



RESEARCH ARTICLE

On the checkered beetle species (Coleoptera: Cleridae) in the collections of "Grigore Antipa" National Museum of Natural History, Bucharest (Romania)

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Abstract

The paper deals with twenty-five species of checkered beetles of the Palaearctic Region preserved in the collections of "Grigore Antipa" National Museum of Natural History. All species have been revised. Within these species, *Trichodes apiarius* has been found to be the most common and widespread species in Romania.

Keywords

Coleoptera, Cleridae, Palaearctic, Romania, collection.

Introduction

Cleridae (also known as checkered beetles) are a small family of Coleoptera which counts around 3700 species assigned to just over 350 genera from 13 subfamilies (Gerstmeier 2018 in Okutaner 2020). Clerids are widespread in all continents (except Antarctica) and has the highest diversity in the tropics (Gunter et al. 2013 in Okutaner 2020). A quarter of the species of Cleridae are distributed in the Palaearctic Region (Gerstmeier 1998).

The checkered beetles live in a variety of habitats and have different feeding preferences. The group of “flower-visitors” includes the species of the genus *Trichodes*, *Tilloidea transversalis* and *Opetiopalpus scutellaris*. The adults are carnivorous like their larvae. All are located in inflorescences of various plants, mainly Apiaceae and Carduaceae, where they feed on different species of insects that visit the flowers, in addition to they feed on pollen (Bahillo de la Puebla and López-Colón 2006). The group of “nest parasites” includes the clerid predators of hymenopteran nests, particularly solitary bees. Also includes predatory species of acrid ootheca. They all belong to the genus *Trichodes* (Bahillo de la Puebla and López-Colón 2006). “The bee-eating beetles” corresponds to two very similar species: *Trichodes apiarius* and *T. alvearius*, whose larvae live at the expense of wild bees (*Osmies*, *Megachiles*) and *Sirex* larvae (wood wasp). The larva, especially of *T. apiarius*, can go into domestic hives where it devours larvae and nymphs. The “tree living species” develop inside branches of various tree species, both broadleaved and resinous and includes the species of the genera *Allonyx*, *Clerus*, *Korynetes*, *Opilo*, *Thanasimus*, *Tillus* and *Denops* (Bahillo de la Puebla and López-Colón 2006). The corticolous checkered beetles live on or under the bark of more or less healthy wood in the company of their larvae and hunt the larvae of xylophagous insects in their galleries (they can detect their pheromones). Research efforts related to Cleridae have focused primarily on using certain species as biological controls. The group of synanthropic species includes clerids that as a consequence of human activity (mainly trade in wood and skins) have spread over almost everyone becoming in many cases in species of cosmopolitan distribution (e.g species of *Necrobia*, *Opilo domesticus*, *O. mollis*, *Opetiopalpus scutellaris*). Most of these species, linked to the presence of various types of wood, feed on anobiidae or larvae of cerambycids (Bahillo de la Puebla and López-Colón 2006).

The necrophilous species are linked to the presence of vertebrate corpses where they prey preimaginal and imaginal stages of other necrophilous insects (e.g species of *Necrobia*) (Gerstmeier 1998; Bahillo de la Puebla and López-Colón 2006).

The checkered beetle fauna of Romania is still poorly known. The first faunistic articles date from the end of the 19th century and the beginning of the 20th century. Over time, papers and catalogues have been published on the diversity of coleopterans from various regions, some of them including species of clerids. Most publications are present in the *Records* section. The Cleridae collections of the Museums in Bucharest and Sibiu are published by Kurzeluk (2012), Kurzeluk and Tăușan (2015). The catalogue of the Cleridae of “Grigore Antipa” Museum (Kurzeluk 2012) deals with only a part of the specimens existing today in the collections.

The present article deals with faunistic data of unpublished checkered beetle specimens which are preserved in the Collection of Palaearctic Coleopterans and the new Collection of Cleridae.

Material and Methods

The checkered beetles are preserved in two collections: the Collection of Palaearctic Coleopterans (CPC) and the Collection of Cleridae (CCL), the last being formed during the period 2020–2022. All the specimens belonging both to the Collection of Palaearctic Coleopterans (136 specimens) and to checkered beetle material (1369 specimens, before to be organized in a collection) were revised by the authors. We found that most old specimens were identified by Jules Bourgeois (1877–1911), Arnold Lucien Montandon (1852–1922), Eduard Fleck (dates of birth and death are unknown), Ștefan Negru (1923–1970), Atena Roșca (1930–1976). The clerid specimens were mostly collected in Romania and only a small number of specimens come from Algeria, Austria, Croatia, Czech Republic, France, Germany, Greece, Morocco, Spain, Syria, Tunisia and Turkey.

The new collection (CCL) gathers old specimens previously not included in the Palaearctic collection, collected by Arnold Lucien Montandon (a French citizen that worked at the Museum during 1896–1907 and was interested in Heteroptera, Coleoptera and Orthoptera), Friedrich Deubel (1845–1933) (an amateur entomologist from Brașov that collected beetles in mountainous areas of Romania and a part of his collection was bought by the Museum in 1923), Dénes (Deszo) Kenderessy (1846–1881?), Eugen Teleky (dates of birth and death are unknown), László Diószeghy (1877–1942), Eduard Fleck (who collected insects in Bucegi Mts and Dobrogea; his entomological collection was preserved in the Museum since the beginning of the 20th century), Richard Canisius (an entomologist and painter that worked at the Museum during 1907–1934), Nicolae Săvulescu (a physician, passionate about insects; he was an external collaborator of the Romanian Fauna group of Romanian Academy and a collaborator of the Museum). In addition, the new collection includes specimens collected by the specialists of the “Grigore Antipa” Museum and their collaborators during various research projects in Romanian: the Danube Delta Biosphere Reserve, southern Dobrogea, littoral of the Black Sea, the Great Romanian Field, Bucharest and surroundings, Maramureș region, Piatra Craiului National Park, the Iron Gates Natural Park, Putna-Vrancea Natural Park, Măcin Mountains National Park, Apuseni National Park, sites of community importance – Frumoasa, Sighișoara-Târnava Mare, Mehedinți Plateau. Furthermore a few specimens were donated by Emil Váradi, Igor Ceianu, Vladimir Brădescu, Becka Brodie, Viorel Popescu, Laurențiu Rozyłowicz, Mihai Șerban Procheș, Victor Gheorghiu, Viorel Ungureanu, Levente Székely, Daniel Kurzeluk. In the Collection of Cleridae were included specimens/species collected in several expeditions such as: “Punia”, 2006 (Tunisia); “Atlas”, 2007 and “Merzouga”, 2013 (Morocco).

The specimens were examined with a Zeiss Stemi 2000-C stereomicroscope and were identified according to Reitter (1908), Lohse (1979), Gerstmeier (1992), Lompe (2010), Hackston (2018). Nomenclature follows Löbl et al. (2007). For each species the examined material includes the number of the specimens, the localities, the collecting date, the geographic coordinates for recently collected specimens, the

abbreviations of the collector's name and donator's name. The material is presented chronologically, specifying the countries or counties in the case of Romania. The information in square brackets is a supplement to the data collected. The authors proposed to present the works that refer to the records of clerid species from the territory of Romania, in chronological order, in the *Records* section. In the *Remarks* section, aspects related to the distribution of species are addressed, taking into account various bibliographic sources and some observations of the authors. A summary of the current knowledge on the bionomy of the twenty-five species of clerid beetles, based on literature data, is presented.

Abbreviations:

Name of the collectors: AFP-Alexandra Florina Popa; AI-Alexandru Iftime; AD-Andreea Drăghici; AP-Angela Petrescu; ALM-Arnold Lucien Montandon; AG-Athanasios Gavriliadis; AR-Atena Roșca; APG-Aurelian Popescu Gorj; AS-Aurora Stănescu; BB-Becka Brodie; CS-Cătălin Stanciu; CP-Corneliu Pârvu; CA-Costică Adam; CC-Cristina Constantinescu; CCa-Cristina Calefariu; CH-Cristina Hoinic; DK-Deszo Kenderessy; DaK-Daniel Kurzeluk; EdF-Eduard Fleck; EI-Elena Iorgu; EV-Emil Váradi; ET-Eugen Teleky; FC-Florența Crăciunescu; FrD-Friedrich Deubel; GC-Gabriel Chișamera; HT-Hadrian Tănase; ID-Ion Drăghia; IM-Ioana Matache; IC-Igor Ceianu; IN-Ileana Negoescu; IȘI-Ionuț Ștefan Iorgu; JR-J. Renault; LD-László Diószeghy; LR-Laurențiu Rozyłowicz; LS-Levente Székely; LM-Liviu Moscaliuc; LOP-Luis Ovidiu Popa; MM-Marcel Montandon; MVB-Marcel Vauloger de Beaupré; MF-Mariana Foaltin; MW-Medeea Weinberg; MS-Melania Stan; MȘP-Mihai Șerban Procheș; MAI-Mircea Alexandru Ieniștea; NC-Nicolae Ciubuc; NS-Nicolae Săvulescu; OPP-Oana Paula Popa; RC-Richard Canisius; RS-Rodica Serafim; ȘtN-Ștefan Negru; VG-Victor Gheorghiu; VIR-Victoria Iuga Raica; VG-Viorel Gavril; VP-Viorel Popescu; VU-Viorel Ungureanu; VB-Vladimir Brădescu; XSP-Xenia Scobiola Palade.

Abbreviations of the county names in Romania:

AB-Alba; AG-Argeș; AR-Arad; B-București; BC-Bacău; BN-Bistrița Năsăud; BH-Bihor; BR-Brăila; BV-Brașov; BZ-Buzău; CJ-Cluj; CL-Călărași; CS-Caraș Severin; CT-Constanța; CV-Covasna; DB-Dâmbovița; DJ-Dolj; GJ-Gorj; GL-Galați; GR-Giurgiu; HD-Hunedoara; HR-Harghita; IF-Ilfov; IL-Ialomița; MH-Mehedinți; MM-Maramureș; MS-Mureș; NT-Neamț; OT-Olt; PH-Prahova; SB-Sibiu; SJ-Sălaj; SM-Satu Mare; SV-Suceava; TL-Tulcea; TR-Teleorman; VS-Vaslui; VL-Vâlcea; VN-Vrancea.

