

Additional Notes on the Odonata Fauna of Kurupelit (Samsun, Turkey)

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Abstract: In this study 387 Odonata specimens were collected and identified from the vicinity of streams and puddles in Kurupelit, Samsun, Turkey, between May and October 2002-2005. In all, 27 species from 17 genera belonging to 9 families were identified, 9 of which (*Coenagrion scitulum*, *Ischnura elegans ebneri*, *Aeshna affinis*, *Aeshna isosceles antehumeralis*, *Anax parthenope*, *Hemianax ephippiger*, *Libellula depressa*, *Libellula fulva*, and *Orthetrum brunneum*) are new records for the Odonata fauna of Samsun. This study includes faunistic and distributional records of the 27 species.

Key Words: Odonata, fauna, Kurupelit, Samsun, Turkey

Kurupelit (Samsun, Türkiye) Odonata Faunasına Katkılar

Özet: Bu çalışmada, 2002-2005 yıllarında Mayıs-Ekim ayları süresince Kurupelit, Samsun'daki su birikintilerinden ve ırmak etraflarından 387 Odonata örneği toplanıp teşhis edildi. 9 familyaya ait 17 cinsin 27 türü tespit edilmiştir, bunların 9'u (*Coenagrion scitulum*, *Ischnura elegans ebneri*, *Aeshna affinis*, *Aeshna isosceles antehumeralis*, *Anax parthenope*, *Hemianax ephippiger*, *Libellula depressa*, *Libellula fulva*, *Orthetrum brunneum*) Samsun Odonata faunası için yeni kayıttır. Bu çalışma 27 türün faunistik ve dağılımsal kayıtlarını içerir.

Anahtar Sözcükler: Odonata, Fauna, Kurupelit, Samsun, Türkiye

Introduction

Although the order Odonata is an important group among the insects, studies of the Odonata fauna in Turkey are too few. There are a few records reported by Demirsoy (1982, 1995) and Van Pelt (2004) from Samsun province, but this province has not yet been studied in detail. Kurupelit, located in Samsun province, has a rich habitat and contains a variety of waters, such as streams, puddles, and wetlands. This area is also suitable for the growth of odonates. Therefore, we surveyed the odonates of Kurupelit, which have not been previously investigated.

Materials and Methods

Kurupelit is located in the middle Black Sea region of Turkey. The research area is situated at lat 41°21'-41°22'N, long 36°14'-36°11'E at an altitude of 4-180 m (Figure).

Examined specimens were collected from Kurupelit between May and October of 2002-2005. Odonata specimens were collected with aerial nets. Specimens were put into envelopes and transported to the lab, where they were kept in acetone-filled jars for a day, which was followed by drying for 2 h. After the specimens were softened in jars for approximately 3-4 h, they were desiccated and then pinned. All the specimens were deposited at the Ondokuz Mayıs University Zoology Museum.

Bei-Bienko (1964), Schmidt (1967), Demirsoy (1982, 1995), Schneider (1986), Askew (1988), Dumont (1991), Battin (1993) and Beschovski (1994) were used for identification of the specimens.

Results

Suborder: Zygoptera

Family: Calopterygidae

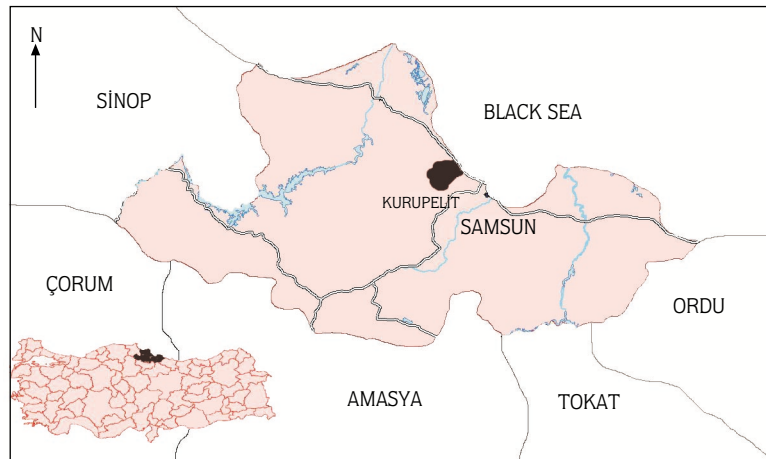


Figure. Kurupelit, situated in the Samsun province of Turkey.

