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On the distribution of the weevil *Adosomus roridus* (Pallas, 1781) (Coleoptera: Curculionidae, Lixinae)

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Abstract

The paper summarizes original and literature data on the geographical distribution of *Adosomus roridus* (Pallas, 1781). The major part of the *A. roridus* range lies within the Eurasian Grass-Steppe. This range has no disjunction in the regions located to the north of the Black Sea. The northern limit of it runs along the line 54°N (East) – 44°N (West). In the latitudinal direction, the species range stretches from Piedmont, Italy (~8°E; Luigioni 1929) to West Kazakhstan. According to the literature sources, *A. roridus* occurs in xerothermic sunny habitats, life cycle is associated with some Asteraceae (*Tanacetum vulgare*, *Artemisia* spp. and possibly *Achillea millefolium*).

Key words: Curculionidae, Lixinae, geographical distribution, European fauna

Introduction

The genus *Adosomus* Faust, 1904 includes exclusively Palearctic taxa, represented by three subgenera and nine species (Alonso-Zarazaga *et al.* 2017). All of them, except for one species, can be found only in Asia. Though their geographical distribution is fairly well known, the host plants and others details of their biology have been studied insufficiently. According to the available scientific data, the life cycle of *Adosomus* spp. is associated with *Artemisia* spp. comprising pastoral weeds, forage, medicinal, aromatic, repellent, sand-binding and ornamental plants (Wright 2001). Thus, an unidentified species of *Adosomus* is an important pest of the sand-binding wormwood (*Artemisia* spp.) in China (Wang *et al.* 2009). Therefore, there is an urgent need for a detailed investigation of the weevils *Adosomus* as potential pests or biological control agents.

The weevil *Adosomus* (*Adosomus s. str.*) *roridus* (Pallas, 1781) (Fig. 1) has been reported in a salt desert at the Lower Volga (“In salsis torridis deserti australis ad Volgam”– p. 28). It is rather rare, and its life cycle is usually associated with the common tansy (*Tanacetum vulgare* L.) (Trnka *et al.* 2015). The first record from the modern Ukrainian territory has been published by Penecke (1928). In general, the range of the weevil *A. roridus* covers Middle and South Europe (from Italy and Switzerland to the south-east of European Russia) as well as Armenia and Kazakhstan (Alonso-Zarazaga *et al.* 2017). Therefore, the major part of the range of *A. roridus* lies within the Eurasian Grass-Steppe. After analyzing the records of *A. roridus* (mainly in Western and Central Europe), Würmli (1976) has concluded that there was a disjunction in the regions located to the north of the Black Sea. My data fill this disjunctive gap.

Material and methods

Museum entomological collections were studied in 1981–1984. All the examined specimens are stored in the collections of I. I. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, Kyiv (SIZK); Museum of Nature of V. N. Karazin Kharkiv National University (KUMN); Gogol State Pedagogical University, Nizhyn (NSPU); Zoological Museum of T. H. Shevchenko Kyiv National University (ZMUK); Zoological Institute of Russian Academy of Sciences (St. Petersburg) (ZIN); Zoological Museum of M. V. Lomonosov Moscow State University (ZMUM). The

data of photo observations (UkrBIN: Ukrainian Biodiversity Information Network. The Database on Biodiversity Information (available from <http://www.ukrbin.com>) were used as well. The figures were produced using the maps from the websites <https://maps-for-free.com> and <https://commons.wikimedia.org>.



Figure 1. *Adosomus roridus*. Kharkiv Reg., Zmiiv Distr., Gusyna Polyana (49°48'N, 36°17'E), 15.04.2009; © by Boris Loboda (Available under the CC BY–NC–ND 3.0).