Other abbreviations:

a.s.l. – above sea level; coll. – collection; don. – donation; MGAB – “Grigore Antipa” National Museum of Natural History; Mt/Mts – Mountain/s; spec./specs – specimen/s; CPC – Collection of Palaearctic Coleopterans; CCl – Collection of Cleridae.

Results and Discussion

The Palaearctic Coleoptera Collection contains twenty-five checked red beetle species from three subfamilies (Clerinae, Korynetinae and Tillinae) and the Cleridae Collection contains seventeen species which belong to the same subfamilies.

Family Cleridae Latreille, 1802

Subfamily Clerinae Latreille, 1802

Allonyx Jacquelin du Val, 1860

Allonyx quadrimaculatus (Schaller, 1783)

Examined material: 1 spec., Băile Herculane (CS), 19.VI.1956, NS (CCI).

Remarks: The species is recorded for the first time in Romanian fauna after the specimen preserved in the MGAB collection (Kurzeluk 2012 a, b). The Romanian record might represent an isolated surviving population within what might constitute its earlier range across most of Europe (Ruchin and Egorov 2018). This species extends through central and southern Europe, reaching Cyprus and Asia Minor (Gerstmeier 1998; Löbl et al. 2007).

Bionomy: The adults are living on conifers, mainly pines, where they prey on various xylophagous species (Bahillo de la Puebla and López-Colón 2006). Furthermore, the beetles were detected on spruce, larch and various types of deciduous trees (oak, beech, linden, cherry) (Neumann 2016). The range limits of *A. quadrimaculatus* in the Western Palaearctic coincides with those of *Pinus* but the clerid species can be found only in the parts of the tree species range where the mean annual temperatures approach to sub-Mediterranean values (Ruchin and Egorov 2018).

Clerus Geoffroy, 1762

Clerus mutillarius mutillarius Fabricius, 1775

Examined material: 3 specs, București (B), coll. ALM; 1 spec., Periș (IF), coll. RC; 3 specs, Comana forest (GR), coll. ALM; 2 specs, Transylvania, coll. DK (CPC); 1 spec., Govora (VL), coll. EdF; 1 spec., Snagov forest (IF), 27.VII.1950, don. IC; Comana (GR): 1 spec., 14.V.1955, NS; 1 spec., 19.VII.1958, NS; 1 spec., Pasărea forest (IF), 19.VI.1958, APG; 2 specs, Băile Herculane (CS), 21.VII.1956, NS; 3 specs, Căldărușani forest (IF), 12.VI.1958, AR; 2 specs, Băneasa forest (B), 4.VI.1959, NS; 1 spec., Pădurea Verde, Timișoara (TM), 3.VII.1960, don. IC; 2 specs, Bogdana-Voloșeni (VS), 10.V.1967, don. IC; 1 spec., Cocoș Monastery (TL), 15.V.1985, NS; 4 specs, Topleț (CS), 9.VI.2015, GC; 1 spec., Podeni (MH), 10.VI.2015, GC; 1 spec., Porumbelul Hill (AB), 18.VI.2015, CC; Eșelnița Valley, 8 kilometers upstream of the Danube: 11 specs, 23.VII.2016 and 2 specs, 17.VIII.2016, don. BB, VP, AG, at pheromone traps (MH); 13 specs, Turnu Măgurele (TR), 2.VII.2018, CS; 1 spec., Corugea (Casimcea) (TL), 6.VII.2018 (44.22757°N, 28.2144663°E), CS; 3 specs, Slava Rusă (TL), 7.VII.2018 (44°52'11"N, E: 28°39'3"N), CS; 1 spec., Saschiz (Valea Soarelui) (MS), 23.VI.2021, AFP; Măgura Odobești, Bolotești (VN): 1 spec., 24.VI.2021, 45.930073°N, 26.655144°E; 1 spec., 5.VII.2021, 45.836450°N,

27.036393°E; 1 spec., 19.VII.2021, 45.834629°N, 27.037825°E; 1 spec., 19.VII.2021, 45.834629°N, 27.037825°E; 3 specs, 19.VII.2021, 45.835179°N, 27.034708°E; 1 spec., 26.VII.2021, 45.834629°N, 27.037825°E; 1 spec., 26.VII.2021, 45.835179°N, 27.034708°E; 1 spec., 19.VIII.2021, 45.835199°N, 27.035777°E, pheromone traps, don. LR; Gălăciuc, Vrancea Mts: 1 spec., 26.VII.2021, 45.931005°N, 26.653119°E; 1 spec., 2.VIII.2021, 45.931005°N, 26.653119°E, pheromone traps, don. LR; 1 spec., Mărgău (CJ), 19.VIII.2022, 46.708853°N, 22.838306°E, AD (CCI).

Records: Nagyvárad [Oradea] (Mocsáry 1872); Biharmegye [Bihar] (Mocsáry 1873); Bufta (Jaquet 1899); București, Comana, Căldărușani, Zorleni (Fleck 1906); Hätszeg [Hațeg], Hermannstadt [Sibiu], Zood [Sadu], Mediasch [Mediaș], Dees [Dej], Klausenburg [Cluj-Napoca]; Haromszök [Trei Scaune Region]; Schässbürg [Sighișoara] (Petri 1912); Băneasa [Dobrogea] (Negru and Roșca 1967, under the name *Pseudoclerops mutillarius* F.); Cotroceni, București (Manolache 1930); Criș, Fișer, Colibari Pasture (Istrate 2016); Derșida (Merkl et al. 2016); Fântânele Hill (Stan et al. 2016).

Remarks: The species is widespread in the Central and Southern Europe (Löbl et al. 2007).

Bionomy: The adults are living under the cortex or running around on the trunks of various leafy, oak especially, where they prey on actively the preimaginal phases of various species of xylophagous insects (Español 1959). In Saxony-Anhalt Bundesland this great clerid became extinct because of the disappearance of the larger oak forests with mature trees and the climate changes (Neumann 2016).

Opilo Latreille, 1802

Opilo domesticus (Sturm, 1837)

Examined material: France: 1 spec., Besançon, coll. ALM (CPC).

Records: Brassó, Keresztény havas [Brașov, Postăvaru Mt.] (Csiki 1900); Fogarasch [Făgăraș], Kronstadt [Brașov]; Hosszufalu [Săcele]; Schässbürg [Sighișoara] (Petri 1912); Toplec [Topleț] sifted from dry, rotten wood (Gebhardt 1928).

Remarks: It is an Euro-Mediterranean species, widespread today (Zappi and Pantaleoni 2010).

Bionomy: It is relatively frequent in old houses with abundance of construction wood (synanthropic species), with nocturnal activity; it is a predator of anobiid beetles and of the cerambycid *Hylotrupes* sp. (Lohse 1979). In the Iberic Peninsula the species was found from wood of fig, carob, genistas, oaks and cypresses (Bahillo de la Puebla and López-Colón 2006).

Opilo mollis (Linnaeus, 1758) (Fig. 1 A)

Examined material: France: 2 specs, Alsacia, coll. ALM; 1 spec., coll. DK (CPC); Romania: 1 spec., without data, coll. MAI; 1 spec., Borosjenő [Ineu] (AR), 19.VII.1934, coll. LD; 1 spec., Nagynyires [Mireșu Mare] (MM), 1942, coll. EV; 1 spec., Săcele (BV), 7.VII.1988, don. IC; 1 spec., Târgu Ocna (BC), 20.VII.1991, AI, don. MȘP; 1

spec., Băile Herculane (CS), 10.VII.1996, don. MȘP; 1 spec., Nona (SV), 18.VI.1991, don. IC (CCI).

Records: Hermannstadt [Sibiu], Gross-Scheuern [Șura Mare], Gross-Schenk [Cincu], Fogarasch [Făgăraș], Mediasch [Mediaș], Schässbürg [Sighișoara], S.-Regen [Reghin], Dees [Dej], Rotenturm [Turnu Roșu], Remete [Râmet], Nagyenyed [Aiud], Kronstadt [Brașov] (Petri 1912); Ozunca Băi (Baraolt Mts) (Szél et al. 1995); west of Aghireșu (Merkl et al. 2016).

Remarks: This is a native European species, but today it has a wide distribution due to human activities (Zappi and Pantaleoni 2010).

Bionomy: The adults and larvae are living in and on old deciduous and coniferous trees as predators on a wide variety of wood-dwelling insect larvae: ptinids, melandryids, bostrichids, scolytids (Lohse 1979, Neumann 2016).

Opilo pallidus (Olivier, 1795) (Fig. 1 B)

Examined material: 1 spec., Băile Herculane (CS), 10.VII.1996, don. MȘP (CCI).

Records: Biharmegye [Bihar] (Mocsáry 1872); Herkulesfürdo [Băile Herculane] (Csiki 1900); Greci (Montandon 1908); Petersberg [Sânpetru], Bucsecs [Bucegi Mts] (Petri 1925–1926); Tismana (Marcu 1929); Dealul Obrejii, la Poplaca, 7.08.1945, Dealul Gușterița, 17.07.1945 (Worell 1951); Periprava (specimen was derived from laboratory growths from branch of *Vitis vinifera* infested by *Phymatodes fasciatus* (Vill.) (Cerambycidae) (Negru 1968).



Figure 1. A *Opilo mollis* (Săcele, Brașov); B *O. pallidus* (Băile Herculane, Caraș-Severin); C *O. taeniatus* (Bașpunar, Constanța). Photographs by I. Iorgu. Scale bar = 2 mm.

Remarks: The specimen collected from Periprava is not preserved in the Museum collections. *O. pallidus* is an Euro-Mediterranean species (Zappi and Pantaleoni 2010). **Bionomy:** It seems to develop preferentially in branches (acrodendric) and easily escapes observation (Lohse 1979). It is considered a very rare species which preferred the natural, original oak stocks with old one trees, mainly with *Cerambyx cerdo* infestation (Neumann 2016).

