Fauna of click beetles (Coleoptera: Elateridae) in the interfluve of Rivers Moksha and Sura, Republic of Mordovia, Russia

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Abstract. Ruchin AB, Egorov LV, Semishin GB. 2018. Fauna of click beetles (Coleoptera: Elateridae) in the interfluve of Rivers Moksha and Sura, Republic of Mordovia, Russia. Biodiversitas 19: 1352-1365. The results of the study of fauna of click beetles in the Republic of Mordovia are presented. By now, 58 species of click beetles have been recorded here. Adrastus pallens is a new record for the republic. As per the literature information, 6 species of click beetles (Agriotes pilosellus, Melanotus crassicollis, Melanotus fusciceps, Liotrichus affinis, Pseudanostirus globicollis, Stenagostus rufus) are known and these indications require confirmation. Two species (Agriotes acuminatus, Limoniscus suturalis) are excluded from the fauna. Taking into account the literary information in the fauna of Mordovia, 64 species of Elateridae are known. Agrypnus murinus, Agriotes lineatus, Agriotes obscurus, Agriotes sputator, Dalopius marginatus, Ampedus baleatus, Ampedus pomorum, Hemicrepidius niger, Athous subfuscus, Prosternon tessellatum, Selatosomus aeneus are among the mass species. A list of the species is presented, which with a high degree of probability can still be found in the republic.

Keywords: Click beetles, Coleoptera, Elateridae, fauna, Republic of Mordovia, Russia

INTRODUCTION

The Republic of Mordovia is located in the center of the East European Plain between 42°11′ and 46°45′ east longitude and 53°38′ and 55°11′ north latitude in the southwestern periphery of the Volga basin in the interfluve of rivers Moksha and Sura. The territory includes forest and forest-steppe zones of Central Russia. The eastern part of Mordovia occupies the northwest of the Volga Upland and the western part of the Oka-Don lowland. In this regard, a variety of habitats is observed in the area of study. Broad-leaved forests cover the central and eastern parts. In the east and south-east predominate forest-steppe landscapes (Yamashkin 1998). The variety of landscapes determines the diversity of entomofauna, in which, in addition to the typically nemoral and forest-steppe, taiga and steppe species have been actively detected in recent years (Egorov and Ruchin 2010; Ruchin and Kurmaeva 2010; Ruchin and Artaev 2016; Legalov et al. 2014; Ruchin and Egorov 2017b, 2018a, 2018b; Ruchin and Grishutkin 2018; Ruchin and Makarkin 2017; Chursina and Ruchin 2018).

Click beetles (Coleoptera: Elateridae) is one of the largest families within Coleoptera, including more than 10 thousand species (Bouchard et al. 2017), of which 467 species are reported from Russia (Prosvirov 2017, 2018). Many species are serious polyphagous pests and therefore of great economic importance (Morris 1951, Subchev et al. 2010; Mullerčikas et al. 2012; Baalbergen et al. 2014; Traugott et al. 2015). Information on the species diversity of click beetles in the Republic of Mordovia is extremely scarce. Plavilschikov (1964) published the first fairly representative list of insects of the Mordovia Reserve, where 14 species of click beetles were recorded. Several species of the family are mentioned in the work on forest pests (Bondarenko 1964). Timraleev et al. (2007) identified 41 species of Elateridae for Mordovia. Thus, before the beginning of our investigations, the fauna of this family in the region has not been studied enough.

MATERIALS AND METHODS

Materials for this paper were collected during seasons in 2006-2017 (most intensively since 2008) using known methods of field entomological research (Fasulati 1971). In total, about 100 localities were studied in all regions of the Republic of Mordovia. In figure 1 the points indicate the collecting grounds. During the research the most diverse biotopes characteristic of the republic were studied: open landscapes (various meadows, cultivated fields, overgrown with birch fields, flood plains of rivers) and afforested (mixed forests, small-leaved forests, pine forests, etc.). The window traps, manual collection, mowing of vegetation were used for the collection of imago. In some cases, imago fell into soil traps (plastic cups). Special soil collections of larvae and imagos were not carried out.

