

***Monochroa tekovella* Kosorín, sp. n. from Slovakia (Lepidoptera: Gelechioidea, Gelechiidae, Anomologini)**

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Citation. Kosorin F. 2020: *Monochroa tekovella* Kosorin, sp. n. from Slovakia (Lepidoptera: Gelechioidea, Gelechiidae, Anomologini) . – e-Acta Naturalia Pannonica 20: 61–67. <https://doi.org/10.24369/eANP.2020.20.61>

Abstract. *Monochroa tekovella* sp. n., a new species in the family *Gelechiidae*, whose description has been delayed for a long time because of its great similarity to several species of the genus *Monochroa* (Heinemann, 1870) and due to the long absence of other specimens and lack of a female individual. The distinction is also supported by DNA barcode. After capturing specimens from Slovakia 22 years since the first finding in Moravia, it is necessary to publish this species as a new taxon, although the female sex is still unknown. In this work a description and photographs of genitalia preparations of a new species are provided. Brief comparison with related species and photographs of their genitalia preparations. Also, a photograph of a live and prepared specimen of the new species.

Keywords. Lepidoptera, Gelechiidae, *Monochroa tekovella* sp. nov., *Monochroa elongella*, *Monochroa lutulentella*, *Monochroa inflexella*, *Monochroa sperata*, new species, Slovakia.

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Introduction

The aim of this work is to contribute to the dissemination of knowledge about this extensive group and demanding genus, which would deserve a detailed review in the future. The description of the new taxon is based on a thorough examination and comparison of the genitalia structures of other specimens available in the author's collection. The paper briefly discusses the differences to the other four related species namely: *Monochroa elongella* (Heinemann, 1870), *M. lutulentella* (Zeller, 1839), *M. inflexella* Svensson, 1992 and the recently described alpine endemic species, *M. sperata* Huemer & Karsholt, 2010.

The first specimen of *Monochroa tekovella* sp. n., was recorded at the end of the last century in the Czech Republic, (South Moravia) with a single, recently unconfirmed specimen, which is mentioned as *Monochroa* sp. 4, Gelechiidae Mitteleuropas (Elsner et al. 1999). In this work, a brief sketch of the male genitalia is also provided, without further description of the species. In 2018 and 2019, 4 more specimens of this new species were caught in southwestern Slovakia (Hronská Pahorkatina). Moths came to light in the garden of the author's family house, in Hronské Kľačany. Just before the publication of this work, the author became aware of another 25 specimens that were caught in Bulgaria (near the Ropotamo Nature Reserve). These findings were subsequently included in the paper.

Methods

Morphological examination: all genitalia preparations were made by F. Kosorín and all photographs were taken by him, if not otherwise specified.

Archives: https://epa.oszk.hu/e-Acta_Naturalia_Pannonica

Photographic documentation: genitalia photographs were taken with a microscope (Meopta) using a 6x lens without ocular, with a Canon EOS 450 without lens. The photographs of the imago were taken using a Canon Macro Lens EF 100mm 1: 2.8 USM. All photographs were edited using the software Zoner 10.

Abbreviations. DEEUR–“Depressariinae of Europe”, prefix for specimen-number of Depressariinae studied by Peter Buchner. TLMF–Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria

Taxonomic part

Monochroa tekovella sp. n. (Figs. 1–5)

Holotype: Slovakia, 1 ♂, Hronská Nivá, Hronské Kláčany, 18°33'59"E, 48°14'08"N, 162 m, 14.6.2019, DEEUR 2294-19 with DNA barcode sample id TLMF Lep 26194 (658bp[0n]) leg. F. Kosorin, genitalia slide FK/4241, coll. F. Kosorin.

Paratypes: Slovakia, 1 ♂, ditto, but 3.6.2018, DEEUR 2293-19 with DNA barcode sample id TLMF Lep 26193 (658bp[0n]) leg. F. Kosorin, genitalia slide FK/4156, coll. F. Kosorin, 2 ♂, ditto, but 11.6.2019, DEEUR 2295-19 and 2296-19 with DNA barcode sample id TLMF Lep 26195 and 26196 (658bp[0n]) leg. F. Kosorin, genitalia slide FK/4242 and FK/4243, coll. F. Kosorin. Czechia, 1 ♂, south-west Moravia, Znojmo-Prímětice, 18°2'07"E, 48°53'2"N, 325 m, 4.7.1996 leg. V. Elsner, genitalia slide GE/765, coll. G. Elsner. Bulgaria, 15 ♂, Burgas 40 km SE, 42.333, 27.724, 10m, Ropotamo 16-20.VI.2001, LEGEL042-18, one in with DNA barcode sample id TLMF Lep 25018 (646bp[0n]), genitalia slides GP02022001 and GP02021604 leg. & coll. J. Junnilainen; 2 ♂, ditto, but 26-27.VI.2001 and 3 ♂, ditto, but 05-07.VI.2002, genitalia slide 7117/2015, leg. & coll. Bo Wikström, 5 ♂, ditto, but 5-7.VI.2002, leg. & coll. J-P. Kaitila.