Opilo taeniatus (Klug, 1842) (Fig. 1 C)

Examined material: 1 spec., without data, coll. EdF; 1 spec., Slobozia (IL), coll. EdF (CPC); 1 spec., Bârnova forest (IS), 4.VI.1953, NS; Jegălia (CL): 1 spec., 22.VI.1955, don. IC; 3 specs, 16 – 20.V.1956, don. IC; 1 spec., 23.IV.1957, don. IC; 2 specs, 30.IV.1957, don. IC; Băile Herculane (CS): 1 spec., 29.V.1956, NS; 1 spec., 2.VII.1961, NS; Canaraua Fetii (CT): 1 spec., 14.V.1958, NS; 1 spec., 27.V.1962, NS; 1 spec., 19.V.1969, NS; 2 specs, Esecheoi (CT), 19.V.1958, NS; 1 spec., Murfatlar (CT), 12.VI.1961, NS; 1 spec., Başpunar [Fântâna Mare] (CT), 29.V.1962, NS; 1 spec., Valu lui Traian (CT), 30.V.1962, NS; Hagieni forest (CT): 2 specs, 4–27.VI.1962, NS; 1 spec., 29.V.1963, NS; 3 specs, 19.VI.1964, XSP; 1 spec., 7.VI.1985, NS; 1 spec., Cotu Ciorii (BZ), 29.V.1963, don. IC; 1 spec., Babadag Forest (TL), 20.VI.1963, NS (CCI).

Records: surroundings Greci-Cerna (Montandon 1887, under the name *Tillus rubrofasciatus* Kol.); Măcin, Bucarest [Bucureşti], Comana (Montandon 1906); Hagieni (Negru and Roşca 1967, f. *thoracicus* Klug).

Remarks: The species is known from Europe (Azerbaijan, Albania, Austria, Bosnia Herzegovina, Bulgaria, Czech Republic, Greece, Hungary, Italy, Macedonia, Poland, Romania, Slovakia, Slovenia, Russia - South European Territory, Turkey); North Africa (Libya); Asia (Cyprus, Turkey) (Löbl et al. 2007).

Bionomy: The species was found on old oaks in five studied regions in Turkey, 2005–2014 (<https://turkishoaks.org/bio-diversity>). Like all other members of the genus *Opilo*, both larvae and adults are likely to be predators of xylophagous beetles and corticolous insects (Richter 1961, Kolibáč et al 2005 in Zappi and Pantaleoni 2010).

Thanasimus Latreille, 1806

Thanasimus formicarius formicarius (Linnaeus, 1758)

Examined material: France: 1 spec., Besançon, coll. ALM; Romania: 2 specs, Bucureşti (B), coll. RC; 2 specs, Comana forest (GR), coll. ALM; 1 spec., Periş (IF), coll. RC; 1 spec., Ialomiţa county (IL), coll. ALM; Azuga (PH): 1 spec., coll. EdF, under the name *Thanasimus rufipes* Brahm; 4 specs, coll. EdF; 2 specs, Bârlad Valley (VS), coll. ALM; 3 specs, Transylvania, coll. DK (CPC); 1 spec., Ardeluţa Valley (tributary of the Tarcău river) (NT), 24.V.1949, don. IC; 2 specs, Aţa Valley (tributary of the Tarcău river) (NT), 24.V.1949, don. IC; 1 spec., Lucina, Obcinele Bucovinei (SV), 3.VI.1951, don. IC; 1 spec., Bolboci Lake, Bucegi Mts (DB), 4.VII.1952, MAI, don. VG; 1 spec., Băneasa forest, Bucureşti, 7.V.1955, NS; 3 specs, Pinu, Broşteni (forest space) (SV), 26.V.1958, don. IC; 1 spec., Chevereşu Mare (TM), V.1960, don. IC;

Valea Putnei (SV): 1 spec., 28.V.1972; 1 spec., 16.V.1975; 1 spec., 18.V.1979; 3 specs, 28.V.–5.VI.1979; 1 spec., 29.V.1980; 1 spec., 16.V.1983, don. IC; 1 spec., Broșteni (SV), 25.V.1971, don. IC; 1 spec., Cernica Forest (IF), 12.VI.1971, IC; 1 spec., Valea Putnei, Pojorâta (forest space) (SV), 28.V.1972, don. IC; 1 spec., Cornetu (IF), 9.IV.1987, don. IC; Dorna Căndrenilor (SV): 1 spec., 26.VI.1982; 1 spec., 7.VII.1982, don. IC; 2 specs, Moldovița, 21.VII.1982, don. IC; 1 spec., Ocoale (Gârda de Sus), 10.VIII.1986, IN; 1 spec., Borsec (HR), 15.VIII.1990, HT, don. MȘP; 1 spec., Nona (SV), 18.VI.1991, don. IC; 1 spec., 500 m upstream from the Repedea forestry range, Repedea (MM), 18.VI.2003, RS; 1 spec., Făina, Vaser Valley (MM), 21.VII.2004, CP; 1 spec., Valea Seacă, upstream of Brusturet forestry range, Piatra Craiului National Park (AG), 21.VI.2006, RS; 25 specs, Parâng Mts (HD), 16.VIII.2012, IȘTI; 8 specs, Păltiniș, Cindrel Mts (SB), 3.VII.2014, soil traps, MS, EI; 1 spec., Râșnov (BV), 13.V.2015, CC; 2 specs, Sadu Valley, Sădurel Valley (SB), 20.V.2015, 45.5965°N, 23.9472E, MS, LM; 2 specs, Sadu river, 20.V.2015, MS; 1 spec., Haneș Valley (VL), 22.V.2015, CC; 1 spec., Porumbelul Hill (AB), 19.VI.2015, LM; 1 spec., Frumoasa, Dobra Valley (SB), 19.VI.2015, CC; 1 spec., Groapa Ruginoasa, Apuseni National Park, Arieșeni (BH), 4.VIII.2020, OPP (CCL).

Records: A Vizér-és Balzatul-völgyben [Maramureș] (Frivaldszky 1871); Bucarest [București] (Jaquet 1899); Ialomița, Azuga, Retivoi, Zorleni (Fleck 1906); Hätszeg [Hațeg], Hermannstadt [Sibiu], Hammersdorf [Gușterița], Präsbe [Prejba], Kerzer Gebirge [Făgărașului Mts], Gross-Schenk [Cincu], Kronstadt [Brașov], Mediasch [Mediaș], BIRTHÄLM [Biertan], Schässbürg [Sighișoara], S.-Regen [Reghin], Bistra (Petri 1912); Cotroceni, București (Manolache 1930); Băile Tușnad (Ciomatul Mare Mts), Liban (Gurghiului Mts) (Szél et al. 1995); Borșa, Rodna Mts, Săcel, Pasul Prislop, 1505 m; Izvorul Izei (Săcel), 850 m, Valea Izei (Merkl 2008); Giumalău Mts (Nitzu and Olenici 2009); The Călimani National Park, swamp (Lotrean and Manu 2015); Dobra Valley, Fântânele Hill, Păltiniș, Râu Sadului, Sădurel Valley, Haneș Valley (Stan et al. 2016); Surduc (Merkl et al. 2016).

Remarks: The species is known from Europe (Albania, Armenia, Austria, Belgium, Bulgaria, Belarus, Croatia, Russia - Central European Territory, Czech Republic, Denmark, Estonia, Finland, France, Great Britain, Germany, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, The Netherlands, Norway, Russia - North European Territory, Poland, Romania, Slovakia, Spain, Russia - South European Territory, Sweden, Switzerland, Ukraine); North Africa (Morocco, Tunisia); Asia (Russia – East Siberia, Russia – Far East, China: Gansu, Nei Mongol; “Korea”); Nearctic Region (Löbl et al. 2007).

Bionomy: The species is living in coniferous forests, preferably on pines as the enemy of the pine borer (Lohse 1979). *Thanasimus formicarius* feeds on 27 bark-beetle species belonging to 15 genera (*Dendroctonus*, *Dryocoetes*, *Hylastes*, *Hylesinus*, *Hylurgops*, *Hylurgus*, *Ips*, *Leperesinus*, *Orthotomicus*, *Pityogenes*, *Pityokteines*, *Polygraphus*, *Scolytus*, *Tomicus* and *Trypodendron*) which infest coniferous (pine, spruce, larch, Douglas fir, and others), and broad-leaved trees (oak, ash, poplar, and others) (Mills 1983).

Trichodes Herbst, 1792*Trichodes alvearius* (Fabricius, 1792) (Fig. 2 A)

Examined material: France: 1 spec, Salans, Jura [department], 28.VI.1880, coll. ALM; 1 spec., without data, coll. DK (CPC); France: 4 specs, the Sainte Baume Massif, Var department, VII.1965, JR; 1 spec., “La Bonde” pond [Vaucluse department, south of the Grand Luberon Massif], NS (CCI).

Remarks: The species is widespread in the western part of Central and Southern Europe and in North Africa. In the eastern part of Central Europe, it is very rare and absent in the north (Lohse 1979).

Bionomy: It develops in the nests of Aculeata (Lohse 1979). Eleven hosts are reported for *T. alvearius* (seven species of Megachilidae, two species of Colletidae, two species of Sphecidae) and four hosts for *T. apiarius* (four species of Megachilidae) (Carré 1980).

Trichodes ammios (Fabricius, 1787)

Examined material: Algeria: 1♂, 1♀, Prov d’Oran, Oued Riou [Rélizane, Oued Rhiau], MVB, coll. ALM; 1♂, without other data, coll. ALM; 2♀♀, without data, coll. DK (CPC).

Remarks: The species is known from the southern Europe (Italy, Spain, Greece) and northern Africa (Algeria, Morocco, Tunisia) (Löbl et al. 2007).

Bionomy: It is considered parasitic on oothecae of the Moroccan locust (*Dociostaurus maroccanus*) (Cañizo 1956 in Bahillo de la Puebla and López-Colón 2006).