The collections of 2017 from 19 window traps installed in the Mordovia Reserve were studied (cf. Table 1) - 11 km NNW of Temnikov, 54°43′56″ N, 43°09′29″ E, quarter 436, mixed forest. In total, more than 2,000 specimens were examined during the study.
Figure 1. Study sites of click beetles in the Republic of Mordovia in 2006-2017 (red dots)

There are given references to the literature on the species from the territory of Mordovia (in case there is a reliable indication of the point of discovery it is mentioned either), new collection sites (previously unpublished information), collection date, number of collected specimens, surname of the collector, notes (if any) for each species in the annotated list below. In the absence of new unpublished material of the authors, the section "Material" is not given in the article.

In the section "Habitat" the original information of the authors received during the research on the territory of the republic is given. In the same section information on biotopes, preferred habitats, numbers and flight dates is presented. The section "Remark" provides general comments on the distribution, taxonomy or biology of the species. The section “Distribution” means distribution in Mordovia.

When the collector is not mentioned it means that material was collected by the first author. The original information on the biology of Elateridae, species habitats description and certain observations in nature are given separately. The names of new species (new record) for the
Republic of Mordovia are marked with an asterisk (*). The sign ««» indicates the species, which, for various reasons, we excluded from the list of Republic of Mordovia click beetles. The sign «s» indicates that the findings of the species require confirmation by additional recent.

The nomenclature of Elateridae is given after the Catalogue of Palaearctic Coleoptera (Cate et al. 2007). The dates for the description of some species are specified in accordance with the work (Bousquet 2016). All materials are deposited in the funds of Zoological Museum of Moscow State University (Moscow), Zoological Institute of Russian Academy of Sciences (St. Petersburg), and Museum of Mordovia State Nature Reserve (Pushta) and in the personal collections of authors.

The abbreviations used are MSNR - Mordovia State Nature Reserve, NPS - National Park «Smolny», quarter - quar., cordon - cord., ex. - exemplar(s) (specimen(s)).

Elateridae Leach, 1815

Subfamily Agrypninae Lacordaire, 1857

Agrypnus murinus (Linnaeus, 1758)

**Distribution.** Temnikov Dist. (Plavilshchikov 1964; Timraleev and Chikina 1991; Kurmaeva et al. 2008; Feoktistov 2011; Egorov et al. 2015, 2016, 2017). Found only in the Mordovia Reserve. Inhabits spruce forests, pine forests, mixed forests, floodplain and dry meadows, in pine forests of various types and ages, on the outskirts of marshes, steppe slopes, in vegetable gardens and orchards, agroecoses, forest shelterbelts, parks and squares of cities. The number of gatherings in soil traps in different biotopes is approximately the same: in the deciduous forest - 1.4 ex./100 trap-days, in the mixed forest - 1.2, in pine forests - 1.1, in birch wood - 1.4.

Danosoma conspersa (Gyllenhal, 1808)


**Habitat.** According to our observations the main habitats are mixed forests. Beetles were found under the bark of pine logs frequently.

Danosoma fasciata (Linnaeus, 1758)


**Habitat.** According to our observations the species occurs in pine forests and mixed forests. Beetles were found under the bark of dead fir trees.

Lacon lepidopterus (Panzer, 1800)

**Distribution.** Temnikov Dist. (Egorov and Ruchin 2014; Egorov et al. 2015, 2016, 2017). Found only in the Mordovia Reserve.

**Materials.** Temnikov Dist., MSNR, cord. Valzenski, 18.VII.2017, 1 ex.; Pushta, 22.V.2017, 1 ex.

**Habitat.** Inhabits spruce forests, pine forests, mixed forests, floodplain forests. Beetles were found under the bark of pine logs.

