



Contribution to the Study of the Cantharoidea (Coleoptera: Drilidae, Lycidae, Lampyridae, Cantharidae) in the Republic of Mordovia (Russia)

Alexander B. Ruchin^{1*}, Leonid V. Egorov^{1,2}

¹ Joint Directorate of the Mordovia State Nature Reserve and National Park "Smolny", Saransk, Russia.

² State Nature Reserve "Prisursky", Cheboksary, Russia.

ABSTRACT

The study results of the Cantharoidea fauna (Drilidae, Lycidae, Lampyridae, Cantharidae) in the Republic of Mordovia from 2005 to 2018 are presented. The following thirty-six species have been found in the region: Drilidae – 1 species, Lycidae – 7 species, Lampyridae – 1 species, and Cantharidae – 27 species. For the first time for the Republic of Mordovia *Erotides nasutus* (Kiesenwetter, 1874), *Pyropterus nigroruber* (DeGeer, 1774), *Cantharis terminata* (Faldermann, 1835) and *Rhagonycha fugax* (Mannerheim, 1843) have been reported. *Rhagonycha femoralis* (Brulle, 1832) has been excluded from the fauna of Republic of Mordovia. Two species (*Cantharis figurata*, *Cantharis nigra*) are known only by literary data. Findings must be confirmed with new material. *Lygistopterus sanguineus*, *Lampyris noctiluca*, *Cantharis fusca*, *Cantharis nigricans*, *Cantharis pellucida*, *Cantharis rustica*, and *Rhagonycha fulva* are common species.

Keywords: Coleoptera, Cantharoidea, Republic of Mordovia, Russia.

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Corresponding author: Alexander B. Ruchin

E-mail ✉ ruchin.alexander@gmail.com

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INTRODUCTION

Biodiversity conservation (biodiversity) is one of the most important contemporary environmental problems that have been actively discussed in recent decades [1-4]. Biological diversity is an indispensable condition for the dynamic biosphere stability, and its conservation is one of the most urgent problems of mankind [5, 6]. According to Rivers et al. (2014), and Mupepele et al., (2016), the biodiversity conservation, which has become global problem, requires continuous monitoring, accounting and protection at the regional level [7, 8]. Optimal management of biodiversity and its effective conservation can be based only on accurate data on the current state and trends in wildlife at the level of individual regions, knowledge of the mechanisms for the formation of diversity of biosystems, and assessments of its influence on biospheric processes [9-11].

The Republic of Mordovia is located at the junction of the forest and steppe zones; it has a variety of transitional ecosystems. Due to this, the Coleoptera fauna in this region is very diverse and unique. Over the past two decades, more than 2,600 Coleoptera species have been found in the entomofauna [12-21]. Among them there are many unexpected findings of species previously known only by one or two localities in Russia, as well as new species for Russia [22-25].

However, not all Coleoptera taxa of the fauna of the Republic of Mordovia have been fully studied yet. The Cantharoidea superfamily, including several families, is one of the under-researched groups. These beetles are predatory, moderately mobile, with a very soft elongated body, more or less flat and parallel. Beetles are found in many biotopes, they are somewhat poisonous [26, 27]. Larvae and imago of some species lead a predatory way of life; they destroy by aphids, scarabids, caterpillars of butterflies, larvae of beetles

and flies, others are mycetophagous [28-32]. There are 6 genera and 120 Drilidae species, 160 genera and 4,600 Lycidae species, 110 genera and 2,200 Lampyridae species, 160 genera and 5,100 Cantharidae species in the world fauna [33]. In Russia, there are 6 known species of Drilidae, 44 species of Lycidae, 12 species of Lampyridae and 213 species of Cantharidae, the distribution of which is still poorly understood [34].

MATERIALS AND METHODS

We have collected material for research during the 2005–2018 seasons (most intensively since 2011) using the generally accepted entomological methods of insect field studies [35]. Window traps were very effective for collecting Lycidae [36]. In general, we studied more than 550 examples. In the annotated list for each species, we indicated references to the literature on the view from the territory of Mordovia (if there is a reliable indication of the finding point), new places of collection (previously unpublished information), date of collection, number of equipment collected, collection name, notes (if there were any). If the collector's name was missing, the material was collected by the first author of the article. Also, we gave original information about biology, characteristics of species habitats, some observations in nature. The names of new species for the Republic of Mordovia are marked with an asterisk (*).

We cited the Cantharoidea nomenclature according to the "Catalog of Palaearctic Coleoptera" [34, 37-39]. Collection material is stored in the Museum of Mordovia State Nature Reserve (Pushta, Russia), the Biological Museum of Mordovia State University (Saransk) and the authors' personal collections.