Genus: *Calopteryx* Leach, 1815

Species: *Calopteryx splendens* (Harris, 1782)

Material Examined: 16.06.2003 1♂; 07.07.2003 1♂, 1♀; 24.07.2003 1♂.

Distribution in Turkey: Adana, Adıyaman, Afyonkarahisar, Ağrı, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bartın, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Giresun, Gümüşhane, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Kars, Kayseri, Kırklareli, Kırşehir, Konya, Kütahya, Malatya, Manisa, Mersin, Muğla, Nevşehir, Ordu, Sakarya, Samsun, Sivas, Şanlıurfa, Tekirdağ, Trabzon, Yozgat, and Zonguldak (Morton, 1915; Longfield, 1932; Demirsoy, 1982, 1995; Ardiç and Uygun, 1996; Hacet and Aktaş, 1997; Salur and Kıyak, 2000b, 2006; Salur and Öz Saraç, 2004; Kalkman et al., 2004b).

Worldwide Distribution: Europe, Bulgaria, Greece, Asia Minor, North Africa, and southern Scandinavia (Beschovski, 1964; Asahina, 1973; Steinmann, 1997a; Van Pelt, 1999).

Species: *Calopteryx virgo festiva* (Brulle, 1832)

Material Examined: 24.06.2002 2♀♀; 08.07.2002 1♂, 2♀♀; 02.06.2003 1♂, 2♀♀; 04.06.2003 1♂; 06.06.2003 2♂♂, 2♀♀; 09.06.2003 1♂, 1♀; 10.06.2003 2♂♂; 16.06.2003 4♂♂, 6♀♀; 09.07.2003 4♂♂, 2♀♀; 11.07.2003 4♂♂, 4♀♀; 21.07.2003 1♂; 24.07.2003

3♂♂, 3♀♀; 28.07.2003 1♀; 06.08.2003 3♂♂, 4♀♀; 08.08.2003 1♂; 15.08.2003 1♂, 1♀; 19.08.2003 4♀♀; 22.08.2003 1♀; 28.08.2003 2♀♀.

Distribution in Turkey: Adana, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bilecik, Bingöl, Bolu, Burdur, Bursa, Denizli, Edirne, Erzincan, Eskişehir, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Karabük, Kastamonu, Kayseri, Kırklareli, Kütahya, Malatya, Mersin, Muğla, Ordu, Rize, Sakarya, Samsun, Tekirdağ, Trabzon, and Zonguldak (Morton, 1915; Dumont, 1977; Demirsoy, 1982, 1995; Hacet and Aktaş, 2004; Kalkman et al., 2004a, 2004b; Van Pelt, 2004; Salur and Kıyak, 2006).

Worldwide Distribution: Europe, Greece, Asia Minor, and Turkestan (Demirsoy, 1982; Steinmann, 1997a).

Family: Euphaeidae

Genus: *Epallage* Charpentier, 1840

Species: *Epallage fatime* (Charpentier, 1840)

Material Examined: 28.05.2003 1♀; 11.06.2003 1♂; 07.07.2003 2♂♂, 1♀; 09.07.2003 1♀; 11.07.2003 1♂; 21.07.2003 2♂♂; 08.08.2003 1♂; 22.08.2003 1♂; 08.07.2004 1♂.

Distribution in Turkey: Adana, Adıyaman, Afyonkarahisar, Ağrı, Ankara, Antalya, Artvin, Balıkesir, Bilecik, Bingöl, Bitlis, Bursa, Denizli, Elazığ, Eskişehir, Erzincan, Erzurum, Gaziantep, Giresun, Hatay, İstanbul, Kahramanmaraş, Kars, Kayseri, Kırklareli, Kilis, Konya, Kütahya, Malatya, Manisa, Mardin, Mersin, Muğla, Ordu,

Osmaniye, Sakarya, Samsun, Şanlıurfa, and Trabzon (Schneider, 1845; Selys, 1887; Dumont, 1977; Demirsoy, 1982, 1995; Schneider, 1985; Dumont et al., 1988; Hacet and Aktaş, 1997; Salur and Kıyak, 2000b, 2006; Kalkman et al., 2004a, 2004b; Van Pelt, 2004).

