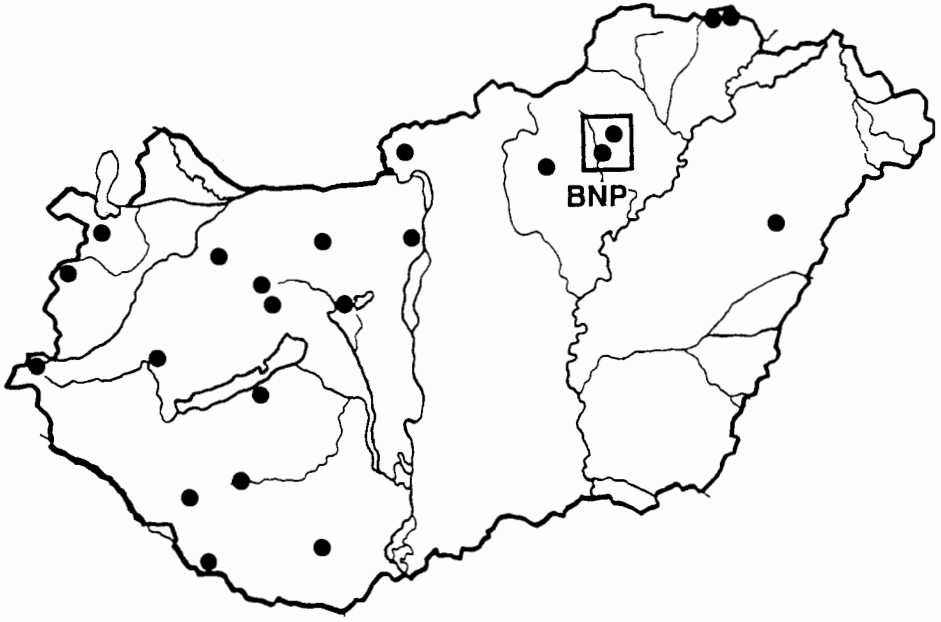


Fig. 30. Localities of *Poecilus lepidus* in Hungary

the Lake Balaton and a few localities of the Northern Mountains. The localities of Lake Velence, Lake Fertő and Székesfehérvár are sodic places. However, the species occurs in non-sodic areas as well, i.e. in the reeds or marshy forests. Most of the specimens were captured in the lowlands.

Pterostichus longicollis (Duftschmid, 1812) — Cserépfalu: Hór-völgy; Miskolc: Lillafüred; Nagyvisnyó: Hármaskút; Szilvásvárad: Keskeny-rét. IV–V, VII, IX. — Five specimens were swept and collected between 250 and 850 m in wet and dry open associations from beneath stones. The bulk of the localities is in the Great Hungarian Plain and the hilly areas, in marshy forests (Ádám and Merkl 1986, Hieke 1983), in *Achilleo-Festucetum pseudovinae* association (Nyilas 1991) and in arable lands (Horvatovich and Szarukán 1986). Only a few localities are known from the mountains.

Pterostichus melanarius (Illiger, 1798) (= *Pterostichus vulgaris* (Linnaeus, 1758)) — Bélapátfalva: Felső-erdő, Ravaszlyuk; Bükkzsérc: Hosszú-völgy; Cserépfalu: Hór-völgy; Felsőtárkány: Oldalvölgy, Tar-kő, Vörös-kő-völgy; Mályinka: Recem-völgy; Miskolc: Bolhás, Disznóspatak, Forrás-völgy, Garadna, Garadna-völgy, Hámori-tó, Közép-forrás, Létrás, Lillafüred, Lyukas-gerinc, Szárdóka, Szentlélek; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Leány-völgy, Nagy-völgy; Répáshuta: Csúnya-völgy; Szarvaskő: Tardos-hegy, Új-határ-völgy; Szilvásvárad: Keskeny-rét, Köves-gerinc, Őserdő, Pes-kő-hegy, Tar-kő; Varbó: Dobrica. IV–X. — Many specimens were collected between 250 and 900 m in almost all types of forest associations, including spruce plantations but also in wet, open habitats. The collecting methods include pitfall trapping, treading the ground and singling from beneath stones, logs and bark. One of the most common species of *Pterostichus* in Hungary, it is found all over the country. Wet gallery forest is its typical habitat where it lives under the bark of rotten logs, often in great numbers. It occurs in agricultural lands as well.

Pterostichus melas (Creutzer, 1799) — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Lófő-tisztás; Bükkzsérc: Hosszú-völgy, Oldalvölgy, Odor-hegy; Cserépfalu: Derda-kaszáló, Hór-völgy,

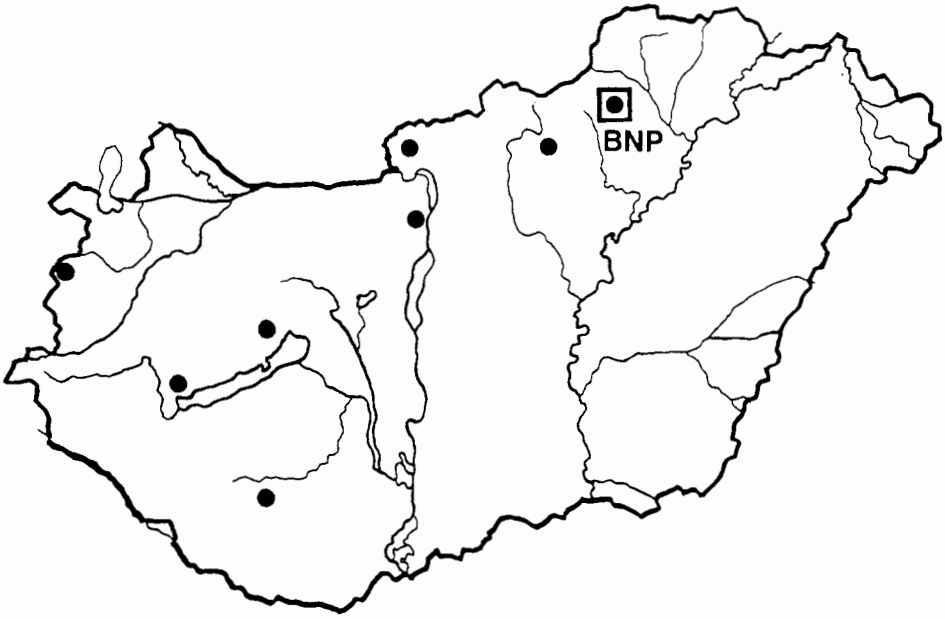


Fig. 31. Localities of *Pterostichus aethiops* in Hungary

Ódorvári rom; Felsőtárkány: Oldalvölgy, Tar-kő; Miskolc: Forrás-völgy, Garadna-völgy, Hámor, Hársas-bérc, Hosszú-bérc, Lillafüred, Lyukas-gerinc, Nagy-mező, Szentlélek; Nagyvisnyó: Ablakos-kő-völgy, Bálvány, Elza-lak, Gerennavár; Répáshuta; Szarvaskő: Eger, Tardos-hegy, Új-határ-völgy, Veres-oldal; Szilvásvárad: Pes-kő-hegy, Szalajka-völgy, Tar-kő. III–IX. — A huge number of specimens were collected between 250 and 950 m, mainly in forests (oak and beech zones, spruce plantations) but also in *Pastinaco-Arrhenatheretum*, *Anthyllido-Festucetum rubrae*, *Pulsatillo-Festucetum rupicolae* and *Potentillo-Festucetum pseudodalmaticae* associations. The collecting methods include pitfall trapping and singling from beneath stones and bark. It is common in the beech and oak forests of the Alpokalja, the mountains and Southern Transdanubia. In the Great Hungarian Plain, only a few localities are known: Debrecen, Egyek, Komádi (Hajdú-Bihar county) and Gyula (Békés county). The lowland specimens were reported under the name *Pterostichus hungaricus* (Dejean, 1828) by Ádám (1981) and Hieke (1983). However, neither the genitalia nor the more superficial characters differ from those of the representatives of the mountain populations. In my opinion, therefore, all the Hungarian specimens belong to *Pterostichus melas*.

Pterostichus minor (Gyllenhal, 1827) (= *Pterostichus brunneus* (Sturm, 1824)) — Miskolc: Hámori-tó; Parasznya: Sziklakapus-víznyelő; Répáshuta: Tebepuszta. IV–VI. — Ten specimens were collected between 300 and 350 m in *Phyllitidi-Aceretum*, *Chaerophyllo-Petasitetum* and *Typhaetum latifoliae* associations by treading the ground and from beneath rotten wood. It is widely distributed in wet associations (reeds, gallery forests), mainly in the lowlands and the hills.

Pterostichus niger (Schaller, 1783) — Bükkszentkereszt: Lófő-tisztás; Bükkzsérc: Hosszú-völgy; Cserépfalu: Hór-völgy; Miskolc: Disznós-patak, Fekete-sár, Garadna-völgy, Hosszú-bérc, Jávorkút, Létrás, Lyukas-gerinc, Vadkert; Nagyvisnyó: Ablakos-kő-völgy, Diabáz-barlang, Elza-lak, Huta-rét, Veres-sár-bérc; Parasznya: Soros-teber; Szarvaskő: Tardos-hegy; Szilvásvárad: Keskeny-rét, Őserdő, Tar-kő; Varbó: Dobrica. V–IX. — Many specimens were collected between 250 and 900 m in various forests, in open habitats as well as in a cave (Diabáz-barlang) at 24 m from the entrance. The collecting methods include pitfall trapping and singling from beneath rotten wood and stones. It is found in all types of wet habitats from the lowlands to the mountains, frequent to common in most localities.

Pterostichus nigrita (Paykull, 1790) — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Bocfa-lápa, Hosszú-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás, Lőki-patak, Oldalvölgy; Miskolc: Barátságkert, Forrás-völgy, Garadna-völgy, Hámori-tó, Lillafüred, Lyukas-gerinc; Nagyvisnyó: Bán völgye, Elza-lak; Parasznya: Sziklakapus-víznyelő; Répáshuta: Csúnya-völgy; Szarvaskő: Eger. V–X. — Many specimens were collected between 250 and 850 m in open, wet associations but also in *Aconito-Fagetum*, *Melittidi-Fagetum*, *Aegopodio-Alnetum* associations and spruce plantations by treading the ground, pitfall traps and singling from beneath leaf litter, rotten wood, bark and stones. A hygrophilous species, it occurs both in forests and meadows. It is typical to the hills and mountains but many localities are known from the lowlands as well.

