

Leistus rufomarginatus (Duftschmid, 1812) (Coleoptera, Carabidae, Nebriini), ground beetle new to Norway

ALEKSANDR V. PUTCHKOV & TETIANA YU. MARKINA

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Leistus rufomarginatus (Duftschmid, 1812) (Coleoptera, Carabidae) is recorded in Southern (Sandnes, Rogaland) and South-western Norway (northern part of Bergen env., Hordaland) for the first time. Thus, the known area of the species is expanded up to 60 degrees north latitude. Appearance of *L. rufomarginatus* in Norway can be associated with both the importation of plants with substrate to the country or the quite natural migration. This expansion is most probably caused by the climate warming, accompanied with mild winters in recent decades. The locality and ecology of the species are briefly discussed.

Key words: Coleoptera, Carabidae, *Leistus rufomarginatus*, new record, Norway.

Aleksandr V. Putschkov, Schmalhausen Institute of Zoology of NAS of Ukraine, vul. B. Khmelnitzkogo, 15, Kyiv-30, 01601, Ukraine, e-mail: 1954caradus@gmail.com

Tetiana Yu. Markina, G.S. Skovoroda's Kharkov National Pedagogical University, vul. Alchevskikh, 29, Kharkiv, 61002, Ukraine, e-mail: t.yu.markina@gmail.com

Introduction

Leistus Frölich, 1799 is a genus of ground beetles (Coleoptera, Carabidae, Nebriini) native to the Palearctic (mainly) and Nearctic regions. They are middle-sized beetles (6.5–13.0 mm) with a slender body, elongated and oval elytra, heart-shaped pronotum, widely separated lateral margins of mandibles, maxillas bearing the row of spine-shaped setae along the outer margin. Coloration of ground beetles varies from almost black or reddish-brown to yellow, with or without the metallic luster. The genus counts more than 170 species from five subgenera in the Palearctic region, and 44 species from three subgenera in Europe (with the Caucasus).

Only two species of the nominative subgenus, *Leistus* (s. str.) *terminatus* (Panzer, 1793) and *L.* (s. str.) *ferrugineus* (Linnaeus, 1758), were listed

for Norway in the last Catalogue of Palearctic Coleoptera (Farkač 2017). However, recently the third species of the genus was recorded for Norway – *Leistus* (*Pogonophorus*) *fulvibarbis* Dejean, 1826 (Westergaard *et al.* 2015). Several specimens of this species were found in Southern Norway (Sandnes, Rogaland) when inspecting imported plants and substrates, as well as the urban biotopes, to identify the possible invasive insect species. There are no other published data on the occurrence of other species from this genus in Norway. Here we present the data on the first finding of *Leistus* (*Pogonophorus*) *rufomarginatus* (Duftschmid, 1812) in this country.

Leistus rufomarginatus is the European-Caucasian species distributed throughout all Caucasus and the vast part of Europe (Shilenkov 1999, Putschkov 2013, Farkač 2017). Its area

reaches Sweden and Denmark in the north, Ireland in the west, Belarus and Southwestern Latvia in the east of Europe (but not in Northern European Russia), Sicily and Greece in the south (Silfverberg 2004, Telnov 2004; Brandmayr *et al.* 2005, Farkač 2017). Nevertheless, the borders of its geographic area in the north of Europe have not been discussed. It was believed that the known area of *L. rufomarginatus* reaches only 22 degrees eastern longitude and 55 degrees northern latitude (Aleksandrowicz 2011, Putchkov 2013, Aleksandrowicz *et al.* 2018). Our finding of *L. rufomarginatus* in Norway for the first time testify about its distribution north to 60 degrees latitude.

Material and methods

We collected one female of *L. rufomarginatus* by pitfall traps in July 2017 to the north of the city Bergen of Norway, Bergen, Sandviken env. (60.414579°N 5.323459°E), 10–21 July 2017 1♂, leg. T. Markina and A. Putchkov. A total of 22 pitfall traps were placed in the mixed forest with domination of *Alnus*, *Corylus* and *Pinus*. Additionally, the preliminary information of findings of *L. rufomarginatus* in Southern Norway (Rogaland) is given at Artskart (<https://artsdatabanken.no>): 1 ex., 17 June 2016, 10 m a.s.l., Sandnes, Hove (leg. F. Ødegaard & Hanssen); 1 ex., 2 February 2018, 200 m a.s.l., Stavanger, Sandbakk env.: 2 ex., 10 March 2018, 500 m a.s.l., Sandnes (leg. H. Løvbrekke).

Results and discussion

L. rufomarginatus is a mesophilous species associated with forests and bushes. Imago and larvae are zoophagous, specializing mainly in Collembola (Hexapoda). In Europe and West Caucasus this species prefers mainly moist bushes, deciduous and rarely coniferous forests, but is very rare in parks and gardens (Šustek 1983, Aleksandrowicz 2011, Putchkov 2013).

Obviously, *L. rufomarginatus* has constantly expanded its area since the second half of 20th century (Šustek 1983). It started the expansion

to the north and northeast of Europe in early 21st century (Putchkov 2013, oral information from Dr. J. Farkač in March 2018 in Praha). These beetles have fully developed wings, elytra with prominent straight shoulders, a widened head and pronotum, and are capable of active flight. In our opinion, further spread of *L. rufomarginatus* northwards (for example to Sognefjord) is quite possible. That is, the appearance of this species in Norway can be quite natural. The climatic limits for expansion of *L. rufomarginatus* are unknown, but the data obtained indicate that the species is rather tolerant to the mild winters and has fully adapted to Southwestern Norway. We can assume that this is caused by the climate warming, accompanied with longer plant growing season and mild winters in recent decades.

However, the appearance *L. rufomarginatus* in Norway may be associated also with the importation of plants and substrate too (for example, as in the case with *L. fulvibarbis*). This is confirmed by a written report (but unpublished) from Mr. Frode Ødegaard: “our findings of *L. rufomarginatus* from Sandnes are all from plant import areas, which might be the primary source for import of this species to Norway”.

Conclusions

Leistus rufomarginatus is recorded in Southern (Sandnes, Stavanger, Rogaland) and Southwestern Norway (northern part of Bergen env., Hordaland) for the first time. This expands the known area of species up to 60 degrees northern latitude. Thereby, the genus *Leistus* is represented currently by four species in Norwegian fauna: *L. terminatus*, *L. ferrugineus*, *L. fulvibarbis* and *L. rufomarginatus*.

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