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Pill beetles (Coleoptera, Byrrhidae) of Kemerovskaya Oblast, Russia

Жуки-пилюльщики (Coleoptera, Byrrhidae) Кемеровской области

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Ключевые слова: Coleoptera, Byrrhidae, фауна, Кемеровская область.

Резюме. В работе представлен предварительный список 11 видов жуков пилюльщиков семейства Byrrhidae, собранных в Кемеровской области на юге Западной Сибири. Впервые для области приводятся девять видов пилюльщиков. Присутствие в регионе реликтовых горных видов в сочетании со степными и широко распространёнными лесными характеризует высокое разнообразие фауны Кемеровской области и определяет необходимость дальнейшего изучения распространения локальных видов.

Abstract. A preliminary list of 11 Byrrhidae beetle species from 6 genera collected from Kemerovskaya Oblast of Russia is presented. Nine species are newly recorded for the fauna of Kemerovskaya Oblast. Presence of relic mountain species in combination with residents of steppes and widespread forest species characterize high diversity of the regional fauna and determine necessity of further study of local species distribution.

Introduction

Pill beetles (Byrrhidae) is a moderate family of beetles of superfamily Byrrhoidea represented in Russia by 60 species and subspecies, of which 19 were registered for West Siberia [Lafer, 1989; Korotyaev, 1990; Tshernyshev, Dudko, 1997; Tshernyshev, Putz, 1999; Jaeger, Pütz, 2006, 2016; Tshernyshev, 1997, 2002, 2005, 2006, 2009, 2012, 2013; Tshernyshev, Sergeev, 2020]. Pill beetles are associated with liverwort mosses, their larvae developed in moss mats or soil litter on moss. Adults can be found on moss mats in mixed forests or in mountain or zonal tundra, often under stones hiding from sunlight. Byrrhidae can de considered as markers of stable condition of delicate ecosystems of river valley forests often located on old sandy massifs. Presence of *Morychus, Lamprobyrrhulus, Byrrhus, Cytilus* species in urban recreation zones could illustrate ecosystem status and necessity of their protection [Tshernyshev, 2018]. In well protected city parks mass emergence of pill beetle adults could be registered. Thus, *B. pilula* and *B. fasciatus* were registered ih highh number in spring, 2015 in the City of Cheboksary, and according to the museum collection data the same phenomenon with *B. pustulatus* emergence have been observed in mixed forest with dominance of pine trees «Zaeltsovskii Bor» located in river valley in central part of Novosibirsk [Egorov, Tshernyshev, 2016].

In Kemerovskaya Oblast pill beetles were poorly studied, only for Gornaya Shoriya two species, *Byrrhobolus rutilans* (Motshulsky, 1845) and *Byrrhus (Byrrhus) pilula* (Linnaeus, 1758), have been registered [Efimov, 2008]. The present paper is aimed to summarize all data on diversity of pill beetles in Kemerovskaya Oblast and present a list of regional Byrrhidae fauna.

The new data presented in the paper seem to be potentially necessary for modern methods of environmental monitoring while collection data from regional ecosystems and their species composition provide baselines for monitoring, and generation of long-term databases with local distributions of species. For example, in the Great Britain naturalists send field records to the Centres and the data are then entered on a powerful database and eventually each Centre sends its accumulated data to a National Data base (as well as maintaining a local data set). Potentially, similar monitoring tools could be effective for nature analysis in Siberia too [Hartmann, Tshernyshev, 2020].

Byrrhidae fragments are often found in quaternary deposits of North Asia. Beetles are most numerous in deposits of North-East Siberia comprise one of the most dominate Coleoptera group representing from 60 to 90 % of the insect diversity in local samples [Kuzmina, Matthews, 2012; Chernov et al., 2014; Tsh-

ernyshev, 2017]. Species composition of insects in quaternary deposits of West Siberia is actively studied at present time [Tshernyshev et al., 2013; Gurina et al., 2016, 2018, 2019; Zinoviev et al., 2016]. Fragments of five pill beetle species from five genera are registered from Pleistocene deposits of southern part of West-Siberian Plain, namely: *Simplocaria* (*Simplocaria*) *semistriata* (Fabricius, 1794), *Morychus* (*Morychus*) *ostasiaticus* Tshernyshev, 1997, *Lamprobyrrhulus nitidus* (Schaller, 1783), *Cytilus sericeus* (Forster, 1771) and *Porcinolus murinus* (Fabricius, 1794) [Tshernyshev et al., 2013; Zinoviev et al., 2016]. Most of these species occur in Kemerovskaya Oblast at presence, so exact data on species distribution are important for analysis of fossil remains from deposits of different regions for comparison of species composition in taphocenoses and recent fauna.

Material used in the paper was collected by the authors and colleagues from Kemerovo, and also studied in collections of Siberian Zoological Museum, Novosibirsk, and Kemerovo State University.

Nomenclature and distribution data on pill beetles are given following the Palaearctic Catalogue of beetles [Jaeger, Pütz, 2006, 2016], with a glance to recent changes [Tshernyshev, 2021].

