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Coleophora texanella Chambers, 1878, a new alien species in Hungary (Lepidoptera: Coleophoridae)

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Abstract – *Coleophora texanella* Chambers, 1878 (Lepidoptera: Coleophoridae), endemic to the Nearctic Region, is reported from Hungary for the first time. Adult habitus, genitalia and larval case are illustrated.

Key words – Microlepidoptera, new records, adventive species, faunistics, Nearctic Region, *Portulaca oleracea*

INTRODUCTION

Coleophora texanella Chambers, 1878 (Lepidoptera: Coleophoridae) was described from the USA, Texas (Chambers 1878). It was introduced to the Mediterranean area of Europe, probably in the 2000s. It was firstly reported 17 years ago from Sicily (Baldizzone & van der Wolf 2007), described as *Coleophora coxi* Baldizzone et van der Wolf, 2007 (type locality: Sicily, Catania, Fondachello); however, Landry *et al.* (2013) showed that *Coleophora coxi* is a junior synonym of *Coleophora texanella*. Its further junior synonyms are all from the Nearctic region: *Coleophora vagans* Walsingham, 1907 (type locality: USA, New York City) (Landry *et al.* 2013) and *Coleophora portulacae* Cockerell, 1898 (type locality: USA, New Mexico) (Pohl & Nanz 2023). This is the only known species of *Coleophora* Hübner, 1822 which is specialised to purslane (*Portulaca oleracea* L., Portulacaceae).

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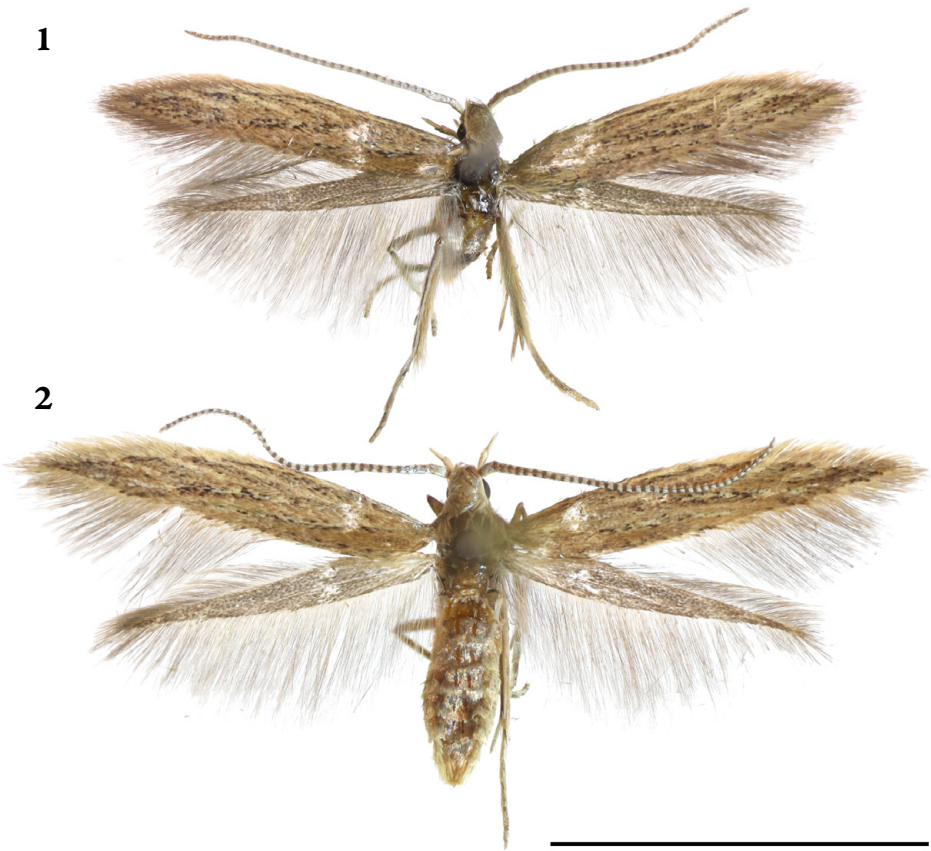
The aim of this paper is to present the first Hungarian records of *Coleophora texanella* and report some details to its bionomy. Together with this species, 215 species of Coleophoridae have been known from Hungary (Takács & Kőszegi 2024, present study).

