

First records of *Kolibacia squamulata* (GEBLER, 1830), *Cucujus haematodes* ERICHSON, 1845, and *Clerus dealbatus* (KRAATZ, 1879) (Coleoptera: Trogossitidae, Cucujidae, Cleridae) from Kazakhstan

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ABSTRACT. First records of *Kolibacia squamulata* (GEBLER, 1830), *Cucujus haematodes* ERICHSON, 1845, and *Clerus dealbatus* (KRAATZ, 1879) (Coleoptera: Trogossitidae, Cucujidae, Cleridae) from Kazakhstan.

Three saproxylic beetle species: *Kolibacia squamulata* (GEBLER, 1830) (Trogossitidae), *Cucujus haematodes* ERICHSON, 1845 (Cucujidae), and *Clerus dealbatus* (KRAATZ, 1879) (Cleridae) are recorded from Kazakhstan for the first time. Notes on their biology, habitat preferences and distribution are also provided. All species were found in the eastern part of the country, in the vicinity of the villages of Putintsevo, Kol'bay and Kuktal in 2017.

KEY WORDS: dendrophilous beetles, eastern Kazakhstan, Kuktal, Kol'bay, new locality, Putintsevo, saproxylobionts, zoogeography.

INTRODUCTION

Most of the territory of Kazakhstan is dominated by steppe, semi-desert and desert, hence forest stands occurs here only locally. Particularly, the north-eastern region of the country, which is partly covered by mixed forest in the foothills of West Altay mountains, stands out in this respect. Moreover, the biodiversity of this region seems to be investigated to a small extent. Therefore, many saproxylic species may be found in the area as a new for Kazakhstan.

The family Trogossitidae is extremely diversified both morphologically and ecologically and contains about 55 genera and 600 species from all of the zoogeographical regions (KOLIBÁČ 2013). The genus *Kolibacia* LESCHEN & LACKNER, 2013 was recently separated from the Australasian genus *Leperina* ERICHSON, 1844 into two taxa based on the results of a phylogenetic analysis (LESCHEN & LACKNER 2013). Currently, it contains five species: *Kolibacia squamulata* (GEBLER, 1830), *K. tsushimana* (NAKANE, 1985),

K. tibialis (REITTER, 1889), *K. okinawana* YOSHITOMI & LEE, 2014 and *K. regularis* (GROUVELLE, 1913), which are primarily distributed in the Japanese islands (YOSHITOMI & LEE 2014).

The family Cucujidae is a small group of beetles which contains only 4 genera and 48 described species in the world (THOMAS & LESCHEN 2010). The genus *Cucujus* FABRICIUS, 1775 is represented by twelve known species which are distributed throughout the northern hemisphere; nine species occur in Asia, three in Europe, and one in North America (LEE & PÜTZ 2008, HORÁK & CHOBOT 2009, BONACCI *et al.* 2012).

The family Cleridae currently retains approximately 300 genera and almost 4,000 species (KIM & JUNG 2006). The genus *Clerus* GEOFFROY, 1762 is represented by ten species, mostly distributed in Southeast Asia (LÖBL *et al.* 2007).

MATERIAL AND METHODS

The beetles were collected during two entomological expeditions to southern and eastern Kazakhstan conducted by two independent research teams in May and June 2017.

Photographs of the habitus were taken with a Canon EOS 50D digital camera equipped with a MP-E 65 mm macro lens (Fig. 1A) and with a Canon 1000D body with