Description. Adult (Figs. 1, 2). *Monochroa tekovella* sp. n. is one of the relatively large European species of the genus *Monochroa*. Labial palps consist of three segments. The second segment is thicker, and its surface is grey-black haired, the third segment is thinner and black coloured. The legs are grey-black, covered with pale hairs. Head, chest and tegulae are black coloured, covered with large, strikingly metallic shiny scales. The antennae are grey-black, with three to four whitish links in the distal half. These paler antennal segments are irregularly spaced apart. The tip of the antenna is white. The forewings are uniformly black-grey, with a faint black discal spot, which is only visible in fresh individuals. On the costa and dorsum, near the apex, similar to *M. elongella*, there are several bright, indistinct opposite spots. The costa is slightly convex. The length of the forewings is 6-7 mm, wingspan 14-15 mm. The hindwings are grey-black, paler than the forewings. Because of the shape and colouring of the whitish-marked antennae and the structure of the male genitalia, this species belongs to the *Monochroa lutulentella* group (Benander, 1945). In the description of *M. inflexella*, antennal colouring has also been described, wherein the antennal tip is white and the 9th, 17th, 25th and sometimes the 23rd segment whitish coloured (Svensson 1992). The same whitish marking, even the same antennal segments, is also visible in the species *Monochroa tekovella* sp. n. (Figs. 1, 2).

Male genitalia. (Figs. 3–5) Gnathos is missing. Valva is heavily sclerotized, the dorsal side is slightly convex and wavy, with two to three sharp protrusions at the top but which are not always clearly visible under the microscope, especially when the specimen is loaded with a coverslip. The ventral side of the valva is almost straight to convex (Figs. 4, 5). The hairy sacculus is of medium length, is smooth and slightly concave from the ventral side, slightly convex on the dorsal side and towards the top with distinct protrusions from which long hairs protrude. The apex of the sacculus is markedly angular at the end (Figs. 4, 5). Aedeagus is robust, the proximal part is visibly

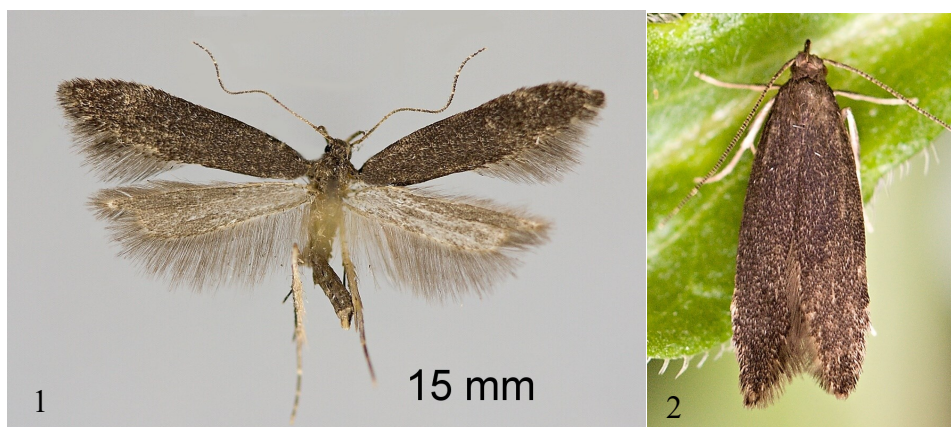


Fig. 1. *Monochroa tekovella* sp. n., holotype male, Slovakia, Hronské Kľačany, 14.06.2019

Fig. 2. *Monochroa tekovella* sp. n., live adult, holotype male, Slovakia, Hronské Kľačany, 14.06.2019

