

FIRST RECORDS OF *ALEIODES* WESMAEL, 1838 SPECIES IN EAST MARMARA REGION OF TURKEY (HYMENOPTERA: BRACONIDAE: ROGADINAE)

M. AYDOGDU and A. BEYARSLAN

Trakya University, Faculty of Arts and Sciences, Department of Biology,
22030 Edirne, Turkey; e-mail: maydogdu75@hotmail.com

Abstract - Collecting was carried out in spring, summer and autumn periods from 1992 to 2002 in a wide range of habitats at different altitudes in the East Marmara Region of Turkey. 14 species of the genus *Aleiodes* Wesmael, 1838 were determined. Four species are reported for the first time in the Turkish fauna. The general distribution and known hosts of the taxa are added.

KEY WORDS: Hymenoptera, Rogadinae, *Aleiodes*, fauna, East Marmara Region, Turkey

Izveček – PRVI PODATKI O VRSTAH RODU *ALEIODES* WESMAEL, 1838, V VZHODNI MARMARSKI REGIJI TURČIJE (HYMENOPTERA: BRACONIDAE: ROGADINAE)

Zbiranje je potekalo v pomladanskih, poletnih in jesenskih obdobjih od leta 1992 do 2002 v različnih življenjskih prostorih na različnih nadmorskih višinah v Vzhodni marmarski regiji Turčije. Določili smo 14 vrst iz rodu *Aleiodes* Wesmael, 1838. Štiri vrste so prvič ugotovljene v turški favni. Navedeni so splošna razširjenost in znani gostitelji vrst.

KLJUČNE BESEDE: Hymenoptera, Rogadinae, *Aleiodes*, favna, Vzhodna marmarska regija, Turčija

Introduction

The Rogadinae (Hym.: Braconidae) is a rather large and cosmopolitan subfamily. The genus *Aleiodes* is worldwide in distribution, but is particularly species rich in the Holarctic region. The species of *Aleiodes* are koinobiont endoparasitoids of

Lepidopteran larvae, especially of Noctuidae and Geometridae. The host caterpillar is mummified (SHAW, 1997). The genus *Aleiodes* comprise 215 species and about 126 species in the Palaearctic (YU et al., 2005).

The Nearctic *Aleiodes* species were revised by MARSH & SHAW (1998, 2001), SHAW & MARSH (1999) and SHAW et al. (1997, 1998a, 1998b). European species are under revision by Van Achterberg & Shaw. Main studies concerning *Aleiodes* species in the Palaearctic region were done by PAPP (1985a, 1985b, 1986, 1989a, 1989b, 1996), ACHTERBERG (1985) and BELOKOBYLSKIJ (1996). In addition a cladistic analysis of a large part of the species of *Aleiodes* was published by FORTIER & SHAW (1999).

Only 14 species of the Rogadinae are recorded from Turkey (AYDOGDU & BEYARSLAN, 2005; BEYARSLAN et al., 2002; ONCUER, 1991; SHENEFELT, 1975). A faunistic study of the Rogadinae species of Turkey hasn't been carried out up to now.

Many species of Braconidae use hosts which are important economically as pests of crops. The need for programmed "biological" control is already becoming more urgent as the effectiveness of chemical methods of pest control declines. The use of parasitoid insects in the control of pest species has not met more than sporadic success. To be effective in biological control an intimate knowledge of the biology of the insects involved is essential, and this depends upon an accurate knowledge of their taxonomy.

Materials and Methods

Solitary endoparasitoid *Aleiodes* species were collected from pastures, vegetable garden, crop fields, orchards, trefoil, olive grove, hazelnut garden, pine forests and mixed forests at different altitudes in East Marmara region between 1992 and 2002. The specimens were collected by using a sweep net and Malaise traps. Specimens were then pinned and labeled according to taxonomic rules and regulations. Pertinent literature was used for determination of species (PAPP, 1985a; TOBIAS et al., 1986). Some species were determined by Dr. S.A. Belokobylskij (Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia). Identified species of *Aleiodes* provided by Dr. S.A. Belokobylskij and Dr J. Papp (Zoological Department, Hungarian Natural History Museum, Budapest, Hungary) were used as comparison materials.

References are used for known distributions and hosts of the species in the world (BELOKOBYLSKIJ, 1996; BEYARSLAN et al., 2002; PAPP, 1985a, 1989b, 1996; PAPP & REZBANYAI-RESER, 1997; SHENEFELT, 1975; TOBIAS et al., 1986). Localities (with grid numbers) and collecting dates are listed for 14 species found in research areas. The collecting places (provinces) of species are shown on the map (Fig. 1).