Trichodes apiarius (Linnaeus, 1758)

Examined material: Austria: 1 spec., Dürstein [Donau, Niederösterreich], MM, coll. ALM; Romania: 2 specs, Măcin (TL), coll. ALM; 1 spec., Cruce [Broșteni] (SV), coll. ALM; 1 spec., Turnu Severin (CS), coll. EdF; 1 spec., Azuga (PH), coll. EdF; 1 spec., Pitești (AG), coll. EdF; 1 spec., Grăușor (MS), coll. RC; 1 spec., Brașov; 2 specs, Torzburg [Bran] (BV), coll. RC; 1 spec., Ferăstrău [the old name of the Herăstrău area, Bucharest], coll. RC; 1 spec., Novaci (GJ), coll. RC; 1 spec., Transylvania, coll. DK; 2 specs, Hațeg (HD), coll. DK; 1 spec., Slănic Moldova (BC), VI.1940 (CPC); France: 4 specs, the Sainte Baume Massif, Var department, VII.1965, JR; Romania: 3 specs, Nagynyires [Mireșu Mare] (MM), 1942, coll. EV; 2 specs, Ața Valley (tributary of the Tarcău river) (NT), 14.VII.1949, don. IC; Băile Herculane (CS): 1 spec., 1950, coll. EV; 3 specs, 10.VI.1951, NS; C.A. Rosetti, Danube Delta (TL): 1 spec., VII.1950, don. IC; 2 specs, 20.VII.1964, MW, XSP; 1 spec., 25.VII.1966, NS; 1 spec., 5.VI.1979, don. VB; Pasărea forest (IF): 1 spec., 28.IV.1951, NS; 6 specs, 19.VI.1959, NS; 2 specs, 24.VII.1964, don. VB; 1 spec., 16.VI.1966, AR; 2 specs, 26.VI.1970, AR; 1 spec., Timișoara, Pădurea Verde (TM), 15.VI.1951, coll. NS; 1 spec., Búdösfürdő [Sântimbru-Băi], 1952, coll. EV; 1 spec., Peștera Șura Mare, Valley of Ponor River (HD), 1.X.1952, MAI, don. V.G.; 1 spec., Tâmpa Mt. (BV), 27.VI.1954, don. IC; 7 specs, Retezat Mts, Gura Zlata (HD), 25–26.VII.1956, NS; 1 spec., Gheorgheni (HR), 5.VII.1955, VIR; 1 spec., Ditrău (HR), 6.VII.1955, VIR; Budești (CL): 1 spec., 5.VII.1957, XSP; 2 specs, 5.V.1958, AR; 5 specs, 14–15.VI.1959, NS; 4 specs, 5.VI.1964,

AR; 2 specs, Pitești (AG), 15.VII.1957, VIR; 3 specs, Oravița (CS), 17.VI.1952, NS; Câmpulung Moldovenesc (SV): 1 spec., 22.VII.1952, don. IC; 2 specs, 1.VII.1953, NS; 4 specs, Bârsești (GJ), 22.VI.1954, VIR; 2 specs, Drăgoiasa (SV), 26.VII.1958, don. IC; Băneasa forest, București (B): 2 specs, 5.VI.1959, NS; 1 spec., 12.VII.1980, don. VB; Comana forest (GR): 5 specs, 27.VI.1959, NS; 1 spec., 5.VII.1969, NS; 1

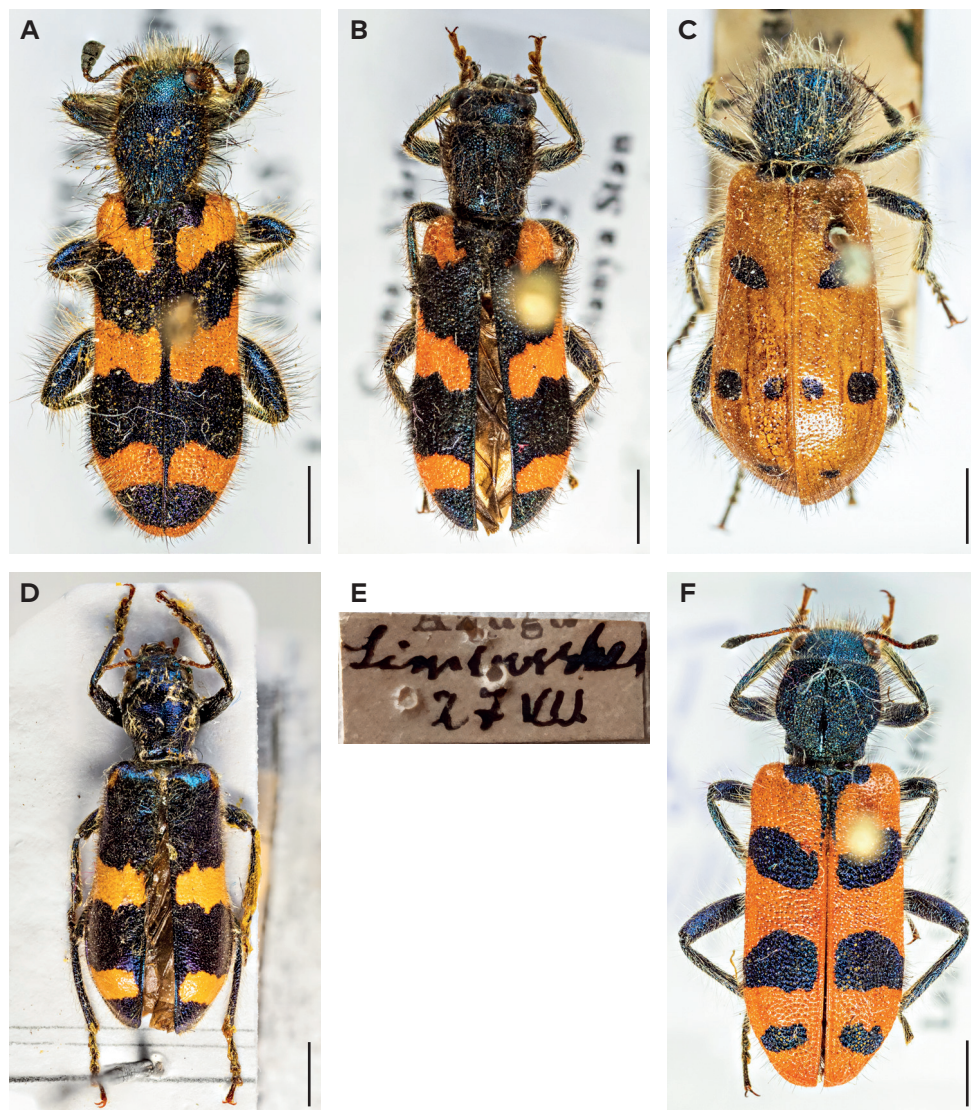


Figure 2. A *Trichodes alvearius* (France, the Sainte Baume Massif); B *T. favarius* (Cerna Vârf, Coșuștei Valley, Mehedinți); C *T. octopunctatus* (coll. Kenderessy); D *T. ircutensis* (coll. Fleck); E the label of *T. ircutensis*; F *T. umbellatarum* (Morocco, Merzouga Expedition, Moulay Idriss); Photographs by I. Iorgu.

Scale bar = 2 mm.

spec., 6.VII.1991, AI, don. MȘP; 1 spec., 2.VIII.1995, don. MȘP; 1 spec., 19.V.2009, RS; 1 spec., Căldărușani (IF), 30.VI.1959, AR; 1 spec., Gyarmat forest (SM), 20.VII.1960, don. IC; 1 spec., Baba Novac (SM), 26.VII.1960, don. IC; 1 spec., Șișești (MH), 4.VI.1961, AR; Eșelnița (MH): 2 specs, 21.V.1962, MW; 1 spec., 16.VI.1968, ȘtN; 2 specs, Poiana Bota, Câmpulung Moldovenesc (SV), 17.VII.1962, don. IC; 1 spec., Culmea Cocoșul (Câmpulung Moldovenesc), 28.VII.1962, don. IC; 1 spec., Mesteacănu (Câmpulung Moldovenesc), 21.VII.1963, don. IC; 1 spec., Deia (Câmpulung Moldovenesc), 20.VIII.1963; Moșna (SB): 3 specs, 12.IX.1963; 2 specs, 10.V.1964, XSP; 1 spec., Moldova Nouă (CS), 29.VI.1964, NS; Periprava, Danube Delta (TL): 1 spec., 14.VII.1964, ȘtN; 3 specs, 25.VII.1964, NS; 1 spec., 29.VI.1965, XSP; 11 specs, 5.VII.1974, APG; 1 spec., Murfatlar (CT), 12.VIII.1964; 1 spec., Oradea (BH), 1.VIII.1964, ȘtN; 1 spec., Breznița (MH), 6.VII.1965, NS; Caraorman, Danube Delta (TL): 2 specs, 14–16.VIII.1967, XSP; 2 specs, 1–5.V.1968, APG; 13 specs, 2–3.VII.1968, ȘtN; 1 spec., 19.VII.1969, XSP; 1 spec., Bogdana-Voloșeni (VS), 20.V.1968, don. IC; 1 spec., Orșova (Grața) (MH), 14.VI.1968, ȘtN; 1 spec., Babadag forest (TL), 20.VI.1968, XSP; 1 spec., Agapia Monastery (NT), 3.VII.1968, VB; 1 spec., Ada Kaleh (the island disappeared into the waters of the Danube in 1970), 29.VI.1969, ȘtN; 1 spec., Pustnicu forest, 18.VI.1970, XSP; Sfântu Gheorghe (TL): 1 spec., 7.VII.1971, APG; 3 specs, 4.VI.1972, NC; 2 specs, Ogradena (MH), 27.VI.1970, AR; 3 specs, Domogled Mt. (CS), 12–30.VII.1978, don. IC; 2 specs, Lueta (HR), 10.VII.1979; Băneasa (CT): 1♂, 3♀♀, 21.VII.1979, NS; 1 spec., 7.VII.1994, don. LS; 2 specs, Scornicești forest (OT), 23–24.VII.1980, IM; 1 spec., Căciulați (IF), 5.VIII.1980, CP; Putna Valley (SV): 1 spec., 17.VII.1981, don. IC; 1 spec., 19.VIII.1981, don. IC; 1 spec., Gura Beliei (PH), 20.V.1985; 1 spec., Cernica forest, 25.VI.1987, don. IC; 1 spec., Stoenesti, 7.VII.1990, don. MȘP; 1 spec., Hagieni (CT), 13.VII.1992, RS; 1 spec., Băile Chirui, Lueta (HR), 1.VIII.1993, CH; 1 spec., Timișul de Jos (BV), 12.VI.1994, don. LS; 2 specs, Cârțișoara, Vama Cucului, Transfăgărășan Highway, Făgăraș Mts, 29.VII.–1.VIII.1994, AS; 3 specs, Furnica (CT), 22.VI.1995, CP; 2 specs, Galeș (Săliște) (SB), 25.VII.1995, CP; 1 spec., Odăile (IF), 1995, don. MȘP; 1 spec., Dunavăț (TL), 31.V.1996, CH; 2 specs, Valea Ceairului, Dumbrăveni forest (CT), 18.VII.1997, GA; 2 specs, Canaraua Feti (CT), 3.IX.1997, don. MȘP; București, 1 spec., 27.VI.1998, don. VB; Galeșu (AG): 1 spec., 8.VII.2001, CP; 1 spec., 19.VIII.2004, CP; 1 spec., Valea Beiului (CS), 16.V.2002, MS; 2 specs, Poienile de sub Munte, 500 m downstream from the confluence of the rivers Rica and Budescu (MM), 14.VI.2003, RS; 1 spec., Poienile de sub Munte, the left bank of the Rica river, 14.VI.2003, RS; 41 specs, Leordina (MM), 15.VI.2003, RS, CP; Coșnea forestry range, Poienile de sub Munte (MM): 9 specs, 16.VI.2003, RS, CP; 1 spec., 25.VII.2004, CP; 1 spec., Dragomirești, Baicu forestry range (MM), 21.VI.2003, RS; 4 specs, Dragomirești, valley of Pălcuț streamlet (MM), 22.VI.2003, RS, CP; 1 spec., Idișor river valley, Săliștea, Țibleș Mts (MM), 23.VI.2003, RS; 2 specs, The Natural Reserve “Marine sand dunes of Agigea” (CT), 16.VII.2003, RS; Sărata (SB): 1 spec., 22.VI.2004, CCa; 1 spec., 27.VII.2005, CCa; 10.VII.2016, CCa; 1 spec., the confluence of the rivers Pop Ivan and Hututeanca (MM), 18.VII.2004, GC; 4 specs, Bistra (MM), 24.VII.2004,

