Liparus (Liparus) glabrirostris Küst. AND Hylobius (Callirus) abietis (L.)
(COLEOPTERA: CURCULIONIDAE)
FIRST RECORDS FOR SERBIA

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ABSTRACT. This paper presents a survey of data on two weevil species not recorded for the fauna of Serbia till now. Despite their large size, Liparus (Liparus) glabrirostris Küster, 1849 and Hylobius (Callirus) abietis (Linnaeus, 1758) have not been recorded for Serbia in the newest Palaeartic weevil catalogue (ALONSO-ZARAZAGA et al., 2017) or in the Fauna Europaea (ALONSO-ZARAZAGA et al., 2013, https://fauna-eu.org/). In this paper L. glabrirostris, found in a single locality on Mt Goč, is registered as the third representative of the genus Liparus Olivier, 1807 in Serbia. Hylobius abietis is a serious, widely distributed conifer pest, but was not faunistically registered for Serbia till now. Some ecological data and distribution maps with Serbian locations are given for both species.

Keywords: large size weevils, fauna, first records, ecological data, large pine weevil, Serbia, Petasites hybridus.

INTRODUCTION

Entomological collections are important sources of information and very often sources of interesting discoveries, like the two in this paper. Comparison of different findings, i.e., personal weevil collection, and one old, student’s entomological collection, with literature sources about the weevil fauna registered so far in Serbia (ALONSO-ZARAZAGA et al., 2017) gave a chance to write this paper about Serbian findings of two weevil species, characterized by large bodies – Liparus (Liparus) glabrirostris Küster, 1849 and Hylobius (Callirus) abietis (Linnaeus, 1758).

Although one of the largest European weevils (with body up to 19 mm long), L. glabrirostris has not been recorded for Serbia so far. It is not listed for our country either in the Fauna Europaea database (ALONSO-ZARAZAGA et al., 2013, https://fauna-eu.org/), or in the latest Catalogue of Palaeartic weevils (ALONSO-ZARAZAGA et al., 2017). This is also true for H. abietis (Linnaeus, 1758), a well-known and widely distributed forest pest.

In this paper data on findings of these species with ecological notes for both are given.
MATERIAL AND METHODS

Very different entomological field surveys conducted throughout entire Serbia from 1995 onwards by Vesna Stojanović, Ivo Karaman, Nastas Ilić, Snežana Pešić, Dejan Stojanović, Ivan Tot and Mihaílo Vujić resulted in the collection of 31 weevil specimens on which this text is based.

Specimens collected by Nastas Ilić (Tab. 1) were in pit-fall traps with 9% alcoholic vinegar aromatized with rum extract as an attractant, while all other beetles were collected manually or, more rarely, by the classic entomological net.


Liparus (Liparus) glabrirostris Küster, 1849

The data presented in this paper concern two male specimens. One comes from the insectarium of a student Vesna Stojanović and was collected on 01.06.1997 on Goč Mt. in Central Serbia (Fig. 2), situated in the northern part of Kopaonik’s branch of the Dinaric Alps. Due to doubts about the reliability of the label data, this finding has not been published till now. The second specimen was hand-collected by the author during the XI Symposium of Entomologists of Serbia, on 18.09.2017, again on Goč Mt., at the Dobre Vode locality on a Petasites hybridus leaf.

Hylobius (Callirus) abietis (Linnaeus, 1758)

There are 29 specimens (4 males, 15 females and 10 unsexed) of H. abietis from Serbia in the weevil collections at the Faculty of Sciences, University of Kragujevac, and in the „Fruska Gora” National Park.

Six specimens were already mentioned in published papers: Tara Mt., Kaluderske Bare, 04.05.2002, 1 ♀, leg. Snežana Pešić (Pešić, 2002); Fruška Gora Mt., Ledinci, 21.07.2002, 1, leg. Dejan Stojanović; Fruska Gora Mt., Paragovo Polje, 18.05.2006, 4, leg. Dejan Stojanović (Pešić et al., 2017; database HABIROT, 2014-2020).

New records are: Zlatibor Mt., Tornik, 1300 m a.s.l., 08.07.1995, 1 ♀, leg. Ivo Karaman; Zlatibor Mt., 23.05.1997, 1 ♂, leg. Nastas Ilić; Tara Mt., Zaovine, 24.05.1997, 3; 24.05.1999, 1 ♀, leg. Nastas Ilić; Tara Mt., Kaluderske Bare, 31.05.1998, 1 ♂; 04-24.07.1998, 1 ♀, leg. Nastas Ilić; Golić Mt., Rudno 1150 m a.s.l., 08.06-02.07.2012, 1 ♀; 02-30.07.2012, 2, leg. Nastas Ilić; Šar planina Mt., Durlov potok 1600 m a.s.l., 15.07.1997, 1 ♀, leg. Nastas Ilić; Rtanj Mt., village Rtanj 640 m a.s.l., 18-27.06.2012, 2 ♂♂; 27.06-07.07.2012, 1 ♀; 18-27.06.2012, 2 ♂♂; 19.05-02.06.2019, 1 ♀; 15.06-01.07.2019, 1 ♀, leg. Nastas Ilić; Vlasina, Vlasina Rid, 20.05.2017, 1 ♀, leg. Mihaílo Vujić; 27.05.2018, 1 ♂, leg. Snežana Pešić; 26.05.2019, 1 ♀, leg. Ivan Tot; Vlasina, Čemernik, Cvetkova reka, 27.05.2019, 1 ♀, leg. Ivan Tot and Mihaílo Vujić.

