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Caraboid beetles (excl. Cicindelidae) of Anatolia, and their biogeographical significance (Coleoptera, Caraboidea)[1]

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SUMMARY

A synthesis is presented of the present knowledge of caraboids of Anatolia (Asia Minor of authors, *i.e.*, the Asiatic part of Turkey), based on literature and numerous specimens collected and/or examined by the authors. A preliminary annotated list of Caraboidea (excl. Cicindelidae) known so far for the area is also provided. Like other regions of the Mediterranean area, the origin and composition of the present carabid fauna and carabid associations of Anatolia are explained as a result of both historical (palaeogeographic and palaeoclimatic) events, and recent, ecological causes. A striking characteristic of Anatolia – as a southern, Gondwanian plate migrated to the North – is that a part of it, although with geographic position, surface and borders different from the present ones, has been colonizable by ancient lineages of carabids during the entire Tertiary Period. Probably, the occurrence and differentiation in this area of various groups of carabids, only marginally extended now to adjacent countries (Balkan Peninsula, Caucasus, Syrian and Iranian regions) can be attributed to the survival of some of these Oligocene-Miocene lineages, in part of Gondwanian origin. For these reasons, the total number of extant carabids, and the composition of the present carabid fauna, is the result of a long process, dated at least from the Oligocene Epoch to the present. The principal features of Anatolia, compared to the other Mediterranean peninsulas, are: i) a large surface; ii) a rectangular shape; iii) a distinctive orographic system (with three main mountain chains, the Pontic chain in the North, the Toros chain in the South, and the Caucasian and Transcaucasian slopes in the East, delimiting a high plateau and several chains and isolated massifs in the middle part); and, iv) a longitudinal position along the eastern side of the Mediterranean Sea, as a bridge between Asia and Europe which made easy many migrations of floras, faunas and humans. These are the reasons, for which the biogeographic knowledge of Anatolia is so important for the understanding of the biological diversity of the entire Mediterranean area.

The principal features of the Anatolian carabid fauna are a relatively low diversity of some lineages, and a rather low total number of species, compared to the surface area: about 1100 species identified so far, a number surely under-estimated, but which markedly contrasts with the more than 1300 species known so far for the Italian peninsula (much smaller in size, but affected by a more favorable position in the middle Mediterranean, and extended between Southern Europe and North Africa); and, conversely, the high diversity of some carabid lineages, including a high percentage of endemics.

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A more careful examination of taxa, and their geographical patterns of distribution permits postulating the history and evolution of the carabid fauna in Asia Minor. In particular: the original position of the area, on the southern side of the Tethys, during the Mesozoic Era allowed the presence of the most ancient, paleomediterranean (Aegean, Balkano-Anatolian, and Irano-Anatolian) carabid lineages (*e.g.*, Omphreini, and endogean Anillina). The ancient connections between Anatolia and the Balkan Peninsula in the Upper Oligocene (later interrupted in the Upper Miocene), and the Miocene connections with the Euro-Mediterranean and Afro-Arabian territories, allowed the immigration of tropical, forest-dwelling lineages, ancestors of taxa today represented by distinctive endemics, mostly localized in mesozoic limestone massifs of Western and Southern Anatolia (the most isolated troglobiontic Trechini of *Duvalius* and *Orotrechus* lineages, some groups of *Antisphodrus*, Brachininae of the genus *Aptinus*, and some others). From the Upper Miocene to the Middle Pliocene, connections with the Caucasus, generalized land connections during the Mediterranean salinity crisis, new orogenic phases, and subsequent aridization of large areas, contributed to important faunistic changes, cladogenetic events and increased diversity, by means of massive penetrations of Caucasian and Balkan lineages to the Pontic Alps (and vice versa), spreading of steppe lineages from Anatolia to the Caucasus and Europe and from Turanic-Caspian regions to Anatolia, and phases of isolation and speciation. Finally, Pleistocene climatic changes and fluctuation, with the availability of forest and cave refugia during the glacial and interglacial (hot) phases, new patterns of vegetation, extension of steppes, and new land connections, made possible by marked sea level changes of Mediterranean and Black Seas, produced the present pattern of the carabid fauna. Additionally, some Pleistocene cladogenetic events, modification of several patterns of distributions, and adaptive specialization to different environments, completed the present picture. Furthermore, immigrations of Northern (Asiatic-European) mesophilic or hygrophilic elements from the Balkans, and of moist forest dwelling species from the Caucasus (presently not exceeding the western limit of Trabzon), are traced back to this period, or to the recent, post-glacial period.

In this historical scenario, to be stressed is the importance, for the composition of the present-day carabid coenoses, of the main recent climatic and vegetation conditions: examples are the highest density of species living in wet, *Fagus-Rhododendron*, and in cold montane, *Picea-Abies* forests in the North, and that of xerothermophilic or steppe species in the middle and in the southern part of the peninsula. Some of the latter seem also to take advantage of the availability of artificial open country, induced by agriculture over large surfaces.

1. INTRODUCTION

Asia Minor has greatly fascinated not only geologists, botanists, zoologists and biogeographers, but also students of the most different human sciences. This attraction comes mostly from the shape and the geographical position of the Anatolian peninsula, a large bridge between East and West along the eastern side of the Mediterranean sea, and a natural door, in the past as in the present, for migrations of floras, faunas and humans from Asia to Europe, and vice versa: a complicated and dynamic area, which concentrated and conserved, during millennia, a very rich heritage of events and dramatic paleogeographic, biotic and human changes. We are indebted to Kosswig (1955), for a preliminary synthesis and interpretation of some biogeographic aspects of Anatolia.

Carabid beetles also, the importance of which as biogeographic and ecological indicators is well known today, highly stimulated in this area both the curiosity of amateur entomologists, and the interest of professional entomologists and biogeographers. Jeannel himself (1929, 1934a, 1934b, 1947a, 1947b), a leading entomologist in the 20th century, was a pioneer in stressing the importance of subterranean Coleoptera (incl. Carabidae) for the study of the paleogeographic history and evolution of the southern Aegean area.

For the authors of the present contribution, Anatolia represented a fantastic land of explorations, the interest of which exceeds greatly a simple and aseptic scientific treatment. Since the end of the 60s, to the early 90s, we visited this area many times (twice in some years), together with colleagues, friends and often families.

With these persons, we shared great emotions, deep human and some dangerous experiences. We visited, in the earlier travels, an economically poor country, devoted mostly to a traditional agriculture, apparently arrested in time, but inhabited by an industrious and very hospitable people. We traversed the Bosporus, crossed today by huge bridges, on ferry-boats full of persons and domestic animals. We traveled all over the area on thousands of kilometers of terrible roads, which now are mostly paved with asphalt, and relatively comfortable for driving by car.

In three decades, we have seen increasing population, economic transformations, small towns becoming large, and modifications to, and disappearance of, beautiful environments.

The movements of people became easier today. Paradoxically, however, the eastern frontiers became more and more restricted, often inaccessible to both travelers and students. Twenty five years ago only, a field naturalist was rather easily able to reach by car the Himalaya from Europe through the Balkans, Turkey, Iran, Iraq, Afghanistan and Pakistan, just as the ancient traveler managed on foot or horseback. Wars, and crazy people, made this exploit impossible today. Economic progress, material richness, and the so-called global market, seem to have demonstrated glaringly their utter failure as humanizing forces. We hope that true co-operation among peoples, and a common aim in acquiring knowledge of nature and its conservation, will contribute to the construction of a better time.

Just for these reasons, we present this progress report, on our understanding of the diversity and origins of the Anatolian carabid fauna, as a small, but sincere contribution to this goal. It contents an account of the geological history of the region; information about topography, climate, and life zones; a treatment of the carabid fauna, including assemblage of the basic data; a biogeographical analysis, both from historical and ecological perspectives; and an appended checklist of Caraboidea (excl. Cicindelidae) known so far from the area.

2. THE AREA

2.1. *Origin and evolution of the ancient Anatolia.*

In the present contribution, we have conventionally indicated, as Anatolia, the territory included in the political boundaries of the Asiatic Turkey (including the areas already well known with the traditional names "Turkish Kurdistan", "Armenia", "Small Armenia", et cetera), agreeing also with Asia Minor of several authors. Two-thirds of the area can be more correctly indicated, in geographical terms, as the Anatolian Peninsula.

An examination of geologic and geomorphologic maps (see, for example, Yeni Turkiye Atlasi, 1977; Hutteroth, in Hesselbarth et al., 1995) makes immediately evident the marked complexity of the area.

The most ancient history of Anatolia, before the last 250 M.y. ago, is written in sedimentary and magmatic rocks. During the opening of the Neotethys, and the drifting of the Cimmerian continents since the Early Permian, Apulia (with the autochtonous Ionian units from Dinarides, Hellenides and Taurides) represents the western end of the Cimmerian continent (Stampfli et al., 1999). In the Triassic Period, 180 M.y. ago, the Irano-Anatolian plate was part of Gondwanaland, being one of the microplates which, with their migrations, became parts of the southern coast of the Tethyan sea (Barron et al., 1981; Torsvik and Smethurst, 1994; La Greca, 1999). Since the Late Cretaceous (70 M.y. ago) to Miocene (20 M.y. ago), migration to the North of the African plate closed the Tethyan sea, between Gondwanaland and Laurasia, and formed the Palaeomediterranean basin. This drifting was in form of large continental fragments or microplates, which favored exchanges and immigrations – at least for the surfaces which were above sea level (since the Early and Middle Cretaceous, at least the western part of Anatolia: Alvarez-Ramis et al., 1981) – of floras and faunas.

Lacking fossil insect evidences for such ancient period, we have to look at the Cenozoic Era for the most informative events, from both the paleogeographic and paleoclimatic points of view, to hypothesize the origin and present composition of the carabid fauna of Asia Minor. Concerning the geological evolution of the Paleomediterranean basin in the period since 25 M.y. to 3.0 M.y., in which the main events of the recent geographic, floristic and faunistic evolution of Anatolia happened, extensive documentation is available (Rögl and Steininger, 1983; Robertson et al., 1991). Additionally, important fossiliferous localities have furnished fossil wood of different plant species, which made possible the reconstruction of both paleoclimate and paleovegetation in Anatolia during the Miocene (22 to 5 M.y.). In particular, we know that 15 to 5 M. y. ago, a markedly subtropical forest (with long dry seasons) was present in southwestern Anatolia, although more temperate, coniferous forests, were present in the North (Biondi et al., 1985). Pollinic data, collected in the Black Sea by the oceanographic ship Glomar Challenger in the 70s, confirm the occurrence of tropical montane forests in Anatolia in the Late Miocene (8-6 M. y. ago).

During all the Tertiary, most of Anatolia, unlike other areas of Paleomediterranean basin, although with geographic boundaries, shape and climates different from the present ones, was fully emerged, and available for colonization by plants and animals. Furthermore, to be stressed is the considerable importance, for the evolution, composition and diversity of floras and faunas in the area, of the impressive Cenozoic orogenic phases, which (since 30 to 15 M.y. ago), gave to Anatolia the main orographic features present today, and caused both the formation of mountain chains (Toros included), massifs and valleys, and climatic modifications, important for isolation and speciation processes and distribution patterns. The main orographic features of the area are described below (see 2.2, and Fig. 1).

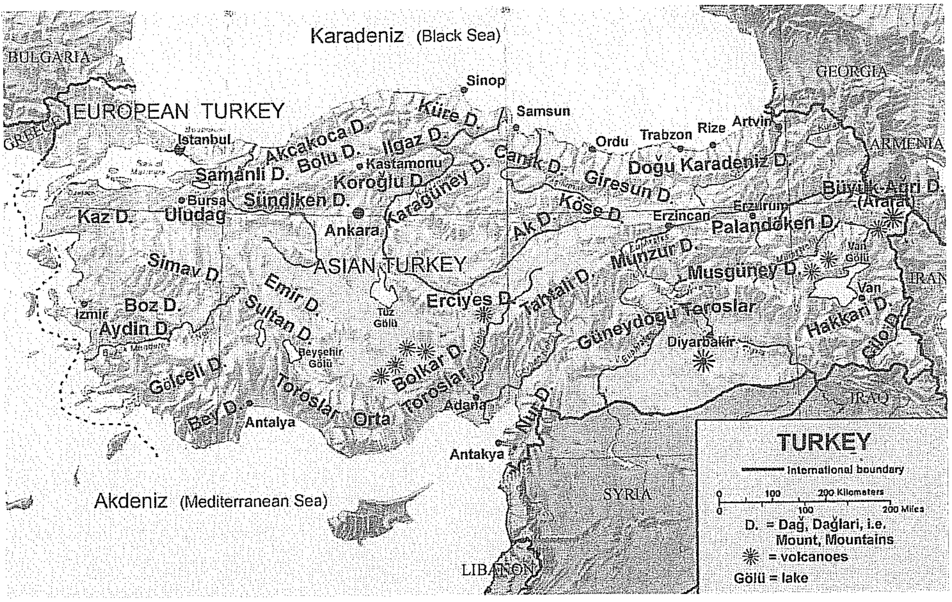


Fig. 1 - Orographic system of Anatolia, with main chains and mountains indicated in Turkish names (original).

Four phases, leading to development of the extant biota, are summarized as follows (Fig. 2):

1. In Upper Oligocene (25.0-23.0 M.y.), the Balkano-Anatolian region became a markedly insular area inside the Tethyan sea. In this period, however, the closing of the Ural sea (Turgai straits) made possible important migrations of organisms from Asia to the Palaeomediterranean, and vice versa. Important land connections of Anatolia with both central-western Asia and the Dinaric-Balkan area became possible in early Miocene (20.0-19.0 M.y.); a new isolation of the eastern side of the Balkano-Anatolian area happened however in Middle Miocene (16.5-15.8 M.y.). Subsequently, 15 M.y. ago, the interruption of connections between the Mediterranean and the Black Sea originated an inner, brinish sea, extended from the southeastern Europe to the Aral lake (Paratethys).

By contrast, the Caucasian area has been characterized by more prolonged insularity or peninsularity, since the early Cretaceous, in middle and upper Miocene, and in Pliocene again. This condition has evidence in the peculiar, autochtonous, very rich insect fauna of this region. The Caucasus became an isthmus in mid-Pliocene: in this period, new land connections became possible between Anatolia and Caucasus.

2. In upper Miocene (6.0-5.5 M.y.), the Messinian Mediterranean salinity crisis (Hsu et al., 1977; Cita and Wright, 1979) made possible extensive land connections among Anatolia, western Asia, Caucasus, Eastern Europe and North

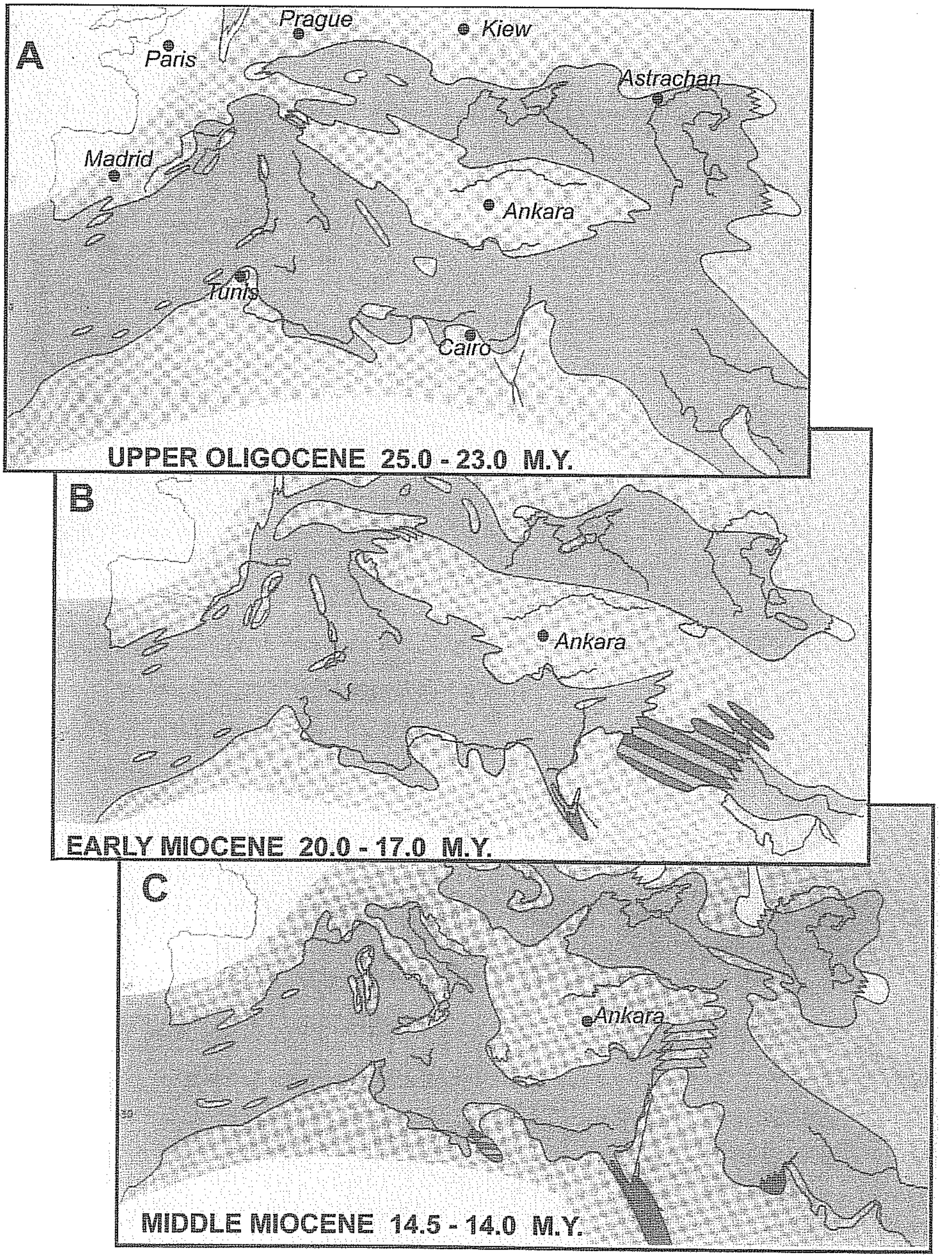
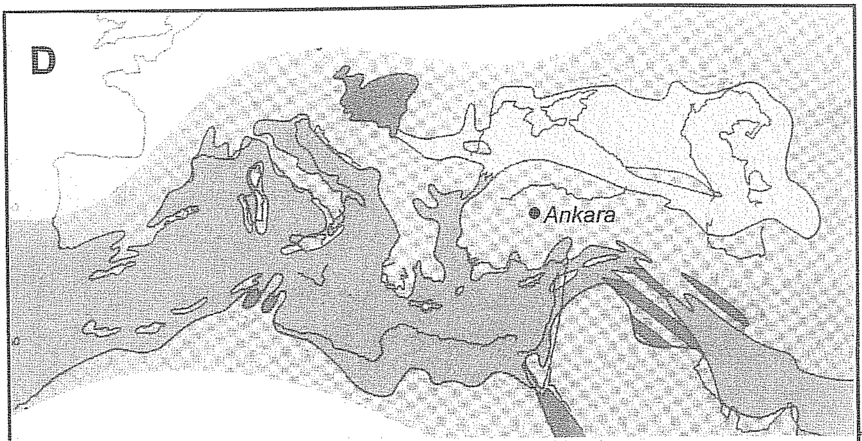
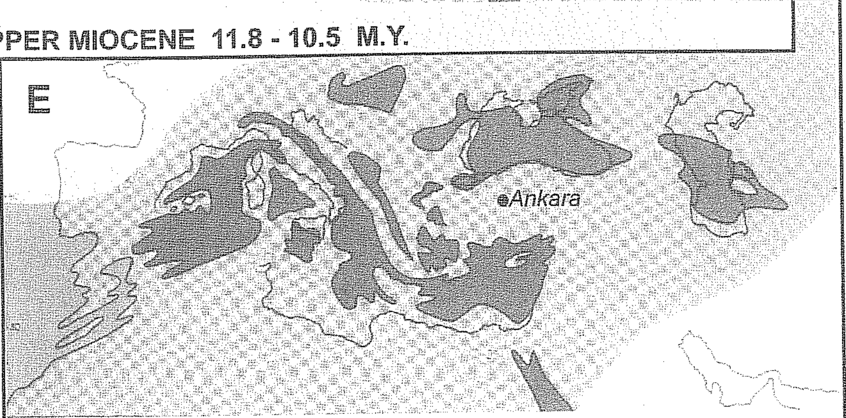


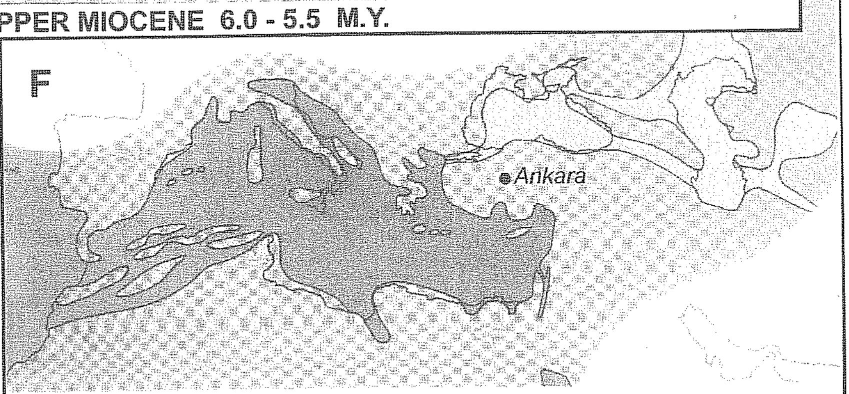
Fig. 2 (A-F) - Palaeogeographic evolution of the Eastern Mediterranean area, Asia Minor included, from the Upper Oligocene to the Pliocene (redrawn from Rögl and Steininger, 1983).



UPPER MIOCENE 11.8 - 10.5 M.Y.



UPPER MIOCENE 6.0 - 5.5 M.Y.



PLIOCENE 3.5 - 3.0 M.Y.

Africa. Cyprus, however, remained isolated as an island: this condition can explain the distinctive fauna of this island (Hadjisterkotis, in press; Hadjisterkotis et al., in press), as discussed below (see 3.3.3).

3. Since 4.5 to 3.5 M.y. ago, narrow connections of the Mediterranean basin with both Paratethys and the Indian Ocean became possible. Finally, 3.5-3.0 M.y. ago, in the early Pliocene, opening of the Gibraltar Straits, with extensive transgressive phases and the formation of the present Mediterranean Sea, gave to Anatolia its modern shape.

4. Finally, the Plio-Pleistocene climatic deterioration deeply remodeled the geographic and orographic features of Anatolia, leaving glacial evidence (Erinc, 1978), and greatly modified the biotic scenario. Since Pliocene to the Quaternary, at least seven changes of sea level are known, reaching sometimes 120 m in difference (Azzaroli, 1983; Pirazzoli, 1991): important land connections between continental coasts and islands became possible during glacial peaks (three at least around the Black Sea, since 1.8 M. y. to the Recent, with successions of forest and steppe vegetation). The Aegean Sea, with its present shape, is a recent basin; furthermore, during the Last Glacial, Dardanelles and Bosporus straits (the latter 35 m deep at present), separating today Europe from Asia Minor, were transformed into land or river valleys, available for migration of plants and animals, the Marmara Sea was occupied by a lake, and the Black sea was in a state of desalination. Therefore, it is not surprising that some authors have recently hypothesized that the biblical narration of the Flood represents the historical memory of the sudden filling of the Black Sea Basin by the Mediterranean waters, which happened about 7.500 years ago.

2.2. *Principal features of eco-geography, climate and vegetation*

Many geadephagous beetles are closely tied to ecological features, *i.e.*, to macro- and microclimatic conditions, and to plant communities (see, for a synthesis, Lövei and Sunderland, 1996) of a given area. Concerning Anatolia, the main ecological characteristics, which help the biogeographer in understanding the varied and different carabid cenoses, are the following.

2.2.1. Asiatic Turkey is subrectangular in shape, oriented on an East-West axis. The eastern part of the area, near the boundaries with Georgia, Armenia, Iran and Iraq, presents markedly eco-geographic continental or montane characters. The northern, western and southern sides, between the Black Sea (Karadeniz) in the North, and Mediterranean Sea (Akdeniz) in the South, delimit the true Anatolian peninsula. With some 700.000 square kms, this is the largest Mediterranean peninsula. Whereas the northwestern coast has two closest approaches with the Balkan Peninsula, where the Bosporus and Dardanelles Straits delimit the semi-closed Marmara sea, the Black sea coast of the peninsula, near the middle of its length, is some 250 kms from Crimea, the southern coast some 500 kms from North Africa (about 100 kms from the northern part of Cyprus), and the south western coast some 300 kms from the southeastern coast of Greece. A long series of peninsulas and islands different in size (the largest are Lesbos, Khios, Samos, Ikaria, Kos and Rhodos, all politically Greek), fringe the Western coast of Anatolia. Finally, some Aegean archipelagos very rich in islands, such as the Sporades and the Cyclades, between Asiatic Turkey and Greece, represent an excellent example of stepping stones (in the sense of MacArthur and Wilson, 1963) for island biogeographers.

2.2.2. The area as a whole is mostly montane: large plains, however, are in the central plateau, at an altitude of some 1000-1500 meters; a few, very small lowlands at sea level, are concentrated along the Mediterranean coast, near Antalya and Adana. Two main salt lakes (Tuz gölü and Van gölü), are present in the center and in the East of the area, respectively.

The orographic system of Anatolia can be summarily illustrated as follows (Fig. 1).

The northern side of the Anatolian peninsula is occupied by a series of longitudinal chains and isolated massifs, with a long series of short and deep valleys perpendicular to the Black sea: the central and eastern part of the system is known with the collective name of Pontic chain. This chain is connected East with the Great Caucasus, and some of its peaks, South and Southeast of Rize, reach or exceed 3000 m in altitude (Kackar Dağ, 3937 m). West of Samsun, mountains decrease in altitude, with the highest peaks at 1500-2000 m. Soils are mainly crystalline, tufaceous or basaltic, with a few exceptions in isolated limestone massifs (Yaraligöz, 1985 m, near Devrekani, and some others which are smaller). Several minor chains bead the inner (southern) slopes of the northern chain, and some, high altitude, isolated massifs (for instance Ilgaz Dağ, South of Kastamonu, 2264 m) (Fig. 59) face the central plateau.

Along the western side of the peninsula some high, isolated massifs, with distinctive floras and faunas, such as the Ulu Dağ near Bursa (the Bythinian Olympos of the ancient authors, 2023 m high), are present, and several short longitudinal chains extend to the Mediterranean Sea. The southern coast is fully fringed by the impressive chain of the western and central Toros Mts. (Pisidian, Lydian and Pamphilian Taurus), some 500 kms long, connected, Northeast of Adana, with the Eastern (Inner, or Cilician) Toros chain. The Western Toros are mostly formed by Mesozoic limestone, with highest altitude at 2500-3000 m; some massifs close to the sea (such as the Bey Dağlari, 3070 m, W of Antalya), greatly influence the local climate, vegetation, and faunal composition. In this part of the mountain system, many long and deep caves are known, with a rich and diversified peculiar troglobitic fauna, and several large lakes are present, bordered by wetlands mostly modified or drained in recent years. The Eastern Toros (Guneydogu

Toroslar, Cilician Taurus of authors) are connected with the main inner chains of South-East Anatolia (Munzur Dağlari and Palandöken Dağlari, among others), and with a low chain along the Meditteranean sea, at the bounderies of Syria (Nur, or Amanos Dağlari). The main massif of the region, NW of Adana, is the Bolkar Dağ (3430 m). In South East Anatolia rise and flow the well known major mesopotamian rivers (Tigris and Euphrates), on which large artificial lakes have been developed recently.

Finally, two series of inactive volcanoes are obliquely raised in the central-southern and the eastern part of Asiatic Turkey, with the highest tops at Erciyes Dağ, 3916 m, and at Büyük Agri Daği, 5165 m (the famous Ararat, at the Armeno-Iranian bounderies), respectively.

2.2.3. The large surface, geographic position and orographic systems allow recognition of geo-morphologically and eco-geographically markedly diverse sub-regions (Fig. 3; see also Davis, 1965-1985). In such a complicated landscape, the natural habitats of Anatolia are varied and complex, often markedly contrasting with each other, within short distances and in small surfaces. In each of these sub-regions, with different, often contrasting biotopes, distinctive plant and animal communities, with high percentages of endemics, are concentrated.

Rain and temperature diagrams (see Yeni Turkiye Atlasi, 1977; Wagener, in Hesselbarth et al., 1995: Fig. 24; and Turkish Climate Service) indicate a puzzle of climatic regions and sub-regions (Fig. 4), which agree in part with different vegetation zones. Very summarily:

1. A northern, Black Sea region, in which however two (or more) distinct climates are recognized. East of Ordu to the Georgian boundary, owing to the influence of the high mountain chain close to the sea, the area is characterized by the highest rainfalls (some 2500 mm/year, or more) in Asiatic Turkey, which, associated with favorable temperatures along the coast, make possible extensive cultivation of tea (the well known "çay", in the Turkish language). Nevertheless, temperatures are low, and snow is abundant on the highest peaks close to the coast. To the West, rainfall markedly decreases (to 700-1000 mm/year), and the Mediterranean influence becomes more and more evident.
2. A large Aegean-Mediterranean region, along the western and the southern coasts, with mediterranean, or arid-mediterranean climatic features, extended in places to the inner territories, is wet in autumn and spring, dry and hot in the summer. In this area, however, rain and/or snow are frequent and abundant, in particular in the high mountains of the Toros chain close to the sea, and in some regions at low altitude, such as localities near Antalya.
3. A large inner area, markedly continental in climate, with long, very cold winters, and dry, very hot summers. The latter conditions are particularly marked east of the so-called Anatolian diagonal, a series of mountains which cross

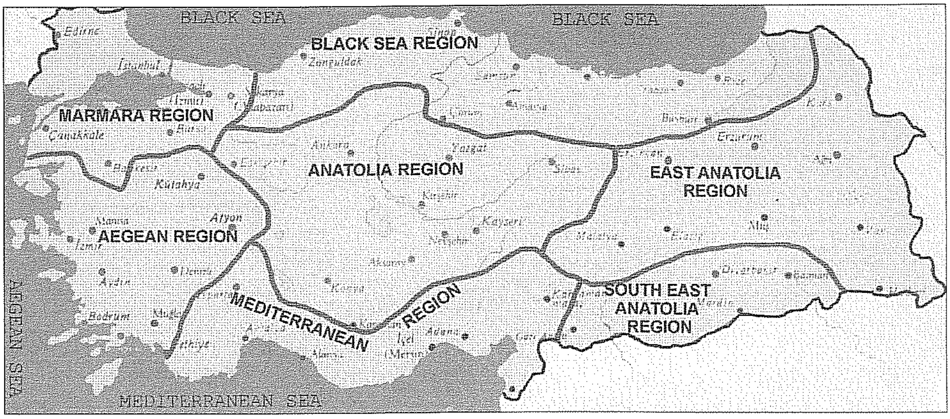


Fig. 3 - Main eco-geographic and climatic zones of Anatolia (from the Turkish Climate Service).

obliquely the eastern side of the peninsula, from the Great Caucasus in North East to the Toros in the South.

Isolated mountain massifs, owing to their respective geographic positions, altitude, soil nature and morphology, present peculiar microclimates and microbiotopes.

2.2.4. The thoroughly investigated flora of Anatolia (Davis, 1965-1985) is influenced by the different eco-geographic conditions, and includes some 8500 species, with maximum percentages of steno-endemics (taxa which live in only one region) close to 20-25 %. Distribution patterns of plant, and phytogeographical regions can be usefully compared with those made evident by zoologists.

More interesting however for entomologists, and markedly dependent from the eco-geographic and climatic conditions, are the vegetation communities of

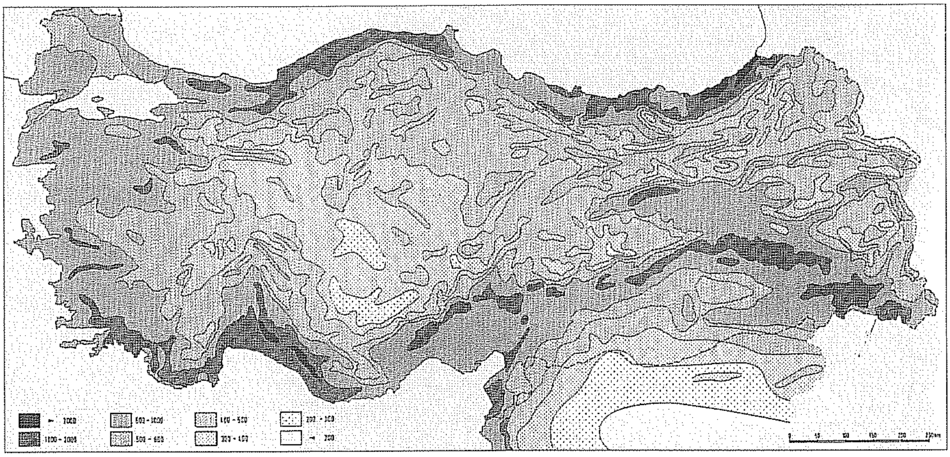


Fig. 4 - Distribution of rain per annum (from Hutteroth, in Hesselbarth et al., 1995).

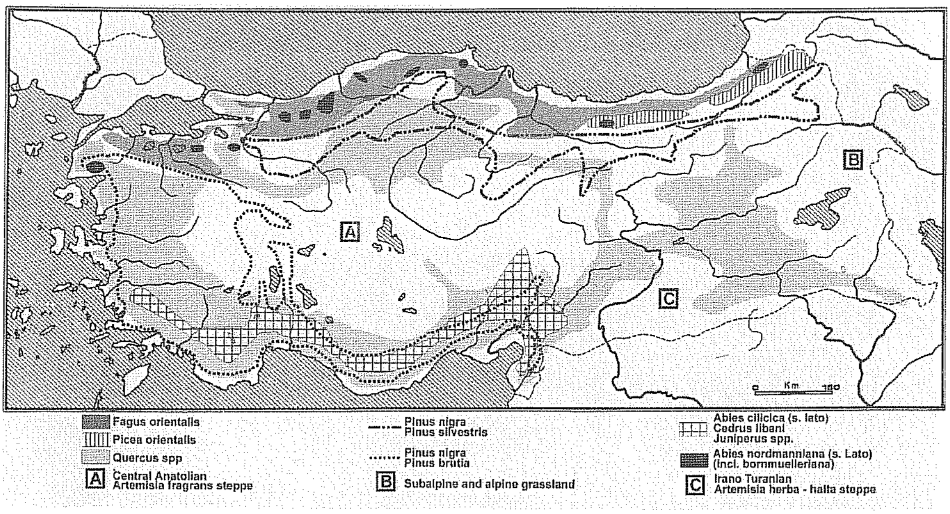


Fig. 5 - Main forests and extant vegetation of Anatolia (original, from data in Davis, 1965-1985; Wagener, in Hesselbarth et al., 1995; and from maps of the Turkish Forest Service, since 1962 to the present. Further data in the text).

the area, which influence the insect associations, including the carabid fauna. A very schematic picture, made from the carefully prepared maps in the flora of Davis (1965-1985), and by those furnished by the Turkish Forest Service (since 1962 to the present) and the Council of Europe (Wagener, in Hesselbarth et al., 1995: 88-89), illustrates the main and diverse aspects of the forest and vegetation communities (Euxinian, Subeuxinian, Mediterranean, Supramediterranean, Oromediterranean, Steppe vegetations), of Anatolia (Fig. 5), as follows. In the northern, wet area, close to the Black and Marmara seas, the beech-tree (*Fagus orientalis*) and fir-tree (*Picea orientalis, Abies nordmanniana*) (Fig. 59) forests are dominant, with extensive zones of *Rhododendron* bushes. In some points of this area, *Fagus* reaches to sea level. Conversely, in the West and the South, extensive Mediterranean forests (Fig. 57) are present, with pines, oaks, junipers, and isolated groups of cedar (*Cedrus libani*) on the mountains. A peculiar fir-tree (*Abies cilicica*) is also present in the highest, cold limestone massifs of Toros chain. Finally, xerophilic forests and bushes (*Quercus* spp., *Pinus* spp.), and steppe, or subdesertic open territories (induced and/or extensively modified by agriculture) (Fig. 55), are typical of the central and eastern plateau and mountain slopes.

3. CARABID FAUNA

3.1. *Material and methods*

The present synthesis, and the appended checklist, are based on more than forty thousands specimens, collected by the authors in several expeditions, made in different years and in different seasons (since 1971 by A.V.T., and since 1973, by A.C., to 1991), and by several colleagues, who conducted official research programs (see Sbordoni and Vigna Taglianti, 1989; Vigna Taglianti and Zapparoli, 1999). Furthermore, many professionals and amateurs, who visited Anatolia several times in the last 30 years, offered to us their data and specimens: they are cited in the Acknowledgements (see below).

Many publications, which cover two centuries of entomological history and exploration of Asia Minor, have been carefully examined, including important papers dealing with geographically proximate areas, but reporting also data on Anatolian species (see, for instance, Apfelbeck, 1904; Hieke and Wrase, 1988).

Notes, comments and new records are added to the accompanying checklist. The terms Caraboidea, and caraboid beetles, in both the title and the species list, make evident that the authors treat three families of Caraboidea, or Geadephaga of authors (Carabidae, Rhysodidae and Paussidae), and exclude Cicindelidae of Anatolia, a taxon which is treated in detail by Cassola (1999). This specification is important because many carabidologists include rhysodids and paussids (as well as cicindelids) in the family Carabidae (see, for a review, Ball et al., 1998). Concerning the list, a further, brief explanation about ranking is required. The reader will note that some genera, such as *Carabus* (sensu Deuve, 1994; Brezina, 1999), *Laemostenus* (sensu Casale, 1988), and *Amara* (sensu Hieke, 1995), are treated in a very broad sense. By contrast, groups such as Bembidiina (*Bembidion* of authors), are comprised of numerous genera, according to the taxonomic treatments proposed by Jeannel (1941-1942), Perrault (1981), and Vigna Taglianti (1993). Evidently, this method produces a rather disparate ranking among the different supraspecific taxa. Nevertheless, we believe that this procedure is acceptable for a list which does not derive from a critical revision or a phylogenetic analysis of a particular group, but simply presents an inventory of the species known so far from the area, in agreement with the most recent treatments, by different authors, of different groups of carabids.

As in previous contributions (Casale and Vigna Taglianti, 1993, 1996; Vigna Taglianti, 1994), however, we have to stress the importance of this kind of list – in spite of its limits – not only for specialist taxonomists of restricted groups, but also for general biogeographers and ecologists: particularly in the present time, in which many so-called ecologists believe themselves able to discuss biogeography and ecology, but are unable to identify the organisms living in the investigated areas and ecosystems.

An explanation of the methods used in drawing conclusions about ages and origins of various taxa is necessary. Without a fossil carabid record, inferences are required, based on other considerations. Available data, and their interpretation to obtain the desired inferences and conclusions, are developed below (see sections 3.4 and 4).

3.2. *A brief history of the discovery of Anatolian carabids.*

It is not very surprising that one of the first carabids described from Anatolia was *Carabus (Procerus) scabrosus*, described by Olivier, in 1789, from Bosporus: this species largest in size (some specimens over 60 mm), with its magnificent violet or blue-green color, is one of the most impressive beetles of the Palaearctic Region (Fig. 58). Diurnal, specialized helicophagous, it welcomed us several times, walking on roads on rainy days, at our arrival in Asia Minor.

In the 19th century, the number of known species increased, thanks to the explorations of enterprising travelers and famous entomologists, with the additional help of missionaries and local collectors. For descriptions and records of several taxa, in the first half of the century, we are particularly indebted to great Russian entomologists such as Mannerheim, Ménétriés, Fischer von Waldheim, Motschulsky, Tschitschérine, and in particular to the Baron Maximilien Stanislavowitch de Chaudoir in Kiev (Chaudoir and Hochhuth, 1846) (about this distinguished carabidologist, see Basilewsky, 1982). The Italian entomologists G. De Cristoforis and G. Jan, with travels in 1832 (and then the description in 1837 of some of the most famous *Carabus* species from Northern Anatolia), and the great explorer G. Osculati in 1841 (along the road to Persia and India), have been among the contributors in this pioneering phase of knowledge of Anatolian carabids (Goidanich, 1976; Vigna Taglianti and Zapparoli, 1999).

In the second half of the 19th century, some entomologists travelling to Anatolia from Central Europe and France, such as A. Kindermann, J. Lederer, J. Krueper, M. Korb, E. v. Oertzen, C. Escherich, and A. David, collected carabids.

The end of the 19th, and the beginning of the 20th century, mark an important moment in the scientific investigation of Anatolia, with explorations of defined areas: in particular, research trips were undertaken to Bolkar Dag (by E. v. Bodemayer), Erciyes Dag (by A. Penther and E. Zederbauer) and in western and southern Anatolia (by J. Sahlberg and son [Unio Saalas] in 1904 and B. v. Bodemeyer in 1911). Carabids collected in these expeditions were described or reported by the top specialists of the time, such as L. Fairmaire, E. Reitter, V. Apfelbeck, and in particular by L. Ganglbauer (1900, 1905), curator entomologist at the Vienna Museum. A catalogue of the Coleoptera of the Eastern Mediterranean region was also published by Sahlberg (1913).

In the first decades of the 20th century, some scientific explorations of the Aegean islands (especially the Dodecanese islands) were also conducted, in particular by Italian zoologists. At the same time, carabid specimens were collected in high karstic mountains and caves of Lydian, and Pamphilian and Pisidian Toros. Concerning this area, the extraordinary figure of Leo Weirather must be recalled. Heir of the Vienna school of explorers, postman of the Austrian army, author of exceptional collections in mountains, caves and forests in the Balkan peninsula, he collected beetles, in the 1930s, in regions of the southwestern Anatolian peninsula, which were almost inaccessible at the time. A part of his carabid material was studied by, among others, G. Müller (1931, 1937), S.L. Straneo (1935a, 1935b) and R. Jeannel (1934a, 1934b). The last-named visited also some caves near Istanbul. At that time, the carabidologist and traveler E. Schauberger in Linz dedicated some important contributions to the knowledge of Anatolian Harpalini (1926-1936), and F. Netolitzky in Vienna furnished keys for identification of palaearctic species of *Bembidion* s. l. (1942-1943), including Anatolian taxa.