MS, RS; 1 spec., the left bank of the the Tisa river (MM), 24.VII.2004, CP; 2 specs, Stan Valley, Făgăraş Mt (AG), 7.VIII.2004, RS; 1 spec., Greci, Măcin Mountains National Park (TL), 25.V.2005, RS; 1 spec., Belciugatele (CL), 13.VII.2005, don. VU; 5 specs, Manafu forest, Izvoarele (GR), 22.VI.2006, RS, MS, EI; 3 specs, Pricopan Peak, Suluc Valley, Măcin Mountains National Park (TL), 18.VII.2006, IM, MS; 1 spec., Ştefeşti (PH), 19.VIII.2006, FC; 2 specs, Moara Domnească (IF), 9.VII.2008, MS; 1 spec., Râmeţ Gorges (AB), 2.VI.2012, IŞT; 2 specs, Putna – Vrancea Natural Park, Lepşa river, 6–7.VIII.2013, CC; 1 spec., Eşelniţa, Valea Mare (MH), 4.VI.2014, VG; 1 spec., Soveja, Crementeş stream (VN), 12.VI.2014, CC; 1 spec., Greci, Moroianu Peak, Măcin Mountains National Park (TL), 23.VI.2014, EI; 2 specs, Soveja (TL), 25.VII.2014, CC; 2 specs, Tălmăcel, Şuvara Saşilor (SB), 2.VII.2014, MS, CC; 4 specs, Lotrioara, Lotrioara Valley (SB), 4.VII.2014, MS; 4 specs, Soveja, Ungureanca stream (VN), 26.VII.2014, CC; 2 specs, Frumoasa, Dobra river valley (SB), 16.VIII.2014, CC, CA; 3 specs, Valea Sadului, Gura Sadului (SB), 17.VI.2015, MS; 3 specs, Tău Bistra, Bistra Dam (AB), 19.VI.2015, EI, CC; Şugău Gorges, Munticelu (NT): 2 specs, 27.VI.2015, CA; 1 spec., 8.VIII.2015, CA; Dobra, Porumbelul Hill (AB): 1 spec., 22.VII.2015, MS; 2 specs, 21.VII.2022, MS; 1 spec., Voineasa, Voineşiţa Valley (VL), 23.VII.2015, EI; 1 spec., Gemenele Scientific Reservation, Retezat Mountains National Park (HD), 3.VII.2015, CA; 1 spec., Bilbor (HR), 20.VIII.2016, VG; 1 spec., Dăbâncă (CJ), 13.VI.2017, AFP; 27 specs, Ivrinezu Mare (CT), 24.VI.–5.VII.2017, VG; 1 spec., Valley of Bâsca Mare river (BZ), 18.VI.2018, 45.51169°N, 26.43657°E, OPP; 2 specs, Brebu (BZ), 19.VI.2018, LOP; 1 spec., Corugea (Casimcea) (TL), 6.VII.2018, CS; 1 spec., Pietrosul Rodnei Mt. (BN), 16.VII.2020, CC; 1 spec., Sălciua, Arieş Valley, Trascău Mts (AB), 8.VIII.2020, OPP; 1 spec., Valea Caselor, Maieru (BN), 17.VII.2020, CC; 1 spec., Pârâul Rece Valley, Vârghiş Gorges (CV), 25.VII.2020, AD; 1 spec., Brebu Mănăstirii (PH), 18.VII.2019, RS; 1 spec., Paltin (SB), 3.VIII.2015, MS; 1 spec., Negru Lake, Valea Neagră (VN), 14.VII.2016, VG; 1 spec., Pricopan Peak, Măcin Mountains National Park (TL), 18.VI.2019, MS; Lepşa Funicular, Vrancea Mts (VN): 1 spec., 20.VII.2016, CA; 1 spec., 30.VII.2022, 45.990508°N, 26.540503°E, don. LR (pheromone traps); 2 specs, Cucu, Vrancea Mts, 12.VII.2022, 45.920722°N, 26.627765°E, don. LR (pheromone traps); 1 spec., Podeni (MH), 22.VI.2022, 44.89163°N, 22.535285°E, C.C; 2 specs, Dobra (AB), 22.VII.2022, MS, CC (CCI).

Remarks: On the occasion of the various faunistic research projects carried out after 2012, the species was found in all the mountain areas where collecting trips were made, being collected as an adult in the June–August periods. The species is also present in low-altitude areas, being found between June and July, including in gardens with plants from the Apiaceae family (pers. obs). *Trichodes apiarius* may be considered the most common and widespread species in Romania based on the field observations and specimens preserved in the new collection (CCI).

Records: A Gutinhegy alján, a Nagy-Bányánál [At the bottom of Gutâi Mts, near Baia Mare] (Frivaldszky 1871); Biharmegyje [Bihor] (Mocsáry 1872); Herkulesfürdő [Băile Herculane] (Kuthy 1900); Szászsebes [Sebeş] (Csiki 1900; Kuthy 1900); Căldăruşani (Hurmuzachi 1904); Măcin (Montandon 1906); Comana (Jaquet 1899);

Montandon 1908); Azuga (Fleck 1906); Haromszek [Ținutul Secuiesc], Uj Radna [Rodna Nouă=Șant], Zsombolya [Jimbolia], Resicza [Reșița], Dubova, Karánsebes [Caransebel], Pécska [Pecica] (Vángel 1906); Pester-surroundings of Iași (Jonesco 1911); widespread in mountainous and hilly areas, on flowering plants (Petri 1912); Tismana (Marcu 1929); București and surroundings (Manolache 1930); Rodna, Valea Vinului (Csiki 1951); Canaraua Fetii (Negru and Roșca 1967); Letea, C.A. Rosetti, Periprava – on flowers of *Daucus carota*, frequent (Negru 1968); Caraorman (Ieniștea 1974); Eșelnița valley (Ieniștea 1975); Cocoș Monastery, Greci, Niculițel, Măcin (Roșca 1976); Sălăștioara (Metaliferi Mts, 300–400 m), Rogojel (Bihorulului Mts, 1600 m), Borșa (Rodna Mts, 1200 m, 1600 m), Oașa Lake (Cibinului Mts, 1000 m), Borla, Bunești (Szél et al. 1995); Ciuperceeni (Chimișliu 2008); Hera (Rona de Sus) 580 m, Dobăieș (Sighetu Marmăției) 400 m (Merkl 2008); Smereca (Poiana) (Nițu 2008); Albina islet (Stan 2009); Bârsana, Munții Lăpușului, Măgura de la Valea Morii, 500 m, oak forest (Merkl et al. 2011); The Călimani National Park, (Lotrean and Manu 2015); Sighișoara, Villa Franka (Istrate 2016); Bistra dam, Fântânele Hill, Tău Bistra, Lotrioara Valley, Paltin Valley, Sadu Valley, Șuvara Sașilor Reserve, Voinoșița Valley (Stan et al. 2016).

Bionomy: The adults are floricolous and are observed mainly on umbelliferous inflorescences. The larvae are living in the nests of many Hymenoptera species (e.g. *Osmia*, *Megachile*, *Sirex*), where the clerid beetles prey on their larval stages (Carré 1980; Español, 1960 in Bahillo de la Puebla and López-Colón 2006).