Results and Discussion

Material examined. UKRAINE (Fig. 2), **Crimea:** Leninske [=Yedi Quyu] Distr., Opuk Mount / 45°02'N, 36°13'E / 23–26.06.1986 – S.V. Winter, 1 spec. (SIZK); Dnipro Reg.: Novomoskovsk & Pavlograd districts, Samarskyi pinery / 48°44'N, 35°27'E / 5.06.1952 – Goncharenko, 1 spec. (SIZK); **Kharkiv Reg.:** Iziium Distr. / 49°13'N, 37°17'E – Dankov, 1 spec. (ZMUM); Kharkiv Distr.: Vasysheve / 49°49'N, 36°19'E / 27.05.2007 – A. Shekhovtsov (KUMN); idem / 18–21.05.2006, 2 spec. (KUMN); Zmiiv, Mokhnach env. / 49°45'N, 36°32'E / 11.05.2008 – E. Karolynskyi, 1 spec. (UkrBin, ID # 55476); idem / 11.05.2009 – B. Loboda, 1 spec. (UkrBin, ID # 32373); Zmiiv Distr., Husyna Poliana / 49°48'N, 36°17'E / 15.04.2009 – B. Loboda, 2 spec. (UkrBin, ID # 32156); **Kherson Reg.:** Hola Prystan Distr., Burkuty / 46°24'N, 32°48'E / 21.07.1996 – P. Sheshurak, 1 spec. (NSPU); idem / 22.07.1996 – P. Sheshurak, 4 spec. (NSPU); idem / 22.07.1996 1 spec., (NSPU); idem / 14.05.2018 – A. Zhakov. 1 spec. (UkrBin, ID # 69450); Black Sea Biosphere Reserve, pasture / ca. 46°15'N, 31°52'E / 9.06.1987 – L. Zelinskaya, 1 spec. (SVC); **Luhansk Reg.:** Dovzhansk Distr., Luhanskyi Reserve, Provalska Steppe, Kalinovskiy Division / 48°06'N, 39°29'E / 13.06.1999V – P. Foroshchuk, 1♂ (SIZK); idem, floodplain (of Verkhne Provallia River) / 19.06.1989 – J. Yu. Moroz, 4 spec. (SIZK); idem, 48°07' N 39°48' / 17.07.2002 – P. Sheshurak, 1 spec.; (SIZK) idem / 23.06.1999 – J. Yu. Moroz, 2 spec. (SIZK); **Sumy Reg.** Sumy Distr., forest near Vakalivshchyna / 51°01'N, 34°55'E / 5.06.2014 – D. V. Makhotina, 1 spec. (SIZK); idem / 5.06.2014 – T. A. Dehtyaryova, 1 spec. (SIZK); **Zakarpatska Reg.:** Berehove Distr., Muzhyevo / 48°10'N, 22°42'E / 24.08.1957, 1 spec. (ZMUK); idem, woodland belt / 8.06.1957 – V. M. Yermolenko, 1 spec.

(SIZK); **RUSSIA, North Caucasus:** Stavropol / 45°02'N, 41°58'E / 25.06.1923 – V. N. Luchnik, 1 spec. (ZIN); Teberda / 43°27'N, 41°45'E / 27.08.1939 – D. Romashov, 1 spec. (ZMUM); idem / 10.08.1967 – A.V. Bogachyov (ZMUM); **Lower Volga Reg.:** Sarepta [part of modern Volgograd] / 48°41'N, 44°28'E / 11.05.1891 – G. Suvorov, 1 spec. (ZIN); ibid., 2 spec. (ZIN); Nikolaevsk District of Samara Governorate [south of current Saratov Region] / 52°01'N, 48°48'E / 1896 (ZIN).

Without a doubt, the available collection material perfectly fills the lacuna in the territory north of the Black Sea. So, the disjunction is absent. These data can be complemented by some literature information (Fig. 2; Yunakov *et al.* 2018). *Adosomus roridus* was recorded in 4 localities of Western Ukraine (Mazur 2002). Several findings were made in the east of Luhansk Region (Arnoldi 1956), adjacent areas of the west of Rostov Region (Arzanov 2015), the centre of Voronezh Region (Silantyev 1898) and further east to the North Caucasus, Lower Volga (Shapovalov 2012; Zabaluyev [2012]), and West Kazakhstan inclusively (M. Meregalli, personal communication). The westernmost points of findings lay in Piedmont, Italy – Bra (Luigioni 1929) and Asti (Würmli 1976). It is possible to assume that this apterous species could not get through the Alps.

