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The Ground Beetles (Coleoptera: Carabidae) of South Dobrudzha, Bulgaria

Nikolai D. Kodzhabashev[1], *Lyubomir D. Penev*[2]

Abstract: This paper summarizes data on the distribution of 348 species of ground beetles (belonging to 83 genera) in South Dobrudzha, Bulgaria. One species (*Bembidion* (*Ocydromus*) *persicum* Menétriés, 1832) is new to the fauna of Bulgaria. Eleven species are new to the region, 4 species have been previously recorded from Bulgaria only once, and 121 species have been previously recorded from less than 3 localities in South Dobrudzha. The species richness approaches nearly half (47%) of the ground beetle species hitherto known from Bulgaria. Two hundred twenty-five species (73%) were recorded on the basis of materials studied by the authors. The bulk of the species (200 species, or 58%) are known from single or few localities and, hence, they can be described as rare. About 110 species (32%) can be described as relatively common, and 35 species (10%) can be described as very common, or mass species. All recorded species are classified into zoogeographical, habitat-preference, and life-form categories. An analysis of the taxonomic, zoogeographical, ecological and life-form features of the fauna is given.

Keywords: Ground beetles, Coleoptera, Carabidae, Bulgaria, Dobrudzha

Introduction

The studies on the ground beetle fauna of South Dobrudzha began at the end of the 19th century. The subsequent period of investigation can be divided into three stages, according to the aims and methods of study. The first publications on ground beetles were mostly faunistic and originated between 1884 and 1928. In three well-known works on Bulgarian insects (Kovachev 1905, Markovitch 1909, Nedelkov 1909), the authors reported a total number of about 70 species of Carabidae from Northeastern Bulgaria, originating mainly from the districts of Russe, Razgrad and Varna. The detailed survey on the Balkan fauna of Adephaga of Apfelbeck (1904) is another important source of information, wherein about 30 species from South Dobrudzha, mainly from the vicinities of Varna, as well as single records from Silistra, Srebarna and the northern Black Sea Coast, were published. Later, the Czech entomologist F. Rambousek published his review on the beetle fauna of Bulgaria containing several records on Carabidae from Dobrudzha (Rambousek 1912).

The second period of research, carried out between 1928 and 1950, is characterized by more intensive and detailed faunistic investigations. In the late twenties,

[1] University of Forestry, 10, St. Kliment Ohridski Blvd., Sofia, Bulgaria, Email: ndkodjak@abv.bg

[2] Central Laboratory of General Ecology, 2, Gagarin St., 1113 Sofia, Bulgaria,
Email: pensoft@mbox.infotel.bg

KANTARDJIEVA (1928) and BURESCH, KANTARDJIEVA (1928) published two important works on Cicindelinae and tribe Carabini, respectively. These two papers were the first attempts to summarize all available data on a particular taxonomic group from the Bulgarian territory, establishing in this way the fundamentals of the future Fauna Bulgarica series. In 1929, A. Müller published a paper, in which he reported about 20, mainly rare steppe species, from the vicinities of Kavarna (MÜLLER 1929). The hallobiont Carabidae fauna of the coastal area of Dobrudzha was investigated by LUTSHNIK (1934) and KARNOSCHITZKY (1950). During the same period, the Romanian coleopterologist S. Panin studied the local fauna of Carabidae in the floodland forests along the Batova River and its mouth (PANIN 1941). Some species from the localities north of Varna were reported by DRENSKY (1942). The species composition, density and injuriousness of the genus *Zabrus* were discussed in a paper by DRENSKY *et al.* (1951).

The third period of investigation started in the 1970s and still continues. It is a period of summarizing data collected before, as well as of gathering new information on the species composition and habitat preferences of the ground beetles in Dobrudzha. In 1975, the Czech entomologist Zbyšek Šustek carried out his diploma work on the comparison of carabid faunas of the Bulgarian and the Romanian parts of Dobrudzha, wherein several species from the vicinities of Balchik and Albena were reported (ŠUSTEK 1975). Two important sources of information on the carabids of Bulgaria and Dobrudzha in particular are the papers of HIEKE, WRASE (1988) and Wrase (1991), as well as the catalogue of GUÉORGUIEV, GUÉORGUIEV (1995). The peculiarities of distribution of the ground beetles in the oak forests of Dobrudzha were studied by the second author in 1984-1987 as a part of his investigations on the ground beetles of the East-European forest-steppe zone. Five broad-leafed forests, situated in the Forestry of Karakuz, in the Papratta locality near the Srebarna Biosphere Reserve and near to the villages of Dabrava and Senokos, were sampled by pitfall traps (PENEV 1989, 1992). Some years later, in 1991-1997, the senior author of this paper carried out extensive studies on the species composition and habitat preferences of ground beetles of the Srebarna Biosphere Reserve and a checklist of the beetle species from this locality was published by KODZHABASHEV, PENEV (1998). Further detailed investigations of the species composition, community structure and biodiversity of the Carabidae assemblages of the northern Bulgarian Black Sea Coast are reported in the paper of POPOV, KRUSTEVA (1999).

The present paper aims to summarize the data on the Carabidae fauna hitherto known from South Dobrudzha. We consider it necessary for each species to be characterized by its habitat preferences, distribution, life form and frequency of occurrence, as well as to investigate the taxonomic, ecological, zoogeographical and life-form peculiarities of the regional fauna. The systematic list follows KRYZHANOVSKIJ *et al.* (1995).

The paper is based on rich material collected by the authors since 1985. Most species are determined by the authors and confirmed by Dr F. Hieke and David Wrase (Berlin), the late Prof. O.L.Kryzhanovskij (St. Petersburg), Drs. B. Kataev and I. Belousov (St. Petersburg) and Dr. D. Fedorenko (Moscow). The authors are indebted to the above-mentioned colleagues for their valuable support, as well as to both Mr Gordon Ramel and Dr Krasimir Kabakchiev for the linguistic editing of the manuscript.

Study Region

South Dobrudzha is understood here in the widest possible sense, covering the territory between the line connecting Russe and Varna, the Danube River and the land border between Bulgaria and Romania (Fig. 1). Some data from the adjacent regions, i.e. the environs of Razgrad and Shumen, were also included.

Dobrudzha is described as a flat to hilly territory, nowadays covered mostly by agricultural landscapes and remnants of the former deciduous forests. Despite its relatively uniform landscape, Dobrudzha is rich in habitats supporting diverse faunas. The northern coast of the Black Sea is characterized by presence of fragmented patches of steppe and steppe-like grasslands, saline and salinized habitats and a few lakes, the most famous of which are Shabla and Durankulak lakes. The bank of the Danube River is another major factor for supporting specific habitats, such as flooded ("longoz") forests, clayish banks, lakes, swamps, dikes, etc. Within the internal part of the region there are several habitats of high specificity and conservation value, i.e. limestone slopes, dry river valleys, small caves and so on. In this respect, the limestone canyon-like dried valley of the Suha Reka, starting from the region of Dobrich and going into Romania, needs special attention as a major oasis of calcareous and xerophilous habitats hosting many plant and animal species of primary conservation value.

The forests of Dobrudzha are also of special interest, as they seem to be preserved islands of biodiversity scattered throughout the prevailing agricultural landscape. The flooded forests, called often "longoz", are found in few places between the villages of Dolno Ryahovo, Malak Preslavets, Garvan, Popina, Vetren, Srebarna at the Danube and also on the Danube islands. In the past, most parts of these unique biocoenoses have been destroyed and turned into poplar plantations. One more longoz forest is known from the mouth of the Batova River near Balchik and the resort of Albena. Though preserved by law, this forest suffers from both the strong

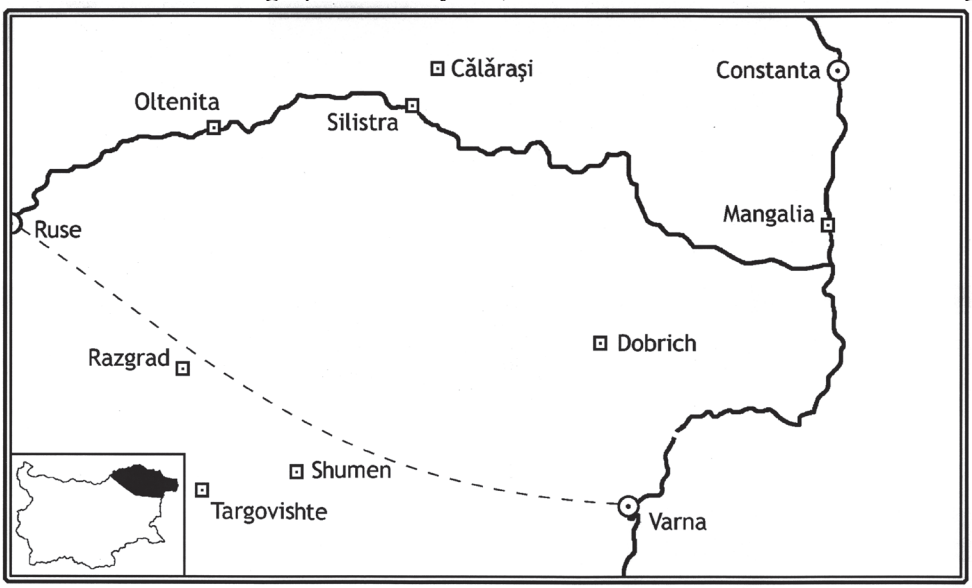

Fig. 1. Map of the study region.

impact of tourism in that region and the drainage works along the road between Balchik and Varna. Deciduous forests of mesophilous type are known mostly from the western part of Dobrudzha, along the border with the Ludogorie region, i.e. in the localities Palamara near Venetz village, Irihisar near Stefan Karadzha village, Karakuz and Zli Dol near Alfatar and Dulovo towns, respectively. Xerophilious deciduous forests are a characteristic of the central and especially eastern parts of Dobrudzha, such as Dabrava and Senokos near Balchik and the Suha Reka valley near the villages of Onogur, Efreitor Bakalovo, Golesh and others. Generally, all these forests are younger than 40-60 years, though their root systems are dated to be nearly 400-450 years old. The preservation of the forests and forest patches of Dobrudzha is of primary importance for maintaining the rather diverse fauna of European and Euro-Siberian forest species (see below).

Results and Discussion

Species Diversity and Taxonomic Structure

In the course of the present study, 348 carabid species belonging to 83 genera were recorded from South Dobrudzha (see Appendix). One species (*Bembidion (Ocydromus) persicum* Menétriés, 1832, is new to the fauna of Bulgaria. Two hundred twenty-five species, or 73% of all the fauna, are either reported or confirmed by the authors on the basis of studied material, and the rest of the species are known from literature sources only. Most species (ca. 58%, or 200 species) are recorded in very low frequencies either in authors' samplings and/or in literature, hence such species can be characterized as very rare or sporadic. About 112 species, or 32 %, can be determined as relatively common, and the rest of 35 species (10 %) may be called very common, or mass species.

Eleven of the total of 348 species are reported for the first time from this region. Four species are known up to now in Bulgaria from a single locality. One hundred twenty-one species were previously reported from less than 3 localities in South Dobrudzha. Locations with relatively well-studied local faunas of ground beetles are the Srebarna Biosphere Reserve (231 species), the villages of Staro Oryahovo, Malak Preslavets, Garvan, Popina, Okorsh, the towns of Dulovo and Alfatar, the villages of Professor Ishirkovo, Maior Tsenovich, Kalipetrovo, Bortsi, Venets, Stephan Karadzha, the Suha Reka River valley (the districts of Balik and the villages of Karapelit, Onogur, Kolartsi, Golesh and Kainardzha), the town of Shabla, the villages of Dabrava and Senokos. The original material collected by the authors from the above-mentioned localities was taken mainly in the years 1985-1999.

Due to the scarcity of quantitatively sampled data, the frequency characteristics of several species seem to be somewhat arbitrary. Another source of bias in our estimations of real population densities and faunal rarity/commonness assessments is the difference in the tendency various species to be caught in pitfall traps. The five-years pitfall sampling of ground-beetles at the northern Black Sea Coast (Popov, Krusteva 1999) and the two-years pitfall sampling in the forests of Dobrudzha carried out by the junior author (Penev 1989), showed that the larger and the mobile species prevailed in their collections, whereas the smaller species of the tribes Notiophilini, Clivinini, Dyschirini, Apotomini, Trechini, Tachini, Bembidiini and Lebiini (nearly

half of the species of the regional fauna) appeared to be rare or very rare. On the contrary, the small and middle-sized species are well caught by hand sampling, in contrast to the large species, i.e. of the tribe Carabini. Therefore, the present-day estimation of the rarity/commonness status of the ground beetles in South Dobrudzha remains to be confirmed in future by more intensive collecting methods.

The 29 tribes, 83 genera and 348 species of ground beetles, recorded from South Dobrudzha (Fig. 2), represent 81% of the tribes, 74% of the genera and 47% of the species of the Bulgarian fauna. The species-to-genera and genera-to-tribes ratios in South Dobrudzha are 4.2 and 2.9, whereas the same parameters for the Bulgarian fauna are 6.2 and 3.1, respectively. The higher numbers of the ratios in the Bulgarian fauna suggests that the generic diversity and especially the species richness of South Dobrudzha will increase with future investigations. Nevertheless, the fauna of Dobrudzha can be characterized as very rich and diverse, despite the lack of a major group of habitats, generally common in Bulgaria, i.e. montane landscapes. The highest species richness is found in the tribes Harpalini (98 species) and Bembidiini (41 species). Relatively rich in species are also the tribes Lebiini (27 species), Amarini and Pterostichini (26 species each), Platynini (17 species), Carabini (15 species), Dyschiriini (13 species), Sphodrini (12 species) and Callistini (11 species). The total species richness of all the 10 tribes encompasses 286 species, which represents the majority of the fauna (84%).

Similar results were obtained along the northern Black Sea Coast by Popov, Krusteva (1999), who found a markedly increased species richness of the tribe Harpalini, as well as of Carabini, Pterostichini, Sphodrini and Amarini; according to them, the higher richness of Harpalini and Amarini is due to the prevalence of open habitats in the studied area, particularly man-made or man-transformed biotopes, such as arable lands and xerophilous steppe-like grasslands. Most of the species of these two tribes are characterized by Euro-Asiatic ranges, more or less closely connected to the steppe and semi-desert regions of the East European Plain and the adjacent territories of Asia. On the contrary, the increased species richness of the tribes Carabini and Pterostichini in the insular forest habitats in Dobrudzha (Penev 1989, Popov, Krusteva 1999) is to be explained by the mesophilous and meso-xerophilous habitat conditions of the forest patches, which are still able to support species of mostly European, Euro-Siberian and Holarctic chorotypes, and hence serve as important small-size reservations of the mesophilous fauna within a

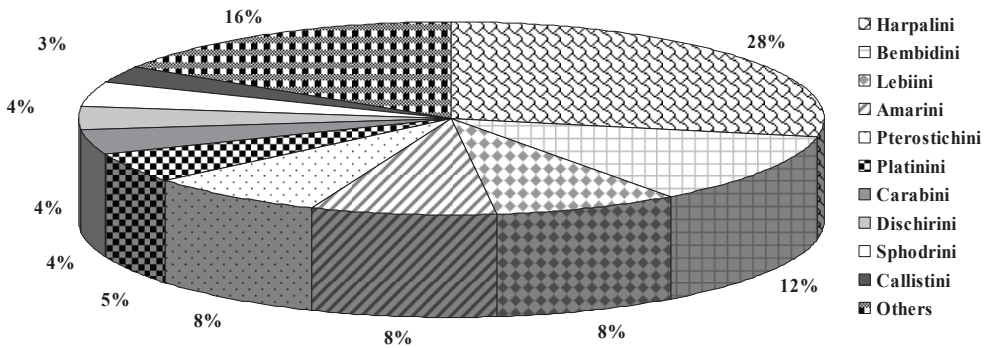

Fig. 2. Taxonomic structure of the ground-beetle fauna of South Dobrudzha

deforested and mostly agricultural landscape. The taxonomic structure of the carabid fauna reflects the remarkable habitat diversity of Dobrudzha, despite its generally flat and heavily transformed territory.