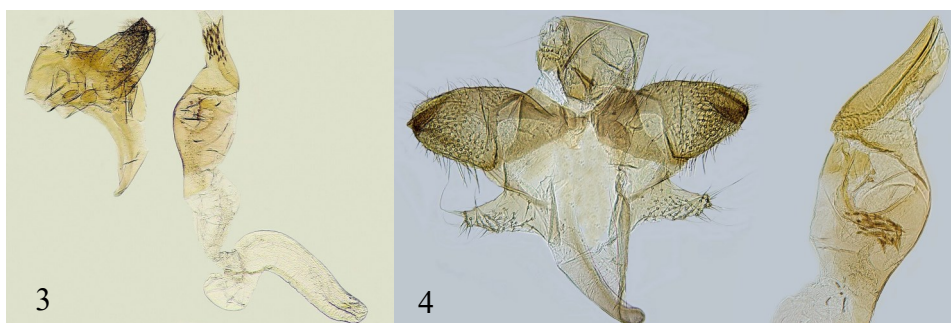


Fig. 3. *Monochroa tekovella* sp. n., paratype, male genitalia, lateral view, genitalia slide, FK/4156

Fig. 4. *Monochroa tekovella* sp. n., holotype, male genitalia, genitalia slide FK/4241



Fig. 5. *Monochroa tekovella* sp. n., paratype, male genitalia, Czechia, Znojmo-Prímětice, 4.7.1996, genitalia slide GE/765, photo Gustav Elsner, leg. Vladimír Elsner.

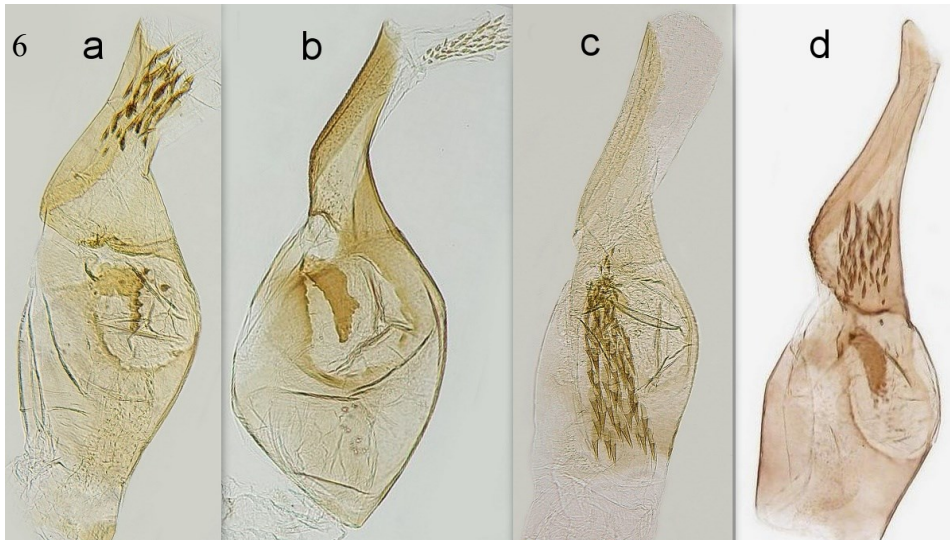


Fig. 6. *Monochroa* sp., aedeagus, **a**= *M. tekovella* sp. n., **b**= *M. elongella*, genitalia slide and photo Peter Buchner, **c**=*M. inflexella*, **d**= *M. lutulentella*, genitalia slide and photo Patrick Clement.

