Mitt. internat. entomol. Ver.	Frankfurt a.M.	ISSN 1019-2808
Band 26 · Heft 3/4	Seiten 147 - 153	28. Dezember 2001

New records of Yponomeutoid moths in Israel
(Lepidoptera: Yponomeutidae, Plutellidae, Argyresthiidae)

Zlata GERSHENSON, Vasiliy KRAVCHENKO,
Tomáš PAVLÍČEK, Eviatar NEVO

Abstract: This paper describes 10 newly recorded species of Yponomeutoid moth from Israel (Families: Argyresthiidae, Plutellidae, and Yponomeutidae). Family Argyresthiidae and its two genera (*Ocnerostoma* and *Argyresthia*) have not been recorded in Israel previously. The newly recorded species are: *Ocnerostoma friesei* Svensson, 1966, *Ypsolopha trichonella* (Mann, 1861), *Y. parenthesella* (Linnaeus, 1761), *Y. sequella* (Clerck, 1759), *Y. sylvella* (Linnaeus, 1767), *Y. scabrella* (Linnaeus, 1761), *Argyresthia curvella* (Linnaeus, 1761), *A. brockeella* (Hübner, 1913), *A. pruniella* (Clerck, 1759) and *A. goedartella* (Linnaeus, 1758). There are 25 species known of Yponomeutoid moths in Israel, with new records to be expected in the future.

Keywords: Microlepidoptera, moths, Argyresthiidae, Plutellidae, Yponomeutidae, fauna, Israel

Introduction

Yponomeutoid moths represent a world-wide distributed phytophagous Microlepidopteran complex trophically connected with numerous host-plants (GERSHENSON & ULENBERG 1998). Adults are usually rather small (wing-span varies from 9 mm to 31 mm), characterized by a dull colour of the wings. The adults are active at dusk and during the night, whereas during the day-time they are hiding in shady places, for example under leaves of trees and bushes or in dense grasses. Adults are also often very scarce and it is difficult to catch them. There is a possibility to attract them by UV light-traps, but it should be kept in mind that Yponomeutoid

moths usually quickly hide among plants near the light source. Their hidden mode of life and lack of conspicuousness might be a reason why this lepidopteran complex has been insufficiently studied in Israel.

In Israel, the following species have been recorded: *Prays oleae* (Bernard, 1788), *P. citri* Millière, 1873, *Plutella xylostella* (Linnaeus, 1788), *Ypsolopha eremella* Amsel, 1933, *Y. sculpturella* (Herrich-Schäffer, 1854) (AMSEL 1933, AVIDOV & HARPAZ 1969, BODENHEIMER 1937, BYTINSKI-SALZ 1966, HALPERIN & SAUTER 1992) and *Yponomeuta albonigratus* Gershenson, 1972, *Y. cagnagellus* (Hübner, 1813), *Y. meridionalis* Gershenson, 1972, *Kessleria saxifragae* (Stainton, 1868), *Ypsolopha asperella* (Linnaeus, 1761), *Y. dentella* (Fabricius, 1775), *Y. instabilella* Mann, 1866, *Y. mucronella* (Scopoli, 1763), *Y. persicella* (Fabricius, 1787), and *Plutella porrectella* (Linnaeus, 1758) (GERSHENSON et al. 2001).

Material and methods

Moths were collected by UV light traps (TLD 18W/80) during May and September 2000. We collected them mainly from "Evolution Canyon", Lower Nahal Oren, Mt. Carmel (40-90 m asl.) (for description see NEVO 1995, 1997, 2001), around the University of Haifa, Mt. Carmel, and at Mt. Hermon at an elavation of 1.400 m and 1,600 m. asl. The collected material is kept and available for future studies in the National Insect Collection at Department of Zoology, Tel Aviv University. The higher taxonomic units mentioned in this work are given according to HEPPNER (1998).

List of newly recorded species in Israel

Family Yponomeutidae

Minute or medium-sized moths; wingspan 6 to 28 mm. Most species have the following pattern on forewings: dots (genus *Yponomeuta*) or transverse bands (genus *Cedestis*). In the resting posture, moths mainly sit parallel to substratum with folded wings and antennae compressed. Larvae live in the web nests on leaves of trees or bushes feeding on living tis-

sues. One hundred thirty two species were recorded in the Palaearctic region (GERSHENSON & ULENBERG 1998).

Ocnerostoma Zeller, 1847

Ocnerostoma friesei Svensson, 1966

Material: 1♂, Park Forest near University of Haifa, 17.05.2000, Israel; 1♀, garden in the Centre for Agricultural Services, Majdal Shams, Golan Heights, on light, 20.09.2000, Israel.

Comments: The first record of genus *Ocnerostoma* in Israel. *O. friesei* is a transpalearctic species trophically connected with *Pinus* (Moriuti 1997; Gershenson 1990). A pine species, *P. halepensis*, found around the University of Haifa might be a host plant.

Family Plutellidae

Moths of medium size; wingspan 10 to 27 mm. Most species have different patterns on the forewings. Moths, when resting, turn their antennae forward. Larvae are trophically connected with different arboreous and herbaceous plants. About 100 species are known in the Palaearctic region (ZAGULAYEV 1990).

