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Contribution to the Fulgoromorpha (Cixiidae, Delphacidae) and Cicadomorpha (Aphrophoridae, Cicadidae, Cicadellidae) (Insecta: Hemiptera) fauna of farming terraces in Aspat (Strobilos) ancient city and its territorium, Bodrum, Muğla, western Turkey

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A b s t r a c t : This paper provides information about the Fulgoromorpha (Cixiidae, Delphacidae) and Cicadomorpha (Aphrophoridae, Cicadidae, Cicadellidae) fauna of farming terraces in Aspat (Strobilos) ancient city and its territorium, Bodrum, Muğla, western Turkey, during the years of 2008-2009. As a result of this study, fifteen species were identified. Among them *Thamnotettix zelleri* (KIRSCHBAUM 1868), *Cicada orni* LINNAEUS 1758 and *Lyristes plebejus* (SCOPOLI 1763) were the most abundant species. Seven species were recorded for the first time from Muğla province of Turkey.

K e y w o r d s : Cicadomorpha, Fulgoromorpha, Hemiptera, Fauna, Turkey.

Introduction

In this study, Fulgoromorpha (Cixiidae, Delphacidae) and Cicadomorpha (Aphrophoridae, Cicadidae, Cicadellidae) fauna of farming terraces in Aspat (Strobilos) ancient city and its territorium (27°26'E and 37°02'N), Bodrum, Muğla, western Turkey have been evaluated. Studies have been conducted in 500 hectares of land during the years of 2008-2009. Material have been monitored by beating, handpicking and sweep net sampling at two weeks' intervals. Material have been deposited in the collection of Lodos Entomological Museum, Turkey (LEMT) of Ege University, Izmir and in the collection of Biology Department of 19 Mayıs University, Samsun.

Results

In this study, 15 species belong to five families of Hemiptera have been recorded. As a result, a total 165 specimens have been recorded in this area.

Fulgoromorpha EVANS 1946

Family Cixiidae SPINOLA 1839

Hyalesthes obsoletus SIGNORET 1865

Material examined: Muğla: Bodrum, Aspat, 10.V.2008, on weeds, 1 ex., totally 1 specimen.

Distribution in Turkey: Adana, Adıyaman, Ağrı, Ankara, Aydın, Diyarbakır, Erzincan, Elazığ, Erzurum, Gaziantep, Giresun, Hakkari, İstanbul, Kars, Manisa, Mardin, Sakarya, Sinop, Sivas, Şanlıurfa, Tokat, Trabzon, Van (ÖNDER et al. 2011). Recorded for the first time from Muğla province.

Family Delphacidae LEACH 1815

Toya propingua (FIEBER 1866)

Material examined: Muğla: Bodrum, Aspat, 16.X.2009, on weeds, 1 ex., 13.XI.2009, on weeds, 9 exs. Totally 10 specimens.

Distribution in Turkey: Adana, Afyonkarahisar, Amasya, Ankara, Antalya, Diyarbakır, Erzurum, Gaziantep, Hatay, Isparta, İçel, Kastamonu, Mardin, Ordu, Siirt, Sinop (ÖNDER et al. 2011). Reported from Muğla province by DEMİR (2008).

Kelisia ribauti WAGNER 1938

Material examined: Muğla: Bodrum, Aspat, 16.X.2009, on weeds, 1 ex., 13.XI.2009, on weeds, 5 exs. Totally 6 specimens.

Distribution in Turkey: Ankara, Bitlis, Diyarbakır, Erzurum, Hakkari, Konya, Siirt, Van (ÖNDER et al. 2011). Recorded for the first time from Muğla province.

Cicadomorpha EVANS 1946

Family Aphrophoridae AMYOT & SERVILLE 1843

Philaenus spumarius (LINNAEUS 1758)

Material examined: Muğla: Bodrum, Aspat, 11.IV.2009, on weeds, 1 ex., 01.V.2009, on weeds, 4 exs., 18.V.2009, on weeds, 1 ex., 23.V.2009, on weeds, 1 ex., 25.XII.2009, on the ground, 1 ex., totally 8 specimens.