With its 348 species of ground beetles the diversity of Dobrudzha seems remarkable when compared to other regions within the European forest-steppe zone. From Southwest Moldova, KARPOVA, MATALIN (1993) published 209 species belonging to 57 genera. In the steppe-like region Budzhak in South Moldova, NECULISEANU, MATALIN (2000) recorded 225 species; the adjacent forest-steppe region of the Gyrnets (xerophilous oak forests dominated by *Quercus pubescens*) had a similar diversity of 238 species; finally the southern part of the Prut River floodplain supported 252 species. The faunal diversity of South Moldova will probably reach the level of 350 species, whereas the species richness of Moldova as a whole is 497 species (NECULISEANU, MATALIN 2000). In a survey on the ground beetle fauna of the Danube Delta, POPOVICI (1992) reported 107 species, however this number certainly does not reflect the real diversity. Hungary is another appropriate basis for comparison, as its southeastern part is characterized by a similar forest-steppe landscape structure, i.e. a large plain crossed by the Danube composed by grasslands, salinized habitats, upland and flooded forests, arable lands, etc. There are two major national parks in the Great Hungarian Plain with well studied ground beetle faunae: Kiskunság (ca. 31,000 ha) with 289 species of ground beetles known so far (ADAM, MERKL, 1986), and Hortobágy (ca. 52,000 ha) with 172 reported species (HIEKE 1983). Having in mind that several parts of Dobrudzha have not been explored intensively, we may expect that the list of ground beetles will increase, however we can consider the ground beetle fauna of Dobrudzha to be both well studied and very diverse.

From biogeographical point of view, the taxonomic structure is similar to those regional faunae of ground beetles situated in the forest-steppe zone of Southeast and East Europe. The six richest in species tribes of the the Budzhak steppes of Moldova are Harpalini (44), Bembidiini (29), Pterostichini (21), Amarini (19), Platynini (15), Lebiini (15); for the forest-steppe area of Gyrnets in Moldova the numbers are as follows: Harpalini (65), Bembidiini (35), Pterostichini (25), Amarini (23), Platynini (13), Lebiini (11) (NECULISEANU, MATALIN 2000). The distribution of diversity among tribes in the Kiskunság National Park in Hungary is similar, however with prevalence of Harpalini and Amarini, suggesting the more steppe-like character of its fauna: Harpalini (67), Amarini (31), Bembidiini (29), Pterostichini (24), Platynini (20), Lebiini (9) (ADAM, MERKL 1986). Thus, considering its taxonomic structure, the fauna of South Dobrudzha may be characterized as being of generally forest-steppe character with increased relative importance of tribes inhabiting mainly steppe and saline biotopes.

Zoogeographical Peculiarities

The carabid species recorded from South Dobrudzha belong to 27 zoogeographical categories or chorotypes (sensu VIGNA TAGLIANTI *et al.*, 1999, with some changes) grouped in 4 major "faunal types", consisting of species of presumably similar geographical origin (Fig. 3).

The Northern Holarctic and Euro-Siberian faunal type consists of 103 species (30%) distributed mainly in the northern regions of the Holarctic, mostly in Europe and Siberia. The most characteristic examples of this type are: *Carabus cancellatus,*

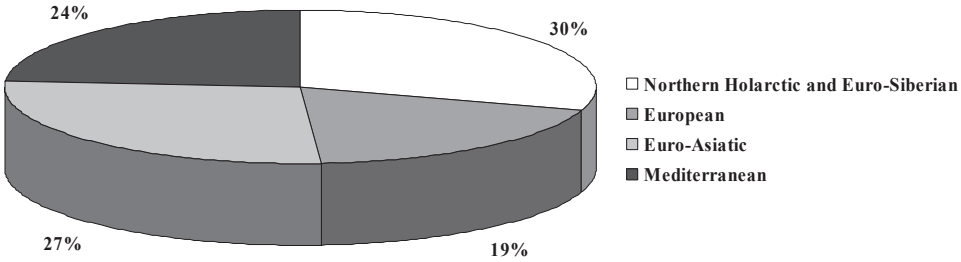

Fig. 3. Zoogeographical structure of the ground-beetle fauna of South Dobrudzha

Bembidion litorale, Poecilus versicolor, Pterostichus niger, P. strenuus, Agonum viduum, Platynus assimilis, Synuchus nivalis, Harpalus servus and others.

The second faunal type is called European and is characteristic of species connected to the middle and southern part of Europe, dominated mainly by deciduous forests. Here the Euro-Anatolian (or Euro-Caucasian, or Euro-Neareastern) species were also included, assuming that such species are primary European elements, having extended their ranges through the mesophilous forests of Asia Minor, and sometimes also the Caucasus. The European species (*s. lato*) amount to 19% of the fauna of Dobrudzha (64 species), and among the most typical representatives of this group are *Carabus coriaceus, C. intricatus, C. montivagus, C. gigas. Pterostichus macer, Abax parallelus, A. parallelopipedus, A. carinatus, Harpalus picipennis, H. flavescens, Badister meridionalis*, etc.

The third faunal type is defined as Euro-Asiatic and consists of 94 species or 27% of the total. The Euro-Asiatic species ranges lie between the Euro-Siberian and Mediterranean zones and are characterized as being more or less connected to the huge steppe and semi-desert regions of Southern Russia, Central Asia, Caucasus and Asia Minor. These species are often indicators of the presence of (semi-)natural steppes and very often they are substantial elements of the fauna of arable lands. Examples of the Euro-Asiatic faunal type are *Carabus torosus, C. graecus morio, C. scabriusculus*, *Calathus ambiguus,* several species of *Harpalus, Ophonus, Cymindis*, etc.

The fourth, and probably most complicated faunal type is the Mediterranean *s. lato.,* consisting of 86 species, or 24%, distributed in the so-called region of the "Ancient Mediterraneum" (Popov 1927, Kryzhanovskij 1965). This faunal type encompasses species distributed within the area surrounding the former Tethys Ocean, and extending nowadays from the Iberian Peninsula through South Europe, North Africa and the Near East to the Ciscaspian region and Central Asia. Mediterranian species in the fauna of Dobrudzha are for instance *Scarites laevigatus, Dyschirius caspius, Bembidion latiplaga, Olysthopus glabricollis, Gynandromorphus etruscus, Stenolophus mixtus* and several other *Stenolophus spp., Daptus vittatus, Ditomus clypeatus, Parophonus hirsutulus, Brachinus elegans* and others.

The relatively high percentage of the Mediterranean species (24%) and the low percentage of the European species is a fact, which deserves special attention. Most of the Mediterranean species penetrate Dobrudzha along the Black Sea Coast, where they inhabit mainly extra- and intrazonal habitats, such as seashore, sand dunes, sunny slopes, etc. Other important habitats for Mediterranean species are

the limestone valleys and the ravines of Dobrudzha, primarily the canyon of the Suha Reka (see above). On the contrary, the low percentage of European species is probably due to the strong deforestation of the region, which led to fragmentation of the former large forests into small forest patches and, hence, to alterations in the zoogeographical structure of the regional fauna. The replacement of the forests with arable lands and/or steppe-like pastures and grassland caused replacement of the European forest elements with more adaptable Euro-Asiatic elements confined to open habitats, such as numerous representatives of the tribes Harpalini and Amarini. The invasion of the species from open habitats must have been supported by the pre-existing steppe-like grasslands and even natural steppes in Dobrudzha (see Bondev, 1991) and by its proximity to the sources of steppe fauna in South Ukraine and Russia. The relationship between steppe and forest faunae of Dobrudzha and its connections to the forest-steppe faunae of Europe was largely discussed by Penev (1989), who found several points of evidence for the presence of autochthonous mesophilous European forest species in the region. He also confirmed the presence of some Euro-Siberian species mostly along the Danube and lakes connected to the Danube, i.e. Srebarna. Such swamp habitats serve as stepping stones, or on the contrary, as reserves for northern faunal elements, otherwise normally occurring in the montane regions of Bulgaria. Similar relationships between zoogeographical elements have been observed in the region also by Popov, Krusteva (1999).

According to a long tradition in the zoogeographical studies of Bulgaria (i.e. Josifov 1981), it is assumed that the zoogeographical character of a region is based on the ratio between the the Euro-Siberian *s. lato* and Mediterranean *s. lato* faunal types. This concept has proved its validity in numerous faunistic papers by Bulgarian entomologists and appears to be very useful when comparing the zoogeographical structure of different taxonomic groups within a region, or when looking for borders between the Mediterranean and Euro-Siberian subregions on the territory of Bulgaria. On the other hand, Dobrudzha is one of the regions where this concept faces obvious difficulties, mostly because of the high percentage of Euro-Asiatic steppe species. The zoogeographical character of the steppe fauna and its possible origin from either Euro-Siberian, or Mediterranean, or both ancestors is a matter of endless discussion (i.e. Kryzhanovskij, 1965). In this paper, we follow De Lattin's approach (De Lattin, 1967), who interpreted the zoogeographical categories as groupings of species having common distribution centre(s) since the last glaciation or the last interglacial. Considering this, we believe that the fauna of Dobrudzha is a complicated composition of four main faunistic sources. The first of them is the Euro-Siberian boreal faunal type, consisting of adaptable, cold-resistant, widely distributed species, which occur in Dobrudzha mostly in swampy areas along the Danube and in the few preserved mesophilous forest massifs. The second type is the European nemoral (=connected to the mesophilous deciduous forests) faunal type, consisting mostly of typical forest species, distributed mainly in Central, Southeastern or the whole Europe. The third faunal source lies obviously in the Euro-Asiatic region ("eremial" in De Lattin's sense), and is composed of species adapted to mainly open habitats. These species are also known as successful colonizers of arable lands. Finally, the most specific for the region is the Mediterranean faunal type. It consists of species inhabiting habitats along the Black Sea, the Danube, limestone slopes in dried river valleys, xerophilous grassland and shrubs.

Ecological Features

There are four main types of habitat-preference groups for the species occurring in Dobrudzha - inhabitants of open biotopes, forest species, extra- and intrazonal species, and eurytopic species (Fig. 4). The inhabitants of open biotopes are the dominant group (144 species, 42%), followed closely (111 species 32%) by the intra- and extrazonal species (psammobionts - 5 species, hallobionts - 35 species, bothrobionts - 5 species, and 64 riparian species). The stenotopic forest inhabitants are represented by 63 species (18%) and the remainder are eurytopic - 29 species (8%).

The habitat-preference structure clearly reflects the specificity of Dobrudzha as a region consisting of a few predominating landscapes. Most of the territory is covered by open habitats, mainly arable lands, but also quite a lot by pastures, meadows near water basins, grasslands, secondary, and according to some authors (see STOYANOV, 1950), even primary steppes. All this variety of open habitat offers a very diverse range of biotopes, starting from marsh-like habitats near swamps and/or Danube bank to the dry steppe-like grasslands of slopes and hills. Nearly the half of the inhabitants of open biotopes (70 species, 49%) prefer xerophilous grasslands and sometimes also corn fields (*i.e. Carabus graecus, C. torosus, Calathus distinguendus, Zabrus corpulentus, Harpalus albanicus, H. calceatus, H. akinini, H. autumnalis, H. anxius, Ophonus signaticornis, O. puncticeps, Acinopus laevigatus, A. ammophilus, A. megacephalus, Ditomus calidonius, Dixus obscurus, Cymindis* spp.*, Microlestes negrita, M. maurus, M. plagiatus, Brachinus elegans, Amara saphyrea, A. ovata, Anisodactylus signatus*), and the other half (74 species, 51%) are more confined to meadows and Lucerne fields (*i.e. Carabus granulatus, C. ullrichi, Poecilus cupreus, Pterostichus gracilis, P. nigrita, P. strenuus, Synuchus nivalis, Olistopus glabricollis, Curtonotus aulicus, C. convexiusculus, Parophonus maculicornis, P. laeviceps, Lebia chlorocephala, Drypta dentata*). Another distinct group of species prevail in agricultural lands and can be considered a substantial element of their fauna. Among the most common and

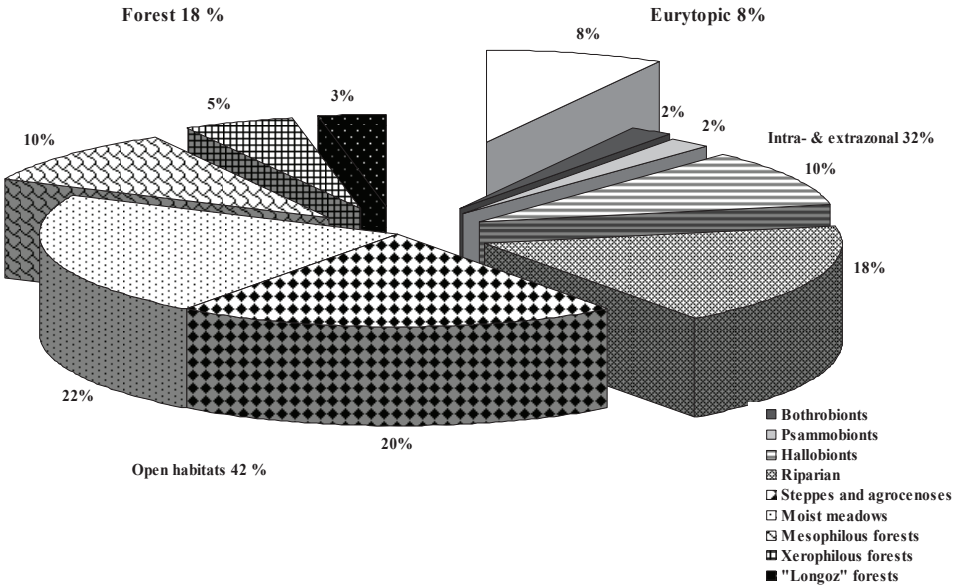

Fig. 4. Ecological (habitat preference) structure of the ground-beetle fauna of South Dobrudzha

characteristic species of this group are: *Calathus fuscipes, Amara aenea, A. eurynota, A. anthobia, A. ingenua, Zabrus tenebrioides, Ophonus rufibarbis, Harpalus serripes, H. autumnalis, H. pumilis, H. cupreus, Ophonus cordatus, O. puncticollis, O. subquadratus, O. sabulicola, Microlestes corticalis, M. fissuralis, Brachinus explodens* and others.

An important group of habitats is formed by the great variety of seashore, river, swamp and lake banks, existing mostly along the Danube and the Black Sea Coast. Of special conservation value are the salinized habitats along the Black Sea coasts, where a remarkable number of hallobionts exists, mostly of the tribes Pogonini, Dyschiriini and Bembidiini (i.*e. Dyschirius chalibaeus, D. caspius, D. chalceus, D. nitidus, D. luticola, Apotomus clypeonitens, Bembidion inoptatum, B. tenellum, B. normannum, B. azurescens, Pogonus* spp.). The banks of the swamps of Srebarna, Garvan and Malak Preslavets, are also characterized by specific fauna, for instance *Badister bulatus, Pterostichus vernalis, P. cursor, P. chamaeleon, Agonum viridicupreum, A. viduum, A. angustatum, A. thoreyi, A. meridianus, Bembidion spp. (*subgenera *Bracteon, Metallina, Notaphus, Diplocampa, Leja, Peryphanes), Stenolophus* spp*., Chlaenius aenocephalus.* A further distinct group is formed by the psammobionts (inhabitants of riverine sands) - *Omophron limbatum, Bembidion latiplaga, B. nigropiceum, Harpalus picipennis*.