Subfamily Elaterinae Leach, 1815

*Adrastus pallens* (Fabricius, 1792)


**Habitat.** It is caught at the edge of mixed forest in soil traps.
Figure 2. Photo of click beetles. A. *Agrypnus murinus* (Chamzinka Dist., Alekseevka, photograph by M.K. Ryzhov); B. *Ampedus pomenae* (Temnikov Dist., MSNR, quar. 408, photograph by O.N. Artaev); C. *Ampedus sanguinolentus* (Temnikov Dist., MSNR, quar. 408, photograph by O.N. Artaev); D. *Athous haemorrhoidalis* (Chamzinka Dist., Alekseevka, photograph by M.K. Ryzhov); E. *Athous subfuscus* (Temnikov Dist., MSNR, quar. 408, photograph by O.N. Artaev); F. *Denticollis linearis* (Chamzinka Dist., Alekseevka, photograph by M.K. Ryzhov); G. *Limonius minutus* (Temnikov Dist., MSNR, cord. Inorski, photograph by O.N. Artaev); H. *Hemicrepidius niger* (Bolshie Berezniki Dist., 9 km S Simkino, photograph by A.B. Ruchin); I. *Prosternon tesselatum* (NPS, Barakhmanovskoe forestry, quar. 108, photograph by A.B. Ruchin); J. *Selatosomus cruciatus* (Temnikov Dist., MSNR, cord. Inorski, photograph by A.B. Ruchin)

*Synaptus filiformis* (Fabricius, 1781)

**Distribution.** Bolshie Berezniki Dist. (Timraleev and Chikina 1991).

**Materials.** Zubova Polyana Dist., Kargashino, 29.VII.2009, 1 ex.

**Habitat.** The species was caught once in a floodplain.

* - *Agriotes acuminatus* (Stephens, 1830)

**Distribution.** Lyambir Dist. (Loginova et al. 2006).

**Remark.** It is not included in the list of fauna of the Russian beetles (Guryeva 1979; Prosivirov 2018). The area is located much to the west (Merkli and Mertlik 2005; Tolasch et al. 2010; Németh et al. 2014).

*Agriotes lineatus* (Linnaeus, 1767)

**Habitat.** The species occurs in various biotopes: birch forests, aspen forests, forest shelterbelts, deciduous and mixed forests, floodplain and dry meadows, steppe slopes, spruce groves.


**Habitat.** The species occurs in floodplain high-grass meadows, in willow thickets along river banks, in pine forests, in aspen forests, in mixed forests, on steppe slopes, near vegetable gardens. It was also noted on the fumes (in the place of last year’s grassroots fire, the number of species in the soil traps reached 6.7 ex. Per 100 trap-days).

**Distribution.** Bolshie Berezniki Dist. (Timraleev and Chikina 1991). It was noted without indicating the localities of the findings (Timraleev 1992, 1996; Timraleev et al. 2001).

**Remark.** Occurrence of the species should be confirmed by recent material (Timraleev and Chikina 1991).

**Habitat.** The species occurs in the steppe areas.


**Habitat.** It is forest species. Every year, in mass, it is found in the forests of the Mordovia Reserve. It occurs in glades, fringes, glades, roads in various types of forests (floodplain deciduous, mixed, pine forests of various types and ages, spruce forests). According to the data of catches in the window traps the main number of beetles came from 12th May to 15th June, and after flight was not observed (cf. Table 1). Sometimes it flies into the light.


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The species occurs in mixed and deciduous forests along the fringes and glades.

*Ampedus erythrogonus* (P.W. Müller, 1821)


**Materials.** Temnikov Dist., MSNR, cord. Inorski, 1.VI.-13.VII.2017, 3 ex., L.V. Egorov, G.B. Semishin. Mostly in coniferous, floodplain deciduous and mixed forests. According to the data of catches from the window traps the highest activity from 1st June to 13th July (cf. Table 1).

*Ampedus karpathicus* (Buysson, 1886) (=*Ampedus suecicus* Palm, 1976)

**Distribution.** Temnikov Dist. (Egorov et al. 2015, 2016, 2017).

**Habitat.** The species was repeatedly noted only in the territory of the Mordovia Reserve in ripe spruce forests with pine, birch.