Pterostichus oblongopunctatus (Fabricius, 1787) — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Lófő-tisztás; Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás, Lőki-patak, Tar-kő; Kisgyőr: Gyertyán-völgy; Miskolc: Bolhás, Felső-Sebes-víz, Forrás-völgy, Garadna-völgy, Hosszú-bérc, Jávorkút, Közép-forrás, Lyukas-gerinc, Nagy-mező, Vadkert; Nagyvisnyó: Ablakos-kő-völgy, Diabáz-barlang, Elza-lak, Gerennavár, Huta-rét, Nagy-István erőse; Parasznya: Sziklakapus-víznyelő; Szarvaskő: Tardos-hegy, Új-határ-völgy; Szilvásvárad: Keskeny-rét, Köves-gerinc, Őserdő, Tar-kő. III–XI. — Many specimens were collected between 250 and 950 m in various forest associations and wet meadows by pitfall traps, sweeping, treading the ground, sifting and singling from beneath stones, rotten wood, bark and in a cave at 10 m from the entrance. A forest species, it is very common in the forests of the hills and mountains. A few localities are known from the Great Hungarian Plain (Bátorliget, Hortobágy National Park) as well.

Pterostichus ovoideus (Sturm, 1824) — Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy; Nagyvisnyó: Elza-lak; Parasznya: Gyertyán-völgy; Varbó: Dobrica. III–VIII, X. — Thirty-two specimens were collected between 250 and 350 in *Quercetum petraeae-cerris*, *Cuscuto-Calystegietum* and *Alismato-Eleocharidetum* associations by sifting from wood-stack and singled from beneath stones and rotten wood. It occurs mainly in the forests of the hilly and mountain regions but is known from the Great Hungarian Plain as well.

Pterostichus rhaeticus Heer, 1837 — Miskolc: Lyukas-gerinc. V. — Only one specimen was collected at 850 m in *Aconito-Fagetum* from rotten wood. This is the first record of this species in Hungary. Further specimens are known from Telkibánya in the Zemplén Mts. (collected by G. Hegyessy), from the Kőszeg Mts., from Porva in the Bakony Mts. and from Majkpuszta in the Vértes Mts. (collected by Cs. Kutasi) (Fig. 32). In these localities, the specimens were captured mostly in wet associations, mainly in *Carici acutiformis-Alnetum*. The localities suggest that *Pterostichus rhaeticus* is widely distributed in the Transdanubian and the Northern Mountains. It is very similar to *P. nigrita*, the distinguishing characters include the smaller size, the shape of paramera of males as well as the 8th sternite and the gonostyli of the females (see Figs in Lompe 1989).

Pterostichus strenuus (Panzer, 1797) — Bélapátfalva: Ravaszlyuk; Bükkszentkereszt: Kerekhegy; Bükkzsérc: Bocfa-lápa; Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút, Hereg-rét, Lénárt-forrás, Lőki-patak; Miskolc: Garadna-völgy; Nagyvisnyó: Elza-lak; Szilvásvárad: Tar-kő; Varbó: Dobrica. III–IX, XI. — Sixteen specimens were collected between 250 and 950 m in various forests (including plantations of Norway spruce), in hayfields, mountain meadows and in open, wet associations by pitfall traps, sifting from leaf litter and debris, treading the ground, sweeping and singling from beneath stones and logs. Widely distributed in wet habitats all over Hungary, it occurs both in forests and open associations.

Pterostichus vernalis (Panzer, 1796) — Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Hámori-tó, Jávorkút. IV–VII. — Seven specimens were collected between 250 and 650 m in *Mercuriali-Tilietum*, *Chaerophyllo-Petasitetum* and *Alismato-Eleocharidetum* associations by treading the ground and singling. Widely distributed all over the country, it is as hygrophilous as the preceding species.

Molops piceus (Panzer, 1793) — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Odor-hegy; Cserépfalu: Hór-völgy, Ódorvári rom; Felsőtárkány: Lénárt-forrás, Oldalvölgy, Tar-kő; Miskolc: Disznós-patak, Forrás-völgy, Garadna-völgy, Hosszú-bérc, Jávorkút, Közép-forrás, Lillafüred, Lyukas-gerinc, Nagy-mező; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Gerennavár, Taró-fő; Szarvaskő: Eger, Tardos-hegy; Szilvásvárad: Köves-gerinc, Őserdő, Pes-kő-hegy, Szalajka-völgy, Tar-kő. IV–X. — Many specimens were collected between 250 and 900 m in various forests (including plantations of Norway spruce) and wet open habitats by pitfall traps, treading the ground and singling from beneath stones, logs and rotten wood. In Hungary, it is known from the Alpokalja, the Transdanubian and Northern Mountains as well as at Bátorliget. The bulk of the specimens was collected in beech forests but many data are known from oak forests and open swards as well (Kádár and Szél 1993).

Abax carinatus (Duftschmid, 1812) — Szilvásvárad: Tar-kő. VIII. — Eight specimens were collected at 950 m in *Aconito-Fagetum* by pitfall traps. Most of its sporadic locality data are in the beech and oak forests of the hills and mountains. In the Great Hungarian Plain it was found in the hard-wood riverine forests of the Szigetköz, in the environs of Szeged (Erdős 1935), in the Békés county and at Bátorliget.

Abax parallelepipedus (Piller et Mitterpacher, 1783) (= *Abax ater* (Villers, 1789)) — Bélapátfalva: Felső-erdő, Ravaszlyuk; Bükkszentkereszt: Lófő-tisztás; Bükkzsérc: Hosszú-völgy; Cserépfalu: Hór-völgy, Ódorvári rom; Felsőtárkány: Tar-kő, Vörös-kő-völgy; Miskolc: Disznós-patak, Forrás-völgy, Garadna, Garadna-völgy, Hámori-tó, Közép-forrás, Lyukas-gerinc; Nagyvisnyó: Ablakos-kő-völgy, Bánkút, Elza-lak, Gerennavár, Huta-rét, Leány-völgy, Nagy-István erőse,

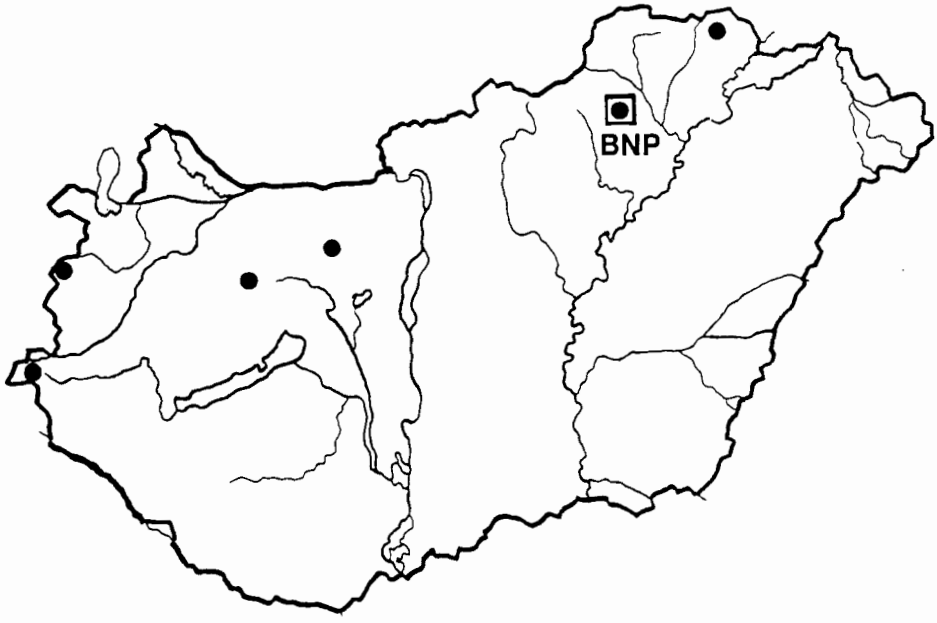


Fig. 32. Localities of *Pterostichus rhaeticus* in Hungary

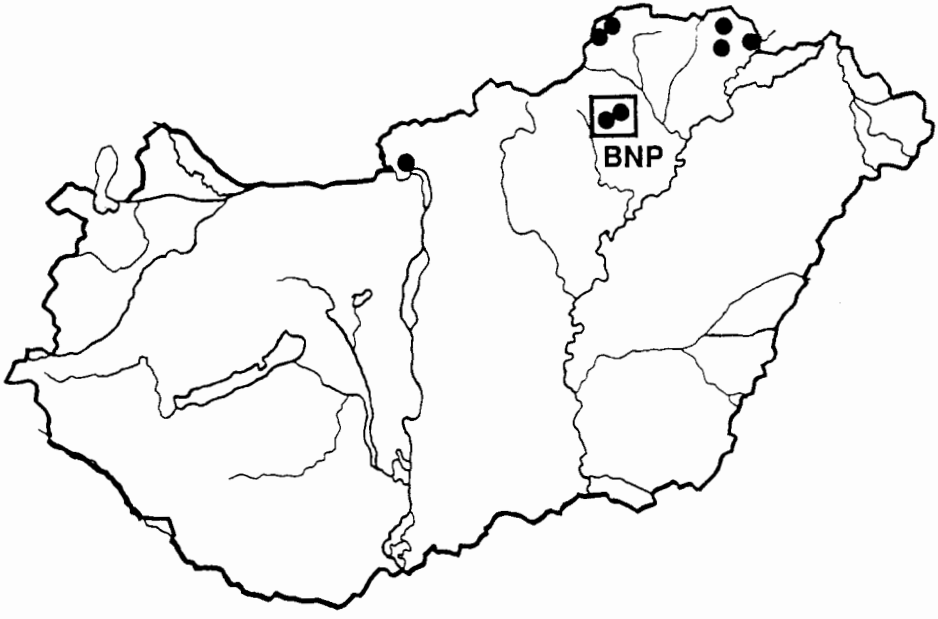


Fig. 33. Localities of *Abax schueppeli* in Hungary

Taró-fő; Parasznya: Sziklakapus-víznyelő; Répáshuta; Szarvaskő: Eger, Tardos-hegy, Új-határ-völgy; Szilvásvárad: Köves-gerinc, Őserdő, Szalajka-völgy, Tar-kő. V–IX. — Many specimens were collected between 250 and 950 m in various forests (from oak to beech forests and also in plantations of Norway spruce), in mountain meadows and streamside associations by pitfall traps and singling from beneath stones, logs and bark. It is frequent to common under stones and wood in the deciduous forests of the hills and mountains. In lowland, it is frequent only in the hard-wood riverine forests of the Szigetköz.