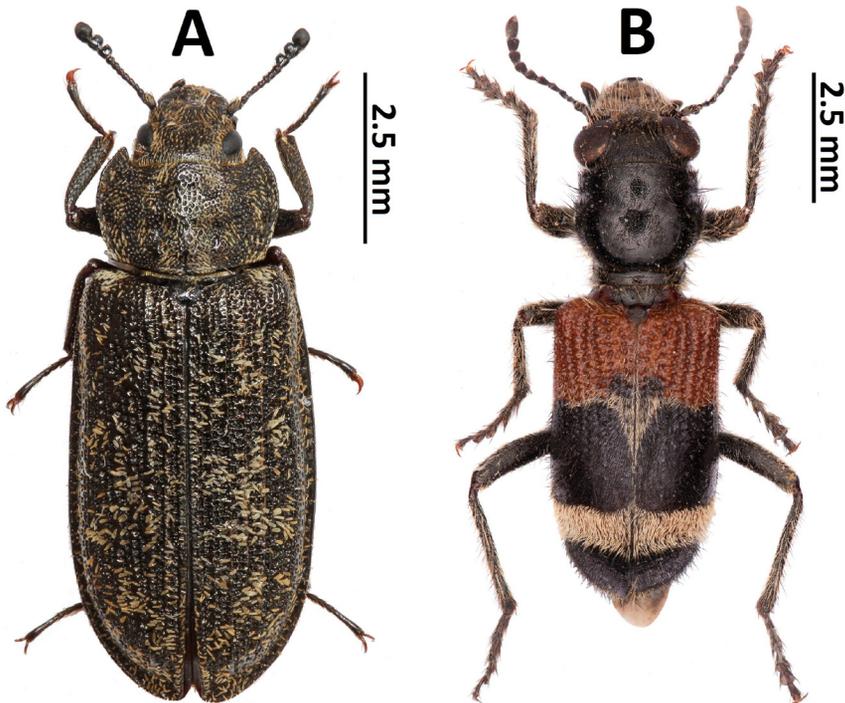


Fig. 1. Imagines of collected specimens: A – *Kolibacia squamulata* (GEBLER, 1830) (photo L. Kruszelnicki), B – *Clerus dealbatus* (KRAATZ, 1879) (photo M.J. Kamiński).

Ryc. 1. Postaci dorosłe odłowionych chrząszczy: A – *Kolibacia squamulata* (GEBLER, 1830) (fot. L. Kruszelnicki), B – *Clerus dealbatus* (KRAATZ, 1879) (fot. M.J. Kamiński).



Fig. 2. General view of the habitat of *Cucujus haematodes* ERICHSON, 1845, Putintsevo env., north-eastern Kazakhstan (photo L. Karpiński).

Ryc. 2. Widok ogólny siedliska *Cucujus haematodes* ERICHSON, 1845, okol. Putintsevo, płn.-wsch. Kazachstan (fot. L. Karpiński).

accordion bellows equipped with a EF 100 mm Canon macro lens (Fig. 1B). The images that were produced were stacked, aligned and combined using Zerene Stacker software (www.zerene.com) and Adobe Photoshop CS5.

The specimens are preserved in the entomological collection of the Department of Natural History of the Upper Silesian Museum in Bytom (USMB, Poland) and in the private collections of the authors.

RESULTS AND DISCUSSION

Three saproxylic beetles species were recorded for the first time in Kazakhstan.

Six specimens of *Kolibacia squamulata* (Trogossitidae) (Fig. 1A) and one specimen of *Cucujus haematodes* ERICHSON, 1845 (Cucujidae) were collected between 21–22 June 2017 in north-eastern Kazakhstan in the vicinity of the village of Putintsevo [Путинцево] [472 m a.s.l.; 49°52'N, 84°21'E], leg. L. Karpiński & W.T. Szczepański. It appears that both species primarily inhabits riverine forests in the foothills of West Altay mountains (Fig. 2).

The specimens of *K. squamulata* were sampled by shaking them into a beating net from the host plants, in this case, rather young deciduous trees, which were mostly dead or dying willows. The species was observed sympatrically with other beetles belonging to

families such as Cerambycidae, Scarabaeidae or Melandryidae. It is worth noting that one of the specimens was caught in a wine trap. Recently, the species was quite numerous collected in the Mongolian taiga, north of Ulaanbaatar (MÜLLER *et al.* 2013). However, the nearest locality of *K. squamulata* is situated in the federal subjects of Kemerovo and Khakassia (Russia), where it was observed in the dark taiga habitat (EFIMOV 2014). Our finding extends the hitherto known distribution of the species by about 400 km to the south-west. Such a distribution may suggest that species is widespread in the southern region of the Russian taiga.

Kolibacia squamulata is the most widely distributed species of the genus; its range starts from Mongolia and runs throughout north-eastern China, North and South Korea, the Russian Far East to Japan (YOSHITOMI & LEE 2014). The biology of the species is still poorly understood, but it seems that the adults and larvae are probably predatory and not mycophagous (KOLIBÁČ 2013). The larvae of the species primarily develop under the bark and trunks of various deciduous trees that are infested with the larvae of other insects (MAMAEV 1976). However, according to YOSHITOMI & LEE (2014), in Japan, the species mainly attacks conifer trees and is easily collected from lumberyards in the mountains.

