

Description of the pupae of three western Palaearctic noctuids (Lepidoptera: Noctuidae: Heliothinae)

Popis kukel tří druhů západopalearktických můrovitých (Lepidoptera: Noctuidae: Heliothinae)

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Abstract. The pupae of the following three western Palaearctic species of the Noctuidae (subfamily Heliothinae) are described: *Chazaria incarnata* (Freyer, 1828), *Pyrrhia victorina* (Sodoffski, 1849), and *Brithys crini* (Fabricius, 1775). The main morphological characters are illustrated and compared with related noctuid moth species, and the differences are discussed. The systematic status and position of described species in currently used systems is also discussed from the point of view of morphology of their pupae.

INTRODUCTION

This paper continues the work of Patočka (1996) and Patočka & Turčáni (2005). The taxonomic position of some noctuids is still not quite clear and various authors (e.g. Beck 2000, Fibiger & Skule 2007) place the same species in different subfamilies, tribes or genera. Its main aim is to study the external morphology of pupae and apply the results to poorly resolved questions regarding the taxonomy position of species/genera within the Noctuidae. However, it is difficult to propose changes in the currently used system only on the basis of the pupal stage, since species treated here originate from a single zoogeographical region. Other related species from different areas may have different morphological characters.

In the lepidopteran pupa, the external morphology is not covered by hairs and/or scales, and it is thus relatively easy to find many characters which may be used for identification but also to propose hypotheses on phylogenetic relationships (Patočka & Turčáni 2005). Here we describe the pupal morphology of species which have not been described in previous papers, or which were described incompletely, usually due to the lack of material.

MATERIAL AND METHODS

The pupae were loaned from the following institutions: National Museum of Natural History in Leiden (Naturalis, the Netherlands), the Zoological Museum in Amsterdam (ZMA, the Netherlands), and the Zoologisches Museum der Alex. von Humboldt Universität Berlin (ZMAHUB, Germany). Additional material comes from the Hungarian Natural History Museum Budapest (HNHM, Hungary) and the collection of the senior author. The methodology used is the same as in Patočka (1996) and Patočka & Turčáni (2005). Examined pupae originating from museums were usually pinned on extra pins without collecting data and we were only able to identify country of origin from adults in the same series.