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Chalcidoid parasitoids of *Micrurapteryx sophorivora* [Lepidoptera: Gracillariidae] in Kuluncak, Turkey
Parasitoïdes chalcidoïdes de *Micrurapteryx sophorivora* [Lepidoptera : Gracillariidae] de la région de Kuluncak en Turquie

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Article abstract

This study deals with the parasitoids of *Micrurapteryx sophorivora*. Parasitoids of *M. sophorivora* were investigated on *Robinia pseudoacacia* in 2004 in the Kuluncak district, Turkey. Seven parasitoid species, *Baryscapus nigroviolaceus*, *Cirrospilus pictus*, *Necremnus croton*, *Neochrysocharis arvensis*, *Neochrysocharis formosa*, *Pnigalio* sp. and *Pteromalus* sp., were reared. *Necremnus croton* was found to be the most common parasitoid. All the parasitoids reared were recorded for the first time from *Micrurapteryx sophorivora*.

Chalcidoid parasitoids of *Micrurapteryx sophorivora* [Lepidoptera: Gracillariidae] in Kuluncak, Turkey

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Keywords: Chalcidoidea, Gracillariidae, *Micrurapteryx sophorivora*, parasitoid.

[Parasitoïdes chalcidoïdes de *Micrurapteryx sophorivora* [Lepidoptera : Gracillariidae] de la région de Kuluncak en Turquie]

Cette étude traite des parasitoïdes de *Micrurapteryx sophorivora*. Les parasitoïdes de *M. sophorivora* ont été examinés sur *Robinia pseudoacacia* dans la région de Kuluncak, en Turquie, en 2004. Sept espèces de parasitoïdes, *Baryscapus nigroviolaceus*, *Cirrospilus pictus*, *Necremnus croton*, *Neochrysocharis arvensis*, *Neochrysocharis formosa*, *Pnigalio* sp. et *Pteromalus* sp., ont été élevés. *Necremnus croton* a été l'espèce la plus courante. Tous les parasitoïdes élevés sont décrits pour la première fois chez *M. sophorivora*.

Mots clés : Chalcidoidea, Gracillariidae, *Micrurapteryx sophorivora*, parasitoïde.

Micrurapteryx sophorivora Kuznetsov and Tristan was first described and recorded from Alma-Ata (Kuznetsov and Tristan 1985), and a second record was reported from Kuluncak (Turkey) (unpublished data). This moth had previously been recorded on *Sophora* sp. (Kuznetsov and Tristan 1985) and later on leaves of *Robinia pseudoacacia* L. (unpublished data). Mines of *M. sophorivora* commonly occur on leaves of *R. pseudoacacia* in Turkey. We have observed that the larvae of moth feed on the lower side of the leaf epidermis at early stages and, at later stages, move to the upper side of the leaf, consuming epidermal tissue, which results in large blotch mines on the leaf surface. Larvae leave the mines at the pre-pupal stage and pupation takes place on the leaf surface. There have been a few studies on *M. sophorivora* (e.g. Kuznetsov and Tristan 1985), but no work has been conducted on the natural enemies of this species. Thus, the objective of this study was to identify the parasitoids of *M. sophorivora* occurring in Turkey.

This study was carried out in 2004 in the Kuluncak district, located in the province of Malatya. Infested leaves of *R. pseudoacacia* were collected and brought to the laboratory. Infested leaves were kept in plastic culture containers at approximately 25°C and 70% relative humidity. Lepidoptera specimens and parasitoid adults were retrieved from the containers after emergence and kept separately. All the parasitoids were preserved in 70% ethanol and Lepidoptera specimens were preserved as dry material. Parasitoids were sorted out and identified, and the number of specimens for each species was counted. Parasitoids were identified by the first author and *M. sophorivora* was identified by the second author.