In the middle of the 20th century, new expeditions to Anatolia, with collections of carabids, were organized by museums and institutes, such as the Prague Museum (Mařan, 1950), the Turkish Society of Natural and Physical Sciences in Istanbul (Bytinski-Salz, 1956), the Zoological Institute of the University of Istanbul (Schweiger, 1966), and travels by single specialists, such as S. v. Breuning: the latter, with S. Ruspoli, since the 1960s published a long series of contributions on the genera *Carabus* and *Cychrus* of the area (Breuning and Ruspoli, 1970, 1971 and following: see annexed checklist).

Since the 1960s, many travelers and collectors, both professional and amateur (the latter often attracted by the most impressive, highly diverse *Carabus* species), mostly coming from Austria, France, Germany, Italy, Switzerland, and more

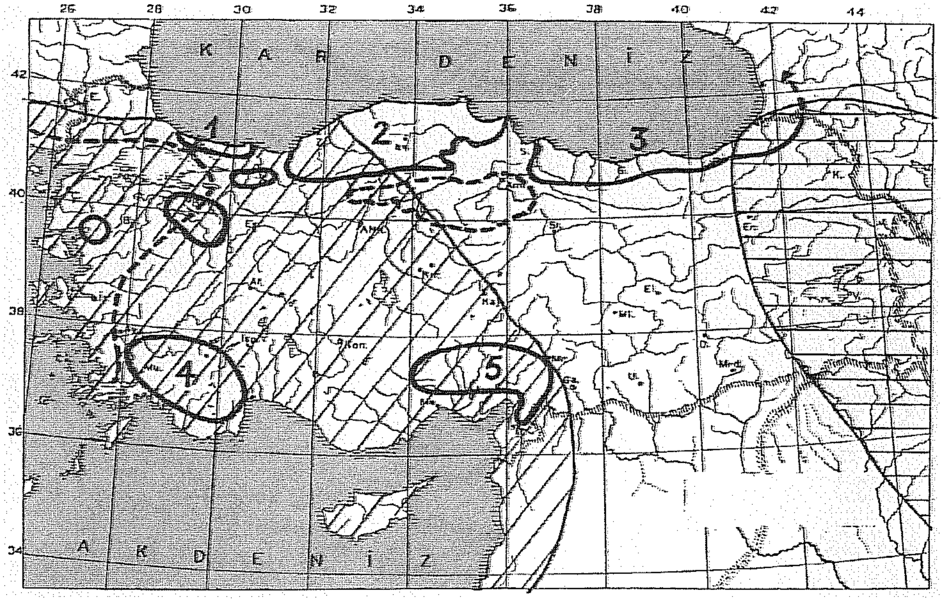


Fig. 6 - Zoogeographical regions and subregions of the Near East, and refugial areas, based on carabids of the genus *Carabus* plus tenebrionid beetles. 1: Thracian-Bythinian bridge; 2: Paphlagonian refugium; 3: Eastpontic-Iranian refugium; 4: Lycian refugium; 5: Taurus refugium (from Schweiger, 1966).

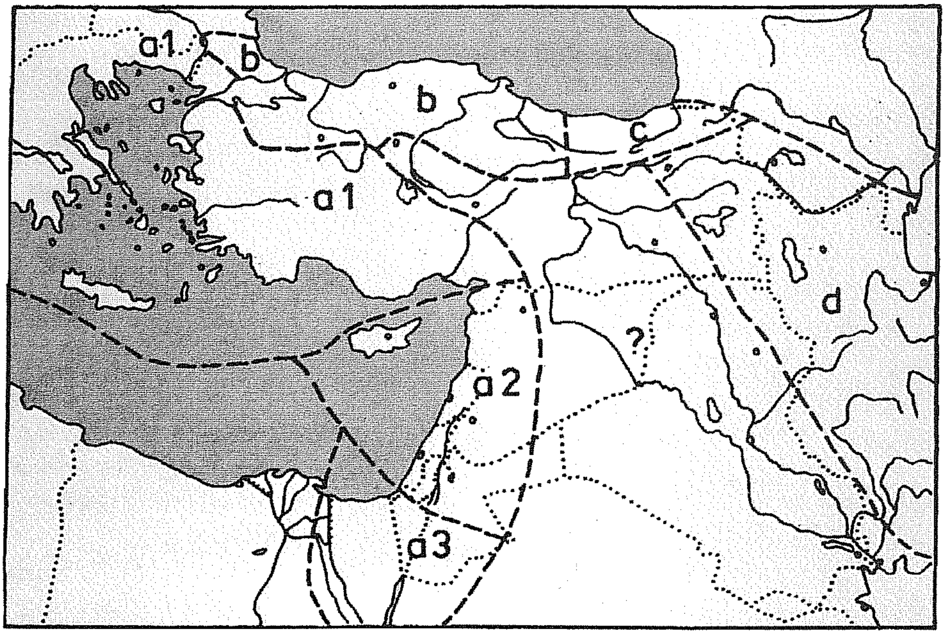


Fig. 7 - Zoogeographical regions and subregions of the Near East, based on carabids of the genus *Trechus*. a1. Northern-Levantine; a2. Central Levantine; a3. Southern Levantine; b. Western-Pontian region; c. Eastern Pontian region; d: Armeno-Iranian region (from Pawlowsky, 1979, and Nitzu, 1995).

recently from Russia and Czech Republic, collected insects in Anatolia, carabids included. Some authors (Schweiger, 1966, and Pawlowsky, 1979, among others: see figs 6-7) used carabids for important biogeographic inferences.

Concerning the contribution given by Italian travelers and zoologists, see Vigna Taglianti and Zapparoli (1999); many others are noted in our references and checklist.

3.3. *Carabids: present faunistic and biogeographic knowledge.*

Our present knowledge of the carabid fauna of the region is summarized as follows.

3.3.1. The carabid fauna of Anatolia seems to present a relatively low diversity, in spite of a high percentage of endemics, if compared to the total, large surface area (more than 750.000 square Kms): 1086 species (excl. Cicindelidae) recorded so far, a figure that certainly under-estimates the real diversity of the fauna, but which markedly contrasts with the more than 1300 species known presently for the much smaller (301.260 square Kms) Italian peninsula (Vigna Taglianti, 1993). On the other hand, this number of species for Anatolia is perfectly comparable

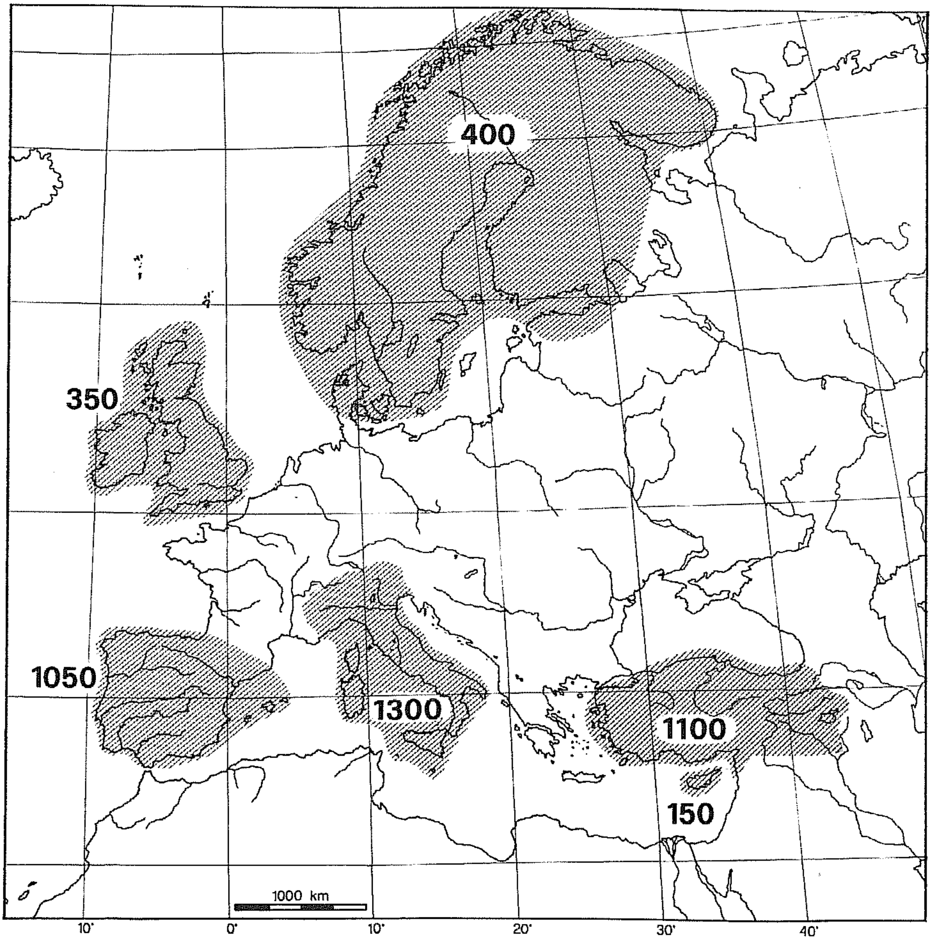


Fig. 8 - Approximate number of species of Caraboidea in some European and Mediterranean regions.

with that of the Iberian Peninsula (Spain plus Portugal), which has a surface of some 600.000 square Kms, and a well known carabid fauna (Zaballos and Jeanne, 1994; and subsequent up-to day contributions), of some 1050 species (Fig. 8).

This preliminary datum, in spite of its limits, is important for two reasons. First, it refutes the current opinion that insect diversity decreases in Eurasia from the East to the West. Second, it confirms the favored position of Italy in the Mediterranean area, between Central Europe and North Africa, being able to house a fauna highly enriched by Middle European, Balkan and Maghrebian elements, with a high percentage of endemics in the Alps, the Apennines, and in two major islands (Sardinia and Sicily) (Oosterbroek and Arntzen, 1992; Oosterbroek, 1994).

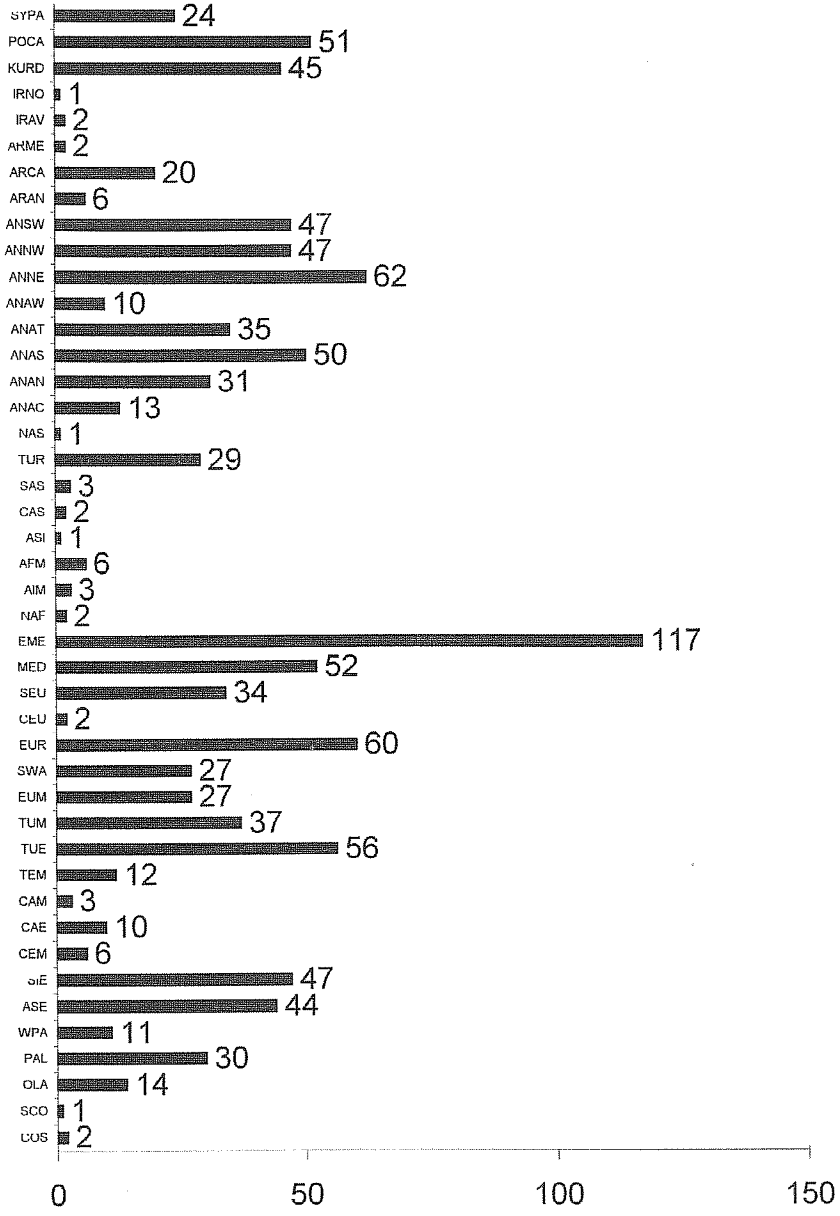


Fig. 9 - Number of Anatolian caraboid species (excl. Cicindelidae) referred to the chorotypes of the Western Palearctic region. Codes of the main chorotypes (three letters) and recurrent patterns of taxa endemic to Anatolia and neighbouring areas (four letters) as in Vigna Taglianti et al. (1999) (see Appendix 2).

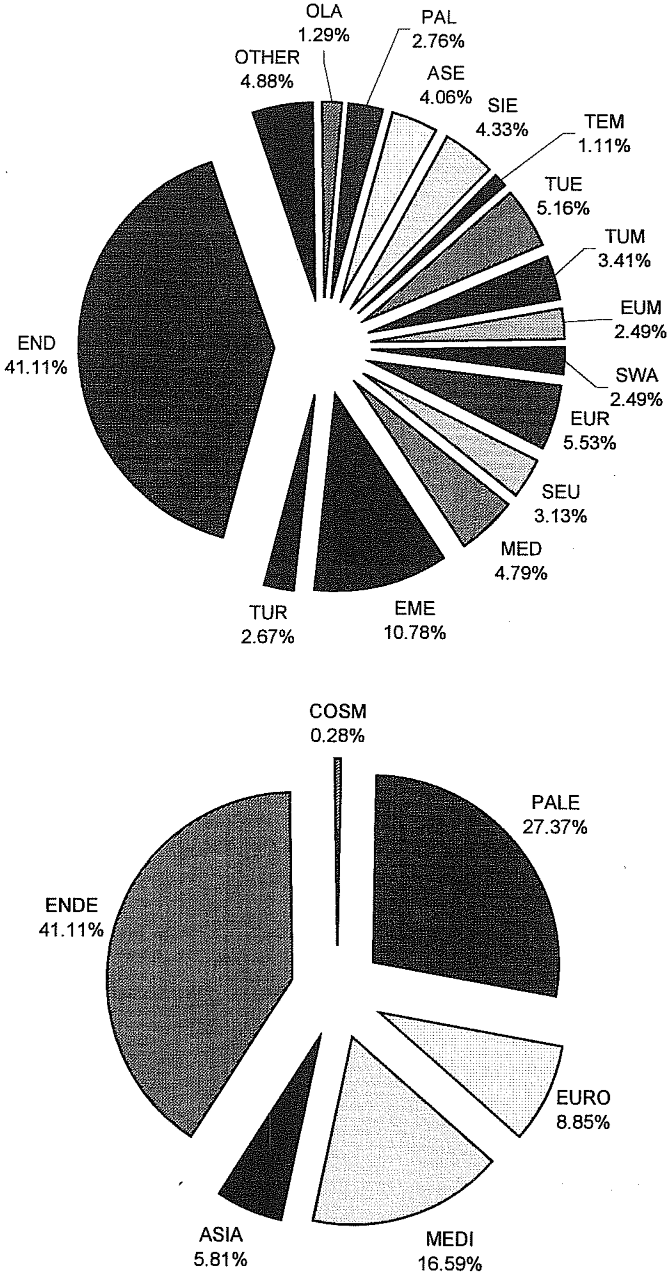
3.3.2. Conversely, some carabid lineages in Anatolia are markedly diverse. Among the best confirmed examples (see also chapt. 4), are the following: the carabids large in size of the tribes Calosomatini, Carabini and Cychrini (nearly 90 species, almost all endemic), Nebriini (*Nebria* and *Leistus* s. l.: some 50 species), steppe pterostichines (Zabrini: *Amara* s.l. and *Zabrus* s.l., with some 80 species) and harpalines (some 180 species), Sphodrini of different lineages (about 80 species). These markedly diverse taxa give to the Anatolian carabid fauna as a whole a markedly West-Asiatic and Caucasian, more than a Mediterranean facies.

3.3.3. No endemic carabid species, but only some slightly differentiated subspecies, are known from the numerous islets along the Western coast of the Anatolian peninsula, almost all politically Greek, close to the coast, and connected with the mainland during the Pleistocene variations in sea level of the Mediterranean Sea. An exception is represented by the cavernicolous sphodrid *Laemostenus (Antisphodrus) beroni* Casale, 1988, endemic to Kalymnos, which belongs to a species group very diverse in the Toros chain and represented also in Peloponnesus (Casale, 1988, 1997). By contrast, Cyprus presents a different biogeographic history: as an island of oceanic origin, isolated from the proximal mainland for the last 5 million years (Hadjisterkotis, in press), Cyprus developed a quite different fauna. With some 150 species (Jeanne, 1986), its carabid fauna is not very rich, and several species are in common with the carabid fauna present in Southern Anatolia and the Near East. Some others, however, are endemic to the island.

3.3.4. The chorological diagram of the Anatolian carabid fauna as a whole, based on the distribution patterns (chorotypes) proposed by Vigna Taglianti et al. (1993), modified in part (Vigna Taglianti et al., 1999), is summarized in figs 9-12, and is in agreement with the geographical position of the area, located adjacent to the Caucasus, the Irano-Arabian and Syrian regions, and the Balkan peninsula. Furthermore, the extended paleogeographic and paleoclimatic evolution of the area, and the isolation of several different sub-regions, are evident in the presence of 41.1 % endemic species known so far (figs 10-11), restricted to one or more regions of Anatolia (Fig. 12). In the endemic component, the highest percentages in the Eastern Pontic Alps (13.9 % of NE-Anatolian endemics + 11.4 % of Ponto-Caucasian endemics) and in Western Toros (10.5 % of SW-Anatolian endemics) respectively are markedly evident.

3.4. *Origin and diversity of the carabid fauna.*

At different times, phytogeographers and zoogeographers have proposed several patterns of distribution for plants and animals living in the Euro-Mediterranean, West Asiatic and Central Asiatic regions. The result is a series of biogeographical provinces and/or biogeographic relationships, the details of



Figs. 10-11 - Percentages of chorotypes of Anatolian caraboid species (excl. Cicindelidae) (10) (codes as in Fig. 9) and percentages of major groups of chorotypes (PALE = widespread in the Palearctic region; EURO = more or less widespread in Europe; MEDI = more or less spread in the Mediterranean countries; ASIA = widespread in Asia; COSM = Cosmopolitan or Subcosmopolitan; ENDE = Endemic or Subendemic to Anatolia).

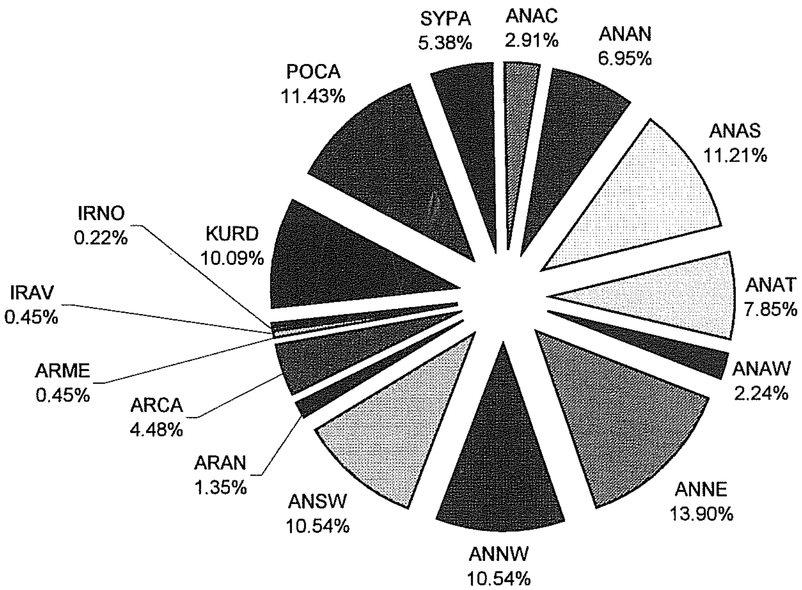


Fig. 12 - Percentages of recurrent patterns of caraboid species (excl. Cicindelidae) endemic to Anatolia and neighbouring areas.

which are not accepted by all eco-geographers, botanists and zoologists (see also, for some examples and maps, Nitzu, 1995; and further discussions in different contributions, this volume). Carabidologists also contributed to this work in progress: among others, two little known (being written in Russian), but excellent examples come from two authorities in the Central Asiatic insect fauna, as Semenov-Tian-Shanskij (1936), and Kryzhanovskij (1956).

Also, in this area the conflicting approaches between dispersalists, more attentive to ecological, dynamic recent factors, and historical biogeographers, more influenced by paleogeographical aspects, are evident. Phytogeographers and vertebrate zoologists are mostly representative of the first group (Kosswig himself, in the already cited review of 1955 – as a freshwater ichtyologist – can be included among them). Soil fauna workers, including many entomologists adherent to the Jeannelian school, are as a rule partisans of the second approach.

The question is, whether every present coenosis, or each extant species, has different chronological and chorological origins. What is sure, and supported also by molecular data in carabids (Prüser and Mossakowski, 1998), is that the diversity of the Mediterranean biota cannot be explained only in ecological, dynamic terms, or as an overlap of recent faunas in a transition zone among Europe, Asia and Africa. On the contrary, as it will be ascertained below, the present insect fauna of the Mediterranean area, Anatolia included, derives from a combination mostly of paleogeographic-historical factors, and of geo-dynamic and paleoclimatic evolution of the Paleomediterranean, with subsequent clado-vicariance events.

This is not the best venue to discuss all questions about the origin of the extant Anatolian biota and the present geographical distribution of their members, on which biologists interested to biogeography have spent so much energy. Concerning carabids (and not only carabids), a review of some general works (Jeannel, 1941-1942; Darlington, 1957), and of some more recent, basic contributions (see, among others, Darlington, 1979; Erwin, 1979; Noonan, 1979; Noonan et al., 1992) is instructive. Some of our own opinions, however, have to be stressed, to make explicit the methods that we used in drawing conclusions about ages and origin of distributions of various taxa, and to avoid this reconstruction becoming little more than a series of unsupported assertions.

In our opinion, expressed already in previous contributions (Casale, 1988, among others), the best way to reconstruct the origin of distributions and chorological affinities among taxa is through basic taxonomic revisions and phylogenetic analyses of sufficiently diverse and homogeneous supraspecific groups. This kind of work can also provide area cladograms and test them in a clearly defined area (see, as example, Liebherr, 1994). But this is not the aim of the present contribution. Furthermore, this kind of analysis is not available for many lineages of carabids that are represented in the Anatolian fauna (among the exceptions, we cite the excellent revision of *Harpalus* of the *oblitus* species group by Kataev, 1993). Comparison of association ("community") structures seems to us less informative: many of such associations, at least in the highly dynamic and varied Mediterranean area, are a kaleidoscopic assemblage of taxa with different origins and relationships, as is made evident below. Some opinions of other authors, and some facts, need explanation.

In agreement with Erwin (1981), we believe that dispersal and speciation events are understood sufficiently well that the terms and underlying concepts do not require additional explanation. Furthermore, beside opinions about their efficacy, dispersal power (*i.e.*, ability of dispersal by individuals, or groups of individuals), vicariance (*i.e.*, development of geographic or environmental barriers, able to isolate two or more genetic pools), and differentiation (both cladogenetic and anagenetic), seem to us irrefutable, demonstrated processes that we accept as facts. Another fact is that earth and climate changed in the past, and are changing in the present, at times more quickly and dramatically than organisms: Anatolia, and all of the Mediterranean area, furnish a good example of this reality (see section 2), and of the influence that these changes exerted in different, proximate areas, on the diversity of life and faunal assemblages. Drift of microplates, evolution of closed (and nearly closed) seas, and climatic evolution in a small area, have furnished good support for theories and hypotheses made on a global scale (continental drift), or based on unusual habitats, some of which are extreme (oceanic islands, high mountains, caves, tropical forests).

At the moment, a unified theory has not been formulated to explain the development of the recent biota, their geographical distribution, and current diversity of life. Therefore, in biogeography, it is important to avoid simplistic reductionism. Nevertheless, the taxon pulse model proposed for carabids by Erwin (1985), as a unidirectional series of habitat shifts and specialization (different, in this unidirectionality, from Wilson's [1961] taxon cycle theory), can provide – when integrated with existing cases of adaptive radiation, and possible reversal – a satisfactory, narrative explanation at least at higher (more inclusive) taxonomic levels and over longer intervals of time. Reversal occurs; but we believe that there is a sequence of modifications – such as happened in super-specialized aphaenopsian trechines, or in arboreal lebiines with hypermetamorphic life cycle – from which reversal seems impossible. For example, the present scarcity of arboreal lebiomorph carabids in Anatolia, where tropical and sub-tropical forests were widespread in the near past (at geologic scale), seems to confirm that extinction, or movement to more southern areas, has been for some carabid lineages the only possible response to environmental changes. Great caution must be exercised in attributing ecological constraints to caraboid species because the way of life of most of them is unknown (*i.e.*, about 95 % of the extant, almost 40.000, described species). Such attribution seems to be a current practice of ecologists working with carabid beetles. Many publications (Lövei and Sunderland, 1996), however, have demonstrated that many so-called specialized carabids in temperate regions can adapt to different and changing habitats (see section 5).

This is not all. Brachyptery, for example, does not necessarily indicate low dispersal power, and vice versa: in Europe, brachypterous species have demonstrated a very efficient, impressive ability in re-colonizing areas reforested in recent centuries; conversely, in tropical areas, many arboreal, winged species show very narrow ranges of distribution and markedly limited dispersal power (see also Den Boer, 1971). Closely related species, with the same plan of morphological modifications and similar ways of life, exhibit markedly different extents of geographic distribution, and colonize restricted or extensive altitudinal ranges, respectively, or biotopes very different in environmental conditions. Some of these taxa are able to modify their life cycles and activity periods, coinciding with requirements of life in different latitudes and altitudes. Consequently, and owing to the occurrence of numerous endemics, in the Mediterranean regions, some vicariant faunal assemblages, in apparently similar environments, differ markedly from each other in species composition; or, conversely, some are very similar in different environments.

With these premises, what can we learn from study of Anatolian carabids? The facts available are: ecological associations (and associated structural and functional adaptations); faunal associations; topographical associations; geological history of the area, and fossil evidence of Tertiary forests, in which insects – carabids included – lived and evolved. Also, available are data about diversity (number of species per higher taxon), and divergence (amount and kind of differentiation, coming both from examination of morphological features of specimens and information gained from life history observations). The taxa involved provide patterns, which emerge from a combination of diversity, divergence and geographical distribution within Anatolia, and relationship of the Anatolian taxa – or populations – to taxa occurring elsewhere. These patterns must be interpreted in terms of evolutionary processes.

Three patterns provide the basis for discussion of the Anatolian carabid fauna. The first is the objective (although incomplete) datum that we have available for the diversity of the carabid fauna as a whole, as presented in the appended checklist: 1086 species reported so far, a number surely under-estimated, but which markedly contrasts with the more than 1300 species known for the much smaller Italian peninsula. The latter, however, is in a substantially more favorable position, being located in the middle Mediterranean, and extended between Southern Europe and North Africa.

Second, as pointed out above (section 3.3), the richness of specific taxa is evident, including a high percentage (41 %) of endemics in some lineages, and in agreement with the well known richness of other Mediterranean insect faunas.

Third, some caraboid lineages in Anatolia exhibit relatively low diversity, and a rather low total number of species, compared to the surface area. Some of the main lineages are treated in more detail below (section 3.4.1., and following).

Drifting of microplates, and early evolution of the Anatolian area (since the Eocene to the Middle and Upper Miocene) seems to be a satisfactory explanation for the earliest carabid assemblages, represented today by isolated, relict lineages, representing respectively the Euro-Mediterranean, Asiatic and African faunas. A more careful examination of these taxa, and their geographical patterns of distribution, permits postulating the history and evolution of some of the ancient elements of the carabid fauna in Asia Minor, which will be summarized below (section 4.1). In particular: the original position during the Mesozoic Era of the area, on the southern side of the Tethyan Sea, allowed the presence of the most ancient, paleomediterranean (both Aegean and Balkano-Anatolian, as well as Irano-Anatolian), or Gondwanian lineages (ancestors of the extant endogean Anillina, for example). In this indigenous component, a distinctive, relict higher taxon, Omphreini, restricted to the Balkan Peninsula and the western Toros, must be noted.

In our opinion, however, land movement, as an explanation of the current distribution of carabids in restricted areas, is a factor which must be used with prudence. For instance, in our biogeographical analysis of carabids of Sardinia (Casale and Vigna Taglianti, 1996), we recognized, among some 350 species known at the time, not more than 4 or 5 species (isolated at generic rank), the occurrence of which in the island can be explained only by means of its well documented drift in the western Mediterranean area.

The process explaining the presence of most insect taxa in Anatolia is evidently dispersal using available land connections, or over narrow sea barriers, and then movements of various stocks as dictated by changing climate and changing topography (particularly mountain building). The ancient connections between Anatolia and the Balkan Peninsula in the Upper Oligocene (later interrupted in the Upper Miocene), and the Miocene connections with the Afro-Arabian territories, allowed the immigration of tropical, forest-dwelling lineages, ancestors of taxa today represented by distinctive endemics, mostly localized in Mesozoic limestone massifs of Western and Southern Anatolia (the most isolated troglobiontic Trechini of *Duvalius* and *Orotrechus* lineages, some groups of *Antisphodrus*, Brachininae of the genus *Aptinus*, and some others). Since the Upper Miocene to the Middle Pliocene, connections with the Caucasus, generalized land connections during the Mediterranean salinity crisis, new orogenic phases, and subsequent aridization of large areas, contributed to important faunal changes, cladogenetic events and increased diversity, by means of massive penetrations of Caucasian lineages to the Pontic Alps (and vice versa), spreading of steppe lineages from Anatolia to the Caucasus and Europe and from Turano-Caspian regions to Anatolia, and phases of isolation and differentiation. Finally, Pleistocene climatic changes and fluctuation, with the availability of forest and cave refugia during the glacial and interglacial (hot) phases, new patterns of vegetation, extension of steppes, and new land connections (made possible by marked sea level changes of Mediterranean and Black Seas), produced the present pattern of the carabid fauna. Additionally, Pleistocene cladogenetic events (speciation, semi-speciation and subspeciation), survival of relicts, modification of several patterns of distribution, and adaptive specialization to different environments, completed the present picture. Furthermore, immigrations of Northern (Asiatic-European) mesophilic or hygrophilic elements from the Balkans, and of montane forest dwelling species from the Caucasus (not exceeding today the western limit of Trabzon), are traced back to this period, or to the recent, post-glacial age (last 10.000 years).

This historical, long-term process seem to provide a satisfactory, narrative reconstruction of the composition of the extant carabid fauna as a whole, in agreement with documented facts and current theories. Some other information comes, however, from the examination of patterns within the Anatolian Peninsula, which require other processes to explain the most speciose groups in the area (sections 3.3.2, 3.4.1, and following), with numerous endemic (or precinctive) elements. These processes include isolation, vicariance, speciation, survival of relicts, and extinction, and involve different ways of life, and related adaptive features and modifications. Therefore, an ecological approach to the faunal assemblages furnishes further information. Approximately two thirds of the caraboid fauna (excl. cicindelids) known so far is represented by macropterous species, mostly corresponding with Darlington's hygrophiles, or with Erwin's waterside or lowland generalists, or plesiotypes. A few species (*Carabus granulatus*, *C. clatratus*, some *Calathus* species, and a few others) exhibit in some populations a wing-polymorphic state (*i.e.*, both macropterous and brachypterous individuals). One third about of the Anatolian carabid species is represented by brachypterous, or micropterous forms. Most correspond with Darlington's mesophile geophiles (plus endogean and hypogean elements), or with Erwin's apotypes, and their massive occurrence in Anatolia is in perfect agreement with the eco-geographic characteristics of a mostly montane area. Thus, from an ecological perspective also, the Anatolian carabid fauna includes a high percentage of derived, apomorphic or specialized taxa, the number of which will increase markedly with further exploration of little known high mountains, caves, and montane forests.

Most of the hygrophilous winged species (many Bembidiini, Callistini, some Zuphiini, among others), but also many xerothermophilic, spermophagous Harpalini, are widespread in the Euro-Mediterranean or Palaearctic areas (see chorological information in the checklist). As stated above, however, macroptery does not mean pronounced dispersal power and wide distribution, for several macropterous species seem to be endemic to Anatolia. The scarcity of arboreal, macropterous forms in the area has been noted above. Some brachypterous or micropterous species of the Anatolian carabid fauna are widely distributed: *Carabus coriaceus*, although represented in Anatolia by subspeciated or semi-speciated forms, is a good example of brachypterous species with wide geographical range, high dispersal power and ability in colonizing available land. It seems clear that the diversity and composition of the extant Anatolian fauna has been influenced not only by historical events, but also by ecological constraints, and availability of habitats (coasts, salt marshes, freshwaters, open lands, forests, high mountains, caves) and trophic resources.

In this context, some evolutionary processes seem important. Among these processes, as noted previously several times, evolution to a larger size class in some groups (some Anatolian *Carabus* species of the subgenera *Procrustes*, *Lamprostus* and *Procerus* are among the largest in size in the genus), associated in some taxa with thickened integument in xeric habitats, seems to be a favorable adaptation in using prey of large size, such as some terrestrial gastropod mollusks.

Competition, and exclusion in the same biotope among close taxa, seems also markedly present in Anatolian carabid taxocoenoses. It is true that ten large sized *Carabus* species can be syntopic in Anatolia (see section 3.4.1), but none of these is closely related to each other, and they present different periods of breeding, larval development, and feeding habits. As a rule, in this area, sister species tend to be distributed allopatrically or parapatrically with respect to each other: among the best documented examples, in some localities of the eastern Pontic chain, it is easy to verify the impressive ecological vicariance, in the same locality, between the large sized *Carabus (Lamprostus) nordmanni pseudorobustus* and the small sized *C. (L.) rabaroni paululus*, in a range of a few metres between the highest limit of the forests (1800 m about), and the lower limit of the alpine pastures, respectively. In these localities, the sympatric populations of these species present also the most marked character displacement. Conversely, these conditions are not present where the two species are fully allopatric.

This fact, associated with the shift to cold, wet habitats by hygrophilic elements in hot, dry periods, suggests that some older elements of the montane fauna once occupied forested lowlands, and there were displaced when changing climate allowed differently adapted species to enter the lowland habitats. But the montane fauna of Anatolia does not only represent a residuum of a fauna which once occupied the lowland. As stated a number of times, in the Pontic chain many elements entered the peninsula as montane adapted: there, the older (Nebriini, Patrobini, for instance) were affected by intensive cladogenetic events in the Plio-Pleistocene refugial massifs, although the most recent immigrants (section 4.4) do not differ morphologically from their respective conspecific Caucasian populations.

Finally, the subterranean fauna of the area merits some comments from the ecological point of view. A few only specialized troglobitic Trechini are known so far, all localized in the southwestern limestone massifs of the Toros chain, with Balkan relationships; conversely, many endogean elements (Trechini of the Caucasian *Nannotrechus* phyletic lineage, some Anillina and Pterostichini), and yet oculated, recent cavernicolous *Duvalius* species, plus numerous Sphodrina, are described from Asia Minor. Strangely, endogean scaritine Reicheiina, normally associated with Anillina elsewhere in the Mediterranean area, and present in the adjacent Balkans and Caucasus, are not yet reported. This pattern, compared with those of other, proximate Mediterranean areas (where numerous highly specialized subterranean carabids occur), suggests that the geological evolution, and the topographic characteristics of Anatolia, were efficient cladogenetic factors in isolating and differentiating subterranean taxa from geophilic, brachypterous ancestors which once lived in Anatolia as surface, pre-adapted inhabitants (see also, about the cholevid beetles, Giachino and Vailati, in press). By contrast, the ecological (mostly climatic) pressures in the same area seem to have been lower in modifying markedly the adaptive features of carabids to the subterranean environment, being the cave super-specialized taxa almost absent.

For a more detailed treatment of some groups of carabid beetles, the following examples are provided below.

3.4.1. Tribes Calosomatini, Carabini and Cychrini.

The last-named is a small tribe in Asia Minor: it includes the genus *Cychrus* only, with two (maybe more, in the opinion of some authors: see Mandl, 1977), polytypic species. Highly hygrophilic, helicophagous carabids, they are localized in the northern, wet forests, and are clearly derived from, and related to, the Balkan and Caucasian complexes of *Cychrus semigranosus* and *C. aeneus*, respectively, of the European *attenuatus* species group. *Cychrus* is an evident example of low diversity in Anatolian carabids, which markedly contrasts, for example, with the nine species of the genus present in the Italian peninsula, belonging to three different species groups (Casale and Vigna Taglianti, 1992). In East Asia, the genus reaches its maximum diversity, and includes some 60 species known so far (Deuve, 1997).

By contrast, Calosomatini and Carabini (ranked as subtribes of a single tribe, in the opinion of some recent authors) are represented in Anatolia by numerous species of different groups, with different origins in space and time.

The nine species of Calosomatini (*Calosoma* sensu latissimo, auctorum) belong to three different phyletic lineages (sensu Jeannel, 1940). First, winged *Calosoma* of a holarctic lineage, *C. sycophanta* (Linné, 1758), and *C. inquisitor* (Linné, 1758), the latter in some localities with a high percentage of bicolored specimens (*cupreofulgens* Chapman, 1922, described from Amanos Mts.), are common, widespread species through all the western palaearctic region. Second, the two (or three) species of the Afro-Asiatic *Campalita* lineage belong to a xerothermophilic, eremo-steppe Central Asiatic stock, extended throughout the Mediterranean region. The third lineage is more interesting from a biogeographic point of view: it includes the brachypterous, early spring active, steppe and montane *Callisthenes* species, four of which are endemic to Anatolia (see, for their distribution, Heinz and Pavesi, 1994), and represents a derived stock of a Central Asiatic lineage, which colonized Anatolia probably in the Upper Miocene. This lineage reached also the Balkan peninsula, where it is represented today by two, relict and very localized species (*C. pentheri* [Apfelbeck, 1918] and *C. relictus* [Apfelbeck, 1918]). By contrast, in Northern and Central Europe, *C. reticulatum* (Fabricius, 1787) seems to be a more recent, Pleistocene immigrant from Western Siberia.

Finally, the number of *Carabus* s. l. species in Anatolia is impressive: seventy five, *i.e.*, about 10% of the world total number known so far (Deuve, 1994; Brezina, 1994, 1999) are present in the area, most of them polytypic and very polymorphic, and many (fourty) strictly endemic. The specific or subspecific rank that we attribute to the different taxa is based on examination of numerous specimens, carefully revised and critically discussed (see notes in the appended checklist). In the opinion of different authors (see Darge, 1990; Deuve, 1994; Brezina, 1994, 1999; Cavazzuti, 1989; Cavazzuti and Ghiretti, 1992, for taxonomy of different subgenera, and for a review of the extensive literature on the topic), the number of species and subspecies is markedly increased, or slightly reduced.

Regardless, from the biogeographic point of view, the main features of the *Carabus* fauna remain unchanged, and are the result of a long series of events, and overlaps of the following different lineages.

1. Autochtonous, Tertiary age paleoendemic lineages, derived in the Balkano-Anatolian area from ancestors living in Eurasian, subtropical ecosystems: an impressive example is represented by the largest in size, diurnal, highly specialized helicophagous *Procerus* species. In Europe, other Tertiary, highly derived Carabini lineages are represented by the *Chrysocarabus* species, extant adelphotaxa of the Southeastern Asiatic species of the *Damaster-Coptolabrus* complex, and relatives.
2. Ancient Asiatic-European, basal lineages of Lipastromorphi, Archicarabomorphi and Lobifera (pars) (sensu Deuve, 1994), some endemic to Anatolia (*Ischnocarabus),* or represented by species or subspecies with Anatolian, Balkano-Anatolian, or Caucaso-Anatolian distributions (of the subgenera *Archicarabus, Mimocarabus, Tomocarabus, Pachystus, Oreocarabus*).
3. Higher longimandibulares (sensu Breuning, 1932-1937) Carabini (Lobifera pars, sensu Deuve, 1994), with a similar origin and zoogeographic history: endemic subgenera, such as *Heterocarabus* (marginally extended to European Turkey and Bulgaria) and *Oxycarabus,* as indigenous adelphotaxa of the European *Chaetocarabus* and *Megodontus* complexes, respectively; an enigmatic, relict group of flattened, excessively rare, sphodrid-like and very localized species, belonging to the endemic subgenus *Apoplesius* (see Deuve, 1990); the Irano-Anatolian lineages of the subgenera *Procrustes* (incl. *Chaetomelas*) and *Lamprostus,* each with some impressive, largest in size (as *C. (Procrustes) payapha,* Fig. 56) or polychromous (as *C. (Lamprostus) spinolae,* Fig. 54) endemic species, and a few species extended to Europe, Caucasus and Syria.
4. Ponto-Caucasian, wet forest dwelling or montane lineages, intensively speciated or subspeciated in the area, and represented today by several taxa scattered along northern Anatolia, of the subgenera *Sphodristocarabus, Tribax, Megodontus,* and a *Cechenochilus* species just discovered.
5. Finally, recent immigrants of different subgenera, from different regions, with taxa not or slightly differentiated in the area: from western Caucasus, some species not ranging beyond the northeastern part of Anatolia, East of Trabzon (as examples, *C. [Megodontus] septemcarinatus, C. [Pachycarabus] roseni, C. [Limnocarabus] clathratus,* some *Sphodristocarabus, Tribax* and *Lipaster* species); from southern Europe, *C. granulatus;* and, last, from the Syrian-Palestinian area, some species which marginally reach the southeastern part of the Anatolian peninsula, in the Amanos (Nur) chain, or range slightly to the North: *C. syriacus, C. piochardi, C. impressus, C. mulsantianus, C. punctatus* are good examples of this southeastern Mediterranean stock.

