Abstract

Based on literature analysis and museum collections, the range of Mimela holosericea (Fabricius, 1787) is defined. Outside of Russia, M. holosericea is distributed in Kazakhstan, Mongolia, some northern provinces of China, the Korean peninsula and Japan. Within the Russian Federation, the species is recorded in 30 administrative regions (the Far East, Eastern, Western and Southern Siberia, the Urals, Volga River basin and Central Russia). It is most abundant and most frequently recorded at the Far East: the Jewish Autonomous Region, Primorsky Krai, Khabarovsk Krai, Amur and Sakhalin Regions. In the western part of its range - Volga River basin and Central Russia - the species is sporadically distributed, though the number of specimen records here has increased in recent years. The main habitats are sparse pine forests (on glades, roadsides, fringes) and floodplain cenoses.

Introduction

Melolontha holosericea: Fabricius, 1787: 21. Typical locality – «Rossia» [Russia].

Anomala holosericea: Lindeman, 1871: 281; Matsumura, 1911: 119; Esterberg, 1929: 50.

Anomala (Rhombonyx) holosericea: Jacobson, 1900: 3; Semenov, 1904: 114.

Rhombonyx holosericea: Medvedev, 1949: 107; Galkin, 1961: 1039; Stebnicka, 1980: 275; Nikolajev, Pontsagdulam, 1984: 219; Nikolajev, 1987: 188; Kalinina, 1989: 411; Nikitsky et al., 1996: 57; Degma, 1997: 7; Dedukhin, 2003: 10; Bezborodov, 2006: 308; Bezborodov, 2009: 140; Kyzyly-ool, 2013: 84.

Mimela holosericea: Hua, 2002: 174; Kim et al., 2006: 135; Nikitsky, 2009: 51; Bezborodov, Zinchenko, 2010: 45; Park et al., 2010: 20; Shabalin, 2011: 68; Shabalin, Bezborodov, 2012: 265; Bayartogtokh et al., 2012: 213; Bezborodov, 2013a: 136; Bezborodov, 2014: 138; Bezborodov, 2016: 130; Zorn, Bezđek, 2016: 345.

Subfamily Rutelinae consists of more than 200 genera and over 4200 species (Krajčík, 2008). This is a very diverse group, common in most countries of the world. Within Russia there are more than 40 species (Zorn, Bezđek, 2016). Rutelinae have significant biocenotic and economic value (Ruchin, Kurmaeva 2010; Limbourg, 2014; Sarkar et al., 2016). In the adult stage beetles feed on leaves, buds, flowers of plants, i.e. when abundant they considered to be potential pests of cultivated plants and forest vegetation. Larvae of this species are rhizophagus (Medvedev, 1949).

In recent years ranges of many Coleoptera (Abood, Murphy,
2006; Sekerka, 2007; Kurzawa, 2012) were described in detail. It is particularly interesting in zoogeographical respect that this eastern in the territory of Russia species is penetrating to the west to European part of the region. This article describes present distribution of one such species – *Mimela holosericea* (Fabricius, 1787).

**Materials and Methods**

There were examined entomological collections of the Zoological Institute of Russian Academy of Sciences, Zoological Museum of Moscow State University, Siberian Zoological Museum, Institute of Systematics and Ecology of Animals, Zoological Museum of Institute of Plant and Animal Ecology of Russian Academy of Sciences (Ural Branch).

- ZMMU: collection of Zoological Museum of Lomonosov Moscow State University (Moscow, Russia);
- ZIN: collection of Zoological Institute of Russian Academy of Sciences (Saint-Petersburg, Russia);
- SZM ISEA: collection of Siberian Zoological Museum, Institute of Systematics and Ecology of Animals, Russian Academy of Sciences, Siberian Branch (Novosibirsk, Russia);
- ZM IPAE: collection of Zoological Museum of Institute of Plant and Animal Ecology Russian Academy of Sciences (Yekaterinburg, Russia).

When materials from collections are mentioned, the exact label content is given in quotes. To prepare the distribution maps (Figure 1) we considered all reliable indication of the species (according to literature – described in section Literature and collections of materials – Material Examined). In Figure 1, numerals indicate regions of the species distribution in Russia (according to the numbering in the list of finds in the region).

Special attention when processing collections is given to the materials from the European part of Russia and the Urals. The examined material is deposited in the collections of ZIN, ZMMU, ZM IPAE, SZM ISEA, Mordovia State Nature Reserve, L.V. Egorov (Cheboksary), S.A. Karpeev (Cheboksary), M.E. Smirnova (Ivanovo), R.V. Filimonov (St. Petersburg) and A.V. Korshunov (Kemerovo).

