

## Two New Coleopterous Hosts Records of Tachinidae (Diptera) with a New Tachinid for The Turkish Fauna

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### ABSTRACT

This study was carried out to determine the tachinid parasitoids of coleopterous hosts from some localities in Akıncılar and Suşehri (Sivas-Turkey). *Phaedon cochleariae* (Fabricus, 1792) (Col.: Chrysomelidae) for *Anthomyiopsis plagioderae* (Mesnil, 1972) (Dip.: Tachinidae) and *Chrysomela polita* L. (Col.: Chrysomelidae) for *Meigenia simplex* Tschorsnig et Herting 1998 (Dip.: Tachinidae) are recorded for the first time as tachinid/host-couples. Additionally *A. plagioderae* is recorded for the first time from Turkey.

*Key words:* Tachinidae, parasitoids, hosts, new records, Turkey.

### INTRODUCTION

The Diptera family Tachinidae contains more than 8.000 species worldwide (Ziegler, 1998). Tachinid flies are exclusively endoparasitic species that develop in the bodies of live hosts. They have a vast host range that spreads over many taxonomic groups of insects, including phytophagous species and also some other arthropods (Belshaw, 1994). However, the hosts of many tachinid species are still unknown. Detailed information on West Palaearctic hosts can be found in Herting (1960), Tschorsnig and Herting (1994), Kara and Tschorsnig (2003), Vaňhara *et al.*, (2009), Cerretti and Tschorsnig (2010) and Robertson and Shaw (2012).

Tachinids belong to the natural enemies of chrysomelids (Leaf Beetles) (Herting, 1960; Kara and Tschorsnig, 2003; Cerretti and Tschorsnig, 2010). Many genera in the tribe Blondeliini and Macquartiini are regular parasites in adults and many others in larval Coleoptera. *Meigenia* spp. are not specific to a single Chrysomelid subfamily but *Anthomyiopsis* spp. parasites chrysomelinae subfamily (Crosskey, 1976; Cox, 1994).

*Phaedon cochleariae* is distributed in Europe, the Caucasus, Central Asia and Siberia (Gruev, 1992). It has been recorded in various localities from Turkey (Ankara, Diyarbakır, Erzurum, Gaziantep, Kayseri, Kırşehir, Niğde, Tokat, Trabzon (Tuatay *et al.*, 1972; Tomov and Gruev, 1975; Kısmalı *et al.*, 1995; Aslan and Özbek, 1999; Atay and Çam, 2006). Known host plants of this species in Turkey are *Cardamine impatiens* L. and *Nasturtium officinale* L., (both Brassicaceae), and *Populus* spp. (Salicaceae) (Kasap, 1988; Atay and Çam, 2006; Aslan, 1997).

*Chrysomela polita* is distributed in Europe, Siberia, Mongolia, China and many parts of Turkey (Aslan, 1997; Aslan *et al.*, 2003; Chiş, 2008). This species lives on marshy meadows along rivers and mainly feeds on Lamiaceae (*Melissa*, *Mentha* and *Salvia* spp.) and occasionally feeds on Saliaceae (*Populus* and *Salix*) (Aslan, 1997; Vig, 1997; Alford, 2012).

## MATERIAL AND METHODS

This study was carried out in 2008. Larvae of *Phaedon cochlariae* and *Chrysomela polita* were collected from *Salix* sp. in Akıncılar and Suşehri (Sivas-Turkey) respectively. Samples collected and the tree leaves were taken to the laboratory, placed in cages, kept at  $25 \pm 2$  °C and 60% - 70% relative humidity. Cages were checked on a daily basis. Adult tachinids and hosts were killed, pinned and prepared for identification.

The tachinids were identified by the authors using the keys of Tschorsnig and Herting (1994) and Tschorsnig and Richter (1998). The chrysomelid hosts were identified by Prof. Dr. İrfan Aslan (Atatürk University, Faculty of Agriculture, Plant Protection Department, Erzurum, Turkey). Confirmation of tachinid/host-couple records were carried out by Dr. H. P. Tschorsnig (Staatliches Museum für Naturkunde, Stuttgart, Germany).

## RESULT

### Subfamily: Tachininae

#### Tribe: Macquartiini

#### *Anthomyiopsis plagioiderae* (Mesnil, 1972)

Material examined: 05 August 2008, 1♀. Host: *Phaedon cochlariae* larvae, collected on 12 July 2008, on *Salix* sp., Sivas (Akıncılar-Göllüce), 40°05'23" N, 038°29'29" E, 1103m.

Distribution in Turkey: *A. plagioiderae* is a new record for Turkey.