Thus, it is evident that several heterochronic phases of colonization, isolation and speciation, favored by paleogeographic and paleoclimatic events, contributed to create an unusually rich diversity, where ten *Carabus* species are sometimes sympatric in the same locality, and where some species are represented, in localities very close to one another, by subspecies or populations the adults of which differ markedly in shape, color and size. This scenario is important, because the marked differentiation of Carabini in Anatolia merits to be compared with the low mt-DNA-substitution rates in Mediterranean *Carabus* species, postulated recently from molecular data by Prüser and Mossakowski (1998).

As stated above, several other lineages of carabids share in part the evolutionary and biogeographic history, and patterns of distribution, of Carabini. The following, among others, merit a particular attention.

3.4.2. The Tribe Nebriini is represented by a rather numerous assemblage of species, of the genera *Nebria* s. l., and *Leistus* s. l., mostly localized in wet forests and montane massifs. The genus *Nebria*, represented by 33 species, has been the object of recent contributions by, among others, Shilenkov (1983) and Ledoux and Roux (1990). Like in some other areas of the Nearctic and Palaearctic regions, in Anatolia the genus shows a high percentage of montane endemics, mostly close to some Caucasian elements. The genus *Leistus*, represented by 13 species in Anatolia, has been the object of a series of revisional notes by Perrault (see, among others, 1974,1986, 1992), by Assmann and Heine (1993), and by Shilenkov (1999).

3.4.3. The Tribe Bembidiini presents several components, from both the phylogenetic and ecological points of view, *i.e.*: 1, an endogean lineage of subtribe Anillina, represented by a few genera and species known so far (Vigna Taglianti, 1980); and, 2, some oculate, winged, ripicolous, hygrophilic lineages, *i.e.*, Bembidiina, Tachyina and Lymnastina. Bembidiina (*Bembidion* of authors, sensu latissimo), for the specific knowledge of which in Anatolia we are mostly indebted to Netolitzky (1942-1943), and recently to Belousov and Sokolov (1994, 1996), include about 130 species, many with high dispersal power, widespread in West Palaearctic, Euro-Mediterranean or Anatolian-Caucasian regions. Tachyina include some twenty species, and Lymnastina is only represented by *Lymnastis galilaeus*. It must be stressed that the latter species is representative of a genus with a present, paradigmatic historical distribution, along the late Mesozoic borders of the continental platform, between Gondwanaland and Laurasia (Nitzu, 1995).

3.4.4. Tribe Trechini in Anatolia is rather well known, and has been carefully investigated. Nevertheless, we have to expect that in the future many undescribed species and genera will be discovered in mountains, caves, and in the upper hypogean zone of the less explored areas.

The excellent monograph by Pawlowski (1979) illustrated both the diversity of silvicolous and montane *Trechus* species of Asia Minor (increased by recent descriptions of Sciaky and Pavesi: see list, and by Moravec and Zieris, 1998), and the distribution patterns of sympatric taxa in relation to ecological factors, such as vegetation and altitude. *Trechus* species belong to Asiatic-European, or Mediterranean, or Ponto-Caucasian, or Irano-Anatolian lineages, with numerous endemics, and are mostly distributed in the wet North and in the highest eastern massifs.

Subterranean Trechini have a different history, and are represented by two main lineages: the *Duvalius* and the *Orotrechus* phyletic lineages, respectively (sensu Jeannel, 1926-1930, and Casale and Laneyrie, 1982).

The first lineage is represented in the region by the Western Palaearctic genus *Duvalius* only, which includes, in the central and eastern Pontic chain, and in eastern Anatolia, some silvicolous, endogean or troglophilic species, all probably belonging to the Caucasian *antoniae* species group. Markedly isolated seem to be *D. bicikensis* Perrault, 1971, from the Giresun Daglari, apparently related to the Eastern-European *Duvalidius* complex, and *D. bruschii* Vigna Taglianti, n. sp., probably related to the southern Balkan *krueperi*-group. By contrast, in the Western Toros, the genus is represented by two peculiar, troglobitic but oculate species, with very different relationships: *D. bortesii* Casale & Vigna Taglianti, 1984, related apparently to the northern Balkan *Duvaliotes* lineage; and *D. huetheri* Jeannel, 1934, present in several caves of Antalya and Muğla provinces, redescribed with different names, and related to *D. diaphanus* Rottenberg, 1874, endemic to Mt. Taygetos (Greece, Peloponnesus). *D. huetheri* and *D. diaphanus* seem to be derived both from paleomediterranean lineages ("*Trechopsis*" sensu Jeannel, 1934), the relationships and biogeographic significance of which have been discussed in other, previous contributions (see, for a review, Casale et al., 1996). Similar geographic, Southern Aegean distribution patterns are known for other carabids of several, different groups (see below).

The *Neotrechus* phyletic lineage shows a pattern of distribution only in part overlapped to that of the preceding one. The endogean species of the genera close to *Nannotrechus* belong to a typically Caucasian lineage (Belousov, 1998), and are distributed, with three genera (*Anillidius*, *Troglocimmerites*, and the markedly isolated genus *Pontodytes*), in the Pontic Alps and in some western massifs.

Conversely, the genera *Kosswigia* and *Sbordoniella*, in the Western Toros, seem to be related – such as the sympatric *Duvalius* species – to the Balkan component of the lineage, *i.e.*, to the genera *Orotrechus* and *Neotrechus*. These specialized troglobitic trechines form, together with the impressive *Carabus (Procrustes) payafa*, some Pterostichini, several subterranean Sphodrini, and a few, rare peculiar species of the Dinaric-Anatolian genus *Omphreus*, a stock of Paleomediterranean, isolated carabids, which make the Western Toros – a xeric Mediterranean region, with low carabid diversity if compared to the wet northern mountains – one of the most interesting areas of the Mediterranean basin from the biogeographic point of view.

3.4.5. The boreal Tribe Patrobini is represented by few taxa in Anatolia, but includes, like the orophilous Nebriini, interesting relict taxa speciated and restricted today – as in all the Mediterranean area – in scattered, montane Pleistocene refugia. The few species described so far, all discovered in recent years and localized in the highest massifs of the eastern part of the region, living at altitude of more than 2500-3000 m, belong to the genus *Deltomerus*: *D. dinci* Ledoux, 1976, from the Kackar Daği massif (Rize), is an isolated representative, in the eastern Pontic chain, of the rich Caucasian lineage of the genus; *D. punctatus* Heinz & Ledoux, 1987, *D. balachowskyi* Ledoux, 1976, and *D. lodosi* Ledoux, 1976, sympatric in the southeastern system of Cilo Daği, Sat Daği and Mor Daği are more probably derived from the Irano-Transcaucasian stock of the genus.

3.4.6. The Tribe Sphodrini, like Trechini, merits a particular attention: this group includes a subterranean, specialized component, the biogeographic and evolutionary history of which is similar to that of other hypogean organisms (Vigna Taglianti, 1980; Casale, 1988).

The genus *Calathus*, including *Lindrothius* (Calathina sensu Casale, 1988), well known in Anatolia mostly thanks to the contributions by Perrault (1977), Battoni (1984, 1986) and Battoni and Vereshagina (1984), includes so far 28 species. They are derived from silvicolous ancestors, living in tropical and subtropical Tertiary forests, which in the Mediterranean area (and in Macaronesia: Machado, 1992) became affected by intensive, allopatric speciation in Pleistocene forest refugia. Isolated taxa, with the same origin, are the monobasic, Balkano-Anatolian genus *Amphimasoreus*, with the species *amaroides* La Brûlerie, 1876, and the peculiar genus *Atranopsis*, represented in Syria by *A. scheuernei* Baehr, 1982, and in Western Toros by the troglophilic *A. (Tauroderus) bolognai* (Casale & Vigna Taglianti, 1984), known from small caves near Arif (Antalya).

The genus *Platyderus* is represented by 10 species, more or less, all endemic (Jedlička, 1963): but a careful revision is needed.

Sphodrina, of the *Laemostenus* and *Sphodrus* lineages, have been treated in detail by Casale (1988), with some maps of distribution of Anatolian and Central Asiatic species. The present sphodrine fauna, beside the West-Palaearctic *Sphodrus leucophthalmus*, includes two eremo-steppe, large in size elements of Central Asiatic origin (*Taphoxenus* sensu stricto, and of the subgen. *Lychniphugus*), often occupying holes of subterranean mammals, several forest dwelling and montane *Laemostenus* species (of different subgenera), and numerous cavernicolous *Laemostenus* species of the subgen. *Antisphodrus*: in the latter, the *bodemeyeri* species group, together with many trechines noted above, an undescribed molopine species cited below, and other troglobitic Arthropoda, give to the Western Toros pronounced biospeleologial and biogeographic interest.

3.4.7. The pterostichine Tribes Poecilini, Pterostichini and Molopini are representatives of heterochronic phases of colonization and speciation.

Poecilini, mostly hygrophilic, ripicolous inhabitants of open country, are represented by widespread Palaearctic, Euro-Asiatic or Euro-Mediterranean species. Only few species present a more restricted distribution.

Species of the Tribe Pterostichini are notably scarce in Anatolia, if compared to other European and Asiatic areas, with a few endemics, and some Ponto-Caucasian elements, mostly confined to montane massifs of northeastern Anatolia (Kirschenhofer, 1987, 1992). Examples of Pleistocene speciation or semi-speciation in western massifs, from Balkan immigrants, are known, such as *P. casalei* Straneo, 1984, and *Platysma minus turcicus* Brandmayr & Drioli, 1979. An exception to this scarcity is represented by the conspicuous number of taxa of the Balkano-Anatolian lineages of *Tapinopterus* s. l., *Haptoderus* and *Haptotapinus* (Schatzmayr, 1942-1943; Straneo, 1986, 1987), intensively speciated in montane massifs, with a little known component of subterranean taxa (*Speluncarius* s. l., a probably polyphyletic taxon: Jeanne, 1982; Sciaky, 1982; Casale and Giachino, 1991).

Finally, Molopini have in Anatolia a few representatives only: two European species, of the genera *Abax* and *Molops*, respectively (for the latter, see Mlynar, 1977), as recent immigrants from the Balkan peninsula to the northwestern part of Anatolia. Furthermore, an unidentified, mysterious subterranean genus and species has been reported from remains collected in a cave of the Haci Akif island, in Beysehir Lake (Vigna Taglianti, 1980). This latter species is very informative, from both the phylogenetic and biogeographic points of view, because it confirms, together with subterranean Trechini, Sphodrini, and other troglobitic organisms, the ancient hypogean colonization of the Western Toros, noted above. It is to be stressed, in fact, that the only extant subterranean molopine genera and species known so far are scattered in the eastern pre-Alps, in the Dinaric chain, in the southern Iberian Peninsula, the Pyrenees, the Baleares, and in East Sardinia. The Thyrrhenian lineages represent an excellent paradigmatic model of historical biogeography, tied to Miocene microplate drift in the western Paleomediterranean (Casale and Vigna Taglianti, 1996). For these very reasons, the examination of specimens of the subterranean Anatolian molopine should be very important and informative, to ascertain its phyletic relationships to other Mediterranean taxa.

On the other hand, the marginal occurrence in Anatolia of two European, recent immigrant molopine species only, of the genera *Molops* and *Abax* respectively, shows the very low dispersal power that these forest dwelling carabids have had from the Balkans (where these genera have their major center of diversity in Europe), to Asia Minor, and confirms that the present distribution of taxa of this group is more related to paleogeographic, than ecological factors (Baroni Urbani et al., 1978).

3.4.8. The pterostichine Tribe Zabrini (*Amara* s. l. and *Zabrus* s. l.: some 100 species), and the Tribe Harpalini (including Anisodactylina, Selenophorina, Ditomina, Harpalina and Stenolophina: some 150 species), spermophagous and grassland inhabitants, form a conspicuous percentage of the carabid fauna living in large steppe or subdesertic areas – mostly cultivated today – in the Anatolian plateau, in Mediterranean steppes, and in montane pastures. Many species are widespread in the Palaearctic or in Mediterranean area, but several are autochtonous in Anatolia, or present Irano-Turanic, Syrian, or Anatolian-Caucasian patterns of distribution.

In *Amara* s. l., a markedly disjunct distribution is presented by the species of the subgen. *Leironotus*, with two endemics in western Asia Minor, widely separated from the other representatives of the subgenus, which are confined to the Iberian peninsula (Hieke, 1995).

The phylogeny and speciation of some genera of Subtribe Harpalina in Anatolia have been postulated by, among others, Mlynar (1979), Kataev (1993), Kataev and Wrase (1995) for *Harpalus* of different species group, and Sciaky (1987), for *Ophonus*. Some genera of Ditomina, as *Carterus* and *Oedesis*, have been revised by Wrase (1994, 1999); other peculiar genera of Ditomina, such as the Balkano-Anatolian genus *Mystropterus*, and the Anatolian genus *Pachycarus*, had been revised by Schauberger (1931), G. Müller (1937), and Dvořak (1993). Some genera of Stenolophina have been recently revised by Jaeger (1992, 1999).

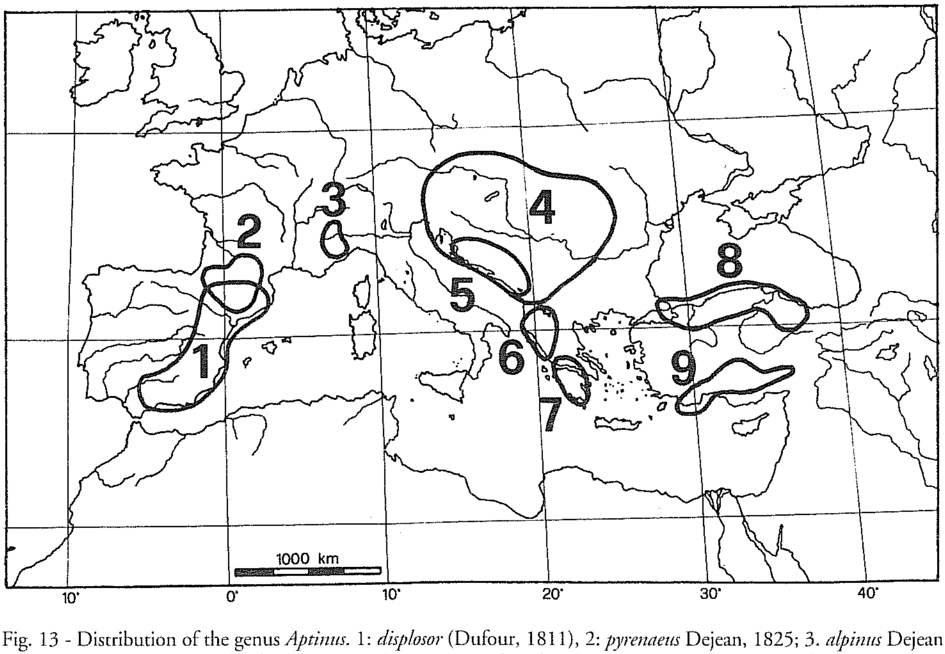


Fig. 13 - Distribution of the genus *Aptinus*. 1: *displosor* (Dufour, 1811), 2: *pyrenaeus* Dejean, 1825; 3. *alpinus* Dejean & Boisduval, 1829; 4: *bombarda* (Illiger, 1800); 5: *acutangulus* Chaudoir, 1876; 6: *merditanus* Apfelbeck, 1918; 7: *lugubris* Schaum, 1862; 8: *cordicollis cordicollis* Chaudoir, 1843; 9. *cordicollis creticus* Pic, 1903.

3.4.9. Dryptini, Zuphiini, Lebiini and Brachininae (the latter subfamily listed here at the end of the system, but of uncertain position in the carabid phylogeny: Ball et al., 1998), are not very rich in species in Anatolia. Some taxa, however, merit a note: among Lebiini, the occurrence of some thermophilic species, of African or Central-Asiatic lineages, of the genera *Tilius*, *Phloeozetus* and *Glycia* (*Merizomena* included), which reach only marginally the Mediterranean area; and, among Brachininae, one (or two, in Hůrka's opinion, 1988) species of the genus *Aptinus*, a genus the scattered distribution of which, through the northern Mediterranean area (Fig. 13), is of considerable biogeographic significance (Casale and Vigna Taglianti, 1983).

4. REMARKS AND CONCLUSIONS ABOUT THE ANATOLIAN CARABID FAUNA

The preceding data illustrate the diversity of the Anatolian carabid fauna, in terms of paleogeographic and paleoclimatic factors, heterochronic phases of colonization, overlap of taxa of different origin, and intense, local speciation and subspeciation. The following components are recognized:

4.1. Autochtonous taxa of very ancient, Paleomediterranean origin, representatives of ancestors that lived in tropical or subtropical, Tertiary forests and marshes, clearly recognizable today as isolated genera and distinctive phyletic lineages. Included are some *Carabus* subgenera, Bembidiini Anillina and Lymnastina, some subterranean Trechini and Sphodrini, pterostichine *Tapinopterus*, the brachinine genus *Aptinus*, and some others, mostly localized in the southern, Mesozoic limestone Toros chain, and in forest and cave refugia. In some of these taxa, in addition to intense (late Miocene, or Plio-Pleistocene) cladogenetic splitting, various very marked anagenetic processes are noticeable, *i.e.*, features adaptive to xeric, mediterranean environments (for example, black, thickened integuments and largest size in some impressive, helicophagous *Carabus* species, such as *C. payafa*, different *Procerus* species, et cetera), and troglomorphic features in highly specialized hypogean Trechini.

In this carabid assemblage of ancient origin, the most noticeable and isolated lineage is that of the Omphreini tribe, with the Balkano-Anatolian genus *Omphreus* s. l., which includes few, excessively rare, large in size species (see list). If the postulated relationship of this tribe to Perigonini is confirmed (Kryzhanovskij, 1976), then Omphreini appears to be a relict Gondwanian lineage, as postulated for other higher taxa of Anatolian invertebrates (see, for earthworms, Rota and Omodeo, 1992; Omodeo and Rota, 1999; and, for Orthoptera, La Greca, 1999).

4.2. Taxa derived from ancient immigrants through successive connections of Anatolia with Europe in the West, and with the Caucasus and western Asia in the East, since the Miocene to the Plio-Pleistocene. They are represented today by autochtonous species of several genera, differentiated in situ, belonging to Carabini, Calosomatini, Nebriini, Trechini of the genus *Trechus*, Pterostichini, and several others.

It is to be recalled, as for other Eurasian or Mediterranean carabid faunas (see, as example, Casale and Vigna Taglianti, 1993), how much the Plio-Pleistocene climatic changes influenced the isolation of silvicolous elements in Kolkhidian, Euxinic, and Sarmatian temperate forest refugia during glacial maxima, and, conversely, the isolation of hygro-cryophilic, montane elements (*Nebria* s. l., several trechines, and *Deltomerus* species, among others) in high altitude massifs and caves during xeric, hot interglacial periods.

4.3. Many steppe, open country dwellers, which have different origins in Anatolia. Some autochtonous taxa are derived from Mediterranean or Irano-Caucasian ancestral lineages, in agreement with a phyletic and biogeographic pattern similar to that proposed by Noonan (1990), for North American Harpalini. Several others are recent immigrants, mostly from central and western Asia or Mediterranean areas, which increased their geographic range in Plio-Pleistocene, or present phases of extension of grassland zones.

4.4. Recent, silvicolous or montane Pleistocene immigrants, not or little differentiated in Anatolia, which survived in Würm Glacial forest refugia, and/or extended their geographic range in the reforestation phases subsequent to glacial periods. They are represented by several species, with geographic distribution normally reduced in the region, and contiguous with the major adjacent source areas of each species.

Beside the Balkan molopines of the genera *Molops* and *Abax* cited above, and some mesophilic or hygrophilic platynines, pterostichines and bembidiines, the Syro-Palestinian species merit particular attention living today in the southeastern part of the Anatolian peninsula (Adana and Antakya provinces): examples are some *Carabus* species (see 3.4.1), and the sphodrines *Laemostenus quadricollis* and *L. parallelocollis*.

Nevertheless, the most important evidence of this pattern of distribution is represented by many Caucasian taxa in the eastern part of the Pontic chain, east of Trabzon: these carabids, associated with wet, temperate climatic conditions along the Black Sea, and with *Fagus-Picea orientalis* forests in mountains, give a marked Caucasian feature to the taxocoenoses of the area. *Carabus (Pachycarabus) roseri, C. (Lipaster) stjernvalli, C. (Megodontus) septemcarinatus*, some *Tribax* and *Sphodristocarabus* species, *C. (Procerus) caucasicus, Nebria bonellii* and *N. fischeri, Trechus gravidus, Stenochlaenius caeruleus, Calathus deyrollei, Laemostenus (Antisphodroides) koenigi, L. (Pristonychus) pretiosus, L. (P.) mannerheimi, Thermoscelis insignis, Pterostichus (Myosodus) lacunosus, P. (M.) schoenherri, P. (Haplomaseus) voronovi, Zabrus aurichalceus*, among others, are typical caucasian elements which, in exceptionally favorable ecological conditions, overlap geographically several autochtonous Anatolian taxa – such as some *Carabus* species of the subgenera *Megodontus*, *Lamprostus* and *Sphodristocarabus*, many Nebriini and Trechini, among others -, and give to this area a maximally diverse carabid fauna.

4.5. Finally, another stock of thermophilic but hygrophilic elements, is of Holo-Mediterranean, Eurasian, or African origin. This assemblage includes several Scaritinae, Callistinae of the genera *Chlaenius*, *Dinodes*, *Epomis*, some Bembidiini, Demetriini, Dryptini, Zuphiini, and Lebiini. It gives to the carabid coenoses of Anatolian riparian habitats along rivers, streams, wet and salt zones, an appearance similar to that of such biotopes throughout the Mediterranean area.

5. MAN AS A BIOGEOGRAPHIC FACTOR

The role that man is dramatically performing on world diversity of life is well known: this fact, emphasized in recent years in tropical areas, has been underestimated in many temperate areas, such as the Mediterranean basin (Balletto and Casale, 1991), and more generally in all the densely populated, overexploited regions of the West Palaearctic Region, which is very rich in species and in distinctive, endemic taxa. It is also well known today, that not only vertebrates large in size, but also invertebrates (mostly small in size), such as insects, show a more or less high vulnerability to habitat modifications by anthropogenic causes. Carabid beetles, among others, have been the object of careful investigation about this topic for the past thirty years, in particular in the most populated countries of Europe. Owing to fragmentation and loss of habitats, several species of carabids became rare, or locally extinct, in several countries. Furthermore, the autecology of several taxa, and structure of coenoses in temperate areas, are well known today (Stork, 1990; Desender et al., 1994).

Asia Minor does not make exception to this general rule. The largest forests, described by Strabo, Livy and Xenophon two millenia ago (Brice, 1978), when lions were present in Turkey, are mostly disappeared. The difference in surface between the potential and the extant forests is impressive (Schiechtl et al., in Hesselbarth et al., 1995: Fig. 19). But loss of habitat increased dramatically in recent years: as we wrote in the introduction, when we started our research in the Near East, Anatolia was a frontier not easy to explore. Thirty years ago only, many mountain massifs were difficult to reach, or fully inaccessible, and large forests, both in the North and in Toros chains, were not crossed by roads. Several main roads, also, were in very bad condition. The Caspian tiger was yet present in the Southeast of the country, and the leopard was more widespread than today (Masseti, in press); wolves and bears, rare in Europe, were common everywhere.

From 1974 to the present, the human population in the Mediterranean area (including Turkey) increased by some 100.000.000 people (Pavan, 1999).

Instanbul, which was already a large city of 4.000.000 people, is now, with the surroundings, a megalopolis of some 8.000.000. Roads have been opened everywhere, the forests have been and are being intensely exploited; huge dams, built on the main rivers and karstic springs, submerged large areas and caves; marshes have been drained; agriculture in the central plateau, and tourism along the Mediterranean coast, modified profoundly the landscape. Many biotopes, that we visited in our first travels, were drastically modified or fully destroyed some years later. Unfortunately, our data and knowledge of the Anatolian carabid fauna are too scarce, if compared to those available for other, more investigated areas: subsequently, future modifications of habitats and taxocoenoses are difficult to anticipate, quantify and compare.

Nevertheless, entomologists demonstrated that many insect species are able to adapt to habitat changes: even some carabids very large in size, and specialized to peculiar food or environments, such as some *Procerus* and *Lamprostus* species, seem to be able to survive in modified – cultivated or urbanized – habitats. Several steppe dweller species, such as some phyto-spermophagous Amarini and Harpalini, have taken advantage of the extension of traditionally cultivated lands. On the other hand, several species tied to primary forests, fragile ecosystems, or restricted to small or fragmented areas, could become endangered in the near future, owing to habitat loss and pollution. A dramatic, and well known example, is represented by some callistines large in size, as *Epomis dejeani* and *E. circumscriptus*, confined to large wetlands, which are quickly disappearing from the Mediterranean area.

Furthermore, we have to expect that introduction to Anatolia of allochtonous insect species by anthropogenic means will probably increase. For these reasons, entomologists and biogeographers, accustomed to treat slow processes of evolution on a geologic scale, and to debate distributions and phylogenies of organisms from historical and ecological perspectives, must pay attention to the environmental changes in areas – such as Asia Minor – modified by man during recent millennia, and will have more and more to evaluate the human factors as objectives in their studies.

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APPENDIX 1

NEW OR LITTLE KNOWN SPECIES FROM ANATOLIA

We report herein on some species from Anatolia, all but one cave-dwellers, most of which were previously named but not accurately described.

In particular, a detailed redescription of *Sbordoniella indagi*, for which only a differential diagnosis was made by Vigna Taglianti (1980), is given. A *Duvalius* species from North-West Anatolia and two *Laemostenus (Antisphodrus)* species from South-West Anatolia, for which names were proposed but no description fournished (Vigna Taglianti, 1980), are herein described. Taxonomic and faunistic notes on two other *Antisphodrus* species, from South-West and South Anatolia, named without description in the above cited paper, and successively described with different names by other authors (Casale, 1988; Lassalle, 1997), are presented. Finally, two new Sphodrina species, of the *Antisphodrus* and *Pristonychus* subgenera, are described from southwestern Anatolia.

Numerical codes refer to the checklist in Appendix 2.

Abbreviations: MRSN = Museo Regionale di Scienze Naturali, Torino; ASS = Coll. T. Assmann (Osnabrük); AVT = Coll. A. Vigna Taglianti (Roma); CA = Coll. A. Casale (Torino); GE = Coll. L.C. Genest (Les Houches); GI = Coll. P. Giachino (Torino); SCI = Coll. R. Sciaky (Milano).

TL = body overall length, mandibles included; MW = body maximum width; LP/WP = length of pronotum/width of pronotum; LE/WE = length of elytra/width of elytra (LE: linear distance from basal ridge to apex of one elytron, along the suture).

101.001.0 **Sbordoniella indagi** Vigna Taglianti, 1980
(*Sbordoniella indagi* Vigna Taglianti, 1980: 166)

About thirty years ago, this extraordinary species (included in a new genus) was discovered by our dear friend Valerio Sbordoni in southwestern Anatolia, in the big cave (Kocain) on the slopes of In Dagi (vil. Antalya). One of us (A.V.T.) named the new taxon, with a brief preliminary description, and discussed its relationships, at the Conference on Evolution of Cave and Endogeous Coleoptera, held in Moulis (Saint-Girons, Ariège) in September 1979 by the "Société de Biospéologie" (Vigna Taglianti, 1980): the complete description, and figures, of the new genus and species was never presented. More recently, this species was newly found by German speleologists, in the same cave, and we received a specimen by our friend T. Assmann.

DIAGNOSIS

An highly specialized, aphaenopsoid trechine of the "anisotopic" *Neotrechus* line, with very elongate antennae and legs, subcylindrical head, narrow pronotum and narrow pear-shaped elytra, vanishing shoulders, and with stout and short median lobe of aedeagus, great copulatory piece, sinuate, vertically placed. Close to the genus *Kosswigia* Jeannel, 1947, in the general shape of the body and appendages, in the pubescence on genae, and in having the mentum fused with submentum, *Sbordoniella* Vigna Taglianti, 1980 clearly differs by its smaller size, more elongated head, strongly protruding and elongate anterior angles of pronotum, more flattened and pedunculate strongly pubescent elytra, and inner sac of aedeagus without thick scales packages.

EXAMINED MATERIAL

Holotype ♂, labelled: "Turchia, vil. Antalya, Dosemealti, grotta In Dag, 30.IV.1973, V. Sbordoni leg.", genitalia on slide C460 (AVT); 3 Paratypes, same as holotype: 1 ♀, with genitalia and mouthparts on slide C461, "lab. 163" (AVT), 1 ♀ "lab. 164" (CA), 1 ♀ (GE, "lab. 165").

1 ♀, labelled: "Turkey / Mittelm.-G. / Kokain magarasi / Bucak 07.08.1994 / leg. H. Hirschfelder" (ASS).

REDESCRIPTION

A trechine, showing high morphological adaptive modifications to the cave environment (Fig. 14). Little sized, with very elongated antennae and legs, narrow cordate pronotum and pear-shaped, pedunculate elytra; pubescence marked on head (especially on genae), elytra, abdominal sternites, and appendages; reduced on prothorax. Inner wings totally reduced. Colour pale reddish, fulvous; surface relucent and shiny; microsculpture evident on head, reticulate, in fine polygonal meshes; reduced, with fine meshes transversely stretched, on pronotum; marked, clearly transverse, on elytra.

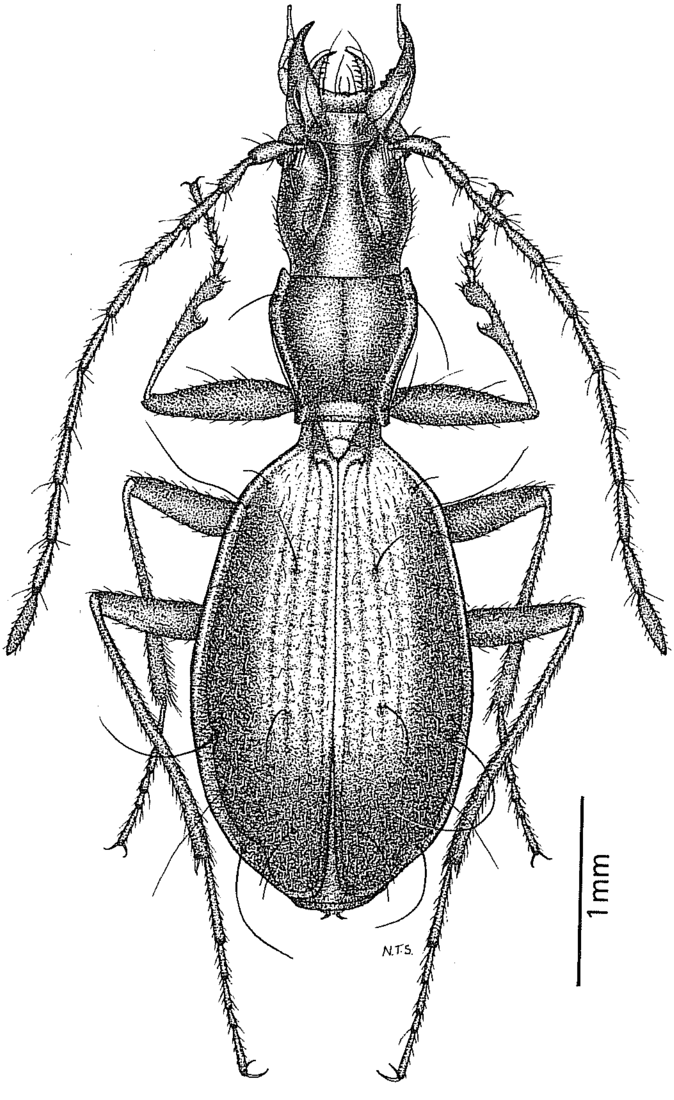


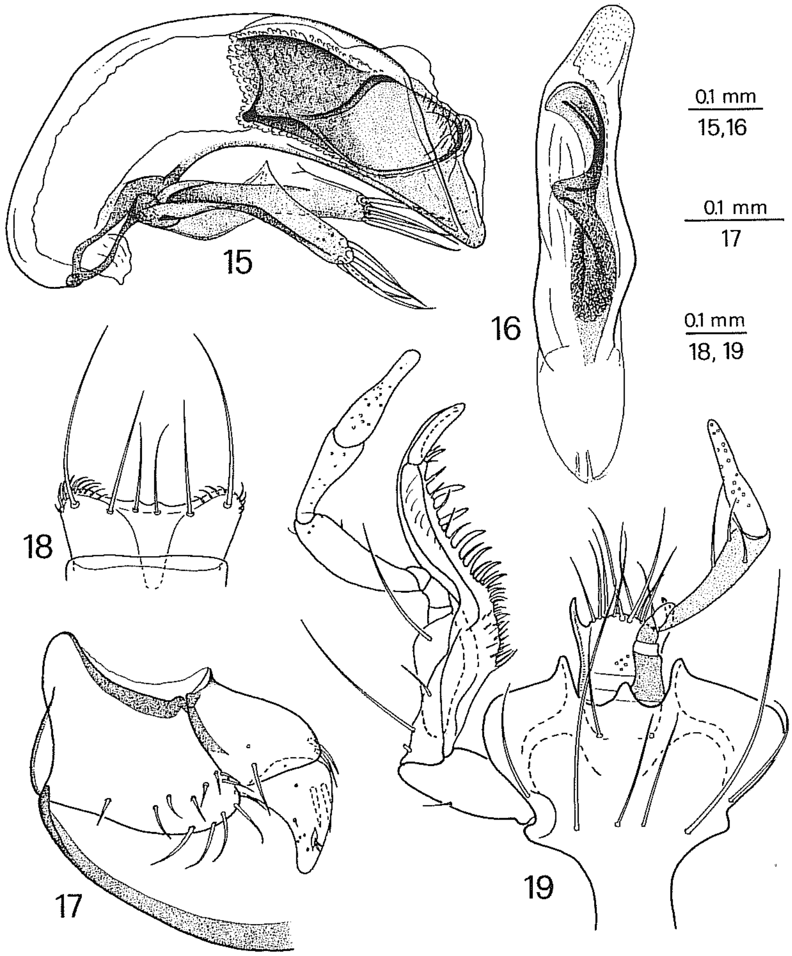
Fig. 14 - *Sbordoniella indagi* Vigna Taglianti, 1980: female paratypus, habitus.

Total length 3.85-4.20 mm (holotype 4.10) from apical margin of clypeus to apical margin of elytra; TL 4.25-4.65 mm (holotype 4.55).

Head elongated (length, from apical margin of clypeus to apical margin of pronotum, 0.91-0.93 mm, holotype 0.93), longer than prothorax (4: 3), narrow (greatest width, behind level of the first frontal seta, 0.65-0.72 mm, holotype 0.69), with a clear neck constriction; frontal furrows complete, posteriorly divergent; eyes completely vanished; genae subparallel, with many thin hairs; two pair of frontal setae, well behind the level of ocular oblique sutura, and in posterior half of frontal furrows, in more or less parallel lines; two pairs of short setae above the antennal base; clypeus with right margin, and with four setae, the outers being longer and stronger; labrum (Fig. 18) gently emarginate at the apex, with two median obtuse teeth, with six setae, the outers longer, the inner ones shorter and thin. Mandibles slender, feebly arcuate, acute at apices; the right mandible clearly tridentate, with stronger basal tooth, the left one bidentate, with basal tooth acute protruding. Labium (Fig. 19) completely fused, without trace of labial suture; mentum with a porrect tooth in apical emargination, half as long as lateral lobes, simple at the tip; two distal setae, at the base of the tooth, and a series of six prebasilar setae. The inner and the outer of these are similar in length and size, the intermediate (near the side angles of submentum) are longer and stronger. Ligula gently produced, rounded at the tip, decasetose (the apical two setae are longer and stronger); paraglossae moderately arcuate, extending clearly beyond the ligula; labial palpus long and slender, penultimate segment only slightly curved and dilated at the apex, with two setae at the apex and one, longer, in the distal half of the length, on the anterior side; apical segment about four-fifths as long as the penultimate. Maxillae (Fig. 19) slender, with lacinia gently curved and provided with a row of recurved spines and hairs on the inner margin; maxillary palpus long and slender, glabrous, with only three short setae at the apex of the third segment; penultimate segment long, subcylindrical in the basal half and sinuately dilated towards the apex; apical segment a little longer than penultimate. Antennae long (3.02-3.36 mm, holotype 3.33) and slender, reaching 4/5 of the elytral length; scape is the thickest of all segments, the shortest (slightly more than the second) and the less setose; all the following are similar in lenghth and in thick pubescence.

Prothorax short (length, along the mid-line, 0.70-0.76 mm, holotype 0.76); pronotum cordate, shorter than head (as long as frontal length, clypeus and labrum excluded) and as wide as long, with the maximum width at the apical third (greatest width 0.72-0.81 mm, holotype 0.76; minimum width 0.45-0.52 mm, holotype 0.48); sides gently arcuate in the apical half, more gradually sinuate narrowing towards the base; front angles markedly protruding, elongate, sharpened and almost hooked at the tip, hind angles acute, truncate at the tip; lateral borders fine, sharp, weakly and irregularly serrulate; lateral grooves regularly continuing onto apex and base; basal foveae deep, after the crossing between lateral grooves and basal transverse sulcus. Marginal setae present, of the same length; the apical ones situated before the first-fifth of the length, the basal ones at the posterior fifth, before the hind angle, at the minimum width. Scutellum distinct.

Elytra elongate (length, along the mid-line, 2.40-2.59 mm, holotype 2.45) pear-shaped, wide twice than prothorax, with maximum width (1.34-1.53 mm,



Figs. 15-19 - *Sbordoniella indagi* Vigna Taglianti, 1980, male holotypus: aedeagus, left (15) and dorsal (16) sides; id., female paratypus: gonapophysis (17), labrum (18) and labium with maxilla (19).

holotype 1.39) at apical third, gently narrowing towards the base and the apex; slighly convex, with flattened basal and humeral area; oblique prehumeral borders, not distinct shoulders, narrowly rounded apices; side borders complete from basal peduncle to the apical lobe; striae shallow, vanishing at the sides and at the apex; the inner four striae more complete and deeper; basal pore present; two setiferous dorsal pores present on stria 3, the anterior one before the fore third, the posterior one clearly before the apical third; preapical pore present; two apical pores present, slightly internal to the recurrent stria; marginal series of umbilicate pores not aggregate, as shown in Fig. 14: the first and the second pore adjoining the marginal gutter, the third and the fourth a little distant from gutter; all three anterior pores close to each other, equidistant; the fourth more distant (twice the distance between the previous), and more displaced from the gutter, posterior to the level of first discal seta; fifth and sixth very close to each other, the sixth adjoining the gutter, posterior to the level of second discal seta; seventh and eighth at a similar distance to each other, at the apical sixth of elytron, the eigth adjoining marginal gutter, posterior to the level of preapical seta.

Ventral surface with sternites 4-7 pubescent, transversely microsculptured; 4-6 with one pair of median setae; sternite 7 with one pair of longer and more lateral setae, in male, and with two pair of similar setae, the outer being a little longer than inner ones, in female.

Legs very long and slender, distinctly and densely pubescent; fore tibiae not sulcate; tarsi slender, pubescent on dorsal side; first tarsal segment in male distinctly dilated, clearly denticulate at the apico-internal corner.

Aedeagus relatively large (total length 0.65 mm, holotype; 0.62 mm along the ventral line of median lobe), short and stout in lateral view (Fig. 15), with median lobe regularly curved, rounded at apex; parameres short, both with 4 apical setae; inner sac with hyaline scales and a large, well sclerified copulatory piece (total length 0.30 mm, holotype) rounded at apex, strongly tickned on ventral margin and a diagonal line on the right side; in dorsal view (Fig. 16), the median lobe is thin, laterally compressed, sinuate, with rounded apex, deversed on the left side.

Female genital appendages (Fig. 17) without peculiar features; penultimate segment of gonostyli with two subapical spines on dorsal surface, and one subapical spine on ventral side; apical segment gently curved, with two dorsal (inner and outer) spines and ventral sensorial fovea, with two thin hairs.

DERIVATIO NOMINIS

The generic name is in honour of Prof. Valerio Sbordoni, a good friend of us and organizer and companion (with A.V.T.) of the biospeleological expedition in 1973, during which the new taxon was found. The species name is after one of the Turkish names (In Dag) of the cave of discovery.

ECOLOGICAL NOTES

The type locality, In Dag (or In Dagi) cave (= Koca In, or Kocain magarasi, or "grotta Ulisse Aldrovandi"), is a very big cave about 45 km North of Antalya. It can be reached along the road Antalya-Burdur, about 10 km North of Dosemealti, and, on the right side, along a small road to Camili, Killik and Ahirtas. From Ahirtas köyü, 500 m high, by two hour of walking, one can reach the cave, 788 m high, on the southern slopes of the top of In Dagi (= the mountain of the cave), 1171 m.

This cave is a big one (the Turkish name Koca In means exactly "big cave"), well known and of great prehistorical interest; its extension is more than 300 m, with very large halls, where some stalagmites are about 30-40 m high (Aygen, 1984).

In Dagi cave was explored by Italian speleologists (Circolo Speleologico Romano) in 1956, 1973, 1976 (see Vigna Taglianti and Zapparoli, 1999: Figs. 12, 15), and by Turkish ones since 1972. Only in the visit of 1973, the four specimens of the type series were collected, free walking on the surface of the big stalagmites dividing the two main halls, by V. Sbordoni. In the same locality, the species was more recently found, in 1994, by the German speleologist H. Hirschfelder, and given to our colleague T. Assmann.

The type series specimens were parasitized by *Rhacomyces gratiellae* W. Rossi, 1978, a Laboulbeniales fungus, well isolated among all other previously known Laboulbeniales species of the genus. It is noteworthy that, by contrast, the other highly specialized, Turkish aphaenopsoid trechine, *Kosswigia insularis*, of which some specimens were collected in the expeditions of 1967 (by V. Sbordoni) and 1973 (by A.V.T.), were parasitized by another species, *Laboulbenia vignai* W. Rossi, 1978, also well isolated among the previously known species of the genus (Rossi, 1978).

REMARKS

Both, *Kosswigia insularis* Jeannel, 1947, from the cave of the Aci Akif island in Beysehir lake (Jeannel, 1947a, 1947b), and *Sbordoniella indagi* Vigna Taglianti, 1980, from the In Dag cave, are known only from their type localities, in South-West Anatolia. They are the most highly specialized carabids species of the whole Anatolian cave fauna.