The nomenclature is given by Zorn, Bezděk (2016). This species is not included in the Fauna Europaea database (2017).

**Results**

**Distribution outside of Russia**

Kazakhstan, the Irtysh River Valley (Nikolajev, 1987: 188); Northern Kazakhstan (Bezborodov, 2016: 130).

China (Heilongjiang, Jilin, Liaoning, Beijing, Inner Mongolia, Hebei, Shanxi, Henan, Shaanxi, Qinghai) (Hua, 2002: 174; Zorn, Bezděk, 2016: 345); Xinjiang (Hu Hongying, Huang Rensin, 2013: 89); Northeast China (Kalinina, 1989: 411; Bezborodov, 2016: 130).

Mongolia (Jacobson, 1900: 3; Stebnicka, 1980: 275; Nikolajev, Pontsagdulam, 1984: 219; Zorn, Bezděk, 2016: 345; Insects of Lazovsky Nature Reserve, 2009: 130; Bayartogtokh et al., 2012: 213; Bezborodov, 2016: 130).

The Korean Peninsula (Stebnicka, 1980: 275; Kalinina, 1989: 411; Kim et al., 2006: 135; Insects of Lazovsky Nature Reserve, 2009: 130; Bayartogtokh et al., 2012: 213; Bezborodov, 2016: 130).
Distribution in Russia

1. Moscow region

Material Examined: 1 spec. – label: “Moscow region, Ramensky district, Bykovo station, pine forest, first decade of August 1955”, Rodnyanskaya (ZMMU).

LITERATURE: Orekhovo-Zuyevo district (Nikitsky, 2009: 51); in mid 60s of 20th century, south-east of the region (Nikitsky et al., 1996: 57).

2. Vladimir region

Material Examined: 1 spec. – label: “Vladimir region, Vladimirskiy uyezd, Lunevo village, on pine tree, 30.06.1908” A.N. Kazanskiy (ZMMU); 1 spec. – label: “Vladimir region, on young pine shoots, in abundance, 1901” (ZIN); 1 spec. – label: “Lunevo village Vladimirskiy uyezd” date illegible, end of 19th – beginning of 20th century [-1895 or 1905, approximately June] (ZMMU); 1 spec. – Vladimir, label: “B. Sokanowski” (judging by labels this is an old specimen, of approximately end 19th – first half, or rather third, of 20th century) (ZMMU).

LITERATURE: Lunevo village Vladimirskiy uyezd (in the vicinity of Vladimir on the river Klyazma) (currently – Vladimir) (Semenov, 1904: 114); Kurlovo, Ilino (Esterberg, 1929: 50); Meschera National Park (Semenov, 2010: 36).

3. Ivanovo region

Material Examined: 1 spec. – Ivanovo region, Makarevsky district, first half of July, 1929, label: “B. Sokanovskiy” (ZMMU); 1 spec. – label: “Pestyakovskiy district, vicinity of Demidovo settlement, 28.06.1995”, M.E. Smirnov.

LITERATURE: Klyazminsky Nature Reserve, Yuzhsky district (Tikhomirov, 2010: 30); Balakhninskaya lowland, Yuzhsky district (Vasyushin, 2012: 103).

4. Ryazan region

LITERATURE: Klepikovsky district, Spass-Klepiki, 1994, 1995, Laptevo, 1994; Kasimovsky district, Dankovo village, 1994, Gus-Zhelezny, 2009 (Red Book of Ryazan region, 2011: 228).

5. Nizhny Novgorod region

Material Examined: 1 spec. – label: “Nizhny Novgorod region, Kudma river, ½.06.1892” (ZMMU); 1 spec. – label: “Zaokskoe Lesnichestvo” of Vladimir region, 06.913”, (currently – Nizhny Novgorod region) (ZIN); 3 spec. – label: “Arzamas, 5, 19.07.1952, 24.06.1960”, B.S. Pavlov-Verevkin (SZM ISEA).

LITERATURE: Nizhny Novgorod city (Jacobson, 1900: 4; Medvedev, 1949: 109); Dzerzhinsky district, Seima station (Esterberg, 1957: 146).

6. Republic of Mordovia

LITERATURE: Temnikov district, Tengushevo district (Ruchin, Egorov, 2015: 91).