The abbreviations accepted in the article: MSNR – Mordovia State Nature Reserve, NPS – National Park Smolny, example – ex. In the case of references to cordons and quarters in Mordovia State Nature Reserve and the National Park Smolny, their coordinates are given.

RESULTS AND DISCUSSION

List of species

CANTHAROIDEA

DRILIDAE Blanchard, 1845

Drilus concolor Ahrens, 1812

Ichalki District [40].

Biology. Discovered only once on the territory of the National Park "Smolny" in a broadleaf forest.

LYCIDAE Laporte de Castelnau, 1838

Erotinae LeConte, 1881

Aplatopterus rubens (Gyllenhal, 1817)

Temnikov District [41, 42].

Material. Temnikov District, MSNR, quarter 436, 54°44'15"N, 43°08'53"E, 29.VI.–13.VII.2017, 13–27.VII.2017, 2 ex., Egorov L.V., Semishin G.B., cordon Inorskiy, 54°44'15" N, 43°08'53" E, 12.V.2018, 1 ex., Semishin G.B [43].

Biology. In the Republic of Mordovia, it is known only in Mordovia State Nature Reserve. It is found in mixed forests.

**Erotides nasutus* (Kiesenwetter, 1874)

Material. Temnikov District, MSNR, quarter 19, 54°54'26" N, 43°13'59" E, 15.V.–27.VI.2018, 2 ex., Semishin G.B., Egorov L.V.

Biology. It was caught in the window traps in linden with alder, birch, aspen (nearby is a ripe pine forest).

Note. This is a very rare species. In Russia, it is known from the Far East (Primorye, Sakhalin, the Kuril Islands), and Southern Siberia; for the European part of Russia, it is specified from the Moscow region [34, 44, 45] and Chuvashia [46]. According to the oral report of S.K. Alekseev, samples were collected using window traps in the Kaluga Zaseki Reserve (Kaluga region). It is also common in Japan and Korea [34].

Platycis minuta [18]

Temnikov District [47].

Material. Temnikov District, MSNR, Pushta, 27.VII.–28.VIII.2018, 1 ex., Semishin G.B., Egorov L.V.

Biology. This species was noted twice in the flood-plain oak forest and in the pine-tree with a birch, spruce, aspen.

Dictyoptera aurora (Herbst, 1784)

Ichalki District [40]. Temnikov District [36, 42, 48-51].

Material. Temnikov District, MSNR, quarter 427, 14.V.1984, 1 ex. Volkov O.G., quarter 427, 54°44'42"N, 43°12'56"E, V.2014, 1 ex., quarter

86, 54°53'45" N, 43°35'58" E, 18.V.2018, 1 ex., Egorov L.V.; quarter 86, 54°53'45" N, 43°35'58" E, 17.V.–27.VI.2018, 5 ex., Semishin G.B., Egorov L.V.; quarter 406–383, 19.V.2018, 1 ex., Bolshakov L.V.; Pushta, 19.V.–26.VI.2018, 2 ex., Semishin G.B., Egorov L.V. Ardatov District, Turgenevo, 19.V.2008, 1 ex. Chamzinka District, Komsomolskiy, 9.VI.2009, 1 ex., Ryzhov M.K. Temnikov District, Temnikov, V.2009, 1 ex.

Biology. This species is found in mixed forests, spruce forests with pine, birch, riparian deciduous forests with a predominance of aspen.

**Pyropterus nigroruber* (DeGeer, 1774)

Material. Temnikov District, MSNR, quarter 19, 54°54'26" N, 43°13'59" E, 12–29.VII.2018, 1 ex., Semishin G.B., Egorov L.V.

Biology. Samples were collected in window traps in linden with alder, birch, aspen (nearby is a ripe pine forest).

Xylobanellus erythropterus (Baudi di Selve, 1872)

Temnikov District [36, 42, 47, 49, 50].

Material. Temnikov District, MSNR, quarter 34, 54°53'30" N, 43°10'05" E, VII.2014, 1 ex.; quarter 19, 54°54'26" N, 43°13'59" E, 27.VI.–12.VII.2018, 2 ex., Semishin G.B., Egorov L.V.; Pushta, 6–13.VII.2018, 2 ex., Semishin G.B., Egorov L.V.

Biology. In the Republic of Mordovia, this species is known only from the territory of Mordovia State Nature Reserve, where it lives in floodplain deciduous forests with a predominance of aspen, ripe pine forests with spruce, birch, aspen, floodplain oak forests, lindens with alder, birch, aspen.