The two strictly related genera clearly belong to the *Neotrechus* line, as some Eastern Alps and Balkanian genera, and as some Caucasian and Kolkhidian genera. As hypotized by Vigna Taglianti (1973, 1980), it is possible to consider these highly specialized taxa as the results of local cladogenetic phaenomena, from northern ancestors of the *Neotrechus* line. Possibly, the ancestors displayed a lesser degree of "troglomorphosis", as in the endogeous species of the genus *Anillidius* Jeannel, 1928, spread in Western Anatolia, or in *Pontodytes cavazzutii* Casale & Giachino, 1989 of North Anatolia, or in *Troglocimmerites pasquinii* Vigna Taglianti, 1977 of North-East Anatolia, and in related species and genera of the *Cimmerites* complex from Caucasus and Crimea (see Belousov, 1998). Such interpretation agrees with the presence of other lines of Trechini with northern affinities in the southwestern Anatolia (Taurus chain), as hypotized by Casale and Vigna Taglianti (1984).

103.006.0 **Duvalius (Duvalius) bruschii** Vigna Taglianti, n. sp.
(*Duvalius bruschii* Vigna Taglianti, 1980: 168, nomen nudum)

Also this interesting cave dwelling Trechine, found many years ago in North West Anatolia, was named and discussed, from the phylogenetic and biogeographic points of view, by one of us (A.V.T.) at the Conference on Evolution of Cave and Endogeous Coleoptera, held in Moulis (Saint-Girons, Ariège) in September 1979 by the "Société de Biospéologie" (Vigna Taglianti, 1980): the description, and figures, of the new species, for various reasons, were never presented.

DIAGNOSIS

A specialized trechine of the "isotopic" *Duvalius* genus, of subgenus *Duvalius* s. str., completely eyeless, glabrous and shiny, 5 mm long, with a big head and strongly convex elytra, subparallel at sides, with marked round shoulders. Long and narrow median lobe of aedeagus, regularly and gently arcuate, short parameres with 4 apical setae, and a symmetrical, bilobate, hyaline and feebly sclerified, copulatory piece.

Easily distinguishable, by the above characters, from all other previously known Near East *Duvalius* species.

EXAMINED MATERIAL

Holotype ♂, labelled: "Turchia, vil. Zonguldak, Eregli, 80 m, Oglan Kis magarasi, 2.VIII.1976, A. Vigna leg.", genitalia on slide C605 (AVT); 2 Paratypes, same locality, "22.X.1974, A. Vigna leg.": 1 ♀, with genitalia on slide C604 (AVT), 1 ♀ (CA).

DESCRIPTION

A *Duvalius* s. str. species, showing, at a medium degree, morphological adaptive modifications to the cave environment (Fig. 20). Medium sized, with elongated antennae and legs, narrow cordate pronotum and subparallel, convex elytra; pubescence absent (except a few very short hairs on genae); inner wings totally reduced. Colour reddish, testaceous; surface relucent and shiny; microsculpture reduced, in fine polygonal meshes transversely stretched, on head; vanishing, with fine transverse meshes, on pronotum; fine lines on elytra.

Total length 4.40-4.50 mm (holotype 4.50) from apical margin of clypeus to apical margin of elytra; TL 4.90-5.05 mm (holotype 5.05).

Head stout, somewhat globose (length, from apical margin of clypeus to apical margin of pronotum, 0.96-1.05 mm, holotype 1.05), as long as prothorax (mandibles excluded), enlarged (greatest width, before level of the second frontal seta, 0.91-0.96 mm, holotype 0.96), with a clear neck constriction; frontal furrows complete, posteriorly divergent; eyes completely vanished; genae enflated, with few very short hairs; two pair of frontal setae, well behind the level of ocular oblique sutura, and in the posterior half of frontal furrows, in oblique, posteriorly convergent, lines; two pairs of short setae above the antennal base; clypeus with right margin, and with four setae, the outers being longer and stronger; labrum gently emarginate at the apex, with six setae, the outers longer, the inner ones shorter and thin. Mandibles thick, clearly bidentate, as in the

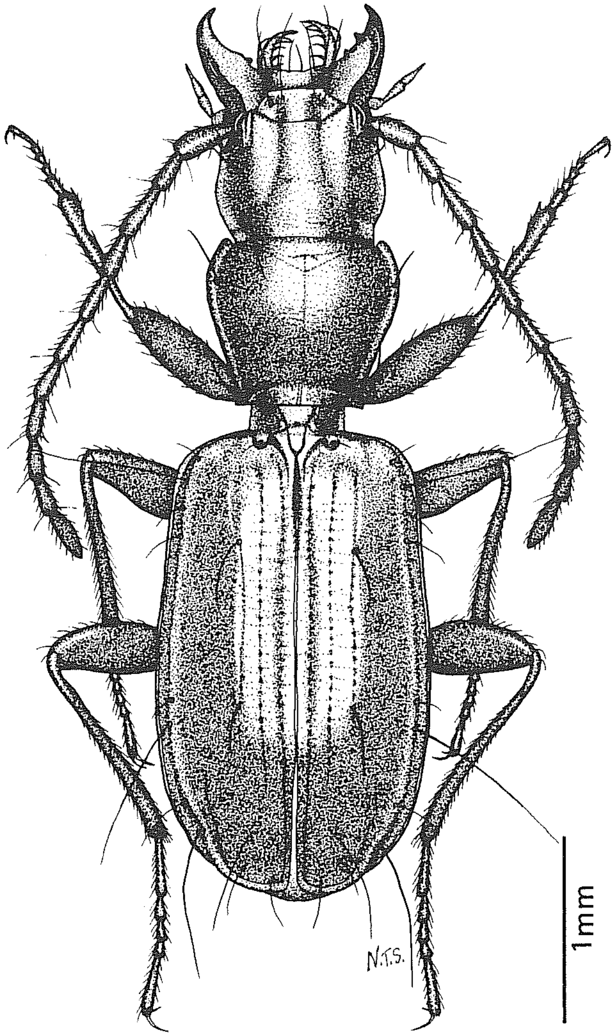


Fig. 20 - *Duvalius bruschii* Vigna Taglianti, n. sp.: female paratypus, habitus.

genus, strongly arcuate and acute at apices. Labium articulated; mentum with a porrect tooth in apical emargination, bifide at the tip; two distal setae, at the base of the tooth, and a series of six prebasilar setae, the intermediate longer and stronger. Ligula, palpi and maxillae as in the genus. Antennae long (2.88-3.12 mm, holotype 3.12) and slender, reaching the half of the elytral length; scape is the thickest of all segments, second the shortest, third the longest; scape has setae, not pubescence; second is pubescent on apical half; all the following are similar in thick pubescence, and, from fourth, in length.

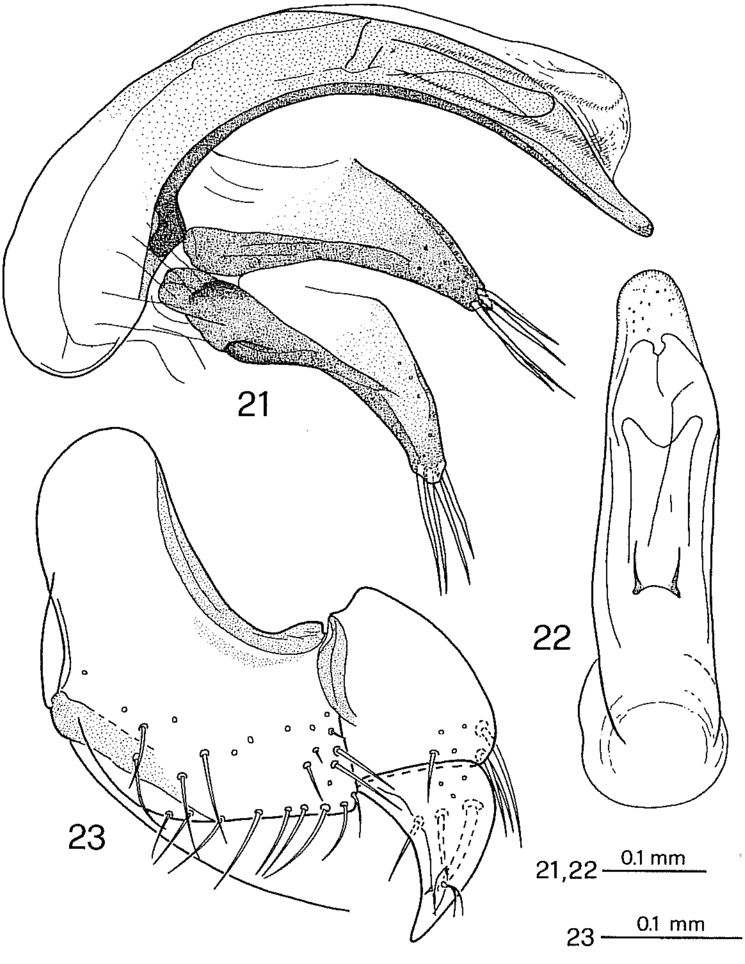
Prothorax short (length, along the mid-line, 0.91-0.93 mm, holotype 0.93); pronotum cordate, convex, a little wider than long, with the maximum width at the apical third (greatest width 1.05-1.12 mm, holotype 1.12; minimum width 0.69-0.72 mm, holotype 0.72); sides gently arcuate in the apical half, more gradually sinuate narrowing towards the base; front angles protruding, subacute at the tip, hind angles sharp and acute, emarginate at the base; lateral borders fine, sharp; lateral grooves regularly continuing onto apex and basal emargination; basal foveae deep, after the crossing between lateral grooves and basal arcuate transverse sulcus. Marginal setae present, of the same length; the apical ones situated before the first-fourth of the length, the basal ones at the hind angle. Scutellum distinct.

Elytra elongate (length, along the mid-line, 2.66-2.73 mm, holotype 2.73), wider than prothorax (3: 2), with maximum width (1.51-1.56 mm, holotype 1.56) at the apical third; strongly convex, with a median depression along the suture and a short humeral depression at the base of 5 striae; straight prehumeral borders, marked and rounded shoulders, narrowly rounded apices; subparallel, gently sinuate at the basal fourth, and a little enlarged posteriorly, towards the apical third; side borders complete from basal peduncle to the apical lobe; striae shallow, vanishing at the sides and at the apex; the inner three striae more complete and deeper, punctate; basal pore present; two setiferous dorsal pores present on stria 3, the anterior one at the fore fourth, the posterior one clearly before the apical third; preapical pore present; two apical pores present, slightly internal to the recurrent stria; marginal series of umbilicate pores aggregate, all in marginal gutter, as shown in Fig. 20: the four pores of the humeral group close to each other, equidistant; fifth and sixth, close to each other, at the same distance from the previous, at the level of the second discal seta; seventh and eighth at a similar distance to each other, at the apical fifth of elytron, the eighth at the level of preapical seta.

Ventral surface with sternites 4-7 glabrous, finely transverse microsculptured; 4-6 with one pair of median setae; sternite 7 with apex pointed, transversely impressed, with one pair of longer and more lateral setae, in male, and with two pair of similar setae, the outer being a little longer than the inner ones, in female.

Legs slender, distinctly pubescent; femora gently inflated; fore tibiae not sulcate; tarsi slender, pubescent on dorsal side; basal two tarsal segments in male distinctly dilated, clearly denticulate at the apico-internal corner.

Aedeagus small (total length 0.62 mm, holotype; 0.56 mm along the ventral line of median lobe), slender elongate in lateral view (Fig. 21), with median lobe regularly curved, rounded at apex; parameres short, both with 4 apical setae; inner sac with a little, thin, hyaline copulatory piece (total length 0.17 mm, holotype), ventrally placed, symmetrically bilobed at apex, a little ticked at the base; in dorsal view (Fig. 22), the median lobe is parallel side, flattened, feebly sinuate, with rounded apex, deversed on the right side.



Figs. 21-23 - *Duvalius bruschii* Vigna Taglianti, n. sp., male holotypus: aedeagus, left (21) and dorsal (22) sides; id., female paratypus: gonapophysis (23).

Female genital appendages (Fig. 23) without peculiar features; penultimate segment of gonostyli with two subapical spines on dorsal surface, and one subapical spine on ventral side; apical segment gently curved, with three dorsal spines and ventral sensorial fovea, with two thin hairs.

DERIVATIO NOMINIS

The name is in honour of our dear friend Dr. Sandro Bruschi, companion in a lot of "carabological" expeditions in Anatolia, and in particular in the trips in 1974 and 1976 (with A.V.T.), during which some caves along the Pontic chain were explored and the new taxon was found.

ECOLOGICAL NOTES

The type locality, Oglan Kis magarasi, is a little cave that can be reached by a trail from Eregli Karadeniz (vil. Konguldak), in the Insirti valley. The cave, about 80 m asl, well known and of historical interest, is only about 20 m long, with a small entrance and a wide hall and a pool of fresh water on the ground.

This cave was explored in 1954 by H. Coiffait, who made also a sketch of the cave (Coiffait, 1959: 441, Fig. 24), without relevant biospeleological results. Two females were found in the clay near the pool, in the exploration by one of us (A.V.T.) in 1974, and one male in 1976. The associated fauna is also interesting, with an undescribed *Niphargus* species (Amphipoda, Gammaridae) in the water, some Gastropoda, Isopoda Oniscidea, Araneae, Chilopoda, and Diplopoda Iulomorpha and Glomeromorpha, also belonging to new taxa, specialized to the subterranean environment.

REMARKS

Duvalius bruschii Vigna Taglianti, n. sp., from the cave Oglan Kis magarasi near Eregli, is at present known only from the type locality, on the Black Sea coast. Among the species-groups of the subgenus *Duvalius* s. str., the new species is probably to be referred to the *krueperi*-group (sensu Casale et al., 1996), for the morphological characters set.

The previously known *Duvalius* species from Anatolia belong to other groups. *Duvalius bicikensis* Perraul, 1971, from Kulakkaia (vil. Giresun) in the eastern Pontic chain, was previously considered as belonging to the subgenus *Duvaliotes*, in the *pilifer*-group (Perrault, 1971; see also Vigna Taglianti, 1973). In more recent interpretations (Vigna Taglianti, 1980; Casale and Vigna Taglianti, 1984; see also the checklist in Appendix 2), *D. bicikensis* is to be ascribed to the subgenus *Duvalius* s. str. It may represent a less specialized species, in forest environments, spread easternwards along the Pontic chain, of the same line, with Balkan-Anatolian northern affinities, like the cave specialized *Duvalius bruschii*.

Duvalius armeniacus Casale, 1979, from Borçka (vil. Artvin) clearly belongs to the subgenus *Duvalius* s. str., in the *antoniae*-group (Casale, 1979; Vigna Taglianti, 1973, 1980; Casale and Vigna Taglianti, 1984), an Armeno-E-Anatolian endemic line; *Duvalius heinzi* Casale & Giachino, 1991, from Tanin geçidi, W of Uludere (vil. Hakkari) clerly belongs to the same species-group, to which also *Duvalius martinae* Jeanne, 1996, from Yucarilarnica (vil. Van), must be referred (Jeanne, 1996).

Duvalius huetheri Jeannel, 1934, from Ferzen magarasi and many other caves in the karstic areas of Seydisehir, Sugla and Kembos (vil. Konya), in southwestern Anatolia, was considered as belonging to the subgenus *Trechopsis*, with West-Mediterranean relationships, by Jeannel (1934a, 1934b) and Coiffait (1973). *Trechopsis* is possibly an ancient line with circum-mediterranean range (spread in North Africa, Eastern Spain, Baleares islands, Apennines, Sardinia, Sicily, South Balkans, Greece, Crete), with clear "southern" affinities in the southwestern Anatolian fauna, within *Duvalius* s. str., of which it is a junior synonym (see Vigna Taglianti, 1980: 168).

Duvalius bortesii Casale & Vigna Taglianti, 1984, from a little pot hole in Kocaçay valley, near Kemer (vil. Mugla), belongs to the subgenus *Duvaliotes*: by contrast, this is a clear line with "northern" affinities in the southwestern Anatolian fauna (see Casale and Vigna Taglianti, 1984).

133.002.0 **Laemostenus (Antisphodrus) longicornis** Casale, 1988
(*Antisphodrus sbordonii* Vigna Taglianti, i.l. 1980: 169, nomen nudum)
(*Laemostenus (Antisphodrus) sbordonii*, Casale, 1988: 605, nomen nudum)

This species has been described from a single female from a cave near the Irmasan Pass (Casale, 1988: 608). Only recently it was identified with "*Antisphodrus sbordonii* Vigna Taglianti, i.l." cited as nomen nudum by Vigna Taglianti (1980: 169) and by Casale (1988: 605), known on one male from the cave of Demirci Dükkanlan, near Akseki, 29.IV.1973, V. Sbordoni leg. (Fig. 24) and one female from a pit near Dikmen (Akseki, at 900 m of hight), 29.IV.1973, V. Sbordoni leg. (AVT). Subsequently, two males have been examined, from the Akyarlar magarasi [=cave], Antalya-Kemer, 16.VI.1998, F. Gasparo leg., and from a cave near Akseki, m 1100, 21.VI.1990, P.F. Cavazzuti leg., respectively (CA).

Morphological characters of all these specimens agree with those of the holotype (Casale, 1988: Figs. 870-871). Description of the species is completed as follows: male, antennae very long, exceeding with five antennomeres the base of pronotum, and reaching the apical 3rd or 4th of elytra. Aedeagus: median lobe and parameres as in figs 25-28.

133.003.0 **Laemostenus (Antisphodrus) patrizii** Vigna Taglianti, n. sp.
(*Antisphodrus patrizii* Vigna Taglianti, i.l. 1980: 169, nomen nudum)
(*Laemostenus (Antisphodrus) patrizii*, Casale, 1988: 605, nomen nudum)

DIAGNOSIS

A medium sized, micropthalmic, ferrugineous to brown *Laemostenus (Antisphodrus)* species of the *bodemeyeri* species group (sensu Casale, 1988), close to *L. (A.) longicornis* Casale, 1988, from which is mostly recognized by the larger size, the presence of a few (1-3) additional setae on antennomere 3, and the much more elongate pronotum. Median lobe of aedeagus with apex shorter and wider, subtruncate.

EXAMINED MATERIAL

Holotype ♂, labelled: "Turchia, vil. Antalya, Dosemealti, Yagca, 300 m,

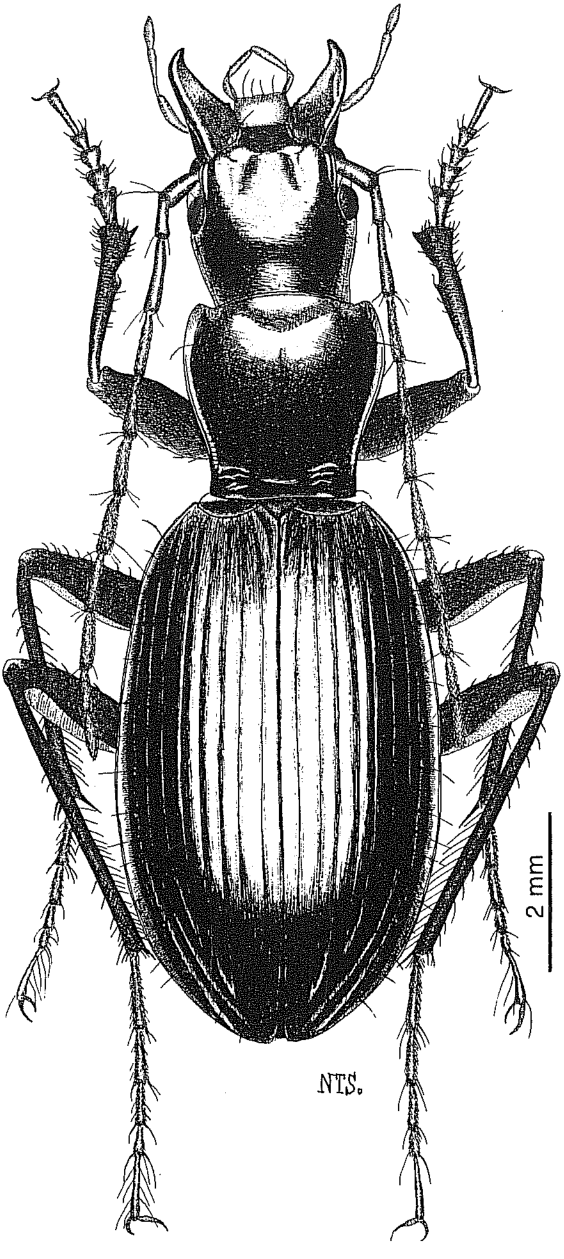
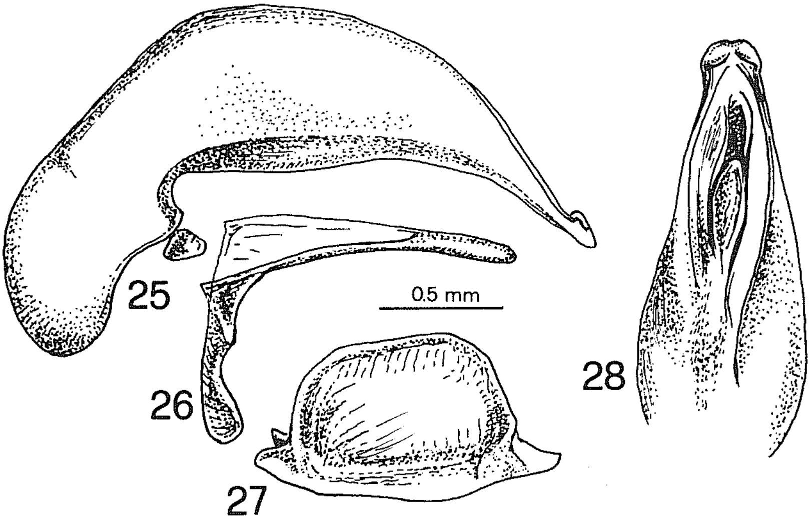


Fig. 24 - *Laemostenus (Antisphodrus) longicornis* Casale, 1988, from the cave Demirci Dükkanlan, near Akseki (vil. Antalya) : habitus of a male specimen.



Figs. 25-28 - *Laemostenus (Antisphodrus) longicornis* Casale, 1988, from the cave Akyaslar magarasi (Antalya-Kemer), male genitalia features: median lobe, left side (25), right paramere (26), left paramere (27), median lobe, dorsal side (28).

Mustan Ini, 30.IV.1973, V. Sbordoni leg." (AVT); paratypes: 1 ♂, 1 ♀, remains of 1 specimen, same as holotype (AVT, CA); 1 ♂: "piccola grotta In Dagh, 9.VIII.1956, S. Patrizi" (AVT); 1 ♀: "grotta presso In Dag, 30.IV.1973, V. Sbordoni leg." (AVT); 2 ♂♂: "Yeniköy, Karain magarasi, 16.VII.1988, G. Gardini and S. Zoia leg." (AVT, SCI); 1 ♂: "Yeniköy, Karain magarasi, 25.IX.1998, L. Latella and M. Lucarelli leg." (AVT).

DESCRIPTION

TL medium: 13.5-15.0 mm; MW: 4.5-4.9 mm; LP/WP: 1.1; LE/WE: 1.62.

Habitus as in Fig. 29. Colour fully reddish to dark brownish; elytra without bluish reflection. Surface shining, elytra slightly sericeous. Microsculpure isodiametric, vanished on head; pronotum with transversal, almost vanished microlines; elytra with distinct, isodiametric meshes.

Head elongate, convex; genae long, slightly oblique; neck constriction shallow but evident; eyes small, as long as 2/3 of genae, slightly prominent outside; two supraorbital setae on each side present; frontal impressions short and deep; with shallow transversal wrinkles often extended to the frons; antennae long, exceeding with five to six antennomeres the base of pronotum; antennomere 3 with a few (1-3) short accessory setae in addition to the apical fixed setae.

Pronotum elongate-cordate, longer than wide, its maximum width at the anterior fourth; lateral sides narrowly beaded, regularly sinuate and reflexed in the basal third and constricted to the basolateral angles, which are right or acute;

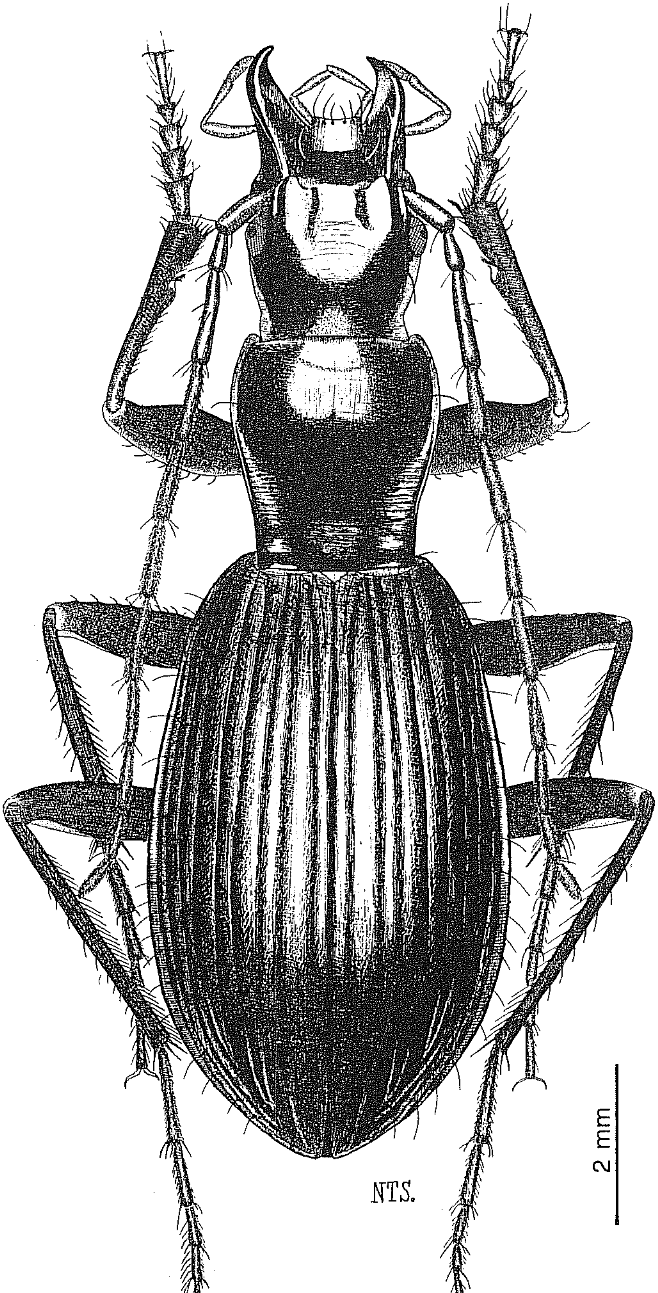
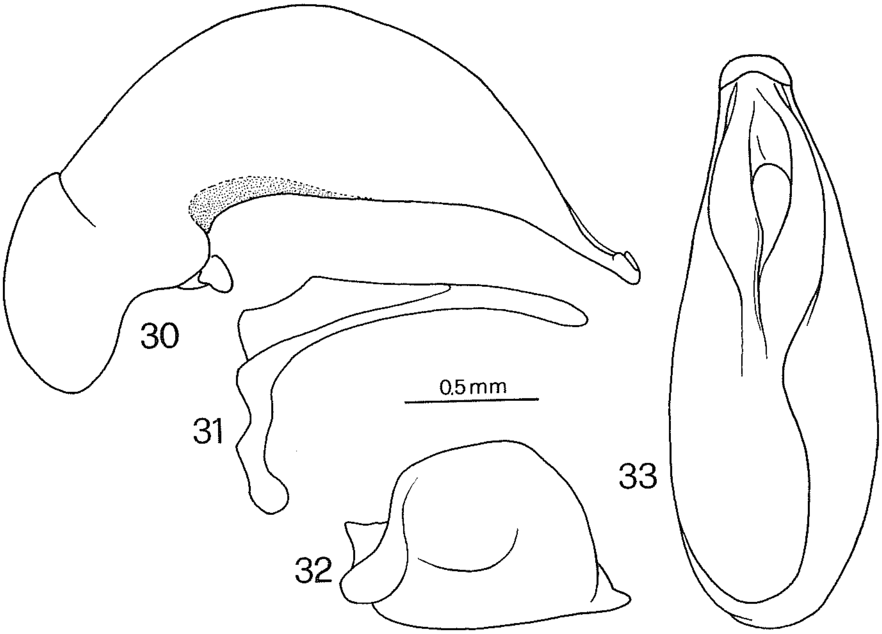


Fig. 29 - *Laemostenus (Antisphodrus) patrizii* Vigna Taglianti, n. sp.: male holotypus, habitus.



Figs. 30-33 - *Laemostenus (Antisphodrus) patrizii* Vigna Taglianti, n. sp.: male holotypus, genitalia features: median lobe, left side (30), right paramere (31), left paramere (32), median lobe, dorsal side (33).

anterolateral angles prominent; basal margin fully beaded. Disc with shallow transversal wrinkles; median furrow deep; basal impressions elongate, rather deep, each with some tranversal deep rugae extended to the basal third of the lateral furrow; anterolateral and basolateral setiferous pores inserted as in Fig. 29.

Mesosternum denticulate in front of mesocoxae.

Elytra ovate, basally narrow, widened at the distal third, very convex. Base almost straight; basal ridge slightly incavate, humeral angle rounded, humeral tooth almost vanished. Striae deep, smooth or vaguely punctate; intervals flat or subconvex, the even distictly wider than the odd. Chaetotaxy: basal pore present; umbilicate series with 16-18 setiferous punctures, interrupted at the middle; 1-2 setae at apex of stria 7.

Legs long and slender; profemora each with three-five long setae along the outer margin of the ventral side; metatibiae each with numerous apical yellow reddish setae; tarsomeres with long, strigose dorsal pubescence; males with fore tarsomeres 1-3 dilated and with ventral, biseriate adhesive vestiture. Tarsal claws with traces of a few (3-4) basal teeth along their inner margin.

Male genitalia (Figs. 30-33): aedeagus with median lobe short, arcuate, inflated at its basal third; apex very short, subtruncate, slightly prominent on the dorsal side. Right paramere rounded apically; left paramere with short apical membranous lobe.

DERIVATIO NOMINIS

Dedicated to the memory of the active biospeleologist Saverio Patrizi, who organized one of the first Italian biospeleological expeditions to Anatolia, and collected the first specimen of this species in 1956.

DISTRIBUTION AND ECOLOGY

A specialized hypogean species, known from some caves near Antalya, in the Western Toros, associated with several endemic subterranean elements, such as the trechine carabid *Sbordoniella indagi*, illustrated above.

REMARKS

Laemostenus (Antisphodrus) patrizii n. sp. is closely related to, and adelphotaxon of *L. (A.) longicornis* Casale, 1988, of which represents the western geographic vicarious. The diagnostic features stressed above, and the annexed figures, allow to recognize each other.

133.004.0 **Laemostenus (Antisphodrus) zoiai** Casale & Vigna Taglianti, n. sp.

DIAGNOSIS

A medium sized, depigmented, microphthalmic *Laemostenus (Antisphodrus)* species of the *bodemeyeri* species group (sensu Casale, 1988), very distinct from all related species known so far by the very reduced but prominent eyes, the very elongate, narrow, parallel sided head and pronotum, markedly contrasting with the relatively short, ovate, punctato-striate elytra, and by the long and smooth tarsal claws.

EXAMINED MATERIAL

Holotype ♀, labelled: "Turchia, vil. Mersin (= Içel), Anamur, Kösen Bürkü magara, 12.VII.1988, S. Zoia leg." (SCI).

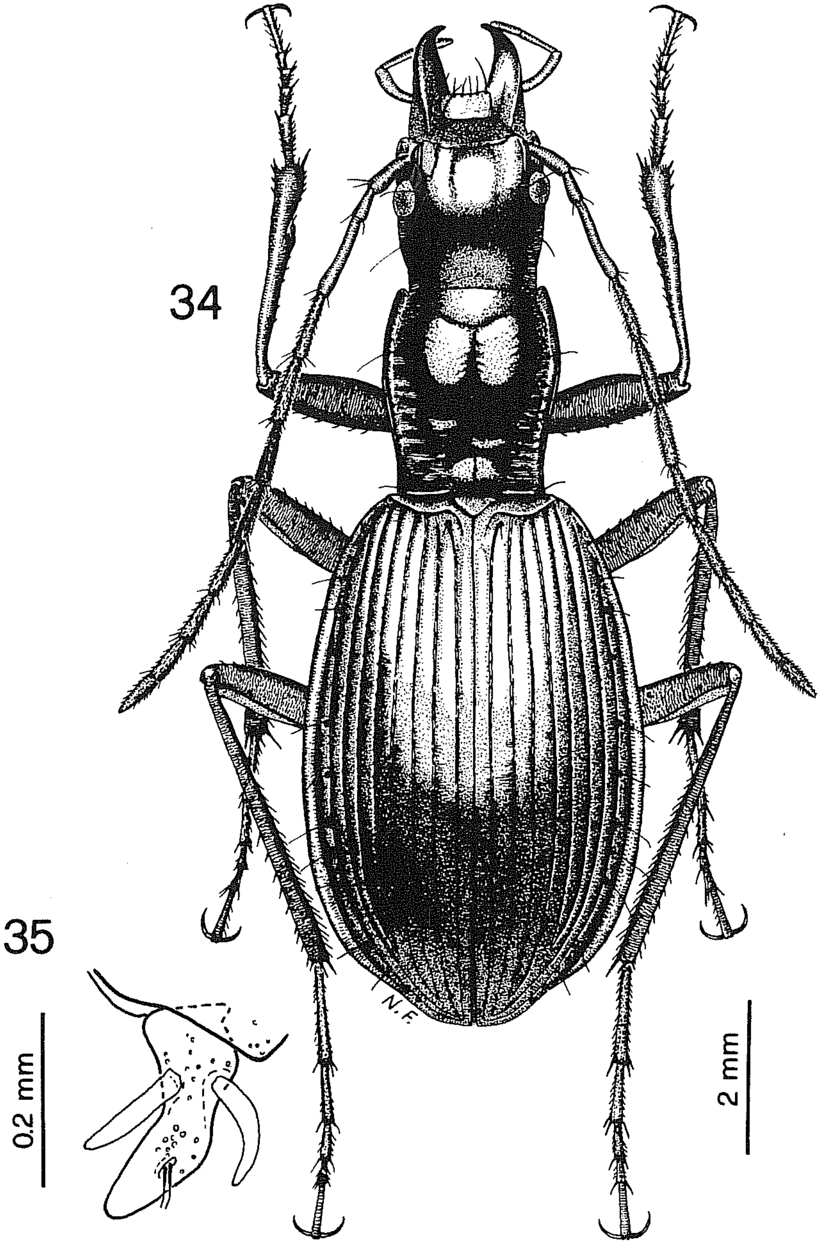
DESCRIPTION

TL: 12.9 mm; MW: 4.3 mm; LP/WP: 1.2; LE/WE: 1.50.

Habitus as in Fig. 34. Colour ferrugineous; head and pronotum slightly darkened, brown reddish. Surface shining, elytra slightly sericeous. Microsculpure: head and pronotum with transversal, almost vanished microlines, elytra with distinct, isodiametric meshes.

Head elongate and narrow; genae parallel sided, neck constriction inconspicuous; eyes very small, as long as 2/3 of genae, but prominent outside; frontal impressions very short and deep; mandibles long, straight; antennae long, exceeding with five antennomeres the base of pronotum; antennomere 3 without accessory setae in addition to the long, apical fixed setae.

Pronotum elongate and narrow, parallel sided, distinctly longer than wide, its lateral sides narrowly beaded and slightly constricted to the basolateral angles,



Figs. 34-35 - *Laemostenus (Antisphodrus) zoiai* Casale & Vigna Taglianti, n. sp.: female holotypus, habitus (34), and right stylomeres 1-2 (35).

which are right, evident; anterolateral angles small but acute and prominent; basal margin beaded at sides only. Disc with shallow transversal wrinkles; median furrow very deep; basal impressions small, deep, each with some deep punctures extended to the lateral furrow; anterolateral setiferous pores inserted anteriorly to the maximum width of the pronotum.

Mesosternum denticulate in front of mesocoxae.

Elytra ovate, convex. Base narrow, straight; basal ridge slightly incavate; humeral angle evident, humeral tooth vanished. Striae deep, punctate; intervals flat. Chaetotaxy: basal pore present; umbilicate series with 18-19 setiferous punctures, interrupted at the middle; 1 seta at apex of stria 7.

Legs very long and slender; metatibiae each with a few, apical yellow reddish setae; tarsomeres with dorsal pubescence long, strigose. Tarsal claws smooth along their inner margin.

Female stylomeres as in Fig. 35. Male unknown.

DERIVATIO NOMINIS

Dedicated to our friend and active biospeleologist Stefano Zoia, who collected the only known specimen of this specialized, interesting species.

DISTRIBUTION AND ECOLOGY

A subterranean, highly specialized species, known so far only from a cave in the Central Toros chain, close to the Mediterranean coast of Anatolia.

REMARKS

The peculiar morphological features, stressed in the diagnosis, make the species described above unmistikable among the related species of the *bodemeyeri* species group. In particular, owing to some adaptive characters, such as the general shape of the body and the fully smooth tarsal claws, *Laemostenus (Antisphodrus) zoiai* is the most specialized hypogean species known so far from Anatolia. For further comments, see above.

133.005.0 **Laemostenus (Antisphodrus) agnolettii** Vigna Taglianti, n. sp.

(*Antisphodrus agnolettii* Vigna Taglianti, i.l. 1980: 169, nomen nudum)
(*Laemostenus (Antisphodrus) agnolettii*, Casale, 1988: 605, nomen nudum)

DIAGNOSIS

A medium sized, dark reddish brown *Laemostenus (Antisphodrus)* species of the *bodemeyeri* species group (sensu Casale, 1988), related to *L. (A.) cyrili* Lassalle, 1997, from which is recognized by the absence of setiferous occipital pores (present in *cyrili*), the more cordate pronotum; the shorter, slightly bluish elytra, the striae of elytron superficial and shallow, the tarsal claws smooth. Median lobe of aedeagus with apex more developed and more prominent on the dorsal side.

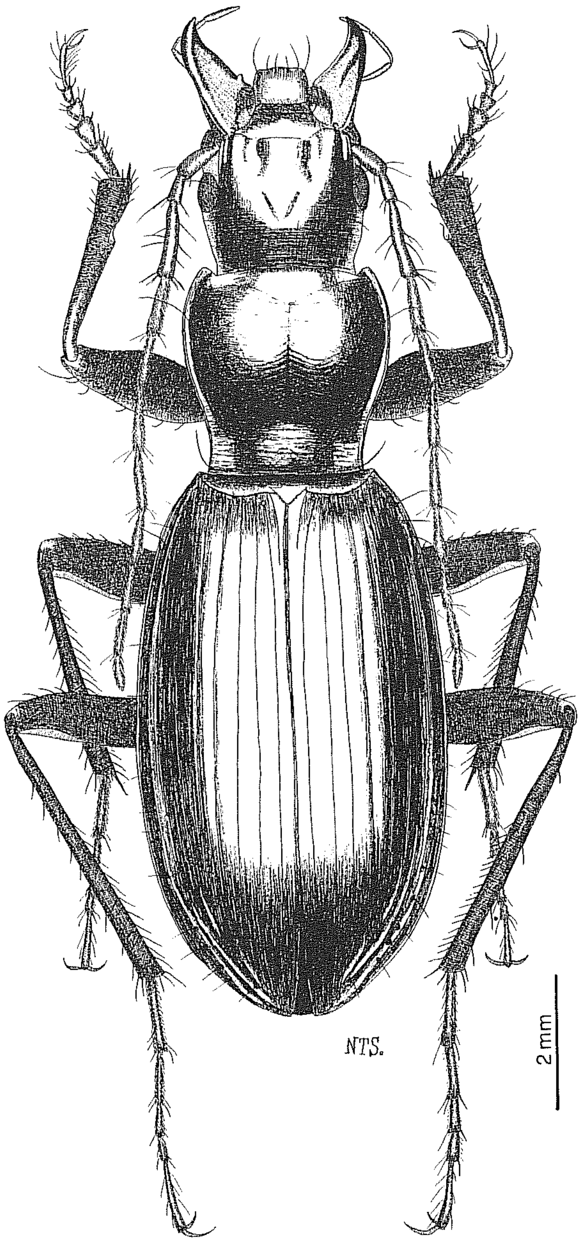


Fig. 36 - *Laemostenus (Antisphodrus) agnolettii* Vigna Taglianti, n. sp.: male holotypus, habitus.

EXAMINED MATERIAL.

Holotype ♂, labelled: "Turchia, vil. Konya, Seydisehir, 1410 m, Ferzen magarasi, 23.IV.1973, P. Agnoletti leg." (AVT).

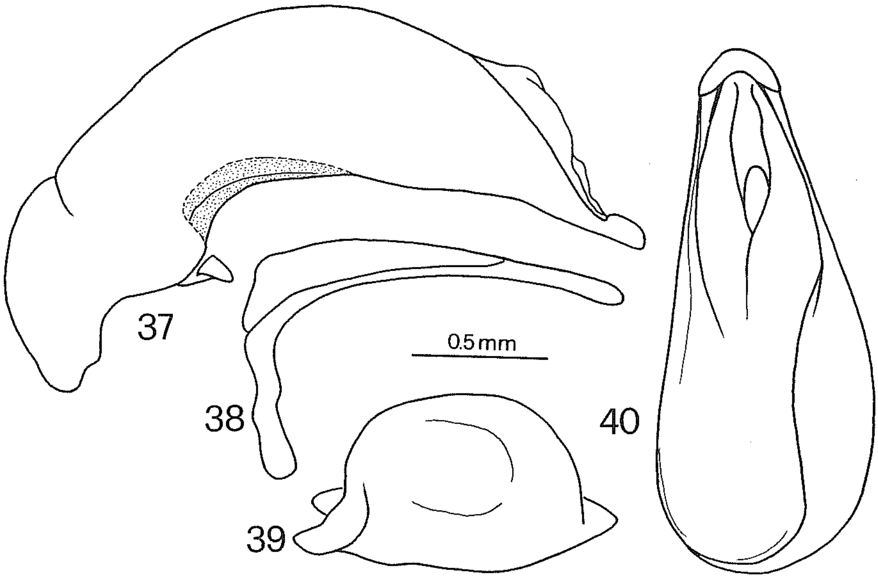
DESCRIPTION

TL medium: 15.8 mm; MW: 4.6 mm (male holotype); LP/WP: 1.0; LE/WE: 1.65.

Habitus as in Fig. 36. Colour reddish brown; elytra darkened, with vague bluish reflections; labrum, palpomeres, apical antennomeres and tarsomeres reddish. Surface shining, elytra slightly sericeous. Microsculpure: head and pronotum with transversal, almost vanished microlines, elytra with distinct, isodiametric meshes.