RESULTS

Coleophora texanella Chambers, 1878
(Figs 1–5, 7–10)



Figs 1–2. Adult voucher specimens of *Coleophora texanella* Chambers, 1878 from Hungary, 1 = male, Budapest, 21st district, 7.VIII.2024, slide No. TB2373m, 2 = female, same locality, 6.VIII.2024. Scale bar = 5 mm (photos by Balázs Tóth)

Material examined – Hungary: one female, Budapest, 21st district, Csepel-Királyerdő, corner of Hollandi and Matróz streets, at light, 160 W HMLI, 10.V.2024, leg. Balázs Tóth, slide No. TB2364f, id. no. HNHM-LEP-12151; one female, same locality and collector, 25.VII.2024; two males, same locality and collector, 26.VII.2024; one male, same locality and collector, 4.VIII.2024, slide No. TB2380m; two females, same locality and collector, 6.VIII.2024; three males, two females, same locality and collector, 7.VIII.2024, slide Nos TB2373m, TB2374m; one male, one female, same locality and collector, 8.VIII.2024; three males, four females, same locality and collector, 10.VIII.2024; one male, two females, same locality and collector, 11.VIII.2024; two males, same locality and collector, 14.VIII.2024; one male, same locality and collector, 16.VIII.2024; two males, one female, same locality and collector, 19.VIII.2024; four males, four females, same locality and collector, 26.VIII.2024; three males, two females, same locality and collector, 28.VIII.2024; three males, three females, same locality and collector, 29.VIII.2024; two males, four females, same locality and collector, 30.VIII.2024; five males, one female, same locality and collector, 31.VIII.2024; eight males, six females (including one copula), same locality and collector, 1.IX.2024; one male, three females, same locality and collector, 2.IX.2024; three males, four females, same locality and collector, 3.IX.2024; one male, four females, same locality and collector, 4.IX.2024; four males, three females, same locality and collector, 5.IX.2024; four males, two females, same locality and collector, 6.IX.2024; three males, three females, same locality and collector, 7.IX.2024; two males, two females, same locality and collector, 8.IX.2024; one male, same locality and collector, 11.IX.2024; twenty-four cases, Budapest, 21st district, bus stop "Csepel, Soroksári rév" 47.3984°N, 19.1058°E (Fig. 6), 7.IX.2024, leg. Balázs Tóth, one male and five females emerged on 21.IX.2024, two males and five females emerged on 24.IX.2024; one case, Budapest, 21st district, sledding hill at the end of Hollandi street, 47.3880°N, 19.1039°E, 12.IX.2024, leg. Balázs Tóth; one male, Budapest, 23rd district, Soroksár, Rétek dűlő, 47.3716°N, 19.1709°E, 160W HMLI, 4.VIII.2024, leg. Benedek Jandó, Zsigmond Nyáry, Márton Bauer, Zoltán Lánczy, Balázs Tóth, slide No. TB2379m; one female, Pest County, Érd, Nőszirom street 16, 47.3961°N, 18.9420°E, compact tube and UV-LED, 13.VIII.2024, leg. Orsolya Dombi, slide No. TB2383f, id. no. HNHM-LEP-12384; one female, same locality and collector, 18.VIII.2024; three males and one female, same locality and collector, 8.IX.2024; eight cases, same locality and collector, 10.IX.2024, one male emerged on 28.IX.2024 (three cases are deposited in Attila Takács's private collection, three males emerged on 17.IX.2024, 20.IX.2024 and 23.IX.2024); three cases, Érd, highway No. 7 at Nőszirom street, 47.3963°N, 18.9407°E, 10.IX.2024, leg. Orsolya Dombi, one male emerged on 24.IX.2024; three cases, Érd, Porcsinrózsa street, 47.396°N, 18.945°E, 10.IX.2024, leg. Orsolya Dombi; one case, Pest County, Diósd, Nádas street at Sulák stream, 47.3978°N, 18.9479°E, 10.IX.2024, leg. Orsolya Dombi; three cases, Pest County, Szigetszentmiklós, Üdülő sor 266, edge of arable land, 47.3852°N,

19.1001°E, 12.IX.2024, leg. Balázs Tóth; three cases, Szigetszentmiklós, edge of gallery forest, 47.3787°N, 19.0949°E, 12.IX.2024, leg. Balázs Tóth. Altogether 117 adults and 46 cases were collected; all specimens are deposited in the Hungarian National Museum Public Collections Centre – Hungarian Natural History Museum (HNHM), Budapest, unless stated otherwise.