7. Kirov region

Material Examined: 1 spec. – label: “Medvedsky pine forest, Vyatka region Barkhan. region, park, pine forest on burnt, 13.07.1923”, Shemin coll., (ZIN); 1 spec. – label: “Kirov region, Orichi settlement, 11.07.1994”, G.I. Yuferev (ZMMU).

LITERATURE: Medvedsky pine forest, Korsik, Sovetsk, Kilmez (Shemin, 1974: 144); Kirov region (Yuferev, 1988: 58); Nolinsky district (Esterberg, 1957: 146).

8. Udmurt Republic

LITERATURE: Krasnogorsky district (Dedukhin, 2003: 10), Kokman settlement (Dedukhin, 2003: 10); Seltsinsky district (Dedukhin, 2003: 10); Yakshur-Bodinsky district (Dedukhin, 2003: 10); Udmurtia (Dedukhin et al., 2005: 302).

9. Republic of Tatarstan

LITERATURE: Kazan (Lindeman, 1871: 281).

10. Orenburg region

LITERATURE: Chkalov (currently – Orenburg) (Medvedev, 1949: 109).

11. Republic of Bashkortostan

Material Examined: 1 spec. – label: “Bashkiria, Arkhangelsky village council”, 06.[19]36 (ZMMU).

LITERATURE: Belaya river at the borders of Orskiy uyezd and Orenburg uyezd (currently – The Republic of Bashkortostan) (Jacobson, 1900: 4).

12. Sverdlovsk region

Material Examined: 1 spec. – label: “Ural, Chusovaya river, Shaitansky factory, 08.07.1902” (currently – Pervouralsk) (ZIN).

13. Chelyabinsk region

Material Examined: 1 spec. – label: “Ufimsky District, Zlatoustovsky uyezd, 11.07.1999”, E. Shirokokova (ZMMU); 1 spec. – Chelyabinsk region (ZIN); 6 spec. – label: “09.07.1999, Chelyabinsk region, 6.5 km North from Miass city, in the vicinity of Turgoyak lake (55°10’42.26”N, 60°21’16.47”E), in twilight in young pine growth”, Ivanov A.V. (ZM IPAE).

14. Kurgan region

Material Examined: 10 spec. – label: “Pritobolnyi district, vicinity of Nagorskoe village (55°9’2”N 65°11’57”E)”, Ivanov A.V. leg. (ZM IPAE); 1 spec. (dead) – label: “Shatrovskiy district, Mostovka-2 village (56°42’24.28”N, 64°24’43.60”E)”, pine forest clearing”, Ivanov A.V. leg. (ZM IPAE); 2 spec. – label: “Pritobolny district, Uytatskoe village, 22.07.1997”, A.V. Ivanov (SZM ISEA); 1 spec. – label: “Vargashinsky district, Shastovo, 25.06.1998”, R.V. Filimonov; 2 spec. – label: “Ketovskiy district, Temlyakovo village, 23.07.1997”, A.V. Ivanov (SZM ISEA).

15. Yamalo-Nenets Autonomous District

LITERATURE: Krasnoselkupsky district (Sozinov, Sitnikov, 2005: 223).

16. Tomsk region

Material Examined: 1 spec. – label: “Tomsk, 07.1949” (SZM ISEA).

LITERATURE: Inya river (Jacobson, 1900: 3).

17. Novosibirsk region

Material Examined: 1 spec. – Novosibirsk, 23.07.1968 (SZM ISEA); 2 spec. – label: “Ordynsky district: Krasnoyarsky kor- don, 28.06.1962”, T. Martynenko (SZM ISEA); 1 spec. – label:
18. Kemerovo region

**Material Examined:** 1 spec. – label: “Kuznetsk (currently – Novokuznetsk), 02.06.1901” (SZM ISEA); 1 spec. – label: “Novokuznetsky district, Kuznetsk Alatau, kordon Verkhneyaya Ters, bank of the Verkhneyaya Ters river, in the air, flying”, A. Korshunov.

19. Altai Krai

**Material Examined:** 1 spec. – label: “Altai Krai, Yegeoryevsky District, Lebyazhye” (ZMMU).

**Literature:** Barnaul (Lindeman, 1871: 281); Krasnoyarsk (Medvedev, 1949: 109).

20. Altai Republic

**Material Examined:** 1 spec. – label: “Altai, Teletskoe lake” (ZIN); 1 spec. – label: “Turochaksk district, Artybash settlement, 23.07.2004”, A.A. Safronov; 1 spec. – label: “Ust-Koksinsky district, Ust-Kokska, 04.08.1973” (Berman coll.) (SZM ISEA); 2 spec. – label: “7 km West from Katanda, 07.1983” (Dubatolov coll.) (SZM ISEA).