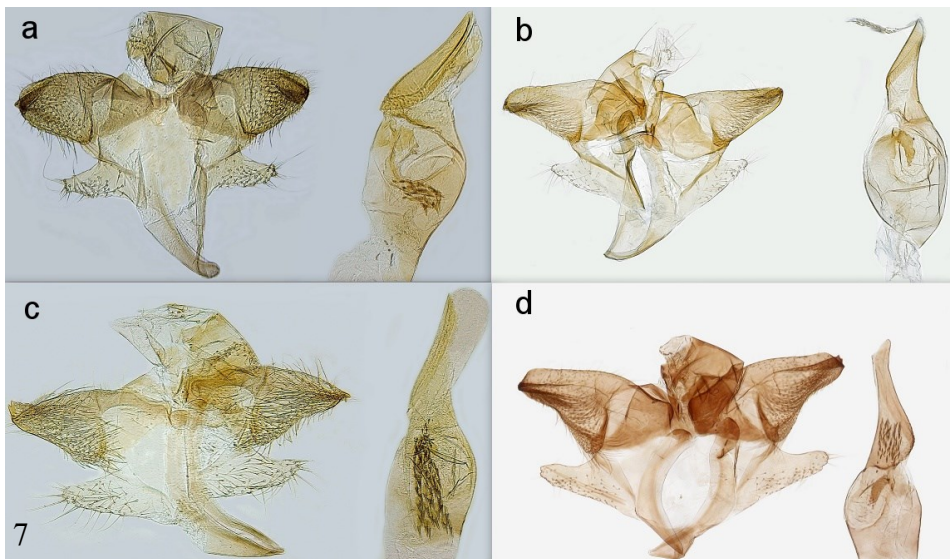


Fig. 7. *Monochroa* sp., male genitalia, **a**= *M. tekovella* sp. n., **b**= *M. elongella*, genitalia slide and photo Peter Hall, **c**= *M. inflexella*, **d**= *M. lutulentella*, genitalia slide and photo Patrick Clement.

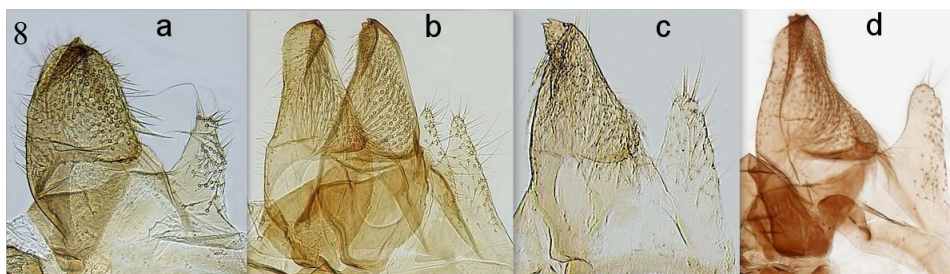


Fig. 8. *Monochroa* sp. detail of valva and sacculus, **a**= *M. tekovella* sp. n., **b**= *M. elongella*, genitalia slide and photo Peter Buchner, **c**= *M. inflexella*, **d**=*M. lutulentella*, genitalia slide and photo Patrick Clement.

longer compared to the distal part, broadly enlarged from the ventral side, almost straight from the dorsal side. The shorter distal part is slightly concave, obliquely bevelled from the ventral side and terminated into a sharp point. In the vesica there is an irregular, sclerotized plate with 25 to 30 large, sharp spines. They all are approximately the same length (Figs. 3 - 5).

Female genitalia. Unknown.

Genetic data. 5 specimens have been sequenced, here only mentioned with DEEUR-number and sample ID. Details concerning collecting place and sequence quality are found in the type list (paragraph "Material"). Further data are accessible via the public dataset.

http://www.boldsystems.org/index.php/MAS_Management_DataConsole?codes=DS-TEKOVELL. DEEUR 2293-19: TLMF Lep 26193 | DEEUR 2294-19: TLMF Lep 26194 | DEEUR 2295-19: TLMF Lep 26195 | DEEUR 2296-19: TLMF Lep 26196 LEGEL042-18: TLMF Lep 25018.

Distribution. So far, it is only known from southwestern Slovakia (Hronské Kľačany), from the southern part of Moravia (Znojmo-Přímětice) and Bulgaria (Ropotamo-near the nature reserve).

Habitat and Foodplants. Samples from Slovakia and Moravia came to light in the gardens of family houses, in the middle of urban residential districts in the villages of Hronské Kľačany and Přímětice, so no specific habitat requirements can be derived. It is worth mentioning however, that in the past there was a lot of marshy habitats with hydrophilic plants in the village of Hronské Kľačany. In Slovakia the adult appears in the first half of June, whereas the only specimen from Moravia was recorded in early July. All 25 specimens from Bulgaria also came to a light source in the Ropotamo near the nature reserve, but this environment is very exceptional both in Bulgaria and in Europe. The habitats where the moths of this new species have been collected are coastal swamps where hydrophilic plants and woody plants dominate. The moths that were recorded in this habitat during 3 visits over two years, fly from June 5. to 27. 2001 and 2002. Neither the foodplants nor the early stages of this species are known.

Etymology. The generic name is derived from the name of the area (Tekov), where most type material comes from Slovakia.