Material is kept in personal collections of A.V. Korshunov and D.A. Efimov, and in the collection of Siberian Zoological Museum of the Institute of Systematic and Ecology of Animals, Novosibirsk.

Abbreviation for collectors names are given as follows: D. Efimov — DE; V. Polevod — VP; A. Korshunov — AK; S. Nenilin — SN; S. Luzyanin — SL.

List of pill beetle species of Kemerovskaya Oblast, Russia

Byrrhinae Latreille 1804
Morychini El Moursy, 1961
Morychus Erichson, 1844
Morychus ostasiaticus Tshernyshev, 1997

Material. **Kuznetskaya Kotlovina, *Promyshlennovskii Raion:*** 3 km NW Zhuravlevo vill., Tanaevo Lake, steppe, 13.VI.1999, DE — 3 spm.

Distribution. Steppes of South-West and Central Siberia (Novosibirskaya, Omskaya and Kemerovskaya Oblasts, Krasnoyarskii Krai, Hakasia,Tuva), Mongolia.

Byrrhobolus Fiori, 1965
Byrrhobolus rutilans (Motshulsky, 1845)

Morychus rutilans (Motschulsky, 1845): Jäger, Pütz, 2006, 2016, Tshernyshev, 2006, 2012, Efimov, 2008;

Byrrhobolus rutilans (Motschulsky, 1845): Tshernyshev, 2021.

Material. **Gornaya Shoriya: *Tashtagolskii Raion,*** Mustag mountain, alpine meadows, h~1350 m a.s.l., 27.VII.1999, 6.VII.2000, 15.VII.2000, DE — 6 spm., moss-fruticulose tundra, h ~ 1400 m, 8.VII.2001, DE — 2 spm.; **Kuznetskii Alatau: *Novokuznetskii Raion,*** Kiya river, fir forest, 25.VII.2000, SN — 2 spm.

Distribution. Mountains of South Siberia from Altai to Mongolia and Primorie.

Pedilophorini Casey, 1912
Lamprobyrrhulus Ganglbauer, 1902
Lamprobyrrhulus nitidus (Schaller, 1783)

Material. **Kuznetskaya Kotlovina: *Prokopievskii Raion,*** Prokopievsk, steppe slope, under stone, 7.V.1994, VP — 1 spm.; ***Promyshlennovskii Raion,*** in plant remains, VII.2014, DE — 1 spm.; ***Kemerovo,*** Leninskii Raion, Kuzbasskii Botanical Garden, 55°21'57.7" N, 86°11'32.6" E, h ~ 180 m a.s.l., under pine needles, 29.V.2021, AK — 1 spm.

Distribution. Forest communities from Europe to the Far East of Russia, Mongolia, Korea peninsula and China.

Byrrhini Latreille, 1804
Byrrhus Linnaeus, 1767
Byrrhus (***Aeneobyrrhus***) Pütz, 1998
Byrrhus (*Aeneobyrrhus*) *mordkovitshi*
Tshernyshev et Dudko, 1997

Material. **Gornaya Shoriya: *Tashtagolskii Raion,*** Mustag mountain, 52°58'20.4" N, 87°54'50.4" E, subalpine sphagnous swamp, 1–3.VII.2015, AK — 1 spm.

Distribution. Altai-Sayan mountain system.

Byrrhus (***Byrrhus***) Linnaeus, 1767
Byrrhus (Byrrhus) pilula pilula (Linnaeus, 1758)

Byrrhus pilula (Linnaeus, 1758): Efimov, 2008.

Material. **Kuznetskii Alatau: *Novokuznetskii Raion,*** Verkhnyaya Ters' river, 4 km SSE Chernyi Voron mountain, fir-birch forest, 18–21.VII.1998, DE — 1 spm., ibidem, 54°14'33" N, 88°14'16" E, 6.VII.2009, AK — 1 spm.; Skalistye Gory, alpine meadow, 10.VII.2001, SN — 3 spm. **Gornaya Shoriya: *Tashtagolskii Raion,*** 4 km N Sheregesh vill., Zelenaya mountain, meadow, 6.VII.2001, N. Valyas — 1 spm., env. of Mundybash vill., right bank of Condoma river, meadow, 4.VII.2005, A. Doroganova — 1 spm.; Mustag mountain, h ~ 1300 m a.s.l., 52°58'20.4" N, 87°54'50.4" E, subalpine sphagnous swamp, 1–3.VII.2015, AK — 1 spm.; **Kuznetskaya Kotlovina: *Kemerovskii Raion,*** Mozzhuha vill., birch forest edge, 16.VI.2002, AK — 1 spm.; ***Kemerovo,*** Lelinskii Raion, Kuzbasskii Botanical Garden, 55°21'57.7" N, 86°11'32.6" E, aspen grove, pitfall traps, 29.V.2021, AK — 1 spm.; ***Krapivinskii Raion,*** 8 km SSW Saltymakovo vill., «Azhendarovo» biological station of Kemerovo State University, 54°45'46" N, 87°01'27" E, pitfall traps, 20–28.V.2012, AK — 7 spm.