Lycinae Laporte, 1838

Lygistorus sanguineus (Linnaeus, 1758)

Ichalki District (Ruchin et al., 2007b). Temnikov District [48–50, 52, 53]. Bolshie Berezniki District, Atyashevo District, Ichalki District [54, 55]. Saransk city [56]. Bolshie Berezniki District [57]. Ichalki District, Temnikov District [58]. Temnikov District, Bolshie Berezniki District, Tenguushevo District [36]. Ruzaevka District, Ichalki District, Ardatov District, Torbeevo District, Zubova Polyana District, Kochkurovo District,

Krasnoslobodsk District, Temnikov District, Chamzinka District, Dubenki District [59].

Material. Atyurievo District, Russkaya Velyazma, 1.VII.2016, 4 ex. Krasnoslobodsk District, 5 km NE Staraya Avgura, 8.VII.2017, 1 ex. Temnikov District, MSNR, quarter 19, 54°54'26" N, 43°13'59" E, 8–27.VI.2018, 1 ex., Semishin G.B., Egorov L.V.; cordon Plotomoika, quarter 34, 54°53'30" N, 43°10'05" E, 28.VI.–12.VII.2018, 3 ex., Semishin G.B., Egorov L.V.

Biology. This is a common species. It is found in various types of forests (pine, alder, mixed, deciduous). Beetles are common on the inflorescences of *Aegopodium podagraria* L., *Anthriscus sylvestris* (L.) Hoffm. Sometimes the number of adults on *A. podagraria* can be 25–30 individuals per inflorescence.

LAMPYRIDAE Latreille, 1817

Lampyrus noctiluca (Linnaeus, 1767)

Ichalki District [60]. Temnikov District [36, 42, 47–51] Republic of Mordovia [55].

Material. Bolshie Berezniki District, 9 km S Simkino, 27.VI.2005, 3 ex. Ichalki District, NPS, Lvovskoe forestry, Obrezki, 4.VI.2007, 1 ex., VI.2008, 2 ex., IV–V.2008, 5 ex., 21.V.2008, 1 ex. Ichalki District, NPS, 2 km NE Tashkino, IV–V.2008, 7 ex. Bolshoe Ignatovo District, NPS, Lesnoi, IV–V.2008, 8 ex. Lyambir District, Ekaterinovka, 29.V.2008, V.2008, 2 ex. Saransk city, 22.IV.2008, 1 ex. Torbeevo District, Vindrei, 6.VI.2008, 1 ex. Chamzinka District, Bolshoe Maresevo, 13.VI.2008, 1 ex. Ruzaevka District, Streletskaya Sloboda, 20.VI.2009, 3 ex. Temnikov District, MSNR, quarter 19, 54°54'26" N, 43°13'59" E, 8.VI.–12.VII.2018, 9 ex., Semishin G.B., Egorov L.V.; quarter 34, 54°53'30" N, 43°10'05" E, 8.VI.–12.VII.2018, 20 ex., Semishin G.B., Egorov L.V.; quarter 86, 54°53'45" N, 43°35'58" E, 6–27.VI.2018, 5 ex., Semishin G.B., Egorov L.V.; Pushta, 26.VI.–13.VII.2018, 2 ex., Semishin G.B., Egorov L.V.

Biology. This is a common species. It inhabits a wide variety of biotopes: spruce forests, mixed forests, pine forests of various types and ages, deciduous forests, forest plantations, forest shelter belts.

CANTHARIDAE Imhoff, 1856 (1815)

Cantharinae Imhoff, 1856 (1815)

Podabrus alpinus (Paykull, 1798)

Kochkurovo District, Chamzinka District [61].
Temnikov District [47].

Biology. This species is rare. It is believed that it inhabits deciduous and mixed forests.

Cantharis annularis Ménétrés, 1836

Republic of Mordovia [55, 62].

Material. Oktyabrskiy District, Monastyrskoe, 12.VI.2017, 1 ex.

Biology. This is a rare species. It was found in a small meadow area with growing *Salvia stepposa* Schost.

Cantharis figurata Mannerheim, 1843

Temnikov District [48].

Biology. In the Republic of Mordovia, this species is known only from Mordovia State Nature Reserve. The finding requires confirmation.

Cantharis flavilabris Fallén, 1807

Temnikov District [36, 42, 47-51, 53]. Republic of Mordovia [55].

Material. Ichalki District, NPS, Obrezki, 21.VI.2008, 1 ex. Saransk city, 9.VIII.2008, 1 ex. Staroe Shaigovo District, Nikolskaya Salovka, 8.VII.2017, 1 ex. Krasnoslobodsk District, 5 km NE Staraya Avgura, 8.VII.2017, 1 ex.; Staraya Avgura, 1.VII.2018, 1 ex.