Worldwide Distribution: From Kashmir to south-central Europe, Bulgaria, Greece, Turkey, Iraq, and Syria (Asahina, 1973; Schneider, 1981; Beschovski, 1989; Steinmann, 1997a; Van Pelt, 1999; Kalkman et al., 2003).

Family: Lestidae

Genus: *Lestes* Leach, 1815

Species: *Lestes parvidens* Artobolewski, 1929

Material Examined: 25.10.2002 1♂, 1♀; 28.08.2003 4♂♂, 3♀.

Distribution in Turkey: Adana, Ankara, Antalya, Artvin, Aydın, Çanakkale, Edirne, Eskişehir, Hakkari, Hatay, Isparta, İstanbul, İzmir, Kars, Kırklareli, Konya, Manisa, Mardin, Mersin, Muğla, Osmaniye, Samsun, Tekirdağ, and Van (Dumont, 1977; Demirsoy, 1982, 1995; Dumont et al., 1988; Hacet and Aktaş, 2004; Kalkman et al., 2004a, 2004b; Van Pelt, 2004; Salur and Kıyak, 2006).

Worldwide Distribution: From Crimea to Cyprus, Caucasia, Anatolia, and the Levant (Dumont, 1991; Demirsoy, 1995; Steinmann, 1997a).

Family: Coenagrionidae

Genus: *Coenagrion* Kirby, 1890

Species: *Coenagrion puella* (Linnaeus, 1758)

Material Examined: 10.05.2002 1♂, 1♀; 17.05.2002 9♂♂, 2♀♀; 26.05.2002 2♀♀; 30.05.2002 3♀♀; 17.06.2002 7♂♂, 5♀♀; 24.06.2002 7♂♂, 5♀♀; 08.07.2002 1♂; 15.05.2003 2♂♂; 22.05.2003 4♂♂, 1♀; 23.05.2003 1♂, 1♀; 02.06.2003 4♂♂; 06.06.2003 6♂♂; 09.06.2003 1♂, 1♀; 10.06.2003 2♂♂, 1♀; 16.06.2003 6♂♂; 09.07.2003 1♂; 11.07.2003 1♂.

Distribution in Turkey: Afyonkarahisar, Amasya, Ankara, Antalya, Artvin, Bingöl, Bolu, Çankırı, Çorum, Edirne, Elazığ, Erzurum, Giresun, Isparta, İstanbul, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kırklareli, Kütahya, Ordu, Rize, Sakarya, Samsun, Tekirdağ, Van, Yozgat, and Zonguldak (Morton, 1915; Demirsoy, 1995; Hacet and Aktaş, 1997, 2004; Salur and Kıyak, 2000b, 2006; Kalkman et al., 2004a, 2004b; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Europe (except Iceland), Bulgaria, Greece, Turkey, western Asia, North Africa, Iran, Syria (Asahina, 1973; Schneider, 1981; Beschovski, 1989; Steinmann, 1997a; Van Pelt, 1999; Kalkman et al., 2003).

Species: *Coenagrion scitulum* (Rambur, 1842)

Material Examined: 08.07.2004 1♂.

Distribution in Turkey: Afyonkarahisar, Ankara, Antalya, Bolu, Çorum, Edirne, Isparta, İstanbul, Kırklareli, Mersin, Muğla, Van, and Yozgat (Morton, 1915; Dumont, 1977; Demirsoy, 1995; Hacet and Aktaş, 1997, 2004; Kalkman et al., 2004b; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Mediterranean region of Europe, Asia Minor, North Africa, Algeria, and extending from Spain and Morocco to the Middle East (Askew, 1988; Steinmann, 1997a).

Genus: *Enallagma* Charpentier, 1840

Species: *Enallagma cyathigerum* (Charpentier, 1840)

Material Examined: 23.05.2003 1♀; 29.07.2003 1♂, 2♀♀, 08.07.04 1♂.

Distribution in Turkey: Afyonkarahisar, Ankara, Antalya, Artvin, Balıkesir, Bitlis, Bolu, Burdur, Çankırı, Çorum, Edirne, Elazığ, Erzurum, Eskişehir, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Kars, Kırklareli, Kırşehir, Konya, Malatya, Mersin, Muğla, Niğde, Ordu, Samsun, Van, and Yozgat (Morton, 1914; Dumont, 1977; Demirsoy, 1995; Ardiç and Uygun, 1996; Hacet and Aktaş, 2004; Kalkman et al., 2004b; Salur and Özşaraç, 2004; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Palaearctic region, Europe, Asia, and North America (Askew, 1988; Steinmann, 1997a).