Remarks. All 30 specimens that arrived at light sources are male. At the three known sites, no female was captured, which could not be accidental with such a number of specimens and sites. The question arises as to what the cause is of such an imbalance, perhaps the inability to fly (reduced wings, or the winglessness of females)?

In contrast, in the related species of *M. lutulentella* and *M. inflexella*, the author routinely reports females coming to light. A 160 W mixed lamp was used.

Discussion. *Monochroa tekovella* sp. n. is closely related to the *M. inflexella* species according to the external appearance and shape of the male genitalia structure. The main differences lie in the shape of the costa of the forewings and their length. *M. inflexella* has, on average, a smaller wingspan, 9–14 mm, and the costa is clearly concave, due to long cilia before the apex. Labial palps are uniformly black. *M. tekovella* sp. n. has a convex costa and the second segment of the labial palps is visibly paler. The genitalia show differences mainly in the form of the valvae, which in *M. inflexella* is thinner and sharply terminated at the tip. The dorsal rim of the valva is concave, unlike *M. tekovella* sp. n., where the dorsal rim of the valva is convex. The distal part of the aedeagus is much longer and thinner than that of *M. tekovella* sp. n. The number of cornuti is greater in *M. inflexella*, with up to about 50 thorns (Figs. 6-8).

When compared with *M. lutulentella*, it is much darker with uniform black legs whilst *M. tekovella* sp. n. has legs with pale hairs. Labial palps are whitish on the third segment, second segment is black and half thicker than *M. tekovella* sp. n. In addition, the almost straight costa of the forewings and much thinner black scales on the head, chest and tegulae compared to *M. tekovella* sp. n. The shape of *M. lutulentella*'s valva is also different, where the dorsal rim is strongly concave and gives a much slimmer overall impression. Aedeagus also shows a different shape. In the distal part, both edges are visibly concave up to the coarse part thereof. The distal part of the aedeagus is longer and thinner than that of *M. tekovella* sp. n. and the following ventral side bulge is most prominent in *M. lutulentella*, of all compared species. The thorns in the vesica are one third smaller than those of *M. tekovella* sp. n. The distal and proximal parts of aedeagus are approximately equally long in *M. lutulentella*. Sacculus is blunt and rounded and is much wider at the top than in *M. elongella*, but is not angular as in *M. tekovella* sp. n. (Figs. 6-8). The third species to compare with is *M. elongella*. The second part of the labial palpus in this species is black, terminated by striking pale yellow hair, the thinner third segment is first black and pale coloured at the end. The differences in the genitalia are mainly in the form of the valva and aedeagus. The edges of the valva for *M. tekovella* sp. n. are on both sides convex, in *M. elongella* the edges are straight, sometimes even slightly concave. Sacculus is in *M. tekovella* sp. n. bluntly terminated and densely serrated, in *M. elongella* sacculus has a triangular shape terminated in the tip and both its edges are smooth. The proximal part of the onion-shaped aedeagus is also wider and its distal part is much narrower than in the newly described species. Another noticeable difference is in the size of the thorns found in *M. tekovella* sp. n. approximately 3 times larger and longer than *M. elongella*. In the middle of the aedeagus *M. tekovella* sp. n. there is a strongly sclerotized deposit of characteristic shape which is different from a similar deposit known in *M. elongella* (figs. 6-8). Finally, it is necessary to mention the differences from the species *M. sperata*, which lives only in a small area in the Italian and French parts of the Alps, in positions above 2000 m. Overall, this species is smaller than *M. tekovella* sp. n. and has yellow-coloured labial palps. The costa of the forewings is straight. The details of the genitalia are also different, with the valva being the slimmest of all species compared and with 40-50 cornuti (Huemer, & Karsholt, 2010). Aedeagus is very similar to *M. inflexella*. *M. sperata* has a visibly longer and thinner distal portion of the aedeagus than *M. tekovella* sp. n., with a greater number of cornuti in the vesica.

Acknowledgement. We would like to thank Gustav Elsner (Czechia) in particular for his help in identifying a new species and for providing photographs of genitalia preparations for comparison and for providing reference data of a single specimen from Moravia and Jari Junnilainen and Jari-Pekka Kaitila (Finland) for providing specimen occurrence data from Bulgaria. I would also like to thank Peter Hall and Patrick Clement (England) for providing photographs of genitalia preparations of related species and for checking the English text and Peter Buchner (Austria), for providing photographs of genitalia preparations of related species and for assisting in obtaining DNA analysis data.

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