

# Notes on the distribution and taxonomical status of the enigmatic *Polia cherrug* (Noctuidae) in Dobrogea (south-eastern Romania)

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**Abstract.** A new locality, representing the third known for *Polia cherrug* Rákosity & Wieser, 1997, is reported from northern Dobrogea, south-eastern Romania. The species' habitat, imago and genitalia of both sexes are illustrated. By comparing the distributions of *P. cherrug*, *P. nebulosa* (Hufnagel, 1766) and *Pachetra sagittigera* (Hufnagel, 1766) in Dobrogea, the hypothesis that *P. cherrug* might represent a natural hybrid between the latter two species is discussed.

**Samenvatting.** Gegevens over de verspreiding en taxonomische status van de enigmatische *Polia cherrug* (Noctuidae) in Dobrogea (Zuid-Oost-Roemenië) Een nieuwe vindplaats van *Polia cherrug* Rákosity & Wieser, 1997, de derde voor deze soort, wordt meegedeeld uit Noord-Dobrogea, Zuid-Oost-Roemenië. De biotoop van deze soort, imago's en genitalia van beide sexen worden geïllustreerd. De verspreiding van *P. cherrug*, *P. nebulosa* (Hufnagel, 1766) en *Pachetra sagittigera* (Hufnagel, 1766) in Dobrogea wordt vergeleken, en de mogelijkheid dat *P. cherrug* een natuurlijke hybride is van beide laatst genoemde soorten wordt besproken.

**Résumé.** Notes sur la distribution et le statut taxonomique de l'énigmatique *Polia cherrug* (Noctuidae) dans le Dobrogea, Sud-Est Roumanie Une nouvelle localité, la troisième de l'espèce *Polia cherrug* Rákosity & Wieser, 1997, du Dobrogea septentrional, Sud-Est Roumanie, est rapportée. L'habitat de cette espèce, des imagos et les genitalia des deux sexes sont figurés. Après comparaison des distributions de *P. cherrug*, *P. nebulosa* (Hufnagel, 1766) et *Pachetra sagittigera* (Hufnagel, 1766) dans le Dobrogea, l'hypothèse que *P. cherrug* pourrait représenter un hybride naturel de ces deux espèces, est discutée.

**Rezumat.** Notes sur la distribution et le statut taxonomique de l'énigmatique *Polia cherrug* (Noctuidae) dans le Dobrogea, sud-est Roumanie O nouă localitate, a treia cunoscută pentru *Polia cherrug* Rákosity & Wieser, 1997, este semnalată din nordul Dobrogei (sud-estul României). Habitatul speciei, adulții și armăturile genitale ale ambelor sexe sunt ilustrate. Prin compararea distribuțiilor lui *P. cherrug*, *P. nebulosa* (Hufnagel, 1766) și *Pachetra sagittigera* (Hufnagel, 1766) în Dobrogea, este discutată ipoteza conform căreia *P. cherrug* ar putea reprezenta un hibrid natural între speciile mai sus menționate.

**Key words:** *Polia cherrug* – Romania – Dobrogea – distribution – habitat – hybridization

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## Introduction

Recently described as new to science (Rákosity & Wieser 1997), *Polia cherrug* Rákosity & Wieser, 1997 has one of the most restricted distributions of any European Noctuidae. It has been collected only from the north Dobrogea plateau (Tulcea county), being known from two localities: Greci (Moroianu massif, Măcin Mountains) and the Horia forest (near Atmagea) (Rákosity & Wieser 1997, Rákosity & Wieser 2000) (Fig. 3).