21. Krasnoyarsk Krai

**Material Examined:** 1 spec. – label: “Krasnoyarsk, 24.06.[19]33” (ZMMU); 1 spec. – label: “Kryzhina ridge, 30 km East from Cheremenchki, Tarbat river, h = 500-700 m, spure-birch forest, 1-5.07.2000” (A. and R. Dudko) (SZM ISEA).

22. Tyva Republic

**Material Examined:** 1 spec. – label: “Dzun-Khemchiksky District, Khondergej river, 23.07.1997” [TuvSU] (SZM ISEA); 1 spec. – label: “Tes-Khemsky district, 125 km West from Kyzyl, 06.07.1980” (Korotyayev) (SZM ISEA).

**Literature:** Shagonar (Cherepanov, 1956: 69); Buryazinsky pine forest (Galkin, 1958: 3); Shagonarsky and Balgaziksky pine forest (Galkin, 1961: 1039, 1044); Khondergej river, Shagonar (Maryasova, 2016: 19); Ulug-Khemsky District (Kyzyl-oll, 2013: 84); Kyzyl city (Maryasova, 2016: 19); Tuva (Kyzyl-oll, 2003b: 83; Kyzyl-oll, 2004: 37); North West of Tuva (Kyzyl-oll, 2003a: 22); Tyva (Maryasova, 2016: 19).

23. Irkutsk region

**Material Examined:** 1 spec. – label: “vicinity of Irkutsk city, 30.07” [year not mentioned], V. Dorogostajsky (ZMMU); 2 spec. – label: “100 km West from Irkutsk, vicinity of Belorechensky settlement, 24.05.2003, in sand soils”, N. Berlova; label: “Silyudyansk district, lower reaches of Khara-Murin river, 9, 10.07.1984” (Dubatolov) (SZM ISEA).

**Literature:** Kirensk (Medvedev, 1949: 109); Kadinsky Nature Reserve (Shilenkov et al., 2014: 21); Mangutai, Iya river (Berlov, Shilenkov, 1977: 94).

24. Republic of Buryatia

**Material Examined:** 1 spec. – label: “Lake Baikal, Mishikha River, 10.08.2003”, D. Fominikykh; label: “Severo-Baykalsky District: Uoyan settlement, 15.07.1969” (SZM ISEA); 4 spec. – label: “~3 km NW from Romanovka village, 53°12'8.99"N, 112°48'18.61"E, in daytime on open sand beaches”, Ivanov A.V. leg. (ZM IPAE).

**Literature:** Kyakhta (Lindeman, 1871: 281); Vydrynino, Zun-Murino (Berlov, Shilenkov, 1977: 94).

25. Zabaykalsky kray

**Material Examined:** 1 spec. – label: “Chita region, Menza river, Ust-Bukal, 28.07.1958, flying in twilight” (ZMMU).

**Literature:** Nerchinsk (Lindeman, 1871: 281; Jacobson, 1900: 3).

26. Amur region

**Literature:** Amur region (Lindeman, 1871: 281); Amur region (Jacobson, 1900: 3); Blagoveschensk district, Svobodny district, Belogorsky district, Arkharinsky district, Skvorodinsk district (Bezborodov, 2006: 308); Blagoveschensk (Bezborodov et al., 2011: 76); Amur region (Kalinina, 1989: 411; Bezborodov, 2016: 130).

27. Khabarovsk Krai

**Literature:** Bolshehekhtisirsksy State Nature Reserve (Bezborodov, Zinchenko, 2010: 45); Tuguro-Chumikansky district, Nikolaevsk district, Vyazemsky district (Bezborodov, 2014: 138); Bolshehekhtisirsksy State Nature Reserve (Bezborodov, 2009: 140); Khabarovsk Krai (Kalinina, 1989: 411; Bezborodov, 2016: 130).

28. Jewish Autonomous Region

**Literature:** Obluchensky district, Khingansk settlement, Birobidzhan district, Smidovich district, Leninskoe district, Oktyabr'sky district (Bezborodov, 2013a: 136); Jewish Autonomous Region (Bezborodov, 2016: 130).