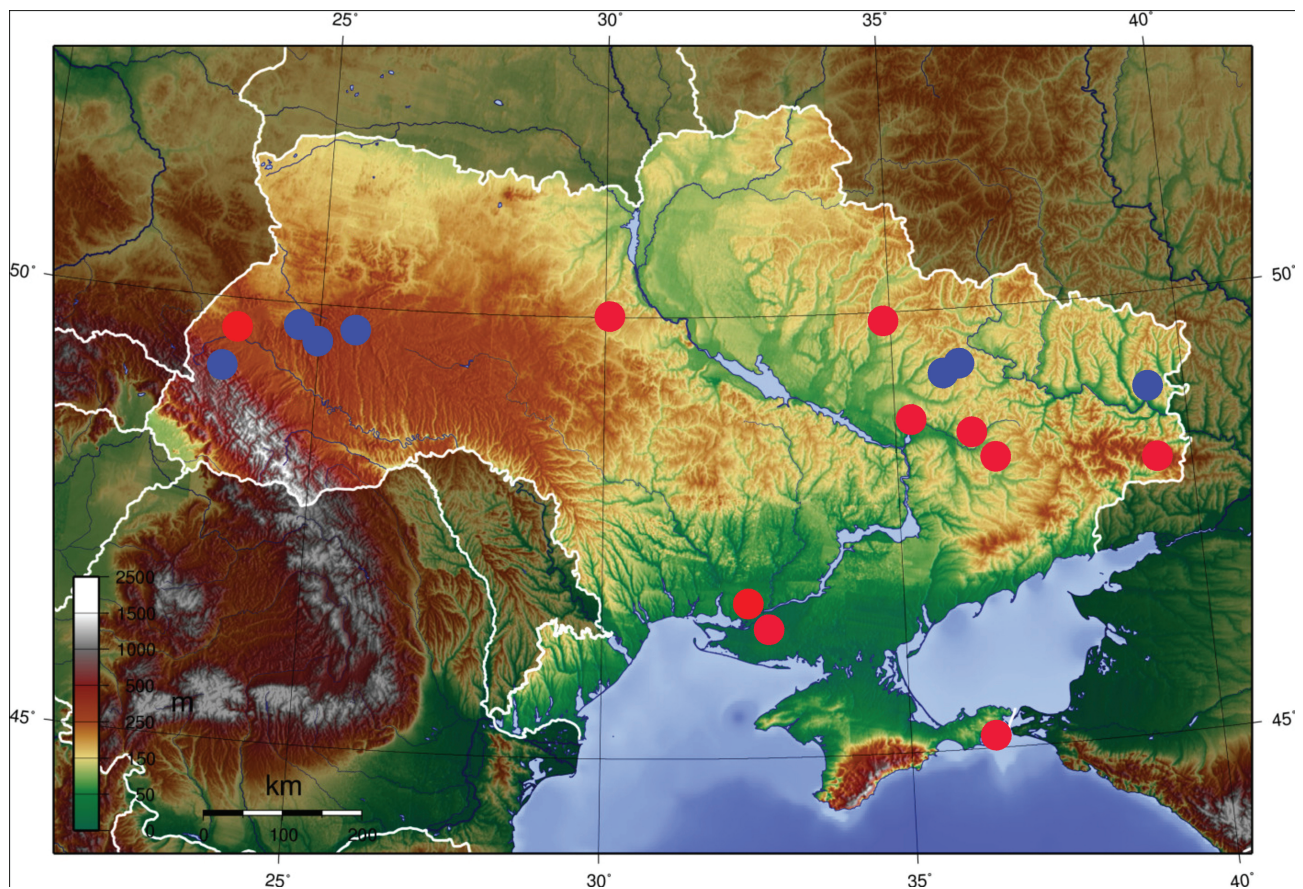


Figure 2. Main findings of *Adosomus roridus* in Ukraine according to the original (red circles) and literary (Penecke 1928; Arnoldi 1956; Mazur 2002; UkrBIN 2017) data (blue circles).