The forest dwellers can be divided into three groups, depending on their attitude to moisture. Eleven species (18 % of the forest species) inhabit the inundated (so-called "longoz") forests (*i.e. Pterostichus anthracinus, P. nigrita, P. leonisi, Callistus lunatus*). This "longoz" forest still exists in some regions along the Danube and its islands, as well as in the Batova River valley near Balchik. Thirty-five species (56 %) prefer mesophilous forests, situated mainly in ravines of few large forest massifs, managed today as commercial forests and/or game reserves, such as Irihisar near Stefan Karadzha village, Karakuz and Zli Dol near Dulovo (*i.e. Leistus rufomarginatus, L. ferrugineus, Carabus intricatus, C. gigas, Myas chalibaeus*). Furthermore, several of these species occur also in small, sometimes very small forest patches in Western and Central Dobrudzha. All records of such typical forest species are of considerable importance in relation to conservation and monitoring practices, as these unique forests have suffered uncontrolled cutting during the last ten years, which has led to the complete destruction of several of them. Seventeen species (27% of the forest species) occur in the xero-mesophilous and xerophilous forests, shrubs and shelter-belts (*i.e. Notiophilus laticollis, N. rufipes, Calosoma inquisitor, Carabus montivagus, Badister lacertosus, Harpalus fuscicornis, H. xanthopus, H. politus, H. servus*), a type of habitat quite common in Dobrudzha, especially in its eastern part (the Dobrudzha Plateau and the Suha Reka valley). The habitat-preference structure of the ground beetles of Dobrudzha reinforces once agian the urgent need to extend the protection to several natural and semi-natural habitats as reference biotopes and "islands" of preservation of the biodiversity within an agricultural landscape. Such habitats include coastal and riverside biotopes, swamps, floodland, mesophilous and xerophilous forests, limestone slopes in dry river valleys, and steppe or steppe-like grasslands.

Finally, several species occur in various kinds of biotopes and therefore can be termed "eurytopic". Such species are: *Carabus coriaceus, Trechus quadristriatus, Tachys micros, Bembidion lampros, Pterostichus melanarius, Amara familiaris, Calathus melanocephalus, Harpalus rufipes*.

The hierarchical classification of the life-forms of ground beetles proposed by

SHAROVA (1981) consists of 3 classes, 7 subclasses and 28 groups. The 374 species of ground beetles established in South Dobrudzha belong to two classes, those of the zoophages and mixophytophages (Fig. 5). The life-form structure of the ground beetle fauna reflects in general the habitat specificity of the region. The zoophages are represented by 223 species or 64% of the fauna, most of which belong to the subclass of stratobionts (160 species, 46%), followed by the epigeobionts (32 species, 9%), geobionts (19 species, 6%), phytobionts (10 species, 3%) and psammocollimbets (2 species, 1%). The second class of mixophytophages includes 3 subclasses in Dobrudzha, namely 74 species of geohortobionts (21%), 28 species of stratohortobionts (8%) and 22 species of stratobionts (6%).

SHAROVA (1981) made an analysis of the changes in the life-form structure of the carabid fauna through the natural zones of the East European Plain. She found that life-form structure changed gradually from north to south, reflecting in this way the changes in landscape structure of the zones studied. With respect to life-form structure, the fauna of Dobrudzha is similar to that of the forest-steppe zone of European Russia. There is however a remarkable tendency towards an increased percentage of the mixophytophagous species on account of the decreasing litter-dwelling and epigeobiont zoophags. The later group inhabits mainly forests and their decline in Dobrudzha is obviously connected with the reduction of the former large forest massifs.

The habitat distribution of the ground beetles may add essential information on the history of the territory. One of the questions, still remaining unresolved in Dobrudzha, is the primary character of the natural landscape. In his classical Manual of Phytogeography, the Bulgarian botanist N. Stoyanov stated that the natural vegetation of North Bulgaria and South Dobrudzha in particular, was of forest-steppe type (STOYANOV 1950). On the other hand, some authors consider the present-day landscape derived from a secondary forest-steppe as a result of the destruction by man, of the natural climax xerothermic oak forests (BONDEV 1973, TISHKOV, KUZMANOV 1985). The general features of the ground beetle fauna of South Dobrudzha - zoogeographical composition, habitat-preference peculiarities and life-form structure

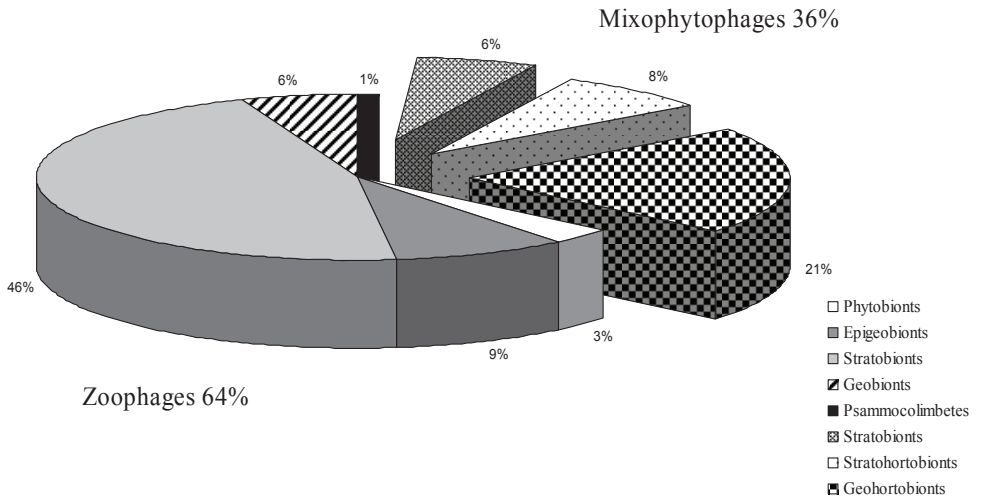

Fig. 5. Life-form structure of the ground-beetle fauna of South Dobrudzha

- serve as indirect evidence for Stoyanov's view on the natural forest-steppe landscape in South Dobrudzha. The reason supporting such conclusion is the occurrence of two main faunal types in South Dobrudzha, namely species connected to the mesophilous deciduous forests of European type and species originating from the vast steppe areas of the Ponto-Caspian region and Asia.

Conclusions

1. The ground beetle fauna of South Dobrudzha is relatively well studied and consists of 348 species or about of the half of the species known from Bulgaria so far. Future investigations will add new species to the regional list, however even at the present stage of knowledge, the fauna of South Dobrudzha can be described as very rich and diverse.

2. The taxonomic structure of the fauna is very diverse and reflects the remarkable habitat diversity of Dobrudzha, which is a transitional region from floodland and inland mesophilous forests, through xerophilous and forest-steppe habitats to real steppe remnants and sea shores. The general taxonomic structure suggests a forest-steppe character of the fauna of Dobrudzha, enriched by some supraspecific taxa characteristic mainly of intra- and extrazonal habitats (sea shores, loamy river banks of the Danube, limestone hills and others).

3. The zoogeographical structure of the fauna is complicated, and consists of four, more or less balanced in richness, faunal types, Northern Holarctic and Euro-Siberian boreal, European nemoral, Eurasian (related to the De Lattin's term "eremial") and Mediterranean. The complicated zoogeographical structure reflects both the different chronological layers in the history of the fauna and the present-day habitat diversity, supporting species of various zoogeographical origins.

4. The habitat-preference and life-form structures of the fauna, the later based on Sharova's life-form classification, characterizes South Dobrudzha as corresponding to the Eastern European forest-steppe zone type of fauna.

5. Despite the long history of human-mediated landscape transformation of Dobrudzha, this mainly agricultural region still possesses a rich, original and diverse ground beetle fauna, which reinforces the need to extend the network of protected areas so that they will cover all main natural habitats of the region.

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Бръмбарите бегачи (Coleoptera: Carabidae) от Южна Добруджа, България

Н. Коджабашев, Л. Пенев

(Резюме)

Публикацията обобщава и допълва данните за разпространението на бегачите в Южна Добруджа. Един вид (*Bembidion* (*Ocydromus*) *persicum* Menétriés, 1832) е нов за фауната на България. От установените общо 348 вида, отнасящи се към 83 рода, нови за района са 12, еднократно съобщавани за България са 4 вида, а 121 вида са съобщени за територията на Южна Добруджа от не повече от 3 находища. Броят на установените видове е почти половината (47%) от известните за страната. Двеста двадесет и пет вида или 73% от фауната на Добруджа са съобщени или потвърдени от авторите на основата на проучени материали. В публикацията са приведени данни за 22 нови находища, в които общият брой на установените видове бегачи е около 250 вида. Основната част от видовете (200 или 58%) са известни от малко находища и с малко екземпляри, поради което могат да бъдат определени като редки; Около 112 вида (32%) са относително често срещащи се, а 35 вида (10%) могат да бъдат характеризирани като масови. Всички установени видове бегачи са класифицирани и типизирани по отношение на техния биотопичен преферендум, зоогеографска принадлежност, жизнени форми и честота на срещаемост.

Appendix. List of Carabidae species established in South Dobrudzha, Bulgaria.

No	Taxa	Faunistic records from literature	Faunistic records based on authors' samplings	Range type	Habitat preferences	Life forms according to Sharova (1981)	Frequency of occurrence (1-6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	*Cicindela* (*Eumecus*) *germanica* Linnaeus, 1758	Ram.(V),P-K.(B-A),Sus.(B-A), K-P.(Sre)	Kod.(Sre,MPre,Vet,Alf,Ono), Pen.(Kar)	E-AS	drmead	1.2.4	3
2*	*C.* (*Lophyridia*) *fischeri* Adams, 1817	Apf. (Dobr)?	?*	B-PAS	drmead	1.2.4	1
3	*C.* (*Lophyridia*) *littoralis* Fabricius, 1787	Ned.,Kar.(V),Pan.(Kra),Kov.(R), Sus.(B-A)	Pen.(Dab)	E-CAS	drmead	1.2.4	1
4	*C.* (s.str.) *hybrida* Linnaeus, 1758	Ram.(R,V,Pro),Kan.(V), Sus.(B-A), Mar.(Raz),K-P.(Sre)	Kod.(Sre,Alf,MTsen,Oko),Pen.(Dab)	E-SI	meadow	1.2.4	3
5	*C.* (s.str.) *campestris* Linnaeus, 1758	Kov.(R),Mar.(Raz),Ram.,Kan.(V),P-K.(B-A),K-P.(Sre)	Kod.(Sre),Pen.(Dab)	PAL	drmead	1.2.4	3
6*	*C.* (s.str.) *soluta* Latreille and Dejean, 1822	Apf.,Kar.(V)		E-WSI	drmead	1.2.4	1
7*	*C.* (*Cephalota*) *elegans stigmatophora* Fischer-Waldheim, 1825	Pan.(Kra)		BAL	drmead	1.2.4	1
8*	*C.* (*Cephalota*) *chiloleuca* Fischer-Waldheim, 1820	Kar.(V)		B-CAS	drmead	1.2.4	1
9	*Omophron* (s.str.) *limbatum* (Fabricius, 1776)	Apf.(V),Pan.(Kra)	Kod.(Sre,MPre,Gar,Sil)	PAL	banks	1.5.1	3
10	*Nebria* (s.str.) *brevicollis* Fabricius, 1792	Apf.(V), Mar.(Raz),P-K.(B-A)		E-PAS	mesofor	1.3(1).2	1(2)
11*	*Leistus* (*Pogonoforus*) *rufomarginatus* (Duftschmid, 1812)	K-P.(Sre)	Pen.(Sre), Kod.(Ven,Bor)	EUR	mesofor	1.3(1).2	1
12*	*L.* (s.str.) *ferrugineus* (Linnaeus, 1758)	P-K.(B-A)		E-SI	mesofor	1.3(1).2	2
13*	*Notiophilus* (s.str.) *palustris* (Duftschmid, 1812)	H-W.(Kar,Sre,Sen),K-P.(Sre)	Pen. (Kar,Sre, Sen, Dab), Kod.(St.Kar,Bab,Alf,Dul)	E-SI	mesofor	1.3(1).1	3
14*	*N.* (s.str.) *laticollis* Stephens, 1861	P-K. (B-A),K-P.(Sre)	Kod.(Sre,MPre,DRiach)	C-EE	xeroforp	1.3(1).1	2
15*	*N.* (*Latviaphilus*) *biguttatus* (Fabricius, 1779)	W.(V)		W-PAL	mesofor	1.3(1).1	2
16	*N.* (*Makarovius*) *rufipes* Curtis, 1829	Mar.(Raz),H-W.(Kar),K-P.(Sre)	Pen.(Kar,Sen,Dab,Sre), Kod.(Sre,VLev,Kaj)	CE-PAS	xerofor	1.3(1).1	2

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
17	*Calosoma* (s.str.) *sycophanta* (Linnaeus, 1758)	Kov.(R),Mar.(Raz),K-P.(Sre)	Pen.(Kar,Dab,Sre), Kod. (Sre,Alf,Dul,Kaj,Ven,Bor)	PAL	mesofor	1.2.2(1)	4
18	*C.* (*Acalosoma*) *inquisitor* (Linnaeus, 1758)	Kov.(R), Mar.(Raz),K-P.(Sre)	Pen.(Kar,Sen), Kod.(Sre,Kar,Bab,Gol,Bal,Ste.Kar)	PAL	xerofor	1.2.2(1)	3
19	*C.* (*Campalita*) *auropunctatum* (Herbst, 1784)	Mar.(Raz),H-W.(V,Kal,Sreb), Sus.(B-A), P-K.(B-A), Müll.(Kav),K-P.(Sre)	Pen.(Sre),Kod.(Sre,Kol, Ono,Karap,Scha)	E-CAS	drmead, steepes, agro	1.2.2.	3(4)
20	*Carabus* (*Procrustes*) *coriaceus* Linnaeus, 1758	Ram.(Sil),Kov.(R),Mar.(Raz),H-W.(V),Sus.,P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sre,Sen), Kod.(Sre,Kar,Sil,Dul,Alf,MCen)	E-PAS	eury	1.2.2.	4(5)
21*	*C.* (*Limnocarabus*) *clathratus* Linnaeus, 1758	G-G.(R),K-P.(Sre)	Kod.(Sre,MPre,Gar,Pop,Sha)	E-SI	swa,banks	1.2.2.	2
22	*C.* (*Autocarabus*) *cancellatus* Illiger, 1798	Mar.(Raz), H-W.(R.), P-K.(B-A),K-P.(Sre),K-P.(Sre)	Pen.(Kar), Kod.(Sre,Alf,Vlev, MTsen,DRya)	E-SI	mesofor, meadow	1.2.2.	4(5)
23	*C.* (s.str.) *granulatus* Linnaeus,1758	G-G., (Kra), P-K.(B-A), Sus.(B-A),K-P.(Sre)	Kod.(Sre,Sha,MPre)	E-AS	swamfor	1.2.2	4(5)
24	*C.* (*Eucarabus*) *ullrichi* Germar, 1824	Kov.(R), P-K.(B-A),K-P.(Sre)	Kod.(Sre,Kai)	C-EE	swamfor, meadow	1.2.2	3(4)
25	*C.* (*Archicarabus*) *montivagus* Palliardi, 1825	Mar.(Raz), H-W.(V), P-K.(B-A), Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sre,Sen,Dab), Kod.(Sre, Alf,Kai,Ven,Bor,St. Kar)	BAL-K	xerofor	1.2.2	5(6)
26	*C.* (*Tomocarabus*) *convexus* Fabricius, 1775	Kov.(R), P-K.(B-A), Mar.(Raz), H-W.(V),K-P.(Sre)	Pen.(Kar,Sre,Sen,Dab), Kod.(Sre,Alf,Bab,Karap,St.Kar)	E-PAS	xerofor,mesofor	1.2.2	5(6)
27	*C.* (*Trachycarabus*) *scabriusculus* Olivier, 1795	Mar.(Raz), P-K.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Oko,Dria,Kaj)	B-PAS	drmead, steppes, agro	1.2.2	1
28	*C.* (*Pachystus*) *graecus morio* Mannerheim, 1830	H-W.(Nkal), P-K.(B-A), Müll.(Kav)	Kod.(Ono,Kol,Sha)	B-PAS	drmead, steppes	1.2.2	1(6)
29	*C.* (*Lamprostus*) *torosus* Frivaldszky, 1835	H-W.(Nkal,Kav),P-K.(B-A), Müll.(Kav)	Kod.(Gol,Bal,Kol)	BAL	drmead, steppes,agro	1.2.2	1(5)
30*	*C.* (*Chaetocarabus*) *intricatus* Linnaeus, 1761	H-W.(V), Pen.(Kar)	Pen.(Kar), Kod.(Ven)	EUR	mesofor	1.2.2	1