**Remark.** In our early publications, it is shown as *A. suecicus*. In the work of Mertlik (2018) it is shown that *Ampedus suecicus* Palm, 1976 is the younger synonym of *Ampedus karpathicus* (Buysson, 1886).

*Ampedus nigerrimus* (Lacordaire, 1835)

**Distribution.** Temnikov Dist. (Ruchin and Egorov 2017a).


**Habitat.** According to the data of catches in the window traps in the mixed forest, the main number of beetles fell from 12th May to 1st June, then the number decreased, but the imago flew until the end of July (cf. Table 1).
Table 1). A rare European species, a denizen of rotten wood (De Zan et al. 2014).

Remark. It is known in Russia from the Krasnodar territory, Voronezh region, Tatarstan (Guryeva 1979).

Ampedus nigroflavus (Goeze, 1777)


**Habitat.** The species occurs in mixed forests, mature pine forests with spruce, birch, ripe spruce forests with pine, birch, floodplain oak forests, and linden. According to the data of catches in the window traps, the peak of the imago flight was in the second half of May (cf. Table 1).

Ampedus nigroflavus (Goeze, 1777)

**Distribution.** Temnikov Dist. (Egorov et al. 2016).

**Habitat.** Single finds are made in a ripe sphagnum pine with spruce, birch and mature spruce with pine.

Ampedus pomonae (Stephens, 1830)


**Habitat.** The species occurs in pine forests with spruce, birch, riparian spruce grove, birch, birch forests with pine, aspen, linden, mixed forests, floodplain oak forests with lindens, wet deciduous forests (Figure 2).

Ampedus pomorum (Herbst, 1784)


**Habitat.** The species occurs in deciduous and mixed forests, ripe spruce forests with pine, birch, mature pine forests with spruce, birch, aspen, in floodplain oak forests with lime trees.

Ampedus praefectus (Fabricius, 1792)


**Habitat.** The species occurs in deciduous and mixed forests, small-leaved and broad-leaved forests with predominance of aspen, in pine forests with spruce (Figure 2).

Ampedus sanguineus (Linnaeus, 1758)


**Habitat.** The species occurs in aspen, linden, ripe spruce pine forests with spruce, birch, mixed forests.

Ampedus sanguinolentus (Schrank, 1776)


**Habitat.** The species occurs in floodplain forests, small-leaved forests and broad-leaved forests with predominance of aspen, in pine forests with spruce (Figure 2).

Ampedus tristis (Linnaeus, 1758)


**Habitat.** As the previous species, it was repeatedly noted only in the territory of the Mordovia Reserve in pine forests with spruce, mixed forests, ripe spruce forests with pine, birch. Imago was found under the bark of a spruce log. It visits inflorescences Umbelliferae.

Habitat. The species is constantly found in the Mordovia Reserve. It inhabits on the fringes, clearings, glades in pine forests, mixed forests, spruce forests. It is often wiped out from young pines. It is noted on the fumes.

Subfamily Melanotinae Candèze, 1859 (1856)

Melanotus brunnipes (Germar, 1823)

Habitat. Steppe view.

Remark. The species is known from Chuvashia (Egorov 2013), Ulyanovskaya (Isayev 2000), Tula and Lipetsk regions (Dorofeev 2006; Tsurikov 2009), the Middle Volga region (Dolin 1988).

Melanotus castanipes (Paykull, 1800)


Habitat. The species occurs in ripe spruce forests with pine and birch, deciduous forests, floodplain deciduous forests with predominance of aspen, mixed forests, pine forests with spruce. According to the data of catches in the window traps, the main number of beetles came from 12th May to 1st June, from the second half of June the flight ceased (cf. Table 1). It flies into the light.

? Melanotus crassicollis (Erichson, 1841)

Remark. The species is known from the Brest region (Belarus) (Alexandrovich 1995), Tula (Dorofeev 2006), Ulyanovsk (Isayev 2000) regions, from the Moscow region on the discovery of the end of the XIX century (Nikitsky et al. 1996). Instructions for Mordovia likely refer to M. castanipes. It is possible to live in the republic, but it needs confirmation.