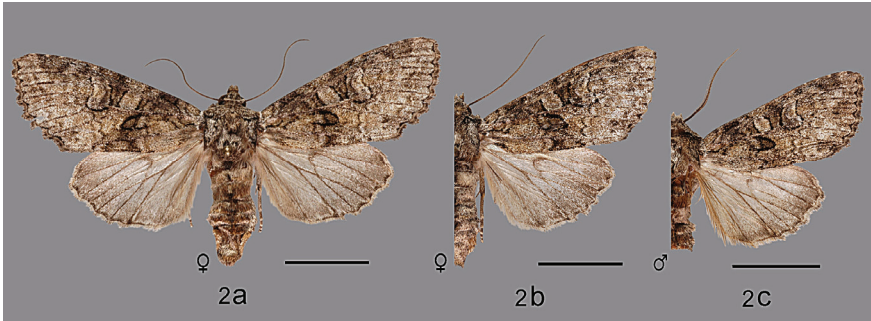


Fig. 1.– Dorsal view of *Polia cherrug*, Romania, ca. 8 km south of Babadag city (Tulcea county), 24.v.2007; a.– female; b.– female; c.– male, genit. prep. 546/♂/Dincă. Scale bar 10 mm. Photo V. Dincă.



Fig. 2.– Collecting site of *Polia cherrug* in Babadag forest, 120 m (4.vi.2008). Photo V. Dincă.

Hacker *et al.* (2002) mentioned that *P. cherrug* was by some authors suspected to represent a natural hybrid between *Polia nebulosa* (Hufnagel, 1766) and *Pachetra sagittigera* (Hufnagel, 1766). As this hypothesis has not yet been tested and proven, the above mentioned authors accepted it as a distinct species, endemic to Dobrogea. Besides its disputed taxonomical status, *P. cherrug* has a very poorly known distribution and biology (Rákossy & Wieser 1997, Rákossy & Wieser 2000, Hacker *et al.* 2002). Improving the knowledge on the biology and distribution of *P. cherrug* is mandatory in order to better understand its evolutionary history and to safeguard its strongholds, given the fact that the species is protected by law in Romania (Rákossy 2006).



Fig. 3.– Map of Dobrogea indicating the currently known distribution of *Polia cherrug*, *P. nebulosa* and *Pachetra sagittigera*. Lower right corner indicates the position of Dobrogea in Romania.

- – previously published records of *P. cherrug*: Greci area (Măcin Mts.) (north) and Horia forest - Atmagea (south) (Rákósy & Wieser 1997)
- ▲ – new locality for *P. cherrug*: ca. 8 km south of Babadag city (Babadag forest)
- – records of *P. nebulosa* in Dobrogea (Rákósy 1996)
- ◆ – record of both *P. nebulosa* and *P. sagittigera* (prior to 1960) (Rákósy 1996)

The dashed line (----) marks the approximate limits of the largest forested area in Dobrogea.

Besides improving the known distribution of *P. cherrug* (by adding the third and southernmost known locality in northern Dobrogea), we provide an overview on the distribution of *P. nebulosa* and *P. sagittigera* in Dobrogea and show that these data are not in favour to the hypothesis of *P. cherrug* being a natural hybrid between the two above mentioned species.

## Material and methods

Specimens of *P. cherrug* were collected during two field trips to northern Dobrogea in late spring 2007 and early summer 2008. The capture method consisted of a 125 W mercury vapour bulb placed in front of a white screen and powered by a portable gasoline generator. The material is preserved in Vlad Dincă's collection. Genitalia were processed as follows: maceration in 10% potassium hydroxide, dissection and cleaning under the stereomicroscope and storage in tubes with glycerine.

## Results and discussion

Material. 1♂, 3♀: Romania: ca. 8 km south of Babadag city (Babadag forest, Tulcea county), 120 m, 24.v.2007 (1♂, 2♀), genit. prep. 546/♂/Dincă; 4.vi.2008 (1♀), genit. prep. 779/♀/Dincă. All specimens leg. & coll. V. Dincă.