Distribution in Turkey: Northwest Anatolia, Ağrı, Amasya, Ankara, Artvin, Aydın, Balıkesir, Bilecik, Bitlis, Bolu, Bursa, Çanakkale, Elazığ, Erzincan, Erzurum, Eskişehir, Giresun, Gümüşhane, Hakkari, İstanbul, İzmir, Kars, Kırklareli, Kütahya, Kocaeli, Malatya, Manisa, Mardin, Muğla, Ordu, Rize, Samsun, Siirt, Sinop, Tekirdağ, Trabzon, Tokat, Van (ÖNDER et al. 2011).

Family Cicadidae WESTWOOD 1840

Lyristes plebejus (SCOPOLI 1763)

Material examined: Muğla: Bodrum, Aspat, 19.VI.2008, on *Pinus brutia*, 6 exs., 08.VII.2008, on *P. brutia*, 12 exs., 01.VIII.2008, on *P. brutia*, 2 exs., 29.VI.2009, on *P. brutia*, 3 exs., 10.VIII.2009, on *P. brutia*, 3 exs., 18.VII.2009, on *P. brutia*, 6 exs. Totally 32 specimens.

Distribution in Turkey: Adana, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bursa, Denizli, Erzincan, Gaziantep, İstanbul, İzmir, Kahramanmaraş, Kırklareli, Kütahya, Manisa, Mardin, Muğla (ÖNDER et al. 2011).

***Cicada orni* LINNAEUS 1758**

Material examined: Muğla: Bodrum, Aspat, 08.VII.2008, on *P. brutia*, 12 exs., 18.VII.2008, on *P. brutia*, 2 exs., 01.VIII.2008, on *P. brutia*, 10 exs., 15.VIII.2008, on *P. brutia*, 1 ex., 18.VII.2009, on *P. brutia*, 1 ex., 19.VII.2009, on *P. brutia*, 3 exs., 24.VIII.2009, on *P. brutia*, 8 exs. Totally 37 specimens.

Distribution in Turkey: Adana, Aydın, Artvin, Balıkesir, Diyarbakır, Eskişehir, İstanbul, İzmir, Kahramanmaraş (ÖNDER et al. 2011). Recorded for the first time from Muğla province.

Family Cicadellidae LATREILLE 1825

Subfamily Deltocephalinae FIEBER 1869

***Thamnotettix zelleri* (KIRSCHBAUM 1868)**

Material examined: Muğla: Bodrum, Aspat, 29.III.2008, on weeds, 11 exs., 12.IV.2008, on weeds, 3 exs., 26.IV.2008, on weeds, 1 ex., 10.V.2008, on weeds, 2 exs., 07.VI.2008, on weeds, 1 ex., 11.IV.2009, on weeds, 23 exs., 1.V.2009, on weeds, 11 exs., 22.VI.2009, on weeds, 1 ex., 18.IX.2009, on weeds, 1 ex., totally 54 specimens.

Distribution in Turkey: Adana, Antalya, Aydın, Burdur, Bursa, Çanakkale, Çorum, Edirne, Hatay, İçel, İzmir, Kırıkkale, Manisa, Mardin, Muğla (ÖNDER et al. 2011).

***Hecalus storai* (LINDBERG 1936)**

Material examined: Muğla: Bodrum, Aspat, 24.VIII.2009, on weeds, 1 ex., totally 1 specimen.

Distribution in Turkey: Bursa, Mardin, Manisa (ÖNDER et al. 2011). Recorded for the first time from Muğla province.

***Psammotettix provincialis* (RIBAUT 1925)**

Material examined: Muğla: Bodrum, Aspat, 13.XI.2009, on weeds, 2 exs. totally 2 specimens.

Distribution in Turkey: Adana, Ankara, Antalya, Aydın, Bolu, Bursa, Çankırı, Diyarbakır, Edirne, Erzurum, Hatay, İçel, İstanbul, İzmir, Kayseri, Konya, Manisa, Mardin, Nevşehir, Sakarya, Samsun, Van (ÖNDER et al. 2011). Recorded for the first time from Muğla province.