Biology. The species is found on the edges of deciduous forests, pine forests, and floodplain meadows.

Cantharis fusca Linnaeus, 1758

Ichalki District [63, 64]. Ruzaevka District [65].
Temnikov District [26, 36, 49, 42, 51]. Republic of Mordovia [55, 62].

Material. Lyambir District, Ekaterinovka, 29.V.2008, 1 ex. Ichalki District, NPS, Obrezki, 20.VI.2008, 1 ex. Atyurievo District, Chudinka, 07.VI.2008, 1 ex. Bolshie Berezniki District, Degilevka, 12.VI.2015, 1 ex. Insar District, Kochetovka, V-IX.2015, 1 ex. Ardatov District, Oktyabrskiy, 26.V.2017, 1 ex. Temnikov District, MSNR, cordon Plotomoika, 54°53'36"N, 43°09'41"E, 16.VI.2018, 1 ex. Ichalki District, NPS, Kemlyanskoe forestry, quarter 106, 54°43'38"N, 45°15'29"E, 8.VI.2018, 1 ex.

Biology. It lives in mixed and deciduous forests, pine forests with spruce, birch, and on steppified slopes.

Cantharis livida Linnaeus, 1758

Ichalki District [22, 63]. Temnikov District [36, 42, 47, 50, 51, 53] Republic of Mordovia [55].

Material. Chamzinka District, Komsomolskiy, 31.V.2005, 2 ex. Saransk city, 15.VI.2004, 1 ex. Kochkurovo District, Staroe Turdaki, 12.VI.2008, 3 ex. Bolshie Berezniki District, Degilevka, 12.VI.2015, 1 ex. Atyurievo District, Pichelonga, 2.VII.2016, 1 ex. Lyambir District, Ateamar, 24.VI.2017, 1 ex.; Novaya Uda, 24.VI.2017, 2 ex. Kovytkino District, Chepurnovka, 29.VI.2017, 1 ex. Elniki District, Malye Mordovskie Poshty, 22.VII.2017, 1 ex. Staroe Shaigovo District, Nikolskaya Salovka, 8.VII.2017, 1 ex. Temnikov District, Temnikov, VI.2008, 1 ex. Temnikov District, MSNR, cordon Inorskiy, 54°44'15" N, 43°08'53" E, 29.V.2018, 1 ex.; quarter 368, 54°46'37"N, 43°21'45"E, 18.VI.2018, 1 ex.; cordon Srednyaya Melnitsa, 54°54'09"N, 43°13'53"E, 19.VI.2018, 3 ex., Semishin G.B.

Biology. This species is found in different biotopes: on the edges and glades of pine forests, alder-trees, mixed forests, on floodplain meadows, and steppe slopes. It flies into the light.

Cantharis nigra (DeGeer, 1774)

Republic of Mordovia [55].

Biology. Finding a form requires confirmation, as we have not found this species during many years of searching.

Cantharis nigricans O.F. Müller, 1776

Temnikov District [36, 42, 47-51, 53]

Material. Temnikov District, MSNR, quarter 445, 54°42'48"N, 43°12'19"E, 25.VI.1984, 1 ex., Volkov O.G., Pushta, 30.V.2008, 1 ex., quarter 368, 54°46'37"N, 43°21'45"E, 27.V.2018, 18.VI.2018, 8 ex.; quarter 381, 54°45'17"N, 43°09'52"E, 28.V.2018, 2 ex.; cordon Inorskiy, 54°44'15" N, 43°08'53" E, 29.V.2018, 14.VI.2018, 2 ex.; quarter 360, 54°46'13"N, 43°13'31"E, 15.VI.2018, 1 ex.; quarter 422, 54°43'55"N, 43°07'39"E, 21.VI.2018, 1 ex.; quarter 347, 54°47'34"N, 43°28'31"E, 23.VI.2018, 3 ex.; quarter 349, 54°47'47"N, 43°31'04"E, 23.VI.2018, 1 ex.; quarter 332, 54°46'44"N, 43°13'20"E, 23.VI.2018, 3 ex.; cordon Srednyaya Melnitsa, 54°54'09"N, 43°13'53"E, 19.VI.2018, 3 ex., Semishin G.B. Lyambir District, Ekaterinovka, 29.V.2008, 2.VI.2009, 2 ex. Atyurievo District, Chudinka, 7.VI.2008, 1 ex. Zubova Polyana Dis-