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
31	*C.* (*Procerus*) *gigas* (Creutzer, 1799)	Mar.(Raz), Kov.(R), P-K.(B-A), Sus.(B-A)	Kod.(Alf,VLev,Bab)	C-EE	mesofor	1.2.2	1
*32	*Cychrus* (s.str.) *semigranosus balcanicus* Hopffgarten, 1881		Pen. (Kar)	BAL-K	mesofor	1.2.2	1
33*	*Elaphrus* (s.str.) *riparius* (Linnaeus, 1758)	H-W.(Pop),K-P.(Sre)	Pen.(Pop),Kod.(Sre,DRia,MPre,Sil)	OLA	banks	1.2.3	2
34	*E.* (*Neoelaphrus*) *uliginosus* Fabricius, 1775	Ned.(R,Raz)		E-CAS	banks	1.2.3	1
35	*Scarites* (s.str.) *terricola* Bonneli, 1813	Pan.(Kra), Kar.(V), H-W.(Tuz.,V)	Kod.(Sre)	PAL	banks	1.4.2(2)	1(2)
36*	*S.* (s.str.) *laevigatus* Fabricius, 1792	Ram.(V),K-P.(Sre)		MED	banks	1.4.2(2)	1
37	*Clivina* (s.str.) *fossor* (Linnaeus, 1758)	H-W.(R), Gue-Gue.(B), P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sre), Kod.(Sre,Alf,Oko,MTsen,Vet)	E-AS	eury	1.4.2(1)	4(5)
38	*C.* (s.str.) *collaris* (Herbst, 1784)	Mar.(Raz), Pan.(Kra),K-P.(Sre)	Kod.,Pen.(Sre)	E-CAS	drmead, agro, steppes	1.4.2(1)	1
39	*C.* (s.str.) *ypsilon* Dejean, 1829	H-W.(Tuz,B), Kar.(V)	Pen.(Dab)	E-CA-M	drmead	1.4.2(1)	1
40	*Dyschirius* (*Dischiriodes*) *chalybaeus* Bonelli, 1813	R.(V), H-W.(Dur),K-P.(Sre)	Kod.(Sre)	E-MED	halob,banks	1.4.2(1)	3(4)
41	*D.* (*Dischiriodes*) *caspius* Putzeys, 1866	R., Kar.(V), Pan. (Kra)		CA-MED	halob	1.4.2(1)	1(2)
42	*D.* (*Dischiriodes*) *chalceus* Erichson, 1837	H-W.(Dur), W.(Shab),K-P.(Sre)	Kod.(Sre)	E-CAS	halob	1.4.2(1)	3
43*	*D.* (*Dischiriodes*) *nitidus* (Dejean, 1825)	K-P.(Sre)	Kod.(Sre)	E-AS	halob,banks	1.4.2(1)	3(4)
44*	*D.* (*Dischiriodes*) *agnatus* Motschulsky, 1844	K-P.(Sre)	Kod.(Sre)	E-CAS	banks	1.4.2(1)	4
45*	*D.* (*Dischiriodes*) *tristis* Stephens, 1828	K-P.(Sre)	Kod.(Sre)	E-SI	banks	1.4.2(1)	1?
**46	*D.* (*Dischiriodes*) *abditus* Fedorenko, 1982	K-P.(Sre)	Kod.(Sre)	C-EE	banks	1.4.2(1)	1?
47*	*D.* (*Dischiriodes*) *aeneus* (Dejean, 1825)	K-P.(Sre)	Kod.(Sre)	E-SI	banks	1.4.2(1)	3(4)
48*	*D.* (*Dischiriodes*) *globosus* Herbst, 1783	W.(V)		PAL	banks	1.4.2(1)	1?
49	*D.* (*Dischiriodes*) *cylindricus* (Dejean, 1825)	W.(Dur), H-W.(Bal)	Pen.(Ish)	E-CAS	banks	1.4.2(1)	1?
50	*D.* (*Dischiriodes*) *luticola* (Chaudoir, 1850)	H-W.(Schab,Bal)	Pen.(Dab)	NMED	halob,banks	1.4.2(1)	1?
51*	*D.* (*Dischiriodes*) *pusillus* (Dejean, 1825)	H-W.(V)		E-CAS	halob,banks	1.4.2(1)	1?
52*	*D.* (*Dischiriodes*) *laeviusculus* Putzeys, 1846	G-G.(V)		E-PAS	halob,banks	1.4.2(1)	1?
53*	*Apotomus* (s.str.) *clypeonitens* Müller, 1943	W.(V)		CA-MED	halob,banks	1.4.2(1)	1?
54*	*Perileptus* (s.str.) *areolatus* (Creutzer, 1799)	K-P.(Sre)	Kod.,Pen.(Sre)	W-PAL	banks	1.3(1).2	3(4)

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
55*	*Blemus* (s.str.) *discus* (Fabricius, 1801)	K-P.(Sre)	Kod.(Sre,Gar,Vet)	E-AS	banks	1.3(1).2	3
56	*Trechus* (s.str.) *quadristriatus* (Schrank, 1781)	H-W. (Sil.,Kar.,Ish.),Ram.,Pan.(V), Ram.,Mar.(Raz),K-P.(Sre)	Kod.(Sre),Pen.(Kar,Sen)	E-CA-M	eury	1.3(1).2	4(5)
*57	*T.* (s.str.) *obtusus* Erichson, 1837		Pen. (Kar)	E-PA-M	mesofor	1.3(1).2	1
58*	*Tachys* (*Paratachys*) *bistriatus* (Duftschmid, 1812)	Mar.(Raz),K-P.(Sre)	Kod.(Sre), Pen.(Sil,Aid,Tar)	E-PA-M	banks	1.3(1).4	4(5)
59*	*T.* (*Paratachys*) *micros* (Fischer-Waldheim, 1828)	K-P.(Sre)	Kod.(Sre)	PAL	eury	1.3(1).4	3(4)
60*	*T.* (*Paratachys*) *centriustatus* Reitter, 1894	H-W.(Bal)	Pen.(Dab)	B-CAS	halob	1.3(1).4	1?
61	*Elaphropus* (*Tachyura*) *diabrachis* (Kolenati, 1845)	Mar.(Raz.),H-W.(Pop,MPres)	Pen.(MPre,Sil,Aid),Kod.(Sre,Alf,VLev)	E-PA-M	banks	1.3(1).1	3(4)
62*	*E.* (*Sphaerotachys*) *chaemorrhoidalis* (Ponza, 1805)	Ram. (V)	Kod.(Sre,Gar,Mpre)	E-CA-M	banks	1.3(1).1	3(4)
*63	*Tachyta* (s.str.) *nana* (Gyllenhal, 1810)		Kod.(Sre)	OLA	mesofor	1.3(1).5	2
*64	*Asaphidion* (s.str.) *caraboides* (Schrank, 1781)		Kod.Pen.(Sre)	E-PAS	banks	1.2.3	2
65	*A.* (s.str.) *flavipes* (Linnaeus, 1761)	H-W.(Sil.,Pop.,Vet),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Mpre,Alf,Dul,St.K), Pen.(Kar,Sre,Sil)	W-PAL	bamks, swa, marsh	1.2.3	3(4)
**66	*Ocys* (s.str.) *quinquestriatus* (Gyllenhal, 1810)	K-P.(Sre)	Kod.(Sre,Sil)	C-EE	bothr	1.3(1).6	1?
67*	*Bembidion* (*Bracteon*) *striatum* (Fabricius, 1792)	H-W.(Pop),K-P.(Sre)	Pen.(Pop,Vet),Kod.(Gar,Sre,Sil)	E-WSI	banks	1.2.3	3(4)
*68	*B.* (*Bracteon*) *litorale* (Olivier, 1791)		Kod.(Sre), Pen.(Kar)	E-SI	banks	1.2.3	1
69*	*B.* (*Odontium*) *foraminosum* Srurm, 1825	K-P.(Sre)	Kod.(Sre)	C-EE	banks	1.2.3	4(5)
70	*B.* (*Eurytrachelus*) *laticolle* (Duftschmid, 1812)	H-W.(Pop),Pan.(Kra),K-P.(Sre)	Kod.(Sre)	E-WSI	banks	1.3(1).1	1
*71	*B.* (*Chlorodium*) *splendidium* Sturm, 1825		Pen.,Kod.(Sre,DRia)	CE-PAS	eury	1.3(1).1	1
72	*B.* (*Metallina*) *lampros* (Herbst, 1784)	Apf.(V), H-W.(Kar,Sre),K-P.(Sre)	Kod.(Sre,Kaj,Oko,Bor), Pen.(Sre,Kar)	OLA	eury	1.3(1).1	3(4)
73	*B.* (*Metallina*) *properans* Stephens, 1828	Pan.(Kra), H-W.(Vet),K-P.(Sre)	Kod.(Sre,Dria,Gar,MPre)	E-WSI	banks	1.3(1).1	2(3)

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
74*	*B.* (*Princidium*) *punctulatum* Drapiez, 1820	H-W.(MPres),K-P.(Sre)	Pen.(MPre),Kod.(Sre,DRya, Gar.)	E-CA-M	banks	1.2.3	2(3)
75	*B.* (*Notaphus*) *semipunctatum* (Donovan, 1806)	H-W.(Pop,Vet),Ram.(V),K-P.(Sre)	Kod.(Sre,DRya,Gar), Pen.(Sil,Aid,Pop,Vet)	PAL	banks	1.3(1).1	1?
76	*B.* (*Notaphus*) *varium* (Olivier, 1795)	Ram.(V),H-W.(Pop,Vet.,V.,Bal.),K-P.(Sre)	Kod.(Sre,Sil),Pen.(Pop,Vet,Sil,Aid)	PAL	banks	1.3(1).1	4(5)
77*	*B.* (*Philochtus*) *lunulatum* (Fourcroy, 1785)	H-W.(V),K-P.(Sre)	Kod.(Sre)	E-MED	banks	1.3(1).1	1?
78*	*B.* (*Philochtus*) *inoptatum* Schaum, 1857	K-P.(Sre)	Pen.(Kar),Kod.(Sre,Alf,Bor, Ven),	E-PAS	halob	1.3(1).1	1
79*	*B.* (*Philochtus*) *biguttatum* (Fabricius, 1779)	K-P.(Sre)	Kod.(Sre)	E-WSI	banks	1.3(1).1	2(3)
80	*B.* (*Emphanes*) *tenellum* Erichson, 1837	Pan.(Kra), Kar.(V),H-W.(V.,Tuz.),K-P.(Sre)	Kod.(Sre)	E-CAS	halob	1.3(1).1	1?
81	*B.* (*Emphanes*) *latiplaga* Chaudoir, 1850	Ram.,H-W.(V),K-P.(Sre)	Kod.(Sre,MPre,Gar)	NMED	psamob	1.5.1	1
82	*B.* (*Emphanes*) *rivulare* Dejean, 1831	Kar.(V),Pan.(Kra),K-P.(Sre)	Kod.(Sre)	PON	halob	1.3(1).1	1
83*	*B.* (*Emphanes*) *azurescens* DallaTorre, 1877	H-W.(Tuz)	Pen.(Sen)	E-SI	halob	1.3(1).1	1
84	*B.* (*Emphanes*) *normannum* Dejean, 1831	R.(V),H-W.(Tuz.,V)		MED	halob	1.3(1).1	1
85	*B.* (*Emphanes*) *minimum* (Fabricius, 1792)	R.,Kar.(V), Pan.(Kra),H-W.(Tuz,V)		PAL	halob	1.3(1).1	1
86	*B.* (*Talanes*) *subfasciatum* Chaudoir, 1850	Pan.(Kra), Kar.(V), H-W.(Tuz,Bal)		B-PAS	banks	1.3(1).1	2
87	*B.* (*Semicampa*) *guttulatum* Chaudoir,1850	Pan.(Kra), H-W.(V)		BAL	halob	1.3(1).1	1
88*	*B.* (*Diplocampa*) *fumigatum* (Duftschmid, 1812)	R.(V),K-P.(Sre)	Kod.(Sre)	E-AS	halob	1.3(1).1	1
89*	*B.* (*Diplocampa*) *assimile* Gyllenhal, 1810	K-P.(Sre)	Kod.(Sre,Aid,Sil)	W-PAL	banks	1.3(1).1	1(2)
90*	*B.* (*Leja*) *octomaculatum* (Panzer, 1796)	Pan.(Kra.),K-P.(Sre)	Kod.(Sre)	PAL	banks	1.3(1).1	2(3)
91*	*B.* (*Leja*) *articulatum* (Panzer, 1796)	H-W.(V),K-P.(Sre)	Kod.(Sre,Aid,Vet)	E-AS	banks	1.3(1).1	1?
92	*B.* (*Bembidion*) *quadrimaculatum* (Linnaeus, 1761)	H-W.(Tuz,V),Ned.(V),K-P.(Sre)	Kod.(Sre,MPre,Gar),Pen.(Sil,Aid)	OLA	drmead	1.3(1).1	4(5)
93	*B.* (*Bembidion*) *quadripustulatum* (Linnaeus, 1761)	Pan.(Kra),H-W.(Tuz,Alb),K-P.(Sre)	Kod.(Sre,Sil,Aid)	E-CA	banks	1.3(1).1	2?