***Exitianus capicola* (STÂL 1855)**

Material examined: Muğla: Bodrum, Aspat, 13.XI.2009, on weeds, 1 ex., totally 1 specimen.

Distribution in Turkey: Mediterranean and Aegean regions of Turkey, Adana, Antalya, Aydın, Bursa, Hatay, İçel, İzmir, Manisa, Muğla (ÖNDER et al. 2011).

***Allygus modestus* SCOTT 1876**

Material examined: Muğla: Bodrum, Aspat, 26.IV.2008, on weeds, 1 ex., totally 1 specimen.

Distribution in Turkey: Hatay, Muğla (ÖNDER et al. 2011).

***Euscelis lineolatus* BRULLÉ 1832**

Material examined: Muğla: Bodrum, Aspat, 10.V.2008, on weeds, 1 ex., 01.V.2009, on weeds, 1 ex., 23.V.2009, on weeds, 1 ex., totally 3 specimens.

Distribution in Turkey: Ankara, Artvin, Balıkesir, Bursa, İstanbul, İzmir, Kırıkkale, Kırklareli, Kırşehir, Konya, Malatya, Manisa, Niğde, Samsun, Trabzon, Uşak (ÖNDER et al. 2011). Recorded for the first time from Muğla province.

***Goniagnathus guttulinervis* (KIRSCHBAUM 1868)**

Material examined: Muğla: Bodrum, Aspat, 19.VII.2009, on weeds, 1 ex., totally 1 specimen.

Distribution in Turkey: Reported from Antalya, Turkey (DEMİR 2006). Recorded for the first time from Muğla province.

***Circulifer opacipennis* (LETHIERRY 1876)**

Material examined: Muğla: Bodrum, Aspat, 16.X.2009, on weeds, 7 exs. totally 7 specimens.

Distribution in Turkey: Distributed in all regions of Turkey (ÖNDER et al. 2011).

Subfamily Agallinae KIRKALDY 1901

***Austroagallia sinuata* (MULSANT & REY 1855)**

Material examined: Muğla: Bodrum, Aspat, 16.X.2009, on weeds, 1 ex., totally 1 specimen.

Distribution in Turkey: Adana, Ankara, Bursa, Diyarbakır, Erzincan, Erzurum, Gaziantep, Hakkari, Iğdır, İçel, İzmir, Kars, Kırşehir, Mardin, Muğla, Nevşehir, Samsun, Siirt, Şırnak (ÖNDER et al. 2011).

As a result of this study, fifteen species were identified. Among them *Thamnotettix zelleri* (KIRSCHBAUM 1868), *Cicada orni* LINNAEUS 1758 and *Lyristes plebejus* (SCOPOLI 1763) were the most abundant species. Seven species namely *Hyaalsthes obsoletus* SIGNORET 1865, *Kelisia ribauti* WAGNER 1938, *Cicada orni* LINNAEUS 1758, *Hecalus storai* (LINDBERG 1936), *Psamnotettix provincialis* (RIBAUT 1925), *Goniagnathus guttulinervis* (KIRSCHBAUM 1868) and *Euscelis lineolatus* BRULLÉ 1832 were recorded for the first time from Muğla province of Turkey. The number of species collected only in 2008 was two (12,50 %) and in 2009 was nine (56,25 %). The number found in both year was five (31,25 %).

Zusammenfassung

Vorliegende Arbeit informiert über die Fauna an Fulgoromorpha (Cixiidae, Delphacidae) und Cicadomorpha (Aphrophoridae, Cicadidae, Cicadellidae) von landwirtschaftlich genützten Flächen der historischen Stadt Aspat (Strobilos) und ihrem Umfeld, Bodrum, Muğla, in der Westtürkei, basierend auf Studien der Jahre 2008 bis 2009. Als Ergebnis konnten 15 Arten nachgewiesen werden, *Thamnotettix zelleri* (KIRSCHBAUM 1868), *Cicada orni* LINNAEUS 1758 und *Lyristes plebejus* (SCOPOLI 1763) stellten sich als die häufigsten Spezies heraus. 7 Arten konnten erstmalig für die türkische Provinz Muğla vorgestellt werden.

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