A single imago of *C. haematodes* was observed in the evening, running on bark of very old broken willow trunk covered with polypores. The species is already known from the southern Siberia region in Russia where the nearest locality is situated in Altai Oblasts (HORÁK & CHOBOT 2009). It is likely that this taxon is widely distributed in this area of Kazakhstan. *Cucujus haematodes* is a Palearctic species ranging from east part of Europe to the Far East and Japan, where is divided into three subspecies: *C. h. haematodes* ERICHSON, 1845, *C. h. caucasicus* MOTSCHULSKY, 1845, and *C. h. opacus* LEWIS, 1888 (HORÁK & CHOBOT 2009). In Europe, the species is rather rare but locally it can be more common (e.g. Białowieża Primeval Forest). It was included in red lists in many European countries, e.g. Czech Republic (JELÍNEK 2005), Slovakia (HOLECOVÁ & FRANC 2001), and Poland (PAWŁOWSKI *et al.* 2002). This species shows a different distribution in Asia, where it is more common and probably not endangered (HORÁK & CHOBOT 2009). The larvae develop in subcortical zone of dead trees and are probably opportunistic omnivores, which feed on phloem and woody debris with co-occurring filamentous fungi and various invertebrates (HORÁK 2011). In Europe, the species is reported mostly on dead coniferous trees, but in the rest of its distribution area it prefers broadleaved trees (HORÁK *et al.* 2010).

Four specimens of *Clerus dealbatus* (KRAATZ, 1879) (Cleridae) (Fig. 1B) were collected on 9 May 2017 in eastern Kazakhstan in the vicinity of the Kol'bay [Кольбай] village [45°49'N 80°17'E], leg. R. Plewa & J. Hilszczański. Additionally, one specimen was collected on 3 June 2017 in vicinity of the Koktal [Көктал] village [44°08'N 79°36'E], leg. W.T. Szczepański.

The individuals were caught on firewood of various deciduous tree species. The lumber was harvested and located in the vicinity of one of the households. The beetles were observed in the afternoon during strong sunlight (temperature approx. 30°C). Imagines were very active and they probably were hunting for larvae of other insects. Adult beetles of this species are usually active from May to August. In Russia, it was observed on the trunks of fallen, mostly hardwood trees (MELNY 2009).

Clerus dealbatus is an Asian species known in Palearctic region from the Russian Far East (Amur Oblast and Primorsky Krai), China, South Korea (LÖBL *et al.* 2007), Mongolia (MELNY 2009), and Japan (LI & BAI 2007). It is also distributed in Oriental Region (LI & BAI 2007, LÖBL *et al.* 2007). Like in other Cleridae, both the larvae and imagines of this species are predators and feed on immature stages and even on adults of other insects (MAZUR 1975).

It seems that areas covered with forest in eastern Kazakhstan are still poorly explored, and it is very likely to find here other saproxylic species which have not been recorded so far.

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REFERENCES

- BONACCI T., MAZZEI A., HORÁK J., BRANDMAYR P. 2012. *Cucujus tulliae* sp. n. – an endemic Mediterranean saproxylic beetle from genus *Cucujus* FABRICIUS, 1775 (Coleoptera, Cucujidae), and keys for identification of adults and larvae native to Europe. *ZooKeys* 212: 63–79.
- Efimov D.A. 2014. New data on the fauna of the beetles (Coleoptera) from Kuznetsk-Salair Mountain area. *Amurian Zoological Journal* 6(1): 18–21. (in Russian)
- HOLECOVÁ M., FRANČ V. 2001. Červený zoznam rastlín a živočíchov Slovenska. *Ochrana prírody* 20: 111–128. (in Slovak)
- HORÁK J. 2011. Contribution to knowledge of diet preferences of the endangered saproxylic beetle *Cucujus cinnaberinus* (Coleoptera: Cucujidae) from East Bohemia. *Acta Musei Reginahradecensis* 33(A): 127–130.
- HORÁK J., CHOBOT K. 2009. Worldwide distribution of saproxylic beetles of the genus *Cucujus* FABRICIUS, 1775 (Coleoptera: Cucujidae). In: BUSE J., ALEXANDER K.N.A., ASSMANN T. (Eds.), Saproxylic beetles – Their role and diversity in European woodland and tree habitats. Pensoft Publishers, Sofia–Moscow, 189–206.
- HORÁK J., ZAITSEV A.A., VÁVROVÁ E. 2010. Ecological requirements of a rare saproxylic beetle *Cucujus haematodes* – the beetles' stronghold on the edge of its distribution area. *Insect Conservation and Diversity* 4(2): 81–88. DOI: 10.1111/j.1752-458X.2010.00102.x.
- JELÍNEK J. 2005. Cucujidae. In: FARKAČ J., KRÁL D., ŠKORPÍK M. (Eds.), List of threatened species in the Czech Republic – Invertebrates. AOPK ČR, Praha: 492–493.
- KOLIBÁČ J. 2013. Trogossitidae: A review of the beetle family, with a catalogue and keys. *ZooKeys* 366: 1–194. DOI: 10.3897/zookeys.366.6172.
- LESCHEN R.A.B. & LACKNER T. 2013. Gondwanan Gymnochilini (Coleoptera: Trogossitidae): generic concepts, review of New Zealand species and long-range Pacific dispersal. *Systematic Entomology* 38: 278–304. DOI: 10.1111/j.1365-3113.2012.00661.x.
- LEE C.F., PÜTZ A. 2008. A new species of *Cucujus* FABRICIUS, 1775 from China and key to the east–Palearctic species of the genus (Coleoptera: Cucujidae). *Entomologische Zeitschrift* 118 (5): 211–213.
- LI C-d., BAI Y-Q. 2007. Taxonomic review of Cleridae (Coleoptera) in Heilongjiang Province with one new record species from China. *Journal of Forestry Research* 18(2): 147–148.
- LÖBL I., ROLČÍK J., KOLIBÁČ J., GERSTMEIER R. 2007. Family Cleridae LATREILLE, 1802. In: LÖBL I. & SMETANA A. (Eds.), Catalogue of Palearctic Coleoptera, Vol. 4. Apollo Books, Stenstrup: 935 pp.
- KIM J.I., JUNG B.H. 2006. Taxonomic review of the Cleridae (Coleoptera) in Korea (Part 1): Clerinae LATREILLE, 1802. *Entomological Research* 36: 6–15.
- MAMAEV B.M. 1976. Review of larvae of the family Trogossitidae (Coleoptera) in the fauna of the USSR. *Zoologicheskij Zhurnal* 55: 1648–1658. (in Russian)