Head rather large and thickened, smooth; genae slightly oblique, neck constriction evident; eyes small, as long as 3/4 of genae, almost flat; two supraorbital setae on each side present; frontal impressions short and deep; antennae long, exceeding with five antennomeres the base of pronotum; antennomere 3 with several (7-9) long accessory setae in addition to the apical fixed setae.

Pronotum cordate, as long as wide, its maximum width at the anterior fourth; lateral sides narrowly beaded, deeply sinuate and constricted to the basolateral angles, which are acute, evident; anterolateral angles large, acute, prominent;



Figs. 37-40 - *Laemostenus (Antisphodrus) agnolettii* Vigna Taglianti, n. sp.: male holotypus, genitalia features: median lobe, left side (37), right paramere (38), left paramere (39), median lobe, dorsal side (40).

basal margin fully beaded. Disc convex, with shallow transversal wrinkles; median furrow superficial; basal impressions elongate, rather deep, each with some large and deep punctures extended to the basal third of the lateral furrow; anterolateral and basolateral setiferous pores inserted as in Fig. 36.

Mesosternum denticulate in front of mesocoxae.

Elytra elongate ovate, depressed. Base narrow, slightly incavate; humeral angle evident, humeral tooth reduced in size, not prominent. Striae very shallow, almost smooth; intervals flat, the even distinctly wider than the odd. Chaetotaxy: basal pore present; umbilicate series with 18 setiferous punctures, interrupted at the middle; 2 setae at apex of stria 7.

Legs moderately long and slender; profemora each with four-five long setae along the outer margin of the ventral side; metatibiae each with numerous apical yellow reddish setae; tarsomeres with dorsal pubescence long and moderately dense, not strigose; male with fore tarsomeres 1-3 dilated and with ventral, biseriate adhesive vestiture. Tarsal claws smooth along their inner margin.

Male genitalia (Figs. 37-40): aedeagus with median lobe short, arcuate, medially very inflated; apex very short, rounded, prominent on the dorsal side. Right paramere rounded apically; left paramere with developed apical membranous lobe.

Female unknown.

DERIVATIO NOMINIS

Dedicated to our friend and active speleologist Paolo Agnoletti, of the Circolo Speleologico Romano, member of many speleological expeditions in Anatolia, and companion (with A.V.T.) of the biospeleological expedition in 1973, during which he collected the only specimen known so far of the species herein described.

DISTRIBUTION AND ECOLOGY

A little specialized, occasionally troglophilic species, of which one specimen only is known from a cave frequently visited by biospeleologists. The closely related *Laemostenus (Antisphodrus) cyrili* and *L. (A.) lundbergi* seems to be strictly tied to the deep fissures in rocky soil and to the upper hypogean zone, respectively (Lassalle, 1997; Jeanne, 1996)). Probably, this is the same way of life of *L. (A.) agnolettii* here described: this fact could explain the lack of further specimens from the Ferzen magarasi cave, in spite of several investigations, since the famous by L. Weirather in summer 1933, in which *Duvalius huetheri* (Carabidae, Trechinae), *Huetheriella maximiliani* (Cholevidae, Leptodirinae), and *Spelaeacritus anophthalmus* (Histeridae, Abraeinae) were found (Jeannel, 1934a, 1934b).

REMARKS

Owing to morphological features of the body and male genitalia, *Laemostenus (Antisphodrus) agnolettii* n. sp. is closely related to, and adelphotaxon of *L. (A.)*

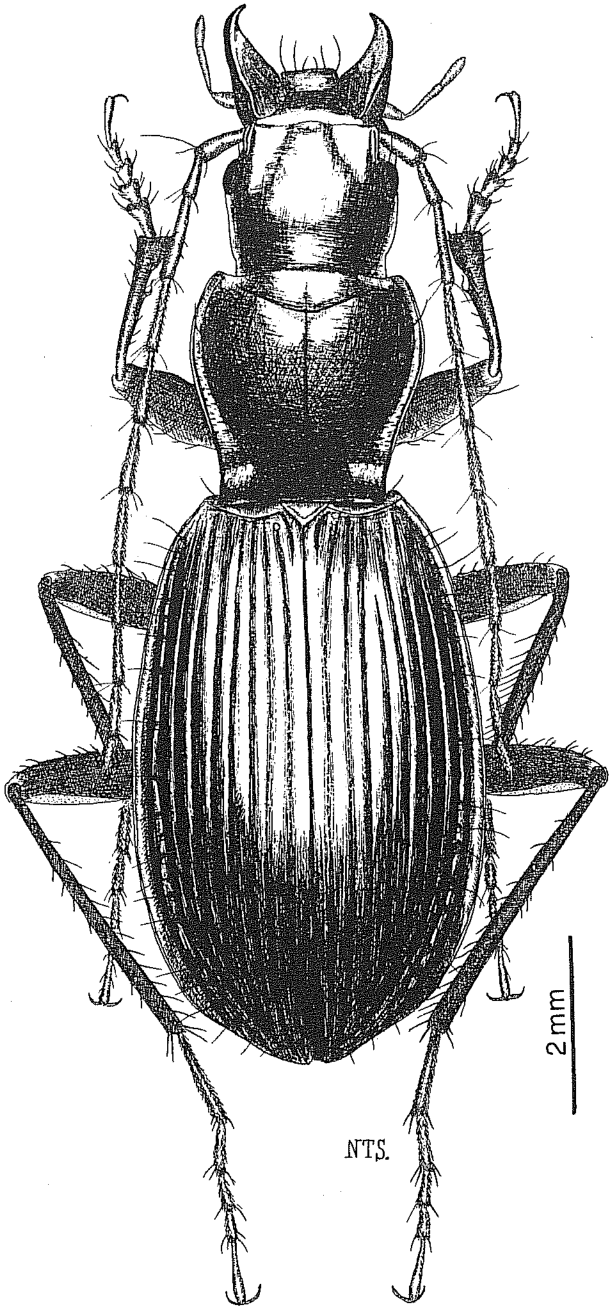


Fig. 41 - *Laemostenus (Antisphodrus) guzelolukensis* Lassalle, 1997, from the cave Cennet magarasi, near Silifke (vil. Içel): habitus of a male specimen.

cyrili Lassalle, 1997, recently described from the massifs along the southern shores of the Beysehir lake, not far from the type locality of *L. (A.) agnolettii*. Nevertheless, howing to several diagnostic characters stressed above, their appear markedly distinct each other at specific rank.

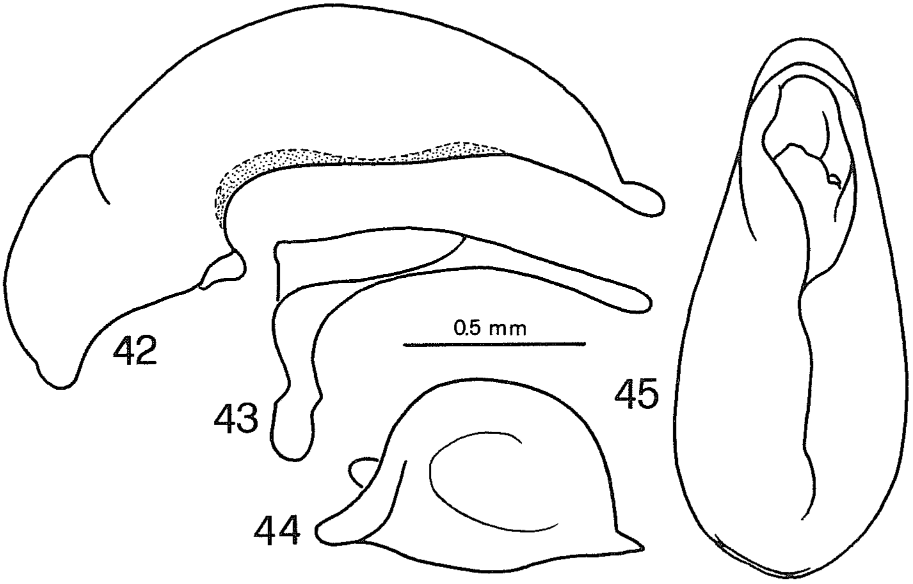
Close to the preceeding species, but both morphologically and geographically more isolated, is *Laemostenus (Antisphodrus) lundbergi* Jeanne, 1996, that presents accessory occipital setae and small basal teeth along the inner side of the tarsal claws (characters both present in *cyrili*, but absent in *agnolettii*). Of this species, we had the opportunity to examine one male and one female, labelled "Turchia, vil. Antalya, Irmasan geçidi, m 1525, 27.VI.90, Casale and Cavazzuti" (CA) (a locality cited already by Lassalle, 1997). The examination of male genitalia of *lundbergi* showed that their structure is very similar to that of *cyrili* and *agnolettii*, and that the apex of the median lobe is not so narrow as in the drawing provided by Jeanne (1996: Fig. 7), based probably on a teneral specimen.

133.008.0 **Laemostenus (Antisphodrus) guzelolukensis** Lassalle, 1997
(*Antisphodrus inferorum* Vigna Taglianti, i.l. 1980: 169, nomen nudum)
(*Laemostenus (Antisphodrus) inferorum*, Casale, 1988: 605, nomen nudum)

This species has been described from a male and a female from a cave near Guzeloluk (vil. Içel). Only recently we had the opportunity to establish its identity with "*Antisphodrus inferorum* Vigna Taglianti, i.l.", cited as nomen nudum by Vigna Taglianti (1980: 169) and by Casale (1988: 605), and known on a series of specimens labelled "TURCHIA, vil. Mersin (= Içel), Silifke, Cennet magarasi, 26.IV.1973, P. Brignoli leg.", 1 ♀; id. id., M. Di Rao leg., 4 ♂♂, 2 ♀♀; id. id., A. Vigna leg. 5 ♂♂, 6 ♀♀ (CA, SCI, AVT); and "Turchia, Vil. Mersin, dint. Silifke, Astim magarasi, 11.VII.1988, S. Zoia leg.", 8 ♂♂ (CA, SCI, AVT).

Morphological characters of all these specimens agree with the description furnished by Lassalle (1997). We believe however useful to provide some more detailed figures of habitus (Fig. 41) and male genitalia (Figs. 42-45) of this species, and to complete the description as follows: TL: 11.5-13.0 mm; antennomere 3 with a few (1-3) very short additional setae near the middle length; pronotum, basal margin beaded at sides; elytron, intervals flat or subconvex; aedeagus: median lobe and parameres as in Figs. 42-45.

Lassalle (1997), in his description, attributed this taxon to the *cavazzutii* species group sensu Casale (1988). We believe however, owing to a series of facts stressed below (see the following Notes), that it belongs to the *bodemeyeri* species group, as adelphotaxon, and eastern geographic vicarious, of the *patrizii-longicornis* complex.



Figs. 42-45 - *Laemostenus (Antisphodrus) guzelolukensis* Lassalle, 1997, from the cave Cennet magarasi, near Silifke (vil. Içel), male genitalia features: median lobe, left side (42), right paramere (43), left paramere (44), median lobe, dorsal side (45).

Notes on the Anatolian species of genus *Laemostenus* subg. *Antisphodrus* Schaufuss, 1865

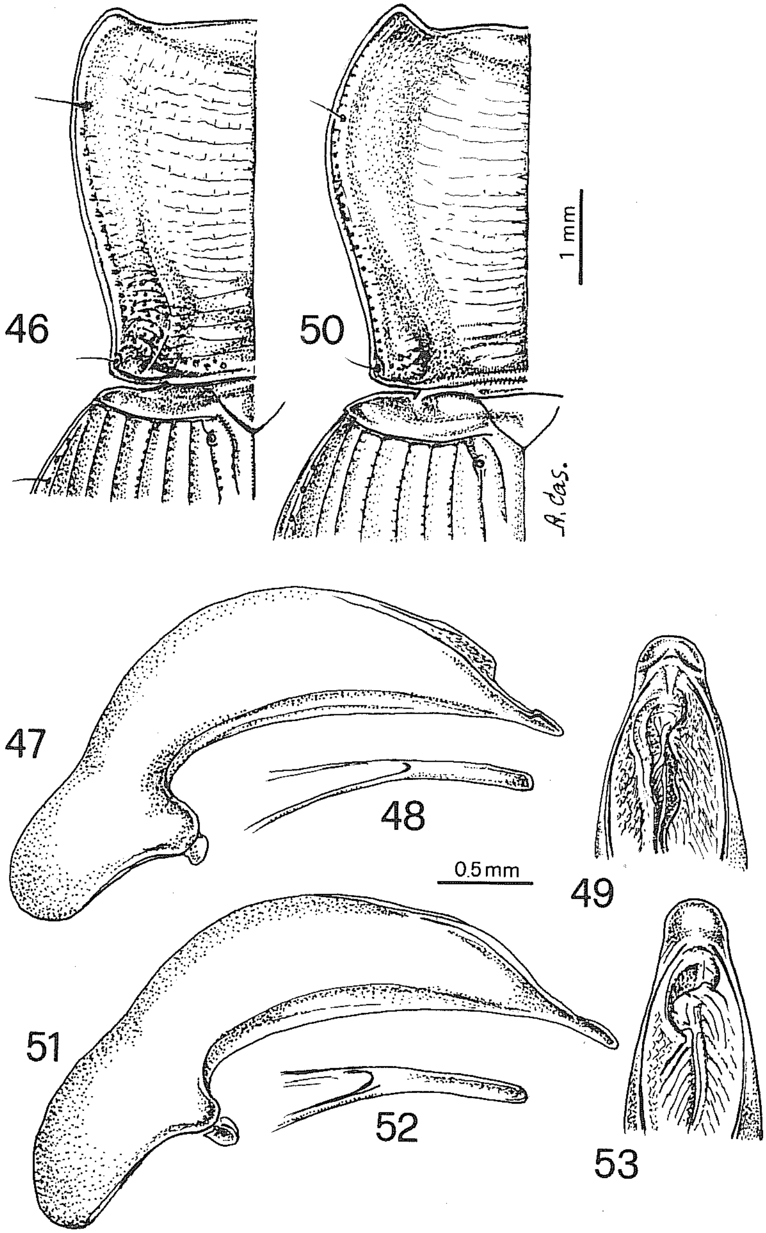
Subsequently to the monographic contribution by Casale (1988), many new *Antisphodrus* species have been described from Anatolia by different authors, including some already known *in litteris* in the previous literature (see above, and the checklist in Appendix II). All have been attributed to the Iranian and Anatolian lineages recognized preliminarly by Casale, *i.e.*, to the *bodemeyeri*, *cavazzutii*, *glasunowi* and *bicolor* species groups, respectively.

The examination of new taxa stimulated however some remarks and questions, based on characters states and morphological features previously unknown. Jeanne (1996), for instance, proposed a re-evaluation of the generic rank for the eastern *Antisphodrus* species, separated from the Western, Ibero-Maghrebian lineage of *Ceuthosphodrus*-*Cephalosphodrus*. This is a good question, and the confirmation of the monophyly of the subgenus *Antisphodrus* in the widest sense of Casale (1988) needs further confirmation, based on characters excluding adaptive features of convergence to the subterranean environment.

On the other hand, the impressive increesing of our knowledge of the Irano-Anatolian taxa seems to confirm the monophyly of some eastern lineages, more than the need of new, artificial species groups. In particular, apart from the rather isolated *bicolor* species group, the diagnostic features separating the remaining lineages, emphasized by Casale in his keys, and based on the knowledge of a few species, became more and more unsupported. In particular:

1. occurrence, reduction or absence of additional setae on antennomere 3, and on occipital region of head, is recognized now as a highly variable feature between adelphotaxa (*patrizii* and *longicornis*, for instance: see above), or in homogeneous complexes of species (*agnolettii*, *cyrili*, *lundbergi*: see above). This fact was already stressed and debated by Casale (1997), concerning two closely related species from Greece (*leonhardi* Breit, 1911, and *giachinoi* Casale, 1997), of the *leonhardi* species group;
2. occurrence, reduction or absence of mesosternal denticulation in front of mesocoxae are also character states co-existing in homogeneous complexes: for instance, *guzelolugensis* Lassalle, 1997, related to *patrizii* Vigna Taglianti, n. sp., of the *bodemeyeri* species group, or *baehri* Casale, 1997, of the *glasunowi* species group, present reduction or absence of mesosternal denticulation, respectively, in groups of species in which the denticulation is normally present. This fact also was already stressed by Casale (1997);
3. occurrence, reduction or absence of teeth along the inner margin of tarsal claws are character states present in closely related species (see descriptions above), and are notoriously tied to the more or less specialized adaptation to different compartments of the subterranean environment. The latter remark is also valid for other morphological features, such as the reduction of eyes, the more or less convex or depressed elytra, the occurrence of traces of metallic reflections on integument.

Thus, in our opinion, the present state of knowledge seem to confirm the monophyly at least of the *bodemeyeri* species group, as a highly diverse phyletic lineage of *Antisphodrus* widespread along all the Toros chain, extended to the Aegean islands (Kalymnos) and to Peloponnesus (Taygetos), and represented today by a series of extant vicarious, very localized species each at different degree of adaptation to epigean or subterranean environments, respectively. That is not all: the presence, in the same area, of epigean, or occasionally troglophilic "true" *Laemostenus* species of the *quadricollis* group (sensu Casale, 1988), suggests the hypothesis that this *Antisphodrus* lineage, and the latter, sympatric *Laemostenus* stock, could be derived by a common ancestor by means of heterochronic colonization of the subterranean environment, highly favourished in xeric, mediterranean areas. In this case, the monophyly of *Antisphodrus* (in the widest sense) should be re-discussed. But such important questions merit future investigations, and exceed the purpose and content of the present contribution.



Figs. 46-53 - *Laemostenus (Pristonychus) sciakyi* Casale & Vigna Taglianti, n. sp., male holotype: pronotum and base of left elytron (46), median lobe, left side (47), right paramere (48), median lobe, dorsal side (49); *Laemostenus (Pristonychus) pisidicus* (G. Müller, 1931), male paratype: idem (50-53).

134.008.0 **Laemostenus (Pristonychus) sciakyi** Casale & Vigna Taglianti, n. sp.

(*Laemostenus (Pristonychus) pisidicus* Casale, 1988: 799, partim, nec G. Müller, 1931)

DIAGNOSIS

A medium sized, piceous black *Laemostenus (Pristonychus)* species of the *terricola* species group (sensu Casale, 1988), related to *L. (P.) pisidicus* (G. Müller, 1931), from which is recognized by the more prominent eyes, the narrower pronotum, more constricted to the base and with anterolateral angles smaller and less prominent; the shorter, more ovate and depressed elytra, with shoulders and humeral tooth more vanished and striae deeper and deeply punctate; the dorsal surface more shining, not sericeous, and the different shape of aedeagus.

EXAMINED MATERIAL

Holotype ♂, labelled: "Turchia, vil. Mugla, tra Kemer e Korkuteli, 32 Km da Kemer, m 1200, 30.IV.1982, A. Casale leg." (MRSN); paratypes: 3 ♂♂, 3 ♀, same as holotype, M. Bologna, A. Casale, P. Giachino and A. Vigna leg. (MRSN, CA, GIA, AVT); 1 ♀ , remains of 2 specimens: "Turchia, Fethiye, Passo Karabel, m 1300, 8.VII.1987, A.Casale leg." (CA, GIA); remains of 1 specimen: "Turchia, vil. Mugla, Bayir m 700 ca., 5/6.VII.1987, Casale-Giachino" "traps" (GIA); 1 ♀: "Prov. Mugla, 12-20 Km E Mugla 37.14 N / 28.32 E", "SW Anatolien Exp. Resal, Rausch, Aspock 19.V.1981" (SCI).

DERIVATIO NOMINIS

Dedicated to our friend and active carabidologist Dr. Riccardo Sciaky, in recognition of his contribution to our present work, and to the knowledge of Asian carabid beetles of different groups.

DESCRIPTION

TL medium: 17.0-18.5 mm; MW: 6 mm; LP/WP: 1.0; LE/WE: 1.50.

Colour dark brown or piceous black; elytra with slight violet reflection; labrum, mandibles, palpomeres, antennae, legs, and lateral margins of pronotum, reddish brown. Surface shining, elytra not sericeous. Microsculpure: head and pronotum with transversal, almost vanished microlines, elytra with distinct, isodiametric meshes.

Head small, narrow, almost smooth; eyes small, shorter than genae, but prominent outside; frontal impressions rather deep but short, narrow.

Pronotum narrow, cordate, its lateral sides slightly reflexed and markedly constricted to the basolateral angles, which are obtuse; anterolateral angles small, slightly prominent; base fully beaded. Disc with shallow transversal wrinkles; basal impressions small, deep, each with some large, deep punctures extended to the basal area and the lateral furrow; anterolateral and basolateral setiferous punctures present, as in Fig. 46.

Elytra ovate, markedly depressed.. Base narrow, almost straight; basal ridge slightly incavate; humeral tooth vanished (Fig. 46). Striae deep and deeply punctate; intervals subconvex. Chaetotaxy: basal pore present; umbilicate series with 24-26 setiferous punctures; 1 (2, exceptionally) seta at apex of stria 7.

Legs rather long and slender; profemora with ventral side slightly incavate, its outer margin with a series of small teeth and a few (3-5) short setae; mesotibiae almost straight in both sexes; metatibiae each with apical brush of rather long, yellow reddish setae; tarsomeres with dorsal pubescence scarce; males with fore tarsomeres 1-3 dilated and with ventral, biseriate adhesive vestiture. Tarsal claws with a series of small, reduced in number (5-7) teeth along the basal half of the inner margin.

Male genitalia (figs 47-49): aedeagus with median lobe rather short, arcuate, medially inflated; apex very short, rounded, slightly and symmetrically prominent on the dorsal side. Apical orifice wide; inner sac with dense, serrate scales. Right paramere subtruncate apically; left paramere with very long apical membranous lobe.

DISTRIBUTION AND ECOLOGY

An epigean, forest dweller species, known so far only from the Bey Daglari massif, (southwestern Anatolia, Mugla province, West of Antalya), in a range of altitude of 700 to 1300 m asl.

REMARKS

A careful, subsequent examination of further material has demonstrated that some specimens, included by Casale (1988: 799, and see Fig. 1169) in the range of variability *of Laemostenus (Pristonychus) pisidicus* ("*pisidicus* var.", sensu Müller, 1931), were markedly distinct from the latter at specific rank: they are herein described as *L (P.) sciakyi* n. sp. It seems to be the sothwestern geographic vicarious of the troglophilic *L. (P.) pisidicus*, in a mountain massif characterized by a peculiar, markedly relict and isolated carabid fauna.

Figs. 54-59 - Three striking species of Anatolian carabids, and their habitats: *Carabus* (*Lamprostus*) *spinolai spinolai* De Cristoforis & Jan, 1837, vil. Çorum, Mecitozü 1200 m, 4.V.1987 (54); a panoramic view of central Anatolia, near Bogazkale (vil. Çorum, 14.V.1987) (55); *Carabus (Procrustes) payapha payapha* White, 1845, vil. Mugla, Fethiye 30 m, 27.IV.1982 (56); the slopes of Toros mountains, in SW Anatolia, near Kemer (vil. Mugla, 30.IV.1982) (57); *Carabus (Procerus) scabrosus schuberti* Breuning, 1968, vil. Kastamonu, Ilgaz dagi geçidi 1700 m, 15.VI.1992 (58); the Ilgaz dag massif, in the Pontic chain (vil. Kastamonu, 30.X.1974) (59) (photo by A. Vigna Taglianti, 55, 56, 57, 59, and by M. Zapparoli, 54, 58).

Fig. 54

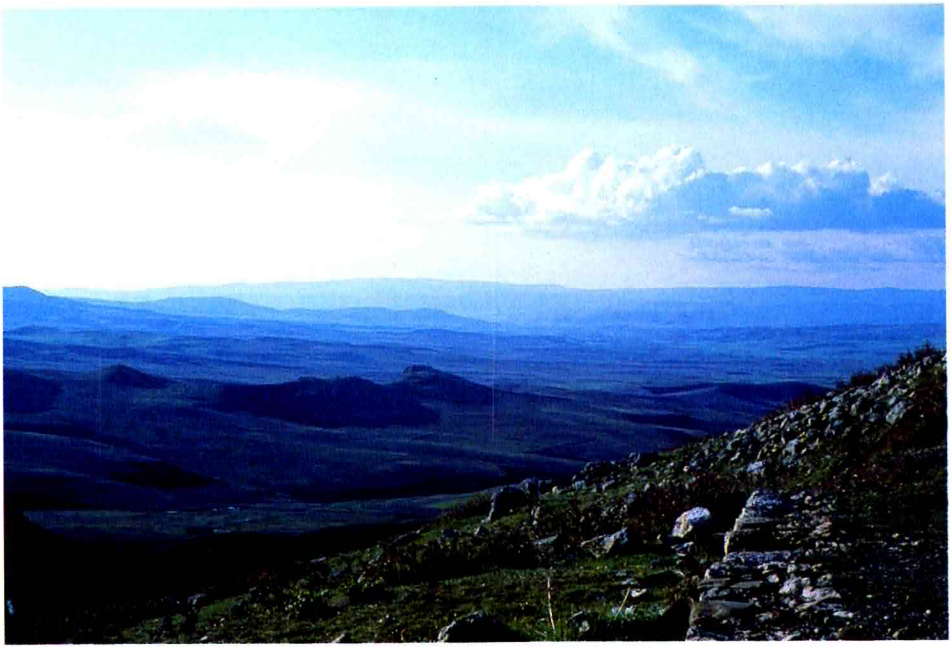


Fig. 55

Fig. 56

Fig. 57

Fig. 58

Fig. 59

APPENDIX 2

CHECKLIST OF ANATOLIAN CARABOIDEA (EXCL. CICINDELIDAE)

Bold: taxa presumably valid or confirmed.
( ): synonyms, only if described from, or reported for Anatolia.
? : occurrence in Anatolia doubtful or presumable, but not confirmed.
??: doubtful taxa, to be verified.

Abbreviations of patterns of distribution (chorotypes sensu Vigna Taglianti et al., 1993 and Vigna Taglianti et al., 1999):

COS = Cosmopolitan, SCO = Subcosmopolitan;

OLA = Holarctic, PAL = Palearctic, WPA = W-Palearctic, ASE = Asiatic-European, SIE = Sibero-European, CEM = Centralasiatic-Europeo-Mediterranean, CAE = Centralasiatic-European, CAM = Centralasiatic-Mediterranean, TEM = Turano-European-Mediterranean, TUE = Turano-European, TUM = Turano-Mediterranean, EUM = Europeo-Mediterranean, SWA = SW-Asiatic;

EUR = European, CEU = Centraleuropean, SEU = S-European;

MED = Mediterranean, EME = E-Mediterranean, NAF = N-African;

AIM = Afrotropico-Indo-Mediterranean, AFM = Afrotropico-Mediterranean;

ASI = Asiatic, CAS = Centralasiatic, SAS = Saharo-Sindian, TUR = Turanian, NAS = NE-African-Sindian;

AFP = Afrotropical + Palearctic (type of distribution not included in the above cited papers);

ANAT = Anatolian, ANAN = N-Anatolian, ANAW = W-Anatolian, ANNW = NW-Anatolian, ANNE = NE-Anatolian, POCA = Ponto-Caucasian, ANSW = SW-Anatolian, ANAS = S-Anatolian, ANAC = C-Anatolian, KURD = Kurdish, ARME = Armenian, ARAN = Armeno-E-Anatolian, ARCA = Armeno-Caucasian, IRAW = W-Iranian, IRNO = N-Iranian, SYPA = Syro-Palaestinian;

E = strictly endemic to the Asiatic Turkey.

For other information about the systematic treatment of different taxa, see section 3.4.1-9, Appendix 1, and notes annexed to the list.

Family: Rhysodidae

001.0. **Omoglymmius** Ganglbauer, 1892 subg. **Omoglymmius** Ganglbauer, 1892
  001.0 **germari** (Ganglbauer, 1892) OLA

002.0. **Rhysodes** Germar, 1822
  001.0 **sulcatus** (Fabricius, 1787) PAL

Family: Paussidae

001.0. **Paussus** Linné, 1775 subg. **Cochliopaussus** Kolbe, 1927
  001.0 **turcicus** Frivaldszky, 1835 EME
    (= mariae Mulsant, 1864)
    (= foreli Wasmann, 1922)

Family: Carabidae

001.0. **Calosoma** Weber, 1801
  001.0 **inquisitor** (Linné, 1758) SIE
    (= punctiventre Reiche & Saulcy, 1855)
    (= viridulum Kraatz, 1877)
    (= cupreofulgens Chapman, 1922)
  002.0 **sycophanta** (Linné, 1758) PAL (OLA)
    (= severum Chaudoir, 1850)

002.0. **Caminara** Motschulsky, 1865
? 001.0 olivieri (Dejean, 1831) SAS

003.0. **Campalita** Motschulsky, 1865
  001.0 **auropunctatum** (Herbst, 1782) CAE
    a. dsungaricum (Gebler, 1833)
    (= funestum Géhin, 1885)
  002.0 **maderae** (Fabricius, 1775) MED

004.0. **Callisthenes** Fischer von Waldheim, 1821 (1) subg. **Callisthenes** Fischer von Waldheim, 1821
  001.0 **ewersmanni** (Chaudoir, 1850) E (ANAC)
  002.0 **persicus** (Géhin, 1885) E (KURD)
    (= adehinotus Lassalle, 1992)
  003.0 **pesarinii** (Heinz & Pavesi, 1994) E (ANAC)
  004.0 **peksi** (Heinz & Pavesi, 1994) E (ANSW)
  005.0 **breviusculus** (Mannerheim, 1830) ARCA
    (= araraticus Chaudoir, 1846)

005.0. **Carabus** Linné, 1758 (2) subg. **Limnocarabus** Géhin, 1876
  001.0 **clatratus** Linné, 1761 ASE
    (= clathratus Auct.)
    c. stygius Ganglbauer, 1890 (3)

006.0. **Carabus** Linné, 1758 subg. **Carabus** Linné, 1758
  001.0 **granulatus** Linné, 1758 ASE
    g. aetolicus Schaum, 1857
    g. ponti Csiki, 1927
    (= ponticus Lapouge, 1924)

007.0. **Carabus** Linné, 1758 subg. **Morphocarabus** Géhin, 1885
  001.0 **scabriusculus** Olivier, 1795 SEU
    s. bulgarus Lapouge, 1908
    s. minutus Motschulsky, 1850

008.0. **Carabus** Linné, 1758 subg. **Lipaster** Motschulsky, 1865
001.0 **stjernvalli** Mannerheim, 1830 ARCA
s. stjernvalli Mannerheim, 1830
(= langneri Breuning & Ruspoli, 1976)
(= latisi Breuning & Ruspoli, 1977)
(= purpureoviolaceus Machard, 1979)
(= tenebrius Heinz & Staven, 1989)
(= posofensis Auvray, 1994)
002.0 **gordius** Reitter, 1898 (4) E (ANNE)
g. gordius Reitter, 1898
(= bontempsi Lassalle, 1992)
(= lasoeli Lassalle, 1992)
g. osellai Breuning & Ruspoli, 1970
(= pseudolangneri Machard, 1979)
g. planostriatus Heinz & Staven, 1995

009.0. **Carabus** Linné, 1758 subg. **Mimocarabus** Géhin, 1885
001.0 **maurus** Adams, 1817 SWA
m. maurus Adams, 1817
m. hochhuthii Chaudoir, 1846
(= geminatulus Reitter, 1896)
m. paphius Redtenbacher, 1843
m. osculatii Osculati, 1844
002.0 **pumilio** Küster, 1846 ARME
(= araratensis Kraatz, 1896)

010.0. **Carabus** Linné, 1758 subg. **Archicarabus** Seidlitz, 1887
001.0 **wiedemanni** Ménétriés, 1836 ANNW
w. wiedemanni Ménétriés, 1836
(= bythinus Lapouge, 1908)
(= winklerianus Breuning, 1933)
w. nilufer Schweiger, 1964
w. cekirgensis Schweiger, 1964
w. goeckdaghensis Mandl, 1964
w. akcakocaensis Blumenthal & Breuning, 1967
w. mengenicola Schweiger, 1969
w. besucheti Schweiger, 1962
w. mussardianus Breuning, 1964
w. paphlagoniensis Breuning, 1964
(= regismontium Schweiger, 1964)
(= subnivalis Schweiger, 1964)
(= patruelis Schweiger, 1964)
002.0 **gotschii** Chaudoir, 1846 SWA
g. gotschii Chaudoir, 1846
g. ilgazicus Breuning & Ruspoli, 1970
g. turcicus Motschulsky, 1865
(= ottomanus Reitter, 1896)
(= diversus Schweiger, 1969)
g. pseudogotschi Breuning, 1926

g. goeksunensis Breuning, 1966
g. bulghardaghensis Breuning, 1926
g. pseudorugosus Machard, 1994
g. naumanni Breuning, 1971
g. horioni Korge, 1968
g. caramanus Fairmaire, 1886
(= unctus Lapouge, 1908)
(= mollis Lapouge, 1924)
(= eregliensis Breuning, 1974)
g. demelti Heinz, 1977
003.0 **victor** Fischer von Waldheim, 1836 POCA
v. congruus Motschulsky, 1865
(= falsarius Reitter, 1896)
(= anceps Lapouge, 1924)
v. akkusanus Breuning, 1964
v. victor Fischer von Waldheim, 1836
v. dissolutus Csiki, 1927
(= obtritus Lapouge, 1924)
v. loebli Schweiger, 1969
v. transenus Lapouge, 1924
(= pseudotransenus Machard, 1979)
v. inconspicuus Chaudoir, 1848
(= nanus Kraatz, 1896)
(= montanellus Heinz & Korge, 1967)
(= subminimus Machard, 1995)
(= ? nicolae Auvray, 1995)
v. cordithorax Blumenthal & Breuning, 1967
(= hortulanus Darge, 1994)

011.0. **Carabus** Linné, 1758 subg. **Ischnocarabus** Kraatz, 1877
001.0 **tenuitarsis** Kraatz, 1877 E (ANAC)
t. tenuitarsis Kraatz, 1877
(= ankarensis Breuning, 1961)
(= cottarellii Breuning & Ruspoli, 1970)
(= auvrayi Charet, 1992)
t. cankiriensis Breuning, 1962
t. prasinosomatus Rapuzzi, 1991
t. rubizzaniorum Cavazzuti, 1994
002.0 **cychropalpus** Peyron, 1858 E (ANAS)
(= cychropalpulus Mandl, 1955)

012.0. **Carabus** Linné, 1758 subg. **Tomocarabus** Reitter, 1896
001.0 **convexus** Fabricius, 1775 SIE
c. erzeliki Schweiger, 1962
(= abantayaginiensis Schweiger, 1962)
c. rhinopterus Hampe, 1852
c. salax Motschulsky, 1865
c. sultandaghensis Breuning, 1966
c. acutangulus Chaudoir, 1879
c. mackaensis Cavazzuti & Korell, 1991

002.0 **simardianus** Deuve, 1990 (5) E (ANAC)
003.0 **scabripennis** Chaudoir, 1867 TUM
s. scabripennis Chaudoir, 1850
s. ponticola Deuve & Simard, 1977
(= reticulatus Hampe, 1852 nec Fabricius, 1787)
s. microderus Chaudoir, 1867
(= ledereri Gautier des Cottes, 1868)
(= gautieri Géhin, 1885)
(= finikensis Lassalle, 1993)
s. reductus Roeschke, 1896
(= nocturnus Schweiger, 1969)
s. subreductus Breuning, 1977
004.0 **rumelicus** Chaudoir, 1867 EME
r. rumelicus Chaudoir, 1867
r. cappadociae Breuning, 1934
(= guelekensis Breuning, 1964)
(= zaraensis Breuning & Ruspoli, 1970)
r. kurdistanicus Eidam, 1931
(= kurdistanicola Deuve, 1990)
005.0 **decolor** Fischer von Waldheim, 1823 ARCA

013.0. **Carabus** Linné, 1758 subg. **Pachystus** Motschulsky, 1865
001.0 **graecus** Dejean, 1826 EME
g. morio Mannerheim, 1830
(= carceli Goy, 1833)
(= olivieri Castelnau, 1835)
(= acuminatus Ménétriés, 1838)
(= aethiops De Cristoforis & Jan, 1837)
(= cavernicola Kraatz, 1880)
g. mazzii Cavazzuti, 1992
002.0 **irmasanus** Heinz & Korge, 1967 E (ANAS)
(= felix Heinz & Korge, 1967 nec Semenov & Znojko, 1931)
003.0 **ganymed** Heinz, 1975 E (KURD)
004.0 **pisidicus** Peyron, 1854 E (ANAS)
p. pisidicus Peyron, 1854
p. samai Cavazzuti & Rapuzzi, 1998

014.0. **Carabus** Linné, 1758 subg. **Oreocarabus** Géhin, 1876
001.0 **cribratus** Quensel, 1806 ARCA
c. cribratus Quensel, 1806
c. orientalis Osculati, 1844
(= remotus Reitter, 1888)
c. haramburae Breuning & Ruspoli, 1974
c. schubertianus Breuning & Ruspoli, 1974
c. negreianus Deuve, 1994
c. pulumuricus Cavazzuti, 1994
c. echarouxi Lassalle, 1996
002.0 **porrectangulus** Géhin, 1885 (6) E (ANAN)
p. porrectangulus Géhin, 1885

(= ? farineli Machard, 1975)
p. tazieffi Breuning & Ruspoli, 1970
(= arpaalaniensis Machard, 1985)
p. ispiriacus Deuve, 1993
c. bilmenekus Lassalle, 1996
p. staneki Sterba, 1931
(= kreissli Schweiger, 1964)
p. yaraligozi Battoni, 1982
p. graziolii Cavazzuti, 1987
p. maironei Cavazzuti, 1994
003.0 **mahouxi** Ledoux, 1972 E (KURD)
m. ciloensis Deuve, 1994

015.0. **Carabus** Linné, 1758 subg. **Pachycarabus** Géhin, 1876
001.0 **roseri** Faldermann, 1835 POCA
r. soganliensis Heinz & Korge, 1964
r. ciftekopruleriensis Machard, 1975

016.0. **Carabus** Linné, 1758 subg. **Oxycarabus** Semenov, 1898
001.0 **saphyrinus** De Cristoforis & Jan, 1837 E (ANAN)
s. pirithous Reitter, 1896
s. pseudopyrithous Mandl, 1955
s. kenyeryi Schweiger, 1964
s. sapancae Blumenthal & Breuning, 1967
s. notabilis Roeschke, 1898
s. akdagicola Mandl, 1973
s. pseudosaphyrinus Schweiger, 1962
(= kainashensis Scweiger, 1964)
(= boluensis Schweiger, 1964)
(= ilgazdagicus Blumenthal & Breuning, 1967)
(= mengenensis Blumenthal & Breuning, 1967)
(= korgei Heinz & Korge, 1964)
(= ? yenicensis Lassalle, 1998)
s. rabaronianus Breuning, 1964
s. saphyrinus De Cristoforis & Jan, 1837
(= wagneri Küster, 1846)
(= artusi Schweiger, 1964)
(= pseudowagneri Mandl, 1973)
s. ruspolii Breuning, 1964
s. besanconi Breuning & Ruspoli, 1970
s. juengeri Breuning & Ruspoli, 1970

017.0. **Carabus** Linné, 1758 subg. **Heterocarabus** Morawitz, 1886 (7)
001.0 **marietti** De Cristoforis & Jan, 1837 ANNW
m. marietti De Cristoforis & Jan, 1837
(= ativsengueni Schweiger, 1962)
(= petrovitzi Mandl, 1964)
(= pseudomariettii Schweiger, 1962)
(= charetianus Auvray, 1992)

m. sapancaensis Blumenthal & Breuning, 1967
m. ormanensis Blumenthal & Breuning, 1967
(= mouthiezi Lassalle, 1991)
m. necopinatus Basquin & Darge, 1987
002.0 **akensis** Haury, 1889 E (ANNW)
003.0 **muchei** Breuning, 1961 E (ANAN)
m. muchei Breuning, 1961
m. inclarus Darge, 1994
m. ornatus Heinz, 1976
m. stephaniruspolii Breuning, 1964
004.0 **bischoffi** Chaudoir, 1848 E (ANAN)
b. bischoffi Chaudoir, 1848
(= kindermanni Hampe, 1852)
b. inexpectatus Basquin & Darge, 1987
b. terahci Charet, 1994
b. hroni Deuve, 1997

018.0. **Carabus** Linné, 1758 subg. **Sphodristocarabus** Thomson, 1875
001.0 **heinzi** Breuning, 1964 E (ANNE)
h. heinzi Breuning, 1964
h. matteui Breuning & Ruspoli, 1970
002.0 **scovitzi** Faldermann, 1835 POCA
s. otingoensis Deuve, 1993
s. czipkai Heinz, 1980
s. bouilloni Breuning, 1976
s. hedini Heinz, 1973
s. sarigoelensis Deuve & Charet, 1992
003.0 **gilnickii** Deyrolle, 1869 E (ANNE)
g. gilnicki Deyrolle, 1869
(= giulielli Thomson, 1875)
(= acutus Lapouge, 1904)
(= viridifossulatipennis Breuning, 1964)
(= brignolii Breuning & Ruspoli, 1970)
(= ovoideus Machard, 1994)
(= pseudoelongatus Machard, 1994)
g. lavezorum Darge, 1994
g. hasandaghensis Darge & Basquin, 1990
g. yakalamakus Lassalle, 1993
g. brunneicupreus Deuve, 1994
004.0 **coruhneriensis** Cavazzuti, 1990 E (ANNE)
005.0 **enigmaticus** Heinz, 1980 E (ANNE)
e. enigmaticus Heinz, 1980
e. reiseri Heinz, 1980
e. exiliatus Cavazzuti, 1990
e. citamgineus Lassalle & Charet, 1992
(= bechteli Charet, 1996)
006.0 **georgia** Cavazzuti, 1984 E (KURD)
g. georgia Cavazzuti, 1984
g. hardei Heinz, 1990