Abax parallelus (Duftschmid, 1812) — Bélapátfalva: Felső-erdő, Ravaszlyuk; Bükkszentkereszt: Lófő-tisztás; Bükkzsérc: Bocfa-lápa, Hosszú-völgy, Kis-rét; Cserépfalu: Hór-völgy; Miskolc: Disznós-patak, Dolka-hegy, Felső-forrás, Felső-Sebes-víz, Forrás-völgy, Garadna-völgy, Jávor-hegy, Jávorkút, Lyukas-gerinc, Vadkert; Nagyvisnyó: Elza-lak, Gerennavár; Szarvaskő: Eger, Tardos-hegy, Új-határ-völgy; Szilvásvárad: Köves-gerinc, Tar-kő; Varbó: Dobrica. V–XI. — Many specimens were collected between 250 and 950 m in wet forests (including plantations of Norway spruce) and once at waterside. The collecting methods include pitfall trapping, treading the ground, singling from rotten wood of beech, from beneath stones, logs and bark. It is frequent in the forests (mainly beech and oak) of the hills and mountains, often along with the previous species. No datum is known from the Great Hungarian Plain.

Abax schueppeli Palliardi, 1825 — Miskolc: Garadna-völgy, Szentlélek; Szilvásvárad: Tar-kő. VI, VIII. — Six specimens were collected in *Aconito-Fagetum* association (at 950 m, by pitfall traps) and in *Phyllitidi-Aceretum*. The four old specimens from the Garadna-völgy were collected by I. Vásárhelyi in 1959. Distributed in the Carpathian Range and its environs, it is known in Hungary from the Bükk Mts., the Börzsöny Mts. (Endrődi 1974), the Aggtelek National Park, and the Zemplén Mts. (Fig. 33). In the two latter regions, it was collected in great numbers. It prefers habitats in beech and oak forests.

Platyderes rufus (Duftschmid, 1812) — Bükkzsérc: Hosszú-völgy, Kispazsag; Cserépfalu: Hór-völgy; Felsőtárkány: Fekete-len, Oldalvölgy, Tar-kő; Miskolc: Felső-forrás, Forrás-völgy, Garadna-völgy, Lyukas-gerinc, Szentlélek; Nagyvisnyó: Elza-lak; Parasznya: Soros-teber; Répáshuta: Csúnya-völgy; Szarvaskő: Veres-oldal; Szilvásvárad: Köves-gerinc, Tar-kő. IV–VII, IX–X. — The specimens were collected between 250 and 950 m in various forests, in *Anthyllido-Festucetum rubrae* and in *Potentillo-Festucetum pseudodalmaticae* associations by pitfall traps, sifting, singling from rotten trunks, wood-stacks, from beneath stones logs and bark. Many localities are known from the lowlands as well as the hilly and mountainous regions. It prefers wet places, both in forests and open habitats.

Synuchus vivalis (Illiger, 1798) — Répáshuta: Szász-orom; Varbó: Dobrica. VII–VIII. — Four specimens were singled between 300 and 350 m in *Querco petraeae-Carpinetum*, *Alismato-Eleocharidetum* and *Lolio-Cynosuretum* from rotten wood and from beneath stones. A sporadic species known to occur in the mountains and the Great Hungarian Plain, rare in most of the localities. Its habitats include beech, marshy forests, dry grasslands and agricultural lands.

Calathus fuscipes (Goeze, 1777) — Cserépfalu: Derda-kaszáló; Felsőtárkány: Oldalvölgy; Miskolc: Hosszú-bérc; Nagyvisnyó: Bálvány, Elza-lak. V, VII–VIII. — No more than seven specimens (six old and one new) are known from the area investigated. The specimen from the Derda-kaszáló was swept at 550 m in *Pulsatillo-Festucetum rupicolae* association. The specimen from Bálvány was captured at 900 m. It is frequent in the hills and mountains, rare in the lowlands. Xerophilous, it prefers open associations. Many specimens were collected in the inner city of Budapest.

Calathus melanocephalus (Linnaeus, 1758) — Nagyvisnyó: Bálvány, Gerennavár, Nagy-István erőse, Nagy-mező; Répáshuta; Szilvásvárad: Keskeny-rét; Varbó: Dobrica. IV–VIII. — Twenty-one specimens were collected between 300 and 900 m in *Querco petraeae-Carpinetum*, *Anthyllido-Festucetum rubrae* and *Lolio-Cynosuretum* associations by sweeping and singling

from beneath stones and from rotten wood. A widely distributed and ubiquitous species. It is known from forests, wet and dry open habitats and agriculture lands.

Sphodrus leucophthalmus (Linnaeus, 1758) — Miskolc: Lillafüred. V. — Only two old specimens are known from the National Park collected by D. Kanabé but it was found beyond the boundaries of the protected area at Eger (Szépasszony-völgy) and Tard, too. It is known from nearly all regions of Hungary (Fig. 34) but rare everywhere. The majority of the data are old. Synanthropic, it is found mostly in cellars, larders and similar, dark places around settlements.

Laemostenus terricola (Herbst, 1784) (= *Pristonychus terricola* Herbst, 1784) — Cserépfalu: BNP-kutatóház. IX. — One single specimen was found in front of the cellar of a research house. It is widely distributed but rare in Hungary. It occurs both in forests and open habitats as well.

Agonum afrum (Duftschmid, 1812) — Bükkzsérc: Bocfa-lápa, Hosszú-völgy; Felsőtárkány: Lőki-patak; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó: Ablakos-kő-völgy; Répáshuta: Tebepuszta. III–VII, IX–XI. — Fifty-two specimens were collected between 250 and 850 in *Aconito-Fagetum*, *Aegopodio-Alnetum*, *Carici acutiformis-Alnetum*, *Piceetum excelsae cultum*, *Typhaetum latifoliae* and *Chaerophyllo-Petasitetum* associations by treading the ground, pitfall trapping and from rotten spruce. Schmidt (1994) divided "*Agonum moestum* (Duftschmid, 1812)" into three species: *Agonum afrum* (Duftschmid, 1812), *Agonum duftschmidi* Schmidt, 1994 (= *Agonum moestum* (Duftschmid, 1812)) and *Agonum permoestum* Puel, 1938. These species are very similar in appearance and ecological demands. Based on the revision of the specimens deposited in the HNHM, *Agonum duftschmidi* seems to be the rarest while the frequency and distribution of the other two species are similar in Hungary (the specimens were identified by. J. Schmidt). *Agonum afrum* is widely distributed in wet places both in the Great Hungarian Plain and the mountains.

Agonum antennarium (Duftschmid, 1812) — Felsőtárkány: Lénárt-forrás; Varbó: Dobrica. V–VII, IX. — Seven specimens were collected between 300 and 500 m in *Urtico-Aegopodietum* and *Querco petraeae-Carpinetum* by treading the ground and singling from rotten wood. Rare species, it is known from the Alpokalja (Kondorfa, Kőszeg Mts., Sopron), the Transdanubian Mountains (Bakony Mts., Pilis Mts., Buda Mts.), the Northern Mountains (Mátra Mts., Bükk Mts., Zemplén Mts.) and in a few localities of Southern Transdanubia (Kaposvár, Szigetvár, Mecsek Mts.) (Kuthy 1896 [1897], Tóth 1973, specimens in HNHM) (Fig. 35).

Agonum atratum (Duftschmid, 1812) — Répáshuta: Pénzpatak. V. — One specimen was captured by light trap in 1964. Widely distributed in Hungary but uncommon. It was collected in deciduous forests, rock swards, reeds and at sodic lakes.

Agonum fuliginosum (Panzer, 1809) — Bükkzsérc: Bocfa-lápa, Hosszú-völgy; Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút. IV–IX, XI. — The specimens were collected between 250 and 500 m in *Piceetum excelsae cultum*, *Aegopodio-Alnetum* and *Pastinaco-Arrhenatheretum* associations by pitfall trapping and singling from beneath stones and from rotten logs. Rare and sporadic in Hungary, it prefers wet and marshy forests (mainly alder) in the lowlands, the hills and mountains. Most of its localities are undisturbed, natural habitats (e.g. Csaroda, Báb tava, *Eriophoro vaginato-Sphagnetum* association; Kisbodak, *Fraxino pannonicae-Ulmetum* or Porva, Felső-erdő, *Carici acutiformis-Alnetum*).

Agonum lugens (Duftschmid, 1812) — Miskolc: Hámori-tó; Répáshuta: Pénzpatak. IV–V. — Eight specimens were collected, partly at 300 m in waterside vegetation by treading the ground. Widely distributed and frequent in Hungary, it is found mainly in muddy, densely overgrown watersides of the Great Hungarian Plain and the hills.

Agonum micans (Nicolai, 1822) — Miskolc: Hámori-tó. V–VI. — The specimens were collected at 300 m in *Chaerophyllo-Petasitetum* by treading the ground. Distributed from the plains to the lower parts of the mountains, it is frequent in willow stands and overgrown watersides.