Trichodes favarius (Illiger, 1801) (Fig. 2 B)

Examined material: Romania: 2 specs, Almás-H. [Almăjului Mts], VI.1907, coll. Deubel; Turkey: 1 spec., Turquie, coll. ALM (CPC); Greece: 1 spec., Sterea Ellada, Trikorfo (38.439167°N, 21.895278°E, 330 m a.s.l.), 3.VI.2017, IȘTI; Romania: Băile Herculane (CS): 1 spec., VI.1951, NS; 1 spec., 12.VII.1953, NS; 1 spec., 29.V.1956, NS; 4 specs, 12.V.1961, NS; 4 specs, 4.VII.1964, NS; 2 specs, 18.V.1967, NS; 1 spec., Pasărea forest (IF), 30.IV.1953, NS; 2 specs, Cerhat forest (SM), 24.IV.1962, don. IC; 1 spec., Cocoș Monastery (TL), 18.VI.1974, ID; Danube Gorges: 1 spec., 21.V.1976, NS; 3 specs, 25.V.1976, NS; 3 specs, Arginești forest, Gura Motrului (MH), 23.VI.1983, RS; 4 specs, Turnu Severin (MH), 5.VI.1984, IM, CP; 1 spec., Schitul Topolniței (MH), 8.VI.1984, CP; 2 specs, Cernica forest (IF), 25.VI.1987, don. IC; 1 spec., Baia de Aramă, near the Bulba cave (MH), 17.VI.1992, RS; 1 spec., Șugău Gorges, Munticelu (NT), 12.VII.2015, CA; 1 spec., Cerna Vârf, Coșuștei Valley (MH), 23.VI.2022, MS (CCL).

Records: Tasnád [Tășnad], Zilah [Zalău], Orsova [Orșova] (Kuthy 1900); Csiker Gebirge [Sadu, Chicera Hill?], Vargyastal [Vârghiș] (Petri 1912); Tismana (Marcu 1929); Cerna valley, Eșelnița valley, Orșova (Ieniștea 1975); Cocoș Monastery (Roșca 1976); Aghireșu (Merkl et al. 2016).

Remarks: The species is known from Europe (Albania, Armenia, Austria, Bosnia Herzegovina, Bulgaria, Croatia, Greece, Hungary, Macedonia, Poland, Romania,

Slovakia, Slovenia, Turkey, Ukraine, Serbia and Montenegro, “Caucasus”) and Asia (Cyprus, Turkey) (Löbl et al. 2007).

Bionomy: The adults were observed on flowers plants of the families Apiaceae, Rosaceae and Asteraceae, similar to other species of *Trichodes* (Škorpík 2018).

Trichodes irkutensis (Laxmann, 1770) (Fig. 2 D, E)

Examined material: 1 spec., coll. EdF, the information on the label has not been deciphered (CPC).

Records: Rodnai havasokból [Rodna Mts] (Csiki 1900, 1951); Montes Sebesenses [Sebeş Mts], Montes Gyergyóenses [Giurgeu Mts] (Kuthy 1900); Gyergyö [Giurgeu], Rodna; Bistra; Rodnagebirge [Rodna Mts], Valea Vinului (Petri 1912); Hohe Rinne [Pältiniş], Râu Sadu, 18.06.1925 (Petri 1925–1926); Pojorâta (Adam and Eva Mts) as *T. irkutensis a. rufohumeralis* nov. (Marcu 1934–1935); Pältiniş, 10.07.1932 (Worell 1951).

Remarks: The species is known mainly from the eastern part of Siberia and Mongolia, reaching west through the southern areas of the former USSR to Transylvania, Slovakia and the vicinity of Przemyśl (Poland), and, probably brought with beehives, to Bavaria, Tyrol and Switzerland. In Poland known only from one locality, not observed for over 40 years. The bionomics of this species and its life cycle are unknown (https://baza.biomap.pl/en/taxon/species-trichodes_irkutensis).

Trichodes leucopsideus (Olivier, 1795)

Examined material: 1 spec., without data, coll. DK (CPC).

Remarks: The species is known from Europe (France, Italy, Spain, Portugal) and North Africa (Algeria, Lybia, Morocco and Tunisia) (Löbl et al. 2007).

Bionomy: Adults are floricolous being active between May and August. They are found on all types of flowers and especially those of the genera *Eryngium*, *Daucus* and *Thapsia* (Bahillo de la Puebla and López-Colón 2006).

Trichodes octopunctatus (Fabricius, 1787) (Fig. 2 C)

Examined material: 1 spec., coll. DK (CPC); Spain: 1 spec., La Granja [Provincia de Cáceres], NS (CCI).

Remarks: The species is known from Europe (France, Italy, Spain, Portugal) and North Africa (Algeria and Morocco) (Gerstmeier 1998; Löbl et al. 2007).

Bionomy: Adults are floricolous living mainly on inflorescences of various species of Compositae and Umbelliferae (*Eryngium*, *Cirsium*, *Helichrysum*, *Thapsia*). Larvae are active predators of hymenoptera (Bahillo de la Puebla and López-Colón 2006).

Trichodes quadriguttatus (Adams, 1817)

Examined material: 1 spec., Măcin (TL), coll. ALM; 1 spec., Dobrogea, coll. EdF (CPC); Romania: 1 spec., Oltina (CT), 9.VII.1960, NS; Hagieni forest (CT): 6 specs, 4.VI.1964, NS, ŞtN; 1 spec., 20.VI.1964, XSP; 1 spec., 21.VI.1964, don. IC; 11 specs, 6.VI.1965, XSP; 7♂♂, 8♀♀, 29.V.1967, NS; 4 specs, 24.VI.1976, don. VB; 31♂♂,

14♀♀, 25.IV.1983, NS; 3 specs, 14.VI.2013, IȘtI; 3 specs, 8.VII.2021 (43.77027°N, 28.45806°E), CC, AFP; 1 spec., Valu lui Traian (CT), 19.VI.1965, XSP; Canaraua Fetii (CT): 2 specs, 11.VI.1967, NS; 2 specs, 7.VII.1994, don. LS; 2 specs, 10.VI.2015, MSt; 1 spec., Neptun Resort (CT), 15.VI.1992, don. MȘP; 1 spec., Greaca (GR), 8.VI.1997, don. MȘP; 15 specs, Olimp Resort (CT) 19.VII.2003, AP, RS, MF, GC; 1 spec., Bragadiru (IF), 13.VI.2008, EI; 1 spec., Săcele (CT), 18.V.2012, GC; 2 specs, București, Văcărești Lake (B), 15.VI.2013, don. DaK; 3 specs, Pantelimon (wind park) (CT), 31.V.2016, CS; 3 specs, Ivrinezu Mare (CT), 24–26.VI.2017, VG; 11 specs, Runcu (wind park), 44.620338°N, 28.272313°E (CT), 26.VI.2018, CS; Turkey: 1 spec., “Taurus” Expedition: Küçükkuşu, Canakkale region, 11.VII.2005, CP; Syria: 10 specs, “Euphrates” Expedition: Jobeth Birghal, at 4 km South of the Citadel Şalāh-al Din (Saladin), 22.V.2008, 35.574444°N, 36.080000°E, 521 m a.s.l., CP (CCI).

Records: Mangalia (Jaquet 1899; Fleck 1906); Iglia [former hamlet] (Montandon 1906); Măcin (Montandon 1908); Iortmac, Buceag, Baș Punar (Săvulescu 1959); Hagieni, Comarova, Băneasa (Dobrogea) (Negru and Roșca 1967); Niculițel, Măcin (Roșca 1976); Bucșani (Kurzeluk 2014).

Remarks: The species is known from Europe: Albania, Armenia, Bulgaria, Georgia, Greece, Kazakhstan, Russia (South European Territory), Turkey, Ukraine (Krym “Caucasus”); Asia: Iran, Jordan, Kazakhstan, Syria, Turkey (Löbl et al 2007).

Bionomy: The adults were observed on flowers of *Daucus carota* and *Cirsium* sp., in June, next to Văcărești Lake, Bucharest (Kurzeluk 2014).

Trichodes umbellatarum (Olivier, 1795) (Fig. 2 F)

Examined material: Algeria: 1♂, Philippeville [Skikda], coll. ALM; 1♂, Atlas Mts, coll. ALM; 2 specs, without data, coll. DK (CPC); Morocco: 1 spec., “Atlas” Expedition: Moulay Idriss, 1.V.2007, CP; 1 spec., “Merzouga” Expedition: Moulay Idriss, 34.049722°N, 5.543056°W, 438 m a.s.l., 11.V.2013, CS; Tunisia: 6 specs, “Punia” Expedition: Bulla Regia, Roman Fortress, 36.556667°N, 8.754444°E, 163 m a.s.l., 28.III.2006, CP (CCI).

Remarks: The species is known from Europe: (France, Spain, Portugal) and northern Africa (Algeria, Lybia, Morocco, Tunisia) (Löbl et al 2007).

Bionomy: The larva lives at the expense of Hymenoptera Apidae nesting in the holes of stones and embankments, so abundant in the Mediterranean region. It preferentially frequents the following flowers: *Galactites tomentosa*, *Malva silvestris*, *Euphorbia serrata*, *Barkhausia taraxacifolia*. It is also found, but less systematically, on *Papaver rheas*, *Isatis tinctoria*, *Daucus carota*, *Anchusa italica*, *Lepidium draba*, *Euphorbia helioscopia*, *Scabiosa maritima*. It is on these flowers that it devours the insects within its reach: *Dasytes*, *Bibio*, among others (Barbier 1973).

Subfamily Korynetinae Laporte, 1838

Korynetes Herbst, 1792*Korynetes caeruleus* (De Geer, 1775)

Examined material: 1 spec., Comana (GR), coll. EdF; 1 spec., Măcin (TL), coll. ALM (CPC); 1 spec., Cornurile [Drăgănești] (PH), coll. ALM; 1 spec., Măcin (TL), coll. ALM (CCI).

Records: Nagycsűr [Șura Mare], Veresmart [Roșia], Brassó [Brașov], Keresztényhavas [Postăvaru Mt.] (Kuthy 1900); Comarnic (Montandon 1906); București, Măcin (Fleck 1906); Resicza [Reșița] (Vängel 1906); Gross-Scheuern [Șura Mare], Rotberg [Roșu Mt.], Kronstadt [Brașov]; Schässbürg [Sighișoara] (Petri 1912); Marginea, on the bones (Marcu 1928); Sinaia (Manolache 1930); Surduc (Merkl 2016).