007.0 **biroi** Csiki, 1927	E (ANAN)
(= kindermanni Chaudoir, 1850)	
b. iorbi Deuve & Charet, 1998	
008.0 **pavesii** Cavazzuti, 1992 (8)	E (ANSW)
009.0 **macrogonus** Chaudoir, 1847 (9)	E (ANAN)
m. keltepensis Vigna Taglianti & Bruschi, 1976	
m. schweigerinae Schweiger, 1962	
(= pseudoschweigerinae Schweiger, 1964)	
(= goettingi Schweiger, 1964)	
m. drannazdaghensis Breuning, 1964	
(= clientulus Schweiger, 1969)	
(= mollioni Breuning, 1976)	
m. diogenes Cavazzuti, 1991	
m. resplendens Breuning, 1932	
(= chambruni Breuning & Ruspoli, 1970)	
(= cavazzutianus Casale, 1971)	
(= zanderi Battoni & Blumenthal, 1972)	
(= eiselti Mandl, 1975)	
m. akkusensis Breuning, 1964	
(= ingloriosus Breuning & Ruspoli, 1970)	
(= guergentepeensis Blumenthal, 1975)	
(= daumani Breuning, 1976)	
m. simonianus Breuning & Ruspoli, 1970	
(= pseudosimonianus Mandl, 1975)	
(= lilianae Cavazzuti & Casale, 1976)	
m. koselerensis Machard, 1991	
m. giresunensis Deuve, 1992	
m. macrogonus Chaudoir, 1847	
(= theophilei Deyrolle, 1869)	
(= kolatensis Lapouge, 1924)	
(= lemeslei Machard, 1995)	
m. azaleae Cavazzuti, 1986	
(= michaelae Darge, 1994)	
m. pseudokolatensis Heinz & Korge, 1967	
(= rizensis Ledoux, 1975)	
m. giachinoi Cavazzuti, 1991	
010.0 **tokatensis** Roeschke, 1898	E (ANAN)
t. tokatensis Roeschke, 1898	
(= almushensis Mandl, 1975)	
t. kosensis Cavazzuti, 1984	
t. kirikensis Stave, 1995	
t. simonae Cavazzuti, 1984	
011.0 **karasudominus** Cavazzuti, 1991	E (KURD)
012.0 **kurdicus** Heinz, 1975	E (KURD)
k. kurdicus Heinz, 1975	
(= schuberti Breuning, 1972)	
(= basquini Darge, 1990)	
k. machardianus Machard, 1986	
k. kurdaorum Lassalle, 1993	

013.0 **varians** Fischer von Waldheim, 1824 ARCA
v. **armeniacus** Mannerheim, 1830
v. pseudoarmeniacus Breuning, 1932
(= incatenatus Mannerheim, 1830)
(= korbianus Ganglbauer, 1887)
(= arsiyandagensis Machard, 1985)
(= sarikamisensis Cavazzuti, 1986)
(= robichei Auvray, 1994)
014.0 **rotundicollis** Mandl, 1955 E (ANNE)
r. rotundicollis Mandl, 1955
(= basilewskianus Breuning & Ruspoli, 1970)
(= aabadensis Lassalle, 1991)
r. aequicostalis Staven & Heinz, 1995
r. blumenthaliensis Heinz & Korge, 1967

019.0. **Carabus** Linné, 1758 subg. **Tribax** Fischer von Waldheim, 1817
001.0 **puschkini** Adams, 1817 ARCA
p. kolenatii Chaudoir, 1846
p. strobinoicus Breuning, 1976
p. ishikawaianus Breuning & Ruspoli, 1970
(= kabacaensis Machard, 1992)
(= zeytinlikensis Charet, 1996)
p. zyzzyus Lassalle, 1993
p. ayderensis Blumenthal & Breuning, 1967
(= pseudoponticus Lassalle & Machard, 1991)
(= ispirensis Machard, 1991)
(= uskutdaghensis Machard, 1991)
(= mescitliensis Staven & Heinz, 1998)
p. ponticus Deyrolle, 1869
p. praenuntius Heinz & Korge, 1967
002.0 **merdeniki** Cavazzuti & Korell, 1992 E (ANNE)
(= koropeckyi Deuve & Macek, 1992)
003.0 **curlettii** Cavazzuti, 1984 E (KURD)

020.0. **Carabus** Linné, 1758 subg. **Cechenochilus** Motschulsky, 1846
001.0 **lazorum** Belousov & Zamotailov, 1999 E (ANNE)

021.0. **Carabus** Linné, 1758 subg. **Lamprostus** Motshulsky, 1865
001.0 **torosus** Frivaldszky, 1835 TUM
t. escherichi Lapouge, 1914
t. xanthicus Darge, 1992
t. cankirianus Blumenthal & Breuning, 1967
(= basquinianus Darge, 1992)
(= crudus Darge, 1992)
(= reynieri Charet, 1992)
t. bodemeyeri Lapouge, 1914
(= moestus De Cristoforis & Jan, 1837)
(= jani Géhin, 1885)
(= mundus Lapouge, 1914)
(= hoberlandti Mařan, 1952)

    (= gajaci Breuning & Ruspoli, 1979)
    (= hahni Mandl, 1980)
    t. procrustoides Géhin, 1885
    t. pseudescherichi Breuning, 1962
    (= vignatagliantii Breuning & Ruspoli, 1977)
002.0 **spinolai** De Cristoforis & Jan, 1837 **(10)** E (ANAC)
    (= bonplandi Ménétriés, 1837)
    (= phaedimus Schaufuss, 1882)
    (= obesus Lapouge, 1909)
    s. spinolai De Cristoforis & Jan, 1837
    s. mercatii Breuning & Ruspoli, 1970
    s. rouziei Breuning & Ruspoli, 1970
    s. pseudoducalis Schweiger, 1964
    s. usurpator Cavazzutii, 1987
    s. lohsei Heinz & Blumenthal, 1978
    s. sinopensis Breuning, 1961
    (= coeruleoviolaceus Breuning & Ruspoli, 1970)
    t. vexator Schweiger, 1969
    t. ladikensis Deuve & Charet, 1992
    t. lamprus Chaudoir, 1850
    t. sturanicus Breuning & Ruspoli, 1979
003.0 **rabaroni** Breuning, 1964 E (ANNE)
    r. rabaroni Breuning, 1964
    r. enricoi Battoni & Blumenthal, 1973
    r. dominici Thomé, 1987
    r. rigouti Basquin & Darge, 1986
    r. giresuni Breuning, 1964
    r. drouxi Machard, 1977
    r. paululus Heinz & Korge, 1964
004.0 **erenleriensis** Schweiger, 1962 E (ANNW)
    e. erenleriensis Schweiger, 1962
    (= kaynasliensis Machard, 1975)
    e. ahmetustaensis Cavazzuti, 1987
    e. bithynicus Heinz & Korge, 1967
    e. karadaghensis Battoni & Blumenthal, 1972
    e. fortepunctatus Battoni & Blumenthal, 1972
    (= rotundicollis Blumenthal & Breuning, 1967 nec Mandl, 1955)
    e. pseudotorosus Schweiger, 1969
    e. hamus Basquin & Legrand, 1991
005.0 **nordmanni** Chaudoir, 1848 E (ANNE)
    n. pseudorobustus Heinz & Blumenthal, 1977
    (= ? extremus Schaufuss, 1882)
    n. pseudocolossus Cavazzuti, 1992
    n. triumphans Cavazzuti, 1987
    (= ? triumphator Schaufuss, 1882)
    (= ? colossus Bleuse, 1896)
    n. exsultans Cavazzuti, 1993
    n. nordmanni Chaudoir, 1848

(= productus Hampe, 1852)
(= robustus Deyrolle, 1869)
(= perfectus Schaufuss, 1882)
(= callipeplus Schaufuss, 1882)
(= semirugosus Schaufuss, 1882)
(= sexpunctatus Schaufuss, 1882)
(= trapesunticus Eichler, 1924)
n. salignus Schweiger, 1969
n. ducalis Schaufuss, 1882
(= subrobustus Machard, 1994)
n. singanensis Breuning, 1932
n. athletus Semenov, 1896
006.0 **chalconatus** Mannerheim, 1830 E (KURD)
c. chalconatus Mannerheim, 1830
(= luxuriosus Motschulsky, 1844)
(= ambiguus Lapouge, 1914)
(= hozari Mařan, 1952)
(= hisarensis Darge, 1990 nec hissariensis Lapouge, 1925)
(= koyunensis Darge, 1990)
(= maguini Auvray, 1994)
c. chalcochlorus Chaudoir, 1852
(= tschimenensis Breuning, 1964)
c. subnigritulus Heinz, 1990
007.0 **calleyi** Fischer von Waldheim, 1823 ARCA
c. machardiellus Deuve, 1991
(= kurdistanicus Machard, 1986 nec Eidam, 1931)
c. pseudoprasinus Lapouge, 1912
(= pseudocalleyi Lapouge, 1914)
c. martinae Machard, 1977
(= catakensis Machard, 1985)
c. subnigrinus Heinz, 1970
008.0 **hemprichi** Dejean, 1826 EME
h. propheta Rapuzzi, 1995

022.0. **Carabus** Linné, 1758 subg. **Procrustes** Bonelli, 1809
(= Chaetomelas Thomson, 1875)
001.0 **payapha** White, 1845 E (ANAS)
p. payapha White, 1845
p. acuticollis Motschulsky, 1858
p. drouxianus Machard, 1986
002.0 **clypeatus** Adams, 1817 ARCA
c. kurnakovi Kryzhanovskij, 1968
003.0 **chevrolati** De Cristoforis & Jan, 1837 SWA
c. internatus Heinz & Korge, 1964
(= cifcandaghensis Blumenthal & Breuning, 1967)
(= salignicola Schweiger, 1969)
c. ilgazdagensis Schweiger, 1964
(= ilgazdaghensis Heinz & Korge, 1964)
(= golkoyensis Schweiger, 1964)

(= dadayanus Schweiger, 1964)
(= esmeraldae Breuning & Ruspoli, 1977)
(= portei Breuning & Ruspoli, 1977)
(= rodriguezi Breuning & Ruspoli, 1977)
c. **chevrolati** De Cristoforis & Jan, 1837
(= assimilis De Cristoforis & Jan, 1837)
(= persimilis Csiki, 1927)
c. **thirki** Chaudoir, 1857
(= wiedmanni De Cristoforis & Jan, 1837)
(= surejae Csiki, 1927)
c. **korbi** Breuning, 1928)
(= chauveloti Breuning & Ruspoli, 1977)
c. **vanensis** Machard, 1985
004.0 **coriaceus** Linné, 1758 EUR
c. **kindermanni** Waltl, 1838
(= olympicus Géhin, 1885)
(= brussensis Ganglbauer, 1888)
(= caraboides Ganglbauer, 1888)
(= mehmeti Battoni & Blumenthal, 1972)
c. **cerisyi** Dejean, 1826
(= melancholicus Gistl, 1857 nec Fabricius, 1798)
(= bodemeyeri Lapouge, 1923 nec Lapouge, 1914)
(= bodemeyerianus Mařan, 1952)
c. **mopsucrenae** Peyron, 1858
c. ressli Mandl, 1961
(= montisgavurensis Mandl, 1975)
005.0 **anatolicus** Chaudoir, 1857 ANSW
a. **lycicus** Breuning, 1932
a. **resslianus** Mandl, 1963
006.0 **impressus** Klug, 1832 EME
i. impressus Klug, 1832
i. simulacrum Rapuzzi, 1997
i. halfeticus Korell, 1999
007.0 **mulsantianus** Morawitz, 1886ANAS
m. mulsantianus Morawitz, 1886
(= asperatus Mulsant, 1853)
(= kotschyi Ganglbauer, 1887)
(= adspersarius Lapouge, 1907)
m. nurdagensis Blumenthal, 1967
m. akbesianus Lapouge, 1914
m. bernhauerorum Heinz, 1977
008.0 **punctatus** Castelnau, 1835 EME
(= antakyae Korell, 1985)
009.0 **piochardi** Géhin, 1883 EME
p. morawitzi Ganglbauer, 1887
(= montesamanus Mandl, 1967)
(= discipulus Rapuzzi, 1997)
(= tainei Lassalle, 1998)

023.0. **Carabus** Linné, 1758 subg. **Apoplesius** Deuve, 1990
- 001.0 **deuvei** Lassalle, 1986 — E (KURD)
- 002.0 **pseudodepressus** Machard, 1988 — E (KURD)
- 003.0 **legrandi** Deuve, 1991 — E (ANNE)
- 004.0 **omphreodes** Reitter, 1898 — E (KURD)

024.0. **Carabus** Linné, 1758 subg. **Megodontus** Solier, 1848
- 001.0 **septemcarinatus** Motschulsky, 1840 — ARCA
- 002.0 **bonvouloiri** Chaudoir, 1863 (11) — E (ANNE)
    - b. **bonvouloiri** Chaudoir, 1863
    - (= clandestinus Schaufuss, 1882)
    - (= nobilis Schaufuss, 1882)
    - (= foveicollis Schaufuss, 1882)
    - (= pastillatus Lapouge, 1902)
    - (= kolatdaghensis Breuning, 1967)
    - (= soganlidaghensis Machard, 1991)
    - b. kaschkarensis Blumenthal & Breuning, 1967
    - b. **graciliformis** Breuning, 1964
    - b. **fortunatus** Heinz, 1970
    - b. **casalei** Cavazzuti, 1986

025.0. **Carabus** Linné, 1758 subg. **Procerus** Dejean, 1826 (12)
- 001.0 **syriacus** Kollar, 1843 — SYPA
    - s. **syriacus** Kollar, 1843
    - (= daphnensis Korell, 1985)
    - s. **limitaneus** Korell, 1988
- 002.0 **transversalis** Csiki, 1927 — E (ANAS)
    - t. **transversalis** Csiki, 1927
    - (= laticollis Kraatz, 1876)
    - t. **bulgharmaadensis** Bodemeyer, 1915
    - t. **akbesiensis** Toulgoët, 1987
    - (= akbesianus Breuning, 1975 nec Lapouge, 1914)
- 003.0 **sommeri** Mannerheim, 1844 — EME
    - s. **estegeicus** Cavazzuti, 1989
    - s. **sommeri** Mannerheim, 1844
    - (= breviusculus Kraatz, 1876)
    - (= uludagensis Schweiger, 1964)
    - (= basoglui Schweiger, 1964)
    - s. **dardanellicus** Kraatz-Koschlau, 1886
    - s. **callipygius** Cavazzuti, 1987
    - (= cerkes Basquin & Darge, 1986)
    - s. **amasicus** Csiki, 1927
    - (= modestus Kraatz, 1876)
    - s. **munzurensis** Cavazzuti & Lassalle, 1987
    - s. **sterilis** Bodemeyer, 1915
    - **montisabanti** Schweiger, 1962
- 004.0 **scabrosus** Olivier, 1795 — TUM
    - s. **mentor** Blumenthal & Breuning, 1967
    - s. **propinquus** Csiki, 1927
    - (= dejeani Géhin, 1885)

(= angusticollis Haller, 1885)	
(= giganteus Bodemeyer, 1915)	
s. culminicola Cavazzuti, 1989	
s. **schuberti** Breuning, 1968	
s. **weidneri** Lassalle, 1990	
005.0 **caucasicus** Adams, 1817	POCA
c. **armenius** Zaitzew, 1930	
c. **audouini** Brullé, 1835	
c. **colchicus** Motschulsky, 1844	
c. **ispiratus** Cavazzuti, 1986	
026.0. **Cychrus** Fabricius, 1794	
001.0 **aeneus** Fischer von Waldheim, 1824	POCA
a. **aeneus** Fischer von Waldheim, 1824	
a. **anatolicus** Motschulsky, 1865	
002.0 **armeniacus** Chaudoir, 1879	E (ANAN)
a. **armeniacus** Chaudoir, 1879	
a. **frivaldszkyi** Roeschke, 1907	
(= m. angustemarginata Mandl, 1977)	
a. **ilgazdaghensis** Mařan, 1932	
(= drannadaghensis Breuning, 1967)	
(= akcakocae Breuning, 1967)	
(= ponticus Schweiger, 1962)	
(= breuningi Schweiger, 1963)	
a. **occidentalis** Mandl, 1977	
(= armeniacus Roeschke, 1907 nec Chaudoir, 1879)	
a. **ruspolii** Breuning, 1964	
(= korgei medodiyensis Breuning, 1969)	
(= korgei mesodiyensis Breuning, 1969)	
a. **korgei** Heinz & Korge, 1964	

027.0. **Omophron** Latreille, 1802	
001.0 **limbatum** (Fabricius, 1776)	PAL
002.0 **rotundatum** Chaudoir, 1852	SWA

028.0. **Leistus** Fröhlich, 1799 subg. **Pogonophorus** Latreille, 1802	
001.0 **spinibarbis** (Fabricius, 1775)	EUR
s. **abdominalis** Reiche, 1855	
002.0 **montanus** Stephens, 1828	EUR
m. **adanensis** Mařan, 1941	
m. **richteri** Shilenkov, 1999	
003.0 **parvicollis** Chaudoir, 1869	SEU
004.0 **noesskei** Bänninger, 1931	E (ANSW)
005.0 **hermonis** Piochard de la Brûlerie, 1875	EME
006.0 **rufomarginatus** (Duftschmid, 1812)	EUR
(= ottomanus Schweiger, 1970)	

029.0. **Leistus** Fröhlich, 1799 subg. **Leistus** Fröhlich, 1799	
001.0 **fulvibarbis** Dejean, 1826	EUM
f. **fulvibarbis** Dejean, 1826	
002.0 **caucasicus** Chaudoir, 1867	SWA
(= schuberti Jedlička, 1968)	

003.0 **fulvus** Chaudoir, 1846	ARCA
(= ellipticus Reitter, 1885 nec Wollaston, 1857)	
(= obscurus Reitter, 1905)	
(= reitteri Jacobson, 1906)	
(= voriseki Jeanne, 1972)	
004.0 **chaudoiri** Perrault, 1986	POCA
005.0 **femoralis** Chaudoir, 1846	POCA
006.0 **ovitensis** Perrault, 1974	E (ANNE)
007.0 **ledouxi** Perrault, 1986	E (ANNE)

030.0. **Nebria** Latreille, 1802 subg. **Eunebria** Jeannel, 1941

001.0 **picicornis** (Fabricius, 1801)	EUR
p. luteipes Chaudoir, 1850	
002.0 **nigerrima** Chaudoir, 1846	POCA
003.0 **merkliana** Apfelbeck, 1904	E (ANNW)
004.0 **jarrigei** Ledoux & Roux, 1990	E (ANNE)

031.0. **Nebria** Latreille, 1802 subg. **Nebria** Latreille, 1802
(= Alpaeus Bonelli, 1810)

001.0 **brevicollis** (Fabricius, 1792)	TUE
002.0 **hemprichi** Klug, 1832	EME
003.0 **sinuosa** Ledoux & Roux, 1990	E (ANNE)
004.0 **testacea** Olivier, 1811	EME
005.0 **defreinai** Kirschenhofer, 1981	E (KURD)
006.0 **coiffaiti** Ledoux, 1983	E (ANSW)
007.0 **bonellii** (Adams, 1817)	ARCA
(= heinziana Shilenkov, 1983)	
008.0 **fischeri** Faldermann, 1835	POCA
(= hyantis Reitter, 1899)	
(= heinzi Jedlička, 1965)	
(= anatolica Jedlička, 1965)	
(= soganlica Jedlička, 1965)	
009.0 **adjarica** Shilenkov, 1983	E (ANNE)
010.0 **irregularis** Jedlička, 1965)	E (ANNE)
011.0 **turcica** Chaudoir,1843	E (ANAN)
t. lassallei Ledoux & Roux, 1990	
012.0 **alpicola** Motschulsky, 1865	E (ANAN)
013.0 **araschinica** Reitter, 1892	ARAN
(= perlidaghensis Shilenkov, 1983)	
014.0 **gotschi** Chaudoir, 1846	POCA
015.0 **korgei** Jedlička, 1965	E (KURD)
016.0 **mandibularis** Bates, 1872	E (KURD)
017.0 **mirabilis** Ledoux & Roux, 1990	E (KURD)
018.0 **wiedemanni** Fischer von Waldheim, 1844	E (ANNW)
019.0 **elliptipennis** Bates, 1874	ARAN
020.0 **pontica** Ledoux & Roux, 1990	E (ANNE)
021.0 **deuveiana** Ledoux & Roux, 1990	E (ANNE)
022.0 **glacialis** Ledoux & Roux, 1999	E (ANNE)
023.0 **arcensis** Ledoux & Roux, 1990	E (KURD)
024.0 **thonitida** Ledoux & Roux, 1990	E (KURD)

025.0 **finissima** Ledoux & Roux, 1990	E (ANNE)
026.0 **walterheinzi** Ledoux & Roux, 1990	E (ANAS)
027.0 **uluderensis** Shilenkov & Heinz, 1984	E (KURD)
028.0 **oramarensis** Shilenkov & Heinz, 1984	E (KURD)
032.0. **Nebria** Latreille, 1802 subg. **Pseudonebriola** Ledoux & Roux, 1989	
001.0 **crassiforma** Ledoux & Roux, 1989	E (ANAS)
033.0. **Notiophilus** Duméril, 1806	
? 001.0 aquaticus (Linné, 1758)	OLA
002.0 **aesthuans** Motschulsky, 1864	EUR
(= pusillus Waterhouse, 1833 nec Schreber, 1759)	
003.0 **germinyi** Fauvel, 1863	EUR
(= hypocrita Auct. nec Curtis, 1829)	
? 004.0 palustris (Duftschmid, 1812)	SIE
005.0 **rufipes** Curtis, 1829	EUR
? 006.0 geminatus Dejean, 1831	MED
007.0 **danieli** Reitter, 1897	EME
(= orientalis Reitter, 1889 nec Chaudoir, 1850)	
008.0 **interstitialis** Reitter, 1889	EME
009.0 **laticollis** Chaudoir, 1850	SEU
010.0 **biguttatus** (Fabricius, 1779)	OLA
011.0 **substriatus** Waterhouse, 1833	EUR
034.0. **Elaphrus** Fabricius, 1775 subg. **Elaphrus** Fabricius, 1775	
001.0 **riparius** (Linné, 1758)	OLA
002.0 **hypocrita** Semenov, 1926	TUR
(= smaragdiceps Bänninger, 1919 nec Semenov, 1889)	
035.0. **Elaphrus** Fabricius, 1775 subg. **Neoelaphrus** Hatch, 1951	
? 001.0 cupreus Duftschmid, 1812	ASE
002.0 **uliginosus** Fabricius, 1792	ASE
036.0. **Siagona** Latreille, 1804	
001.0 **europaea** Dejean, 1826	AIM
? 002.0 longula Reiche, 1855	EME
037.0. **Cymbionotum** Baudi, 1894	
001.0 **semelederi** (Chaudoir, 1861)	SWA
002.0 **pictulum** (Bates, 1874)	SWA
(= transcaucasicum Chaudoir, 1876)	
038.0. **Distichus** Motschulsky, 1857	
001.0. **planus** (Bonelli, 1813)	AIM
039.0. **Scarites** Fabricius, 1775	
001.0 **buparius** (Forster, 1771)	MED
002.0 **eurytus** (Fischer von Waldheim, 1829)	TUM
040.0. **Parallelomorphus** Motshulsky, 1849	
001.0 **laevigatus** (Fabricius, 1792)	MED
(= telonensis Bonelli, 1813)	

002.0 **terricola** (Bonelli, 1813) PAL
t. terricola (Bonelli, 1813)
003.0 **subcylindricus** (Chaudoir, 1843) EME

041.0. **Clivina** Latreille, 1802 subg. **Clivina** Latreille, 1802
001.0 **fossor** (Linné, 1758) ASE
002.0 **collaris** (Herbst, 1784) TUE
003.0 **ypsilon** Dejean & Boisduval, 1829 TEM

042.0. **Clivina** Latreille, 1802 subg. **Eupalamus** Schmidt-Goebel, 1846
001.0 **laevifrons** (Chaudoir, 1824) TUM

043.0. **Dyschirius** Bonelli, 1810 (13)
001.0 **humiolcus** Chaudoir, 1850 POCA
002.0 **latipennis** Seidlitz, 1867 TUM
? 003.0 caspius Putzeys, 1866 TUM
004.0 **zimini** Znojko, 1928 TUR

044.0. **Dyschiriodes** Jeannel, 1941 subg. **Eudyschirius** Fedorenko, 1996
001.0 **beydagensis** (Jeanne, 1996) E (ANAT)
(= ? buglanensis Bulirsch, 1996)
002.0 **smyrnensis** (Bulirsch, 1996) E (ANSW)
003.0 **importunus** Schaum, 1857 MED
i. importunus Schaum, 1857
004.0 **importunoides** Jeanne, 1996 E (ANSW)
005.0 **dimidiatus** (Chaudoir, 1846) TUR
d. iranus (Kult, 1946)

045.0. **Dyschiriodes** Jeannel, 1941 subg. **Chiridysus** Fedorenko, 1996
001.0 **strumosus** (Dejean, 1825) TUM
002.0 **euxinus** (Znojko, 1927) TUR

046.0. **Dyschiriodes** Jeannel, 1941 subg. **Dyschiriodes** Jeannel, 1941
? 001.0 nitidus (Dejean, 1825) ASE
002.0 **agnatus** (Motschulsky, 1844) TUE
(= lucidus Putzeys, 1846)
(= makolskyi G. Müller, 1934)
(= obenbergeri Mařan, 1935)
(= jedlickai Kult, 1940)
? 003.0 chalceus (Erichson, 1837) CAE
004.0 **persicus** Fedorenko, 1994 ARAN
? 005.0 minutus (Dejean, 1825) MED
006.0 **aeneus** (Dejean, 1825) SIE
a. aeneus (Dejean, 1825)
007.0 **apicalis** (Putzeys, 1846) MED
008.0 **jordanicus** Fedorenko, 1996 EME
009.0 **macroderus** (Chaudoir, 1850) MED
m. macroderus (Chaudoir, 1850)
010.0 **auriculatus** (Wollaston, 1867) AFM
a. auriculatus (Wollaston, 1867)
011.0 **morio** (Putzeys, 1866) TUM

012.0 **euphraticus** (Putzeys, 1846)	SWA
013.0 **cylindricus** (Dejean, 1825)	TUE
c. **hauseri** (Fleischer, 1898)	
014.0 **laeviusculus** (Putzeys, 1846)	EUR
015.0 **mesopotamicus** (G. Müller, 1922)	TUR
016.0 **cariniceps** (Baudi, 1864)	EME
017.0 **luticola** (Chaudoir, 1850)	TUM
l. **luticola** (Chaudoir, 1850)	
018.0 **pusillus** (Dejean, 1825)	TUE
019.0 **bacillus** (Schaum, 1857)	MED
b. **bacillus** (Schaum, 1857)	
020.0 **chalybaeus** (Putzeys, 1846)	MED
c. **gibbifrons** (Apfelbeck, 1899)	
c. **resli** (Bulirsch, 1996)	
021.0 **microthorax** (Motschulsky, 1844)	CAM
022.0 **salinus** (Schaum, 1843)	TUE
s. **striatopunctatus** (Putzeys, 1846)	
047.0. **Dyschiriodes** Jeannel, 1941 subg. **Paradyschirius** Fedorenko, 1996	
001.0 **parallelus**(Motschulsky, 1844)	EUR
p. **parallelus**(Motschulsky, 1844)	
002.0 **substriatus** (Duftschmid, 1812)	EUR
s. **priscus** (G. Müller, 1922)	
048.0. **Apotomus** Illiger, 1807	
001.0 **clypeonitens** G. Müller, 1943	CAM
c. **adanensis** Jedlička, 1961	
(= flavescens Auct. nec Apetz, 1854)	
(= bithynicus Korge, 1971)	
002.0 **testaceus** Dejean, 1825	TUR
003.0 **rufithorax** Pecchioli, 1838	TUM
049.0. **Broscus** Panzer, 1813	
001.0 **nobilis** Dejean,1828	EME
002.0 **cephalotes** (Linné, 1758)	EUR
050.0. **Asaphidion** Gozis, 1886	
001.0 **caraboides** (Schrank, 1781)	EUR
c. **caraboides** (Schrank, 1781)	
(= ? balcanicus Netolitzky, 1918)	
? 002.0 pallipes (Duftschmid, 1812)	SIE
003.0 **flavipes** (Linné, 1761)	SIE
004.0 **flavicorne** Solsky, 1874	MED
005.0 **ganglbaueri** (G. Müller, 1921)	EME
(= weiratheri Netolitzky, 1935)	
006.0 **ponticum** Schweiger, 1975	E (ANAN)
051.0. **Microserrullula** Netolitzky, 1921	
001.0 **quadricollis** (Motschulsky, 1844)	TUM
(= inserticeps Chaudoir, 1850)	
002.0 **apicalis** (Ménétriés, 1832)	TUR

052.0. **Odontium** Leconte, 1848 subg. **Odontium** Leconte, 1848	
001.0 **striatum** (Fabricius, 1792)	SIE
? 002.0 suturale (Motschulsky, 1850)	TUR
053.0. **Metallina** Motschulsky, 1850 subg. **Chlorodium** Motschulsky, 1864	
001.0 **pygmaea** (Fabricius, 1792)	EUR
002.0 **splendida** (Sturm, 1825)	TUE
003.0 **luteipes** (Motschulsky, 1845)	TUR
(= colchica Chaudoir, 1850)	
? 004.0 luridicornis (Solsky, 1874)	TUR
(= lamprina Reitter, 1895)	
054.0. **Metallina** Motschulsky, 1850 subg. **Neja** Motschulsky, 1864	
001.0 **torosa** (Marggi & Huber, 1999)	E (ANAS)
(= anatolicum Jedlička, 1968 nec Korge, 1964)	
002.0 **sporadica** (J. Sahlberg, 1903)	EME
003.0 **leucoscelis** (Chaudoir,1850)	EME
(= ? curtula Duval, 1851)	
055.0. **Metallina** Motschulsky, 1850 subg. **Metallina** Motschulsky, 1850	
001.0 **lampros** (Herbst, 1784)	PAL
002.0 **properans** (Stephens, 1828)	SIE
003.0 **bodenheimeri** (Netolitzky, 1935)	E (ANAS)
056.0. **Phyla** Motschulsky, 1844	
001.0 **incommoda** (Netolitzky, 1926)	POCA
002.0 **tethys** (Netolitzky, 1926)	MED
003.0 **liliputana** (J. Sahlberg, 1907)	EME
004.0 **phoenicea** (Huber & Marggi, 1997)	EME
057.0. **Notaphus** Dejean, 1821 subg. **Notaphus** Dejean, 1821	
001.0 **obliquus** (Sturm, 1825)	SIE
? 002.0 semipunctatus (Donovan, 1806)	ASE
(= elegantulus R.F. Sahlberg, 1844)	
(= adustus Schaum, 1860)	
003.0 **varius** (Olivier, 1795)	PAL
(= rumelicus Apfelbeck, 1902)	
058.0. **Notaphus** Dejean, 1821 subg. **Notaphemphanes** Netolitzky, 1920	
001.0 **ephippium** (Marsham, 1802)	MED
059.0. **Notaphus** Dejean, 1821 subg. **Notaphocampa** Netolitzky, 1920	
001.0 **niloticus** (Dejean, 1831)	PAL
n. **hamatus** (Kolenati, 1845)	
060.0. **Emphanes** Motschulsky, 1850 subg. **Emphanes** Motschulsky, 1850	
001.0 **azurescens** (Dalla Torre, 1877)	EUR
002.0 **latiplaga** (Chaudoir, 1850)	MED
003.0 **minimus** (Fabricius, 1792)	SIE
004.0 **normannus** (Dejean, 1831)	MED
(= mediterraneus Csiki, 1926)	
(= apfelbecki Müller-Motzfeld, 1987)	

005.0 **rivularis** (Dejean, 1831)	MED
r. euxinus (Apfelbeck, 1904)	
006.0 **tenellus** (Erichson, 1837)	SEU
061.0. **Emphanes** Motschulsky, 1850 subg. **Talanes** Motschulsky, 1864	
001.0 **subfasciatus** (Chaudoir, 1850)	EME
062.0. **Leja** Dejean, 1821 subg. **Diplocampa** Bedel, 1896	
001.0 **assimilis** (Gyllenhal, 1810)	WPA
002.0 **skoraszewskyi** (Korge, 1971)	E (KURD)
003.0 **fumigata** (Duftschmid, 1812)	ASE
063.0. **Leja** Dejean, 1821 subg. **Leja** Dejean, 1821	
001.0 **articulata** (Panzer, 1796)	ASE
(= diluticorne Netolitzky, 1918)	
002.0 **maculata** (Dejean, 1831)	MED
003.0 **octomaculata** (Goeze, 1777)	PAL
064.0. **Philochthus** Stephens, 1828	
001.0 **inoptatus** (Schaum, 1857)	SEU
002.0 **judaicus** (J. Sahlberg, 1908)	EME
003.0 **escherichi** (Ganglbauer, 1897)	MED
e. escherichi (Ganglbauer, 1897)	
(= latior De Monte, 1949)	
004.0 **vicinus** (Lucas, 1846)	MED
v. subplagiatus (J. Sahlberg, 1907)	
005.0 **guttula** (Fabricius, 1792)	SIE
006.0 **guttuloides** (De Monte, 1953)	E (ANAS)
007.0 **decolor** (Apfbelbeck, 1911)	EME
008.0 **lunulatus**(Fourcroy, 1785)	EUM
009.0 **lycicus** Jeanne, 1996	E (ANAS)
010.0 **ellipticocurtus** (Netolitzky, 1935)	POCA
011.0 **eregliensis** (Jedlička, 1961)	E (ANAS)
012.0 **neresheimeri** (G. Müller, 1929)	EUR
n. dagensis Korge, 1971	
065.0. **Bembidion** Latreille, 1802	
001.0 **quadrimaculatum** (Linné, 1761)	OLA
q. quadrimaculatum (Linné, 1761)	
002.0 **humerale** Sturm, 1825	SIE
h. petribulirschi Toledano, i.l.	
003.0 **quadripustulatum** Audinet-Serville, 1821	CEM
q. quadripustulatum Audinet-Serville, 1821	
066.0. **Pseudolimnaeum** Kraatz, 1888	
001.0 **lederi** (Reitter, 1888)	POCA
l. anatolicum (Korge, 1964)	
067.0. **Ocydromus** Clairville, 1806 subg. **Bembidionetolitzkya** Strand, 1929	
001.0 **tibialis** (Duftschmid,1812)	EUR
002.0 **peliopterus** (Chaudoir, 1850)	SWA
(= macrophthalmus Reitter, 1890)	

003.0 **geniculatus** (Heer, 1837)	EUR
g. ayderensis (Korge, 1971)	
004.0 **varicolor** (Fabricius, 1803)	EUR
(= tricolor Fabricius, 1801 nec Gmelin, 1801)	
005.0 **concoeruleus** (Netolitzky, 1942)	SEU
(= coeruleus Auct. partim)	
(= ? astrabadensis Mannerheim in Chaudoir, 1844)	
006.0 **trabzonicus** (Belousov & Sokolov, 1994)	E (ANNE)
007.0 **relictus** (Apfelbeck, 1904)	SEU
008.0 **pseudocyaneus** (Belousov & Sokolov, 1994)	POCA
009.0 **motzfeldi** (Belousov & Sokolov, 1994)	POCA
010.0 **gotschii** (Chaudoir, 1846)	ARME
068.0. **Ocydromus** Clairville, 1806 subg. **Peryphiolus** Jeannel, 1941	
001.0 **monticola** (Sturm, 1825)	EUR
m. ponticus (Korge, 1964)	
069.0. **Ocydromus** Clairville, 1806 subg. **Euperyphus** Jeannel, 1941	
001.0 **combustus** (Ménétriés, 1832)	SWA
070.0. **Ocydromus** Clairville, 1806 subg. **Peryphanes** Jeannel, 1941 (14)	
001.0 **deletus** (Audinet-Serville, 1821)	EUR
(= nitidulus Marsham, 1802 nec Schrank, 1781)	
002.0 **heinzi** (Korge, 1972) (15)	E (ANAN)
003.0 **tauricus** (G. Müller, 1918) (15)	E (ANAT)
t. tauricus (G. Müller, 1918)	
t. frivaldszkyi (Csiki, 1928)	
(= planipennis Duval, 1852)	
t. weiratheri (Netolitzky, 1930)	
004.0 **argaeicola** (Ganglbauer, 1905) (15)	E (ANAS)
005.0 **grandipennis** (Schaum, 1862)	EME
g. bulgardagensis (Fassati, 1990)	
g. freyi (Netolitzky, 1937)	
006.0 **signatipennis** (Duval, 1852) (15)	E (ANAW)
(=parnassius Miller, 1883)	
007.0 **viduus** (Netolitzky, 1910) (15)	E (ANAS)
008.0 **kulzeri** (Netolitzky, 1935)	E (KURD)
009.0 **kurdistanicus** (Netolitzky, 1920) (15)	IRAW
010.0 **dalmatinus** (Dejean, 1831)	EME
d. dalmatinus (Dejean, 1831)	
d. levantinus (Vsetecka, 1941)	
d. haupti (Reitter, 1908)	
(= biguttatus Motschulsky, 1850 nec Fabricius, 1779)	
011.0 **fraxator** (Ménétriés, 1891)	ARCA
012.0 **lacrimans** (Netolitzky, 1935)	E (ANAT)
013.0 **weiratherianus** (Netolitzky, 1932)	E (ANAS)
w. cilicicus (De Monte, 1947)	
(= ? pindicus Apkelbeck, 1901) (15)	

014.0 **brunnicornis** (Dejean, 1831)	EME
015.0 **castaneipennis** (Duval, 1851)	EME
071.0. **Ocydromus** Clairville, 1806 subg. **Ocyturanes** Müller-Motzfeld, 1986	
001.0 **balcanicus** (Apfelbeck, 1899)	EME
b. asiaeminoris (Netolitzky, 1935)	
002.0 **praeustus** (Dejean, 1831)	MED
(= fauveli Ganglbauer, 1892)	
(= viridifluum G. Müller, 1930)	
003.0 **culminicola** (Piochard de la Brûlerie, 1875)	EME
004.0 **sevanensis** (Belousov, 1990)	ARCA
s. asiorum (Müller-Motzfeld, 1990)	
072.0. **Ocydromus** Clairville, 1806 subg. **Peryphus** Dejean, 1821	
001.0 **cruciatus** (Dejean, 1831)	PAL
(= andreae Auct. nec Fabricius, 1787)	
c. liberus (Netolitzky, 1937)	
002.0 **femoratus** (Sturm, 1825)	SIE
(= caucasicola Netolitzky, 1918)	
003.0 **amplus** (J. Sahlberg, 1907)	EME
004.0 **subcostatus** (Motschulsky, 1850)	TUM
s. subcostatus (Motschulsky, 1850)	
(= propevau Fassati, 1944)	
005.0 **terminalis** (Heer, 1841) **(16)**	EUR
t. confinis (Korge, 1964)	
006.0 **testaceus** (Duftschmid, 1812)	EUR
t. brevius (Netolitzky, 1918)	
007.0 **persicus** (Ménétriés, 1832)	SWA
008.0 **torosiensis** (Jedlička, 1961)	E (ANAS)
073.0. **Ocydromus** Clairville, 1806 subg. **Ocydromus** Clairville, 1806	
001.0 **decorus** (Zenker, 1801)	CAE
d. subconvexus (Daniel, 1902)	
(= schuberti Jedlička, 1963)	
002.0 **bodemeyeri** (Daniel, 1902)	E (ANAT)
003.0 **siculus** (Dejean, 1831)	MED
s. smyrnensis (Apkelbeck,1904)	
(= rebellus Schatzmayr, 1909)	
004.0 **ispartanus** (Netolitzky, 1930)	E (ANAS)
005.0 **atlanticus** (Wollaston, 1854)	CAM
a. megaspilus (Walker, 1871)	
(= jordanense Piochard de la Brûlerie, 1875)	
006.0 **zolotarewi** (Reitter, 1910)	POCA
074.0. **Ocydromus** Clairville, 1806 subg. **Omoperyphus** Netolitzky, 1931	
001.0 **hypocrita** (Dejean, 1831)	MED
h. semibraccatus (Netolitzky, 1911)	
002.0 **caricus** (J. Sahlberg, 1907)	E (ANSW)
003.0 **cordicollis** (Duval, 1851)	EME

075.0. **Ocydromus** Clairville, 1806 subg. **Testediolum** Ganglbauer, 1892	
001.0 **armeniacus** (Chaudoir, 1846)	POCA
a. olympicus (De Monte, 1946)	
002.0 **colasi** (Schuler, 1961)	POCA
076.0. **Ocydromus** Clairville, 1806 subg. **Nepha** Motschulsky, 1864 (17)	
001.0 **caucasicus** (Motschulsky, 1844)	SWA
(= substriatus Chaudoir, 1846)	
(= laevissimus Duval,1851)	
(= turcicus Ganglbauer, 1892 nec Gemminger & Harold, 1868)	
002.0 **turcicus** (Gemminger & Harold, 1868)	POCA
(= versicolor Duval, 1851)	
(= ? staneki Mařan, 1932)	
003.0 **pinkeri** (Netolitzky, 1935)	POCA
004.0 **seriatus** (Motschulsky, 1844)	POCA
005.0 **laevipennis** (G. Müller, 1918)	IRNO
006.0 **posofi** Bonavita & Vigna Taglianti, i. l.	E (ANNE)
007.0 **menetriesii** (Kolenati, 1845)	TUR
008.0 **hauserianus** (Netolitzky, 1918)	ANAT
009.0 **rufimacula** (G. Müller, 1918)	EME
010.0 **retipennis** (G. Müller, 1918)	TUM
011.0 **tetragrammus** (Chaudoir, 1846)	EUM
t. tetragrammus(Chaudoir, 1846)	
012.0 **tetrasemus** (Chaudoir, 1846)	POCA
013.0 **vseteckai** (Mařan, 1936)	EME
v. adanae (De Monte, 1952)	
077.0. **Synechostictus** Motschulsky, 1864	
001.0 **multisulcatus** (Reitter, 1890)	POCA
(= careniger Korge, 1971)	
002.0 **moschatus** (Peyron, 1858)	E (ANAS)
003.0 **nordmanni** (Chaudoir, 1844)	POCA
004.0 **tarsicus** (Peyron, 1858)	EME
078.0. **Princidium** Motschulsky, 1864 subg. **Princidium** Motschulsky, 1864	
001.0 **punctulatum** (Drapiez, 1820)	CEM
p. bracteonoides (Reitter, 1908)	
079.0. **Princidium** Motschulsky, 1864 subg. **Testedium** Motschulsky, 1864	
001.0 **bipunctatum** (Linné, 1761)	EUR
b. rugiceps (Chaudoir, 1846)	
002.0 **quadrifossulatum** (Schaum, 1862)	EME
(= ? coelesyriae Netolitzky, 1921)	
080.0. **Ocys** Stephens, 1828	
001.0 **harpaloides** (Audinet-Serville, 1821)	EUM
002.0 **quinquestriatus** (Gyllenhal, 1810)	EUR
q. berytensis (Netolitzky, 1917)	
003.0 **sp.** cf. **trechoides** (Reitter, 1895)	ARAN
081.0. **Tachys** Dejean, 1821	
001.0 **scutellaris** Stephens, 1828	TUE