Agonum permoestum Puel, 1938 (= *Agonum longipenne* Mannerheim, 1844) — Nagyvisnyó: Elza-lak; Répáshuta: Tebepuszta. VI–VII. — Two old specimens are known from the National

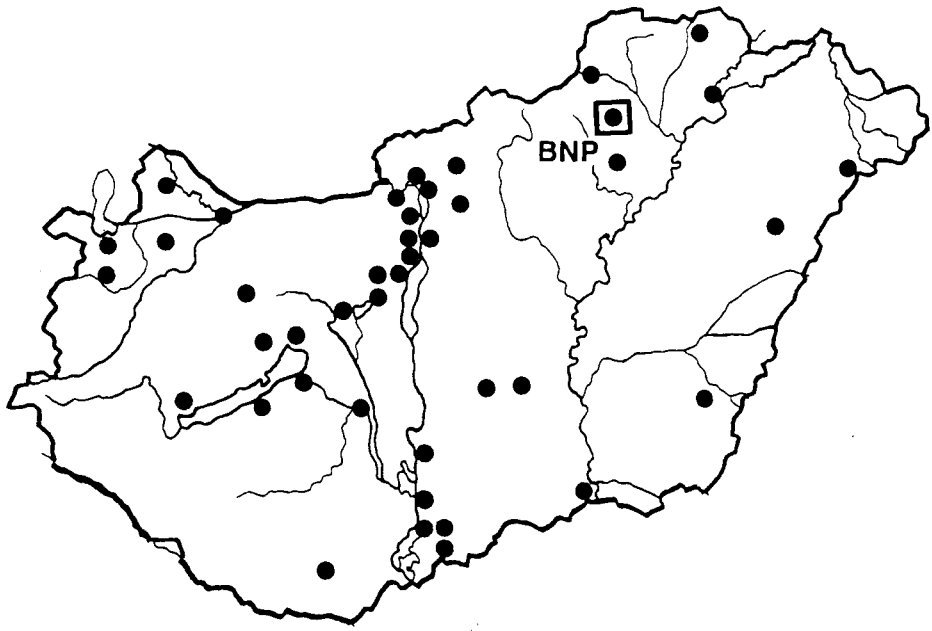


Fig. 34. Localities of *Sphodrus leucophthalmus* in Hungary

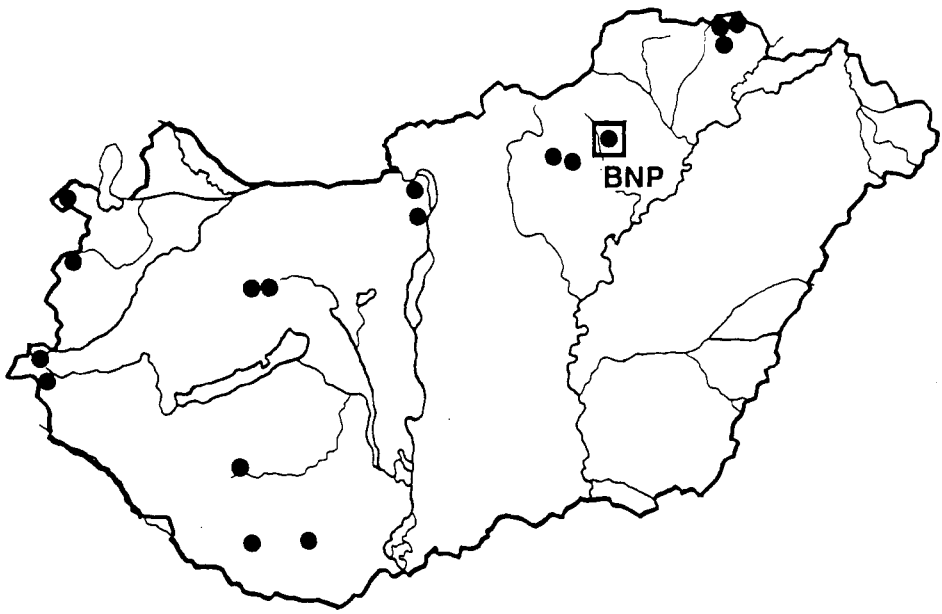


Fig. 35. Localities of *Agonum antennarium* in Hungary

Park, the older was collected from waterside deposit, the other (from Répáshuta) in *Typhaetum latifoliae* association by treading the ground. It is widely distributed and frequent in wet places (willow stands, reeds and hummocks). Although there are data from the hills and mountains, the bulk of the specimens comes from the Great Hungarian Plain. It is especially common in the Kiskunság and Hortobágy National Parks, in the Kis-Balaton and around the Lake Velence.

Agonum sexpunctatum (Linnaeus, 1758) — Bükkszentkereszt: Kerek-hegy; Miskolc: Garadna-völgy; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak; Szilvásvárad: Keskeny-rét, Tar-kő. IV–VII, IX. — The specimens were collected between 600 and 900 m in *Aconito-Fagetum*, *Anthyllido-Festucetum rubrae* and *Lolio-Cynosuretum* associations from beneath stones. Widely distributed but uncommon in the hills and mountains, it prefers open, sunny places (forest margins, clearings), often near waters. It is quite rare in the Great Hungarian Plain, data are known from a few localities of the Kiskunság National Park and from the Béda-Karapancsa Landscape Conservation District (Horvatovich 1992*a*).

Agonum pelidnum (Paykull, 1798) (= *Agonum thoreyi* (Dejean, 1828)) — Miskolc: Hámori-tó. V. — The only specimen was collected at 300 m in *Chaerophyllo-Petasitetum* association by treading the ground. It is typical to waterside reeds and willows as well as overgrown shore of sodic lakes, mainly in the Great Hungarian Plain and the hills.

Agonum versutum Sturm, 1824 — Miskolc: Hámori-tó. V. — One specimen was swept at 300 m in *Chaerophyllo-Petasitetum* association. It is very similar to *Agonum viduum*, so some of the earlier locality data in Hungary are unreliable. Rare in Hungary, its localities are the following: Győr-Moson-Sopron county: Győr, Ikrény, Mosonmagyaróvár, Pinnye; Somogy county: Siófok, Somogyszob; Baranya county: Mohács; Bács-Kiskun county: Baja; Békés county: Gyula (Fig. 36). Hygrophilous, it is found near water (riverine forests, in waterside deposit).

Agonum viduum (Panzer, 1797) — Miskolc: Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak; Szilvásvárad: Szalajka-völgy. IV–X. — Many specimens were collected between 300 and 600 m in *Chaerophyllo-Petasitetum*, *Junco-Tussilaginetum*, *Typhaetum latifoliae* and *Carici acutiformis-Alnetum* association by treading the ground and pitfall traps. It is widely distributed and locally frequent in our mountains, sporadic in the hills (see Horvatovich 1992*a*, 1992*b*), rare in the lowlands (Mosonmagyaróvár, Kiskunfélegyháza and the Béda-Karapancsa Landscape Conservation District). A hygrophilous species preferring open parts of forests and muddy, overgrown watersides. According to Lindroth (1986), it often occurs together with *Agonum versutum*.

Agonum viridicupreum (Goeze, 1777) — Bélapátfalva: Berva-patak; Miskolc: Garadna-völgy; Nagyvisnyó: Elza-lak. IV–VI, VIII. — Four specimens were collected in the National Park. The collectors are as follows (in the order of the localities): M. Reskovits in 1959, I. Vásárhelyi in 1958 and 1959, Z. Kaszab and V. Székessy in 1956. This species was collected mainly in the Great Hungarian Plain, around the Lake Balaton and the Lake Velence, mostly in marshy and sodic places but also in loess grassland, *Salvio-Festucetum rupicolae* (Nyilas 1991). Only a few data are known from the mountains (Bakony, Buda Mts. and Börzsöny) and the hilly regions (e.g. Simontornya).

Platynus assimilis (Paykull, 1790) — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Bocfa-lápa, Hosszú-völgy, Odor-hegy; Cserépfalu: Hór-völgy; Felsőtárkány: Hárs-kút, Lénárt-forrás, Lőki-patak, Oldalvölgy; Miskolc: Bolhás, Disznós-patak, Fekete-sár, Felső-Sebes-víz, Forrás-völgy, Garadna-völgy, Hámori-tó, Jávorkút, Közép-forrás, Kurta-bérc, Létrás, Lyukas-gerinc, Nagymező; Nagyvisnyó: Ablakos-kő-völgy, Diabáz-barlang, Nagy-völgy; Parasznya: Soros-teber, Sziklakapus-víznyelő; Répáshuta: Csúnya-völgy, Pénzpatak; Szarvaskő: Tardos-hegy, Veres-oldal; Szilvásvárad: Őserdő, Tar-kő. III–XI. — A great number of specimens were collected between 250 and 950 m in almost all kinds of forests (including spruce plantations), in wet meadows, in *Chaerophyllo-Petasitetum* and other wet associations and in a cave at 30 m from the entrance. Collecting methods were pitfall trapping, treading the ground, sifting and singling from

beneath stones, pieces of wood, decaying woods and under bark. Distributed from the lowlands to the mountains, it is one of the most common species of Carabidae. Hygro- and umbrophilous, it is most common in soft-wood gallery forests in rotten wood and loose bark.

Platynus dorsalis (Pontoppidan, 1763) — Miskolc: Hosszú-bérc, Jávorkút, Lillafüred; Nagyvisnyó: Bálvány; Szilvásvárad: Szalajka-völgy. III–IX. — The specimens were collected between 250 and 900 m in various wet, open associations by treading the ground, sweeping and singling. It is as widely distributed and common in Hungary as the previous species but prefers open habitats and light forests; very common in agricultural lands.

Platynus obscurus (Herbst, 1784) — Bükkzsérc: Bocfa-lápa, Hosszú-völgy. VI, XI. — Eight specimens were found between 300 and 350 m in *Piceetum excelsae cultum* and *Aegopodio-Alnetum* associations by sifting and singling from rotten log. Widely distributed and frequent, it prefers wet places of the lowlands and the hills, occurs mainly under plant debris accumulated at the shore of waters.

Platynus albipes (Fabricius, 1796) (= *Platynus ruficornis* (Goeze, 1777)) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Kis-Piliske; Felsőtárkány: Lőki-patak; Miskolc: Forrás-völgy, Garadna-völgy, Hámori-tó; Nagyvisnyó: Elza-lak; Szarvaskő: Eger. V–X. — It was collected between 250 and 350 m in *Chaerophylletum aromatici*, *Chaerophyllo-Petasitetum*, *Aegopodio-Alnetum*, *Carici acutiformis-Alnetum* and *Querco petraeae-Carpinetum* associations by treading the ground, sifting and singling from beneath waterside debris, stones and bark. It occurs in wet places (mainly in densely overgrown watersides) of the hills and mountains. It is frequent in the flood-plain of the Danube in the Little Plain but sporadic in other parts of the lowlands, e. g. Hajós (Ádám and Merkl 1986) and Kölked (Horvatovich 1992*a*).