Genus: *Ischnura* Charpentier, 1840

Species: *Ischnura elegans ebneri* Schmidt, 1938

Material Examined: 02.06.2003 2♂♂, 1♀; 05.06.2003 1♂, 1♀; 11.07.2003 1♂; 21.07.2003 9♂♂, 4♀♀; 29.07.2003 4♂♂, 2♀♀; 08.08.2003 4♂♂, 3♀♀; 22.08.2003 4♂♂, 4♀♀; 26.09.2003 1♂, 08.07.2004 1♂.

Distribution in Turkey: Adana, Adıyaman, Ağrı, Antalya, Aydın, Burdur, Bursa, Denizli, Diyarbakır, Edirne, Gaziantep, Hatay, Isparta, İzmir, Kahramanmaraş, Kırklareli, Kırşehir, Kocaeli, Konya, Mersin, Niğde, Osmaniye, Sivas, and Şanlıurfa (Dumont,

1977; Schneider, 1985; Dumont et al., 1988; Demirsoy, 1995; Salur and Öz Saraç, 2004; Salur and Kıyak, 2006).

Worldwide Distribution: South and central Anatolia, the Levant, Turkey, and Crete. (Dumont, 1991; Steinmann, 1997a; Kalkman et al., 2003).

Family: Platycnemididae

Genus: *Platycnemis* Charpentier, 1840

Species: *Platycnemis pennipes* (Pallas, 1771)

Material Examined: 23.05.2003 2♀; 24.05.2002 5♀; 26.05.2003 4♀; 30.05.2003 2♂, 4♀; 24.06.2003 3♂, 4♀; 08.07.2003 6♂, 2♀; 02.06.2003 4♂, 3♀; 03.06.2003 3♂, 2♀; 06.06.2003 5♂; 10.06.2003 4♂, 3♀; 16.06.2003 3♂; 07.07.2003 1♀; 09.07.2003 6♂, 2♀; 11.07.2003 8♂, 5♀; 21.07.2003 3♂, 1♀; 24.07.2003 3♂, 4♀; 29.07.2003 2♂; 06.08.2003 6♂, 1♀; 08.08.2003 3♂, 1♀; 15.08.2003 4♂, 3♀; 19.08.2003 1♂, 2♀; 22.08.2003 2♂; 28.08.2003 2♂, 1♀.

Distribution in Turkey: Adana, Afyonkarahisar, Ağrı, Amasya, Ankara, Antalya, Balıkesir, Bartın, Bolu, Burdur, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Edirne, Erzurum, Eskişehir, Isparta, İstanbul, İzmir, Kahramanmaraş, Kars, Kayseri, Kırklareli, Kırşehir, Kocaeli, Konya, Kütahya, Malatya, Manisa, Mardin, Mersin, Muğla, Ordu, Osmaniye, Rize, Sakarya, Samsun, Sivas, Tekirdağ, Trabzon, Yozgat, and Zonguldak (Morton, 1915; Dumont, 1977; Demirsoy, 1982, 1995; Ardiç and Uygun, 1996; Hacet and Aktaş, 1997, 2004; Salur and Kıyak, 2000b, 2006; Kalkman et al., 2004a, 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Europe, Bulgaria, Greece, western Asia, Turkey, Iraq (Beschovski, 1964; Asahina, 1973; Demirsoy, 1982; Steinmann, 1997a; Van Pelt, 1999; Kalkman et al., 2003).

Suborder: Anisoptera

Family: Aeshnidae

Genus: *Aeshna* Fabricius, 1775

Species: *Aeshna affinis* Van Der Linden, 1823

Material Examined: 09.07.2004 1♂

Distribution in Turkey: Ankara, Antalya, Artvin, Balıkesir, Bolu, Çanakkale, Denizli, Edirne, Elazığ,

Erzurum, Isparta, Kahramanmaraş, Kayseri, Kırklareli, Konya, Malatya, Manisa, Muğla, Sakarya, and Tekirdağ (Longfield, 1932; Dumont, 1977; Demirsoy, 1982, 1995; Salur and Kıyak, 2000a, 2007; Hacet and Aktaş, 2004; Kalkman et al., 2004a, 2004b; Van Pelt, 2004).

