

Contributions to the Leafminer Fauna (Diptera: Agromyzidae) from Turkey, with Four New Records

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In a study carried out during 2002 and 2004 in Diyarbakir and Mardin provinces, southeast Turkey, specimens were collected twice a month from cultivated and non-cultivated plants. Sixteen leafminer (Diptera: Agromyzidae) species were identified. Among them, *Agromyza abiens* Zetterstedt, 1848; *Napomyza elegans* (Meigen, 1830); *Phytoliriomyza dorsata* (Siebke, 1864); and *Phytomyza aquilonia* Frey, 1964 are new records for the Turkish leafminer

KEY WORDS: Agromyzidae; new records; Turkey.

INTRODUCTION

Agromyzidae (leafmining flies) is one of the largest fly families, with more than 2742 valid species belonging to 27 genera worldwide (22). From this family, 1165 species have been identified in the Palaearctic region (2,14). Adults can be minute, with a wing length of little more than 1 mm. The maximum size known is 6.5 mm; most species are in the range 2–3 mm. There is a high degree of host specificity (19). Although the larvae of all species are exclusively internal feeders of living plants, they are not confined to leaves and petioles as the common name may suggest. Numerous species live in different parts of the plant, including the cambium of trees; others feed in seeds, roots and flowers, and a few species induce galls. Overall, approximately 150 species are known to feed regularly on cultivated plants; of these, many species normally do not reach high population levels but occasional outbreaks can occur. However, there are species that tend toward high reproduction and can cause significant yield reduction or even plant mortality. Also, adults can transmit some diseases from infected plants to healthy ones (9).

The Agromyzidae are one of the most important fly families in Turkey because of their pest status, especially on vegetable and ornamental plants in the greenhouse. The Turkish agromyzid fauna is not well known. Until now, 80 species have been identified in Turkey (1,4-8,10,12,21).

There is no detailed study on Agromyzidae in the southeast Anatolia region. The goal of this study was to contribute to the knowledge of the leafminer fauna from Diyarbakir and Mardin provinces, southeast Turkey.

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MATERIALS AND METHODS

This study was carried out during 2002 and 2004 in Diyarbakır and Mardin provinces, which were divided into four subareas for convenience in the collection of specimens. The specimens were collected from both cultivated and non-cultivated plants twice a month. The adults of leafminers were obtained by rearing specimens from infested leaves in the laboratory or by sweeping. Due to the fact that the male genitalia are important characters for the identification of leafminers, they were removed from the fly, treated chemically, and slide preparations were made for identifications of different species. Male abdomens were boiled in 10% KOH, moved into glacial acetic acid for 5 min, into 96% alcohol for another 5 min, and then dissected under a stereoscopic microscope. Identifications of the species were made using the keys in Spencer (16–20). Voucher specimens were deposited at the laboratory in the Plant Protection Department, Faculty of Agriculture, Harran University, Sanliurfa, Turkey.

RESULTS

In this study 16 agromyzid species were identified. Among these species *Agromyza abiens* Zetterstedt, 1848; *Napomyza elegans* (Meigen, 1830); *Phytoliriomyza dorsata* (Siebke, 1864); and *Phytomyza aquilonia* Frey, 1964 are reported for the first time from Turkey. The taxa are presented alphabetically.

***Agromyza* Fallén, 1810**

Agromyza abiens Zetterstedt, 1848

Material examined: Savur-Mardin, *Echium vulgare* L. 22.IV.2002 (1♀, 1♂), reared from infested leaves.

Host plants: *A. abiens* is very common on plants belonging to the family Boraginaceae; *Anchusa* spp., *Asperugos* spp., *Borago* spp., *Cynoglossum* spp., *Echium* spp., *Lycopsis* spp., *Pentaglottis* spp., *Pulmonaria* spp., *Symphytum* spp. (18).

General distribution: Denmark, Sweden, Norway (18), Germany (15,22).

New record for the Turkish fauna.

Agromyza albitarsis Meigen, 1830

Material examined: Beyazsu, Nusaybin, and Mardin, *Populus* spp. (16♀♀, 7♂♂), *Salix* sp., 06.V.2002 (8♀♀, 8♂♂), reared from infested leaves.

Host plants: *Populus* sp., *Salix* sp. (18).

General distribution: Canada, northern and western Europe (18), Germany (22).

