

Impact of artificial illumination on the diapause induction of *Cameraria ohridella* (Lepidoptera: Gracilariidae)

The impact of artificial illumination on moths is to the biggest part unknown. Light controls not only the rhythm of night and day, but has an impact on the timing of egg laying, hatching, pupation, mating and the induction of the diapause.

The horse chestnut (*Aesculus hippocastanum*) is among the most common and favored trees in Berlin. The horse chestnut leaf miner (*Cameraria ohridella*) has major impact on the aesthetics of the tree. The moths have only low impact on the trees physical health, but infested leaves wilt in early summer and appear prematurely like autumn foliage. Noble trees appear sere and other impairments are amplified.

The invasive horst chestnut leaf miner develops three generations in Berlin and up to five in warmer regions. The planned research will quantify the impact of artificial illumination on the timing of diapause induction. The hypothesis is that artificial light impedes dormancy; the leaf miner develops a further generation. Artificial illumination combined with higher temperature due to climate change might lead to a fourth generation of *C. ohridella* in Berlin. The leaf miner has a high potential to adapt on changes in climate and other conditions. It protects the survival of the population with a small percentage of each generation, which goes dormant for six months and therefore is not threatened by the event of early frost. However, other moth species, less adapted to climate conditions, might also be impeded in dormancy by artificial light. The survival of their populations might be threatened by artificial illumination in combination with early frost.

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