Ypsolopha Latreille, 1796

Ypsolopha trichonella (Mann, 1861)

Material: 1♂ "Evolution Canyon", Lower Nahal Oren, Mt. Carmel, south-facing slope, 20.05.2000, Israel.

Comments: This species is distributed in southern Europe, Caucasus, Central and Middle Asia. *Ephedra* sp. was recorded as a host plant of this species (ZAGULAYEV 1990). In Lower Nahal Oren the only recorded species was *Ephedra foemina* (NEVO et al. 1999), a potential host plant.

Ypsolopha parenthesella (Linnaeus, 1761)

Material: 1♂, 1♀, Mt. Hermon, lower Cabel Station, altitude: 1.400 m asl., on light, 19.09.2000, Israel.

Comments: Transpalaearctic species trophically connected with *Quercus*, *Fagus*, *Sorbus*, *Populus* and *Ulmus* (ZAGULAYEV 1990).

Ypsolopha sequella (Clerck, 1759)

Material: 2♂♂, 2♀♀, Mt. Hermon, lower Cabel Station, altitude: 1.400 m asl., on light, 19.09.2000, Israel.

Comments: Common species distributed in Europe and Asia Minor, trophically connected with *Acer*, *Tilia* and *Salix* (ZAGULAYEV 1990).

Ypsolopha sylvella (Linnaeus, 1767)

Material: 1♀, Mt. Hermon, lower Cabel Station, altitude: 1.400 m asl., on light, 19.09.2000, Israel.

Comments: Species occur in Europe, Kazakhstan. Larvae feed on *Quercus* (ZAGULAYEV 1990).

Ypsolopha scabrella (Linnaeus, 1761)

Material: 1♂, Mt. Hermon, lower Cabel Station, altitude: 1.400 m asl., on light, 20.09.2000, Israel.

Comments: European species, trophically connected with *Malus*, *Prunus* and *Pyrus* (ZAGULAYEV 1990). In Israel, *Prunus ursina* and *Pyrus syriaca* are native species, but all three genera mentioned above are cultivated.

Family Argyresthiidae

Minute moths; wingspan 5 to 15 mm. Most species with shiny pattern on forewings. Moths in resting posture form oblique angle with substration because tip of abdomen is directed upward. Larvae live in web galleries inside bird nests, flower stems, branches, fruits, feeding mainly on arboreous plants. About 70 species are found in the Palaearctic region (GERSHENSON 1990). This family was not previously mentioned in Israel.

Argyresthia Hübner, 1826

Argyresthia curvella (Linnaeus, 1761)

Material: 1♀, Mt. Hermon, lower Cabel Station, altitude: 1.400 m asl., 19.09.2000, Israel.

Comments: Transpalaearctic species. Larvae feed inside buds of *Prunus* (GERSHENSON 1990) and eat flowering shoots of *Malus* (AGASSIZ 1987).

Argyresthia brockeella (Hübner, 1913)

Material: 1♂, Mt. Hermon, lower Cabel Station, altitude: 1.400m asl., on light, 20.09.2000, Israel; 2♀♀, Mt. Hermon, upper Cabel Station, altitude: 1.600 m asl., 26.09.2000, Israel.

Comments: Transpalaearctic species. Larvae feed on *Betula* and *Alnus* (AGASSIS, 1987). None of these are growing in Israel.

Argyresthia pruniella (Clerck, 1759)

Material: 1♂, 4♀♀, garden in the Centre of Agricultural Services, Majdal Shams, Golan Heights, on light, 20.09.2000, Israel.

Comments: Transpalaearctic species. Larvae feed inside buds and stems of rosaceous plants (GERSHENSON, 1990).

Argyresthia goedartella (Linnaeus, 1758)

Material: 2♂♂, 2♀♀, Mt. Hermon, lower Cabel Station, altitude: 1.400m asl., 20.09.2000, Israel.

Comments: Transpalaearctic species trophically connected with *Quercus*, *Ulmus* (FRIESE 1969), *Betula* and *Alnus* (AGASSIZ 1987).

Discussion

Taxonomical analyses of collected specimens shows that Yponomeutoid moths are represented in Israel by at least three of the following families: Yponomeutidae s. str., Plutellidae, and Argyresthiidae. One family (Argyrestiidae) and its two genera (*Ocnerostoma* and *Argyresthia*) are new records for Israel. There are 10 new species recorded for the first time in Israel. Our new records bring the total number of known Yponomeutoid moths in Israel to 25, but this number is not final because the collections were restricted both temporally and spatially. We tried to collect Yponomeutoid moths also in the Negev Desert, but our efforts did not bring positive results. This fact indicates that the Yponomeutoid moths might be restricted to northern and central areas (i. e. the mesic part of Israel) and may not live in the southern desert areas.