Zabrus tenebrioides (Goeze, 1777) — Felsőtárkány: Tar-kő; Miskolc: Garadna-völgy, Jávorkút, Létrás; Nagyvisnyó: Veres-sár-bérc; Parasznya: Kőlyuk; Szarvaskő: Eger; Szilvásvárad: Keskeny-rét, Őserdő. VII–VIII. — Eleven specimens were collected between 250 and 900 m in

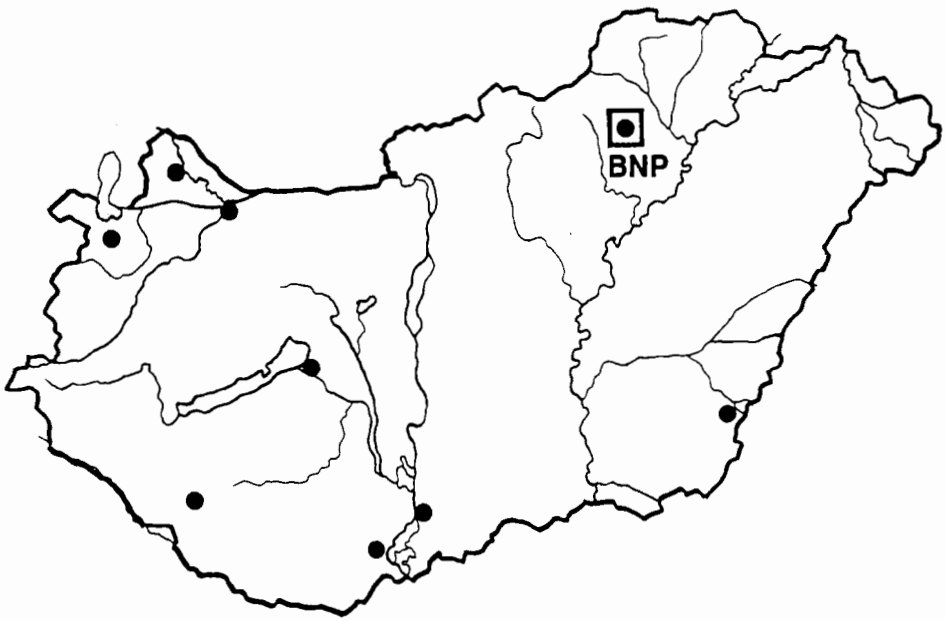


Fig. 36. Localities of *Agonum versutum* in Hungary

Waldsteinio-Spiraeetum, *Aconito-Fagetum*, *Anthyllido-Festucetum rubrae*, *Lolio-Cynosuretum* and *Aegopodio-Alnetum* associations by sweeping and singling from rotten log of beech. It is widely distributed in the grasslands and cereal fields of Hungary, occasionally a pest.

Amara aenea (De Geer, 1774) — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy; Felsőtárkány: Hereg-rét; Miskolc: Disznós-patak, Garadna-völgy, Hámori-tó, Jávorkút, Szentlélek; Nagyvisnyó: Elza-lak; Szilvásvárad. III–V. — It was collected between 250 and 900 m in a number of dry and wet open communities, by treading the ground and singling from beneath stones and from paths. Widely distributed and common all over Hungary preferring dry open (often sun-exposed) places. It is one of the more common carabids in agricultural lands (Horvatovich and Szarukán 1986).

Amara anthobia A. Villa et J. B. Villa, 1833 — Felsőtárkány: Hereg-rét; Varbó: Dobrica. IV–V, VII. — Two specimens were found in the National Park, between 300 and 500 m in *Querco petraeae-Carpinetum* and *Cynodonto-Festucetum pseudovinae* associations. The bulk of its localities is in the Great Hungarian Plain and the hills. It prefers open places (including sodic areas) but it was found in forests, too.

Amara apricaria (Paykull, 1790) — Cserépváralja: Kaptárkövek. IV. — One single specimen was taken at 200 m in *Bromo sterili-Robinietum* association from under stones. In Hungary, it inhabits the dry, warm habitats of the lower regions; typical for the sandy places with sparse vegetation but occurs also in sodic grasslands and forests. Only a few localities are known from the mountains.

Amara aulica (Panzer, 1797) — Miskolc: Garadna-völgy, Jávorkút; Varbó: Dobrica. IV–VII. — Of the nine specimens, only one is new which was singled at 300 m in *Querco petraeae-Carpinetum* association from rotten wood. A comparatively rare species, it was collected mainly in wet meadows along forests and waters of the hills and mountains. According to Lindroth (1986), it feeds on the flower heads of *Cirsium* and *Carduus*. In the Great Hungarian Plain, only a few localities are known: Ócsa in Pest county (Ádám and Merkl 1986), Kölked in Baranya county (Horvatovich 1992*a*), Debrecen in Hajdú-Bihar county (collection of HNHM) and Mezőhegyes in Békés county (Ádám 1981).

Amara bifrons (Gyllenhal, 1810) — Bükkzsérc: Ökrös-fertő; Felsőtárkány. IX–X. — The specimen from Bükkzsérc was singled from rotten wood (no information is available about the remaining old specimens). It is distributed in dry, sunny, sandy, sparsely vegetated places of the lower regions, often in company with *Amara fulva*.

Amara consularis (Duftschmid, 1812) — Miskolc: Disznós-patak. V. — One specimen was collected at 650 m in *Aconito-Fagetum* association by treading the ground. It is widely distributed in dry, open, sparsely vegetated places all over Hungary; frequent in arable lands, too (Horvatovich and Szarukán 1986).

Amara convexior Stephens, 1828 — Bélapátfalva: Ravaszlyuk; Cserépfalu: Hór-völgy, Közép-szék, Ódorvári rom; Felsőtárkány: Hereg-rét, Tar-kő; Miskolc: Garadna-völgy, Jávorkút; Nagyvisnyó: Csurgói erdészlak, Hármas-teber, Sinkó-bérc; Szilvásvárad: Büszkés-hegy, Keskeny-rét, Tótfalu-völgy; Varbó: Dobrica. III–VIII. — Many specimens were collected between 300 and 900 m in wet forests and also in various open associations by sweeping, treading the ground, singling from beneath stones, from rotten logs and debris. In Hungary, it prefers forests of the Great Hungarian Plain, the hills and the mountains but specimens were collected from dry grasslands (Nyilas 1991) and arable lands (Horvatovich and Szarukán 1986).

Amara cursitans (Zimmermann, 1832) — Miskolc: Nagy-mező. IX. — One single specimen was found at 850 m in *Lolio-Cynosuretum* from beneath stones. This species has a montane distribution in Central Europe. Only two specimens are housed in the collection of the HNHM: the above-mentioned specimen from the Bükk and another from Kaposgyarmat in Somogy county. (From the other parts of the Carpathian Basin, further five specimens are deposited in the HNHM, from Slovakia, Transylvania and the Banat.) Although Kuthy (1896 [1897]) and Csiki (1946)

mentioned this species from Budapest, the whereabouts of the voucher specimen is unknown to me, thus, the record is doubtful. *Amara cursitans* is, therefore, considered new to the fauna of Hungary.

Amara curta Dejean, 1828 — Miskolc: Garadna-völgy, Hosszú-bérc, Jávorkút, Lillafüred; Nagyvisnyó: Bálvány, Elza-lak, Hármaskút; Répáshuta; Szarvaskő: Tardos-hegy; Varbó: Dobrica. V, VII–VIII. — Twenty specimens are known from the National Park, the new material was collected between 350 and 850 m in *Lolio-Cynosuretum*, *Potentillo-Festucetum pseudodalmaticae* and *Alismato-Eleocharidetum* associations by sweeping and singling from beneath stones. It is known from nearly all parts of the mountains of Hungary, although in small number. It is sporadic in the lowlands and the hills: Csévharaszt in the Kiskunság National Park (Ádám and Merkl 1986), Siófok, Balatonaliga Simontornya and Nagybajom in Transdanubia (Horvatovich 1992*b*, collection of HNHM).

Amara equestris (Duftschmid, 1812) — Szilvásvárad: Keskeny-rét. VIII. — Only one specimen was captured at 850 m in *Aconito-Fagetum*. — Sporadic and rare in Hungary, its localities in the hills and mountains are listed by Horvatovich (1980). Scarcely any data are known in the lowlands: Mosonszolnok, Mosonmagyaróvár and Ásványráró in the Lesser Plain, Bugac, Kiskunfélegyháza and Debrecen in the Great Hungarian Plain (Horvatovich 1980*b*, collection of HNHM). The data on its habitats suggest a preference to dry and open places. At Acsád in the Vas county and at Mosonszolnok it was collected in agricultural lands.

Amara eurynota (Panzer, 1797) — Cserépfalu: Hór-völgy, Közép-szék; Miskolc: Garadna-völgy. IV, X. — Three specimens were collected in the National Park. The specimen from the Hór-völgy was sifted at 250 m in *Pastinaco-Arrhenatheretum* association from haystack. Its distribution in Hungary is rather sporadic. While it was found in many parts of the hilly and mountainous areas, only a few localities are known from the lowlands: Győr and Mosonmagyaróvár in the Little Plain; Dömsöd, Kalocsa, Ócsa, Debrecen and Bátorliget in the Great Hungarian Plain. It prefers dry, open, overgrown places, e.g. forest margins or high weeds; occurs also in agricultural lands.

Amara familiaris (Duftschmid, 1812) — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Kis-rét; Cserépfalu: Alsó-Csákány, Derda-kaszáló, Hór-völgy; Felsőtárkány: Fekete-len, Tar-kő; Miskolc: Csipkéskút, Disznós-patak, Garadna-völgy, Kurta-bérc; Nagyvisnyó: Elza-lak, Hármaskút, Nagy-völgy; Répáshuta: Tebepuszta; Szilvásvárad: Keskeny-rét; Varbó: Dobrica. III–VIII. — Many specimens were collected between 300 and 900 m in various forest associations as well as in dry and open meadows by singling from rotten wood, stones and dung, by treading the ground and sweeping. It is one of the most common and most widely distributed species of *Amara*.

Amara chaudoiri incognita Fassati, 1946 (= *Amara incognita* Fassati, 1946) — Répáshuta: János-rét. VI. — One specimen was swept at 700 m in *Anthyllido-Festucetum rubrae* association. Albeit sporadically, it is distributed in nearly all parts of Hungary. In the Great Hungarian Plain, it was collected from flood deposit at Lakitelek (Ádám and Merkl 1986), in sandy grasslands at Bátorliget (Kaszab and Székessy 1953) and in wet, sodic places of the Hortobágy National Park (Nyilas 1991). In the hills and mountains, it was found in open meadows. At Mosonszolnok, it was collected in agricultural lands.

Amara lucida (Duftschmid, 1812) — Cserépfalu: Derda-kaszáló; Miskolc: Bolhás; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak; Szilvásvárad: Keskeny-rét. V–VII. — The new specimens were swept between 450 and 850 m in *Pulsatillo-Festucetum rupicolae* and in *Anthyllido-Festucetum rubrae* associations. It is widely distributed in the lowlands, hills and mountains, mostly in dry, open habitats, including arable lands (Horvatovich and Szarukán 1986).