- MAZUR S. 1975. *Klucze do oznaczania owadów Polski*, XIX - Coleoptera, 53. Cleridae. PWN, Warszawa: 20 pp. (in Polish)
- MELNY I.V. 2009. Family Cleridae, In: STOROZHENKO S.YU., SUNDUKOV YU.N., LELEY A.S., SIDORENKO V.S., PROSHCHALYKIN M.YU. (Eds.), *Insects of Lazovsky Nature Reserve*. Dalnauka, Vladivostok: 464 pp. (in Russian)
- MÜLLER J., JARZABEK-MÜLLER A., BUSSLER H. 2013. Some of the rarest European saproxylic beetles are common in the wilderness of Northern Mongolia. *Journal of Insect Conservation* 17: 989–1001. DOI: 10.1007/s10841-013-9581-9.
- PAWŁOWSKI J., KUBISZ D., MAZUR M. 2002. Coleoptera chrząszcze, In: GŁOWAŃSKI Z. (Ed.), *Czerwona lista zwierząt ginących i zagrożonych*. Instytut Ochrony Przyrody PAN, Kraków, 88–110. (in Polish)
- THOMAS M.C., LESCHEN R.A.B. 2010. Cucujidae LATREILLE, 1802, pp. 350–35, In: LESCHEN R.A.B., BEUTEL R.G., LAWRENCE J.F. (Eds.), *Handbook of Zoology, Vol. IV: Arthropoda: Insecta, Part 38. Coleoptera, Beetles*. Walter de Gruyter, Berlin.
- YOSHITOMI H., LEE C.-F. 2014. A revision of the genus *Kolibacia* LESCHEN and LACKNER (Coleoptera, Trogossitidae, Trogossitinae). *Entomological Science* 17: 240–250. DOI:10.1111/ens.12052.

STRESZCZENIE

Pierwsze stwierdzenie *Kolibacia squamulata* (GEBLER, 1830), *Cucujus haematodes* ERICHSON, 1845 oraz *Clerus dealbatus* (KRAATZ, 1879) (Coleoptera: Trogossitidae, Cucujidae, Cleridae) w Kazachstanie

W pracy po raz pierwszy podano dane o występowaniu trzech saproksylicznych gatunków chrząszczy: *Kolibacia squamulata* (GEBLER, 1830) (Trogossitidae), *Cucujus haematodes* ERICHSON, 1845 (Cucujidae) oraz *Clerus dealbatus* (KRAATZ, 1879) (Cleridae) na terenie Kazachstanu. Gatunki te zostały stwierdzone podczas dwóch ekspedycji entomologicznych do południowej i wschodniej części kraju, zorganizowanych przez dwa niezależne zespoły badawcze w maju i czerwcu 2017 roku. Dwa gatunki wymienione jako pierwsze odnaleziono w rejonie miejscowości Putintsevo, natomiast *C. dealbatus* w okolicy Kol'bay i Koktal. Podano również dane odnośnie okoliczności zbioru owadów, a także omówiono ich biologię, preferencje siedliskowe oraz ogólne rozmieszczenie.

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