Remarks: The species was recorded from Europe (Azerbaijan, Armenia, Bulgaria, Georgia, Greece, Kazakhstan, Russia - South European Territory, Turkey, Ukraine (Krym), “Caucasus”); and Asia (Iran, Jordan, Kazakhstan, Syria, Turkey) (Löbl et al. 2007).

Bionomy: The larvae and adults live predatory on others insects, especially *Anobium* sp. (Coleoptera, Anobiidae) (Neumann 2016).

Necrobia Olivier, 1795*Necrobia rufipes* (De Geer, 1775)

Examined material: Algeria: 1 spec., Oran, coll. DK; Romania: 1 spec., București, coll. ALM; 2 specs, coll. EdF (CPC); 1 spec., București, coll. ALM (CCI).

Records: Herkulesfürdő [Băile Herculane], Oravicza [Oravița], Szászsebes [Sebeș] (Csiki 1900; Kuthy 1900); Rumunyst [Românești] (Csiki 1900, under the name *Necrobia pilifera* Reitt.); Kolozsvár [Cluj], Resicza [Reșița] (Kuthy 1900); Rădăuți, 12.05, more specimens (Hormuzachi 1901, under the name *Necrobia pilifera* Reitt.); București (Montandon 1908); Mühlbach [Sebeș], Klausenburg [Cluj-Napoca] (Petri 1912).

Remarks: Cosmopolitan species (Gerstmeier 1998; Löbl et al. 2007).

Bionomy: They are saprophagous and predaceous (Opitz 2002). The adults are observed in the carrion of various animals preferably somewhat dry (Bahillo de la Puebla and López-Colón 2006). The species is called “ham beetle” or “copra beetle” and was found on dog food (Neumann 2016); collected from the carrion and carcasses in contact with soil (Omar et al. 2019).

Necrobia violacea (Linnaeus, 1758) (Fig. 3 A)

Examined material: Croatia: 1 spec., Dalmatia, coll. DK; Czech Republic: 5 specs, Prague, coll. DK; Romania: 17 specs, București, coll. RC; 4 specs, Azuga (PH), coll. EdF; 3 specs, Kronstädter Gebirge [Brașov Mts], coll. FrD; 1 spec., Cruce, Broșteni (SV), coll. ALM; 1 spec., Măcin (TL), coll. ALM; 5 specs, Hațeg (HD), coll. DK (CPC); 1 spec., Țiganca [Nifon] (TL), coll. ALM; 4 specs, Măcin, coll. ALM; 2 specs, București (B), 20.IV.1962, AR; 3 specs, Chilia Veche (TL), 15.IV.1966, ȘtN; 5 specs,

Bârlad Valley (VS), coll. ALM; 1 spec., Schitu Topolniței (MH), 8.VI.1984, CP; 2 specs, Izvoru Dulce, Beceni (BZ), 12.IV.2002, VU (CCI).

Records: Nagyvárad [Oradea], Élesd [Aleșd] (Mocsáry 1873, under the name *Corynetes violaceus* L.); surroundings Greci-Cerna (Montandon 1887, under the name *Corynetes violaceus* L.); Zorleni (Montandon 1906, 1908); București (Fleck 1906); Țiganca (Montandon 1908); widespread in mountainous and hilly areas (Petri 1912); Cotroceni, Sinaia (Manolache 1930); Comarova (Negru 1967).

Remarks: Cosmopolitan species (Gerstmeier 1998; Löbl et al. 2007).

Bionomy: They are saprophagous and predaceous (Opitz 2002). The adults are present in the carrion of various animals and in the rubbish dumps with dried bones and do not go to fresh corpses, but wait a few days to that they are more or less dry (Español 1959; Gerstmeier 1998). They usually appear after the carrion beetles and clown beetles (Bahillo de la Puebla and López-Colón 2006).

Opetiopalpus Spinola, 1844

Opetiopalpus sabulosus (Motschulsky, 1840)

Examined material: 1 spec., Bârlad (VS), coll. EdF (CPC).

Records: Zorleni, Măcin (Montandon 1908, var. *obscuricollis* Schklg.); Bârlad Valley, Babadag, Techirghiol (Kurzeluk and Tăușan 2015 – specimens are preserved in the collections of Natural History Museum Sibiu).

Remarks: In general, *O. sabulosus* was recorded from North Africa, Western Asia, Mongolia and Siberia (Gerstmeier 1998) as well as from Eastern Europe (Armenia, Moldavia, Ukraine, “Balcan”, “Caucasus”) (Löbl et al. 2007). During a comprehensive

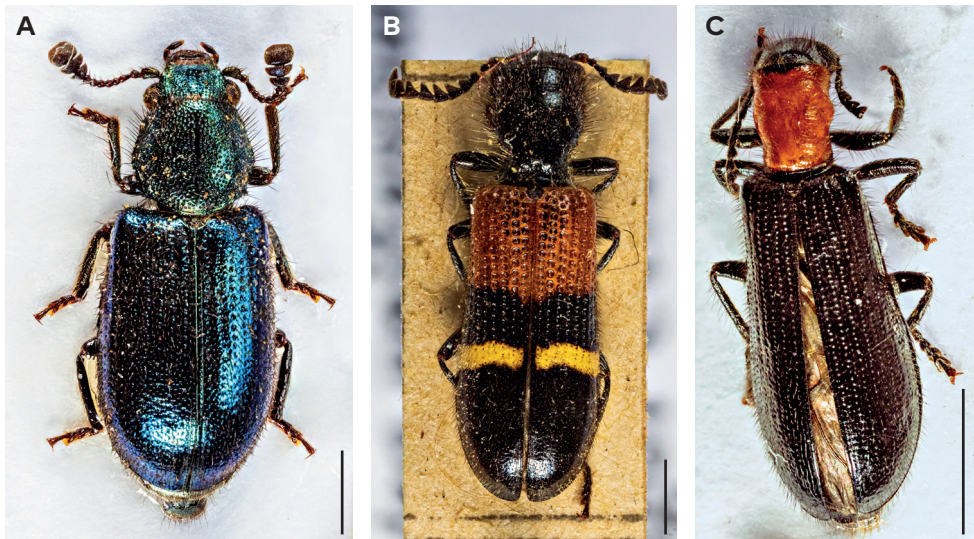


Figure 3. A *Necrobia violacea* (Brașov Mts, coll. Deubel); B *Tilloidea unifasciata* (don. Igor Ceianu); C *Tillus elongatus* (Cucu, Vrancea Mts). Photographs by I. Iorgu. Scale bar = 1 mm (A–B), 2 mm (C).

sampling survey in 2016 in the dry inner-Alpine Vinschgau Valley (South Tyrol, Italy), one individual of *O. sabulosus* was recorded from soil core samples on an extensively managed steppe-like dry pasture at 2000 m a.s.l. This was the first record of *O. sabulosus* for the European Alps and Central Europe (Steinwandter et al. 2019).

Bionomy: The species seems to have a cryptic lifestyle and therefore a low detection probability (Steinwandter et al. 2019). Stony ground seems to be favorable, preferably providing insect cadavers as food source (Gerstmeier 1998).

Opetiopalpus scutellaris (Panzer, 1797)

Examined material: 1 spec., without data, coll. EdF; 1 spec., coll. ALM; 1 spec., Hațeg (HD), coll. DK (CPC).

Records: Nagycsűr [Șura Mare], Jeselnicza [Ieșelnița], Herkulesfürdő [Băile Herculane] (Kuthy 1900); Măcin (Fleck 1906); Gross-Scheuern [Șura Mare], Dees [Dej], Klausenburg [Cluj-Napoca] (Petri 1912).

Remarks: The species was recorded from Europe (Albania, Austria, Bosnia Herzegovina, Czech Republic, Estonia, Germany, Hungary, Italy, Lithuania, Poland, Romania, Slovakia, Russia - South European Territory); North Africa; Asia (Kazakhstan, Mongolia); Afrotropical Region; Australian Region (Löbl et al. 2007).

Bionomy: The adults are carnivorous like their larvae. It is a synanthropic species (Bahillo de la Puebla and López-Colón 2006).

Subfamily Tillinae Leach, 1815

Denops Fischer von Waldheim, 1829

Denops albofasciatus (Charpentier, 1825)

Examined material: Germany: 1 spec., 7.X.1964 (CCI).

Records: Nagyvárád [Oradea], Székelyhid [Săcueni] (Mocsáry 1873); Szent-Erzsébet [Gușterița], Nagyszeben [Sibiu], Nagy Csűr [Șura Mare] (Csiki 1900; Kuthy 1900); Bucarest [București] in old vine stumps (Montandon 1906), Hermannstadt [Sibiu], Hammersdorf [Gușterița], Gross-Scheuern [Șura Mare] var. *longicollis* Stev., Siebenbürgen [Transilvania] (Petri 1912); Orșova (Ieniștea 1975).

Remarks: The examined specimen is derived from laboratory growths. The larva developed in gallery dead wood of *Lyctus pubescens*, throughout 1963, the adult emerging on 7.X.1964. This species colonizes Europe and North Africa, from Portugal to Asia Minor (Gerstmeier 1998; Löbl et al. 2007).

Bionomy: The adults are active predator of bostrychid beetle larvae (Lohse 1979). Studies have shown that the larvae of this clerid developed from carob wood (*Ceratonia siliqua*), mastic tree (*Pistacia lentiscus*), fig tree (*Ficus carica*) and decaying wood of *Quercus* sp. (Bahillo de la Puebla and López-Colón 2006).

Tilloidea Laporte, 1832

Tilloidea transversalis (Charpentier, 1825)

Examined material: Algeria: 3 specs, Ain Sefra (Hénon), coll. MVB; Spain: 2 specs, coll. DK (CPC).