Other known localities in Turkey: Izmir (7,12).

***Calycomyza* Hendel, 1931**

Calycomyza humeralis (Von Roser, 1840)

Material examined: Kabala-Mardin, *Triticum* sp., *Lens culinaris* Medik., 19.IV.2002 (1♂), by sweeping.

Host plants: Very common on plants belonging to the family Asteraceae (18).

General distribution: Australia, widespread in Europe, North and South America, South Africa, India (18), Germany (22).

Other known localities in Turkey: Izmir (7).

Cerodontha Rondani, 1861

Cerodontha denticornis (Panzer, 1806)

Material examined: Ergani-Diyarbakır, *Triticum* sp., 10.V.2002 (1♀, 1♂); Ömerli-Mardin, *Triticum* sp., 16.V.2002 (1♀, 1♂); and Çınar-Diyarbakır, *Triticum* sp., 13.VI.2002 (3♀♀, 2♂♂); Derik-Mardin, *Medicago sativa* L., 06.VI.2002 (3♀♀, 2♂♂), by sweeping.

Host plants: Various plants belonging to the family Poacea (18).

General distribution: Denmark, England, Finland, Hungary, Japan, Morocco, Sweden, Norway, (17; 23); Germany (22).

Other known localities in Turkey: Izmir (7,12), Sanlı Urfa (3).

Chromatomyia Hardy, 1849

Chromatomyia horticola (Goureau, 1851)

Material examined: Kabala-Mardin, *Sonchus* sp., 19.IV.2002 (18♀♀, 16♂♂); Yesilli-Mardin, *Sonchus* sp., 16.V.2002 (1♀, 1♂); Çınar-Diyarbakır, *Xanthium* sp., 24.X.2002 (1♀); Bismil-Diyarbakır, *Papaver* spp., 06.V.2003 (1♀, 1♂), reared from infested leaves.

Host plants: Highly polyphagous species, recorded from 34 plant families; favorite hosts are in the Asteraceae, Brassicaceae and Fabaceae families (18).

General distribution: Common throughout Europe and also Africa, India, China, Japan (18).

Other known localities in Turkey: Izmir (7,12), Sanliurfa (3).

Liriomyza Mik, 1894

Liriomyza congesta (Becker, 1903)

Material examined: Kızıltepe-Mardin, *Lens culinaris* Merck., 24.V.2002 (1♂); *Medicago sativa* L., 24.V.2002 (1♂), by sweeping.

Host plants: *Lathyrus* spp., *Medicago sativa* L., *Pisum sativum* L. (20).

General distribution: Widespread and common throughout most of Europe (18).

Other known localities in Turkey: Izmir (7); Sanliurfa (3).

Liriomyza sativae Blanchard, 1938

Material examined: Ergani-Diyarbakır, *Cicer arietinum* L. (1♀) and *Triticum* sp. (1♂), 11.X.2002, by sweeping.

Host plants: Highly polyphagous species on the Brassicaceae, Cucurbitaceae, Fabaceae and Solanaceae families (17).

General distribution: America, Argentina, Chile, India, Oman, Peru, Thailand, Venezuela, Yemen and eastern part of West Africa (11), Cameroon, Sudan and Zimbabwe (13).

Other known localities in Turkey: Mugla (4).

Liriomyza strigata (Meigen, 1830)

Material examined: Derik-Mardin, *Cucurbita* sp., 11.X.2002 (1♀,1♂), reared from infested leaves.

Host plants: *L. strigata* is a highly polyphagous species occurring commonly on Asteraceae, Campanulaceae and Labiatae (17).

General distribution: Europe, Russia, Uzbek Republic (18).

Other known localities in Turkey: Izmir (7), Sanliurfa (3).

Liriomyza trifolii (Burgess, 1880)

Material examined: Savur-Mardin, *Papaver* spp., 17.V.2002 (1♀, 2♂♂); Savur-Mardin, *Mentha* spp., 11.X.2002 (3♀♀, 4♂♂); Derik-Mardin, *Solanum melongena* L. (2♂♂), *Lycopersicon esculentum* Mill., 22.IX.2003 (2♀♀, 1♂♂); Dicle-Diyarbakır, *Phaseolus vulgaris* L., 22.IX.2003 (6♀♀, 10♂♂), reared from infested leaves.