The material is deposited in the Collection of Biological Department of Trakya University, Edirne, Turkey (T.U.). The following example denotes the information given for the material examined.

Bilecik [1]-Ayvacik [2], pasture [3], 700 m [4], 09.07.1993 [5], 1♀ [6].

[1] Administrative district (province)

[2] Town or Village

- [3] Habitat
 [4] Altitude
 [5] Collecting data (day/month/year)
 [6] Number of specimens

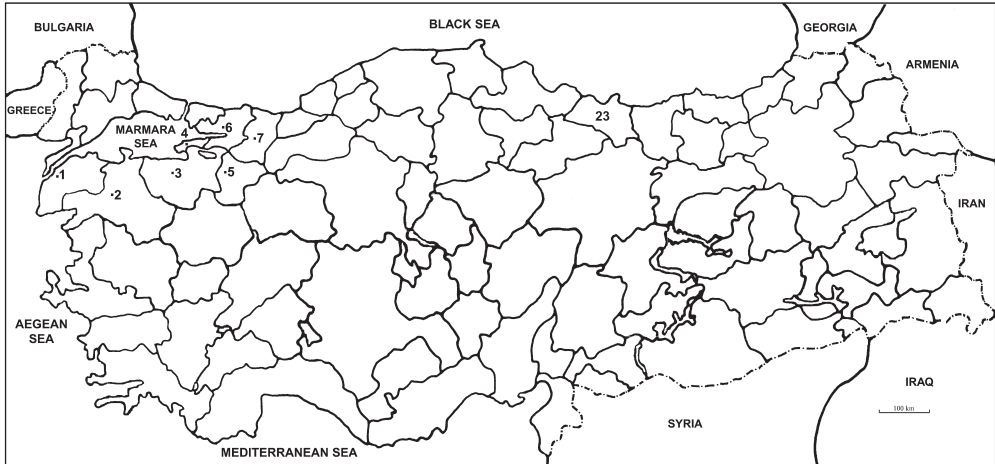


Fig. 1: Collecting places (provinces) of *Aleiodes* species in the East Marmara Region: 1 – Canakkale, 2 – Balıkesir, 3 – Bursa, 4 – Yalova, 5 – Bilecik, 6 – Adapazarı, 7 – Izmit.

Results

In the present survey fifteen taxa of Lepidoptera endoparasitoids were found in the East Marmara region of Turkey, which has not yet been exposed to massive applications of pesticides. By adding these new records, the number of *Aleiodes* species in Turkey has been raised from 14 to 18.

Aleiodes Wesmael, 1838

Aleiodes apicalis (Brullé, 1832)

Material examined: Adapazarı-Emirdag-Mezarlık, orchard, 150 m, 21.09.1992, 2♀; Karasu, pasture, 65 m, 8.07.1993, 1♀; Balıkesir-Burhaniye, orchard, 400 m, 18.09.1992, 1♀; Ivrindi-Gungormez, crop field, 150 m, 17.09.1992, 1♀; Yakupkoy, pasture, 75 m, 14.07.1993, 1♀; Susurluk-Aksu, orchard, 420 m, 18.09.1992, 2♀, 1♂; Bilecik-Cukurpinar, pasture, 500 m, 09.07.1993, 1♀; Tascilar-Kizilcukur, trefoil, 450 m, 20.09.1992, 1♀; Osmaneli-Içmeler, mixed forests, 600 m, 09.07.1993, 1♂; Pazaryeri, crop field, 700 m, 18.08.1994, 1♂; Bursa- Incirli-Akcagac, pasture, 400 m, 20.09.1992, 2♀; Inegöl-Mezitli, pine forests, 1200 m, 17.07.1993, 2♀, 1♂; Karacabey-Kulakpinari, crop field, 50 m, 12.07.1993, 1♀; Suleymaniye, pasture, 450 m, 19.09.1992, 1♂; Uludag-Yesiltarla, pine forests, 450 m, 19.09.1992, 2♂.

General Distribution: Afghanistan, Algeria, Canary Islands, Caucasus, Egypt, Europe, Iran, Israel, Japan, Kazakhstan, Libya, Russia, Siberia, Syria, Turkmenia, Turkey.

Hosts: Endoparasitoid of lepidopterans *Philudoria potatoria* L. (Lasiocampidae), *Mamestra brassicae* L., *Autographa gamma* L., *Discestra trifolii* Hfn. (Noctuidae).