*Polia cherrug* (Figs 1a, 1b, 1c) was collected at the southern limit of the Babadag forest, in a sylvo-stepic area consisting of xerophilous meadows and mixed oak deciduous forest on calcareous ground (Fig. 2). The adults (both males and females) were readily attracted to artificial light, usually before midnight. This collecting place currently represents the third known locality for *P. cherrug* while also marking its southern distribution limit. Moreover, given the distance between the two previously reported localities (ca. 25 kilometers) and the position of the new site, the current findings double the total area of distribution for *P. cherrug* (Fig. 3). Although conclusions would be hazardous based on so few data, it currently appears that this species is associated to the largest forested (sylvo-steppe) areas from Dobrogea which extend over the north-western part of the province (Fig. 3).

Despite considerable collecting activity in sylvo-steppe areas from the southern part of Dobrogea, the species was never recorded there (Rákósy & Székely 1996), although the habitats are similar to those from the northern part of the province.

### *Polia cherrug* – a case of hybridization?

The hypothesis that the specimens of *P. cherrug* represent nothing more than a natural hybrid between *P. nebulosa* and *P. sagittigera*, seems little probable for several reasons which we discuss below.

1. In Romania, both *P. nebulosa* and *P. sagittigera* prefer moderately humid areas and are better represented in hilly and low mountain areas. In the south-east of the country they seem to be scarce (Rákósy 1996). In Dobrogea, they were reported very few times and only from the Danube Delta. Moreover, while *P. nebulosa* was recorded relatively recently from the delta, *P. sagittigera* was not mentioned from this area after 1960 (Rákósy 1996), although the Danube Delta has been well studied by lepidopterists since then (see Székely 2006). The distance between the three localities from where *P. cherrug* is known and the

nearest records of *P. nebulosa* and *P. sagittigera* from the Danube Delta (surroundings of Tulcea) is of about 40 kilometers (Fig. 3).

2. Judging by the high number of collected specimens (up to 20–30 / night) (see Rákósy & Wieser 1997), *P. cherrug* seems to be locally abundant. Moreover, both males and females have been collected in good numbers. This is in contrast to the rarity of its potential parents in Dobrogea.

3. On the other hand, admitting that the two above mentioned taxa might hybridize, one would expect to have more such cases in other parts of Romania (and Europe) where they are sympatric and considerably more common than in Dobrogea. Yet, there are no data that could indicate such a phenomenon.

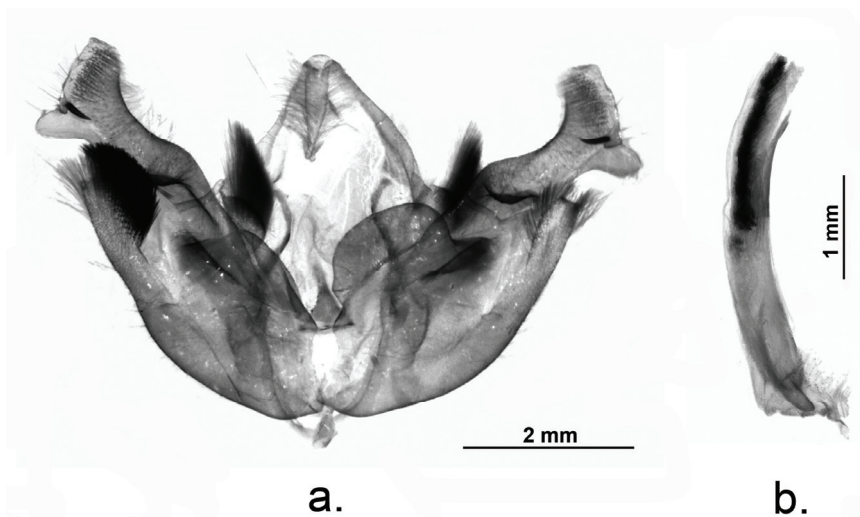


Fig. 4.– Male genitalia of *Polia cherrug*, Romania, ca. 8 km south of Babadag city (Babadag forest), 120 m, 24.v.2007. Genit. prep. 546/♂/Dincă: a.– ventral view, phallus removed; b.– phallus.