082.0. **Paratachys** Casey, 1918	
001.0 **bistriatus** (Duftschmid, 1812)	WPA
002.0 **micros** (Fischer von Waldheim, 1828)	EUM
003.0 **fulvicollis** (Dejean, 1831)	TUE
083.0. **Polyderis** Motschulsky, 1862	
001.0 **brevicornis** (Chaudoir, 1846)	SCO
002.0 **cardioderus** (Chaudoir, 1850)	EME
084.0. **Porotachys** Netolitzy, 1914	
001.0 **bisulcatus** (Nicolai, 1822)	WPA
002.0 **ottomanus** Schweiger, 1968	E (ANAN)
085.0. **Tachyta** Kirby, 1837 subg. **Tachyta** Kirby, 1837	
001.0 **nana** (Gyllenhal, 1810)	OLA
086.0. **Elaphropus** Motschulsky, 1839	
001.0 **caraboides** Motschulsky, 1839	EME
087.0. **Tachyura** Motschulsky, 1862 subg. **Tachyura** Motschulsky, 1862	
001.0 **parvula** (Dejean, 1831)	OLA
002.0 **thoracica** (Kolenati, 1845)	SEU
(= diabrachys Auct. nec Kolenati, 1845)	
003.0 **quadrisignata** (Duftschmid, 1812)	EUM
? 004.0 sexstriata (Duftschmid, 1812)	EUR
005.0 **diabrachys** (Kolenati, 1845)	TEM
(= inaequalis Auct. nec Kolenati, 1845)	
(= tetragraphus Reitter, 1884)	
006.0 **decolorata** (Chaudoir, 1850)	SWA
007.0 **euphratica** (Reitter, 1885)	TUR
008.0 **ferrugata** (Reitter, 1895)	SYPA
?? 009.0 anatolica (Jedlička, 1964)	
088.0. **Tachyura** Motschulsky, 1862 subg. **Amaurotachys** Jeannel, 1946	
001.0 **grandicollis** (Chaudoir, 1846)	EME
g. grandicollis (Chaudoir, 1846)	
089.0. **Sphaerotachys** G. Müller, 1926	
001.0 **hoemorrhoidalis** (Ponza, 1805)	AFM
002.0 **latus** (Peyron, 1858)	ASI
003.0 **lucasi** (Duval, 1852)	MED
?? 004.0 schuberti (Jedlička, 1968)	
090.0. **Limnastis** Motschulsky, 1862	
001.0 **galilaeus** Piochard de la Brûlerie, 1875	MED
091.0. **Turkanillus** Coiffait, 1956	
001.0 **strinatii** Coiffait, 1956	E (ANNW)
002.0 **besucheti** Vigna Taglianti, i. l. 1980	E (ANAW)
092.0. **Parvocaecus** Coiffait, 1956	
(= Winklerites Jeannel, 1937 partim)	

001.0 **turcicus** (Coiffait, 1956) E (ANNW)
(= ? Scotodipnus anatolicus Jedlička, 1968)
002.0 **anatolicus** (Coiffait, 1956) E (ANNW)
003.0 **tokatensis** (Vigna Taglianti, 1976) E (ANAN)
004.0 **loebli** Vigna Taglianti, i. l. 1980 E (ANSW)

093.0. **Thalassophilus** Wollaston, 1854
001.0 **longicornis** (Sturm, 1825) EUR

094.0. **Neoblemus** Jeannel, 1923
001.0 **gillerforsi** Jeanne, 1996 E (ANSW)

095.0. **Perileptus** Schaum, 1860
001.0 **areolatus** (Creutzer, 1799) EUM

096.0. **Trechoblemus** Ganglbauer, 1892
001.0 **micros** (Herbst, 1784) SIE

097.0. **Trechus** Clairville, 1806
001.0 **quadrimaculatus** Motschulsky, 1850 POCA
002.0 **genevanorum** Pawlowski, 1977 E (ANNW)
003.0 **byzantinus** Apfelbeck, 1901 E (ANNW)
004.0 **asiaticus** Jeannel, 1927 EME
005.0 **subnotatus** Dejean, 1831 EME
(= pallidipennis Schaum, 1857)
006.0 **gravidus** Putzeys, 1870 POCA
007.0 **nairicus** Pavesi & Sciaky, 1992 E (KURD)
008.0 **viti** Pawlowski,1977 E (ANNE)
009.0 **austriacus** Dejean, 1831 TUE
(= olympicus Piochard de la Brûlerie, 1875)
(= paphlagonicus Mařan, 1940)
(= gajaci Coiffait, 1973)
010.0 **subacuminatus** Fleischer, 1898 EME
(= pallidipennis Ganglbauer, 1896 nec Schaum, 1857)
(= labruleriei Jeannel, 1921)
(= austriacus Auct. partim)
011.0 **crucifer** Piochard de la Brûlerie, 1875 EME
012.0 **saulcyi** Jeannel, 1921 EME
013.0 **pamphylicus** Jeanne, 1996 E (ANSW)
014.0 **osmanilis** Daniel & Daniel, 1902 E (ANNW)
015.0 **besucheti** Pawlowski, 1977 E (ANAN)
016.0 **diogenes** Pawlowski, 1979 E (ANAN)
017.0 **ilgazicus** Pawlowski, 1976 E (ANAN)
018.0 **kackardagi** Pawlowski, 1978 E (ANNE)
019.0 **karadenizus** Pawlosky, 1976 E (ANNE)
020.0 **lazicus** Pawlowski, 1976 E (ANNE)
021.0 **skoupyi** Moravec & Zieris, 1998 E (ANNE)
022.0 **quadristriatus** (Schrank, 1781) TEM
023.0 **witkowskii** Pawlowski, 1978 E (ANNE)
024.0 **cappadocicus** Pawlowski, 1976 E (ANNE)

025.0 **melanocephalus** Kolenati, 1845	SWA
026.0 **obtusus** Erichson, 1837	OLA
o. thracicus Pawlowski, 1973	
027.0 **loebli** Pawlowski, 1977	E (ANNW)
028.0 **ulrichi** Pawlowski, 1976	E (ANNE)
029.0 **korbi** Reitter, 1903	E (ANNE)
030.0 **hurrita** Pavesi & Sciaky, 1990	E (KURD)
031.0 **urarteus** Pavesi & Sciaky, 1994	E (KURD)
032.0 **machardi** Jeanne, 1976	E (ANNE)
(= korgei Pawlowsky, 1976)	
033.0 **walteri** Pawlowski, 1978	E (ANNE)
034.0 **michaeli** Pawlowski, 1978	E (ANNE)
035.0 **heinzianus** Pawlowski, 1979	E (ANNE)
036.0 **ziganensis** Jeanne, 1976	E (ANNE)
(= heinzi Pawlowski, 1976)	
037.0 **tristis** (Duftschmid, 1812)	TUE
(= nigrinus Putzeys, 1847)	
(= anatolicus Ganglbauer, 1900)	
098.0. **Troglocimmerites** Ljovuschkin, 1970	
001.0 **pasquinii** Vigna Taglianti, 1977	E (ANNE).
099.0. **Anillidius** Jeannel, 1928	
001.0 **pisidicus** (Jeannel, 1936)	E (ANSW)
002.0 **hobhausae** (Jeannel, 1930)	E (ANSW)
003.0 **tauricus** (Jeannel, 1930)	E (ANSW)
004.0 **uludagensis** (Schweiger, 1963)	E (ANNW)
(= stephaniae Schweiger, 1963)	
(= zenzingonuli Schweiger, 1963)	
005.0 **coiffaiti** (Jeannel, 1955)	E (ANNW)
006.0 **byzantinus** (Casale, Etonti & Giachino, 1992) **nov. comb. (18)**	E (ANNW)
100.0. **Pontodytes** Casale & Giachino, 1989	
001.0 **cavazzutii** Casale & Giachino, 1989	E (ANNE)
101.0. **Sbordoniella** Vigna Taglianti, 1980	
001.0 **indagi** Vigna Taglianti, 1980	E (ANSW)
102.0. **Kosswigia** Jeannel, 1947	
001.0 **insularis** Jeannel, 1947	E (ANSW)
103.0. **Duvalius** Delarouzée, 1859 subg. **Duvalius** Delarouzée, 1859	
001.0 **huetheri** Jeannel, 1934	E (ANSW)
(= Trechopsis gajaci Coiffait, 1973)	
(= Trechopsis jeanneli Coiffait, 1973)	
(= Trechopsis bakalowiczi Coiffait, 1973)	
002.0 **bicikensis** Perrault, 1971	E (ANNE)
003.0 **bruschii** Vigna Taglianti, n. sp.	E (ANNW)
004.0 **armeniacus** Casale, 1979	E (ANNE)
005.0 **heinzi** Casale & Giachino, 1991	E (KURD)
006.0 **martinae** Jeanne, 1996	E (KURD)

104.0. **Duvalius** Delarouzée, 1859 subg. **Duvaliotes** Jeannel, 1928	
001.0 **bortesii** Casale & Vigna Taglianti, 1984	E (ANSW)
105.0. **Pogonus** Dejean, 1821 subg. **Pogonus** Dejean, 1821	
? 001.0 luridipennis (Germar, 1822)	WPA
? 002.0 iridipennis Nicolai, 1822	ASE
003.0 **gilvipes** Dejean, 1828	MED
004.0 **chalceus** (Marsham, 1802)	MED
005.0 **littoralis** (Duftschmid, 1812)	MED
006.0 **riparius** Dejean, 1828	SEU
r. syriacus Chaudoir, 1871	
(= olivaceus Carret, 1903)	
007.0 **punctifrons** Reitter, 1908	EME
106.0. **Pogonus** Dejean, 1821 subg. **Pogonoidius** Carret, 1903	
001.0 **punctulatus** Dejean, 1829	EME
107.0. **Pogonistes** Chaudoir, 1871 (= Pogonus Auct. partim)	
001.0 **convexicollis** (Chaudoir, 1828)	EME
002.0 **liliputanus** (Apfelbeck, 1904)	EME
003.0 **rufoaeneus** (Dejean, 1828)	EME
? 004.0 testaceus (Chaudoir, 1828)	EME
108.0. **Syrdenus** Chaudoir, 1871 (= Pogonus Auct. partim)	
001.0 **grayi** (Wollaston, 1862)	MED
109.0. **Deltomerus** Motschulsky, 1850	
001.0 **balachovskyi** Ledoux, 1976	E (KURD)
002.0 **lodosi** Ledoux, 1976	E (KURD)
003.0 **dinci** Ledoux, 1976	E (ANNE)
004.0 **punctatus** Heinz & Ledoux, 1987	E (KURD)
110.0. **Omphreus** Dejean, 1828 subg. **Paromphreus** Ganglbauer, 1887	
001.0 **korbi** Ganglbauer, 1887	E (ANAS)
002.0 **chareti** Lassalle, 1995	E (ANSW)
003.0 **prunierorum** Lassalle, 1998	E (ANSW)
004.0 **andriaenssensi** Lassalle, 1998	E (ANSW)
111.0. **Atranus** Leconte, 1848	
001.0 **ruficollis** (Gautier des Cottes, 1857)	SEU
(= collaris Ménétriés, 1832 nec Say, 1830)	
112.0. **Platynus** Bonelli, 1810 subg. **Limodromus** Motschulsky, 1864	
001.0 **assimilis** (Paykull, 1790)	SIE
113.0. **Platynus** Bonelli, 1810 subg. **Platynus** Bonelli, 1810	
001.0 **scrobiculatus** (Fabricius, 1810)	SEU
s. amicorum Schmidt, 1996	
s. purkynei Obenberger, 1916	
002.0 **anatolicus** J. Schmidt, 1996	E (ANNE)
? 003.0 grandicollis Motschulsky, 1850	POCA

114.0. **Paranchus** Lindroth, 1974	
001.0 **albipes** (Fabricius, 1796)	EUM
(= ruficornis Goeze, 1777 nec Degeer, 1774)	
115.0. **Oxypselaphus** Chaudoir, 1843	
? 001.0 obscurus (Herbst, 1784)	OLA
116.0. **Anchomenus** Bonelli, 1810 subg. **Anchomenus** Bonelli, 1810	
001.0 **dorsalis** (Pontoppidan, 1763)	PAL
117.0. **Anchomenus** Bonelli, 1810 subg. **Anchodemus** Motschulsky, 1864	
001.0 **dohrni** Fairmaire, 1866	E (ANSW)
118.0. **Agonum** Bonelli, 1810	
001.0 **marginatum** (Linné, 1758)	WPA
002.0 **viridicupreum** (Goeze, 1777)	TUE
003.0 **sexpunctatum** (Linné, 1758)	SIE
(= ? sexstigmatum Korge, 1964)	
004.0 **muelleri** (Herbst, 1784)	SIE
m. muelleri (Herbst,1784)	
005.0 **rugicolle** Chaudoir, 1846	POCA
(= brachyderum Chaudoir, 1850)	
(= birthleri Hopffgarten, 1888)	
(= perprasinum Reitter, 1897)	
(= stocki Reitter, 1907)	
(= kurucanicum Kirschenhofer, 1981)	
(= nuytenae Kirschenhofer, 1981)	
006.0 **atratum** (Duftschmid, 1812)	SEU
007.0 **extensum** Ménétriés, 1849	TUM
(= chalconotum Ménétriés, 1832)	
(= zurcheri Puel, 1938)	
008.0 **lugens** (Duftschmid, 1812)	EUR
009.0 **angustatum** Dejean, 1828	TUE
(= gisellae Csiki, 1931)	
010.0 **hypocrita** (Apfelbeck, 1904)	TUE
011.0 **nigrum** Dejean, 1828	TEM
012.0 **longicorne** Chaudoir, 1846	EME
(= holdhausi Apfelbeck, 1904)	
013.0 **sordidum** Dejean, 1828	EME
(= approximatus Reiche & Saulcy, 1855)	
(= bodemeyeri Reitter, 1907)	
014.0 **antennarium** (Duftschmid, 1812)	EUR
?? 015.0 muchei Jedlička, 1961	
119.0. **Europhilus** Chaudoir, 1859	
? 001.0 gracilis (Sturm, 1824)	SIE
002.0 **convexiusculus** (Chaudoir, 1843)	E (ANAT)
003.0 **thoreyi** (Dejean, 1828)	OLA
(= pelidnus Paykull, 1792 nec Herbst, 1784)	

120.0. **Olisthopus** Dejean, 1828	
001.0 **fuscatus** Dejean, 1828	MED
002.0 **glabricollis** (Germar, 1817)	EME
? 003.0 rotundatus (Paykull, 1790)	EUR
004.0 **sturmi** (Duftschmid, 1812)	ASE
121.0. **Dolichus** Bonelli, 1810	
001.0 **halensis** (Schaller, 1783)	ASE
122.0. **Synuchus** Gyllenhal, 1810	
001.0 **vivalis** (Illiger, 1798)	ASE
(= nivalis Panzer, 1797 nec Paykull, 1790)	
123.0. **Platyderus** Stephens, 1828	
? 001.0 punctiger Reiche, 1855	SYPA
? 002.0 reticulatus Chaudoir, 1842	SWA
? 003.0 grandiceps Piochard de la Brûlerie, 1875	SYPA
004.0 **weiratheri** Mařan, 1940	E (ANAS)
005.0 **schuberti** Jedlička, 1963	E (ANAS)
006.0 **anatolicus** Jedlička,1963	E (ANAN)
007.0 **namrun** Jedlička, 1963	E (ANAS)
008.0 **akkus** Jedlička, 1963	E (ANAN)
124.0. **Amphimasoreus** Piochard de la Brûlerie, 1876	
(= Platyderus subgen. Platyderodes Apfelbeck, 1904)	
001.0 **amaroides** Piochard de la Brûlerie, 1876	EME
(= merkli Apfelbeck, 1904)	
125.0. **Atranopsis** Baehr, 1982 subg. **Tauroderus** Casale & Vigna Taglianti, 1984	
001.0 **bolognai** (Casale & Vigna Taglianti, 1984)	E (ANSW)
126.0. **Calathus** Bonelli, 1810	
001.0 **melanocephalus** (Linné, 1758)	PAL
002.0 **cinctus** Motschulsky, 1850	WPA
(= mollis Auct. partim)	
(= ? erythroderus Gemminger & Harold, 1868)	
003.0 **mollis** (Marsham, 1802)	WPA
(= ? atticus Gautier des Cottes, 1867)	
(= ? leptodactylus Putzeys, 1873)	
004.0 **ambiguus** (Paykull, 1790)	ASE
(= dilutus Chaudoir, 1842)	
a. ambiguus (Paykull, 1790)	
a. rugicollis Putzeys, 1873	
005.0 **erratus** (C.R. Sahlberg, 1827)	SIE
006.0 **metallicus** Dejean, 1828	EUR
(= deplanatus Chaudoir, 1843)	
(= aeneus Putzeys, 1873)	
(= jureceki Mařan, 1939)	
007.0 **ordinatus** Gautier des Cottes, 1870	E (ANNE)
008.0 **reflexicollis** Faldermann, 1839	POCA
(= laevicollis Gautier des Cottes, 1870)	

009.0 **deyrollei** Gautier des Cottes, 1870 E (ANNE)
  d. **deyrollei** Gautier des Cottes, 1870
  d. **pseudofemoralis** Battoni, 1986
010.0 **femoralis** Chaudoir, 1846 POCA
011.0 **libanensis** Putzeys, 1873 EME
  l. **libanensis** Putzeys, 1853
  l. **pluriseriatus** Putzeys, 1873
012.0 **fuscipes** (Goeze, 1777) EUM
  f. **latus** Audinet-Serville, 1821
  f. **disjunctus** Battoni & Vereshagina, 1984
013.0 **distinguendus** Chaudoir, 1846 TUE
  (= fuscipes graecus Schatzmayr, 1943 nec Dejean & Boisduval, 1830)
014.0 **longicollis** Motschulsky, 1864 TUE
  (= syriacus Gautier des Cottes, 1867 nec Chaudoir, 1863)
  (= thessalus Auct. nec Putzeys, 1873)
  (= fuscipes paphlagoniensis Schweiger, 1966 nomen nudum)
015.0 **syriacus** Chaudoir, 1863 TUM
  (= distinguendus Chaudoir, 1846 partim)
  (= fuscipes kervillei Puel, 1939)
  (= ? meander Schweiger, 1966 nomen nudum)
  (= ? anatolicus Jedlička, 1969)
016.0 **muchei** Jedlička, 1961 E (ANNW)
017.0 **arcuatus** Gautier des Cottes, 1870 E (ANAN)
  (= consanguineus Schweiger, 1977)
  (= idaeus Schweiger, 1977)
018.0 **busii** Battoni, 1984 E (ANNW)
019.0 **lissoderus** Putzeys, 1873 E (ANAN)
020.0 **erzeliki** Schweiger, 1977 E (ANNW)
021.0 **roccai** Battoni, 1984 E (ANNW)
  (= lissoderus Schweiger, 1977 nec Putzeys, 1873)
022.0 **heinzianus** Battoni, 1986 E (ANNE)
023.0 **zabroides** Putzeys, 1873 E (ANNE)
  z. **zabroides** Putzeys, 1873
  (= heinzi Jedlička, 1965)
  z. **affinis** Battoni, 1986
024.0 **vignatagliantii** Battoni, 1986 E (ANNE)
025.0 **kirschenhoferianus** Battoni, 1986 E (ANNE)
026.0 **acuticollis** Putzeys, 1873 EME
027.0 **casalei** Battoni, 1986 E (ANAW)

127.0. **Lindrothius** Kurnakov, 1962
  (= Synuchidius, Heinz 1971 nec Apfelbeck, 1908)
001.0 **aeneocupreus** (Heinz, 1971) E (ANNE)

128.0. **Thermoscelis** Putzeys, 1873
001.0 **insignis** (Chaudoir,1846) POCA

129.0. **Taphoxenus** Motschulsky, 1864 subg. **Lychnifugus** Motschulsky, 1864
001.0 **cellarum** (Adams, 1817) SWA
  c. **meridionalis** Casale, 1982

002.0 **cerberus** (Ganglbauer, 1905)	E (ANAC)
c. **cerberus** (Ganglbauer, 1905)	
c. **muchei** Jedlička, 1961	
130.0. **Sphodrus** Clairville, 1806	
001.0 **leucophthalmus** (Linné, 1758)	WPA
131.0. **Laemostenus** Bonelli, 1810 subg. **Laemostenus** Bonelli, 1810	
? 001.0 complanatus (Dejean, 1828) **(19)**	MED (COS)
002.0 **venustus** (Dejean, 1828)	EME
003.0 **parallelocollis** (Reiche, 1855)	SYPA
004.0 **quadricollis** (Redtenbacher, 1843)	EME
q. **turcicus** Casale, 1988 **(20)**	
005.0 **heinzi** Casale, 1988	E (ANAS)
006.0 **bergvalli** Jeanne, 1996	E (ANSW)
132.0. **Laemostenus** Bonelli, 1810 subg. **Antisphodroides** Casale, 1988	
001.0 **koenigi** (Reitter, 1887)	POCA
133.0. **Laemostenus** Bonelli, 1810 subg. **Antisphodrus** Schaufuss, 1865	
001.0 **bodemeyeri** Ganglbauer, 1900	E (ANAS)
002.0 **longicornis** Casale, 1988	E (ANSW)
(= sbordonii Vigna Taglianti, i. l. 1980)	
003.0 **patrizii** Vigna Taglianti, n. sp.	E (ANSW)
004.0 **zoiai** Casale & Vigna Taglianti, n. sp.	E (ANAS)
005.0 **agnolettii** Vigna Taglianti, n. sp.	E (ANSW)
006.0 **lundbergi** Jeanne, 1996	E (ANSW)
007.0 **cyrili** Lassalle, 1997	E (ANSW)
008.0 **guzelolukensis** Lassalle, 1997	E (ANAS)
(= inferorum Vigna Taglianti, i. l. 1980)	
009.0 **actenipoides** Lassalle, 1993	E (ANNE)
010.0 **bulirschi** Dvořak, 1995	E (KURD)
011.0 **hroni** Dvořak, 1998	E (ANAS)
012.0 **baehri** Casale, 1997 **(21)**	E (ANAS)
013.0 **cavazzutii** Casale, 1983	E (ANNE)
014.0 **kurdicus** Casale, 1988	E (ANAS)
015.0 **anatolicus** Casale, 1988	E (KURD)
016.0 **bicolor** (Reitter, 1890)	ARCA
b. **occidentalis** Lassalle, 1993	
017.0 **ganglbauerianus** Casale, 1982	E (ANAS)
018.0 **kirschenhoferi** Casale, 1988	E (ANAN)
019.0 **ponticola** Lassalle, 1993	E (ANAN)
134.0. **Laemostenus** Bonelli, 1810 subg. **Pristonychus** Dejean, 1828	
001.0 **mannerheimi** (Kolenati, 1845)	POCA
m. **mannerheimi** (Kolenati, 1845)	
m. **transcaucasicus** Casale, 1988	
m. **armeniacus** Casale, 1988	
m. **araratensis** Casale, 1988	
002.0 **ponticus** Casale, 1988	E (ANAT)

p. **ponticus** Casale, 1988	
p. **caesareae** Casale, 1988	
p. **subponticus** Casale, 1988	
p. **kurdistanus** Casale, 1988	
003.0 **pretiosus** (Faldermann, 1835)	POCA
004.0 **sericeus** (Fischer von Waldheim, 1823)	ARCA
s. **hepaticus** (Faldermann, 1835)	
005.0 **capitatus** (Chaudoir, 1854)	E (ANAT)
006.0 **amasiae** (Semenov, 1851)	E (ANAC)
007.0 **pisidicus** G. Müller, 1931	E (ANSW)
008.0 **sciakyi** Casale & Vigna Taglianti, n. sp.	E (ANSW)
(= pisidicus Casale, 1988 partim, nec G. Müller, 1931)	
009.0 **asiaeminoris** Casale, 1988	E (ANNW)
010.0 **straneoi** Casale, 1988	E (KURD)
011.0 **cimmerius** (Fischer von Waldheim, 1823)	EME
c. **cimmerius** (Fischer von Waldheim, 1823)	
012.0 **conspicuus** (Waltl, 1838)	EME
135.0. **Laemostenus** Bonelli, 1810 subg. **Sphodroides** Schaufuss, 1865	
001.0 **cordicollis** (Chaudoir, 1854)	EME
136.0. **Morion** Latreille, 1810 subg. **Neomorion** Jeannel, 1948	
001.0 **olympicus** Redtenbacher, 1843	EME
137.0. **Abacetus** Dejean, 1828	
001.0 **quadripustulatus** Peyron, 1848	SWA
138.0. **Platysma** Bonelli, 1810 subg. **Platysma** Bonelli, 1810	
001.0 **nigrum** (Schaller, 1783)	ASE
139.0. **Platysma** Bonelli, 1810 subg. **Morphnosoma** Lutshnik, 1915	
001.0 **cardioderum** (Chaudoir, 1846)	POCA
140.0. **Platysma** Bonelli, 1810 subg. **Melanius** Bonelli, 1810	
001.0 **nigrita** (Paykull, 1790)	PAL
002.0 **anthracinum** (Illiger, 1798)	CAE
a. **biimpressum** (Küster, 1853)	
003.0 **fuscicorne** (Reiche, 1855)	SWA
004.0 **minus** (Gyllenhal, 1827)	SIE
m. **turcicum** Brandmayr & Drioli, 1979	
141.0. **Platysma** Bonelli, 1810 subg. **Adelosia** Stephens, 1835	
001.0 **macrum** (Marsham, 1802)	ASE
(= anachoreta Ménétriés, 1832)	
(= thessalonicense Schatzmayr, 1943)	
142.0. **Pterostichus** Bonelli, 1810 subg. **Oreoplatysma** Jakobson, 1907	
001.0 **pulchellus** Faldermann, 1835	POCA
002.0 **borcka** Jedlička, 1963	E (ANNE)
003.0 **lodosi** Heinz, 1977	E (ANNE)
004.0 **araraticus** Kirschenhofer, 1987	E (KURD)

143.0. **Pterostichus** Bonelli, 1810 subg. **Eurymelanius** Reitter, 1896
001.0 **tamsi** Dejean, 1831 POCA

144.0. **Pterostichus** Bonelli, 1810 subg. **Haplomaseus** Reitter, 1896
001.0 **astutus** Tschitschérine, 1903 POCA
002.0 **armenus** (Faldermann, 1835) POCA
(= rufimanus Chaudoir, 1846)
003.0 **voronovi** Lutshnik, 1916 ARAN
004.0 **consanguineus** Chaudoir, 1878 E (ANAN)
005.0 **giresuni** Jedlička, 1965 E (ANNE)
006.0 **heinzi** Jedlička, 1965 E (ANNE)

145.0. **Pterostichus** Bonelli, 1810 subg. **Cheporus** Latreille, 1829
001.0 **casalei** Straneo, 1984 (22) E (ANNW)

146.0. **Pterostichus** Bonelli, 1810 subg. **Falsargutor** Kryzhanovsky, 1984
001.0 **ponticus** Kirschenhofer, 1987 POCA

147.0. **Pterostichus** Bonelli, 1810 subg. **Myosodus** Fischer von Waldheim, 1824
001.0 **lacunosus** (Chaudoir, 1844) POCA
002.0 **schoenherri** (Faldermann, 1861) POCA
003.0 **stoeckleini** Straneo, 1941 E (KURD)
s. **stoekleini** Straneo, 1941
s. **kulzeri** Straneo, 1942
004.0 **buglaniensis** Kirschenhofer, 1981 E (KURD)

148.0. **Pterostichus** Bonelli, 1810 subg. **Haptoderus** Chaudoir, 1838
001.0 **acrogonus** Chaudoir, 1843 E (ANNW)
002.0 **akkusianus** Kirschenhofer, 1981 E (ANAN)
003.0 **anatolicus** Jedlička, 1963 E (ANNE)
004.0 **barlensis** Straneo, 1935 E (ANSW)
005.0 **blumenthali** (Heinz, 1965) E (ANNW)
006.0 **euxinus** Straneo, 1935 E (ANAN)
007.0 **insidiosus** (Fairmaire, 1866) E (ANSW)
008.0 **quadraticollis** Chaudoir, 1846 POCA
(= ? kaynashensis Schweiger, 1967)
009.0 **kultianus** Jedlička, 1947 E (ANNW)
010.0 **namrun** (Jedlička, 1963) E (ANAS)
011.0 **properans** Chaudoir, 1868 E (ANNW)
012.0 **ulubeyensis** Kirschenhofer, 1981 E (ANAN)

149.0. **Pterostichus** Bonelli, 1810 subg.?
?? 001.0 orman Jedlička, 1963

150.0. **Pterostichus** Bonelli, 1810 subg. **Haptotapinus** Reitter, 1886
001.0 **besucheti** Straneo, 1987 E (ANNW)
002.0 **orduensis** Straneo, 1987 E (ANAN)
003.0 **crassiusculus** (Chaudoir, 1868) E (ANAW)
c. **crassiusculus** (Chaudoir, 1868)
c. **daghensis** Jedlička, 1938
c. **goekensis** Jedlička, 1938

004.0 **bythiniensis** Mařan, 1944 E (ANNW)
005.0 **oblongoparallelus** (Mařan, 1932) E (ANNW)
006.0 **vseteckai** Mařan, 1944 E (ANAW)
007.0 **pavani** Straneo, 1987 E (ANAC)
008.0 **aksekianus** Straneo, 1987 E (ANSW)
009.0 **reissi** G. Müller, 1931 E (ANSW)
010.0 **dipojranus** Straneo, 1987 E (ANSW)
011.0 **odontocnemis** G. Müller, 1931 E (ANSW)

151.0. **Pterostichus** Bonelli, 1810 subg. **Pseudorambousekiella** Schweiger, 1967
001.0 **montisdeorum** Schweiger, 1967 E (ANNW)

152.0. **Tapinopterus** Schaum, 1858 subg. **Speluncarius** Reitter, 1886
001.0 **breuningi** Nègre, 1959 E (ANAN)
002.0 **minimus** Cerruti, 1977 E (ANNW)
003.0 **machardi** Jeanne, 1982 E (ANNE)

153.0. **Tapinopterus** Schaum, 1858 subg. **Hypogearius** Jeannel, 1953
001.0 **heracleotes** Jeannel, 1953 E (ANNW)
002.0 **boluensis** Schweiger, 1966 E (ANNW)
003.0 **schweigeri** Korge, 1971 E (ANNW)

154.0. **Tapinopterus** Schaum, 1858 subg. **Hypogeobium** Tschitschérine, 1903
001.0 **ponticus** (Casale & Giachino, 1991) E (ANNW)

155.0. **Tapinopterus** Schaum, 1858 subg. **Molopsis** Schatzmayr, 1942
001.0 **molopinus** Chaudoir, 1868 E (ANAW)
    m. molopinus Chaudoir, 1868
    m. olympicus Kraatz, 1875
    m. molopiformis Lutschnik, 1922
    (= rectangulus Chaudoir, 1868)
    (= wiedemanni Fairmaire, 1866)
002.0 **phrygius** G. Müller, 1931 E (ANSW)
    p. phrygius G. Müller, 1931
    p. pisidicus G. Müller, 1931
003.0 **dipojranus** Straneo, 1986 E (ANAS)
    d. dipojranus Straneo, 1986
    d. brussanus Straneo, 1986
    d. cilicius Straneo, 1986

156.0. **Tapinopterus** Schaum, 1858 subg. **Nesosteropus** Ganglbauer, 1891
001.0 **laticornis** Fairmaire, 1856 EME
    l. laticornis Fairmaire, 1856
    l. karianus Straneo, 1935
002.0 **kapparicola** Ganglbauer, 1889 EME
    k. kapparicola Ganglbauer, 1889
    k. schatzmayri Straneo, 1935
003.0 **kuntzeni** G. Müller, 1931 E (ANSW)
004.0 **laevisternus** G. Müller, 1931 E (ANSW)
005.0 **weiratheri** G. Müller, 1931 E (ANSW)
006.0 **obenbergeri** (Mařan, 1932) E (ANAS)

007.0 **susterai** Mařan, 1943 E (ANAS)
008.0 **heinzi** Straneo, 1983 E (ANSW)
009.0 **samai** Straneo, 1986 E (KURD)
010.0 **jaechi** Kirschenhofer, 1991 E (KURD)

157.0. **Tapinopterus** Schaum, 1858 subg. **Pterotapinus** Heyden, 1883
001.0 **fairmairei** Chaudoir, 1868 E (ANNE)

158.0. **Tapinopterus** Schaum, 1858 subg. **Percosteropus** Ganglbauer, 1896
001.0 **agonoderus** Chaudoir, 1850 E (ANNW)
a. **agonoderus** Chaudoir, 1850
(= iranicus Tschitschérine, 1901)
a. **byzantinus** Ganglbauer, 1896
(= bodemeyeri Ganglbauer, 1900)
002.0 **amani** Breit, 1933 E (ANAS)
003.0 **toelgi** Breit, 1933 E (ANAS)

159.0. **Tapinopterus** Schaum, 1858 subg. **Tapinopercus** Mařan, 1932
001.0 **jedlickai** (Mařan, 1932) E (ANNW)

160.0. **Tapinopterus** Schaum, 1858 subg. **Hoplauchenium** Tschitschérine, 1900
001.0 **minax** Tschitschérine, 1900 E (ANNW)

161.0. **Tapinopterus** Schaum, 1858 subg. **Hoplodactylus** Chaudoir, 1878
001.0 **persicus** Chaudoir, 1878 E (ANAC)

162.0. **Stomis** Clairville, 1806
001.0 **pumicatus** (Panzer, 1796) EUR
002.0 sp. (23) E (ANNE)

163.0. **Argutor** Dejean, 1821
001.0 **vernalis** (Panzer, 1796) PAL
(= ? leonisi Apfelbeck, 1904)
? 002.0 cursor (Dejean, 1828) SEU
003.0 **cryobioides** (Chaudoir, 1868) SYPA

164.0. **Phonias** Gozis, 1886
001.0 **diligens** (Sturm, 1824) SIE
? 002.0 ovoideus (Sturm, 1824) SIE
(= interstinctus Sturm, 1824)
003.0 **strenuus** (Panzer, 1797) ASE
? 004.0 apfelbecki (Csiki, 1908) SEU
(= convexiusculus Apfelbeck, 1904)

165.0. **Omaseus** Dejean, 1821
001.0 **elongatus** (Duftschmid, 1812) EUM

166.0. **Orthomus** Chaudoir, 1838
001.0 **berytensis** Reiche & Saulcy, 1854 MED
(= barbarus Auct. nec Dejean, 1828)

167.0. **Pedius** Motschulsky, 1850
001.0 **inquinatus** (Sturm, 1824) SEU

002.0 **longicollis** (Duftschmid, 1812)	TUE
(= inaequalis Marsham, 1802 nec Panzer, 1796)	
168.0. **Poecilus** Bonelli, 1810 subg. **Poecilus** Bonelli, 1810	
001.0 **cupreus** (Linné, 1758)	ASE
002.0 **anatolicus** (Chaudoir, 1850)	ANAT
003.0 **cursorius** (Dejean, 1828)	TUE
c. **gotschi** (Chaudoir, 1846)	
(= cyanellus Reiche, 1845)	
004.0 **festivus** (Chaudoir, 1868)	ARAN
169.0. **Poecilus** Bonelli, 1810 subg. **Macropoecilus** Lutshnik, 1914	
001.0 **korbi** (Tschitschérine, 1893)	ANAT
(= sublaevicollis Ganglbauer, 1905)	
002.0 **ilgazdensis** (Jedlička, 1961)	E (ANNW)
i. **ilgazdensis** (Jedlička, 1961)	
i. **abanticola** (Korge, 1964)	
i. **ulrichi** (Heinz, 1965)	
003.0 **reicheanus** (Peyron, 1858)	E (ANAS)
170.0. **Angoleus** Villa & Villa, 1833	
(= Pseudopedius Seidlitz, 1887)	
001.0 **puncticollis** (Dejean, 1828)	TUE
?? 002.0 muchei (Jedlička, 1961)	
003.0 **pertusus** (Schaum, 1858)	SYPA
004.0 **hafezi** Morvan, 1975	IRAW
171.0. **Molops** Bonelli, 1810	
001.0 **piceus** (Panzer, 1793)	EUR
p. **byzantinus** Apfelbeck, 1902	
p. **anatolicus** Mlynar, 1977	
172.0. Molopini gen.	
001.0 n. sp. (24)	E (ANSW)
173.0. **Abax** Bonelli, 1810 subg. **Abax** Bonelli, 1810	
011.0 **carinatus** (Duftschmid, 1812)	EUR
c. **sulcatus** Fiori, 1899	
174.0. **Zabrus** Clairville, 1806 subg. **Zabrus** Clairville, 1806	
001.0 **tenebrioides** (Goeze, 1777)	TUE
t. **longulus** Reiche & Saulcy, 1855	
175.0. **Zabrus** Clairville, 1806 subg. **Pelor** Bonelli, 1810	
001.0 **orientalis** Apfelbeck, 1904	EME
(= graecus Dejean, 1828 partim)	
002.0 **politus** Gautier des Cottes, 1869	E (ANAS)
? 003.0 punctiventris Schaum, 1864	EME
004.0 **damascenus** Reiche & Saulcy, 1855	SYPA
005.0 **lycius** Ganglbauer, 1931	E (ANSW)
006.0 **laticollis** Apfelbeck, 1904	EME

007.0 **helopioides** Reiche, 1855	SYPA
008.0 **toelgi** Breit, 1926	E (ANAS)
009.0 **kurdistanicus** Freude, 1989	E (KURD)
010.0 **melancholicus** Schaum, 1864	E (ANAT)
m. **melancholicus** Schaum, 1864	
(= macilentus Ganglbauer, nomen nudum)	
m. **occidentalis** Freude, 1989	
m. **heinzi** Jedlička, 1965	
011.0 **rotundicollis** Ménétriés, 1836	E (ANAT)
012.0 **corpulentus** Schaum, 1864	ANAT
c. **corpulentus** Schaum, 1864	
(= reitteri Apfelbeck, 1904)	
c. **ponticus** Ganglbauer, 1931	
c. **staneki** Mařan, 1934	
013.0 **pentheri** Ganglbauer, 1905	E (ANAS)
014.0 **punctifrons** Fairmaire, 1866	E (ANAS)
015.0 **segnis** Schaum, 1864	E (ANAN)
016.0 **socialis** Schaum, 1864	E (ANAW)
(= angusticollis Ganglbauer, 1931)	
(= werneri Ganglbauer, 1915)	
017.0 **trinii** (Fischer von Waldheim, 1817)	POCA
t. **anatolicus** Ganglbauer, 1931	
018.0 **spinipes** (Fabricius, 1798)	TUM
(= blaptoides Creutzer, 1799)	
s. **rugulosus** Kraatz 1884	
019.0 **iconiensis** Ganglbauer, 1905	E (ANAC)
020.0 **spectabilis** Hampe, 1852	POCA
021.0 **foveipennis** Heyden, 1883	E (ANNW)
022.0 **seriatus** Ganglbauer, 1931	E (KURD)
023.0 **foveolatus** Schaum, 1864	E (ANNE)
020.0 **bodemeyeri** Ganglbauer, 1931	E (ANAW)
024.0 **femoratus** Dejean, 1828	TUM
025.0 **asiaticus** Castelnau, 1834	E (ANAT)
026.0 **idaeus** Schweiger, 1968	E (ANNW)
027.0 **sublaevis** Ménétriés, 1836	E (ANAT)
176.0. **Zabrus** Clairville, 1806 subg. **Eutroctes** Zimmermann, 1831	
001.0 **aurichalceus** (Adams, 1817)	POCA
177.0. **Amara** Bonelli, 1810 (25) subg. **Zezea** Csiki, 1929	
001.0 **strandi** Lutshnik, 1933	TUE
(= pseudostrenua Kult, 1946)	
002.0 **chaudoiri** Schaum, 1858	CAE
c. **transcaucasiens** Hieke, 1970	
003.0 **reflexicollis** Motschulsky, 1844	SWA
r. **reflexicollis** Motschulsky, 1844	
(= rufipes Bodemeyer, 1900, Apfelbeck 1904, nec Dejean, 1828)	
(= etschmiadsina var. kaszabi Fassati, 1951)	
? r. jedlickana Fassati, 1951	
004.0 **fulvipes** (Audinet-Serville, 1821)	EUR

178.0. **Amara** Bonelli, 1810 subg. **Amara** Bonelli, 1810

? 001.0 similata (Gyllenhal, 1810)	ASE
002.0 **ovata** (Fabricius, 1792)	ASE
(= adamantina Kolenati, 1845)	
003.0 **convexior** Stephens, 1828	SIE
004.0 **communis** (Panzer, 1797)	ASE
005.0 **littorea** Thomson, 1857	SIE
(= bogatshevi Lutshnik, 1934)	
? 006.0 curta Dejean, 1828	SIE
007.0 **eurynota** (Panzer, 1797)	SIE
(= acuminata Paykull, 1798)	
008.0 **proxima** Putzeys, 1866	SEU
(= pindica Apfelbeck, 1904)	
009.0 **aenea** (Degeer, 1774)	PAL
010.0 **famelica** Zimmermann, 1832	ASE
011.0 **familiaris** (Duftschmid, 1812)	SIE
012.0 **anthobia** Villa & Villa, 1833	EUR
013.0 **lucida** (Duftschmid, 1812)	TUE
? 014.0 tibialis (Paykull, 1798)	ASE

179.0. **Amara** Bonelli, 1810 subg. **Celia** Zimmermann, 1832

? 001.0 erratica (Duftschmid, 1812)	OLA
002.0 **municipalis** (Duftschmid, 1812)	SIE
m. bischoffi Jedlička, 1946	
? 003.0 cursitans Zimmermann, 1832	EUR
? 004.0 ingenua (Duftschmid, 1812)	ASE
005.0 **fusca** Dejean, 1828	ASE
006.0 **fusgenua** Hieke, 1999	TUR
? 007.0 sabulosa (Audinet-Serville, 1821)	EUR
008.0 **montana** Dejean, 1828	MED
009.0 **pallens** Sturm, 1825	SIE
(= praetermissa C.R. Sahlberg, 1827)	
010.0 **aberrans** Baudi, 1864	EME
011.0 **arenaria** Putzeys, 1865	EUR
(= croatica Ganglbauer, 1892)	
012.0 **sollicita** Pantel, 1888	TEM
? 013.0 ambulans Zimmermann, 1832	TUR