Aleiodes bicolor (Spinola, 1808)

Material examined: Adapazari-Geyve-Baglarbasi, orchard, 200 m, 21.09.1992, 1 ♀; Pamukova, pine forests, 250 m, 17.08.1994, 1 ♀, 1 ♂; -Mekece, pasture, 200 m, 18.09.1992, 1 ♀; Balikesir-Burhaniye, orchard, 400 m, 18.09.1992, 3 ♀, 5 ♂; Dursunbey-Sacayagi, pine forests, 500 m, 14.07.1993, 2 ♀, 1 ♂; Gonen-Tahirova, pasture, 100 m, 15.07.1993, 4 ♀; Manyas-Kayacakoy, trefoil, 100 m, 15.07.1993, 4 ♀; Susurluk-Aksu, orchard, 420 m, 18.09.1992, 2 ♀, 4 ♂; -Cumalikizik, pine forests, 200 m, 18.09.1992, 1 ♀, 1 ♂; -Sultancayir, trefoil, 70 m, 18.09.1992, 2 ♀; -Yalicesme, trefoil, 600 m, 14.07.1993, 2 ♀; Bilecik-Ayvacic, pasture, 700 m, 09.07.1993, 3 ♀; Bayirkoy, vegetable garden, 450 m, 17.08.1994, 1 ♀, 1 ♂; Kuplu, orchard, 400 m, 20.09.1992, 1 ♀, 1 ♂; Osmaneli, vegetable garden, 500 m, 21.09.1992, 3 ♂; Pazaryeri, crop field, 700 m, 18.08.1994, 3 ♀, 2 ♂; Vezirhan, orchard, 350 m, 21.09.1992, 1 ♀; Yenikoy, orchard, 450 m, 20.09.1992, 2 ♀; Bursa-Incirli-Akcaagac, pasture, 400 m, 20.09.1992, 1 ♂; Inegol-Cerrah, vegetable garden, 400 m, 10.07.1993, 1 ♀; Karacabey-Cingenecemesi, crop field, 100 m, 1 ♂; Orhaneli-Cirpi, crop field, 500 m, 13.07.1993, 4 ♀, 2 ♂; Suleymaniye, pasture, 450 m, 18.09.1992, 2 ♀, 1 ♂; Uludag-Yesiltarla, pine forests, 450 m, 19.09.1992, 1 ♂; Yenisehir, trefoil, 350 m, 20.09.1992, 3 ♂; Canakkale-Bayramic-Evciler, orchard, 120 m, 16.09.1992, 1 ♀; Biga, orchard, 50 m, 16.07.1993, 2 ♀, 2 ♂; -Camlidere, pasture, 50 m, 20.08.1994, 2 ♂; Can, orchard, 150 m, 16.07.1993, 1 ♂; Kazdagi, pine forests, 700 m, 16.09.1992, 1 ♂; Izmit-Sapanca-Istanbul Univ.Tesis., pasture, 25 m, 16.08.1994, 1 ♂; Suadiye-Kestanelik, orchard, 100 m, 07.07.1993, 3 ♀; Uzuntarla, pasture, 100 m, 07.07.1993, 1 ♂; Yalova-Safran stream, pasture, 35 m, 19.08.2001, 1 ♂.

General Distribution: Afghanistan, China, Ciscaucasia, Europe, Iran, Korea, Libya, Mongolia, Transcaucasia, Tunisia, Turkey.

Hosts: Endoparasitoid of lepidopterans *Archiearis parthenias* L. (Geometridae); *Dascyhira albobentata* Brem. (Lymantridae); *Polyommatus icarus* Rott., *P. eros* Ochs. (Lycaenidae); *Apamea sordens* Hfn. (Noctuidae); *Nymphalis urticae* L. (Nymphalidae); *Pterophorus monodactylus* L., *Leioptilus tephradactylus* Hb. (Pterophoridae); *Hyphonephele jurtina* L. (Satyridae); *Zygaena filipendulae* L., *Z. meliloti* Esp., *Procris pruni* D.&S (Zygaenidae).

Aleiodes circumscriptus complex (Nees, 1834)

Material examined: Adapazari-Hendek-Huseyinseyh, hazelnut garden, 150 m, 27.06.2001, 1 ♀, 1 ♂; Bursa-Inegöl-Cerrah, vegetable garden, 400 m, 10.07.1993, 2 ♀.

General Distribution: Asia Minor, Caucasus, Europe, Faroes, Iran, Kazakhstan, Manchuria, Mongolia, Russia, Siberia, Turkey.

