

**First record of *Phyllocnistis citrella* in Hungary,
a micromoth species pest on Citrus (Lepidoptera: Gracillariidae)**

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Abstract – Several larvae of *Phyllocnistis citrella* Stainton, 1856 were found mining in lemon leaves in Kistarcsa, Central Hungary. Seven specimens emerged in August 2020. They are deposited as vouchers in the Hungarian Natural History Museum, Budapest. These are the first records of the species occurring in Hungary. With 3 figures.

Key words – citizen science, citrus leafminer, invasive species, moth, new country record

INTRODUCTION

The genus *Phyllocnistis* Zeller, 1848 (type species: *Opostega suffusella* Zeller, 1847) contains 113 species hitherto known worldwide (DE PRINS & DE PRINS 2019), the most famous among them is *Phyllocnistis citrella* Stainton, 1856. This cosmopolitan pest micromoth species is the subject of around 1000 publications.

Phyllocnistis citrella, the citrus leafminer was described from “Calcutta” (now Kolkata, West Bengal, India) (STAINTON 1856). It is a dangerous pest, and spreading everywhere in the citrus producing countries in Asia, Africa, Australia, America and Europe (DE PRINS & DE PRINS 2019). The larvae are polyphagous, they mine and feed especially in the leaves of Rutaceae: Aurantioideae. The damage caused by this pest was more severe in citrus nursery trees and young trees than in older ones (UYGUN *et al.* 1996).

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MATERIAL AND METHODS

The second author (BS) found leaves with mines (Fig. 1) on his lemon tree (*Citrus limon* (L.) Osbeck) on 11 August, 2020 in Kistarcsa, Central Hungary. He uploaded a photo in an entomological Facebook group and subsequently was asked by the first author (GK) to bring some samples to the Hungarian Natural History Museum (HNHM, Budapest) for identification. On 17 August the first adult emerged, on 19 four individuals followed and the last two moths were waiting until 25 August. These specimens were frozen, pinned to minuten pins, five of them were set under microscope (BT). The moths were identified (GK) as *Phyllocnistis citrella* Stainton, 1856 (Fig. 2). All specimens are deposited in the Lepidoptera Collection of the Hungarian Natural History Museum (HNHM).

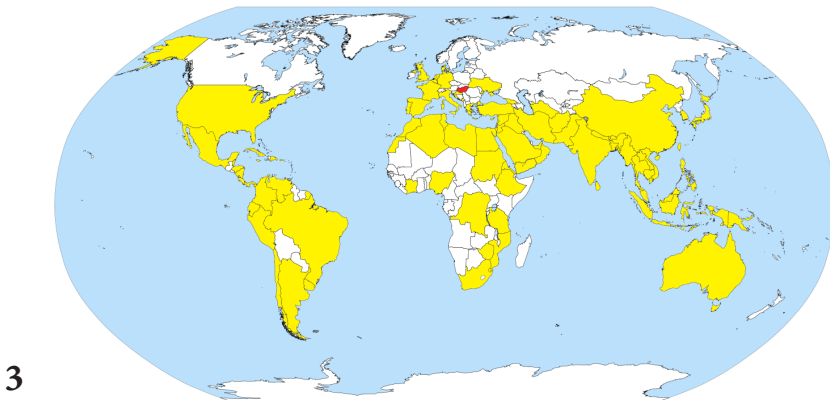
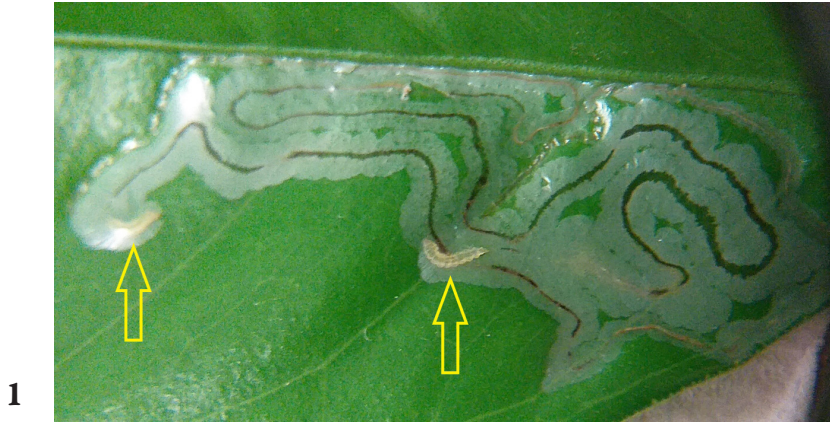
Fig. 1 was photographed by a Samsung Galaxy J4+ telephone, Fig. 2 was produced by Olympus DP70 photographic microscope with DPController and DPManager programs. Altogether 13 images were taken on the specimen with different depths of field and these were stacked to a composite image with the software Adobe Photoshop CS6. The distribution map was composed using the data provided by DE PRINS & DE PRINS (2019), and completed with those of SOBczyk (2019), DE PRINS *et al.* (2019) and the recent finding (Fig. 3).

RESULTS AND DISCUSSION

These seven *Phyllocnistis citrella* specimens are the first positively identified individuals in the extensive Lepidoptera leaf-miner collection of the HNHM (BÁLINT & KATONA 2012). We had no records from Hungary (*cf.* Szőcs 1977). These specimens therefore also represent a micromoth species new for the fauna of Hungary (PASTORÁLIS & BUSCHMANN 2018).

The citrus leafminer does not tolerate winter frost like its host plant. Citrus plants may overwinter only in frost-free sites in Hungary, so viable populations can be established only indoors. Although there is currently no significant citrus cultivation in Hungary, the moth can be a potential pest in household and horticultural greenhouse plantations. The host plant of the specimens discussed was imported to Hungary from the Netherlands in 2020, so the species is likely to appear elsewhere in the near future in Hungarian households or greenhouse horticultures, as well as in the neighbouring countries.

Figs 1–3. 1 = two *Phyllocnistis citrella* Stainton, 1856 caterpillars (indicated by arrows) mining in a lemon leaf (*Citrus limon* (L.), Kistarcsa (photo by Balázs Schermann), 2 = *P. citrella* adult, emerged first (scale bar = 1 mm) (photo by Balázs Tóth), 3 = distribution map of *P. citrella*: yellow countries = known habitats, red country = Hungary, new record (map by Gergely Katona)



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Acknowledgements – We are grateful to Zsolt Bálint (HNHM) who checked the manuscript.

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