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
94*	*B.* (*Nepha*) *genei* KUSTER, 1847	K-P.(Sre)	Kod.(Sre)	E-PA-M	banks	1.3(1).1	1
95*	*B.* (*Limneum*) *nigropiceum* (MARSHAM, 1802)	W.(Tuz.)	Pen.(Sen,Dab)	NMED	psamb,halob	1.3(1).1	1
96*	*B.* (*Peryphus*) *subcostatum* (MOTSCHULSKY, 1850)	Pan.(Kra),K-P.(Sre)	Pen.(Kar,Sre)	B-PAS	banks	1.3(1).1	1
97	*B.* (*Eupetedromus*) *dentellum* (THUNBERG, 1787)	H-W.(R,Vet),K-P.(Sre)	Pen.(Sil,Aid,Vet)	E-WSI	banks	1.3(1).1	4(5)
98*	*B.* (*Ocydromus* sp.group) *modestum* (FABRICIUS, 1801)	K-P.(Sre)	Kod.(Sre)	C-EE	banks	1.3(1).1	3(4)
*99	*B.* (*Ocydromus* sp.group) *decorum* (ZENCER, 1801)		Kod.(Sre,MPre,Sil)	E-CA-M	banks	1.3(1).1	1?
***100	*B.* (*Ocydromus*) *persicum* MENÉTRIÉS, 1832		Kod.(Sre)	B-CAS	banks	1.3(1).1	1?
101*	*B.* (*Ocydromus*) *siculum* DEJEAN, 1831	H-W.(V)		B-PAS	psamob	1.3(1).1	1
102	*B.* (*Peryphanes*) *dalmatinum* DEJEAN, 1831	H-W.(Tuz,Alb,V),K-P.(Sre)	Pen.(Kar),Kod.(Sre,Aid,Vet)	CE-PAS	banks	1.3(1).1	1
103	*B.* (*Peryphanes*) *castaneipenne* DUVAL, 1851	H-W.(Tuz.,V)	Pen.(Kar)	B-PAS	banks	1.3(1).1	1
104	*B.* (*Peryphanes*) *stephensii* CROTCH, 1866	Pan.(Kra),W.(Sil)	Pen.(Sil)	EUR	banks	1.3(1).1	1?
105*	*Pogonus* (*Pogonoidius*) *meridionalis* DEJEAN, 1828	G-G.(Dobr?)		E-SI	halob	1.3(1).1	1?
106	*P.* (*Pogonoidius*) *punctatulus* DEJEAN, 1828	Kar.(V),W.(Tuz,Sha)		B-CAS	halob	1.3(1).1	1
107*	*P.* (*Raptor*) *riparius* DEJEAN, 1828	Kar.(V)		NMED	halob	1.3(1).1	3(4)
108	*P.* (*Raptor*) *persicus* CHAUDOIR, 1842	Ram.,Kar.(V),Pan.(Kra),H-W.(R,Tuz)		B-PAS	halob	1.3(1).1	2(3)?
109*	*P.* (s.str.) *luridipennis* (GERMAR, 1822)	Ram.,Kar. (V)		W-PAL	halob	1.3(1).1	1?
110*	*P.* (s.str.) *iridipennis* NICOLAI, 1822	Kar.,G-G. (V)		E-AS	halob	1.3(1).1	1?
111	*Pogonistes* (s.str.) *rufoaeneus* (DEJEAN, 1828)	Kar(V), G-G.(Sha)		B-CAS	halob	1.3(1).4	1?
112*	*Patrobus* (s.str.) *atrorufus* (STROM, 1768)	P-K.(B-A)	Kod.(Alf,VLev,Bor,Ven)	E-WSI	mesofor	1.3(1).2	1(2)
113	*Stomis* (s.str.) *pumicatus* (PANZER, 1796)	R.(R),H-W.(V),P-K.(B-A),Sus.(B-A),	Pen.(Dab,Sen), Kod.(Sre,Alf,Kai,MTsen,Kal)	E-PAS	mesofor	1.3(1).2	2
114	*Myas* (s.str.) *chalybaeus* (PALLIARDI, 1825)	H-W.(V),P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sre,Dab), Kod.(Sre,Alf,VLev,Kai,Gol)	BAL-K	xerofor	1.3(1).4	3(4)
115	*Poecilus* (s.str.) *cupreus* (LINNAEUS 1758)	Mar.(Raz),Pan.(Kra),H-W.(V,Kar),P-K.(B-A)	Pen.(Kar,Dab,Sen), Kod.(Sre,Alf,,Dul)	E-AS	drmead, meadw	1.3(2).1	3(4)

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
116*	*P.* (s.str.) *versicolor* (Sturm, 1824)	K-P.(Sre)	Pen.(Sen), Kod.(Sre)	E-SI	meadow	1.3(2).1	2(3)
**117	*P.* (s.str.) *subcoeruleus* (Quensel, 1806)		Pen.(Sen)	B-CAS	xerofor	1.3(2).1	1
118*	*P.* (s.str.) *striatopunctatus* (Duftschmid, 1812)	Apf.(Sre)	Pen.(Kar)	C-EE	swamfor	1.3(2).1	1
119*	*P.* (s.str.) *punctulatus* (Schaller, 1783)	W.(Kar,Sen)	Pen.(Kar,Sen), Kod.(Sha,Dur,Ono)	E-SI	drmead, steep, agro	1.3(2).1	1(2)
120*	*P.* (s.str.) *lepidus* (Leske, 1785)	Kov.(R)		E-SI	mesofor	1.3(2).1	1?
121	*Pterostichus* (*Platysma*) *niger* (Schaller, 1783)	Mar.(Raz),Kov.(Rus),Pan.(Kra), W.(V),P-K.(B-A),K-P.(Sre)	Pen. (Kar), Kod.(Sre,Alf,Mpre, Kai,Ven,Bab)	E-AS	mesofor	1.3(2).1	4(5)
122*	*P.* (*Argutor*) *vernalis* (Panzer, 1796)	R.(Raz),K-P.(Sre)	Kod.(Sre,Vet,Sil)	W-PAL	swa	1.3(1).1	2(3)
123	*P.* (*Argutor*) *cursor* (Dejean, 1828)	Apf.,Kar.(V),K-P.(Sre)	Pen.(Sre), Kod.(Sre)	E-PAS	swa	1.3(2).1	1(2)
**124	*P.* (*Argutor*) *chamaeleon* Motschulsky, 1865	K-P.(Sre)	Kod.(Sre)	B-PAS	swa	1.3(2).1	1(2)
125	*P.* (*Adelosia*) *macer* (Marsham, 1802)	H-W.(V),P-K.(B-A),K-P.(Sre)	Pen.(Sen),Kod.(Sre,Gar)	E-CAS	mesofor	1.3(2).1	3(4)
126*	*P.* (*Melanius*) *antracinus* (Illiger, 1798)	H-W.(V),P-K.(B-A),K-P.(Sre)	Kod.(Sre,MPre,Vet,Sil)	E-PAS	swamfor	1.3(2).1	3(4)
*127	P. (*Melanius*) *gracilis* (Dejean, 1828)		Pen.(Sre)	E-SI	meadow,swa	1.3(2).1	1
128	*P.* (*Melanius*) *minor* (Gyllenhal, 1827)	Apf.(V), P-K.(B-A)		E-SI	swa,meadow	1.3(2).1	1
129	*P.* (*Melanius*) *nigrita* (Fabricius, 1792)	Pan.(Kra),H-W.(V),P-K.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre,MPre,Gar)	PAL	swamfor, banks	1.3(2).1	3
130	*P.* (*Phonias*) *strenuus* (Panzer, 1797)	H-W.,(Kar),P-K.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre,Sil,Aid, Ven)	E-SI	meadow	1.3(2).1	2(3)
131	*P.* (*Phonias*) *ovoideus* Sturm, 1824	H-W..(Kar,Sen,Sre), P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sen,Sre), Kod.(Sre,Kai,Dul,Oko,Bab,Vlev)	E-SI	mesofor	1.3(2).1	2
132	*P.* (*Feronidius*) *melanarius* (Illiger, 1798)	Mar.,Ram.(Raz),P-K.(B-A),Sus.(B-A)	Pen. (Kar,Sre), Kod.(Sre,Alf,Dul,Kai,Bor)	E-SI	eury	1.3(2).1	4(5-6)
133*	*P.* (*Argutor*) *leonisi* Apfelbeck, 1904	P-K.(B-A),K-P.(Sre)		C-EE	swamfor, banks	1.3(2).!	1
134	*P.* (*Fernidius*) *melas* (Creutzer, 1799)	Mar.(Raz),Sus.(B-A),K-P.(Sre)		E-PAS	meadow	1.3(2).!	4(5)
135	*P.* (*Omaseus*) *aterrimus* (Herbst, 1784)	Pan.(Kra),Müll.(Kav)		W-PAL	banks	1.3(2).1	1

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
136	*Abax* (s.str.) *carinatus* (Duftschmid, 1912)	H-W.(V,R),K-P.(Sre)	Pen.(Kar.Sre), Kod.(Sre,Alf,Kai)	C-EE	mesofor	1.3(2).1	2
137	*A.* (s.str.) *parallelus* (Duftschmidt, 1812)	W.(Alb),P-K.(B-A)		EUR	mesofor	1.3(2).1	1(2)
138*	*A.* (s.str.) *parallelepidus* (Piller & Mitterpacher, 1783)	Sus.(B-A)		EUR	mesofor	1.3(2).1	1
139	*Calathus* (s.str.) *fuscipes* (Goeze, 1777)	Mar.(Raz),H-W.(V),Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sre,Sen), Kod.(Sre,Dria,Gar,Kai,Gol)	PAL	drmead, agro	1.3(1).2	5(6)
140*	*C.* (s.str.) *glabricollis* Dejean, 1828	Mar.(Raz)		BAL	drmead	1.3(1).2	1
141	*C.* (s.str.) *distinguendus* Chaudoir, 1846	W.(V),P-K.(B-A),K-P.(Sre)	Kod.(Sre,MCn,Bal,Gol,Kol)	B-PAS	drmead, agro,steppe	1.3(1).2	1
142	*C.* (*Neocalathus*) *ambiguus* (Paykull, 1790)	Apf.(V),H-W.(Bal,Nkal,V),P-K.(B-A),K-P.(Sre)	Pen.(Dab),Kod.(Sre,Alf,Dul,Kai,Kal)	E-AS	drmead, agro,steppes	1.3(1).2	2
143*	*C.* (*Neocalathus*) *erratus* C. R. Sahlberg, 1827	R.,H-W.(V)		E-AS	drmead	1.3(1).2	1
144	*C.* (*Neocalathus*) *cinctus* (Motschulsky, 1850)	H-W.(V),P-K.(B-A),Müll.(Kav),K-P.(Sre)	Kod.(Sre,Ono,Bal,Alf,DRia)	PAL	drmead	1.3(1).2	2
145	*C.* (*Neocalathus*) *melanocephalus* (Linnaeus, 1758)	Mar.(Raz),R.(?),H-W.(V),P-K.(B-A),K-P.(Sre)	Pen. (Kar), Kod.(Sre,Alf,Dul,Bor,Ven,Kai,Gar)	OLA	eury	1.3(1).2	4(5)
146	*C.* (*Dolichus*) *halensis* (Schaller, 1783)	Kov.(R),P-K.(B-A),Sus.(B-A)	Pen.(Kar,Sre), Kod.(Sre,Alf,Kai,Bor)	E-AS	meadow	1.3(1).2	2
147*	*Taphoxenus* (s.str.) *gigas* (Fischer-Waldheim, 1823)	Müll.(Kav)		B-CAS	bothr	1.3(2).4	1
148*	*Sphodrus* (s.str) *leucophtalmus* (Linnaeus, 1758)	Mar.(Raz)		E-CA-M	bothr	1.3(2).4	1
149	*Laemostenus* (*Pristonychus*) *cimmerus* Fischer-Waldheim, 1823	G-G.(V),P-K.(B-A),Sus.(B-A),K-P.(Sre)	Kod.(Sre,Alf,VLev)	B-PAS	bothr	1.3(2).4	1
150	*L.* (*Pristonychus*) *terricola* (Herbst, 1783)	W.(R),G-G.(V), Sus.(B-A) P-K.(B-A),K-P.(Sre)	Pen. (Kar,Sen,Dab,Sre), Kod.(Sre,Alf,Dul,Bab,Oko)	C-EE	bothr	1.3(2).4	3
151*	*Agonum* (s.str.) *virdicupreum* (Goeze, 1777)	Mar.(Raz),K-P.(Sre)	Kod.(Sre,Mpre,Gar,Sil)	E-PA-M	marsh, swa	1.3(1).1	1
152*	*A.* (s. str.) *viduum* (Panzer, 1797)	K-P.(Sre)	Kod.(Sre,Bat)	E-SI	banks,swa	1.3(1).1	2(3-4)
153*	*A.* (s. str,.) *angustatum* Dejean, 1828	P-K.(B-A),K-P.(Sre)	Kod.(Sre,MPre,Bat,Gar)	E-PA-M	banks,swa	1.3(1).1	2(3)
154*	*A.* (s.str.) *duftschmidi* Schmidt, 1994	G-G.(Kra),K-P.(Sre)	Kod.(Sre,Vet,Bat)	E-SI	banks	1.3(1).1	3

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
155*	*A.* (s.str.) *longicorne* Chaudoir, 1864,	P-K.(B-A)		CEE-PA	banks	1.3(1).1	1
156*	*A.* (s.str) *hypocrita* (Apfelbeck, 1904)	P-K.(B-A)		E-SI	banks	1.3(1).1	1
157*	*A.* (s.str.) *lugens* (Duftschmidt, 1812)	R.(V),	Pen.(Kar),Kod.(Bat,Kai)	E-CA-M	banks	1.3(1).1	1
158*	*A.* (*Europhilus*) *micans* Nicolai, 1822	K-P.(Sre)	Kod.(Sre)	E-WSI	banks	1.3(1).2	1
159*	*A.* (*Europhilus*) *thoreyi* Dejean, 1828	Pan.(Kra),K-P.(Sre)	Pen.(Kar),Kod.(Sre,Kol,Bat)	OLA	marsh, swa	1.3(1).2	1(2)
160	*Platynus* (s.str.) *assimilis* (Paykull, 1790)	Apf.(V), P-K.(B-A),Pen.(Pop),K-P.(Sre)	Kod.(Sre,Vet,Gar,DRya,Kol)	E-SI	mesofor	1.3(1).2	4(5)
161*	*P.* (s.str.) *krynickii* Sperk, 1835	P-K.(B-A),K-P.(Sre)	Kod.(Sre,Kai)	E-WSI	mesofor	1.3(1).2	1
162*	*Paranchus* (s.str.) *albipes* (Pontoppidan, 1763)	V&N.(V)		OLA	banks	1.3(1).1	1
163	*Oxypselaphus* (s.str.) *obscurum* Herbst, 1784	W.(Alb),Sus.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Gol,Oko,Ven), Pen.(Sre,Aid)	OLA	meadow,mesofor	1.3(1).2	4(5)
164	*Anchomenus* (s.str.) *dorsalis* (Pontoppidan, 1763)	Apf.(V), Ram.(Dob?),P-K.(B-A),K-P.(Sre)	Pen.(Kar, Sre,Sen,Dab), Kod.(Sre,Alf,Gar,Kai,Bab,VLev)	PAL	agro,meadow, drmead	1.3(1).1	4(5)
165*	*Olistopus* (s.str.) *glabricollis* (Pontoppidan, 1763)	K-P.(Sre)	Kod.(Sre,Kol)	NMED	banks,meadow	1.3(1).2	1
166	*Synuchus* (s.str.) *nivalis* (Illiger, 1798)	H-W.(V),P-K.(B-A)	Pen.(Sen)	E-SI	banks,meadow	1.3(1).2	1
167	*Platyderus* (s.str.) *rufus* (Duftschmid, 1812)	H-W.(Kar),W.(Ishi, Sreb),K-P.(Sre)	Pen.(Sil,Sre,Dab,Sen,Kar), Kod.(Sre,Alf,Bor,Ven,Kai,Ono,Bal)	C-EE	mesofor	1.3(1).2	3(4)
168	*Amara* (s.str.) *similata* (Gylenhall, 1810)	H-W.(Sam,Kar,V), P-K.(B-A), Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sre),Kod.(Sre,Sil,Vet,Ono)	E-CA-M	drmead, agro	2.2.1	4(5)
169	*A.* (s.str.) *ovata* (Fabricius, 1792)	H-W.(Kar,Sre),P-K.(B-A), Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sre),Kod.(Sre,Gol,Alf)	PAL	drmead, agro,steppe	2.2.1	4
170	*A.* (s.str.) *saphyrea* Dejean, 1828	H-W.(Kar,Sen),G-G.(V),P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sen),Kod.(Sre,Sil,Alf,Bat)	C-EE	drmead, agro,steppe	2.2.1	3
171	*A.* (s.str.) *convexior* Stephens, 1828	H-W.(Kar,V),P-K.(B-A),K-P.(Sre)	Pen.(Sre,Sen,Dab,Kar), Kod.(Sre,Alf,Kai,Ben)	E-AS	drmead, agro,steppe	2.2.1	4(5)
172*	*A.* (s.str.) *lunicollis* Schiodte, 1837	Kov.(R)	Kod.(Sre)	OLA	drmead	2.1.1	1
173*	*A.* (s.str.) *proxima* Putzeys, 1866	K-P.(Sre)	Kod.(Sre,Bat,Gar)	E-PAS	mesofor	2.2.1	2