Worldwide Distribution: Southern Europe, North Africa, Asia Minor, and the Middle East to China (Askew, 1988; Steinmann, 1997b).

Species: *Aeshna isosceles antehumeralis* (Schmidt, 1954)

Material Examined: 08.07.2004 1♀; 09.07.2004 1♂; 01.06.2005 2♂.

Distribution in Turkey: Antalya, Artvin, Aydın, Burdur, Çorum, Denizli, Hatay, Isparta, Kırklareli, Muğla, Trabzon, and Zonguldak (Selys, 1887; Dumont, 1977; Demirsoy, 1995; Hacet and Aktaş, 2004; Salur and Kıyak, 2007; Salur and Mesci, 2007).

Worldwide Distribution: Caucasus, Turkey, Anatolia, Iran, and Greece (Dumont, 1991; Steinmann, 1997b; Kalkman et al., 2003).

Species: *Aeshna mixta* Latreille, 1805

Material Examined: 30.10.2002 1♂; 09.07.2004 1♀.

Distribution in Turkey: Adana, Afyonkarahisar, Amasya, Ankara, Antalya, Artvin, Burdur, Edirne, Erzincan, Erzurum, Gaziantep, İstanbul, Kastamonu, Kayseri, Kırşehir, Mersin, Muğla, Niğde, Ordu, Rize, Samsun, Tekirdağ, and Trabzon (Selys, 1887; Dumont, 1977; Demirsoy, 1982, 1995; Ardiç and Uygun, 1996; Salur and Kıyak, 2000a, 2007; Hacet and Aktaş, 2004; Kalkman et al., 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004).

Worldwide Distribution: Palaearctic subregion, Europe, Asia Minor and Central Asia, reaching Kashmir in the east, and North Africa (Dumont, 1991; Steinmann, 1997b).

Genus: *Anax* Leach, 1815

Species: *Anax imperator* Leach, 1815

Material Examined: 11.06.2002 1♂; 24.06.2002 1♀.

Distribution in Turkey: Adana, Afyonkarahisar, Amasya, Ankara, Antalya, Artvin, Aydın, Bolu, Burdur, Çorum, Denizli, Edirne, Erzurum, Eskişehir, Hatay,

Isparta, İzmir, Kahramanmaraş, Kırklareli, Kırşehir, Kilis, Malatya, Manisa, Muğla, Ordu, Sakarya, Samsun, and Zonguldak (Dumont, 1977; Dumont et al., 1988; Demirsoy, 1995; Ardiç and Uygun, 1996; Hacet and Aktaş, 1997, 2004; Kalkman et al., 2004a, 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Kiyak, 2006, 2007; Salur and Mesci, 2007).

Worldwide Distribution: Tropical and subtropical Africa, North Africa, Madagascar, Europe (except Scotland, Denmark, Norway, Finland, and North Russia), Asia Minor, western Asia, the Middle East, Uzbekistan, and Pakistan (Askew, 1988; Dumont, 1991; Steinmann, 1997b).

Species: *Anax parthenope* (Selys, 1839)

Material Examined: 09.07.2004 1♂; 27.05.2005 1♂.

Distribution in Turkey: Adana, Adıyaman, Afyonkarahisar, Antalya, Bitlis, Burdur, Bursa, Çanakkale, Denizli, Edirne, Elazığ, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, İstanbul, Kahramanmaraş, Kayseri, Kırklareli, Konya, Malatya, Mersin, Muğla, Niğde, Ordu, Osmaniye, Şanlıurfa, and Zonguldak (Dumont, 1977; Schneider, 1985; Dumont et al., 1988; Demirsoy, 1995; Ardiç and Uygun, 1996; Hacet and Aktaş, 1997, 2004; Salur and Kiyak, 2000a, 2006, 2007; Kalkman et al., 2004a, 2004b; Van Pelt, 2004).

Worldwide Distribution: Western Palaearctic subregion, equatorial Africa, from the Atlantic (including the Canary Islands) to the Pacific, the Middle East, Asia Minor, east through the Caucasus to Kashmir, Pakistan, China, Japan (Hokkaido), and Israel (Askew, 1988; Dumont, 1991; Steinmann, 1997b).

Genus: *Caliaeschna* Selys, 1883

Species: *Caliaeschna microstigma* (Schneider, 1845)

Material Examined: 24.06.2002 1♂; 08.07.2004 1♂.