The northernmost population of *A. roridus* was recorded in Ulyanovsk Region of Russia (Isayev & Zotov 2003). Therefore, the northern boundary may be drawn along the line: 54° N (Ulyanovsk Reg.) – 51° N (Sumy Reg., Ukraine) – 48° N (Bratislava and Košice, Slovakia) – 48° N (Freiburg, Germany) – 44° N (Bra, Italy) (Fig. 3).

However, two records of *A. roridus* are reported rather far from the above-mentioned outlined area, namely in “Sweden” (Fauna Europaea 2017) and in “Eastern Kazakhstan” (Baytenov 1974). Unfortunately, the original source of this information is unknown. Christoffer Fägerström (personal communication) is sure that this species “without a doubt is not native to Sweden”.

The total number of records and the large spatial gaps between them indicate that the size of populations of *A. roridus* has been (and still remains) small at least in the past 150 years.

Adosomus roridus occurs in xerothermic sunny habitats. Its life cycle is closely associated with some common Asteracea as host plants: *Tanacetum vulgare* L., *Artemisia vulgaris* L. (Trnka *et al.* 2015) and possibly *Achillea millefolium* L. and *Artemisia absinthium* L. (Isayev & Zotov 2003). The adults of *A. roridus* were recorded in abandoned vineyards and along roadsides (Trnka *et al.* 2015). Isayev & Zotov (2003) have found 8 adults in a narrow strip of grassland between the road and the agricultural field. In fact, this is all that we know about biology of *Adosomus roridus*. So further researches are needed.

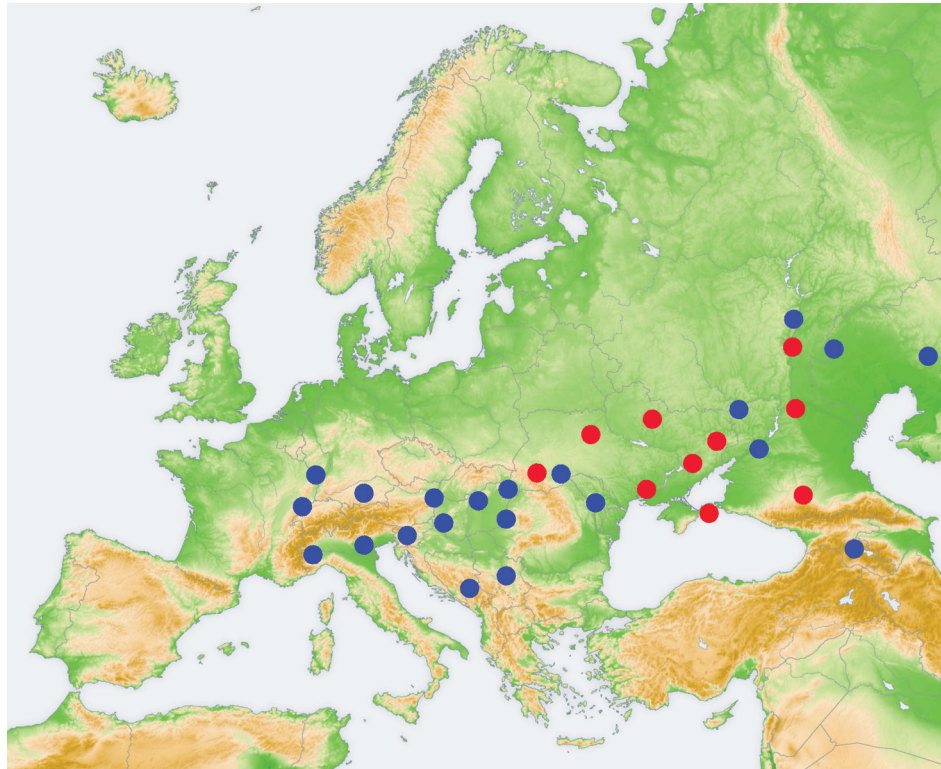


Figure 3. Main findings of *Adosomus roridus* in Europe according to the original (red circles) and literary (blue circles) data (Silant'yev 1898; Penecke 1928; Würmli 1976; Poiras, 1998; Isayev & Zotov 2003; Shapovalov 2012; Zabaluyev [2012]; Arzanov 2015; Alonso-Zarazaga *et al.* 2017; Meregalli 2017; UkrBIN 2017).

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