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
174	*A.* (s.str.) *aenea* (Degeer, 1774)	Mar.(Raz),Pan.(Kra),H-W.(R,Dur, GenT,Kar,V), P-K.(B-A),Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sen,Dab), Kod.(Sre,Oko,Alf,MCen)	OLA	drmead, agro,steppe	2.3.1	3(4)
175	*A.* (s.str.) *eurynota* (Panzer, 1729)	R.(R), H-W.(Dur,GenT,V),P-K.(B-A),K-P.(Sre)	Pen.(Dab),Kod.(Sre,Kai,Ono,Bal)	OLA	drmead, agro,steppe	2.3.1	1(2-3)
176	*A.* (s.str.) *familiaris* (Duftschmid, 1812)	H-W.(Kal, Kar),Sus.(B-A),K-P.(Sre)	Pen.(Kal, Kar), Kod.(Sre,Sil,Alf,Kai,Ono,Bor,Bat)	OLA	eury	2.1.1	4
177	*A.* (s.str.) *anthobia* Villa, 1833	H-W.(Kar,Sreb,V), P-K.(B-A) ,K-P.(Sre)	Pen.(Kar,Dab,Sre,Kar),Kod.(Sre)	E-PAS	drmead	2.1.1	2
178*	*A.* (*s.str*) *lucida* (Duftschid, 1812)	K-P.(Sre)	Kod.(Sre,Vet,Kol)	E-PA-M	eury	2.3.1	1
179	*A.* (*Celia*) *municipalis* (Duftschmid, 1812)	Mar.(Raz), P-K.(B-A),K-P.(Sre)	Kod.(Sre)	E-SI	drmead	2.3.1	2(3)
180*	*A.* (*Celia*) *ingenua* (Duftschmid, 1812)	K-P.(Sre)	Kod.(Sre,Lam,Alf)	E-AS	drmead, agro	2.3.1	2
181	*A.* (*Celia*) *bifrons* (Gyllenhal, 1810)	H-W.(V),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Kai,Alf,Bab,Ono,Bal)	E-CAS	drmead, agro,steppe	2.3.1	1(2)
182*	*A.* (*Celia*) *fusca* Dejean, 1828	H-W.(V)		E-PA-M	drmead	2.3.1	1
183*	*A.* (*Celia*) *sollicita* Pantel 1888	P-K.(B-A)		E-PA-M	agro,steppe	2.3.1	1(2)
184	*A.* (*Bradytus*) *apricaria* (Paykull, 1790)	Pan.(Kra),H-W.(V),P-K.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre)	OLA	drmead, steppe, agro	2.3.1	2(3)
185	*A.* (*Bradytus*) *consularis* (Duftschmid, 1812)	R.(V),Pan.(Kra),H-W.(Kav.V,Alb),P-K.(B-A),K-P.(Sre)	Pen.(Kar), Kod.(Sre,Kai,Bat)	E-CA	meadow	2.3.1	3(4)
186	*A.* (*Bradytus*) *crenata* Dejean, 1828	R.(V), Müll.(Kav),Pan.(Kra)		CE-PAS	drmead	2.3.1	1(2)
187	*A.* (*Bradytus*) *fulva* (O.F. Müller, 1776)	Mar.(Raz),Pan.(Kra)		E-WSI	drmead	2.3.1	2
188*	*A.* (*Percosia*) *equestris* (Duftschmid, 1812)	H-W.(Raz)	Kod.(Sre)	E-AS	agro,steppe	2.3.1	2
189	*Curtonotus* (s.str.) *convexiusculus* (Marsham, 1802)	Kar.,H-W.(V), P-K.(B-A)	Pen. (Kar)	E-WSI	meadow	2.3.1	1(2)
190*	*C.* (s.str.) *aulicus* (Panzer, 1797)	P-K.(B-A)	Pen. (Kar)	E-AS	meadow	2.3.1	1

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
191	*Zabrus* (s.str.) *tenebrioides* (Goeze, 1777)	Mar.(Raz),Ram.(Sil),Ned.(V)Pan.(Kra),H-W.(Tuz,V,Zl.P), P-K.(B-A), Dre. *et al*.(Dobr, GTos, Bal), Sus.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Kai,Bab,Bat,Ono,Kol)	E-CAS	agro,drmead	2.3.2	4(5-6)
192	*Z.* (*Pelor*) *spinipes* (Fabricius, 1798)	Kov.(R), Mar.(Raz),Dre.*et al*.(Dobr, GT,Bal),P-K.(B-A),Sus.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Kai,Bab,Lam)	NMED	drmead,steppe	2.3.1	2
193	*Z.* (*Pelor*) *corpulentus* Schaum, 1864	G-G., (Raz), P-K.(B-A)		B-PAS	drmead, steepes	2.3.2	1
194*	*Scybalicus* (s.str.) *oblongiusculus* (Dejean, 1829)	P-K.(B-A)		MED	drmead, agro	2.3.1	1
195	*Anisodactylus* (s.str.) *binotatus* (Fabricius, 1787)	Pan.(Kra),Mar.(Raz),H-W.(V),P-K.(B-A),K-P.(Sre)	Pen.(Pop), Kod.(Sre,DRya,Gar,Vet)	E-AS	meadow,mesofor	2.3.1	4(5)
196	*A.* (s.str.) *signatus* (Panzer, 1797)	Mar.(Raz),Pan.(Kra),H-W.(Tol, V),P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sre,Dab), Kod.(Sre,Alf)	E-AS	drmead, steppe,agro	2.3.1	3(4)
197*	*A.* (s.str.) *nemorivagus* (Duftschmid, 1812)	K-P.(Sre)	Kod.(Sre,Vet,Mpre,Dul)	E-PAS	swamfor	2.3.1	2
198	*A.* (*Hexatrichus*) *poeciloides* (Stephens, 1828)	H-W.(Alb),Kar.(V)		E-CA-M	halob	2.3.1	1
199	*Gynandromorphus* (s.str.) *etruscus* (Quensel, 1806)	H-W.(R,V),K-P.(Sre)	Kod.(Sre,Alf,Kai,Bab,Ven,Bor)	NMED	xerofor	2.2.1	2(3)
200	*Diachromus* (s.str.) *germanus* (Linnaeus, 1758)	Mar.(Raz), Pan.(Kra),H-W.(R),K-P.(Sre)	Kod.(Sre,Alf,VLev,MCen,Oko)	E-MED	marsh, swa,banks	2.2.1	2(3)
201*	*Bradycellus* (s.str.) *csikii* Laczo, 1912	H-W.(Alb)		E-PAS	marsh,swa	2.1.1	2(?)
202*	*Dicheirotrichus* (s.str.) *lacustris* (Redtenbacher, 1858)	Kar.,H-W.(V)		NMED	meadow	2.1.1	1(?)
203	*Stenolophus* (s.str.) *mixtus* (Herbst, 1784)	Pan.(Kra),P-K.(B-A),K-P.(Sre)	Pen.,Kod.(Sre,Bat)	PAL	banks	2.1.1	4(5)
204*	*S.* (s.str.) *discophorus* (Fischer-Waldheim, 1823)	R.(V),Pen.(Kar,Aid),K-P.(Sre)	Pen.(Kar,Aid), Kod.(Sre,Alf,Dul,Bat,Kol)	CE-PAS	banks	2.1.1	3(4)
205*	S. (s.str.) *skrmishiranus* (Stephens, 1828)	K-P.(Sre)	Kod.(Sre,MTsen)	E-MED	banks	2.1.1	3(4)
206*	*S.* (s.str.) *teutonus* (Schrank, 1781)	K-P.(Sre)	Kod.(Sre,Bab,Bat)	E-MED	meadow,swamfor	2.1.1	3(4)
207*	*S.* (s.str.) *persicus* Mannerheim, 1844	K-P.(Sre)	Kod.(Sre)	E-MED	banks	2.1.1	1(2)
208	*S.* (s.str.) *steveni* Krynicky, 1832	Müll.(Kav),P-K.(B-A)		B-PAS	halob	2.1.1	1

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
209*	*Acupalpus* (s.str.) *meridianus* (Linnaeus, 1767)	Mar.(Raz),K-P.(Sre)	Pen.,Kod.(Sre)	E-PAS	marsh, swa	2.1.1	1(?)
210	*A.* (s.str.) *elegans* (Dejean, 1829)	Ram.,Kar.(V),K-P.(Sre)	Kod.(Sre)	E-MED	halob,marsh, swa	2.1.1	2(?)
211*	*A.* (s.str.) *paludicola* Reiter, 1900	K-P.(Sre)	Kod.(Sre,Alf,Kai)	E-MED	halob	2.1.1	1(?)
212*	*A.* (s.str.) *notatus* Mulsantet Rey, 1861	W.(V),K-P.(Sre)	Kod.(Sre)	MED	banks	2.1.1	2(?)
213	*A.* (s.str.) *parvulus* (Sturm, 1825)	R.,H-W.(V)		W-PAL	banks,halob	2.1.1	2(?)
214	*A.*(s.str.) *maculates* Shaum, 1860	W.(V),K-P.(Sre)	Kod.(Sre)	MED	halob	2.1.1	1(2)
*215	*Anthracus* (s.str.) *cosputus* (Duftschmid, 1812)		Pen.(Sre)	E-AS	banks	2.1.1	1
216*	*Trichocellus* (*s.str*) sp. (*?discicollis*)	W.(V)		B-CAS ?	steppe?	2.1.1	1?
217*	*Daptus vittatus* Fischer-Waldheim, 1824	Kar.(V)	Kod.(Bal,Ono,Bat)	CA-MED	drmead,steppe,agro	2.3.3	2
218*	*Parophonus* (s.str.) *dejeani* (Csiki, 1932)	H-W.(V)	Pen.(Sre)	E-PAS	drmead	2.2.1	1
219	*P.* (s.str.) *laeviceps* (Menétriés, 1832)	Müll.(Kali,Kra)		B-PAS	meadow, agro	2.2.1	1
220*	*P.* (s.str.) *maculicornis* (Duftschmid, 1812)	H-W.(Kar),K-P.(Sre)	Pen.(Kar),Kod.(Sre)	E-PAS	meadow, agro	2.2.1	1(?)
221	*P.* (*Tachyophonus*) *planicollis* (Dejean, 1829)	H-W.(Pop),H-W.(V),K-P.(Sre)	Pen.(Pop),Kod.(Sre,DRia)	NMED	meadow, drmead	2.1.1	2
*222	*P.* (*Ophonomimus*) *hirsutulus* (Dejean, 1829)		Kod.(Sre)	MED	meadow, drmead	2.1.1	1
223	*Harpalus* (*Pseudophonus*) *rufipes* (Degeer, 1774)	Pan.(Kra),H-W.(R,Bal,V),P-K.(B-A), Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sre,Sen,Dab), Kod.(Sre,MPre,DRya,Gar)	PAL	eury	2.1.1	5(6)
224	*H.* (*Pseudophonus*) *griseus* (Pauzer, 1797)	Mar.(Raz),Pan.(Kra),H-W.(R,V),P-K.(B-A), Sus.(B-A),K-P.(Sre)	Kod.(Sre,Kal,Alf,Bor,Ven,Ono ,Bal,Kol)	PAL	eury	2.1.1	4(5)
225	*H.* (*Pseudophonus*) *calceatus* (Duftschmid, 1812)	Ned.,R.(V),H-W.(R),Pan.(Kra),P-K.(B-A), Sus.(B-A),K-P.(Sre)	Kod.(Sre,Bat,Ono)	E-AS	drmead, steeppe	2.3.1	1
226	*H.* (s.str.) *tenebrosus* Dejean, 1829	H-W.(V),P-K.(B-A)	Pen.,Kod.(Sre)	E-CA-M	drmead,steppe	2.3.1	1
227*	*H.* (s.str.) *akinini* Tschtscerine, 1895	Apf.(Sil),K-P.(Sre)	Kod.(Sre,Kai,Ono)	B-PAS	drmead,steppe	2.3.1	1
228*	*H.* (*s.str*) *dimidiatus* (Rossi, 1790)	G-G.(V),K-P.(Sre)	Kod.(Sre,Alf,Bat)	E-PAS	xerofor, drmead	2.3.1	1
229	*H.* (s.str.) *hospes* Sturm, 1818	Ram.H-W.(V),Pan.(Kra),K-P.(Sre)	Kod.(Sre,Bat,Dul,Bor)	CE-PAS	drmead, halob	2.3.1	1
230	*H.* (s.str.) *affinis* (Schrank, 1781)	Mar.(Raz),Pan.(Kra),H-W.(Bal,V), Sus.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Dul,Kai,Bor)	E-AS	eury	2.3.1	2

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
231	*H.* (s.str.) *distinguendus* (Duftschmid, 1812)	Mar.(Raz),Pan.(Kra),H-W.(V), Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sen,Dab), Kod.(Sre,Gar,Bal,Bat)	PAL	eury	2.3.1	3(4-5)
232	*H.* (s.str.) *rubripes* (Duftschmid, 1812)	Apf.(V),H-W.(Kar,V,Alb),Pan.(Kra), P-K.(B-A),Sus.(B-A),K-P.(Sre)	Pen.(Kar), Kod.(Sre)	E-AS	eury	2.3.1	4(5)
233*	*H.* (s.str.) *latus* (Linnaeus, 1758)	Sus.(B-A),K-P.(Sre)	Kod.(Sre)	E-AS	xerofor	2.3.1	2(3)
234*	*H.* (s.str.) *subcylindricus* Dejean, 1829	G-G.(V),K-P.(Sre)	Pen.(Sen,Dab), Kod.(Sre,Ono,Bal,Kol)	E-CAS	eury	2.3.1	1(?)
235	*H.* (s.str.) *albanicus* Reitter, 1900	Apf.,R.(V),H-W.(Kal),P-K.(B-A),K-P.(Sre)	Pen.(Kal),Kod.(Sre,Sil,Alf, Ono)	E-PAS	drmead, steepes, agro	2.3.1	3
236	*H.*(s.str.) *smaragdinus* (Duftschmid, 1812)	Pan.(Kra),H-W.(V),Sus.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre,Alf,Kai,Bab,Bat)	E-AS	eury	2.3.1	1(?)
*237	*H.* (s.str.) *xanthopus* Gemminger et Harold, 1868		Kod.(Sre,Bat,Bal)	E-PAS	xerofor	2.3.1	1
238	*H.* (s.str.) *tardus* (Panzer, 1797)	H-W.,P-K.(B-A),Sus.(B-A),K-P.(Sre)	Pen.(V,Kar,Sen,Dab,Sre), Kod.(Sre,Alf,Kai,Bor,Ven,Bat)	E-CAS	eury	2.3.1	3(4)
239	*H.* (s.str.) *fuscicornis* Menétriés, 1832	W.(Dab,Sen),P-K.(B-A)	Pen.(Dab,Sen),Kod.(Sre,Vet,Alf)	W-PAL	xerofor	2.3.1	2(3)
240	*H.* (s.str.) *autumnalis* (Duftschmid, 1812)	Ned.,R.(V),Pan.(Kra),Mar.(Raz)	Kod.(Sre)	E-MED	drmead, steepes, agro	2.3.1	2
241	*H.* (s.str.) *atratus* Latreille, 1804	H-W.(Dul,Kar,Sre),K-P.(Sre)	Pen.(Dul,Kar,Sre), Kod.(Sre,Bal,Alf,Kai,Bor)	E-CAS	eury	2.3.1	2
242	*H.* (s.str.) *serripes* (Quensel, 1806)	R.,H-W.(V),Mar.(Raz),Sus.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Bat,Ono,Kol,Bal), Pen.(Sre,Dab)	PAL	drmead,steppe, agro	2.3.1	1(2)
243*	*H.* (s.str.) *attenuatus* Stephens, 1828	Pan.(Kra),K-P.(Sre)	Kod.(Sre)	MED	mesofor	2.3.1	1
244*	*H.* (s.str.) *picipennis* Duftschmid, 1812	Pan.(Kra),K-P.(Sre)	Kod.(Sre)	EUR	psamob	2.3.1	1
245	*H.* (s.str.) *pumilis* Sturm, 1818	H-W.(Kar,V),K-P.(Sre)	Pen.(Kar,Dab),Kod.(Sre,Alf,Kai,Ven,Oko)	E-CAS	drmead, agro	2.3.1	1(?)
246*	*H.* (*s.str*) *cupreus* Dejean, 1829	Apf.(V),K-P.(Sre)	Kod.(Vet,Sre)	NMED	drmead, agro	2.3.1	2 (3)
247	*H.* (s.str.) *politus* Dejean, 1829	Ned.(Pro),P-K.(B-A),Müll.(Kav),K-P.(Sre)	Pen.(Dab,Sen,Che), Kod.(Sre,Alf,Bat)	E-SI	xerofor	2.3.1	1(2)