RESULTS AND DISCUSSION

Taxonomic position

Family Curculionidae Latreille, 1802
Subfamily Molytinae Schoenherr, 1823
Tribe Molytini Schoenherr, 1823

1 The data were only orally presented at the XII Symposium of Entomologists of Serbia with International Participation, 2017.
Subtribe Molytina Schoenherr, 1823
Genus Liparus Olivier, 1807

Liparus (Liparus) glabrirostris Küster, 1849

Liparus (Liparus) glabrirostris is one of 16 European species and subspecies in the subgenus Liparus. Nine species are recorded in the countries neighbouring to Serbia (ALONSO-ZARAZAGA et al., 2017).

The genus Liparus includes the largest European weevils (9–20 mm), with rudimental flight wings, covered with sensors (ZACWILICHOWSKI, 1931, cited after NAZARENKO, 1996). Their black and shiny body has yellow spots of scales, or, less frequently, is bare. These weevils mostly inhabit xerothermic alpine habitats or wet mountain forests. Their feeding plants belong to the families Asteraceae (genera Petasites and Cirsium) and Umbelliferae (=Apiaceae: genera Angelica, Anthriscus, Chaerophyllum, Daucus, Falcaria, Heracleum, Laserpitium, Pastinaca, etc.). Larvae develop in roots / rhizomes (FREUDE et al., 1983).

Liparus glabrirostris (the great butterbur weevil, or the great weevil) is the largest weevil species in Central Europe, with body 14–21 mm long (REITTER, 1923; FREUDE et al., 1983; ZAHRADNIK and SEVERA, 2000). It is recognizable among the other Liparus species by a Y-forked stripe of yellow scales on the sides of the pronotum.

Adults are active on butterburs (Petasites hybridus, P. albus), Cirsium oleraceum and Heracleum pyrenaeicum from April to August, and again in November, while larvae develop in Petasites rhizomes (SMRECZYŃSKI, 1968; NAZARENKO, 2001; LOMPE, 2018).

This species inhabits mountains from their bottom to 2000 m a.s.l., from the Pyrenees across the Alps to the Carpathians, east to Ukraine (MAGNANO, 1953-1954; ALONSO-ZARAZAGA et al., 2013), i.e., in 19 European countries including Serbia’s neighbours: Bosnia and Herzegovina, Croatia, Hungary, and Romania (ALONSO-ZARAZAGA et al., 2017). The Global Biodiversity Information Facility (GBIF) has 536 georeferenced records from 1869 till 2020 (Fig. 1, GBIF SECRETARIAT, 2019a), but there no Balkan (except one from Galičica Mt. in North Macedonia), Ukrainian and Carpathian finds are present.

Although these are large insects and presumably easy for identification, the genitalia were extracted from both specimens (Fig. 3).

In addition to L. (L.) glabrirostris, two other species of this genus have been recorded in Serbia so far – three males of Liparus (Liparus) coronatus Goeze, 1777 in three localities on Mt. Fruška Gora (finds of 2003, 2006 and 2008, published in PEŠTČ et al., 2017) and Liparus (Liparus) transsilvanicus Petri, 1895 (ALONSO-ZARAZAGA et al., 2017).
A short key for distinguishing Liparus species registered in Serbia

1 (4) Inner margin of fore tibia with small pointed or notched teeth.
2 (3) Femora strongly toothed. Antennal funicle robust; segments 3-6 wider than long. Pronotum finely and densely punctate, with basal edge curved, and yellow striped with hairlike scales. Two spots of yellow scales on the sides of the pronotum. Elytra slightly shiny, scal-like sculptured, with isolated small yellow spots. Body length 8.5-13 mm.

\textit{coronatus}

3 (2) Femora unarmed. Antennal funicle thin; segments 3-6 as long as wide. Pronotal basal edge straight, without yellow stripe. Pronotum with double punctation – with large, mostly flat-bottomed irregular punctures and fine and sparse punctures in between. Y-forked stripe of yellow scales on the sides of the pronotum. Elytra with numerous spots or bandages of yellow hairlike scales. Body length 14-21 mm.

\textit{glabrirostris}


\textit{transsilvanicus}

Since analysed populations of \textit{L. glabrirostris} from fragmented habitats of Carpathian and Alps mountains ranges show no morphological differences, while genetically they form two well-differentiated groups (MITROVIĆ \textit{et al.}, 2016), it will be interesting to analyse populations from Balkan Peninsula in the same way.
**Hylobius (Callirus) abietis** (Linnaeus, 1758)

*Hylobius (Callirus) abietis*, one of the five European representatives of the subgenus *Callirus*, known as the large pine weevil, is another large weevil not recorded for Serbian fauna in the recent catalogue (ALONSO-ZARAZAGA et al., 2017), despite being listed in all local forestry textbooks as a very serious polyphagous pest of conifers (ŽIVOJINOVIĆ, 1948; ŽIVOJINOVIĆ et al., 1962; LAKATOS et al., 2014; BERASATEGUI et al., 2016; KEREŠI et al., 2016).