29. Primorsky Krai

**Material Examined:** 1 spec. – label: “Lazovsky State Nature Reserve, vicinity of Kievka village, 07.08.1982”; 1 spec. – label: “Lazovsky State Nature Reserve, 05.08.1982”, L.V. Egorov; 4 spec. – label: “vicinity of Glazkovka settlement, 10.07.1982”; 1 spec. – label: “16.08.1982, light trap”, L.V. Egorov; 3 spec. – label: “Ussuriysky District, 20 km NW from Krounovka village, 25.06.-5.07.2015”, S.A. Karpeev; 3 spec. – label: “Ussuriysky District, vicinity of Kaymanovka village, in Umbelliferae”, A. Korshunov; 2 spec. – label: “Ussuri district, 30 km, SW from village, Krounovka ridge Death, h=252-391m., 43°37,26’N, 131°27,44’E, light trap”, A. Korshunov.

**Literature:** Ussuriysky State Nature Reserve (Kuprin, Shabin, 2012: 148); Ussuriysky State Nature Reserve (Bezborodov, Shabin, 2013: 136); Lazovsky Nature Reserve (Insects of Lazovsky Nature Reserve, 2009: 130); Gusevsky mine, Kedrovka river, Gryaznaya river, Barabarash settlement, Primorsky settlement, Narva river, Kedrovaya Pad State Nature Reserve (Bezborodov, 2013b: 83); Sikhote-Alinsky State Nature Reserve (Bezborodov, 2015: 70); Sikhote-Alinsky State Nature Reserve (Degma, 1997: 7); Primorsky Krai (Litvinenko, 1960: 1406); Primorsky Krai (Kalinina, 1989: 411; Bezborodov, 2016: 130).

30. Sakhalin region

**Literature:** 7 km North from Kholmsk (Degma, 1997: 7); Tunaicha Lake, Gornozavoysk district, Okhinsk district, Chekhtcksky district, Uglegorsk district, 6 km South from Shebunino, Novoaleksandrovsk, Dunino, Kazakevichi, Yuzhno-Sakhalinsk, Uglegorsky settlement, Aleksandrovsk-Sakhalinsky district, (all from: Shabalin, Bezborodov, 2012: 265); Sakhalin region (Kalinina, 1989: 411; Bezborodov, 2016: 130).
Shabalin, 2015: 321); Sakhalin (Jacobson, 1900: 3); Sakhalin (Bezborodov, 2016: 130).

Discussion

Within the Russian Federation this species is observed in 30 regions (Figure 1). However, its distribution in these areas is not even. Thus, the largest number of findings and the abundance of this species are typical for the Far East: Jewish Autonomous Region, Khabarovsk Krai, Primorsky Krai, Amur and Sakhalin regions. But in Khabarovsk Krai it is widespread only in the southern areas, in the north it reaches the Mayskiy mountain ridge (Bezborodov, 2014). In the Amur region it is quite abundant in the south-eastern part of the region (Bezborodov, 2006).

In Eastern Siberia M. holosericea is observed in the Zabaykalsky Krai, Krasnoyarsk Krai, Irkutsk region, Buryatia, but mostly in the southern parts of this vast geographic area. The most northern point here is the city of Kirensk (Medvedev, 1949).

In Western Siberia this species is recorded mainly in south-eastern regions. Most findings come from the Republic of Tyva, Altai Krai, Altai Republic. Of special note is a report from Yamalo-Nenets Autonomous District (Sozinov, Sitnikov, 2005). This is generally the most northern finding of this species in the entire range. There are some doubts about the correct determination of specimen, as authors give a Russian name as “meadow cockchafer = silky beetle (Rhombonyx holosericea)”. On the other hand, there is an indication (Emtsev et al., 2012) of another scarab beetle Oryctes nasicornis (Linnaeus, 1758) massive finds within the district of Konda of Khanty-Mansiysk Autonomous District, located just 5° to the south of Krasnoselkup district of Yamalo-Nenets Autonomous District. Taking into account the steady trend towards the expansion of southern species habitats to the north, it is possible that similar situation is true for M. holosericea. We assume that species also occurs in Omsk and Tyumen regions and its detection here is a matter of time.

Data from the Urals (Sverdlovsk, Orenburg, Kurgan, Chelyabinsk regions, Bashkortostan, Udmurtia) is mostly based on century old collections. Current data from this extensive territory, which we have at our disposal, is true for Udmurtia and Kurgan region only.

