

Eupithecia oxycedrata (Rambur, 1833) (Lepidoptera: Geometridae): a new species for the fauna of Hungary

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Abstract. First records of *Eupithecia oxycedrata* from Hungary are presented. This species can usually be distinguished from similar species by the elongated forewing and parallel transverse lines; the row of large spines in the female genitalia provides unambiguous identification. Accidental introduction with host plant is considered to be the most probable explanation of this occurrence, far from its Mediterranean area. The hereby presented records are the northernmost occurrence of the species. With eight figures.

Keywords. Carpathian Basin, Gábor Rác, László Diószeghy, *Juniperus*, Zemplén Mountains, new record.

INTRODUCTION

The Hungarian Natural History Museum (HNHM) obtained several private collections of amateur lepidopterists since its foundation. One of these accessions is the collection of Gábor Rác, of which some families e.g. Geometridae, are still not incorporated to the main collection. He collected 572 specimens of *Eupithecia*, mostly around Telkibánya (Zemplén Mountains, Hungary) and later at his cottage in Bakonykúti (Bakony Mountains, Hungary) but as the material testifies, he also exchanged specimens with Edmond de Laever (Liège, Belgium), who prepared various studies on the genus *Eupithecia* (e.g. de Laever 1960).

The genus *Eupithecia* Curtis, 1825 is one of the most species-rich genera in the order Lepidoptera, comprising more than 1300 species worldwide, 128 species in Europe (Mironov, 2003) and 68 species in Hungary (Pastoralis *et al.* 2016).

The *Eupithecia* curatorial work of the Rác collection is in progress, and will contribute new

data to the project cataloguing all the *Eupithecia* specimens collected in the Carpathian Basin and housed in the HNHM. This is why it was a great surprise that among the geometrid moths of Gábor Rác I found five specimens with unusual pattern I could not assign to any species known from Hungary. Subsequently, I was able to identify these specimens as *Eupithecia oxycedrata*, which is a Mediterranean species occurring from southern Portugal to the northeastern corner of Turkey mainly along seashores; its northernmost records are from Provence (France), Retezat Mountains (Romania: Diószeghy 1929–1930) and Crimea. Its primary host plant is *Juniperus oxycedrus* L.; a Mediterranean gymnosperm of macchia scrubland and also wet montane forest, from sea-level to 2200 m (Farjon 2013).

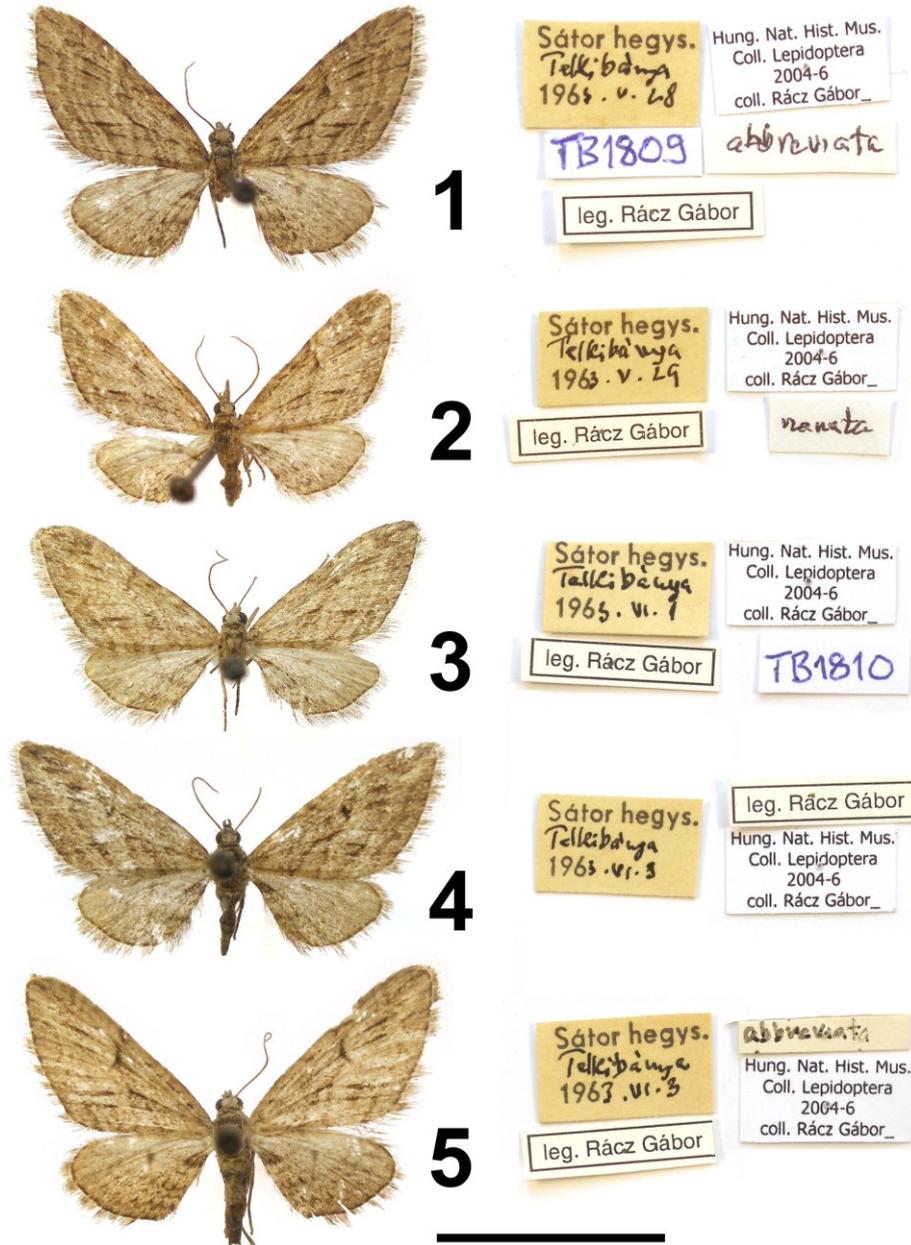
Hereby I report and discuss these data of *Eu. oxycedrata* originating from Hungary.