Distribution in Turkey: Adana, Amasya, Ankara, Antalya, Artvin, Balıkesir, Bolu, Burdur, Denizli, Elazığ, Erzincan, Erzurum, Giresun, Gümüşhane, Hakkari, Hatay, Isparta, İstanbul, Kahramanmaraş, Kastamonu, Kayseri, Kırklareli, Konya, Kütahya, Malatya, Mersin, Muğla, Osmaniye, Ordu, Rize, Sakarya, Samsun, Siirt, Sivas, and Trabzon (Selys, 1887; Morton, 1915; Dumont, 1977; Demirsoy, 1982, 1995; Dumont et al., 1988; Ardiç and Uygun, 1996; Hacet and Aktaş, 1997;

Salur and Kiyak, 2000a, 2006, 2007; Kalkman et al., 2004a, 2004b; Van Pelt, 2004).

Worldwide Distribution: Serbia (Kosovo), Albania, Cyprus, Greece, Yugoslavia, Turkey, Asia Minor, and Israel (Askew, 1988; Dumont, 1991; Steinmann, 1997b; Kalkman et al., 2003).

Genus: *Hemianax* Selys, 1883

Species: *Hemianax ephippiger* (Burmeister, 1839)

Material Examined: 30.05.2005 2♂.

Distribution in Turkey: Adana, Amasya, Antalya, Artvin, Aydın, Edirne, Elazığ, Gaziantep, Hatay, İstanbul, Kırklareli, Mersin, Rize, Sinop, and Trabzon (Selys, 1887; Demirsoy, 1995; Ardiç and Uygun, 1996; Hacet and Aktaş, 2004; Kalkman et al., 2004b; Van Pelt, 2004; Salur and Kiyak, 2006, 2007).

Worldwide Distribution: From Turkestan and India to South Africa and Madagascar, the Seychelles, and south-central Europe (Steinmann, 1997b).

Family: Gomphidae

Genus: *Onychogomphus* Selys, 1854

Species: *Onychogomphus forcipatus albotibialis* Schmidt, 1954

Material Examined: 08.07.2004 1♂; 09.07.2004 1♂, 1♀.

Distribution in Turkey: Adana, Amasya, Ankara, Antalya, Aydın, Balıkesir, Bolu, Burdur, Bursa, Çankırı, Denizli, Erzurum, Hatay, Isparta, İzmir, Kayseri, Kırşehir, Kütahya, Konya, Mardin, Muğla, Ordu, Sakarya, and Samsun (St-Quentin, 1965; Dumont, 1977; Dumont et al., 1988; Demirsoy, 1995; Kalkman et al., 2004a; Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Kiyak, 2006, 2007).

Worldwide Distribution: Turkey (Steinmann, 1997b; Kalkman et al., 2003).

Family: Cordulegasteridae

Genus: *Cordulegaster* Leach, 1815

Species: *Cordulegaster picta* Selys, 1854

Material Examined: 08.07.2004 2♂.

Distribution in Turkey: Amasya, Ankara, Balıkesir, Bolu, Bursa, Çankırı, Denizli, Edirne, Eskişehir, Hakkari, İstanbul, Kastamonu, Kırklareli, Kütahya, Muğla, Sakarya, and Samsun (Dumont, 1977; Demirsoy, 1995;

Hacet and Aktaş, 1997, 2004; Kalkman et al., 2004a, 2004b; Van Pelt, 2004; Salur and Kıyak, 2007).

Worldwide Distribution: The southern Caucasus, the Black Sea coast of Turkey, Greece, Yugoslavia, and Italy (Askew, 1988; Kalkman et al., 2003).

Family: Libellulidae

Genus: *Crocothemis* Brauer, 1868

Species: *Crocothemis erythraea* (Brulle, 1832)

Material Examined: 09.07.2004 1♂.

Distribution in Turkey: Adana, Adıyaman, Afyonkarahisar, Ankara, Antalya, Artvin, Aydın, Bolu, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Kayseri, Kırklareli, Kırşehir, Kocaeli, Konya, Kütahya, Malatya, Mersin, Muğla, Osmaniye, Ordu, Rize, Samsun, Siirt, Şanlıurfa, Tekirdağ, and Trabzon (Selys, 1887; Morton, 1915; Dumont, 1977; Schneider, 1985; Dumont et al., 1988; Demirsoy, 1995; Ardiç and Uygun, 1996; Salur and Kıyak, 2000a, 2006, 2007; Hacet and Aktaş, 2004; Kalkman et al., 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: The Mediterranean subregion, Oman to Assam, western and central Asia, the Middle East, Israel, Asia Minor, the Ethiopian region, Madagascar, tropical and North Africa, Saudi Arabia, Yemen, Pakistan, Tadzhikistan, and Afghanistan (Askew, 1988; Dumont, 1991; Steinmann, 1997b).