Distribution. Widely spread from Europe to the Far East of Russia, Japan, North America (U.S.A. and Canada).

Byrrhus (*Byrrhus*) *fasciatus* (Forster, 1771)

Material. **Kuznetskaya Kotlovina: *Krapivinskii Raion,*** 5 км NE Sheveli vill., 16.VII.2009, D. Sidorov — 1 spm.; ***Kemerovskii Raion,*** dumps of Kedrovskii coal open-pit mine, 55°30'39" N, 86°04'00" E, pitfall traps, 9.VII.2017, SL — 1 spm.; ***Kemerovo,*** Petrovskii vill., 55°28'59" N, 86°09'54" E, meadow, pitfall traps, 1–6.VII.2020, DE — 1 spm.; **Kuznetskii Alatau: *Mezhdurechenskii Raion,*** the road from Gridinskii shelter to Podnebesnye Zubya area, 4.VII.2019, A. Huslamova leg. — 1 spm.

Distribution. Russia: European part, Caucasus, Siberia, Far East; in Europe is common and widespread in forests; Central Asia; Kazakhstan, China, Mongolia, Japan, North America.

Byrrhus (*Byrrhus*) *pustulatus pustulatus*
(Forster, 1771)

Material. **Kuznetskaya Kotlovina: *Prokopievskii Raion,*** near Prokopievsk, VI.1993, VP — 1 spm.; ***poselok Krasnobrodskii,*** mine dumps, 54°15'66" N, 86°53'12" E, birch grove, 30.V.2015, SL — 1 spm., meadow near mine dump foot, 26.VI.2015, 10.VII.2017, SL — 2 spm.; ***Kemerovskii Raion:*** dumps of Kedrovskii coal open-pit mine, 55°30'39" N, 86°04'00" E, 21.VI.2015, 21.VII.2015,

30.VII.2015, 9.VII.2017, SL — 5 spm.

Distribution. Trans-palearctic species distributed from Europe, Kazakhstan to the Far East of Russia.

Cytilus sericeus (Forster, 1771)

Material. **Kuznetskaya Kotlovina:** ***Kemerovo,*** on wall of building, 23.V.2005, AK — 1 spm.; Kedrovka mikroraion, dumps of Kedrovskii coal open-pit mine, 55°31'04.2" N, 86°03'16.8" E, mine dump, 12.V.2021, AK — 1 spm.; ***Kemerovskii Raion,*** Krekovo vill., under moss mats, 10.IX.2009, DE — 8 spm., ***Yashkinskii Raion,*** near Yashkino vill., meadow, in moss, 20.VI.2018, DE — 4 spm.; **Kuznetskii Alatau:** ***Tisulskii Raion,*** 10 km N of Polutornik vill., meadow, 4.VII.2009, 8.VII.2009, A. Tsepokina, T. Akinshina leg. — 2 spm.

Distribution. The species widespread in Eurasia from Europe, Caucasus towards Kazakhstan, Siberia and the Russian Far East, China and Japan.

Porcinolus murinus (Fabricius, 1794)

Material. **Kuznetskaya Kotlovina:** ***poselok Krasnobrodskii,*** birch grove on edge of mine dump, pitfall traps, 54°15'66" N, 86°53'12" E, 30.V.2015, SL — 1 spm., upper part of mine dump, in meadow plots, 54°15'56" N, 86°53'01" E, 13.VII.2015, SL — 1 spm.; **Kuznetskii Alatau:** ***Chebulinskii Raion,*** 4 km SE of Shestakovo vill., 55°52'13.9" N, 87°59'33.5" E, 24–26.VII.2020, AK — 2 spm.

Distribution. The species occurs in North, Central and East Europe, Transcaucasus, Central Asia, Kazakhstan, Mongolia. In Russia distributed from European part, Caucasus to the Far East.

Syncalyptinae Mulsant et Rey, 1869
Syncalyptini Mulsant et Rey, 1869
Curimopsis Ganglbauer, 1902
Curimopsis notiosibiricus Tshernyshev, 2020

Curimopsis notiosibiricus Tshernyshev, 2020: Tshernyshev, Sergeev, 2020.

Material. Paratype: **Kuznetskaya Kotlovina:** ***Krapivinskii Raion,*** 8 km SSW Saltymakovo vill., "Azhendarovo" biological station of Kemerovo State University, 54°45' N, 87°01' E, pitfall traps, 28.V–3.VI.2014, AK — 1 spm.

Distribution. South-West Siberia (Altaiskii Krai, Kemerovskaya Oblast).

Curimopsis paleata (Erichson, 1846)

Material. **Kuznetskaya Kotlovina:** ***Yashkinskii Raion,*** Pashkovo vill., on light, 13–14.VI.2003, AK — 1 spm.

Distribution. From West Europe to East Siberia.

Thus, pill beetle fauna of Kemerovskaya Oblast is well studied and presented with 11 species of the 6 genera of which 9 species are registered for the region fore the first time. The list presented above characterizes significant biodiversity of the region, but still needs further supplement.

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