The body length of the large pine weevil varies from 6 to 16 mm (REITTER, 1891; ŽIVOJINOVIĆ, 1948; ŽIVOJINOVIĆ et al., 1962; ANGELOV, 1978; FREUDE et al. 1983; LAKATOS et al., 2014; KEREŠI et al., 2016). This species has interesting features, not so often found among beetle species from temperate climates. The developmental cycle of one generation lasts one or two years, while adults live more than two years depending on environmental conditions (ŽIVOJINOVIĆ et al., 1962). *Hylobius abietis* is winged but flies only during the swarming period (April-May) (ŽIVOJINOVIĆ, 1948).

This beetle occurs in coniferous and mixed forests at all altitudes (usually at logging plots: LAKATOS et al., 2014). The larvae cause very little damage, making holes in the root system of freshly felled trunks or in diseased trees, but the adults are major pests (ŽIVOJINOVIĆ, 1948). They can survive for three (ZAHRADNIK and SEVERA, 2000) or even up to six years (ŽIVOJINOVIĆ, 1948), damaging trees during feeding by gnawing the stems, twigs, or excavating the shoots (ROQUES et al., 2017), bark and roots, mainly on younger (2-6 years old) pines and spruces, causing death of young woods (LAKATOS et al., 2014). This weevil is polyphagous on a wide range of conifers, and feed also on some deciduous species (ŽIVOJINOVIĆ, 1948). The damage is particularly heavy on locations where there are stumps or freshly cut trees and saplings (LAKATOS et al., 2014). In Central Europe *H. abietis* is considered the worst insect pest of young conifers (HARDE and SEVERA, 2000; BERASATEGUI et al., 2016).

*Hylobius abietis* has respectable reproductive potential – with repeated mating, females constantly lay eggs from May to September in the bark of live roots of fir and spruce stumps (preferring stronger roots which protrude from the ground; ŽIVOJINOVIĆ, 1948), or freshly cut pieces of wood with bark (LAKATOS et al., 2014). A single female lays 60-120 eggs on average (KEREŠI et al., 2016).

The large pine weevil is widely distributed through Europe and Asia (ALONSO-ZARAZAGA et al., 2017), inhabiting practically all woods with *Pinus* (ANGELOV, 1976) and *Picea abies* (SMRECZYŃSKI, 1968), from the plains to the high mountains (ŽIVOJINOVIĆ,
GBIF has 9,878 georeferenced records of *H. abietis* collected from 1800 till 2020 (GBIF SECRETARIAT, 2019b; Fig. 3). This pest is also considered as invasive and included into the list of Centre for Agriculture and Bioscience International, but again, Serbia is not mentioned there (https://www.cabi.org/ISC/abstract/20066600643).

Except for the large pine weevil, one more species of the same subgenus has been recorded in Serbia earlier – *Hylobius (Callirus) transversovittatus* Goeze, 1777 (Pešić, 2014).

**Figure 5.** Locations of *Hylobius abietis* in Serbia: 1 – Zlatibor Mt., 2 – Tara Mt., 3 – Šar planina Mt., 4 – Fruska Gora Mt., 5 – Rtanj Mt., 6 – Golija Mt., 7 – Vlasina.

**Figure 6.** Specimens of *Hylobius abietis* collected in Serbia, deposited in the weevil collection at the Faculty of Sciences, University of Kragujevac.

*A short key for distinguishing Hylobius species registered in Serbia*

1 (2) Scutellum with noticeable yellow hairlike scales. Striae of punctures at bases of elytra as wide as interstriae or, in places, even wider. Granulation of elytra gradually disappears toward apices of the latter. Antennal funicle thin – 2nd segment as long as 1st, 7th segment not more than 1.5× as wide as long. Body and legs rust-red to red-brown. Elytra appearing quite bald and slightly shiny, with a few spots or bandages of yellow hairlike scales. Pronotum densely and very coarsely punctate (almost foveate). Body length 7.5-11 mm. Common around conifers, often at night.

2 (1) Scutellum only inconspicuously hairy. Elytral striae at base narrower than interstriae. Granulation of elytra becoming finer toward their apices, but still well distinct. 7th segment of antennal funicle twice as wide as long. Body and legs dark brown to almost black. Hairs often interspersed, especially on pronotum and elytral base, with yellowish hairlike scales. Elytra less shiny, rather matt, with more spots or bands of yellow hairlike scales. Pronotum densely, but less coarsely punctate. Body length 7.5-13 mm. In peaty wetlands.
Obviously, without well collected and preserved material, a lot of faunistic data will be irretrievably lost to science. It is particularly important in the countries like Serbia, where nature is rich, while entomological collections, private or institutional, are very few. Such lack leads to potential loss of understanding of Serbian biodiversity and the possibility to conserve and manage this. Except it, thanks to the collections performing many kinds of taxonomic research is enabled.

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