tract, Vysha, 8.VI.2008, 1 ex.; Udevo, 8.VI.2008, 1 ex.; Yavas, 22.VI.2018, 1 ex. Temnikov District, Veselyi, 25.V.2013, 1 ex. Elniki District, Novye Shaly, 26.V.2013, 1 ex. Ruzaevka District, Boldovo, 4.VI.2016, 1 ex.; Khovanshchina, 12.VI.2017, 1 ex. Insar District, Vasina Polyana, 4.VI.2016, 1 ex.; Novlei, 27.V.2017, 1 ex. Krasnoslobodsk District, 5 km NE Staraya Avgura, 8.VII.2017, 1 ex. Ichalki District, NPS, Kemlyanskoe forestry, quarter 94, 54°44'24"N, 45°24'20"E, 8.VI.2018, 1 ex., quarter 106, 8.VI.2018, 3 ex., quarter 22, 54°47'47"N, 45°21'28"E, 6.VI.2018, 3 ex.; Lvovskoe forestry, quarter 70, 54°49'11"N, 45°22'35"E, 7.VI.2018, 1 ex.

Biology. This is one of the most common species. It lives in a wide variety of biotopes of open and closed landscapes. It flies to the light.

Cantharis obscura Linnaeus, 1758

Ichalki District [61]. Temnikov District [49].

Material. Dubenki District, Yavleika, 11.VI.2017, 1 ex. Temnikov District, MSNR, quarter 86, 54°53'45" N, 43°35'58" E, 17.V.2018, 1 ex., Egorov L.V.

Biology. This is a rare species. It was found in pine forests with birch and spruce, and on step-plicated slopes with limestone outcrops.

Cantharis pallida Goeze, 1777

Ichalki District [61]. Temnikov District [36, 42, 47-51, 53].

Material. Torbeevo District, Vindrei, 6.VI.2008, 1 ex. Lyambir District, Ekaterinovka, 2.VI.2009, 1 ex. Temnikov District, Veselyi, 25.V.2013, 1 ex. Temnikov District, MSNR, cordon Srednyaya Melnitsa, 54°54'09"N, 43°13'53"E, 19.VI.2018, 3 ex., Semishin G.B. Ichalki District, NPS, Kemlyanskoe forestry, quarter 94, 8.VI.2018, 1 ex., quarter 22, 54°47'47"N, 45°21'28"E, 6.VI.2018, 1 ex.

Biology. This is a frequent species living in deciduous and mixed forests, birch forests, sap-spruce forests with birch, and floodplain oak forests. It flies to the light.

Cantharis pellucida Fabricius, 1792

Ichalki District [63, 64]. Temnikov District [36, 42, 47-51, 53]. Republic of Mordovia [62]

Material. Ichalki District, NPS, Lvovskoe forestry, quarter 53, 54°49'49"N, 45°22'40"E, 21.V.2008, 1 ex., quarter 70, 54°49'11"N, 45°22'35"E,

7.VI.2018, 1 ex.; Kemlyanskoe forestry, quarter 22, 54°47'47"N, 45°21'28"E, 6.VI.2018, 1 ex. Bolshoe Ignatovo District, NPS, 4 km S Barakhmany, 22.V.2008, 1 ex. Temnikov District, MSNR, cordon Valzenskiy, 54°43'12"N, 43°14'01"E, 3.VI.1984, 1 ex., Volkov O.G.; Pushta, 30.V.2008, 1 ex., quarter 420, 54°45'29"N, 43°24'19"E, 18.V.2018, 1 ex.; quarter 86, 54°53'38"N, 43°35'59"E, 18.V.2018, 1 ex., Egorov L.V.; quarter 440, 54°43'56"N, 43°13'15"E, 26.V.2018, 1 ex.; quarter 418, 54°45'43"N, 43°22'08"E, 27.V.2018, 1 ex.; quarter 381, 54°45'17"N, 43°09'52"E, 28.V.2018, 1 ex.; quarter 360, 54°46'13"N, 43°13'31"E, 15.VI.2018, 1 ex.; quarter 349, 54°47'47"N, 43°31'04"E, 23.VI.2018, 1 ex.; cordon Drozhdenovskiy, 54°44'31"N, 43°17'24"E, 24.VI.2018, 1 ex.; cordon Inorskiy, 54°44'15" N, 43°08'53" E, 29.V.2018, 1 ex. Staroe Shaigovo District, Staroe Akshino, 11.V.2008, 2 ex. Ardatov District, Turgenevo, 19.V.2008, 1 ex.; Oktyabrskiy, 19.V.2008, 1 ex. Lyambir District, Ekaterinovka, V.2008, 1 ex. Torbeevo District, Vindrei, 6.VI.2008, 2 ex. Zubova Polyana District, Udevo, 8.VI.2008, 1 ex.; Yavas, 22.VI.2018, 1 ex. Saransk city, 31.V.2009, 1 ex. Temnikov District, Veselyi, 25.V.2013, 6.VI.2015, 2 ex.