Genus: *Libellula* Linnaeus, 1758

Species: *Libellula depressa* Linnaeus, 1758

Material Examined: 11.06.2002 1♀; 08.07.2002 1♂; 01.06.2005 1♂, 1♀; 06.05.2005 1♀; 20.05.2005 1♂; 27.05.2005 1♀.

Distribution in Turkey: Adıyaman, Ağrı, Ankara, Antalya, Amasya, Artvin, Balıkesir, Bingöl, Bitlis, Bolu, Çankırı, Çorum, Denizli, Edirne, Erzincan, Erzurum, Eskişehir, Giresun, Hatay, Isparta, İstanbul, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kırklareli, Kırşehir, Konya, Kütahya, Mardin, Muğla, Niğde, Ordu, Sakarya, Sivas, Tekirdağ, Trabzon, Tunceli, Van, Yozgat, and Zonguldak (Selys, 1887; Morton, 1914, 1915; Dumont, 1977; Demirsoy, 1982, 1995; Dumont et al., 1988; Hacet and Aktaş, 1997, 2004; Salur and Kıyak, 2000a, 2006, 2007; Kalkman et al., 2004a, 2004b;

Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Europe (except northern England, with Ireland and northern Europe), Asia Minor, western Asia, Syria, and Lebanon (Askew, 1988; Dumont, 1991; Steinmann, 1997b).

Species: *Libellula fulva* Müller, 1764

Material Examined: 11.06.2002 1♂; 08.07.2004 1♂; 30.05.2005 1♀.

Distribution in Turkey: Afyonkarahisar, Ankara, Antalya, Aydın, Burdur, Edirne, Kırklareli, Konya, Malatya, Mersin, Muğla, and Ordu (Demirsoy, 1982; Hacet and Aktaş, 2004; Kalkman et al., 2004a, 2004b; Van Pelt, 2004; Salur and Kıyak, 2006, 2007).

Worldwide Distribution: Russia to Spain, the Middle East, Turkey, and Asia Minor (Askew, 1988; Steinmann, 1997b; Kalkman et al., 2003).

Genus: *Orthetrum* Newman, 1833

Species: *Orthetrum albistylum* (Selys, 1848)

Material Examined: 08.07.2004 1♂.

Distribution in Turkey: Amasya, Aydın, Balıkesir, Bursa, Çanakkale, Edirne, Isparta, İstanbul, Kırklareli, Kocaeli, Konya, Ordu, Rize, Samsun, and Siirt (Dumont, 1977; Demirsoy, 1982, 1995; Hacet and Aktaş, 1997, 2004; Kalkman et al., 2004b; Van Pelt, 2004; Salur and Kıyak, 2007).

Worldwide Distribution: Central and western Asia, Turkey, Asia Minor, Europe (France, the Alps, the Balkans to Caucasus, Austria, Hungary, and Romania), and southern Russia (Askew, 1988; Steinmann, 1997b; Kalkman et al., 2003).

Species: *Orthetrum brunneum* (Fonscolombe, 1837)

Material Examined: 08.07.2004 2♂♂, 1♀.

Distribution in Turkey: Adana, Adıyaman, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Elazığ, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Kayseri, Kırklareli, Kırşehir, Kocaeli, Konya, Kütahya, Malatya, Mardin, Mersin, Muğla, Ordu, Osmaniye, Sakarya, Sivas, Siirt, Şanlıurfa, Tekirdağ, Van, Yozgat, and Zonguldak (Dumont, 1977; Demirsoy, 1982, 1995; Dumont et al., 1988; Ardiç and Uygun, 1996; Hacet and Aktaş, 1997, 2004; Salur and Kıyak, 2000a, 2006, 2007; Kalkman et

al., 2004a, 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Palaearctic subregion, found all around the Mediterranean Sea, North Africa, western and central Europe, and the Balkans (Askew, 1988; Dumont, 1991; Steinmann, 1997b).