Remarks – First record for Hungary. Most adults were collected in a garden in a suburban area of Csepel (Budapest, 21st district), ca. 70 m from the Ráckeve-Soroksár branch of the Danube. They arrived to a white sheet illuminated by artificial mixed light. It is worth noting that several insect species were recorded for the first time in Hungary from this garden (Tóth *et al.* 2010, Szabóky 2023, Orosz *et al.* 2024, Szőke 2024) which can be explained by the intensive collecting activity performed by the first author. Many cases were found ca. 200 m from this garden, in a bus stop with some individuals of the host plant (Fig. 6). One specimen was found in a wet meadow, a habitat of *Maculinea teleius* (Bergsträsser, 1779) (Lepidoptera: Lycaenidae). The two adults and the cases from Érd were collected in similar suburban area to the locality in Csepel. Cases were found in Szigetszentmiklós, in rural environment. Most probably this species is much more frequent and widespread in Hungary than our results suggest as its host plant is very abundant in the country. According to Giorgio Baldizzone (personal communication) *Coleophora texanella* has become one the most frequent species of the genus in Italy.

Distribution – The species is indigenous to the USA and has also been found in Bulgaria, Canary Islands, Corsica, Crete, Croatia, Cyprus, France (mainland), Greece (mainland), Hungary, Italy (mainland), Morocco, North Macedonia, Russia, Spain (mainland), Sicily, and Switzerland (Rennwald & Rodeland 2023, present study).

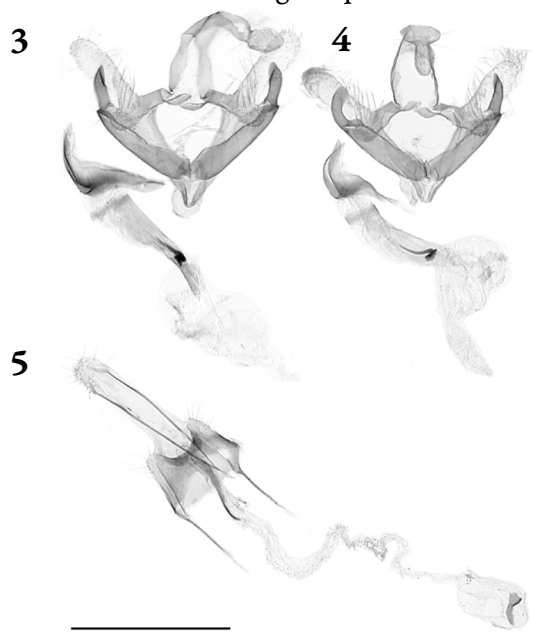
Bionomy – The larva feeds on the seeds of *Portulaca oleracea*. It attaches its case to the seed capsule. An opening on the capsule is the sign of seeds being consumed. We found maximum four cases per plant, not more than one case on each branch. Young (Figs 7–8) and fully grown cases (Figs 9–10) were present simultaneously in early September, even on the same plant. We searched cases also on *Portulaca grandiflora* Hook., a popular ornamental plant, but did not find any. The fully grown larva attaches its case to a solid surface (stem) for pupation. We observed cases of L5 stage on nearby plants and on soil in early September, perhaps due to a heavy rain or search for a suitable pupation site. The first generation flies from May to June when the first flowers occur on the host plant. The second generation flies from September to October according to Baldizzone & van der Wolf (2007); however, adults of the second generation have been observed in Budapest since late July.

The native range of *Portulaca oleracea* is uncertain. The POWO (2024) website restricts it to the tropical and subtropical zones of the Western Palaearctic and Afrotropical Regions. Matthews *et al.* (1993), however, summarised evidence to its presence in the Nearctic Region in pre-Columbian times. In our

opinion the existence of a Nearctic moth species being monophagous on purslane strongly suggests that *Portulaca oleracea* is native to North America.