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
248	*H.* (s.str.) *flavicornis* DEJEAN, 1829	Mar.(Raz), H-W., Apf.,R.(V), P-K.(B-A), Pan.(Kra)	Pen.(Kar,Sre)	CE-PAS	xero,drmead	2.3.1	2
249*	*H.* (s.str.) *calathoides* MOTSCHULSKY, 1844	K-P.(Sre)	Kod.(Sre,Kal,Ono,Bal,Kol)	B-CAS	drmead,steppe, agro	2.3.1	1
250	*H.* (s.str.) *anxius* (DUFTSCHMID, 1812)	Pan.(Kra),Apf.,H-W.(V),G-G.(PolS),K-P.(Sre)	Kod.(Sre,Kai,Lam)	PAL	drmead,steppe, agro	2.3.1	1
251*	*H.* (s.str.) *zabroides* DEJEAN, 1829	W.(Alb.)		E-SI	drmead,steppe, agro	2.3.1	1
252*	*H.* (*s.str*) *saxicola* DEJEAN, 1829	G-G.(V)		CE-PAS	drmead,steppe	2.3.1	1
253*	*H.* (s.str.) *euchlorus* MENÉTRIÉS, 1836	Apf.(V)		BAL	drmead	2.3.1	1
254*	*H.* (s.str.) *modestus* DEJEAN, 1829	Ned.(V)		E-SI	drmead	2.3.1	2
255	*H.* (s.str.) *honestus* (DUFTSCHMID, 1812)	Mar.(Raz), H-W.(V)		E-SI	drmead	2.3.1	2
256*	*H.* (s.str.) *rufipalpis* STURM, 1818	G-G.(Krap)		W-PAL	drmead	2.3.1	1
257	*H.* (s.str.) *servus* (DUFTSCHMID, 1812)	Ram., H-W.(V),		E-SI	xerofor	2.3.1	2
258*	*H.* (s.str.) *flavescens* (PILLER& MITTERPACHER, 1783)	H-W.(V)		EUR	drmead	2.3.1	2
259	*H.* (s.str.) *froelichi* STURM, 1818	H-W.(PolS,V), P-K.(B-A),K-P.(Sre)	Pen.(Kar)	E-AS	meadow	2.3.1	2(3)
260*	*H.* (s.str.) *hirtipes* (PANZER, 1797)	W.(R)		E-AS	drmead	2.3.1	1
261**	*H.* (s.str.) *caspius* STEVEN, 1806		Pen.(Ish)	E-PAS	drmead	2.3.1	1
262*	*H.* (s.str.) *luteicornis* (DUFTSCHMID, 1812)	Sus.(B-A),K-P.(Sre)		E-SI	meadow	2.3.1	1
263*	*Ophonus* (*Semiophonus*) *signaticornis* (DUFTSCHMID, 1812)	P-K.(B-A)		E-PAS	drmead,steppe	2.2.1	2(3)
264	*O.* (*Metophonus*) *cordicollis* (DEJEAN, 1829)	H-W.(Alb,Bal)		NMED	drmead, agro	2.2.1	2
265	*O.* (*Metophonus*) *nitidulus* (STEPHENS, 1828)	H-W.(V,Kar,Dab),P-K.(B-A),Sus.(B-A),K-P.(Sre)	Pen.(V,Kar,Dab), Kod.(Sre,Alf, Bat,Dul,Oko)	E-SI	drmead	2.2.1	3(4)
266*	*O.* (*Metophonus*) *gammeli* SCHAUBERGER, 1932	H-W.(Kar,Sen),K-P.(Sre)	Pen.(Kar,Sen), Kod.(Sre,Alf, MTsen,Kai,Bat)	CEUR	drmead	2.2.1	3
267*	*O.* (*Metophonus*) *cordatus* (DUFGTSCHMD, 1812)	Pan.(Kra),K-P.(Sre)	Kod.(Sre,Ono,Bal,Kol)	E-PA-M	drmead	2.2.1	4
268	*O.* (*Metophonus*) *puncticollis* (PAYKULL, 1798)	Ram.(V),Sus.(B-A),K-P.(Sre)	Kod.(Sre)	W-PAL	drmead	2.2.1	4

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
269	*O.* (*Metophonus*) *puncticeps* Stephens, 1828	H-W.(R,Alb),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Bat,Kol,Bor)	E-CAS	drmead,steppe	2.2.1	1(2)
270	*O.* (*Metophonus*) *melleti* (Heer, 1837)	H-W.(R,Alb),Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sre), Kod.(Sre,Alf,Dul,Nkal)	E-PAS	meadow, drmead	2.2.1	1
271	*O.* (*Metophonus*) *rufibarbis* (Fabricius, 1792)	H-W.(Kar,Sen,Sre,Alb),P-K.(B-A), Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sen,Sre), Kod.(Sre,Alf,Mcen,Vlev,Ono)	W-PAL	eury	2.2.1	2(3)
272*	*O.* (*Metophonus*) *rupicola* (Sturm, 1818)	P-K.(B-A)	Kod.(Sre)	E-PAS	drmead	2.2.1	2
273	*O.* (*Hesperophonus*) *azureus* (Fabricius, 1775)	Mar.(Raz),Pan.(Kra), H-W.(R,V,Kar), P-K.(B-A),K-P.(Sre)	Pen.(Kar,Dab), Kod.(Sre,Alf,Dul,Ven,Bat,Kai,Aid)	E-CA-M	drmead,meadow	2.2.1	3
274*	*O.* (*Hesperophonus*) *similis* (Dejean, 1829)	R.(V),K-P.(Sre)	Kod.(Sre,Vet,Mpre,Gar)	NMED	drmead,agro	2.2.1	2(3)
275*	*O.* (*Hesperophonus*) *subquadratus* Dejean, 1829	P-K.(B-A),K-P.(Sre)	Kod.(Sre,Ono)	MED	drmead	2.2.1	2(3)
276	*O.* (*Hesperophonus*) *cribricollis* Dejean, 1829	Mar.(Raz), Ram.,H-W.(V,Pro),K-P.(Sre)	Kod.(Sre,Bor,Ven,Bat)	E-CAS	drmead	2.2.1	1
277	*O.* (s.str.) *sabulicola* (Panzer, 1796)	H-W.(R,V),Pan.(Kra), P-K.(B-A), Müll.(Kav),Sus.(B-A),K-P.(Sre)	Pen.(Kar,Sen), Kod.(Sre,Alf,Kai,Vlev)	E-SI	drmead	2.2.1	3
278*	*O.* (s.str.) *diffinis* (Dejean, 1829)	P-K.(B-A),K-P.(Sre)	Kod.(Sre)	E-PAS	drmead	2.2.1	1
279	*Acinopus* (s.str.) *picipes* (Olivier,1795)	Mar.(Raz),Pan.(Kra),H-W.,P-K.(V,A-B,Kav),Müll.(Kav),Sus.(B-A)	Pen.(Smi), Kod.(Sre,Kai,Ono, Bal,Kol)	NMED	drmead	2.3.2	2(3)
280	*A.* (s.str.) *laevigatus* Menétriés, 1832	W.(Dab),P-K.(B-A)	Pen.(Dab)	B-CAS	drmead,steppe	2.3.2	1
281	*A.* (s.str.) *ammophilus* Dejean, 1829	Apf.(V),Müll.(Kav), P-K.(B-A)		B-PAS	drmead,steppe	2.3.2	1
282*	*A.* (*Oedematicus*) *megacephalus* (Rossi, 1794)	Dre.(V)	Kod.(Sre)	NMED	drmead,steppe	2.3.2	1
283*	*Carterus* (s.str.) *gilvipes* (Piochard de la brulerie, 1873)	W.(Alb)		E-PA-M	drmead,steppe,halob	2.3.3	2
284	*C.* (s.str.) *rotundicollis* Rambur, 1837	Müll.(Kav,NKal.)		MED	drmead,halob	2.3.3	1
285	*C.* (s.str.) *rufipes* Chaudoir, 1843	H-W.(Bal),P-K.(B-A)		B-PAS	drmead,steep	2.3.3	2
286*	*C.* (s.str.) *angustipennis* Brulerie, 1877	P-K.(B-A)		B-PAS	drmead,steepe	2.3.3	1(2)

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
287	*Ditomus* (s.str.) *calydonius* (Rossi, 1790)	H-W.(Alb),P-K.(B-A),Müll.(Kav)	Pen.(Sre)	NM-CAS	drmead,steppe	2.3.3	2(3)
288	*Dixus* (s.str.) *obscurus* (Dejean, 1825)	Apf.(V),H-W.(Tuz),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Vet, Scha,Bat,Ono,Kol)	NM-CAS	drmead,agro	2.3.3	2
289	*D.* (s.str.) *clypeatus* (Rossi, 1790)	Mar.(Raz), Pan.(Kra), P-K.(B-A), Sus.(B-A)	Pen.(Sre)	E-MED	drmead,steppe,agro	2.3.3	2
290*	*D.* (s.str.) *eremita* (Dejean, 1825)	H-W.(V)		B-CAS	drmead,steppe,halob	2.3.3	2(3)
291*	*Amblistomus* (s.str.) *metallescens* (Dejean, 1829)	Apf.,Ram.(V)		E-PA-M	banks	2.2.1	2(?)
292*	*A.* (s.str.) *nider* Heer, 1841	Ram.(V)		E-PA-M	banks	2.2.1	2(?)
293*	*Panagaeus crux-major* (Linnaeus, 1758)	Pan.(Kra),K-P.(Sre)	Kod.(Sre,Bat,Bab)	E-SI	marsh, swamfor	1.3(1).1	1
294*	*P.* (s.str.) *bipustulatus* (Fabricius,1792)	P-K.(B-A),K-P.(Sre)	Kod.(Sre,MPre,DRya,Vet)	E-PAS	xerofor	1.3(1).1	2(3)
295	*Callistus* (s.str.) *lunatus* (Fabricius, 1775)	Mar.(Raz),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Gar,Lam,MCen)	E-CAS	swamfor,marsh	1.3(1).1	2(3)
296	*Dinodes* (s.str.) *decipiens* (Dufour, 1820)	Apf.(V),G-G.(Bat),P-K.(B-A),K-P.(Sre)	Pen.(Che), Kod.(Sre,Ono,Bal,Oko,Kol,Alf)	E-MED	drmead,steppe	1.3(1).1	1(2)
297	*Chlaenius* (*Trichochlaenius*) *aenocephalus* (Dejean, 1826)	Apf.(V),P-K.(B-A),Sus.(B-A),K-P.(Sre)	Pen.(Dab), Kod.(Sre,DRya,MPre,Gar,Kol)	B-PAS	banks, marsh, swa	1.3(1).1	3
298	*Ch.* (s.str.) *festivus* (Panzer, 1796)	Mar.(Raz),Ned.,Ram(V),Sus.(B-A),K-P.(Sre)	Kod.(Sre,DRya,Vet,Sil)	E-CAS	banks	1.3(1).1	3(4)
299	*Ch.* (*Chlaeniellus*) *nitidulus* (Schrank, 1781)	Pan.(Kra), G-G.(Prov), P-K.(B-A),K-P.(Sre)	Kod.(Sre,Vet,Gar,MPre), Pen.(Sil,Aid),	E-CAS	banks	1.3(1).1	4(5)
300	*Ch.* (*Chlaeniellus*) *vestitus* (Paykull, 1790)	Kov.(R),Mar.(Raz),Pan.(Kra), P-K.(B-A),Sus.(B-A)	Kod.(Sre,Vet,MPre,DRya,Gar,Aid)	PAL	banks	1.3(1).1	4(5)
301*	*Ch.* (*Chlaeniellus*) *terminatus* (Dejean, 1826)	Ram.(R),K-P.(Sre)	Kod.(Sre)	E-CAS	drmead,steppe,banks	1.3(1).1	2
302*	*Ch.* (*Chlaeniellus*) *nigricornis* (Fabricius, 1787)	K-P.(Sre)	Kod.(Sre,Mpre,Gar,Pop)	E-AS	banks	1.3(1).1	2
303*	*Ch.* (*Chlaeniellus*) *flavipes* Menétriés, 1832	H-W.(Isp)		B-PAS	banks	1.3(1).1	2
304	*Oodes* (s.str.) *gracilis* Villa, 1833	Ram.(R),Vas.(V),K-P.(Sre)	Kod.(Sre,MTsen,Alf)	E-PAS	banks,halob	1.3(1).1	2
305*	*O.* (*s.str*) *helopioides* Fabricius, 1792	P-K.(B-A)		W-PAL	banks,halob	1.3(1).1	1
306	*Licinus* (s.str.) *silphoides* (Rossi, 1790)	Pan.(Kra), H-W.(NKal), P-K.(B-A)		NMED	drmead,step	1.3(1).1	1
307	*L.* (s.str.) *cassideus* (Fabricius, 1792)	Kov,(R),Mar.(Raz),H-W.(V),Pan.(Kra),P-K.(B-A),Müll.(Kav),Sus.(B-A)	Kod.(Ono,Bal)	NM-CAS	drmead,step	1.3(1).1	1(2)