? Melanotus fusciceps (Gyllenhal, 1817)

Remark. The species is known from the adjacent Ulyanovsk region from the Cretaceous steppes (Isayev 2000), therefore the indication of Plavilshchikov (1964) is likely erroneous. It is possible to live in the republic, but it needs confirmation.

Melanotus villosus (Geoffroy, 1785)


Habitat. The species was caught at the edge of a deciduous forest.

Subfamily Hypnoidinae Schwarz, 1906

Hypnoidus riparius (Fabricius, 1792)

Habitat. It was caught in mixed forests near water bodies.

Subfamily Denticollinae Stein & J. Weise, 1877 (1856)

Athous haemorrhoidalis (Fabricius, 1801)


Habitat. The species was noted along the fringes of deciduous forests, in linden trees with aspen, pine and spruce, in floodplain oak forests with lime trees, on floodplain meadows (Figure 2).

Athous subfuscus (O.F. Müller, 1764)


Habitat. The species occurs in a wide variety of forest biotopes (mixed, deciduous forests, pine forests of various types and ages, forest shelter belts) ( Figure 2). Beetles often visit the inflorescence of Umbelliferae. According to the data of catches in the window traps, the main number of beetles fell from 12th May to 15th June (cf. Table 1). The number of different biotopes from the data of catches into soil traps varies: in the spruce forest - 0.6 ex./100 trap-days, in the mixed forest - 0.2, in pine-trees - 0.4.

Athous vittatus (Fabricius, 1792)


Habitat. The species was caught at the edge of a deciduous forest.

Athous ferrugineus (Fabricius, 1775)


Denticollis linearis with pine, birch and mixed forests.


Denticollis borealis (Paykull, 1800)

Reserve in a pine forest with spruce.

Pheletes aeneoniger (DeGeer, 1774)


Habitat. The species occurs in ripe spruce forests with pine, birch, in floodplain deciduous forests with aspen predominance, in mixed forests. According to the data of catches in the window traps, the peak of the imago flight was in the first half of June (cf. Table 1). It is considered a stenotope forest species inhabiting old-broad leaved growth forests and pine forests (Mitter 1989; Nitcis and Barševskis 2011). In Europe the species is classified as indicator of forest ecosystems (Nieto, Alexander 2010).

Hemicrepidius niger (Linnaeus, 1758)


Habitat. The species was noted in deciduous and mixed forests, in floodplain oak forests, in floodplain meadows.

Hemicrepidius undulatus (DeGeer, 1774)


Habitat. The main habitats are forests: floodplain deciduous forest with aspen, floodplain oak with lime, mixed, pine forests with spruce, birch, deciduous forest (Figure 2). According to the data of catches in the window traps, flight began from the middle of May and its peak occurred in the first half of June (cf. Table 1). Imago was often found on the inflorescences of Umbelliferae. Larvae were found in a rotten tinder fungus from a birch log.

Diacanthous undulatus (DeGeer, 1774)


Habitat. The species occurs in riparian deciduous forests with aspen and pine predominance, in mixed forests. According to the data of catches in the window traps, the peak of the imago flight was in the first half of June (cf. Table 1). It is considered a stenotope forest species inhabiting old-broad leaved growth forests and pine forests (Mitter 1989; Nitcis and Barševskis 2011). In Europe the species is classified as indicator of forest ecosystems (Nieto, Alexander 2010).

Hemicrepidius hirtus (Herbst, 1784)
? *Stenagostus rufus* (DeGeer, 1774)

**Distribution.** It was noted without specifying the locality of the findings (Timraleev et al. 2007).

**Remark.** A saproxyal species confined to forests (Lukin 2010; Mertlik 2017). Inhabitance in the republic is unlikely, but it is possible and requires confirmation.

**Actenicerus sjaelandicus** (O.F. Müller, 1764)


**Habitat.** The species occurs in relatively moist biotopes: meadows, sphagnum pine forests with spruce, birch, floodplain deciduous forests, alders. It was also noted in the gardens and fire sites.