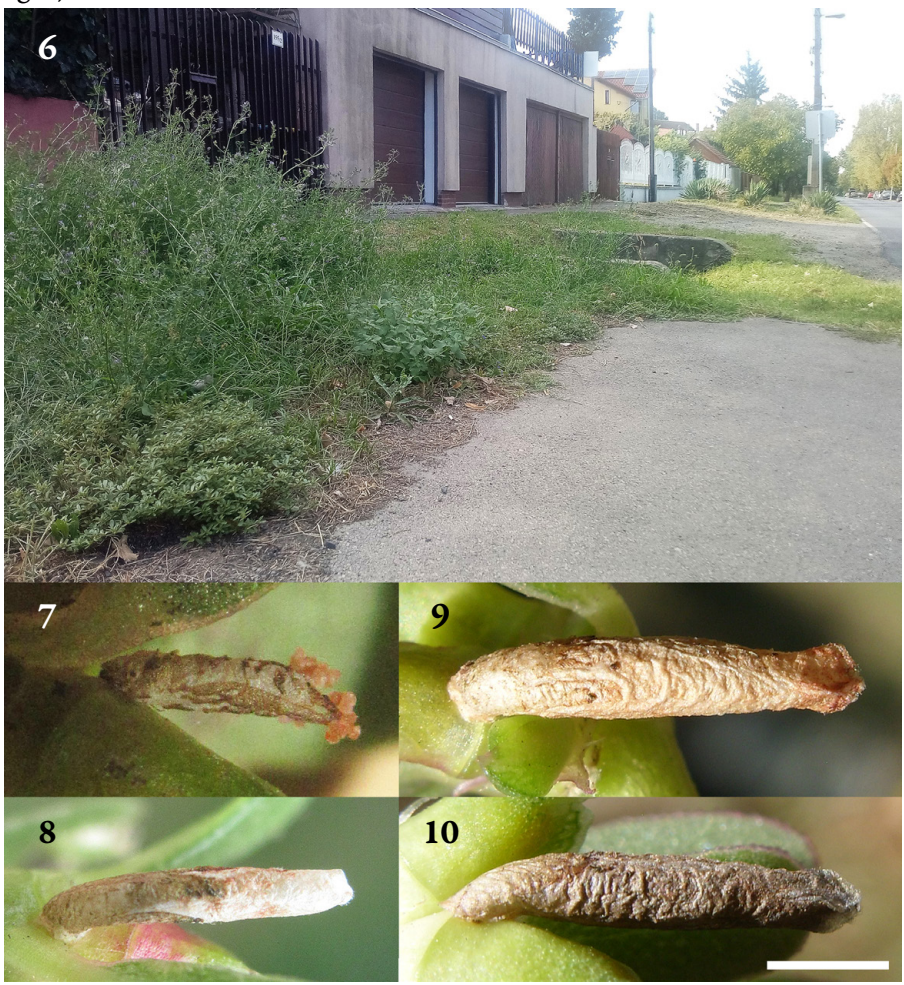
Identification – Selected specimens were dissected, fresh specimens were identified via external appearance. Worn specimens can only be identified via genitalia dissection. The diagnostic characters are summarised below.

Adult (Figs 1–5): Wingspan 9–11 mm. Head grey, laterally whitish. Labial palpi white, their ventral side grey, second palpomere 1.5× as long as third. Base of antenna brownish grey, flagellum brownish grey with white annuli. Forewing brownish grey, veins somewhat paler with some dark scales alongside. Male genitalia (Figs 3–4) with valvula broad and rounded, sacculus with a strong, curved process emerging close to the base of cucullus (appearing to be straight if slide not compressed properly, see Fig. 3), cucullus broad and long, with parallel edges and rounded apex, phallotheca with a single long, strong, slightly curved cornutus emerging from an irregular shaped plate. Female genitalia (Fig. 5) with sternum A8 with a very broad rounded incision on posterior edge, strongly sclerotised along the incision, colliculum 1.5–2× as long as sternum A8, slightly curved, anterior quarter distorted by ca. 90°, ductus bursae with broader posterior half and narrower anterior section, corpus bursae oval, smooth, with a strong signum composed of a broad sub-triangular plate and a broad, long thorn.



Figs 3–5. Genitalia of adult voucher specimens of *Coleophora texanella* Chambers, 1878 from Hungary, 3 = male genitalia, phallotheca below, slide No. TB2373m, 4 = male genitalia, phallotheca below, slide No. TB2374m, 5 = female genitalia, slide No. TB2364f. Scale bar = 0.5 mm (photos by Balázs Tóth)

Case (Figs 7–10): Length 6.5–7.0 mm. Trivalved, tubular silk case, dorsal and ventral edges slightly convex, nearly parallel in side view. Mouth parallel with the longitudinal axis of the case. Creamy white (Cockerell (1898) and Fig. 9) or greyish brown (Walsingham (1907) and Fig. 10). Sometimes with dark patch (the remnant of the previous case) fissured longitudinally and broadened (Fig. 8).



Figs 6–10. Larval habitat and cases of *Coleophora texanella* Chambers, 1878 from Hungary, 6 = habitat (bus stop "Csepel, Soroksári rév", Budapest) with the host plant at bottom left, 7 = young case with frass, side view, Érd, 6.IX.2024, 8 = L4 case with the remnants of the young case (dark anterior section), side-top view, Érd, 10.IX.2024, 9 = fully grown case, light form, top view, Budapest, 21st district, 7.IX.2024, 10 = fully grown case, dark form, side view, same locality, 7.IX.2024. Scale bar (Figs 7–10) = 2 mm (photos by Orsolya Dombi (Figs 7–8) and Balázs Tóth (Figs 6, 9–10))

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