Appendix. Continued.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
308	*L.*(*s.str*) *depressus* (Paykull, 1790)		Pen.(Sen,Dab)	E-SI	drmead,step	1.3(1).1	1
309*	*Badister* (s.str.) *meridionalis* Puel, 1925	K-P.(Sre)	Kod.(Sre,DRya,Gar,MPre,Bat)	E-CAS	banks	1.3(1).2	4
310*	*B.* (s.str.) *unipustulatus* Bonelli, 1813	Ram.(V),K-P.(Sre)	Pen.(Kar,Sre), Kod.(Sre,Gar,MPre,DRya)	E-WSI	banks	1.3(1).2	4
311*	*B.* (s.str.) *bullatus* (Schrank, 1798)	K-P.(Sre)	Pen.(Ish), Kod.(Sre,Mpre,Kol,Bat)	OLA	banks	1.3(1).1	3(4)
312*	*B.* (s.str.) *lacertosus* Sturm, 1815	W.(Sen)	Pen.(Sen)	E-SI	xerofor	1.3(1).2	1(2)
313	*Lebia* (*Lamprias*) *cyanocephala* (Linnaeus, 1758)	Apf.(V),R.(R,V),Mar.(Raz) ,P-K.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre,DRia,Alf ,MTsen)	E-PA-M	drmead	1.1.3	1(2)
314	*L.* (*Lamprias*) *chlorocephala* (Hoffman, 1803)	Mar.(Raz), P-K.(B-A),K-P.(Sre)		E-CAS	drmead	1.1.3	1
315	*L.* (s.str.) *cruxminor* (Linnaeus, 1758)	Apf.,Ram.,H-W.(V),K-P.(Sre)	Pen.(Kar), Kod.(Sre,Alf,VLev ,Bor,Ven)	PAL	meadow,mesofor	1.1.3	2(3)
316	*L.* (s.str.) *humeralis* Dejean, 1825	Apf.,Ram.(V),Müll.(Kav) ,Pan.(Kra), Sus.(B-A),H-W.(Isp),K-P.(Sre)	Kod.(Sre)	E-PAS	mesofor	1.1.3	1(?)
317*	*L.* (*Lebia*) *scapularis* (Fourcroy, 1785)	K-P.(Sre)	Kod.(Sre,Dul)	E-CA-M	mesofor	1.1.3	1(?)
318*	*L.* (*Lebia*) *trimaculata* (Villers, 1789)	Apf.(V)		E-CA-M	mesofor	1.1.3	1(?)
*319	*Demetrias* (s.str.) *atricapillus* (Linnaeus, 1758)		Pen.(Kar)	E-PA-M	mesofor	1.1.2	1
320*	*Dromius* (s.str.) *agilis* (Fabricius, 1787)	K-P.(Sre)	Kod.(Sre,Kai,Ven)	E-SI	mesofor	1.3(1).5	2(?)
321*	*D.* (s.str.) *quadromaculatus* (Linnaeus, 1758)	W.(Sre),K-P.(Sre)	Kod.,Pen.(Sre,MPre)	EUR	mesofor	1.3(1).5	1(?)
322*	*Paradromius* (s.str.) *suturalis* (Motschulsky, 1844)	W.(Sre),K-P.(Sre)	Pen.,Kod.(Sre,Vet)	B-CAS	xerofor, masofor	1.3(1).5	1(?)
323*	*P.* (*Manodromius*) *linearis* (Olivier, 1795)	Mar.(Raz),P-K.(B-A),Sus.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre,Dul,Kai)	E-MED	marsh,swa,swamfor	1.3(1).5	2(3)
324*	*Philorhizus* (s.str.) *sigma* (Rossi, 1790)	Apf.(V)		PAL	marsh, swa	1.1.2	(?)
325	*Syntomus* (s.str.) *obscuroguttatus* (Duftschmid, 1812)	H-W.(R,Kar,Ish),K-P.(Sre)	Pen.(Sen,Dab,Ish,Kar), Kod.(Sre,Ven)	E-PA-M	drmead,steppe	1.3(1).3	1(?)
326*	*S.* (s.str.) *pallipes* (Dejean, 1825)	H-W.(Ish)	Pen.(Kar,Aid,Ish)	E-CA-M	drmead,steppe	1.1.2	2(3)
327	*Microlestes* (s.str.) *corticalis* (Dufour, 1820)	H-W.(Sil),G-G.(V),K-P.(Sre)	Pen.(Sil), Kod.(Sre)	CA-MED	drmead,steppe,agro	1.3(1).1	2(?)
328*	*M.* (s.str.) *fissuralis* Reitter, 1900	H-W.(Kar,Sen),K-P.(Sre)	Pen.(Kar,Aid),Kod.(Sre,Alf,Kai,Gol)	E-CAS	drmead,steppe,agro	1.3(1).1	1(?)

Appendix. Continued.

329	*M.* (s.str.) *maurus* (Sturm, 1872)	H-W.(Kar),G-G.(V),Sus.(B-A),K-P.(Sre)	Pen.(Kar),Kod.(Sre,Kol,Vet)	E-CAS	drmead,steppe	1.3(1).1	3(4)
330	*M.* (s.str.) *negrita* (Wollaston, 1854)	Mar.(Raz),H-W.(Ish,V),K-P.(Sre)	Pen.(Ish,Dab,Tar,MPre), Kod.(Sre,Alf,DRia)	PA-MED	drmead,steppe	1.3(1).1	3(4)
331	*M.* (s.str.) *apterus* Holdhause, 1912	Apf.(V), W.(Zl.Pia)		BAL	drmead	1.3(1).1	2(3-4)
332*	*M.* (s.str.) *luctuosus* Holdhaus, 1904	Apf.(V)		CA-MED	drmead	1.3(1).1	(?)
333*	*M.* (s.str.) *plagiatus* (Duftschmid, 1812)	R.(V)		E-CAS	drmead, steppe,agro	1.3(1).1	3(4)
334	*Lionychus* (*s.str*) *quadrillum* (Duftshmid, 1812)	Pan.(Kra),Pen.,H-W.(MPre),H-W.(V),K-P.(Sre)	Pen.(MPre), Kod.(Sre,MPre,DRya)	EUR	psamob, banks	1.3(1).1	2(3)
335*	*Cymindis* (*s.str*) *lineata* (Quensel, 1806)	H-W.(Kav),K-P.(Sre)	Kod.(Sre,Kol,Ono,Kai)	B-CAS	drmead,steppe	1.3(1).1	2(3)
*336	*C.* (s.str.) *humeralis* (Fourcroy, 1785)		Kod.(Sre)	E-PA-M	drmead,steppe	1.3(1).1	2(3)
337	*C.* (s.str.) *axillaris* (Fabricius, 1794)	P-K.(B-A), Sus.(B-A)	Kod.(Sre,Ono,Kol,Bal)	W-PAL	drmead,steppe	1.3(1).1	1(?)
338	*C.* (s.str.) *scapularis* Schaum, 1860	Müll.(Kav, Nkal),Sus.(B-A)		E-PAS	drmead,steppe	1.3(1).1	(?)
339	*C.* (*Menas*) *variolosa* (Fabricius, 1794)	G-G.(Kav),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Ono,Bal,Kol)	E-PAS	drmead,steppe	1.3(1).1	1
340	*Drypta* (s.str.) *dentata* (Rossi, 1790)	Kar.(V),P-K.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Bab,DRya,MPre,Gar)	W-PAL	hummid, meadow	1.1.2	2(3)
341	*Polystichus* (*s.str*) *connexus* (Faurcoy, 1785)	Pan. (Kra),H-W.(R),K-P.(Sre)	Kod.(Sre,DRya,Gar,Sil)	E-CA-M	meadow, drmead	1.3(1).1	3(4)
342	*Brachinus* (s.str.) *crepitans* (Linnaeus, 1758)	Apf.(V),Kov.(R),Mar.(Raz),H-W., Sus.(B-A),P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sen,Dab), Kod.(Bor,Bat,Gar,Mre,Aid,Alf,Oko)	PAL	drmead, steppe,agro	1.3(1).1	5(6)
*343	*B.* (s.str.) *ejaculans* Fischer-Waldheim, 1825		Kod,(Sre,Oko,Ono,Kol,Bat)	B-CAS	meadow,hummead	1.3(1).1	3
344	*B.* (s.str.) *explodens* Duftschmid, 1812	H-W.(NosK,V), Pan.(Kra),P-K.(B-A), Sus.(B-A),K-P.(Sre)	Pen.(Sen,Dab),Kod.(Sre,Alf,Bab,Kal,Kai,Bal,Bat)	E-CA-M	drmead, steppe,agro	1.3(1).1	5(6)
345*	*B.* (s.str.) *plagiatus* Reiche, 1868	P-K.(B-A),K-P.(Sre)	Kod.(Sre,Ono,Gol)	P-MED	meadow,drmead	1.3(1).1	3(4)
346	*B.* (s.str.) *elegans* Chaudoir, 1842	H-W.(Alb),P-K.(B-A),K-P.(Sre)	Pen.(Kar,Sen), Kod.(Sre,Alf, MTsen,Bal,Bat)	MED	drmead,steppe	1.3(1).1	3(4)
347*	*B.* (s.str.) *psophia* Servile, 1821	P-K.(B-A),K-P.(Sre)	Kod.(Sre,Alf,Kol)	E-CAS	drmead,steppe,agro	1.3(1).1	2(3)
348	*B.* (*s. str*) *brevicollis* Motschulsky, 1845	Sus.(B-A),P-K.(B-A)		B-CAS	drmead,steppe	1.3(1).1	3(4)

Explanations to the Apendix

Column No 1:

No - Species new to the fauna of South Dobrudzha; No - Species reported previously from less than 3 localities in South Dobrudzha; **No - Species reported previously only once from Bulgaria; ***No - Species new to the fauna of Bulgaria

Column No 2:

List of the species and subspecies recorded from South Dobrudzha

Column No 3:

Abbreviations of the publications containing records on ground beetles from South Dobrudzha:
Apf. - Apfelbeck (1904); Kov. - Kovachev (1905); Mar. - Markovitch (1909); Ned. - Nedelkov (1909); Ram. - Rambousek (1912); Kan. - Kantardjieva (1928); Müll. - Müller (1929); Pan. - Panin (1941); Kar. - Karnoschitzky (1949, 1950); Dre - Drensky (1942); Dre.et al. - Drensky et al. (1951); Sus. - Šustek (1975); H-W. - Hieke, Wrase (1988); W. - Wrase (1991); G-G. - Guéorguiev & Guéorguiev (1995); K-P. - Kodzhabashev, Penev (1998); P-K. - Popov, Krusteva (1999); "?"- locality not precised (i.e. Dobrudzha in general)

Abbreviations of the names of the localities known from the literature:
V. - Varna town; B-A. - Balchik-Albena; Dobr. - Dobrudzha region; R. - Russe town; Raz. - Razgrad town; Kra. - Kranevo village; Kal. - Kalipetrovo village; Sreb. - Srebarna village; Vet. - Vetren village; Kav. - Kavarna town; Tuz. - Tuzlata village; Sha. - Shabla town; Alb. - Albena resort; Bal. - Balchik town; Kar. - Karakuz forestry; Dul. - Dulovo town; Sen. - Senokos village; Dab. - Dabrava village; Pop. - Popina village; MPre. - Malak Preslavets village; Smi. - Smilets village; Aid. - Aidemir village; Che. - Chestimensko village; Tar. - Tarnovtsi village; Pro. - Provadia town; Ish. - Professor Ichirkovo village; PSav. - Polkovnik Savovo village; Sil. - Silistra town; Nkal. - Cape Kaliakra; Dur. - Durankulak village; GenT. - General Toshevo town; Zl.Pia. - Zlatni Piasatsi resort; Bat. - Batovo village, Kra. - Krapets village

Column No 4:

Localities in South Dobrudzha according to authors' original data:
I. Danube valley: 1. Dolno Ryahovo village - (DRia), 2. Malak Preslavets village - (MPre), 3. Garvan village - (Gar), 4. Popina village - (Pop), 5. Vetren village - (Vet), 6. Srebarna village - (Sre), 7. Aidemir village - (Aid), 8. Silistra town - (Sil)
II. Suha Reka region: 9. Karapelit village - (Karap), 10. Balik village - (Bal), 11. Onogur village - (Ono), 12. Kolartsi village - (Kol), 13. Golesh village - (Gol), 14. Kainardzha village - (Kai)
III. Dobrudzha Plateau region: 15. Stefan Karadzha village - (SKar), 16. Senokos village - (Sen), 17. Dabrava village - (Dab)
IV. Internal Dobrudzha region: 18. Kalipetrovo village - (Kal), 19. Babuk village - (Bab), 20. Maior Tsenovich village - (MTsen), 21. Alfatar village - (Alf), 22. Vasil Levski village - (VLev), 23. Karakuz forestry - (Kar), 24. Dulovo town - (Dul), 25. Okorsh village - (Oko), 26. Polkovnik Lambrinovo village - (Lam), 27. Smilets village - (Smi), 28. Professor Ishirkovo village - (Ish), 29. Tarnovtsi village - (Tar), 30. Chestimensko village - (Che)
V. Ludogorie region (Palamara forestry): 31. Bortsi village - (Bor), 32. Venets village - (Ven)
VI. Northern Black Sea Coast: 33. Batova River (Batovo village) - (Bat) 34. Cape Kaliakra - (NKal), 35. Shabla town - (Sha), 36. Durankulak village - (Dur)

Abbreviation of the authors' names:
Pen - Penev (PhD thesis and data from personal sampling); Kod. – Kodzhabashev (data from personal sampling)

Column No 5:

Zoogeographical categories and faunal types (after Vigna Taglianti et al., 1999, with some changes):
I. Northern Holarctic and Euro-Siberian faunal type:
OLA - Holarctic; PAL - Palaearctic; W-PAL - Western Palaearctic; E-SI - Eurosiberian; E-WSI - Euro-Westsiberian.
II. European faunal type:
EUR - European; E-PAS - European-Neareastern; CE-PAS - Central European and Neareastern; CEE-PA

- Central and Eastern European and Neareastern; C-EE - Central and Eastern European; CEUR - Central European; BAL-K - Balkan-Carpathian).
III. Euroasiatic faunal type:
E-AS - Euroasiatic steppe complex; E-CAS - European and Central Asian; B-CAS - Balkan and Central Asian; B-PAS Balkan-Neareastern (+ Balkan-Anatolian, BAL-MAS).
IV. Mediterranean (s. lato) faunal type (species of the Ancient Mediterraneum):
E-CA-M - European-Centralasian-Mediterranean; E-PA-M - European-Neareastern-Mediterranean; CA-MED - Mediterranean-Centralasian; MED-PAS - Mediterranean-Neareastern; MED - Mediterranean; E-MED - Eastmediterranean; P-SMED - Pontic-Submediterranean; PON - Pontic; SE - South European; NMED - Northmediterranean; NM-CAS - Northmediterranean-Centralasian; BAL - Balkan

Column No 6:

Habitat preferences of the species in the region of South Dobrudzha:
swa - swamps; marsh - marshlands; banks - river's and lake's banks; comp - compost; hummead - humid meadows, meadow - mesophilous meadows; drmead - dry meadows; xerofor - xerothermic forests; meso-for - mesophilous forests; swamfor - swamp forests; hallob - hallobiontic; steppe - steppes or semisteppes; agro - arable lands; bothro - bothrobionts; psamob - psamobionts; eury - eurybionts

Column No 7:

Explanation to the indexes of the life forms of the species:
The first figure in the index shows the class of life form, the second - the subclass, the third - the life group. In brackets after the subclass the series is shown, when it exists.
Life form class: 1. - Zoophagous.
Life form subclass: 1.1 - Phytobios; 1.2 - Epigeobios; 1.3 - Stratobios [1.3(1) - series crevice-dwelling stratobionts; 1.3(2) - series digging stratobionts]; 1.4 - Geobios; 1.5 - Psammocolimbets.
Life form groups: 1.1.1 - dendrobionts; 1.1.2 - stem-dwelling hortobionts; 1.1.3 - leaf-dwelling dendrohortobionts; 1.2.1 - small walking epigeobionts; 1.2.2 - large walking epigeobionts; 1.2.3 - running epigeobionts; 1.2.4 - flying epigeobionts; 1.3(1) - series crevice-dwelling stratobionts; 1.3(1).1 - surface & litter-dwelling; 1.3(1).2 - surface-dwelling; 1.3(1).3 - litter & crevice-dwelling; 1.3(1).4 - endogeobionts; 1.3(1).5 - litter & bark-dwelling; 1.3(1).6 - bothrobionts; 1.3(1).7 - troglobionts; 1.3(2) - series digging stratobionts; 1.3(2).1 - litter & soil-dwelling; 1.3(2).2 - litter & crevice-dwelling; 1.3(2).3 - bothrobionts; 1.3(2).4 - troglobionts; 1.4.1 - running & digging geobionts; 1.4.2 - digging geobionts; 1.5.1 - shore psammobionts
Life form class: 2. - Mixophytophagous.
Life form subclass: 2.1 - Stratobios; 2.2 - Stratohortobios; 2.3 - Geohortobios.
Life form groups: 2.1.1 - crevice-dwelling stratobionts; 2.2.1 - stratohortobionts; 2.3.1 - harpaloid geohortobionts; 2.3.2 - zabroid geohortobionts; 2.3.3 - dytomeoid geohortobions.
Life form class: 3. - Sympnylous-myrmecophilous.
Explanatory example on the basis of species No 315 Brachinus (s.str.) crepitans (L.) with life form index 1.3(1).1 - belongs to class Zoophagous (1), subclass Stratobionts (1.3), series Crevice-dwelling stratobionts (1.3(1)), group Surface & litter-dwelling (1.3(1).1).

Column No 8:

Frequency of occurrence:
1 - Accidental (sporadic); 2 - very rare; 3 - rare; 4 - relatively common; 5 - common; 6 - very common (mass) species