Biology. It is a common species. It is found in a wide variety of biotopes.

Cantharis rufa Linnaeus, 1758

Ichalki District [63, 64]. Temnikov District [36, 42, 47, 50, 51, 53]. Republic of Mordovia [62]

Material. Krasnoslobodsk District, Selishchi, 5.VI.2009, 1 ex. Dubenki District, 8 km SE Engalychchevo, 1.VII.2009, 1 ex. Bolshie Berezniki District, 9 km S Simkino, 29.VI.2009, 1 ex.; Degilevka, 12.VI.2015, 1 ex. Kadoshkino District, Latyshovka, 4.VI.2016, 1 ex. Ruzaevka District, Khovanshchina, 12.VI.2017, 1 ex.

Biology. It is a common species. It lives on the edges and glades of pine forests, mixed and deciduous forests, on meadows and stepplicated slopes. It flies to the light.

Cantharis rustica Fallén, 1807

Ichalki District [61]. Temnikov [36, 42, 51]. Republic of Mordovia [55, 62].

Material. Bolshie Berezniki District, 9 km S Simkino, 30. IV.2008, 18.VII.2009, 2 ex., Lobachev E.A.; Permisi, 5.VI.2016, 1 ex.; Nerlei, 5.VI.2016,

1 ex. Lyambir District, Ekaterinovka, 29.V.2008, 1 ex. Chamzinka District, Bolshoe Maresevo, 13.VI.2008, 2 ex. Staroe Shaigovo District, Lesnichestvo, 17.V.2008, 1 ex. Ardatov District, Svetotekhnika, 18.V.2008, 1 ex.; Oktyabrskiy, 19.V.2008, 1 ex. Kochkurovo District, Starye Turdaki, VI-VII.2008, 1 ex. Ichalki District, Khanineevka, 12.VI.2009, 1 ex. Kochkurovo District, Kochkurovo, VII.2009, 1 ex., Timoshkina L. Kadoshkino District, Latyshovka, 4.VI.2016, 1 ex. Insar District, Kochetovka, 4.VI.2016, 1 ex.; Vasina Polyana, 4.VI.2016, 1 ex. Ruzaevka District, Khovanshchina, 12.VI.2017, 2 ex.; Palaevka, 10.VI.2017, 1 ex. Dubenki District, Krasnye Luga, 11.VI.2017, 1 ex. Temnikov District, MSNR, Pushta, IV-V.2008, 2 ex., quarter 418, 54°45'43"N, 43°22'08"E, 27.V.2018, 1 ex.; quarter 368, 54°46'37"N, 43°21'45"E, 27.V.2018, 1 ex.

Biology. This is one of the most common species. It lives in a wide variety of biotopes of open and closed landscapes.

**Cantharis terminata* Faldermann, 1835

Material. Ardatov District, Olevka, 26.V.2017, 1 ex.

Biology. This single example was found in a meadow near a deciduous forest.

Note. This species is found in Chuvashia [66], Moscow and Lipetsk regions [34].

Cantharis lateralis Linnaeus, 1758

Temnikov District [36, 42, 47, 49, 50, 53]

Material. Bolshie Berezniki District, 9 km S Simkino, 29.VI.2009, 1 ex.; 6 km SE Permisi, 12.VI.2015, 2 ex. Chamzinka District, Gorbunovka, 24.VI.2016, 1 ex. Lyambir District, Atemar, 24.VI.2017, 2 ex.

Biology. It lives in mixed forests, in floodplain meadows, and is also found on steppified slopes.

Rhagonycha atra (Linnaeus, 1767)

Republic of Mordovia [55].

Material. Temnikov District, MSNR, quarter 36, 16.V.2018, 1 ex., Egorov L.V.; quarter 86, 54°53'45" N, 43°35'58" E, 6-27.VI.2018, 1 ex., Semishin G.B., Egorov L.V.

Biology. We found it twice in a linden with birch and spruce and in a pine forest with spruce, isolated birches.

Rhagonycha elongata (Fallén, 1807)

Temnikov District [14, 36, 42, 47, 48]

Material. Temnikov District, MSNR, quarter 449, 13.VI.1973, 1 ex. (V.F. Feoktistov); quarter 86, 54°53'45" N, 43°35'58" E, 6-27.VI.2018, 1 ex., Semishin G.B., Egorov L.V.

Biology. This is a rare species. We recorded it repeatedly only on the territory of Mordovia State Nature Reserve in mixed forests, pine forests and spruce forests with pine and birch. It flies to the light.