**Anostitus castaneus** (Linnaeus, 1758)


**Habitat.** With regard to distribution, the species is mainly restricted to forest biotopes (mixed and deciduous forests, spruce forests with pine, birch, aspen). Adults were found on the inflorescences of Umbelliferae.

**Aplotarsus incanus** (Gyllenhal, 1827)


**Habitat.** The species inhabit humidified biotopes (floodplain meadows, sphagnum pine forests, moistened spruce forests, deciduous wet forests along the banks of water bodies). Imago is often on the inflorescences of Umbelliferae.

**Ctenicera pectinicornis** (Linnaeus, 1758)


**Habitat.** The main habitats are the fringes and glades of forest tracts: mixed, pine forests with spruce, birch, spruce forests with pine and birch, deciduous.

? *Liogrichus affinis* (Paykull, 1800)

**Distribution.** Temnikov Dist. (Ruchin and Alekseev 2008).

**Remark.** A saproxyal species confined to forests (Lukin 2010; Mertlik 2017). Inhabitation in the republic is unlikely, but it is possible and requires confirmation.

**Orthiales serraticornis** (Paykull, 1800)


**Materials.** Temnikov Dist., MSNR, quar. 361, VI-VI.2011, 1 ex. Ichalki Dist., NPS, Kemlyansko forestry, Smolny, V.2009, 1 ex.

**Habitat.** The species occurs mainly on the fringes, roadsides on the shoots of young pines, and also on floodplain meadows in the grass stand (Medvedev 2005, Mertlik 2015).

**Paraphotistus impressus** (Fabricius, 1792)


**Habitat.** The species occurs on wet meadows, in ripe sphagnum pine forests with spruce, birch, deciduous forests, mixed forests. It was noted on the fire sites.

**Paraphotistus nigricornis** (Panzera, 1799)


**Materials.** Temnikov Dist., Tarkhany, 5.VI.2009, 1 ex.

**Habitat.** The species was recorded in the floodplain oak with linden, in birch forest with pine, aspen, linden, and also on the steppe slope.

**Prosternon tessellatum** (Linnaeus, 1758)


Selatosomus cruciatus (Linnaeus, 1758)


**Habitat.** Adults were found in a variety of biotopes: pine forests of various types and ages, spruce forests, floodplain meadows, thickets along river banks, broad-leaved forests, deciduous forests of secondary origin, steppe slopes with carbonate outcrops. The number in soil traps in different biotopes is the following: in the spruce forest - 0.2 ex./100 trap-days, in the mixed forest - 0.2, in the deciduous forest - 0.4.

Selatosomus latus (Fabricius, 1801)


**Habitat.** The species occurs more often in sparse forests (birch forests, mixed and deciduous forests) and open biotopes (dry and floodplain meadows).

Subfamily Negastrinae Nakane & Kishii, 1956

Negastrius pulchellus (Linnaeus, 1760)


Habitat. The species occurs in the aquatic biotopes.

Oedostethus quadrripustulatus (Fabricius, 1792)


Habitat. The species occurs both in the forests (a ripe spruce forest with a pine, birch, mixed forest), and on floodplain meadows.

Subfamily Cardiophorinae Candeze, 1859

Cardiophorus asellus (Erichson, 1840)


Habitat. The species was found in a mixed forest.

Cardiophorus ebeninus (Germar, 1823)


Habitat. One specimen was caught in a ripe sphagnum pine with spruce, birch.

Cardiophorus ruficollis (Linnaeus, 1758)


Habitat. The species occurs in clearings, fringes, glades and roads in various types of forests (floodplain deciduous, mixed, pine forests of various types and ages, spruce forests, near forest marshes). The amount of the specimens in the soil traps was low: in the deciduous forest - 0.4 ex./100 trap-days, in the mixed forest - 0.2. The species flies into the light.

Dicronychus equiseti (Herbst, 1784)


Habitat. The species occurs in pine forests, mixed forests along fringes and glades, rarely on floodplain meadows.