Amara lunicollis Schiødte, 1837 — Miskolc: Nagy-mező; Szilvásvárad: Keskeny-rét. IV, VII. — Three specimens were swept at 850 m in *Anthyllido-Festucetum rubrae* and *Lolio-Cynosuretum* associations. It is a rare species which is known from several parts of the Carpathians. Apart from the Bükk material, seven specimens are deposited in the collection of the HNHM from the

following localities: Hegykő, Kőszeg, Siófok, Zemplén Mts., (Nagy-Milic, Nagy-Péter-mennykő, Pálháza) and Ócsa (Mádencia). All specimens were determined by F. Hieke (Berlin). One specimen coming from Bajánsenye (Őrség) was collected by A. Podlussány (MMGY) (Fig. 37). The following locality data are known from the literature: Fertő, Sopron (Kuthy (1896 [1897], Szőce (Horvatovich 1981*a*). According to Lindroth (1986), it is a species with wide ecological valency, preferring more or less dry, mainly sandy or peaty places.

Amara nitida Sturm, 1825 — Miskolc: Hosszú-bérc, "Nagy-bérc"; Nagyvisnyó: Huta-rét; Szilvásvárad: Keskeny-rét. IV, VI. — Five specimens are known from the National Park. Two of them, (Hosszú-bérc, Nagy-bérc) were collected earlier. The remaining three specimens were singled at 850 m in *Anthyllido-Festucetum rubrae* and *Lolio-Cynosuretum* associations from beneath stones. It is a rare Carpathian species. Apart from the Bükk material, 12 further specimens are deposited in the collection of the HNHM from the following localities: Mosonmagyaróvár, Siófok, Buda Mts., Lakitelek (Tőserdő), Ócsa (Nagy-erdő), Orgovány, Kiskörös (Szűcsi-erdő), Mátra (Galya-tető) and Zemplén Mts. (Nagy-Péter-mennykő, Pálháza) (Fig. 38). Literature data include Kőszeg, Budapest, Kalocsa, Eger (Kuthy (1896 [1897])), Hódos-ér-völgy in the Bakony Mts. (Tóth 1973), Diósjenő (Závos-nyereg) in the Börzsöny Mts. (Endrődi 1974). The lowland specimens were found in marshy forests as well as in sodic, marshy meadows (Ádám and Merkl 1986), the specimens from the Mátra and Bakony Mts. were singled from beneath stones.

Amara ovata (Fabricius, 1792) — Cserépfalu: BNP-kutatóház, Hór-völgy, Közép-szék; Felsőtárkány: Hereg-rét, Tar-kő; Miskolc: Disznós-patak, Garadna-völgy, Hámori-tó, Közép-forrás; Nagyvisnyó: Ablakos-kő-völgy, Bánya-hegy, Csurgói erdészlak, Elza-lak; Szilvásvárad: Tótfalu-völgy; Varbó: Dobrica. IV–VIII. — Many specimens were collected between 250 and 900 m from *Aconito-Fagetum, Querco petraeae-Carpinetum, Tilio-Fraxinetum, Anthyllido-Festucetum rubrae, Alopecuro-Arrhenatheretum* and *Chaerophyllo-Petasitetum* associations by treading the ground and singling from rotten wood, from beneath stones and logs. It occurs mainly in the hills and mountains with a few localities in the lowlands (Fertőhomok, Kiskunság National Park and environs of Szeged: data of HNHM). It prefers wet forests and forest margins.

Amara saphyrea Dejean, 1828 — Bükkzsérc: Kispazsag; Nagyvisnyó: Elza-lak. V. — Three specimen were collected in the National Park by M. Reskovits in the 1950s and by Z. Kaszab and V. Székessy in 1956. It prefers wetter forests and forest margins of the hills and lowlands but there are mountain data as well. At Mosonszolnok, it was found also in agricultural lands.

Amara similata (Gyllenhal, 1810) — Cserépfalu: Hór-völgy; Felsőtárkány: Hereg-rét; Miskolc: Hámori-tó; Nagyvisnyó: Ablakos-kő-völgy, Elza-lak, Nagy-völgy; Szilvásvárad. IV–V. — The bulk of the specimens was collected between 250 and 800 m in *Chaerophyllo-Petasitetum* and *Cynodonto-Festucetum pseudovinae* associations and in the reeds by treading the ground and singling from beneath stones. In Hungary, it is typical to the forest steppe belt but specimens were found in canopied forests and arable lands as well.

Amara tibialis (Paykull, 1798) — Cserépfalu: Hór-völgy. VI. — One single specimen is known without information on the habitat. It is common in the wet places of the lower regions.

Chlaenius nigricornis (Fabricius, 1787) — Bélapátfalva: Rocska-völgy; Miskolc: Garadna-völgy, Hámori-tó; Nagyvisnyó: Elza-lak; Répáshuta: Tebepuszta. V–IX. — The old specimens were taken from waterside deposit, the new material was collected between 300 and 350 m in *Chaerophyllo-Petasitetum* and *Typhaetum latifoliae* associations by treading the ground and singling. In Hungary, it is found in wet, densely overgrown places (reeds, hummocks, riverine forests), mainly in the hills and lowlands.

Chlaenius nitidulus (Schrank, 1781) — Miskolc: Garadna, Garadna-völgy, Hámori-tó, Lillafüred; Nagyvisnyó: Elza-lak. V–IX. — Fourteen specimens are known from the area. The new material was collected between 300 and 350 m in *Chaerophyllo-Petasitetum* association by treading the ground and singling from beneath logs. Its distribution and ecological demands in Hungary are similar to those of the previous species.

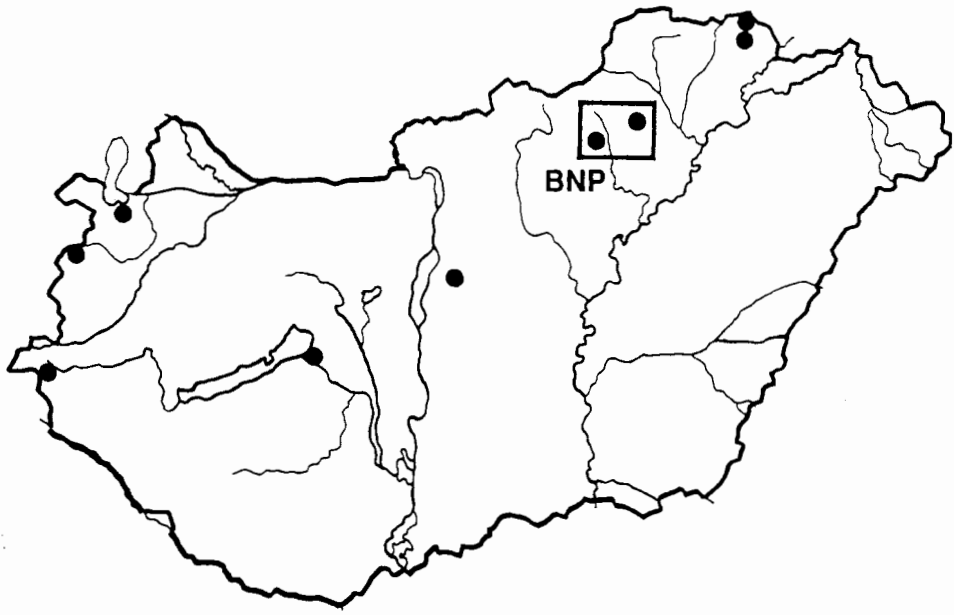


Fig. 37. Localities of *Amara lunicollis* in Hungary

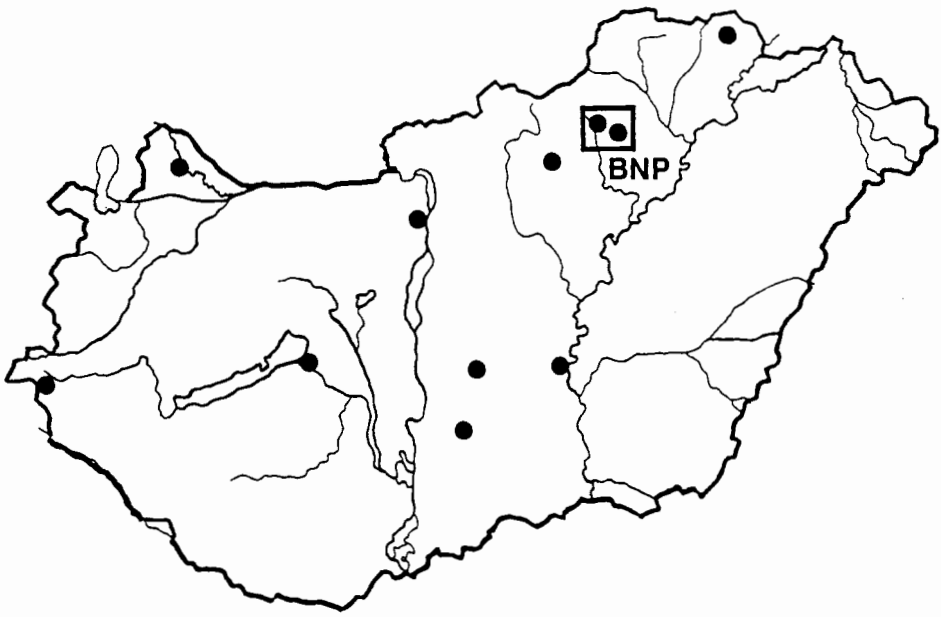


Fig. 38. Localities of *Amara nitida* in Hungary

Chlaenius spoliatus (Rossi, 1790) — Kisgyőr; Miskolc: Garadna-völgy, Hámori-tó, Lillafüred. V. — Four specimens were collected in the protected area. Three of them are old, the fourth was taken in *Chaerophyllo-Petasitetum* association by treading the ground. Hygrophilous, it is found mainly in sparsely vegetated watersides (often in sodic areas) of the Great Hungarian Plain but occurs in the hills and the mountains as well. It is known also from agricultural lands.

Chlaenius tristis (Schaller, 1783) — Miskolc: Garadna-völgy, Hámori-tó, Lillafüred. V–IX. — Twenty-one specimens are known from the area investigated. The single new specimen (from the shore of the Hámori-tó) was collected at 300 m in *Chaerophyllo-Petasitetum* association by treading the ground. Hygrophilous, it is widely distributed in the lowlands, the hills and the mountains but decidedly rarer than the preceding species. It prefers reeds, hummocks and overgrown parts of watersides.