180.0. **Amara** Bonelli, 1810 subg. **Camptocelia** Jeannel, 1942

001.0 **cottyi** Coquerel, 1859	NAF
c. arabica Hieke, 1983	

181.0. **Amara** Bonelli, 1810 subg. **Paracelia** Bedel, 1899

001.0 **dichroa** Putzeys, 1873	EME
002.0 **dalmatina** Dejean, 1828	EME
(= solarii Baliani, 1943)	
? 003.0 serdicana Apfelbeck, 1904	EME
004.0 **cyrenaica** Baliani, 1928	NAF

005.0 **saxicola** Zimmermann, 1832 TUM
(= tescicola Zimmermann, 1832)
(= incerta Gautier des Cottes, 1868)

182.0. **Amara** Bonelli, 1810 subg. **Euderocycla** Tschitschérine,1897
001.0 **abnormis** Tschitschérine, 1894 E (ANAS)
(= fleischeri Tschitschérine, 1897)

183.0. **Amara** Bonelli, 1810 subg. **Percosia** Zimmermann, 1832
001.0 **equestris** (Duftschmid, 1812) ASE
e. equestris (Duftschmid, 1812)

184.0. **Amara** Bonelli, 1810 subg. **Parapercosia** Tschitschérine, 1899
001.0 **taurica** Motschulsky, 1845 TUR
(= timida Motschulsky, 1845)
(= Zabrus cognatus Chaudoir, 1846)

185.0. **Amara** Bonelli, 1810 subg. **Pseudoleirides** Kryzhanovskij, 1968
001.0 **turcica** Hieke, 1976 E (ANAS)

186.0. **Amara** Bonelli, 1810 subg. **Bradytus** Stephens, 1828
001.0 **consularis** (Duftschmid, 1812) ASE
(= regismontium Schweiger, 1966)
002.0 **apricaria** (Paykull, 1790) PAL
(= paphlagoniensis Schweiger, 1966)
(= uludagensis Schweiger, 1966)
003.0 **crenata** Dejean, 1828 TUE
(= crenatostriata Chaudoir, 1846)
004.0 **fulva** (Degeer, 1774) SIE

187.0. **Amara** Bonelli, 1810 subg. **Zabroscelis** Putzeys, 1866
? 001.0 ditomoides Putzeys, 1866 TUM

188.0. **Amara** Bonelli, 1810 subg. **Amathitis** Zimmermann, 1832
001.0 **rufescens** (Dejean, 1829) MED

189.0. **Amara** Bonelli, 1810 subg. **Bradytodema** Hieke, 1983
? 001.0 kaszabiella Hieke, 1983 SYPA

190.0. **Amara** Bonelli, 1810 subg. **Leironotus** Ganglbauer, 1892
001.0 **schweigeri** Hieke, 1995 (1997) E (ANNW)
(= uludagensis Hieke, 1984 nec uludagensis Schweiger, 1966)
002.0 **weiratheri** Baliani, 1935 E (ANAW)

191.0. **Amara** Bonelli, 1810 subg. **Allobradytus** Khnzorian, 1975
?? 001.0 armeniaca Motschulsky, 1839

192.0. **Amara** Bonelli, 1810 subg. **Curtonotus** Stephens, 1828
001.0 **aulica** (Panzer, 1797) OLA
002.0 **convexiuscula** (Marsham, 1802) SIE
002.0 **muchei** Jedlička, 1962 E (ANAC)

205.0. **Oedesis** Motschulsky, 1850 **(26)**	
001.0 **caucasicus** (Dejean, 1831)	TUE
002.0 **palaestinus** (Piochard de la Brûlerie, 1873)	SYPA
003.0 **kryzhanovskii** Wrase, 1999	SYPA
004.0 sp. (cf. Wrase, 1999)?	
206.0 **Eucarterus** Reitter, 1898	
001.0 **sparsutus** Reitter, 1898	SWA
207.0. **Graniger** Motschulsky, 1864	
001.0 **cordicollis** (Audinet-Serville, 1821)	MED
002.0 **femoralis** (Coquerel, 1858)	MED
208.0. **Pachycarus** Solier, 1835 subg. **Pachycarus** Solier, 1835	
001.0 **latreillei** Solier, 1834	E (ANAW)
209.0. **Pachycarus** Solier, 1835 subg. **Mystropterus** Chaudoir, 1842	
001.0 **artipunctatus** (Dvořak, 1993)	E (ANAT)
210.0. **Pachycarus** Solier, 1835 subg. **Paramystropterus** Schauberger, 1932	
001.0 **brevipennis** Chaudoir, 1850	ANAT
b. brevipennis Chaudoir, 1850	
b. kurdistanus Schauberger, 1932	
211.0. **Penthus** Chaudoir, 1843	
001.0 **tenebrioides** (Waltl, 1838)	EME
212.0. **Parophonus** Ganglbauer, 1892 (27)	
001.0 **hirsutulus** (Dejean, 1829)	TUM
002.0 **maculicornis** (Duftschmid, 1812)	SEU
? 003.0 dejeani (Csiki, 1932)	SEU
(= complanatus Dejean, 1829)	
004.0 **dia** (Reitter, 1900)	ANAT
005.0 **laeviceps** (Ménétriés, 1832)	EME
(= fallax Peyron, 1858)	
006.0 **mendax** (Rossi, 1790)	SEU
007.0 **planicollis** (Dejean, 1829)	EME
(= suturalis Chaudoir, 1846)	
(= suturifer Reitter, 1885)	
213.0. **Daptus** Fischer von Waldheim, 1824	
001.0 **vittatus** Fischer von Waldheim, 1824	CEM
214.0. **Acinopus** Latreille, 1829 subg. **Osimus** Motschulsky, 1850	
001.0 **ammophilus** (Dejean, 1828)	TUE
215.0. **Acinopus** Latreille, 1829 subg. **Acinopus** Latreille, 1829	
001.0 **picipes** (Olivier, 1795)	TUE
002.0 **laevigatus** Ménétriés, 1832	TUM
003.0 **pueli** Schatzmayr, 1935	EME
004.0 **baudii** Fiori, 1919	EME
005.0 **megacephalus** (Rossi, 1794)	TUE

216.0. **Ophonus** Dejean, 1821 subg. **Macrophonus** Tschitschérine, 1901	
001.0 **oblongus** (Schaum, 1858)	ANAT
(= langloisi Peyron, 1858)	
(= carteroides Zurcher, 1911)	
(= cilicicus Csiki, 1932)	
217.0. **Ophonus** Dejean, 1821 subg. **Ophonus** Dejean, 1821	
001.0 **stictus** Stephens, 1828	TUE
002.0 **sabulicola** (Panzer, 1796)	TUE
003.0 **battus** (Reitter, 1900)	EME
004.0 **franziniorum** Sciaky, 1987	EME
005.0 **ardosiacus** (Lutshnik, 1922)	EUM
006.0 **diffinis** (Dejean, 1829)	EUR
(= adanensis Schauberger, 1933)	
007.0 **similis** (Dejean, 1829)	TUE
008.0 **wolfi** Wrase, 1995	E (ANNW)
009.0 **azureus** (Fabricius, 1775)	CEM
(= koniensis Schauberger, 1927)	
010.0 **subquadratus** (Dejean, 1829)	MED
011.0 **convexicollis** Ménetries, 1832	ASE
(= korbi Schauberger, 1933)	
012.0 **cribricollis** (Dejean, 1829)	TUE
(= ciliciensis Schauberger, 1927)	
013.0 **heinzi** Wrase, 1991	ANAT
218.0. **Ophonus** Dejean, 1821 subg. **Brachyophonus** Sciaky, 1987	
001.0 **vignai** Sciaky, 1987	E (ANSW)
219.0. **Ophonus** Dejean, 1821 subg. **Metophonus** Bedel, 1897	
001.0 **nitidulus** Stephens, 1828	SIE
(= punctatulus Duftschmid, 1812, nec Fabricius, 1792)	
002.0 **cordatus** (Duftschmid, 1812)	PAL
003.0 **heinzianus** Wrase, 1996	EME
004.0 **castaneipennis** Sciaky, 1987	E (ANAS)
005.0 **rupicola** (Sturm, 1818)	EUR
006.0 **scharifi** (Morvan, 1977)	SWA
007.0 **puncticollis** (Paykull, 1798)	SIE
008.0 **achilles** Sciaky, 1987	E (ANSW)
009.0 **puncticeps** Stephens, 1828	TUE
010.0 **orientis** Schauberger, 1926	E (ANAS)
011.0 **schaubergerianus** Puel, 1937	EUR
012.0 **rufibarbis** (Fabricius, 1792)	TEM
(= subpunctatus Stephens, 1828)	
013.0 **melleti** (Heer, 1837)	EUR
(= schaubergerianus Jeannel, 1942 nec Puel, 1937)	
014.0 **brevicollis** (Serville, 1821)	SEU
015.0 **hittita** Sciaky, 1987	E (ANAT)
016.0 **parallelus** (Dejean, 1829)	EUR
(= apfelbecki ssp. clientulus Schweiger, 1983)	

017.0 **judaeus** (Piochard de la Brûlerie, 1875) EME
018.0 **cordicollis** (Dejean, 1829) SEU

220.0. **Ophonus** Dejean, 1821 subg. **Penthophonus** Reitter, 1900
001.0 **solitarius** (Peyron, 1858) EME
?? 002.0 ophonoides (Jedlička, 1958)

221.0. **Cephalophonus** Ganglbauer, 1892
001.0 **cephalotes** (Fairmaire & Laboulbène, 1854) EUR

222.0. **Cryptophonus** Brandmayr & Zetto Brandmayr, 1981
? 001.0 fulvus (Dejean, 1829) MED
002.0 **litigiosus** (Dejean, 1829) MED
003.0 **melancholicus** (Dejean, 1829) EUM
004.0 **tenebrosus** (Dejean, 1829) CEM

223.0. **Semiophonus** Schauberger, 1933
001.0 **signaticornis** (Duftschmid, 1812) EUR

224.0. **Pseudophonus** Motschulsky, 1844 subg. **Pseudophonus** Motschulsky, 1844
001.0 **griseus** (Panzer, 1797) PAL
002.0 **rufipes** (Degeer, 1774) PAL
(= pubescens O.F. Müller, 1776)

225.0. **Pseudophonus** Motschulsky, 1844 subg. **Pardileus** Gozis, 1882
? 001.0 calceatus (Duftschmid, 1812) ASE

226.0. **Harpalus** Latreille, 1802 subg. **Harpalophonus** Ganglbauer, 1892
001.0 **circumpunctatus** (Chaudoir, 1846) CAE
c. anatolicus K. Daniel, 1904
(nec Harpalus (Lasioharpalus) anatolicus Tschitschérine, 1898)
002.0 **hospes** (Sturm, 1818) TUE
(= sturmi Dejean, 1829)
h. hospes (Sturm, 1818)
003.0 **kagyzmanicus** Kataev, 1984 ANAT

227.0. **Harpalus** Latreille, 1802 subg. **Artabas** Gozis, 1883
001.0 **kadleci** (Kataev & Wrase, 1995) E (KURD)
002.0 **petri** (Tschitschérine, 1902) TUR
003.0 **punctatostriatus** (Dejean, 1829) MED
004.0 **suturangulus** (Reitter, 1887) E (KURD)
005.0 **szalliesi** (Kataev & Wrase, 1995) E (ANAC)

228.0. **Harpalus** Latreille, 1802 subg. **Harpalus** Latreille, 1802
(including Lasioharpalus Reitter, 1900 and Haploharpalus Schauberger, 1926)
001.0 **metallinus** Ménétriés, 1836 ANAT
002.0 **trichophorus** Tschitschérine, 1897 E (ANAC)
003.0 **affinis** (Schrank, 1781) ASE
(= aeneus Fabricius, 1792)
(= weiratheri G. Müller, 1931)
004.0 **distinguendus** (Duftschmid, 1812) PAL
(= psittacinus Reitter, 1900)

005.0 **angulatus** Putzeys, 1878	TUR
(= polychromus Apfelbeck, 1904)	
a. **scytha** Tschitschérine, 1899	
a. **subangulatus** Reitter, 1900	
(= ? salinulus Reitter, 1900)	
006.0 **saxicola** Dejean, 1829	TUE
007.0 **oblitus** Dejean, 1829	TEM
008.0 **smyrnensis** Heyden, 1888	E (ANAT)
s. **smyrnensis** Heyden, 1888	
(= bulgharensis Jedlička, 1958)	
(= boluensis Jedlička, 1962)	
(= dagliari Jedlička, 1962)	
(= ilgasdensis Jedlička, 1962)	
s. **raddei** Tschitschérine, 1897	
s. **medicus** Kataev, 1993	
? 009.0 subtruncatus Chaudoir, 1846	TUR
010.0 **quadratus** Chaudoir, 1846	ARCA
(= polychromus Tschitschérine, 1897)	
011.0 **cupreus** Dejean, 1829	SEU
c. **fastuosus** Faldermann, 1835	
? 012.0 euchlorus Ménétriés, 1836	EME
013.0 **smaragdinus** (Duftschmid, 1812)	ASE
014.0 **dimidiatus** (Rossi, 1790)	EUR
015.0 **caspius** Steven, 1806	TUR
c. **caspius** Steven, 1806	
016.0 **pygmaeus** Dejean, 1829	SEU
017.0 **attenuatus** Stephens, 1828	MED
018.0 **rubripes** (Duftschmid, 1812)	ASE
019.0 **quadripunctatus** Dejean, 1829	ASE
020.0 **latus** (Linné, 1758)	ASE
021.0 **xanthopus** Gemminger & Harold, 1868	SIE
(= ? winkleri Schauberger, 1923)	
022.0 **atratus** Latreille, 1804	EUR
023.0 **autumnalis** (Duftschmid, 1812)	CEU
024.0 **kazanensis** Jedlička, 1958	ARCA
025.0 **reflexus** Putzeys, 1878	ANAT
r. **reflexus** Putzeys, 1878	
r. **ciliciensis** Mlynar, 1979	
(= r. anadoluensis Kataev, 1993, nom. nov. pro brachypterus ciliciensis Mlynar,1979, nomen validum, not homonymous of var. ciliciensis Schauberger, 1927)	
026.0 **brachypterus** Tschitschérine, 1908	SYPA
027.0 **anatolicus** Tschitschérine, 1898	E (ANAT)
a. **anatolicus** Tschitschérine, 1898	
(= skutariensis Reitter, 1899)	
a. **lycius** Kataev & Wrase, 1997	
a. **lydius** Kataev & Wrase, 1997	
a. **caricus** Kataev & Wrase, 1997	
(nom. nov. pro nigripes J. Sahlberg, 1913 nec Sturm, 1818)	

028.0 **tristis** Tschitschérine, 1898 ANAT
? 029.0 pulvinatus Ménétriés, 1848 CAS
    p. lubricus Reitter, 1900
030.0 **zabroides** Dejean, 1829 SIE
031.0 **sulphuripes** Germar, 1824 EUM
    s. sulphuripes Germar, 1824
032.0 **honestus** (Duftschmid, 1812) SIE
    (= demelti Korge, 1962)
033.0 **rufipalpis** Sturm, 1818 SIE
    (= rufitarsis Duftschmid, 1812 nec Illiger, 1802)
034.0 **flavicornis** Dejean, 1829 SEU
035.0 **tardus** (Panzer, 1797) ASE
036.0 compressus Motschulsky, 1844 TUR
    (= amator Reitter, 1900)
037.0 **araraticus** Mlynar, 1979 E (KURD)
038.0 **albanicus** Reitter, 1900 SEU
? 039.0 anxius (Duftschmid, 1812) PAL
    (= pumilus Dejean, 1829 nec Sturm, 1818)
040.0 **subcylindricus** Dejean, 1829 CAS
041.0 **anxioides** Kataev, 1991 ANAT
042.0 **quasianxius** Kataev, 1989 ARCA
043.0 **taciturnus** Dejean, 1829 SIE
    t. amasiensis Reitter, 1900
044.0 **fuscicornis** Ménétriés, 1832 CAE
045.0 **fuscipalpis** Sturm, 1818 PAL
046.0 **serripes** (Quensel, 1806) PAL
?? 047.0 torosensis Jedlička, 1961

229.0. **Harpalus** Latreille, 1802 subg. **Actephilus** Stephens, 1839
001.0 **pumilus** (Sturm, 1818) ASE
    (= vernalis Fabricius, 1801 nec Panzer, 1796)

230.0. **Pangus** Dejean, 1821 (= Microderes Faldermann, 1835, = Harpalus Auct. partim)
001.0 **scaritides** (Sturm, 1818) TUE
? 002.0 brachypus (Steven, 1809) TUR
003.0 **turcicus** (Jedlička, 1958) E (ANAT)

231.0. **Stenolophus** Dejean, 1821 subg. **Stenolophus** Dejean, 1821
001.0 **teutonus** (Schrank, 1781) TEM
002.0 **persicus** Mannerheim, 1844 EME
003.0 **discophorus** (Fischer von Waldheim, 1823) SEU
004.0 **skrimshiranus** Stephens, 1828 EUM
005.0 **steveni** Krynicki, 1832 TUE
006.0 **mixtus** (Herbst, 1784) PAL
007.0 **proximus** Dejean, 1829 MED

232.0. **Egadroma** Motschulsky, 1855
001.0 **marginata** (Dejean, 1829) WPA

233.0. **Loxoncus** Schmidt-Goebel, 1846 (= Anoplogenius Chaudoir, 1852)
001.0 **procerus** (Schaum, 1858) EME

234.0. **Bradycellus** Erichson, 1837 subg. **Bradycellus** Erichson, 1837

001.0 **verbasci** (Duftschmid, 1812)	TUE
002.0 **caucasicus** (Chaudoir, 1846)	SIE
(= collaris Paykull, 1798 nec Herbst, 1784)	
(= turcicus Schweiger, 1963)	

235.0. **Dicheirotrichus** Duval, 1857

001.0 **obsoletus** (Dejean, 1829)	MED
002.0 **lacustris** Redtenbacher, 1858	SEU

236.0. **Acupalpus** Dejean, 1829 subg. **Acupalpus** Dejean, 1829

001.0 **meridianus** (Linné, 1761)	EUR
002.0 **elegans** (Dejean, 1829)	TEM
003.0 **parvulus** (Sturm, 1825)	ASE
(= dorsalis Fabricius, 1787 nec Pontoppidan, 1763)	
004.0 **maculatus** (Schaum, 1860)	EUM
005.0 **notatus** Mulsant & Rey, 1861	MED
006.0 **suturalis** Dejean, 1829	EUR
007.0 **paludicola** Reitter, 1884	MED
(= puncticollis Auct. nec Coquerel, 1858)	
008.0 **turcicus** Jaeger, 1992	EME
009.0 **luteatus** (Duftschmid, 1812)	SIE
010.0 **flavicollis** (Sturm, 1825)	EUR
011.0 **brunnipes** (Sturm, 1825)	EUM

237.0. **Acupalpus** Dejean, 1829 subg. **Ancylostria** Schauberger, 1930

001.0 **interstitialis** Reitter, 1884	EUR
002.0 **morulus** Reitter, 1884	SYPA

238.0. **Anthracus** Motschulsky, 1850

001.0 **consputus** (Duftschmid, 1812)	ASE
002.0 **longicornis** (Schaum, 1857)	EUR
003.0 **quarnerensis** (Reitter, 1884)	SEU

239.0. **Idiomelas** Tschitschérine, 1900 (= Trichotichnus Sciaky, 1992 partim)

001.0 **morio** (Ménétriés, 1832)	TUR

240.0. **Amblystomus** Erichson, 1837

001.0 **cephalotes** Reitter, 1896	EME
002.0 **levantinus** Reitter, 1883	EME
003.0 **metallescens** (Dejean, 1829)	EUM
004.0 **niger** Heer, 1838	EUM
005.0 **picinus** Baudi, 1864	EME
? 006.0 rectangulus Reitter, 1883	EME

241.0. **Derostichus** Motschulsky, 1859

001.0 **caucasicus** Motschulsky, 1859	POCA
002.0 **meurguesae** Ledoux, 1972	E (ANNW)

242.0. **Licinus** Latreille, 1802

001.0 **cassideus** (Fabricius, 1792)	CEU
003.0 **cordatus** Chaudoir, 1861	SYPA

003.0 **silphoides** (Rossi, 1790)	SEU
(= byzantinus Apfelbeck, 1904)	
? 004.0 aegyptiacus Dejean, 1826	EME
005.0 **merkli** Frivaldsky, 1880	E (ANSW)
006.0 **pubifer** Reitter, 1897	E (ANAN)
007.0 **schuberti** Jedlička, 1968	E (ANNW)
243.0. **Badister** Clairville, 1806 subg. **Badister** Clairville, 1806	
001.0 **unipustulatus** Bonelli, 1813	CAE
002.0 **bullatus** (Schrank, 1798)	OLA
(= bipustulatus Fabricius, 1792 nec Fabricius, 1775)	
? 003.0 meridionalis Puel, 1925	SEU
004.0 **brevicollis** Reiche, 1874	E (ANAT)
(= kricheldorffi Puel, 1925)	
005.0 **anatolicus** Schweiger, 1968	E (ANNW)
006.0 **sodalis** (Duftschmid, 1812)	TUE
007.0 **denticulatus** Wrase, 1995	POCA
? 008.0 seriepunctatus Peyron, 1858	E (ANAT)
244.0. **Badister** Clairville, 1806 subg. **Baudia** Ragusa, 1884	
001.0 **collaris** (Motschulsky, 1844)	EUM
(= anomalus Perris, 1866)	
(= gladiator Apfelbeck, 1904)	
? 002.0 dilatatus (Chaudoir, 1837)	SIE
003.0 **peltatus** (Panzer, 1797)	SIE
(= ponticus Motschulsky, 1845)	
245.0. **Oodes** Bonelli, 1810	
001.0 **gracilis** Villa & Villa, 1833	TUE
002.0 **helopioides** (Fabricius, 1792)	SIE
246.0. **Epomis** Bonelli, 1810	
001.0 **dejeani** (Dejean & Boisduval, 1830)	EME
247.0. **Chlaenius** Bonelli, 1810 subg. **Chlaenites** Motschulsky, 1860	
001.0 **spoliatus** (Rossi, 1790)	PAL
248.0. **Chlaenius** Bonelli, 1810 subg. **Chlaenius** Bonelli, 1810	
001.0 **festivus** (Panzer, 1796)	TUE
f. **caspicus** Motschulsky, 1864	
249.0. **Chlaenius** Bonelli, 1810 subg. **Laenichus** Lutshnik, 1933	
001.0 **dimidiatus** Chaudoir, 1842	SWA
250.0. **Chlaenius** Bonelli, 1810 subg. **Trichochlaenius** Seidlitz, 1887	
001.0 **aeneocephalus** Dejean, 1826	TUM
002.0 **lucasi** Peyron, 1858	E (ANAT)
251.0. **Stenochlaenius** Reitter, 1908	
001.0 **coeruleus** Steven, 1809	POCA
002.0 **jaechi** Kirschenhofer, 1991	E (KURD)

252.0. **Dinodes** Bonelli, 1810 (= Paradinodes Apfelbeck, 1904)	
001.0 **decipiens** (Dufour, 1820)	EUM
002.0 **cruralis** (Fischer von Waldheim, 1829)	TUM
003.0 **viridis** (Ménétriés, 1832)	TUM
?? 004.0 armenus (Jedlička, 1950)	
253.0. **Chlaeniellus** Reitter, 1908	
001.0 **vestitus** (Paykull, 1790)	PAL
002.0 **terminatus** (Dejean, 1826)	TUE
003.0 **flavipes** (Ménétriés, 1832)	TUM
004.0 **nigricornis** (Fabricius, 1787)	ASE
(= melanocornis Dejean, 1826)	
005.0 **tristis** (Schaller, 1783)	PAL
? 006.0 douei (Peyron, 1858)	EME
(= rufipes Sterba, 1910)	
? 007.0 differens (Peyron, 1858)	SYPA
254.0. **Callistus** Bonelli, 1810	
001.0 **lunatus** (Fabricius, 1775)	TUE
255.0. **Panagaeus** Latreille, 1802	
001.0 **bipustulatus** (Fabricius, 1775)	EUR
002.0 **cruxmajor** (Linné, 1758)	SIE
256.0. **Trechicus** Leconte, 1853	
? 001.0 nigriceps (Dejean, 1831)	COS
257.0. **Odacantha** Paykull, 1798	
? 001.0 melanura (Linné, 1766)	ASE
258.0. **Masoreus** Dejean, 1821	
001.0 **wetterhallii** (Gyllenhal, 1813)	PAL
w. wetterhallii (Gyllenhal, 1813)	
259.0. **Aephnidius** MacLeay, 1825	
001.0 **ruficornis** Chaudoir, 1850	SWA
260.0. **Platytarus** Fairmaire, 1850	
001.0 **famini** (Dejean, 1826)	AFM
? 002.0 reichei (Chaudoir, 1875)	SYR
261.0. **Cymindis** Latreille, 1806 subg. **Cymindis** Latreille, 1806	
001.0 **adusta** Redtenbacher, 1843	SYPA
002.0 **andreae** Ménétriés, 1832	TUM
003.0 **axillaris** (Fabricius, 1794)	WPA
(= ? omiades Faldermann, 1835)	
a. palliata Fischer von Waldheim, 1823	
? 004.0 humeralis (Fourcroy, 1785)	EUR
005.0 **intermedia** Chaudoir, 1873	ARCA
006.0 **lateralis** Fischer von Waldheim, 1821	TUR
007.0 **picta** (Pallas, 1771)	TUR

008.0 **lineata** (Quensel, 1806)	TUE
(= dorsalis Fischer von Waldheim, 1823)	
009.0 **ornata** Fischer von Waldheim, 1824	EME
010.0 **scapularis** Schaum, 1857	SEU
262.0. **Cymindis** Latreille, 1806 subg. **Menas** Motschulsky, 1864	
001.0 **miliaris** (Fabricius, 1801)	TUE
(= variolosa Fabricius, 1794 nec Fabricius, 1787)	
263.0. **Trichis** Klug, 1831	
001.0 **maculata** Klug, 1831	SAS
264.0. **Syntomus** Hope, 1838	
? 001.0 foveatus (Fourcroy, 1785)	SIE
002.0 **fuscomaculatus** (Motschulsky, 1844)	TUM
(= exclamationis Ménétriés, 1849)	
003.0 **impressus** (Dejean, 1825)	MED
? 004.0 lateralis Motschulsky, 1855	SAS
005.0 **obscuroguttatus** (Duftschmid, 1812)	EUM
006.0 **pallipes** (Dejean, 1825)	EUM
007.0 **truncatellus** (Linné, 1761)	SIE
008.0 **dilutipes** (Reitter, 1887)	TUR
009.0 **parallelus** (Ballion, 1870)	TUR
265.0. **Lionychus** Wissmann, 1846	
001.0 **quadrillum** (Duftschmid, 1812)	EUR
002.0 **orientalis** K. Daniel, 1900	ANAT
266.0. **Apristus** Chaudoir, 1846	
001.0 **subaeneus** Chaudoir, 1846	EME
002.0 **reticulatus** Schaum, 1857	EME
267.0. **Tilius** Chaudoir, 1876	
001.0 n. sp. Pavesi, i. l.	E (ANSW)
268.0. **Microlestes** Schmidt-Goebel, 1846	
? 001.0 baudii (Fairmaire, 1864)	SYPA
002.0 **corticalis** (Dufour, 1820)	TUM
003.0 **discoidalis** (Fairmaire, 1892)	NAS
004.0 **fissuralis** (Reitter, 1900)	TUE
005.0 **fulvibasis** (Reitter, 1900)	TUM
? 006.0 infuscatus Motschulsky, 1859	EME
i. infuscatus Motschulsky, 1859	
(= stricticollis Baudi, 1864)	
007.0 **luctuosus** Holdhaus, 1904	TUM
l. luctuosus Holdhaus, 1904	
008.0 **maurus** (Sturm, 1827)	TUE
m. cordatulus (Reitter, 1901)	
? 009.0 minutulus (Goeze, 1777)	OLA
010.0 **negrita** (Wollaston, 1854)	MED
(= apfelbecki Holdhaus, 1904)	

011.0 **plagiatus** (Duftschmid, 1812)	CAE
012.0 **sahlbergi** Holdhaus, 1912	SYPA
013.0 **seladon** Holdhaus, 1912	SEU
014.0 **syriacus** (Brisout, 1885)	SYPA
269.0. **Paradromius** Fowler, 1886 subg. **Paradromius** Fowler, 1886	
001.0 **linearis** (Olivier, 1795)	EUM
270.0. **Dromius** Bonelli, 1810 subg. **Dromius** Bonelli, 1810	
001.0 **angustus** Brullé, 1834	EUR
?? 002.0 petrovitzi Mandl, 1973	
? 003.0 quadrimaculatus (Linné, 1758)	EUR
271.0. **Calodromius** Reitter, 1905	
001.0 **spilotus** (Illiger, 1798)	EUM
s. **spilotus** (Illiger, 1798)	
(= quadrinotatus Panzer, 1801 nec Fabricius, 1798)	
272.0. **Philorhizus** Hope, 1838	
001.0 **nonfriedi** (Reitter, 1898)	POCA
002.0 **melanocephalus** (Dejean, 1825)	TEM
003.0 **notatus** (Stephens, 1828)	CAE
004.0 **crucifer** (Lucas, 1846)	MED
c. **crucifer** (Lucas, 1846)	
273.0. **Xanthomelina** Iablokoff-Khnzhorian, 1964	
001.0 **zaitzewi** (Eichler, 1924)	ARCA
274.0. **Microdaccus** Schaum, 1864	
001.0 **opacicolor** Reitter, 1897	SYPA
002.0 **opacus** Schaum, 1857	EME
003.0 **pulchellus** Schaum, 1864	SYPA
004.0 **teodori** Gridelli, 1930	EME
275.0. **Metadromius** Bedel, 1913	
001.0 **anamurensis** Jedlička, 1964	E (ANAS)
? 002.0 arabicus Mateu, 1978	SWA
003.0 **carmelitanus** Mateu, 1982	EME
? 004.0 fascifer (Reitter, 1894)	TUR
005.0 **signifer** (Reitter, 1884)	EME
276.0. **Demetrias** Bonelli, 1810 subg. **Aetophorus** Schmidt-Goebel, 1846	
001.0 **imperialis** (Germar, 1824)	SIE
(= ruficeps Schaum, 1857)	
277.0. **Demetrias** Bonelli, 1810 subg. **Demetrias** Bonelli, 1810	
001.0 **atricapillus** (Linné, 1758)	EUM
a. **sagitta** Coye, 1870	
278.0. **Somotrichus** Seidlitz, 1887	
? 001.0 elevatus (Fabricius, 1787)	COS

279.0. **Singilis** Rambur, 1837 subg. **Phloeozetus** Peyron, 1856	
001.0 **fuscipennis** Schaum, 1857	EME
002.0 **dimidiatus** (Motschulsky, 1864)	E (ANAS)
003.0 **turcicus** Jedlička, 1963	E (KURD)
? 004.0 hirtipennis Pic, 1901	SYPA
? 005.0 plagiatus Reiche & Saulcy, 1855	SYPA
280.0. **Lebia** Latreille, 1802	
001.0 **cruxminor** (Linné, 1758)	PAL
002.0 **trimaculata** (Villers, 1789)	TEM
003.0 **marginata** (Fourcroy, 1785)	EUM
004.0 **scapularis** (Fourcroy, 1785)	CEM
005.0 **humeralis** Dejean, 1825	SEU
006.0 **lepida** Brullé, 1834	EME
007.0 **arcuata** Reiche, 1855	EME
281.0. **Lamprias** Bonelli, 1810	
001.0 **cyanocephalus** (Linné, 1758)	PAL
002.0 **festivus** (Faldermann, 1835)	TUM
f. **krueperi** (Apfelbeck, 1904)	
003.0 **lucillus** (Reitter, 1888)	E (ANAS)
004.0 **punctatus** (Gebler, 1843)	TUR
?? 005.0 violatus (Jedlička, 1963)	
282.0. **Glycia** Chaudoir, 1842 subg. **Glycia** Chaudoir, 1842	
001.0 **ornata** (Klug, 1831)	AFM
283.0. **Glycia** Chaudoir, 1842 subg. **Merizomena** Chaudoir, 1872	
001.0 **basalis** (Chaudoir, 1852)	E (ANAS)
284.0. **Drypta** Latreille, 1796 subg. **Deserida** Basilewsky, 1960	
001.0 **distincta** (Rossi, 1792)	AFM
285.0. **Drypta** Latreille, 1796 subg. **Drypta** Latreille, 1796	
001.0 **dentata** (Rossi, 1790)	AFP
(= angustata Chaudoir, 1842)	
286.0. **Zuphium** Latreille, 1806	
001.0 **olens** (Rossi, 1790)	AIM
002.0 **cilicium** Peyron, 1858	EME
003.0 **ponticum** Daniel & Daniel, 1888	TUM
? 004.0 syriacum Chaudoir, 1861	EME
287.0. **Parazuphium** Jeannel, 1942 (= Zuphium Auct. partim)	
001.0 **chevrolati** Castelnau, 1833	TUM
? 002.0 damascenum (Fairmaire, 1896)	SWA
288.0. **Polistichus** Bonelli, 1810	
001.0 **connexus** (Fourcroy, 1785)	WPA
002.0 **fasciolatus** (Rossi, 1790)	TUM
289.0. **Macrocheilus** Hope, 1838	
001.0 **saulcyi** Chevrolat, 1854	EME

290.0. **Mastax** Fischer von Waldheim, 1827
? 001.0 thermarum (Steven, 1806) TUR
t. thermarum (Steven, 1806)

291.0. **Aptinus** Bonelli, 1810
001.0 **cordicollis** Chaudoir, 1843 E (ANAT)
c. **cordicollis** Chaudoir, 1843
(= ponticus Apfelbeck, 1904)
c. **creticus** Pic, 1903

292.0. **Brachinus** Weber, 1801 subg. **Brachinus** Weber, 1801
001.0 **alexandri** Battoni, 1984 TUE
(= plagiatus Jablokoff-Khnzorian, 1973 nec Reiche, 1868)
002.0 **berytensis** Reiche, 1855 EME
003.0 **crepitans** (Linné, 1758) PAL
004.0 **ejaculans** Fischer von Waldheim, 1828 TUE
005.0 **ganglbaueri** Apfelbeck, 1904 MED
006.0 **psophia** Audinet-Serville, 1821 TUE
(= elegans Chaudoir, 1842)

293.0. **Brachinus** Weber, 1801 subg. **Brachynidius** Reitter, 1919
?? 001.0 ankarensis Jedlička, 1962
002.0 **bodemeyeri** Apfelbeck, 1904 TUE
(= fulviventris Jeannel, 1942 nec Motschulsky, 1864)
003.0 **brevicollis** Motschulsky, 1844 TUM
(= peregrinus Apfelbeck, 1904)
004.0 **explodens** (Duftschmid, 1812) ASE
005.0 **nigricornis** Gebler, 1829 TUE
(= incertus Brullé, 1834)
? 006.0 sclopeta (Fabricius, 1792) EUM

294.0. **Brachinus** Weber, 1801 subg. **Aploa** Hope, 1833
001.0 **nobilis** (Dejean, 1831) AFM

295.0. **Brachinus** Weber, 1801 subg. **Cnecostolus** Reitter, 1919
001.0 **bayardi** Dejean, 1831 TUE
002.0 **bipustulatus** Quensel in Schönherr, 1806 TUE
003.0 **cruciatus** (Quensel in Schönherr, 1806) TUE
004.0 **exhalans** (Rossi, 1792) TUE
005.0 **hamatus** Fischer von Waldheim, 1828

296.0. **Brachinus** Weber, 1801 subg.?
001.0 **bagdatensis** Pic, 1902 SWA
(= Cymindis richteri Jedlička, 1961)

ADDITIONAL NOTES TO THE CHECKLIST.

1) The list of Anatolian species of this genus is based on the recent contribution of Heinz & Pavesi (1994).

2) Classification of this genus is mostly based on the recent catalogues by Deuve (1994) and Brezina (1994, 1999), with comments and modifications proposed by the authors, based on the examination of abundant material. Main original and subsequent statements are specified each time. Markedly distinct taxa at subspecific rank are in boldface;

questionable infraspecific taxa are printed in conventional types: several names indicate slightly isolated and morphologically little differentiated populations only.

3) Brezina (1999) attributes the specimens from "Turkey" to the subspecies *auraniensis* G. Müller, 1902 in a wide sense. In our opinion, the Anatolian specimens (known only from the NE part of the region) have to be attributed to the subspecies *stygius* Ganglbauer, 1890.

4) The specific rank of this taxon is questioned by Deuve (1994) and Brezina (1994, 1999), who include it as subspecies of *stjernvalli*. In nature, however, the two taxa are sympatric or parapatric (although not syntopic), and the latter is a small sized, often diurnal element, inhabitant of dry forests and montane pastures; *gordius*, on the contrary, is a large sized (at high altitude also: *planostriatus*) carabid, normally nocturnal inhabitant of wet forest at low and medium altitude. Furthermore, no hybrid zones and apparent genetic flow are known between the two taxa. For these very reasons, we maintain in our list a distinct specific rank for each of these two taxa.

5) Described from a single specimen from "Amasya". Taxonomic rank and type locality of this taxon ("?artifact" in Brezina, 1999: 34) are to be verified.

6) Specific separation between *cribratus* and *porrectangus* on account of sympatry has been demonstrated by Deuve (1993: 5) and Vigna Taglianti and Forestiero (1994: 55).

7) *Heterocarabus* is treated as consubgeneric of *Chaetocarabus*, on the basis of endophallus characters, by some authors (see Deuve, 1994). We believe however (see Turin et al., 1993; Brezina, 1999) that *Heterocarabus* should be maintained as a distinct subgenus, as the eastern adelphotaxon of the european *Chaetocarabus* species complex, owing to several other important morphological features. Furthermore, Deuve (1994) and Brezina (1994, 1999) treat *marietti* as a single, polytipyc species; on the contrary, on the basis of abundant examined material, both in nature and in collections, we believe that at least four valid allopatric species of *Heterocarabus*, geographically isolated, and without introgressive forms, may be recognized.

8) Described on single male specimen from M. Pavesi collection, not collected by entomologists, from "Bornova (Izmir vil.)", with doubtful locality label (or, as hypothized by Jeanne, i.l. 1999, with collection label, "Ege University/Bornova-Izmir", but without locality label). Taxonomic status and type locality have to be verified. In fact, the autochtonous occurrence of *Sphodristocarabus* species in the Izmir region is highly improbable. On the other hand, the passive, anthropogenic transportation and introduction to Istanbul of single *Sphodristocarabus* specimens are reported by Mandl (1971) (*macrogonus drannadaghensis* [redescribed as *clientulus* Schweiger, 1969]; furthermore, *C. (S.) janthinus* has been introduced from Caucasus to the Urals (Turin et al., 1993).

9) Some taxa, here included in *macrogonus* as subspecies, have been described and/or considered as distinct at specific rank. We treat *macrogonus* as a polytypic, markedly varied species.

10) Deuve (1994), followed by Brezina (1999), ranked *spinolai*, and its subspecies, as subspecies of *torosus*. In agreement with other authors (see Cavazzuti and Ghiretti, 1992), and on the basis of the respective geographic patterns of distribution, we prefer to maintain a specific separation for these taxa. The same, for the (following) *C. (L.) rabaroni*.

11) Specific rank for *graciliformis* and *fortunatus*, treated currently as subspecies of *bonvouloiri*, should be proposed. They show markedly different morphological features; furthermore, in nature the three taxa do not present any introgressive zone or apparent genetic flow among each other.

12) The systematic tratment of this subgenus is after Cavazzuti (1989: treated as distinct genus). In the opinion of different authors (see, among others, Deuve, 1994; Brezina, 1994, 1999), the different taxa close to *scabrosus* are conspecific, owing to interbreeding. On the other hand, it is demonstrated that in nature the different *Procerus* species and subspecies are all parapatric or allopatric, with marked distinctive morphological features, and without apparent gene flow, although they seem able to interbreed in captivity (Cavazzuti, pers. comm.; Auvray and Machard, 1995).

13) The systematic treatment of this subgenus, and the following one, is after Fedorenko (1996).

14) For a careful revision of this subgenus in Caucasus, and part of Anatolia, see Belousov and Sokolov (1996).

15) Following Lorenz (1998: 213-214) this species belongs to the subgenus *Ocyturanes* Müller-Motzfeld, 1986.

16) This species belongs to the subgenus *Terminophanes* Müller-Motzfeld, 1986.

17) The systematic treatement of this subgenus is after Bonavita and Vigna Taglianti (in preparation).

18) This new combination is established after the careful revision of the generic complex of *Nannotrechus* by Belousov (1998). Furthermore, it is in agreement with the geographic patterns of distribution of taxa, being *byzantinus* described from a cave near the Bosporus, although the *Troglocimmerites* species known so far are endemic to Caucasus and the eastern Pontic chain.

19) We know this species, almost cosmopolitan today, from Lebanon (Casale, 1988), and from Greece (new report: 1 female, Greece, Gythion, 1.6.1990, M. Janata leg., in Dvořak coll.). Its occurrence in Anatolia, at least in some localities of the southern coast, is highly probable.

20) Examination of a series of nine male and female specimens from Cyprus (SW-Cypern, Paphos, 3-22.XII.1996, leg. R. Grimm, in Zool. Staatsamml., Munchen) shows that they belong to the subsp. *turcicus*. The question about this topic was proposed by Casale (1988: 497, note 1).

21) This species was described from a single male specimen from "Taurus armen.", a vague locality that the author identified in the Van Lake region. Jeanne (i. l. 1999) informed us that the type locality could be more correctly identified in the Cilician (eastern) Toros. This information seems confirmed by the examination of a second male (Zool. Staatsamml., Munchen), from "Moks [=Mokye], 1912. Kulzer".

22) This species has been described from a single female specimen from northwestern Anatolia (Sapanca region). Subsequently, Straneo himself identified some specimens of *P. voronovi* as *P. casalei*. The latter, however, is a western element, close to the Balkan *P. (Cheporus) transversalis* Duftschmid; *P. voronovi*, on the contrary, is a typical Caucasian element, limited in Anatolia to the eastern Pontic chain only. No direct relationships exist between these taxa.

23) A single male specimen, of a presumably new species of the *pumicatus* species group, had been found near Artvin (A.V.T.).

24) Incomplete remains of a single specimen of an unknown Molopini genus and species were found in a cave of the Haci Akif island in Beysehir Lake, in Pisidian Toros Mts. (Vigna Taglianti, 1973, 1980).

25) The systematic treatment of this genus is after Hieke (1995).

26) The systematic treatment of this genus is after Wrase (1999).

27) The taxonomy of this genus is after Noonan (1985).

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