Special attention should be payed to registration of this species at western border of the range - in the central regions of the European part of Russia. We have no doubt that this species inhabited these areas for a long time and remained an unobtrusive representative of Coleoptera fauna because of its small numbers. This is confirmed by the findings of species since the end of XIX – early XX centuries within the Vladimir, Ivanovo, Nizhny Novgorod, Kirov regions and some other regions of the European part of Russia. It is possible that in recent years the number of M. holosericea at the western border of the range is gradually increasing due to the general climate aridization. In South Russia species is not found (Shokhin, 2007).

In the Amur region the species was observed in sparse forests with an admixture of Pinus sylvestris on sandy soils, as well as in open spaces of Zeya River floodplains (Bezborodov, 2006). In the Jewish Autonomous Region it is a common species, widespread throughout the territory (Bezborodov, 2014). According to observations in Khabarovsk Krai and Jewish Autonomous region it tends to floodplain censuses (Bezborodov, 2013a, 2014). At the Usuri Nature Reserve it is found in the shrub layer (Kuprin, Shabalil, 2012). The larvae live in the soil, feeding on roots of herbaceous plants (Shilenkov et al., 2014). According to labels and literary sources, beetles are active from June to August, in the evening or at night, often fly to the light.

Conclusions

Outside of Russia M. holosericea is common in Kazakhstan, Mongolia, in some northern provinces of China, on the Korean Peninsula and in Japan. Within the Russian Federation species is observed in 30 administrative areas (Far East, Eastern, Western and Southern Siberia, the Urals, Volga region and Central Russia). The largest number of findings and abundance of this of species are typical for the Far East: Jewish Autonomous region, Khabarovsk Krai, Primorsky Krai, Amur and Sakhalin regions. The northernmost point of findings for this species is Krasnoselkupsky region of Yamalo-Nenets Autonomous District.

In the western part of its range - Volga region and Central Russia - the species occurs sporadically. The number of findings here has recently increased. Key habitats are sparse pine forests (glades, roadsides, forest edges), floodplain censuses. Our data on M. holosericea distribution will form the basis for monitoring of the range dynamics of this East Palaeartic species of beetles.

References

ABOOD F., MURPHY R.J., 2006 - World distribution of Minthea rugicollis (Coleoptera: Lyctidae). - J. Trop. Forest Sci. 18: 250-254.
BAYAROTGOTKH B., KIM J.J., BAE Y.J., 2012 - Lamellicorn beetles (Coleoptera: Scarabaeoidea) in Korea and Mongolia. - Entomol. Res. 42: 211-218.
BERLOV E.YA., SHILENKOV V.G., 1977 - Lamellicorn beetles (Coleoptera, Lamellicornia) of South Baikal region. - Fauna and ecology of insects of eastern Siberia and the Far East. pp 87-101. [In Russian].
BEZBORODOV V.G., 2009 - New findings of lamellicorn beetles (Coleoptera, Scarabaeoidea) for the fauna of Bolshekhektirsirski reserve and Khabarovsky Krai. - Sixth Grodekovsky readings. Vol. 4. Haboravsk: Khabarovsk: Khabarovsk regional museum of N.I. Grodekov. pp. 138-141. [In Russian].
BEZBORODOV V.G., 2006 - A Review of cockchafers (Coleoptera, Scarabaeidae) faunae of the Amur Region. Subfamilies: Rutelinae, Sericinae, Rhizotroginae, Hoplinae. - Euroas. Entomol. J. 5: 307-312. [In Russian].
BEZBORODOV V.G., 2013a - Annotated checklist of the Lamellicorn beetles (Coleoptera, Scarabaeoidea) in the fauna of Jewish Autonomous Region (Russia). - Amur. Zool. J. 2: 125-146. [In Russian].
BEZBORODOV V.G., 2013b - Lamellicorn beetles (Coleoptera, Scarabaeoidea) of Nature Reserve “Kedrovaya Pad” and adja-cent territories (Primorsky Krai, Russia). - The social and economic and humanitarian magazine of Krasnoyarsk SAI 4: 76-88. [In Russian].
BEZBORODOV V.G., 2014 - Annotated checklist of lamellicorn beetles in the fauna (Coleoptera, Scarabaeoidea) of the Khabarovsk Krai (Russia). - Amur. Zool. J. 6: 125-146. [In Russian].
BEZBORODOV V.G., 2015 - Lamellicorn beetles (Coleoptera, Scarabaeoidea) of the Sikhote-Alin Nature Reserve and adja-cent territories (Primorsky Krai, Russia). - Herald of Tver State