Chlaenius vestitus (Paykull, 1790) — Miskolc: Garadna-völgy, Hámori-tó, Hosszú-bérc, Jávorkút; Nagyvisnyó: Elza-lak. V–VIII. — Twelve specimens are known from the area. The new specimens (from the shore of the Hámori-tó) were collected at 300 m in *Chaerophyllo-Petasitetum* association by treading the ground. It is one of the most common species of *Chlaenius* which occurs from the lowlands to the lower regions of the mountains. It inhabits the more or less overgrown wet places, mainly watersides.

Callistus lunatus (Fabricius, 1775) — Nagyvisnyó: Elza-lak. VI. — One old specimen is known from the investigated area which was collected by Z. Kaszab and V. Székessy in 1956. While recorded from all major regions of Hungary, it is sporadic everywhere and only a few specimens are known from the localities. Hygrophilous, it was found both in forests (Ádám and Merkl 1986, Hieke 1983) and open habitats (Tóth 1973).

Oodes helopioides (Fabricius, 1792) — Cserépfalu: Hór-völgy; Miskolc: Hámori-tó; Répáshuta: Tebepuszta. IV–VIII. — The specimens were collected between 250 and 350 m in *Cuscuto-Calystegietum*, *Chaerophyllo-Petasitetum* and *Typhaetum latifoliae* associations by treading the ground and singling from beneath stones. It occurs mainly in the lowlands and lower hills, in the reeds and hummocks and other marshy habitats.

Licinus cassideus (Fabricius, 1792) — Miskolc: Bánkút. VII. — Only one specimen is known from the protected area collected by J. Jablonkay in 1953 (deposited in the MMGY). A xerophilous species, it was collected mainly in the Great Hungarian Plain, rarely in the hills and mountains, in dry, warm grasslands. It is sporadic and only a low number of specimens is known from all localities. The bulk of the specimens deposited in the HNHM comes from the southern slopes of the Buda Mts. and other hilly areas around Budapest.

Licinus depressus (Paykull, 1790) — Szilvásvárad: Keskeny-rét. IV. — Two specimens were singled at 850 m in *Anthyllido-Festucetum rubrae* association. Sporadic, it was found both in marshy places (Ádám and Merkl 1986) and drier habitats (Hieke 1983). The Hungarian localities include forests, forests margins and open associations of the Great Hungarian Plain as well as the hilly and mountain regions.

Badister bullatus (Schrank, 1798) (= *Badister bipustulatus* (Fabricius 1792)) — Cserépfalu: Hór-völgy; Miskolc: Jávorkút; Nagyvisnyó: Hármaskút, Nagy-mező; Szilvásvárad. IV–VII. — Five specimens were collected between 250 and 850 m in *Cuscuto-Calystegietum* and *Lolio-Cynosuretum* associations by singling from trails and from beneath stones. It is widely distributed in the lowlands, the hills and the mountains, preferring wet places of light forests and forest margins but occurring in drier associations and agricultural lands as well. According to Lindroth (1986), this is the most ubiquitous species of *Badister*.

Badister lacertosus Sturm, 1815 — Miskolc: Garadna-völgy; Szilvásvárad: Tótfalu-völgy. V, VII. — Only two specimen is known from the area which were collected by I. Vásárhelyi in 1958 (HNHM) and I. Rozner in 1985 (CRO). It is known from gallery forests, forest margins and watersides of the lowlands and the hills.

Badister meridionalis Puel, 1925 — Nagyvisnyó: Ablakos-kő-völgy. VIII. — One specimen was collected at 650 m in *Phyllitidi-Aceretum* association from beneath loose bark. This is the most common of the larger species of *Badister* with coloured elytra. It prefers wet habitats (including sodic places) of the lowlands and the hills.

Badister sodalis (Duftschmid, 1812) — Miskolc: Forrás-völgy. IX. — One specimen was collected at 250 m from beneath stones in *Chaerophylletum aromatici*. Data are known from wet habitats (plant debris in watersides and forests) of the lowlands and the hills.

Panagaeus bipustulatus (Fabricius, 1775) — Miskolc: Hosszú-bérc; Nagyvisnyó: Ablakos-kő-völgy, Ágazat-bérc (= "Nagy-bérc"), Bán völgye. V. — Five specimens are known from the area. Four are old, which were swept and singled on forest trail. The new specimen was singled at 800 m in *Aconito-Fagetum* association from beneath stones. It is widely distributed but uncommon in the hills and the mountains, while rare in the Great Hungarian Plain. It lives both in wet and dry habitats. In Mosonszolnok, it was found in agricultural land.

Panagaeus cruxmajor (Linnaeus, 1758) — Bélapátfalva: Ravaszlyuk; Miskolc: Garadna-völgy; Nagyvisnyó: Ablakos-kő-völgy. IV, VI–VII. — Six old and one new specimen are known from the area, the latter was singled at 350 m in *Cynodonto-Festucetum pseudovinae* association. It often occurs together with the previous species but somewhat commoner. It prefers watersides and other wet places in forests and open associations. Most of the specimens deposited in the HNHM come from the Kis-Balaton.

Odacantha melanura (Linnaeus, 1767) — Cserépfalu: Hór-völgy. VI. — One specimen was swept at 250 m in *Querco petraeae-Carpinetum* association. A characteristic species of the reeds, it is widely distributed but uncommon in the Great Hungarian Plain, the hills and the lower parts of the mountains. It occurs mainly on *Typha* or *Phragmites* in marshy places or in the coastal zone of various water bodies. Wintering adults are found in the leaf sheath of the reed.

Masoreus wetterhallii (Gyllenhal, 1813) — Szilvásvárad: Tar-kő. X. — On specimen was sifted at 950 m in *Tilio-Fraxinetum* association. Sporadic and rare, it is known mainly from the dry, sandy regions of the Great Hungarian Plain. In the collection of the HNHM, specimens are known from the following localities: Győr, Bugac, Ágasegyháza, Újfehértó, Bátorliget (Great Hungarian Plain); Pápa, Szár, Siófok, Székesfehérvár, Nagykovácsi: Nagy-szénás (Transdanubia); Pécel, Isaszeg (Gödöllő Hills). Further data are known from the Hortobágy (Nyilas 1991), the Bodrogköz (specimens collected by G. Hegyessy) and the northern part of the Bakony Mts. (Tóth 1973).

Lebia chlorocephala (Hoffmann, 1803) — Cserépfalu: Hór-völgy; Felsőtárkány: Barát-völgy, Laci-lápa; Miskolc: Kurta-bérc; Nagyvisnyó: Bánkút, Hármaskút. V–VII, IX. — Six specimens were collected between 350 and 850 m in forest margins and various open associations (*Lolio-Cynosuretum*, *Pastinaco-Arrhenatheretum*), partly from beneath stones. Uncommon, it is distributed in the hills and the mountains but quite sporadic in the Great Hungarian Plain. The lowland localities are Mosonmagyaróvár, Szigetszentmiklós, Kalocsa and Nagyhegyes (specimens in the HNHM). In the Velence Hills, it was sifted in an old oak forest while at the Lake Velence, it was collected at the base of willow trees. According to Lindroth (1986), it prefers open places overgrown by high weeds where sweep-netting is the most convenient method of collecting. Its larva is parasitoid of the leaf beetle *Chrysolina varians* Schaller feeding on *Hypericum* species (Lindroth 1986).

Lebia cruxminor (Linnaeus, 1758) — Cserépfalu: Hór-völgy; Miskolc: Fekete-sár, Svéd-fenyves; Nagyvisnyó: Elza-lak; Szarvaskő; Veres-oldal; Szilvásvárad: Tótfalu-völgy. IV–VI, VIII. — Eleven specimens were collected in *Potentillo-Festucetum pseudodalmaticae*, *Lolio-Cynosuretum* and *Quercetum petraeae-cerris* associations by sweeping and singling from beneath stones and from wood-stack. It is swept and beaten from shrubs and trees in forests, forest margins and open habitats in the hilly and mountainous regions.

Lebia humeralis Dejean, 1825 — Cserépfalu: Derda-kaszáló. V. — A single specimen was swept at 450 m in *Pulsatillo-Festucetum rupicolae* association. It is known from all major regions of Hungary but sporadic and in low individual numbers. As the two previous species, it is swept and beaten from trees and shrubs.

Demetrias monostigma Samouelle, 1819 — Cserépfalu: Derda-kaszáló. V. — One specimen was swept at 450 m in *Pulsatillo-Festucetum rupicolae* association. It is known from most major regions of our country but usually in low numbers. It prefers the reeds but found in wet meadows, forest margins and drier places as well (Horvatovich 1988, 1992*a*).

Cymindis humeralis (Fourcroy, 1785) — Cserépfalu: Hór-völgy; Miskolc: Teknős-völgy; Nagyvisnyó: Bálvány, Hármaskút, Nagy-István erőse. VII, IX. — Nine (mostly old) specimens are known from the area between 250 and 850. The newer specimens were collected from *Querco petraeae-Carpinetum* and *Lolio-Cynosuretum* associations by pitfall traps and singling from beneath stones. Rare in Hungary, it was collected mainly in the dry, sparsely vegetated places of the mountains. In the Great Hungarian Plain, it is known only from Debrecen and the Csepel Island. In the hilly regions, it is known from the following localities: Pettend (Frivaldszky 1874), Pétfürdő, Kádárta, Siófok, Balatongyörök (collection of the HNHM) and Balatonakali (Tóth 1973).

Dromius agilis (Fabricius, 1787) — Nagyvisnyó: Gerennavár. III. — Three specimens were collected at 700 m in *Tilio-Fraxinetum* from beneath bark. A forest species, it is widely distributed in the hilly and mountainous regions. In the Great Hungarian Plain, it is known only from Kalocsa, Solt and Tompa (Ádám and Merkl 1986). It lives on branches and on the trunk, often under bark.

Dromius fenestratus (Fabricius, 1794) — Miskolc: Hámor; Nagyvisnyó: Ablakos-kő-völgy; Szilvásvárad: Pes-kő. IV, VI. — Three specimens were collected. One is old; the second (from the Ablakos-kő-völgy) was collected at 650 m in *Phyllitidi-Aceretum* from beneath bark of beech; the third was beaten from fungus-grown twigs at 860 m. New to the fauna of Hungary. Of the 17 specimens deposited in the HNHM, 11 are from Transylvania and Slovakia, three have no further information other than "Hungaria". Apart from the three above-mentioned specimens collected in the Bükk, one specimen is known from the Bakony Mts. (Zirc). According to Lindroth (1986) it is a forest-dwelling species.