**Rhagonycha fugax* Mannerheim, 1843

Temnikov District [36, 42, 47, 49-51, 53]. Republic of Mordovia [62]. In all publications, named erroneously as *Rhagonycha femoralis* (Brulle, 1832). *Rh. femoralis* is excluded from the fauna of the Cantharidae of Mordovia.

Material. Temnikov District, MSNR, Pushta, 30.V.2008, 2 ex., cordon Srednyaya Melnitsa, 54°54'09"N, 43°13'53"E, 15-16.V.2018, 19.VI.2018, 3 ex., Egorov L.V., Semishin G.B.; quarter 381, 54°45'17"N, 43°09'52"E, 28.V.2018, 1 ex. Temnikov District, Temnikov, 1.VI.2008, 2 ex. Zubova Polyana District, Mordovskaya Polyana, 7.VI.2008, 1 ex. Ichalki District, NPS, Kemlyanskoe forestry, quarter 94, 54°44'24"N, 45°24'20"E, 8.VI.2018, 1 ex., quarter 22, 54°47'47"N, 45°21'28"E, 6.VI.2018, 1 ex.

Biology. This is a common species. It often lives near forest stations or in forests (in clearings, roads, glades). It flies to the light.

Rhagonycha fulva (Scopoli, 1763)

Temnikov District [36, 42, 47, 49-51]. Republic of Mordovia [55].

Material. Chamzinka District, Komsomolskiy, 5.VII.2006, 2 ex. Kochkurovo District, Mordovskoe Davydovo, 23.VII.2008, 2 ex., Kurmaeva D.K.; Muran, 29.VII.2017, 1 ex.; Starye Turdaki, 8.VII.2008, 1 ex. Ardatov District, Probuzhdenie, 2.VII.2008, 1 ex. Zubova Polyana District, Zhuravkino, 16.VII.2008, 1 ex.; Kargashino, 29.VII.2009, 1 ex.; Vadovo-Sosnovka, 30.VII.2009, 4 ex.; 8 km SW Vysha, 31.VII.2009, 1 ex.; Tenishevo, 2.VIII.2015, 1 ex. Staroe Shaigovo District, Konopat, 9.VII.2016, 1 ex.; Lesnichestvo, 16.VII.2009, 2 ex.; Ingener-Pyatina, 10.VII.2016, 1 ex.; Staroe Shaigovo, 30.VII.2017, 1 ex. Oktyabrskiy District, Monastyrskoe, VI-X.2014, 1 ex. Tengushevo District, 6 km W Ba-

rashevo, 18.VII.2015, 2 ex.; Barashevo, 18.VII.2015, 1 ex.; Klemeshchei, 18.VII.2015, 2 ex. Atyurievo District, Russkaya Velyazma, 2.VII.2016, 1 ex.; Strelnikovo, 2.VII.2016, 2 ex. Elniki District, Svobodnyi, 31.VII.2008, 1 ex.; Malye Mordovskie Poshaty, 19.VII.2015, 22.VII.2017, 3 ex.; Novye Shaly, 22.VII.2017, 1 ex.; Novaya Yamskaya Sloboda, 22.VII.2017, 1 ex.; Cherlyai, 23.VII.2016, 1 ex. Ruzaevka District, Yakovshchina, 26.VI.2016, 1 ex. Ichalki District, NPS, Kemlyanskoe forestry, quarter 66, 54°45'09"N, 45°13'47"E, 27.VII.2017, 1 ex., quarter 90, 54°44'48"N, 45°19'30"E, 25.VII.2017, 1 ex., quarter 105, 54°43'35"N, 45°14'54"E, 12.VII.2018, 1 ex.; Barakhanovskoe forestry, quarter 113, 54°44'20"N, 45°28'25"E, 10.VII.2018, 1 ex. Temnikov District, MSNR, quarter 37, 54°53'41"N, 43°13'17"E, 8-17.VII.2018, 1 ex.; cordon Srednyaya Melnitsa, 54°54'09"N, 43°13'53"E, 8.VII.2018, 1 ex.; quarter 434, 54°45'04"N, 43°19'02"E, 22.VII.2018, 2 ex.

Biology. This is one of the most common species. It lives on the edges and glades of pine forests, mixed and deciduous forests, on meadows and steppe slopes. It is often found on the inflorescences of plants from the Umbelliferae and Compositae bloodlines.

Rhagonycha lignosa (O.F. Müller, 1764)

Temnikov District [36, 42, 47, 50, 51, 53]

Material. Temnikov District, Veselyi, 25.V.2013, 1 ex. Temnikov District, MSNR, quarter 19, 54°54'26" N, 43°13'59" E, 8-27.VI.2018, 1 ex., Semishin G.B., Egorov L.V.

