Lignyoptera fumidaria (Hübner, 1825) (Lepidoptera, Geometridae) - a new FFH Directive protected species in Romanian fauna

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Summary: *Lignyoptera fumidaria* (Hübner, 1825) is reported for the first time in the Romanian fauna. The only specimen, a male, was collected in the Stânca village (18/11/2014, N47.0698, E27.8038), Comarna commune, Iași county, at an altitude of 50 meters. Being a species of the EU FFH Directive, special protection and conservation measures are required, especially new investigations to determine the status and number of populations.

Key words: Lepidoptera, Geometridae, *Lignyoptera fumidaria*, Romanian first record, EU FFH Directive species, conservation measures.

Introduction

Given the complex and preferred habitat, *Lignyoptera fumidaria* could have been presumably assumed to be found in Romanian fauna but, until now, it has never been reported.

The first specimen collected in Romania comes from the Stânca village (N47.0698, E27.8038), Iasi county, at the altitude of 50 m. The moth, a male specimen (Fig. 1, 2) (leg. C. Manci), was collected on a wall in 11/18/2014. We don't know if the male just rested there or was attracted by a light (the species not being normally collected with light traps).

Biology

Considering the habitus, the collected specimen belongs to the Central European populations of butterflies (Austria-Hungary). The male wingspan measures 27-30 mm, the female being apterous. The moth flies from middle of October to middle of December. The males are active both day and night, searching for the females. They are active specially in the morning and then later after 3-4 p.m. (Kasy, 1990; Ronkay et al., 2007; Petrányi, 2014). The larvae are polyphagous but they prefer *Achillea* species (Culot, 1920; Kasy, 1990; Ronkay et al., 2007). In Hungary, the species typical habitats are xerothermophilous grasslands more or less compact, on dolomite or limestone substrate (Ronkay et al., 2007). Among the types of habitats of community interest of which *Lygnioptera fumidaria* was signaled, Petrányi (2014) states: 6190 - Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*), 6210 - Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites), 8210 - Calcareous rocky slopes with chasmophytic vegetation and 1530 - * Pannonic salt steppes and salt marshes. In Austria, the habitat around Lake Neusiedler See corresponds to Pannonic salt steppes and salt marshes (Kasy, 1965; 1990). Preimages stages and the biology of the species are described by Forster & Wohlfahrt and, Petrányi (Forster & Wohlfahrt, 1981; Petrányi, 2014). The moth overwinters as eggs. The larvae develop from April to June or early July in the flowers of *Achillea* sp.

Stânca locality is situated in the middle of the Moldova region near the Prut River (at approximately 20 km South-East from Iași city) in the continental bioregion. The area were the moth was found is a mosaic of different habitats: wet areas (most of them man made and with water only in the spring), steppe like area (grazed or not) with grassy vegetation or salted areas specific vegetation, shrubs, patches of forests with a very high diversity (mainly from plantations: *Quercus*, *Pinus*, *Fraxinus* and others) and extensively cultivated patches (corn, sunflower, orchard and vineyards). The altitude has an average of 80 m

Fig. 1. Male of *Lignyoptera fumidaria* (Photo Cosmin Manci)

(maximum of cca 130 m and a minimum of cca 25 m). The uncultivated terrain is very rough with a lot of forms of erosion and small depression, filled with water in the spring that contributes to the biological diversity of the region. The climate in the area is characterized by almost continuously winds all year long mostly from South-West or North-East that contribute to dry climate, precipitation almost only in spring and autumn and with summers that are very hot and dry. (Fig. 3).

Fig. 2. Male of *Lignyoptera fumidaria* (Photo Cosmin Manci)

Fig. 3 Habitat of Lignyoptera fumidaria in stepic landscape, near Stânca (Iasi), North-East Romania (Photo Cosmin Manci)

Distribution: eastern Austria, Hungary, Bulgaria, Ukraine, steppe region of European Russia, the Caucasus region, the Transcaucasian to Siberia and Altai Mountains (Prout, 1912; Culot, 1920; Petrányi, 2014). The species can be easily recognized by the morphology of the male. The only similar species, but with a larger wingspan is *Lignyoptera thaumastaria,* known from the mountainous region of Bosnia and Herzegovina. Ronkay et al. (Ronkay et al., 2007) indicates The Meridional Carpathians also as an area for this extremely local species, without indicating the source of information or the exact location. The molecular analysis performed on the *Lignyoptera* genus, compared with the data collected from GenBank, indicates a different phylogenetic position than the classical one (Ronkay et al., 2007).

Protection and conservation

Lignyoptera fumidaria is a species protected by the Habitats Directive Annex II. Being in Annex II this species requires the designation of special areas of conservation. Being so far unknown in Romania, it has not been included on the Lepidoptera Red List, nor on the list of protected species by the national legislation. These aspects must be reviewed and updated. We propose the use of the following vernacular name (in Romanian language): "Cotarul fumuriu de toamnă".

It is possible that the species is present in several Nature 2000 sites in Transylvania, Moldavia and Dobrogea, were suitable habitats exist. As causes of possible populations for this species we mention: burning of dry grassy vegetation in autumn or spring, acacia and pine plantations, expanding of area covered by hedges, grazing in November and December.

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