MATERIAL AND METHODS

To facilitate identification two specimens were dissected via the conventional method *i.e.* macerated in KOH, stained with eosine and mounted

in Euparal to provide permanent microscopic slides. The moths were photographed with Olympus B 101 camera, the slides with Olympus DP70 photographic microscope. Images were processed and figures were made with the program Adobe Photoshop CS2.

Material examined. "Sátor-hg., Telkibánya, leg. Rácz Gábor": 1 ♀: 28.V.1963; slide No. TB1809f (Figs. 1, 6), 1 ♀: 29.V.1963 (Fig. 2), 1 ♀: 1.VI.1963; slide No. TB1810f (Figs. 3, 7), 2 ♀: 3.VI.1963 (Figs. 4, 5). All specimens are deposited in HNHM.

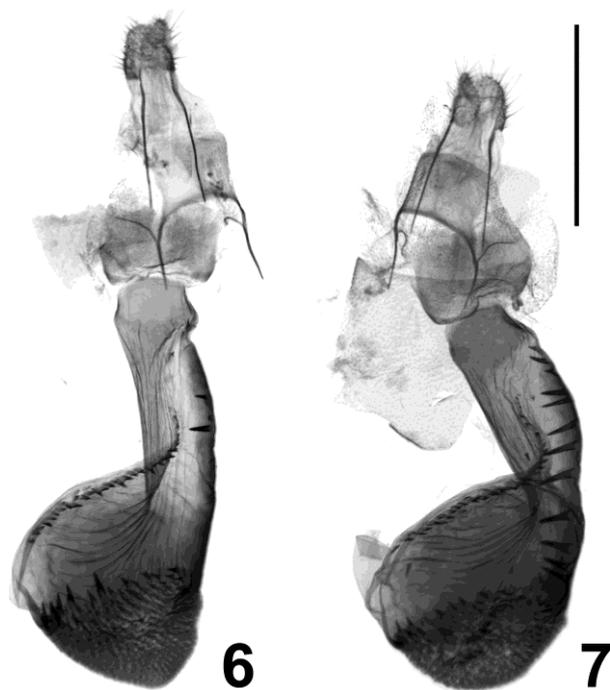


Figures 1–5. Adults in dorsal view, and corresponding labels of *Eupithecia oxycedrata* collected in Hungary. Scale bar: 10 mm.

RESULTS

External morphology of the specimens (Figs. 1–5) is characterised by the elongated forewing, the relatively uniform ground colour, the more-or-less parallel transverse lines and the black longitudinal streaks near vein Cu2 as well as on veins M1 and M2. In the female genitalia (Figs. 6, 7) the most characteristic trait is the presence of large and strong spines on the left side of ductus bursae. Specimen TB1809f has only two spines, while the other dissected specimen (TB1810f) has the complete row of spines.

There are three closely related, similar species known to occur in Central Europe: *Eupithecia oxycedrata*, *Eupithecia pusillata* ([Denis & Schiffermüller], 1775) and *Eupithecia ericeata* (Rambur, 1833). This group is characterised by the more-or-less elongated shape of forewing, the acutely angled antemedial line with a long and straight section below cell and the straight medial line, which is less slanted than the antemedial.