Biology. It lives in deciduous forests, birch forests, and edges of mixed forests.

Rhagonycha nigripes W. Redtenbacher, 1842

Republic of Mordovia [55]

Material. Temnikov District, MSNR, quarter 381, 54°45'17"N, 43°09'52"E, 28.V.2018, 1 ex.

Biology. We recorded it only once in a mixed forest in Mordovia State Nature Reserve.

Rhagonycha nigriventris Motschulsky, 1860

Saransk city [61]. Temnikov District [36, 42, 47, 50, 51].

Material. Temnikov District, MSNR, cordon Inorskiy, 54°44'15" N, 43°08'53" E, 29.V.2018, 1 ex.; cordon Srednyaya Melnitsa, 54°54'09"N,

43°13'53"E, 19.VI.2018, 6 ex., Semishin G.B. Ichalki District, NPS, Kemlyanskoe forestry, quarter 22, 54°47'47"N, 45°21'28"E, 6.VI.2018, 1 ex.

Biology. This is a common species. We recorded it in mixed and deciduous forests, pine forests and spruce forests with pine, birch. It flies to the light.

Rhagonycha testacea (Linnaeus, 1758)

Lyambir District, Zubova Polyana District [61], Temnikov District [36, 42, 47, 51, 53].

Material. Lyambir District, Ekaterinovka, 2.VI.2009, 1 ex. Saransk city, 31.V.2009, 1 ex. Bolshie Berezniki District, Nerlei, 5.VI.2016, 1 ex. Insar District, Novlei, 27.V.2017, 1 ex. Temnikov District, MSNR, cordon Novenkiy, 54°42'32"N, 43°12'47"E, 19.V.2018, 1 ex., Egorov L.V.; quarter 418, 54°45'43"N, 43°22'08"E, 27.V.2018, 1 ex.; quarter 435, 54°43'41"N, 43°07'59"E, 14.VI.2018, 1 ex.; Pushta, 54°42'45" N, 43°13'16" E, 19.V.-26.VI.2018, 2 ex., Semishin G.B., Egorov L.V.

Biology. This is a common species. It is found in birch forests, floodplain oak forests, mixed forests, pine forests with spruce, birch, aspen, on floodplain meadows and on the outskirts of wetlands.

Silinae Mulsant, 1862

Silis ruficollis (Fabricius, 1775)

Temnikov District [36, 47, 53].

Biology. It was recorded repeatedly only in the territory of the Mordovia reserve in the pine-spruce forests with birch, on the edges of pine forests with spruce, birch.

Malthininae Kiesenwetter, 1852

Malthinus fasciatus (A.G. Olivier, 1790)

Temnikov District [51, 53].

Biology. It was recorded only on the territory of Mordovia State Nature Reserve in mixed forests.

Malthinus flaveolus (Herbst, 1786)

Temnikov District [42, 48, 50, 51]

Biology. It was recorded only on the territory of the Mordovia Reserve in ripe pine forests with spruce, birch, aspen, in floodplain deciduous forests with a predominance of aspen.

Malthinus frontalis (Marsham, 1802)

Temnikov District [50].

Biology. It was caught once only on the territory of Mordovia State Nature Reserve in a ripe pine forest with spruce, birch, aspen.

Thus, the Cantharoidea fauna of the Republic of Mordovia includes 36 species: Drilidae - one species, Lycidae - seven species, Lampyridae - one species and Cantharidae - 27 species. For two species (*Cantharis figurata*, *Cantharis nigra*), known only by literary data, confirmation of the findings is required from the territory of the republic. *Lygisterus san-guineus*,

Lampyris noctiluca, *Cantharis fusca*, *Cantharis nigricans*, *Cantharis pellucida*, *Cantharis rustica*, *Rhagonycha fulva* can be named as common and numerous species.

In general, the number of Cantharoidea species in Mordovia is comparable to that in the regions of the European part of Russia for which information was published (Table 1). However, as in many other regions (except for the Moscow region), the fauna of the subfamily Malthininae remains poorly understood, and it is difficult to determine. The number of species may be subsequently increased precisely by obtaining new data about this group.

Table 1. The number of Cantharoidea species in some regions of the European part of Russia (according to published data)

	Drilidae	Lycidae	Lampyridae	Cantharidae	In total
Udmurtia Republic [67]	0	5	1	25	31
Lipetsk Region [68]	1	3	1	27	32
Orenburg Region [69]	0	4	1	17	22
Perm krai [70]	0	0	0	15	15
Vladimir Region [71-73]	0	4	1	26	31
Chuvashia Republic (information of the second author)	1	6	1	27	35
Moscow Region [74]	1	7	1	48	57

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