4. The male (Figs 4a, 4b) and female genitalia (Figs 5a, 5b) are characteristic and display constant features that allow clear separation from both *P. nebulosa* and *P. sagittigera*. A comparison between *P. cherrug*, *P. nebulosa* and *P. sagittigera* (based on wing morphology and genitalia of both sexes) was done by Rákósy & Wieser (1997) (see also genitalia illustrations from Hacker *et al.* 2002).

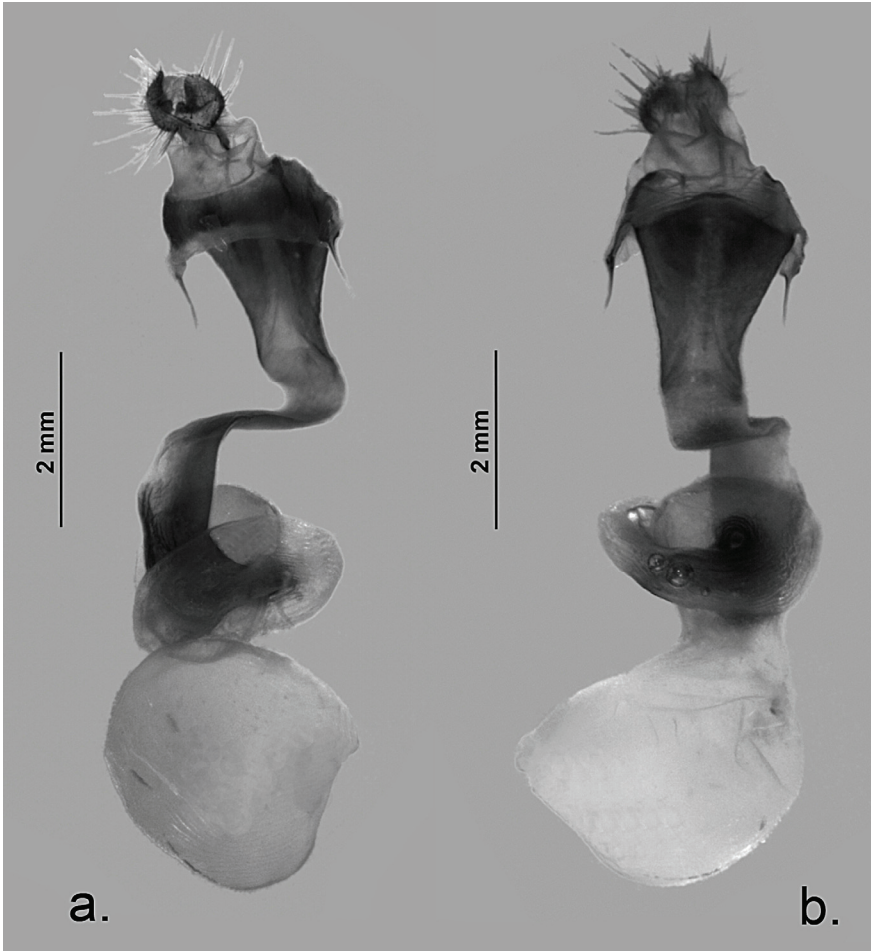


Fig. 5.– Female genitalia of *Polia cherrug*, Romania, ca. 8 km south of Babadag city (Babadag forest), 120 m, 4.vi.2008. Genit. prep. 779/♀/Dincă: **a.**– ventral view; **b.**– dorsal view.

However, although distributional data are not in favour of the hybridization hypothesis, the possibility that *P. cherrug* may actually be a taxon of hybrid origin cannot be discarded. For higher resolution, both hypotheses need to be tested using molecular approaches and cross-breeding experiments. Because such studies are lacking and faunistical and morphological data point towards a differentiated taxon, we share the opinion expressed by Hacker *et al.* (2002) and

consider *P. cherrug* a distinct species which is currently endemic to northern Dobrogea.

### Acknowledgements

I am grateful to Roger Vila and Sylvain Cuvelier for comments on the manuscript.

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