Figures 6–7. Female genitalia of *Eupithecia oxycedrata* in ventral view, collected in Hungary. Fig. 6 = Sátor-hg., Telkibánya, 1963.V.28, leg. Rácz Gábor; slide No. TB1809f (coll. HNHM), fig. 7 = Sátor-hg., Telkibánya, 1963.VI.1, leg. Rácz Gábor; slide No. TB1810f (coll. HNHM). Scale bar: 1 mm.

Difference between *Eu. oxycedrata* and *Eu. pusillata* is the shape of postmedial line: it meets the dorsum at obtuse angle in *Eu. oxycedrata* while at nearly right angle in *Eu. pusillata*. In addition, *Eu. pusillata* lacks the conspicuous black streaks at vein Cu2 which are present in *Eu. oxycedrata*.

Compared to *Eu. ericeata*, the ground colour of *Eu. oxycedrata* is more uniform than that of *Eu. ericeata*. The apical area of *Eu. oxycedrata* is usually uniform, and the colour of the area bordered by the medial line, vein M3, postmedial line and vein Cu2, is like the ground colour of the forewing. On the contrary, the apical area of *Eu. ericeata* is usually divided to a dark dorsal and a light ventral part, and the above-mentioned medial field is usually lighter than the ground colour, especially in males. The transverse lines of *Eu. oxycedrata* appear to be more parallel with each other than in *Eu. ericeata* because the medial line is usually less prominent in the former species than in the latter taxon.

Eupithecia oxycedrata can be distinguished from the two other species by its more elongated forewing shape. Nevertheless, specimens difficult to identify do exist, in these cases only genital dissection can provide positive identification.

In the male genitalia the apex of sternum A8 of *Eu. oxycedrata* is less deeply bifurcated than that of either *Eu. pusillata* or *Eu. ericeata*, and the valval sacculus in *Eu. oxycedrata* does not have any extension while in both other species there is a spine-like saccular terminal process. In the female genitalia of *Eu. oxycedrata* the best character is the presence of large and strong spines on the left side of ductus bursae in ventral aspect which are either completely absent (*Eu. ericeata*) or reduced in length (*Eu. ericeata*, *Eu. pusillata*) in the closely related species.

DISCUSSION

Identity. I identify the specimens as *Eu. oxycedrata* because all features are unanimously characteristic to this species. This is the first record of

this taxon from Hungary, thus the number of *Eupithecia* species collected in Hungary raises to 69.

Collecting site. Gábor Rácz collected these specimens at light in a *Pinus sylvestris* L. plantation near the tourists' hostel of Telkibánya, ca. 290 m a.s.l, in Zemplén Mountains. This building was later demolished and replaced by a larger construction (Gábor Rácz, pers. comm.), currently known as "Ezüstfenyő Hotel". The occurrence of *Eu. oxycedrata* in Zemplén Mountains is highly unexpected because this area is completely different from all habitats known for this species in the Mediterranean region. In addition, the primary host plant *Juniperus oxycedrus* is not known to occur in Hungary. On the other hand, the fact that a small series of specimens was caught within a week, together with other *Eupithecia* individuals representing different species, reduces the possibility of mislabelling.

Although the use of *J. oxycedrus* as ornamental shrub is not typical in Hungary (Zoltán Barina, pers. comm.), I think the most plausible explanation of the occurrence of *Eu. oxycedrata* is still the introduction of its premature stages with host plant. This theory is perhaps supported by the fact that before World War II the aforementioned building was used as a hunting mansion, maybe with exotic plants in its garden.

Data from Central Europe. In the Carpathian Basin only one record of *Eu. oxycedrata* was so far known: László Diószeghy collected one specimen in Retezat Mountains, near Lenșițu, at 1200 m a.s.l (Diószeghy 1929–1930). Unfortunately the voucher specimen cannot be found in the Diószeghy Collection at the Museum of Covasna county, Romania (Căpușe & Kovács 1987) and I was not able to locate it in the collection of HNHM despite the presence of several *Eupithecia* specimens collected by Diószeghy in the Retezat Mountains or in other localities. Mironov (2003) illustrated this record in the distributional map of this species, notwithstanding the lack of the voucher. Maybe it is worth to note that this old record

from Retezat Mountains seems to be at least as mysterious as the new data from Telkibánya.

The record from Zemplén Mountains is by far the most northern occurrence of the species and the only one known in the Pannonian region of the Carpathian Basin (Fig. 8).



Figure 8. Distribution of *Eupithecia oxycedrata* in Europe. Light grey area: continuous range after Mironov (2003); black square: Zemplén Mountains, Telkibánya, 1963.V.28–VI.3., leg. Gábor Rácz; open dot: Retezat Mountains, Lenșițu, 26.V.[year unknown, before 1930], leg. László Diószeghy.

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