Dromius linearis (Olivier, 1797) — Szilvásvárad: Keskeny-rét. VII. — One specimen was swept at 850 m in *Anthyllido-Festucetum rubrae* association. One of the more common species of *Dromius* in Hungary, it is widely distributed in the Great Hungarian Plain as well as in the hills and mountains. In the Great Hungarian Plain, it was collected from the underwood and the foliage (Hieke 1983), beaten from trees (Ádám and Merkl 1986) or collected in wet meadows (Ádám and Rudner personal communication). Lindroth (1986) considered it as xerophilous, while Tóth (1973) regarded it as hygrophilous.

Dromius quadrimaculatus (Linnaeus, 1758) — Cserépfalu: Hór-völgy; Mályinka: Vár-völgy; Nagyvisnyó: Gerennavár. III–IV, VIII. — Five specimens were collected between 250 and 700 m in *Tilio-Fraxinetum* association, from beneath bark and beaten from twigs. It was beaten or singled from trees in the lowlands, hills and mountains. Specimens were captured by sifting leaf-litter (Kaszab and Székessy 1953) and by light traps (Kádár and Szél 1989) as well.

Syntomus pallipes (Dejean, 1825) — Cserépfalu: BNP-kutatóház; Miskolc: Lillafüred. IV–V, VII, IX–X. — Five specimens are known from the area, without more data (one specimen was singled from house wall). Widely distributed in Hungary, it was collected mainly in wet places of open associations, forest margins and clearings, also in agricultural lands. According to Nyilas (1991), who collected it in *Achilleo-Festucetum pseudovinae* association, it is a xerophilous species.

Syntomus truncatellus (Linnaeus, 1761) — Miskolc: Lillafüred, Nagy-mező; Nagyvisnyó: Bálvány, Elza-lak; Szilvásvárad: Tányéros-teber. VI, VIII–IX. — Eight specimens were collected between 250 and 900 m from leaf litter and from beneath stones. It is as widely distributed and

common as the previous species. The bulk of the specimens was collected by sifting and sweeping in the margin of wet forests. According to Lindroth (1986), it is typical to dry, sparsely vegetated meadows and light forests and occurs in arable lands, too.

Microlestes fissuralis Reitter, 1900 — Cserépfalu: Hór-völgy. IV. — One specimen was sifted from wood-stack at 250 m in *Quercetum petraeae-cerris* association. This species can be separated from the two subsequent congeners by the male genitalia, so the Hungarian records (which were based on specimens identified by superficial features) need revision. Sporadic and rare, its checked localities are Budapest, Nagykovácsi: Nagy-szénás, Kartal, Szeged, Tiszasüly, Hortobágy: Nagyiván, Bátorliget and Bükk.

Microlestes maurus (Sturm, 1827) — Cserépfalu: Hór-völgy; Miskolc: Lillafüred; Nagyvisnyó: Ablakos-kő-völgy. IV, VIII–X. — Seven specimens were collected between 250 and 650 m in *Quercetum petraeae-cerris* and *Phyllitidi-Aceretum* associations by sifting from wood-stack and singling from beneath bark. Widely distributed and quite frequent in Hungary, it often occurs together with *Microlestes minutulus*. Ubiquitous inhabiting both dry, sparsely vegetated and wet places (in willow stands, meadows, under reed debris and leaf litter). It was found at sodic puddles (Hieke 1983) as well.

Microlestes minutulus (Goeze, 1777) — Cserépfalu: Derda-kaszáló, Hór-völgy; Cserépvára-alja: Török-rét; Miskolc: Forrás-völgy; Nagyvisnyó: Ablakos-kő-völgy; Répáshuta; Szarvaskő: Veres-oldal; Szilvásvárad: Szána-fő. IV–VII, X. — Fifteen specimens were collected between 250 and 800 m in various wet and dry associations. The most common species of *Microlestes*, it lives in situations similar to those of the previous species. It was found in agricultural lands as well.

Polystichus connexus (Fourcroy, 1785) — Miskolc. VI. — One specimen was collected by light trap in 1964. It is a rare and sporadic species, almost all specimens were collected at light. Therefore, its habitats can only be roughly characterized. Most localities fall into the Great Hungarian Plain, where it was found either in dry, warm habitats (Kiskunság National Park, Ádám and Merkl 1986), or in wet places such as reeds and watersides (Erdős 1935, Horvatovich 1992*a*). A few records are known from the river valleys of the hills and mountains (Csiki 1946).

Drypta dentata (Rossi, 1790) — Bükkzsérc: Bocfa-lápa; Cserépfalu: Hór-völgy; IV, XI. — Three specimens were collected between 250 and 350 in *Quercetum petraeae-cerris* and *Piceetum excelsae cultum* associations by singling from wood-stack and rotten logs of spruce. A hygrophilous species, it is found in leaf litter and plant debris of reeds and willow stands all over the lowlands, hills and the lower regions of the mountains.

Brachinus crepitans (Linnaeus, 1758) — Nagyvisnyó: Nagy-völgy. V. — Only one specimen is known from the National Park which was collected by M. Reskovits in 1956. However, vast number of specimens was collected beyond the border of the protected area at Síkfőkút, Pereces, Eger and Tard. Thermophilous, it is widely distributed in the lowlands and the hilly regions but rarer in the mountains. It prefers dry or slightly wet, more or less densely overgrown habitats and a frequent inhabitant of agriculture lands.

Brachinus explodens Duftschmid, 1812 — Cserépfalu: BNP-kutatóház, Derda-kaszáló, Hór-völgy; Miskolc: Hosszú-bérc, Lillafüred; Nagyvisnyó: Elza-lak, Nagy-mező. IV–VI, IX. — Thirteen specimens were collected between 250 and 850 in *Lolio-Cynosuretum*, *Cuscuto-Calystegietum* and *Pastinaco-Arrhenatheretum* associations by sweeping and singling from beneath stones and from house wall. The most frequent species of *Brachinus*. It is widely distributed all over Hungary. It inhabits forest margins, arable lands, cereal fields, ruderal places, sodic grasslands and other wet and dry habitats.

Brachinus ganglbaueri (Apfelbeck, 1904) — Cserépfalu: Hór-völgy. IV–V, XI. — Five specimens were collected from beneath stones at 250 m in *Cuscuto-Calystegietum* and *Pastinaco-Arrhenatheretum* associations. Found mainly in the Great Hungarian Plain and the hilly regions, it is locally frequent but generally rarer than the two previous congeners. According to Nyilas

(1991), it is a hygrophilous and thermophilous and salt-tolerant species. It occurs also on agricultural lands.

Brachinus psophia Audinet-Serville, 1821 — Cserépfalu: Hór-völgy. IV. — Only one specimen was collected at 250 m in *Cuscuto-Calystegietum* association from beneath stones. It can be separated from the most similar *B. ganglbaueri* by the male genitalia and the fringe along the posterior margin of the pronotum. This fringe consists of longer and rather irregular hairs on *B. ganglbaueri* (Sama 1976). Apart from the above-mentioned locality, only a few collecting sites are known from Hungary. These are the following: Pest county: Kartal (collection of HNHM); Heves county: Eger (Kádár and Szél 1995); Borsod-Abaúj-Zemplén county: around Szerencs (Chyzer 1885), Bodrogkeresztúr, Sátoraljaújhely, Timár (Kovács and Hegyessy 1993) Békés county: Bélmegyer, Doboz, Szabadkígyós, Szanazug (Ádám and Rudner personal communication).

Aptinus bombarda (Illiger, 1800) — Bélapátfalva: Ravaszlyuk; Bükkzsérc: Hosszú-völgy; Cserépfalu: Hór-völgy; Miskolc: Garadna-völgy, Lyukas-gerinc; Nagyvisnyó: Elza-lak, Gerennavár; Szarvaskő: Új-határ-völgy; Szilvásvárad: Tar-kő. V, VIII, X. — Many specimens were collected between 250 and 950 m in various forest associations (*Aconito-Fagetum*, *Tilio-Sorbetum*, *Querco petraeae-Carpinetum* and *Carici acutiformis-Alnetum*) by pitfall traps. In Hungary, it occurs in the Northern Mountains (with exception of the Zemplén Mts.), the Transdanubian Central Mountains and the Alpokalja but absent from the Great Hungarian Plain and Southern Transdanubia. It is a forest-inhabiting species which can be collected by pitfall traps, mainly in oak and beech forests, often in mass.

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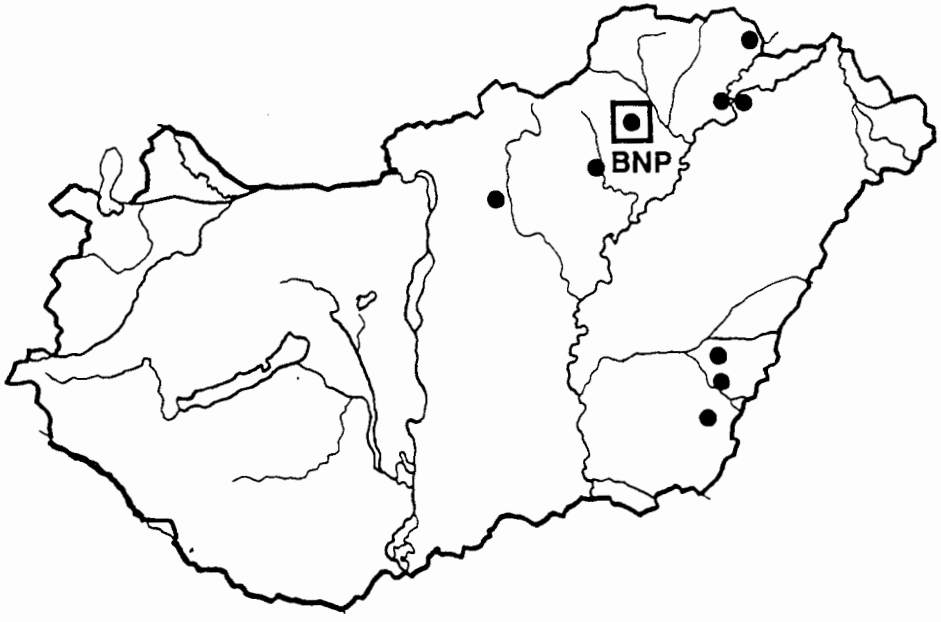

Fig. 39. Localities of *Brachinus psophia* in Hungary

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