Distribution in the World: Europe, Eastern Asia (Herting, 1984; Tschorsnig *et al.*, 2004; O'Hara *et al.*, 2009; Cerretti and Tschorsnig, 2010).

Hosts: *Plagioidera versicolora* Laicharting, 1781, *Phyllodecta vitellinae* (Linnaeus, 1758) (Col.: Chrysomelidae) (Tschorsnig and Herting 1994).

*Phaedon cochlariae* is a new host species for this tachinid.

### Subfamily: Exoristinae

#### Tribe: Blondeliini

#### *Meigenia simplex* Tschorsnig et Herting, 1998

Material examined: 31 August 2008, 4♂; 03 September 2008, 3♀; 04 September 2008, 2♂. Host: *Chrysomela polita* L. collected on, 19 August 2008 on *Salix* sp., Sivas (Suşehri-Yeşilyayla), 40°08'57" N, 038°09'35 E ", 1056m.

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Hosts: *Lilioceris lili* (Scopoli, 1763) (Tschorsnig, 2005), *Chrysomela populi* Linnaeus, 1758, *Chrysomela* sp. *Crioceris asparagi* Linnaeus, 1758, *Crioceris quatuordecimpunctata* (Scopoli, 1763), *Phratora laticollis* (Suffrian, 1851) (Tschorsnig and Herting, 1998; Cerretti and Tschorsnig, 2010; Kara and Tschorsnig, 2003); *Chrysomela tremula* Fabricus, 1787 (Kara and Tschorsnig, 2003).

*Chrysomela polita* L. is a new host species for this tachinid.

Distribution in Turkey: Ankara (Tschorsnig and Herting, 1998).

Distribution in the World: Southern and Western Europe (Tschorsnig *et al.*, 2004).

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## REFERENCES

- Alford, D. V., 2012, *Pest of Ornamental Trees, Shrubs and Flowers*. A Color Handbook. Second Edition. Manson Publishing, London, 480 pp.
- Aslan, İ., 1997, Erzurum İlinde Söğüt ve kavak zararlısı yaprak böcekleri. *Istanbul Üniversitesi Orman Fakültesi Dergisi*, Seri B, 47: 81-88.
- Aslan, İ., Özbek, H., 1999, Faunistic and systematic studies on the subfamily Chrysomelinae (Coleoptera, Chrysomelidae) in Artvin, Erzincan and Erzurum. *Turkish Journal of Zoology*, 23: 751-767.
- Aslan, İ., Gruev, B., Özbek, H., 2003, A Preliminary review of the subfamily Chrysomelinae of Turkey. *Linzer Biologische Beiträge*, 35: 581-605.
- Atay, T., Çam, H., 2006, The Faunistic studies on the subfamilies Chrysomelinae and Cryptocephalinae (Coleoptera: Chrysomelidae) species in Tokat province. *Türkiye Entomoloji Dergisi*, 30: 285-302.
- Belshaw, R., 1994, *Life History Characteristics of Tachinidae (Diptera) and their effect on polyphagy*. In: Hawkings, B. A., Sheehan, W. (Eds). Parasitoid Community Ecology. Oxford University Press, New York, 145-162.
- Cerretti, P., Tschorsnig, H. P., 2010, Annotated Host Catalogue for the Tachinidae (Diptera) of Italy. *Stuttgarter Beiträge zur Naturkunde A. Neue Serie*, 3: 305-340.
- Chiş, T. V., 2008, Geographical Background Elements of the Vişeu River Basin (Maramureş, Romania). *Transylvanian Review of Systematical and Ecological Research*, 5: 1-222.
- Cox, M. L., 1994, *The Hymenoptera and Diptera Parasitoids of Chrysomelids*. In: Jolivet, P. H., Cox, M. L., Petitpierre, E. (Eds). Novel aspects of the biology of Chrysomelidae. Kluwer Academic Publishers, Netherlands, 419-467.
- Crosskey, R. W., 1976, A Taxonomic Conpectus of the Tachinidae (Diptera) of the Oriental Region. *Bulletin of the British Museum (Natural History) Entomology*, Supplement, 26: 1-357.
- Gruev, B., 1992, *Geographical distribution of the leaf beetle subfamilies Lamprosomatinae, Eumolpinae, Chrysomelinae, Alticinae, Hispinae and Cassidinae (Coleoptera, Chrysomelidae) on the Balkan Peninsula*. Plovdiv University Press. Plovdiv, 510 pp.
- Herting, B., 1960, *Biologie der westpaläarktischen Raupenfliegen (Dipt., Tachinidae)*. Monographien zur angewandten Entomologie, Hamburg und Berlin, 188 pp.