Hosts: Endoparasitoid of lepidopterans *Bupalus piniarius* L., *Hylaea fasciaria* L. (Geometridae); *Atolmis rubricollis* L. (Lithossidae); *Mythimna unipuncta* Hw.,

Mamestra brassicae L., *Lithomoia sclidaginis* Hb., *Apamea crenata* Hfn., *Orthosia incerta* Hfn., *O. gracilis* D.&S. (Noctuidae); *Dioryctria abietella* D.&S. (Tortricidae).

***Aleiodes dimidiatus* (Spinola, 1808)**

Material examined: Adapazari-Akyazi-Madenler, hazelnut garden, 200 m, 22.09.1992, 1♀, 1♂; Balikesir-Ovakoy, pasture, 350 m, 17.09.1992, 2♂; Yakupkoy, pasture, 75 m, 14.07.1993, 1♀; Bilecik-Tascilar, crop field, 550 m, 20.09.1992, 1♂; Osmaneli, vegetable garden, 500 m, 21.09.1992, 1♂; Izmit-Uzuntarla, pasture, 100 m, 07.07.1993, 1♂; Bursa-Cumalikizik, pine forests, 200 m, 18.09.1992, 2♀, 2♂; Incirli-Akcagac, pasture, 400 m, 20.09.1992, 1♂; Karacabey-Kulakpinari, crop field, 50 m, 12.07.1993, 1♀; Suleymaniye, pasture, 450 m, 19.09.1992, 1♀, 3♂; Canakkale-Bayramic-Evciler, orchard, 120 m, 16.09.1992, 1♂; Biga, orchard, 50 m, 16.07.1993, 1♂.

General Distribution: Algeria, Europe, Kamchatka, Kazakhstan, Korea, Manchuria, Mongolia, Morocco, Russia, Transcaucasia, Turkey.

Hosts: Endoparasitoid of lepidopterans *Arctia caja* L. *Diacrisia sannio* L., *Phragmatobia rupicola* Gr. (Arctiidae); *Philudoria potatoaria* L., *Lasiocampa quercus* L., *Macrothylacia rubi* L. (Lasiocampidae); *Orgyia antiqua* L., *O. dubia* Ta. (Lymantriidae); *Agrotis segetum* D.&S., *A. vestigalis* H., *A. clavis* H., *A. exclammationis* L., *Euxoa tritici* L., *E. temera* H., *Helicoverpa armigera* H., *Cosmia subtilis* St., *Haplodrina alsines* Br., *H. blanda* D.&S., *Caradrina morpheus* Hfn., *Apamea anceps* D.&S., *Cerapteryx graminis* L. (Noctuidae); *Thaumetopoea processionea* L. (Thaumetopoeidae).

***Aleiodes gastritor* (Thunberg, 1822)**

Material examined: Balikesir-Manyas-Kuscenneti, pasture, 80 m, 15.07.1993, 1♀; Canakkale-Lapseki-Bayramdere, orchard, 40 m, 23.08.1994, 2♀.

General Distribution: Palaearctic regions, Korea, Turkey.

Hosts: So far unknown.

***Aleiodes nocturnus* (Telenga, 1941)**

Material examined: Balikesir-Susurluk-Yalicesme, trefoil, 600 m, 14.07.1993, 1♂; Canakkale-Gokceada-Tigem, olive grove, 40 m, 06.07.1996, 1♂; -Kale, pasture, 30 m, 07.07.1996, 1♂.

General Distribution: Hungary, Iran, Kazakhstan, Mongolia, Russia, Turkey.

Hosts: Endoparasitoid of lepidopterans *Porthesia cargalica* M. (Lymantriidae), *Helicoverpa armigera* Hb. (Noctuidae).

***Aleiodes pallidator* (Thunberg, 1822)**

Material examined: Balikesir-Susurluk-Yalicesme, trefoil, 600 m, 14.07.1993, 1♀.

General Distribution: Afghanistan, Europe, Mongolia, Caucasus, Central Asia, Korea, Pacific Coastal Region, Russia, Turkey.

Hosts: Endoparasitoid of lepidopterans *Anarsia lineatella* Z. (Gelechiidae); *Cyclophora quercimontaria* Bast., *C. punctaria* L., *C. pendularia* Cl., *Hylaea fasciaria*

L., *Bupalus piniaius* L., *Dyscia conspersia* D.&S. (Geometridae); *Leucoma salicis* L., *Lymantria dispar* L., *Euproctis chrysorrhoea* L. (Lymantriidae); *Cosmotriche lunigera* Esp. (Lasiocampidae); *Spodoptera exigua* Hb., *Agrotis segetum* D.&S. (Noctuidae); *Psyche viciella* D.&S. (Psychidae); *Apotomis sororculana* Zett. (Tortricidae).