A total of seven species of parasitoids were reared from *Micrurapteryx sophorivora*. These parasitoid species, their number and relative abundance are given in Table 1. Six of the parasitoids found in this investigation are members of the family Eulophidae and the remaining one is member of the family Pteromalidae. All the parasitoids reared were recorded for the first time from *M. sophorivora*. Of these,

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Table 1. Parasitoid species reared from *Micrurapteryx sophorivora*

Parasitoids	Number of specimens	Relative abundance (%)
Family: Eulophidae		
<i>Baryscapus nigroviolaceus</i>	2 ♀♀ 2 ♂♂	7.4
<i>Cirrospilus pictus</i>	1 ♀	1.8
<i>Necremnus croton</i>	18 ♀♀ 9 ♂♂	50.0
<i>Neochrysocharis arvensis</i>	3 ♀♀	5.5
<i>Neochrysocharis formosa</i>	7 ♀♀ 4 ♂♂	20.3
<i>Pnigalio</i> sp.	5 ♂♂	9.2
Family: Pteromalidae		
<i>Pteromalus</i> sp.	2 ♀♀ 1 ♂	5.5

Necremnus croton (Walker) was found to be the most common parasitoid (50%), followed by *Neochrysocharis formosa* (Westwood). The other parasitoids were less abundant. In addition, *Baryscapus nigroviolaceus* (Nees) is a new record for Turkish fauna.

Hymenopterous parasitoid species have various lifestyles (Gauld and Bolton 1988). In this study, *N. croton* was recorded as larval ectoparasitoid. Life styles of the other parasitoid species were not determined. Although there have been a few studies on *M. sophorivora* (Kuznetsov and Tristan 1985), no investigation on the natural enemies of *M. sophorivora* had ever been undertaken. The present study is the first study on the parasitoids of *M. sophorivora*.

New species recorded from *M. sophorivora* have been reported on various hosts belonging to other mining Lepidoptera species and agromyzids. Some of these hosts, especially those belonging to Gracillariidae, are summarized below.

Baryscapus nigroviolaceus has been reported on *Phyllocnistis unipunctella*, *Phyllonorycter cavella*, *P. corylifoliella*, *P. lantanella*, *P. blancardella*, *P. comparella*, *P. froelichiella* and *P. robiniella* (Graham 1991; Noyes 2002).

Cirrospilus pictus (Nees) has been reported on *Callisto denticulella*, *Caloptilia elongella*, *Gracillaria syringella*, *Parornix anguliferella*, *Phyllocnistis citrella*, *P. tremulella*, *P. unipunctella*, *Phyllonorycter blancardella*, *P. connexella*, *P. corylifoliella*, *P. cytisella*, *P. cytisifoliae*, *P. maestingella*, *P. malella*, *P. platanoideella*, *P. pomifoliella*, *P. populifoliella*, *P. pyrifoliella*, *P. ringoniella*, *P. salictella*, *P. schreberella*, *P. sorbi*, *P. spinicolella*, *P. strigulatella* and *P. ulmifoliella* (Noyes 2002; Zhu et al. 2002).

Necremnus croton has only been reported on *Pseudobankesia macedoniella* [Lepidoptera: Psychidae] (Boucek and Askew 1968; Doganlär 1985). *Neochrysocharis arvensis* (Graham) has been reported on many species of Agromyzidae. However, these parasitoids are recorded for the first time from a species of the Gracillariidae (Gençer 2004; Noyes 2002).

Neochrysocharis formosa has been reported on *Metrochroa latifoliella*, *Phyllocnistis citrella*, *Phyllonorycter blancardella*, *P. cavella*, *P. celtisella*, *P. corylifoliella*, *P. messaniella*, *P. millierella*, *P. platani*, *P. roboris* and *P. spinicolella* (Gençer 2004; Hansson 1990; Noyes 2002).

In addition, *Pteromalus* sp. and *Pnigalio* sp. have been reared from *M. sophorivora*. Identification efforts failed at the species level because of the condition of the specimens. However, some species belonging to *Pteromalus* and *Pnigalio* have been reported on Lepidoptera, Diptera and Hymenoptera, but *M. sophorivora* is not reported as a host.

This study indicates that detailed investigations on parasitoids reared from *M. sophorivora* are needed, including studies on their lifestyle.

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