Remarks: After revised the specimens published by Kurzeluk (2012 a) as *T. transversalis* the authors concluded that the material belongs to *Tilloidea unifasciata* (F.), *Opilo taeniatus* (Klug), *Trichodes favarius* (Illg.) and *T. quadriguttatus* Adams. The specimens from Căprioara (Săvârșin), Canaraua Fetii (1962), Dumbrăveni forest, Tarna Mare belong to *Tilloidea unifasciata*. The specimen from Băile Herculane (1956) belongs to *Trichodes favarius*. The specimens from Canaraua Fetii (1958, 1969), Băile Herculane (1961), Esecheoi, Murfatlar, Valu lui Traian, Hagieni (1962, 1963), Babadag, Bârnova (4.VI.1953!) belong to *Opilo taeniatus*. The specimens from Hagieni (1964, 1965) belong to *Trichodes quadriguttatus*.

Remarks: The species is known from Europe: Bulgaria, Hungary, Czech Republic, France, Greece, Italy, Malta, Macedonia, Portugal, Slovakia, Spain; North Africa: Algeria, Egypt, Morocco, Tunisia; Asia: Turkey (Löbl et al. 2007).

Bionomy: The adults are living on inflorescences, preferably on the great thistles of the genus *Onopordum*, where they prey on various insects (Bahillo de la Puebla and López-Colón 2006).

Tilloidea unifasciata (Fabricius, 1787) (Fig. 3 B)

Examined material: France: 3 specs, Alsacia, coll. ALM; 1 spec., without data, coll. EdF; Romania: 9 specs, Transylvania, coll. DK (CPC); 1 spec., Căprioara (Săvârșin) (AR), V.1934, ET; 1 spec., Nagynyires [Mireșu Mare] (MM), 1942, coll. EV; 1 spec., [Băneasa] Canaraua Fetii (CT), 27.V.1962, NS; 1 spec., Dumbrăveni forest (CT), 18.V.1994, CH; 1 spec., Tarna Mare (SM), 20.V.1997, CP; 2 specs, without other data, don. IC (CCI).

Records: Filaret (Bucarest) under the name *Tillus unifasciatus* F. (Jaquet 1900); Babadag (Fleck 1906); Hätszeg [Hațeg], Hammersdorf [Gușterița], Gross-Scheuern [Șura Mare], Götzenberg, Zood [Sadu], Kronstadt [Brașov], Mediasch [Mediaș], Schässbürg [Sighișoara], S.-Regen [Reghin], Gyeke [Geaca], Hermannstadt [Sibiu], Nagyenyed [Aiud] (Petri 1912); Honigberg [Hărman], Deva (Petri 1925–1926, under the name *Tillus unifasciatus* F.); Kazán [Danube Gorge] on flowering *Ribes rubrum* (Gebhardt 1928, under the name *Tillus unifasciatus* F.); București and surroundings (Manolache 1930, under the name *Tillus unifasciatus* F.); Roadeș (Istrate 2016).

Remarks: The species is spread in Europe, Egypt, Iran, Turkey, India (Löbl et al. 2007).

Bionomy: The adults are obtained from branches of various species of *Quercus* and on vine shoots grapevine (*Vitis vinifera*), under whose bark develop by preying on various species of xylophagous beetles, having been cited as active predators of some auger beetle species (Bahillo de la Puebla and López-Colón 2006). It was reared from dry branches of *Cupressus sempervirens*, infested by *Phloeosinus henschi* collected in the Pirin Mts, Bulgaria (Doychev and Ovcharov 2008).

Tillus Olivier, 1790*Tillus elongatus* (Linnaeus, 1758) (Fig. 3 C)

Examined material: 3 specs, Azuga (PH), 14–24.VIII.?, coll. EdF (CPC); 3 specs, without other data, don. IC; 1 spec., Cucu, Vrancea Mts (VN), 14.VII.2022, 45.920722°N, 26.627765°E, pheromone traps, don. LR (CCI).

Records: Azuga (Fleck 1906); Vöröstoronyi-szoros [Pasul Turnu Roşu] (Csiki 1909); Hätszeg [Haţeg], Zood [Sadu], Kerzer Geb. [Făgăraş Mts], Kronstadt [Braşov], Mediasch [Mediaş], S.-Regen [Reghin]; Elöpatak [Vâlcele], Schässbürg [Sighişoara], Rodnagebirge [Rodna Mts], Hermannstadt [Sibiu], Gyergyö-Tölgyes [Tulgheş], Schulergebirge [Postăvarul Mt.], Bucsecs [Bucegi Mts], Bodzaer Gebirge [Buzăului Mts] var. *comma*, Zalatna [Zlatna] (Petri 1912); Rotenturn [Turnu Roşu] (ab. *hyalinus*) (Petri 1925–1926); Rodna Gebirge, Valea Vinului, Szécs-völgy (Valea Secii) (Csiki 1951); Răcăţău (Marcu 1961); Fişer-Roades, Sighişoara (Istrate 2016).

Remarks: In Asia it lives in Kazakhstan and the Far East and is likely to that it is also widespread in the southern regions of Siberia. In Europe: Iberian Peninsula, Western Europe including the British Isles, southern Sweden, Italy, the Benelux states, Baltics, Belarus, Central Europe, Slovenia, Croatia, Romania, Balkans, Ukraine, northern, central and southern part of European Russia and Transcaucasia (Škorpík 2018).

Bionomy: It is found in old hardwood stands (mostly beech, oak) where the adults and larvae are predators of other saproxylic insects (ex. *Ptilinus* larvae) (Neumann 2016). Broadleaved stands with a large amount of dead wood represent a typical habitat of *Tillus elongatus* (Škorpík 2018).

In the Coleopteran Collections of “Grigore Antipa” Museum are preserved specimens of checkered beetles which belong to twenty-five species, nineteen of them being present in the Romanian fauna. A synthetic list of checkered beetle species preserved in the “Grigore Antipa” Museum is given in the Table 1.

Other six clerid species were recorded in Romania:

- *Thanasimus femoralis* (Zetterstedt, 1828) - Mărmarosmegyében és Cibin és Kerczi hegységben (Csiki 1900); Montes Kerczenses [Făgăraş Mts] (Kuthy 1900, under the name *T. rufipes* Brahm, 1799);
- *Trichodes punctatus punctatus* Fischer von Waldheim, 1829 - Huta, Cluj (46.99420°N, 22.92844°E) beech forest, stream, hand collecting, 23.IV.2014 (Merkl et al. 2016);
- *Dermestoides sanguinicollis* (Fabricius, 1782) - Nagyselyk [Şeica Mare], Medgyes [Mediaş], Segesvár [Sighişoara], Herkulesfürdő [Băile Herculane] (Kuthy 1900); H(erkules) B(ad) [Băile Herculane], V.1959, leg. Weyrauch (Kurzeluk and Tăuşan 2015);
- *Korynetes ruficornis* Sturm, 1837 - Nagyselyk [Şeica Mare], Medgyes [Mediaş], Segesvár [Sighişoara], Herkulesfürdő [Băile Herculane] (Kuthy 1900); Kronstadt [Braşov] (end of November 1923, in old beef tallow in large quantities together with the larvae) (Petri 1925–1926);

- *Tarsostenus univittatus* (Rossi, 1792) - Szent-Erzsébet [Guşteriţa], Szászrégen [Reghin] és Herkulesfürdo [Băile Herculane] (Csiki 1900, Kuthy 1900); Hammersdorf [Guşteriţa], Schässbürg [Sighişoara], Regen [Reghin] (Petri 1912 who quotes Bielz);
- *Tillus pallidipennis pallidipennis* (Bielz, 1850) - Nagy-Sínek [Cincu], Alsó-Szombat, Segesvár [Sighişoara], Csíkmegyei hegyek és (Csiki 1900, Petri 1912 who quotes Bielz), Andronache forest (specimen collected in 1918) (Kurzeluk 2022).

In the Catalogue of Palaearctic Coleoptera (2007) twenty-one clerid species are recorded for Romanian fauna. Besides these, another four species were recorded: *Allonyx quadrimaculatus*, *Trichodes quadriguttatus*, *Trichodes punctatus punctatus* and *Opetiopalpus sabulosus*.

Table 1. Clerid species preserved in the Museum collections.

Clerid species preserved in the Museum collections	Species present in Romania	Species not present in Romania
Subfamily Clerinae		
1. <i>Allonyx quadrimaculatus</i> (Schaller, 1783)	+	
2. <i>Clerus mutillarius mutillarius</i> Fabricius, 1775	+	
3. <i>Opilo domesticus</i> (Sturm, 1837)	+	
4. <i>Opilo mollis</i> (Linnaeus, 1758)	+	
5. <i>Opilo pallidus</i> (Olivier, 1795)	+	
6. <i>Opilo taeniatus</i> (Klug, 1842)	+	
7. <i>Thanasimus formicarius formicarius</i> (Linnaeus, 1758)	+	
8. <i>Trichodes alvearius</i> (Fabricius, 1792)		+
9. <i>Trichodes ammios</i> (Fabricius, 1787)		+
10. <i>Trichodes apiarius</i> (Linnaeus, 1758)	+	
11. <i>Trichodes favarius</i> (Illiger, 1801)	+	
12. <i>Trichodes ircuitensis</i> (Laxmann, 1770)	+	
13. <i>Trichodes leucopsideus</i> (Olivier, 1795)		+
14. <i>Trichodes octopunctatus</i> (Fabricius, 1787)		+
15. <i>Trichodes quadriguttatus</i> (Adams, 1817)	+	
16. <i>Trichodes umbellatarum</i> (Olivier, 1795)		+
Subfamily Korynetinae		
17. <i>Korynetes caeruleus</i> (De Geer, 1775)	+	
18. <i>Necrobia rufipes</i> (De Geer, 1775)	+	
19. <i>Necrobia violacea</i> (Linnaeus, 1758)	+	
20. <i>Opetiopalpus sabulosus</i> (Motschulsky, 1840)	+	
21. <i>Opetiopalpus scutellaris</i> (Panzer, 1797)	+	
Subfamily Tillinae		
22. <i>Denops albofasciatus</i> (Charpentier, 1825)	+	
23. <i>Tilloidea transversalis</i> (Charpentier, 1825)		+
24. <i>Tilloidea unifasciata</i> (Fabricius, 1787)	+	
25. <i>Tillus elongatus</i> (Linnaeus, 1758)	+	

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