Discussion

On the territory of the Republic of Mordovia 58 species of click beetles have been recorded so far. Adrastus pallens is a new record for the republic. For 6 species of click beetles (Agriotes pilosellus, Melanotus crassicollis, Melanotus fusciceps, Liotrichus affinis, Pseudanostrus globicollis, Stenagostus rufus), known only from the literature, confirmation of findings with new material from the territory of the republic is required. Two species (Agriotes acuminatus, Limoniscus naturalis) are probably excluded from the fauna of the republic. Mass species that occur in various biotopes include Agrypnus murnius, Hemicrepidius nigri, Prosternon tessellatum, and Selatosomus aeneus. In addition to them, the most common species that live in a limited number of biotopes are Agriotes linearus, Agriotes obscurus, Agriotes sputator, Dalopius marginatus, Ampedus balteatus, Ampedus pomorum and Atous subfuscus.

In general, the number of species of click beetles in Mordovia is comparable to that in adjacent regions. So, in the Ulyanovsk region 69 species are known (Isaev 2000), in Chuvashia - 66 species (according to L.V. Egorov), in Nizhny Novgorod - 62 species (Anufriev et al. 1981). In other adjacent regions (Penza and Ryazan regions) the fauna of this family has not been adequately studied.

In greater degree it was studied in the Tula region - 57 species (Dorofeev 2009; Dorofeev et al. 2015), the Republic of Komi - 56 species (Medvedev 2005), Lipetsk region - 49 species (Tsurikov 2009). In the fauna of the click beetles of the Republic of Komi, Tula region species associated with forest habitats predominate. This is understandable in consideration of high afforestation of these regions. On the other hand, the inhabitants of steppe biotopes appear in the fauna of click beetles of the Ulyanovsk region (Aleinkova 1962). In the Lipetsk region the species diversity of the click beetles decreases, with decrease in the number of boreal species.

Thus, the high species diversity of the click beetles in Mordovia, Chuvashia, Ulyanovsk and Nizhny Novgorod regions is explained by the forest-steppe character of their territories. In these regions, the fauna of click beetles has a "transitional" character and includes boreal, nemoral and steppe elements. Therefore, it is possible that in the Republic of Mordovia other representatives of both the forest and steppe fauna of the click beetles will be found, e.g., Agriotes gurgistanus (Faldermann, 1835), Sericus sulcipennis (Buysson, 1893), Elater ferrugineus (Linnaeus, 1758), Cidnopus aeruginosus (Olivier, 1790), Cidnopus pilosus (Leske, 1785), Oedostethus tenuicornis (Germar, 1823), Drapetes mordelloides (Host, 1789), and some species of Cardiophorus (Eschschoz, 1829).

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REFERENCES

Aleinkova MM. 1962. Study of ecological and faunistic location of Middle Volga area Elateridae. Zoologicheskii Zhurnal XLI(7): 1028-1039. [Russian].


Isaev AYu. 2000. To the knowledge of beetles of the superfamilies Buprestoidea (Buprestidae) and Elateroidea (Elateridae, Dirrhagidae, Throscidae) of the Ulyanov region. Insects and arachnids of the Ulyanovs region. Ulyanovsk, 32-47. [Russian].


Legalov AA, Egorov LV, Ruchin AB. 2014. First record of Mesoalutobius pubescens (Kiesewetter, 1851) (Coleoptera, Rhynchitidae) in Russia. Euroasian Entomological Journal 13: 400. [Russian].

Loginova NG, Yakushkina MN, Kuzminykh MS. 2008. Soil invertebrates (mesofauna) of deciduous forest in the upper reaches of the river Amord of the central part of Mordovia. Problems of the sustainable functioning of aquatic and terrestrial ecosystems. Rostov-on-Don: Publishing house of Rostov University. [Russian].


Németh T, Dušánek V, Mertlik J, Kundrata R. 2014. New distributional data on Elateroidea (Coleoptera: Elateridae, Eucoenidae and...