- Herting, B., 1984, *Catalogue of Palearctic Tachinidae (Diptera)*. Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) 369, 228 pp.
- Kara, K., Tschorsnig, H. P., 2003, Host catalogue for the Turkish Tachinidae (Diptera). *Journal of Applied Entomology*, 127: 465-476.
- Kasap, H., 1988, A List of Some Chrysomelinae (Col.: Chrysomelidae) From Turkey. (Part II). *Colaphellus, Gastroidea, Phaedon, Prasocuris, Plagiodes, Melasoma, Phytodecta, Phyllodecta, Timarcha, Entomoscelis. Türkiye Entomoloji Dergisi*, 12: 85-95.
- Kısmalı, S., Tezcan, S., Turnalı, F., Madanlar, N., 1995, Chrysomelidae ve Buprestidae (Coleoptera) Familialarına bağlı türlerin GAP bölgesindeki durumu. *GAP Bölgesi Bitki Koruma Sorunları ve Çözüm Önerileri Sempozyumu*, 27-29 Nisan 1995, Şanlıurfa, 139-148.
- O'Hara, J. E., Shima, H., Zhang, C., 2009, Annotated catalogue of the Tachinidae (Insecta: Diptera) of China. *Zootaxa*, 2190: 1-236.
- Robertson, D. M., Shaw, M. R., 2012, Further rearing records of some West Palaearctic Tachinidae (Diptera). *Entomologist's Gazette*, 63: 161-172.
- Tschorsnig, H. P., 2005, Tachinidae. In Baur, H. (ed.): Determination list of entomophagous insects Nr. 14. *International Organization for biological and integrated control of noxious Animals and Plants/West Palaearctic regional Section Bulletin*, 28(11): 3-20.
- Tschorsnig H. P., Herting, B., 1994, *Die Raupenfliegen (Diptera: Tachinidae) Mitteleuropas: Bestimmungstabellen und Angaben zur Verbreitung und Ökologie der einzelnen Arten*. Stuttgarter Beiträge zur Naturkunde (A) 506: 1-170. Online Authorized Version of English Translation by Rayner R. & Raper C. Tschorsnig, H. P., Herting, B., 1994. The tachinids (Diptera: Tachinidae) of central Europe: identification keys for the species and data on distribution and ecology, <http://tachinidae.org.uk/site/downloads.php>. (12.06.2006).
- Tschorsnig, H. P., Herting, B., 1998, A new species of the genus *Meigenia* Robineau-Desvoidy (Diptera: Tachinidae). *Stuttgarter Beiträge zur Naturkunde A (Biologie)*, 569: 1-5.
- Tschorsnig, H. P., Richter, V. A., 1998. *Family Tachinidae*. In: Papp, L., Darvas, B. (Eds.). Contributions to a manual of Palaearctic Diptera, Science Herald Publishers, Budapest, 691-827.
- Tschorsnig, H. P., Richter, V. A., Cerretti, P., Zeegers, T., Bergström, C., Vaňhara, J., Van de Weyer, G., Bystrowski, C., Raper, C., Ziegler, J., Hubenov, Z. 2004, *Tachinidae*. In: Fauna Europaea service, <http://www.faunaeur.org>, (06.05.2010).
- Tomov, V., Gruev, B., 1975, Chrysomelidae (Coleoptera) Collected by. K. M. Guichard in Turkey, Greece and Yugoslavia. *Travaux Scientifiques Université de Plovdiv - Biologie.*, 13: 134-151.
- Tuatay, N., Kalkandelen, A., Aysev, N., 1972, *Nebat koruma müzesi katalogu, 1961-1971*. T.C. Tarım Bakanlığı Zirai Mücadele ve Zirai Karantina Genel Müdürlüğü Yayınları, Ankara, 55-57.
- Vaňhara, J., Tschorsnig, H. P., Herting, B., Mückstein, P., Michalková, V., 2009, Annotated host catalogue for the Tachinidae (Diptera) of the Czech Republic. *Entomologica Fennica*, 20: 22-48.
- Vig, K., 1997, Leaf Beetle Collection of the Mátra Museum, Gyöngyös, Hungary (Coleoptera, Chrysomelidae *sensu lato*). *Folia Historico Naturalia Musei Matraensis*, 22:175-201.
- Ziegler J., 1998, Die Morphologie der Puparien und der larvalen Cephalopharyngealskelette der Raupenfliegen (Diptera, Tachinidae) und ihre phylogenetische Bewertung. *Studia dipterologica Supplement*, 3: 244 pp.