***Aleiodes rossicus* (Kokoujev, 1898)**

Material examined: Bursa-Yenisehir-Cayirli, orchard, 300 m, 24.07.2001, 1♂.

General Distribution: Entire Palaearctic, India.

Hosts: Endoparasitoid of lepidopterans *Cerura vinula* L., *Harpyia hermelina* G. (Notodontidae); *Cilix glaucata* Scop. (Drepanidae); *Ostrinia nibialis* Hb., *Pyrausta sambucalis* D.&S. (Pyraustidae); *Eupithecia sobrinata* Hb., *Semiothisa dathrata* L., *Tephрина arenacearia* D.&S., *Chlorocyclistis coronata* Hb., *Erannis defoliaria* Cl., *E. jacobsoni* D., *Hylaea fasciaria* L., *Lycia hirtarius* Cl., *L. pomonarius* Hb., *Operophtera brumata* L., *Apochemia hispidaria* D.&S. (Geometridae); *Malacosoma neustria* L. (Lasiocampidae); *Archips rosana* L., *Lobesia botrana* D.&S. (Tortricidae); *Euproctis similis* F., *E. chrysorrhoea* L., *Leucoma salicis* L. (Lymantriidae); *Autographa gamma* L., *Spodoptera exigua* Hb., *Helicoverpa armigera* Hb., *Euclidimera ni* Cl. (Noctuidae).

New record for Turkey.

***Aleiodes rufipes* (Thomson, 1892)**

Material examined: Canakkale-Ayvacic, pasture, 150 m, 22.07.2001, 1♀.

General Distribution: Finland, China, European part of Russia, Hungary, Sweden, Turkey, Ukraine.

Hosts: So far unknown.

***Aleiodes schirjajevi* (Kokoujev, 1898)**

Material examined: Bilecik-Ayvacic, pasture, 700 m, 09.07.1993, 1♂; Bilecik-Osmaneli, vegetable garden, 500 m, 08.09.1992, 2♀; Bursa-Keles-Barakli, orchard, 1150 m, 13.07.1993, 1♀; Izmit-Uzuntarla, pasture, 100 m, 07.07.1993, 1♂.

General Distribution: Caucasus, former Yugoslavia, Kazakhstan, Russia.

Hosts: So far unknown.

***Aleiodes signatus* (Nees, 1811)**

Material examined: Bilecik-Vezirhan, orchard, 350 m, 25.07.2001, 2♀.

General Distribution: Palaearctic regions, Turkey.

Hosts: Endoparasitoid of lepidopterans *Arctia caja* L., *A. villica* L., *Ocnogyna boeticum* Rbr., *Coscinia cribrum* L. (Arctiidae); *Philudoria potatoria* L., (Lasiocampidae); *Orgyia antiqua* L., *O. gonostigma* L., *Gynaephora sclenitica* Esp., *Euproctis chrysorrhoea* L., *E. similis* Fu. (Lymantriidae); *Autographa gamma* L., *Noctua fimbriata* Sch., *N. pronuba* L., *Acronicta psi* L. (Noctuidae); *Thaumetopoea processionea* L. *T. pityocampa* D.&S. (Thaumetopoeidae); *Spilonota ocellana* F. (Tortricidae).

New record for Turkey.

***Aleiodes unguilaris* (Thomson, 1891)**

Material examined: Balikesir-Susurluk-Yahyakoy, pasture, 400 m, 23.07.2001, 1♂.

General Distribution: Hungary, Korea, Sweden.

Hosts: So far unknown.

New record for Turkey.

***Aleiodes venustus* (Kokoujev, 1905)**

Material examined: Bilecik-Pazaryeri-Dikilitas, pasture, 350 m, 10.09.2002, 1♀.

General Distribution: Central Asia, Kazakhstan, Russia, Turkey.

Hosts: So far unknown.

***Aleiodes vittiger* Wesmael, 1838**

Material examined: Balikesir-Susurluk-Demirkapi, vegetable garden, 280 m, 23.07.2001, 1♀; Bursa-Karacabey-Hara, pasture, 200 m, 23.7.2001, 3♂.

General Distribution: Europe, Kazakhstan, Mongolia.

Hosts: So far unknown.

New record for Turkey.

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