World-wide distribution of the investigated moths makes them an important tool in the understanding of the evolution of lepidopteran fauna. Being trophically connected with 23 families of palaearctic and tropical plants, these moths are adaptively radiated in all continents (GERSHENSON & ULENBERG 1998). Moreover, being totally phytophagous, their de-

pendence on the flora makes butterflies and moths good indicators of local ecological conditions. Faunal diversity of the recorded moths appears to pose many interesting biological problems that make this lepidopteran complex suitable for evolutionary and phylogenetic studies. Therefore, our preliminary faunal and ecological studies of these moths in Israel aims to clarify the taxonomical deficiencies as the basis for futher evolutionary investigations concerning the above mentioned microlepidopteran families.

Acknowledgements

We wish to express our sincere thanks to Dr. E. IVANITSKAYA (Institute of Evolution, University of Haifa, Israel); Dr. G. I. SHENBROT (Institute of Desert, Mizpé Ramon, Israel), Dr. S. NASRALLA and Dr. M. ABU-SHIBLI (The Centre for Agricultural Services, Majdal Shams, Golan Heights, Israel) for their help during our field work.

Literature

AGASSIZ, D. (1987): The British Argyresthiinae and Yponomeutinae. – Proc. Trans. Br. Ent. Nat. Hist. Soc. **20**:1–26.

AMSEL, H. G. (1933): Die Lepidopteren Palästinas. – Zoogeographica **2**:1–146.

AVIDOV, Z. & HARPAZ, I. (1969): Plant Pest of Israel. – Israel University Press. Jerusalem. 549 pp.

BODENHEIMER, F. S. (1937): Prodromus Faunae Palaestinae. – Mém. Institut Egypte **33**:1–286.

BYTINSKI-SALZ, H. (1966): An annotated list of insects and mites introduced into Israel. – Isr. J. Zool. **1**:15–48.

FRIESE, G. (1969): Beiträge zur Insecten-Fauna der DDR: Lepidoptera-Argyresthiidae. – Beitr. Ent. **19**:639–752.

GERSHENSON, Z. (1990): Family Yponomeutidae. Family Argyresthiidae. Pp. 436–472. In. BEI-BIENKO, G. Y. (Ed.): Keys to the Insects of the European Part of the USSR. Lepidoptera. Volume 4, Part 2. – Leiden: Brill Publishers.

GERSHENSON, Z. & ULENBERG, S. (1998): The Yponomeutinae (Lepidoptera) of the world exlusive of the Americas. – Koninklijke Nederlandse Akademie van Wetenschappen Verhandeilingen Afdeling Naturkude, Tweede Reeks. Amsterdam. 202 pp.

GERSHENSON, Z., PAVLÍČEK, T. , CHIKATUNOV, V. & NEVO, E. (2001): New records of Yponomeutidea moths (Lepidoptera: Yponomeutidae, Plutellidae) to Israel. – Vestnik Zoologii (in press).

HALPERIN, J. & SAUTER, W. (1992): An annotated list with new records of Lepidoptera associated with forest and ornamental trees and shrubs in Israel. – Isr. J. Entomol. **25/26**:105–147.

HEPPNER, J. P. (1998): Classification of Lepidoptera. Part 1. Introduction. – Holarctic Lepidoptera **5** (Suppl. 1):1–148.

MORIUTI, S. (1977): Fauna Japonica. Yponomeutidae s. lat. (Insecta Lepidoptera.). – Tokyo. 327 pp.

NEVO, E. (1995): Asian, Africa and European biota meet at "Evolution Canyon", Israel: Local tests of global biodiversity and genetic diversity patterns. – Proc. Roy. Soc. London B, **262**:149–155.

—— (1997): Evolution in action across phylogeny caused by microclimatic stresses at "Evolution Canyon". – Theor. Pop. Biol. **52**:231–243.

—— (2001): Evolution of genome–phenome diversity under environmental stress. – Proc. Nat. Academy US **98**:6233–6240.

NEVO, E., FRAGMAN, O., DAFNI, A. & BEILES, A. (1999): Biodiversity and interslope divergence of vascular plants caused by microclimatic differences at "Evolution Canyon", Lower Nahal Oren, Mount Carmel, Israel. – Isr. J. Plant Sci. **47**:49–59.

ZAGULAYEV, A. K. (1990): Fam. Plutellidae. Pp. 475–522. In. BEI-BIENKO, G. Y. (Ed.), Keys to the Insects of the European Part of the USSR. Volume 4, Part 2. – Brill E. J., Leiden.

Authors:
Zlata GERSHENSON, Schmalhausen Institute of Zoology, National Academy of Sciences, B. Khmelnitsky str. 15, Kiev–30, UA–01601 Ukraine.
Vasily KRAVCHENKO, Institute of Evolution, University of Haifa, Mt. Carmel 31905, Israel. or: Department of Zoology, Tel Aviv University,Ramat Aviv, Tel Aviv
Tomáš PAVLÍČEK, Institute of Evolution, University of Haifa, Mt. Carmel 31905, Israel.
Eviatar NEVO, Institute of Evolution, University of Haifa, Mt. Carmel 31905, Israel.

Address for communication:
Dr. Tomáš PAVLÍČEK, Institute of Evolution, University of Haifa, Mt. Carmel, Haifa 31905, Israel.
Email: rabi316@uvm.haifa.ac.il
Tel: ++972–4–8240460, Fax: ++972–4–8246554