

The horse chestnut leaf-miner, *Cameraria ohridella* Deschka & Dimić, 1986, (Lepidoptera, Gracillariidae) established in Norway

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The horse chestnut leaf-miner, *Cameraria ohridella* Deschka & Dimić, 1986, is reported new to Norway. In 2013 mines of this expansive species were found in Østfold: Fredrikstad, in Akershus: Frogn and in Oslo. Notes on the species' biology, ecology and distribution are given.

Key words: Lepidoptera, Gracillariidae, *Cameraria ohridella*, new record, Norway.

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Introduction

During late summer and autumn 2013 leaf mines and adults of the horse chestnut leaf-miner, *Cameraria ohridella* Deschka & Dimić, 1986 (Figures 1 and 4), were found in several localities in Norway in Fredrikstad, Frogn and Oslo. Since the moth's discovery in Macedonia in 1985, it has spread to most parts of Europe, and its arrival in Norway was expected. *Cameraria ohridella* is oligophagous on Sapindaceae, its most important food plant being horse chestnut *Aesculus hippocastanum* L. It may occur in great numbers. Mines can cover the leaves entirely and make them wither by the end of the summer. In some cases whole trees turn brown due to the discoloration of the leaves (Figure 7). The moth can be expected to spread further in Norway.

Localities and material

During mid-August 2013 Louis Boumans observed mines of *C. ohridella* on numerous horse chestnut trees along eastern shore of the inner Oslo fjord from Hvervenbukta (UTM-MGRS: 32V NM 992 343) in the south to Bekkelaget (UTM-MGRS: 32V NM 9956 3965) in the north (Figures 2–3). The localities are within 500m distance to a 5km long stretch of European route E 18, and are situated within the borders of Oslo municipality. Subsequently mines were observed in the centre of Oslo by Ove Sørlibråten at Akershus fortress and at Børshagen (UTM-MGRS: 32V NM 9776 4259), and by Leif Aarvik in the Botanical Garden. In Akershus mines were observed by L. Boumans in Frogn: Drøbak (UTM-MGRS 32V NM 9177 1498). In Østfold Ove Sørlibråten found attacks in Fredrikstad: Gamlebyen at two sites.



FIGURES 1–7. 1. Imago *Cameraria ohridella*. Wingspan 7,5mm. Photo: Karsten Sund. 2. Horse chestnut tree attacked by *Cameraria ohridella*. Nordstrand, Oslo, August 2013. Photo: Pieter Jan Nellestijn. 3. Leaf of horse chestnut with mines of *Cameraria ohridella*, Nordstrand, Oslo, August 2013. Photo: Louis Boumans. 4. Adult *Cameraria ohridella* on leaf of horse chestnut. Photo: Pieter Jan Nellestijn. 5. Leaf with mine. The pupa is visible as a dark streak in the lower part of the mine. Photo: Pieter Jan Nellestijn. 6. Pupa of *Cameraria ohridella* removed from its mine. Photo: Pieter Jan Nellestijn. 7. Tree attacked by *Cameraria ohridella*, Denmark, October 2013. Photo: Nini Cecilie Roll Aarvik.

Voucher material preserved in the collection of the Natural History Museum, University of Oslo: AK, Oslo: Nordstrand, Ljabruveien (UTM-MGRS: 32V PM 0001 3707), 1♂1♀ bred from mines on *Aesculus hippocastanum* collected 19 August 2013, leg. L. Boumans; Oslo: Bekkelaget (UTM-MGRS: 32V NM 9917 3953), 4♂♂ 24 August 2013, leg. L. Boumans; Oslo: Botanical Garden (UTM-MGRS: 32V NM 9888 4370), 1♂ bred from mines on *Aesculus hippocastanum* collected 12 September 2013, leg. L. Aarvik.

Voucher material preserved in the collection of Ove Sørlibråten: Ø, Fredrikstad: Gamlebyen (UTM-MGRS 32V PL 12226 644403), 2♂♂1♀ bred from mines on *Aesculus hippocastanum* collected 17 August 2013; same locality (32V PL 12411 64103), 13♂♂9♀♀ netted 24 August 2013, leg. O. Sørlibråten; AK, Oslo: Akershus fortress (UTM-MGRS: 32V NM 9710 4244), 1♀ netted 11 September 2013, leg. O. Sørlibråten.

Biology and expansion

Bengtsson & Johansson (2011) gave detailed information on the biology and expansion of *C. ohridella*, and the main part of the information presented here is extracted from their work. Oviposition takes place on the upper side of a leaf, and when the larva hatches after about three weeks, it immediately bores into the leaf. It causes light spots on the leaf, which later turn brown (Figures 3 and 5). Frass is deposited in the centre of the mine. Pupation takes place inside the mine. It takes about one month from the time the larva starts feeding until the adult moth emerges. In Central Europe there are normally three generations a year, in Sweden only two. The hibernation takes place in the pupal stage. Pupae (Figure 6) can tolerate temperatures down to -21°C, but nearly 90% of the pupae overwintering in the leaves may die from various causes (Lees et al. 2013).

The recent expansion of the moth was first observed by Lake Ohrid in Macedonia in 1984, and the species was described as a new species as late as in 1986 (Deschka & Dimić 1986). However, samples from herbaria document the presence of

the species in the Balkans back to 1879 (Lees et al. 2011). After 1986 *C. ohridella* spread rapidly in Central Europe. It reached Denmark in 2002 and Sweden in 2003. In Denmark it is now found everywhere, in Sweden mostly in coastal areas as far north as the Norwegian border and up to Stockholm in the east (Bengtsson & Johansson 2011).

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