Host plants: A highly polyphagous species occurring commonly on Cucurbitaceae, Fabaceae, Liliaceae, Malvaceae, Solanaceae, Umbelliferae, Zygophyllaceae plants (17).

General distribution: Canada, France, Holland, Hungary, Italy, USA (15,17), Germany (22).

Other known localities in Turkey: Adana and Hatay (21); Izmir (7); Sanliurfa (3).

***Napomyza* Westwood, 1840**

Napomyza elegans (Meigen, 1830)

Material examined: Kızıltepe-Mardin, *Lens culinaris* Medik. (1♀) and *Triticum* sp. (1♂) 24.V.2002, by sweeping.

Host plants: Unconfirmed – adults often caught on *Valeriana officinalis* (18).

General distribution: Denmark, Finland, Sweden (18), Germany (15,22).

New record for the Turkish fauna.

Napomyza lateralis (Fallén, 1823)

Material examined: Organize Sanayi-Diyarbakır, *Lens culinaris* Medik. (1♀) and *Triticum* sp. (1♂) 05.V.2003, by sweeping.

Host plants: *N. lateralis* is very common on plants belonging to the family Asteraceae: *Anthemis* spp., *Bidens* spp., *Calendula* spp., *Carduus*, *Centaurea* spp., *Helichrysum* spp., *Inula* spp., *Lactuca* spp., *Matricaria* spp., *Silybum* spp. (18).

General distribution: Canada, Denmark, England, Finland, Japan, Norway, Spain, Sweden (18), Germany (22).

Other known localities in Turkey: Izmir (7).

***Phytoliriomyza* Hendel, 1931**

Phytoliriomyza dorsata (Siebke, 1863)

Material examined: Kocaköy and Fisköy-Diyarbakır, *Triticum* sp. (1♂), by sweeping.

Host plants: Unknown (18).

General distribution: Romania, Russia (15), Austria, California, Maryland (USA), Canada, England, Norway (18), Germany (22).

New record for the Turkish fauna.

***Phytomyza* Fallén, 1810**

Phytomyza aquilonia Frey, 1946

Material examined: Hani, Seren-Diyarbakır, *Triticum* sp., 16.IV.2004 (1♂), by sweeping.

Host plants: *Ranunculus nivalis* L. and *R. pygmaeus* Wahlenb. (18).

General distribution: northern Canada, Finland, Norway, Poland, Sweden (18), Greenland (15).

New record for the Turkish fauna.

Phytomyza orobanchia Kaltenbach, 1864

Material examined: Karacadağ-Diyarbakır, 01.VI.2002 (3♀♀, 2♂♂); Derik-Mardin, 06.VI.2004 (2♂♂); Yesilli-Mardin, 09.X.2002 (1♀, 1♂); Savur-Mardin, 10.X.2002 (17♀♀, 28♂♂); Çermik-Diyarbakır, 23.IX.2003 (4♀♀, 1♂): all on *Orobanche* spp., and reared from infested leaves and by sweeping.

Host plants: *Orobanche* spp. (17).

General distribution: Recorded from Afghanistan, Balkans, Egypt, England, Germany, Hungary, Israel, Italy, Malta, Russia, Spain, Ukraine, USA, Uzbek Republic (17).

Other known localities in Turkey: Bursa, Çanakkale (8), Izmir (7,12), Sanliurfa (3).

Phytomyza plantaginis Robineau-Desvoidy, 1851

Material examined: Nusaybin-Mardin, family Liliaceae, 17.V.2002 (1♀, 1♂), by sweeping.

Host plants: *Plantago* spp. (18).

General distribution: Alaska, Canada, Finland, Japan, Kirghiz and Uzbek Republics, Norway, Sweden (15,16,18).

Other known localities in Turkey: Izmir (7).

Phytomyza rufipes Meigen, 1830

Material examined: Kayacan, Kabala, Mardin on *Cucurbita* sp., *Lycopersicon esculentum* Mill. and *Solanum melongena* L., 09.X.2002 (1♂), by sweeping.

Host plants: Common on Brassicaceae, especially on *Brassica* spp. (18,20).

General distribution: Widespread throughout most of Europe., Denmark, England, Finland, Germany, Spain, Sweden, Yugoslavia, also Canada, Egypt, Japan, USA (15,18).

Other known localities in Turkey: Izmir (7), Sanliurfa (3).

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