Species: *Orthetrum cancellatum* (Linnaeus, 1758)

Material Examined: 08.07.2004 2♂, 1♀.

Distribution in Turkey: Adana, Adıyaman, Afyonkarahisar, Amasya, Ankara, Antalya, Aydın, Bitlis, Bolu, Burdur, Çorum, Denizli, Edirne, Elazığ, Hatay, Isparta, İstanbul, Kayseri, Kırklareli, Kırşehir, Kilis, Konya, Mersin, Muğla, Rize, Samsun, and Tekirdağ, Van (Morton, 1915; Dumont, 1977; Demirsoy, 1982, 1995; Dumont et al., 1988; Ardiç and Uygun, 1996; Hacet and Aktaç, 1997, 2004; Salur and Kıyak, 2000a, 2006, 2007; Kalkman et al., 2004a, 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004; Salur and Mesci, 2007).

Worldwide Distribution: Palaearctic subregion (except northern Britain, northern Scandinavia, and northern Russia), the Middle East, and North Africa (Askew, 1988; Steinmann, 1997b).

Genus: *Sympetrum* Newman, 1833

Species: *Sympetrum meridionale* (Selys, 1841)

Material Examined: 08.07.2004 1♂, 1♀.

Distribution in Turkey: Adana, Afyonkarahisar, Aksaray, Ankara, Antalya, Balıkesir, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Denizli, Edirne, Erzurum, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Kayseri, Kırklareli, Kırşehir, Malatya, Mardin, Mersin, Muğla, Niğde, Osmaniye, Samsun, Sivas, Tekirdağ, and Zonguldak (Selys, 1887; Morton, 1915; Dumont, 1977; Demirsoy, 1982, 1995; Schneider, 1985; Dumont et al., 1988; Ardiç and Uygun, 1996; Hacet and Aktaç, 1997, 2004; Salur and Kıyak, 2000a, 2007; Kalkman et al., 2004a, 2004b; Salur and Öz Saraç, 2004; Van Pelt, 2004).

Worldwide Distribution: Central, western, and southern Europe to Siberia, Asia Minor, Morocco to Tunisia, Spain, France, Italy, the Balkans, the Mediterranean islands, and Israel (Askew, 1988; Dumont, 1991; Steinmann, 1997b).

Species: *Sympetrum sanguineum* (Müller, 1764)

Material Examined: 08.07.2004 1♂; 09.07.2004 2♂.

Distribution in Turkey: Adana, Afyonkarahisar, Amasya, Ardahan, Artvin, Balıkesir, Bitlis, Bolu, Burdur, Bursa, Çankırı, Çorum, Denizli, Edirne, Elazığ, Erzurum, Gümüşhane, Hakkari, Isparta, İstanbul, İzmir, Kahramanmaraş, Kırklareli, Kırşehir, Kocaeli, Konya, Manisa, Mersin, Muğla, Ordu, Samsun, Şanlıurfa, and Tekirdağ (Selys, 1887; Longfield, 1932; Dumont, 1977; Demirsoy, 1982, 1995; Hacet and Aktaç, 1997, 2004; Kalkman et al., 2004a, 2004b; Van Pelt, 2004; Salur and Kıyak, 2006; Salur and Mesci, 2007).

Worldwide Distribution: North Africa, Algeria, Europe (except northern England, Scandinavia, and Russia) Tunisia, Europe to central Asia, Turkey, and Israel (Askew, 1988; Dumont, 1991; Steinmann, 1997b; Kalkman et al., 2003).

Species: *Sympetrum striolatum* (Charpentier, 1840)

Material Examined: 30.10.2002 2♂, 7♀♀; 09.07.2004 1♀.

Distribution in Turkey: Adana, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bitlis, Bolu, Burdur, Bursa, Denizli, Edirne, Erzincan, Erzurum, Gaziantep, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Kastamonu, Kırklareli, Konya, Kütahya, Malatya, Mardin, Mersin, Muğla, Osmaniye, Rize, Samsun, Sivas, Tekirdağ, Van, and Yozgat (Selys, 1887; Morton, 1914; Dumont, 1977; Demirsoy, 1982, 1995; Dumont et al., 1988; Ardiç and Uygun, 1996; Hacet and Aktaç, 1997, 2004; Salur and Kıyak, 2000a, 2007; Kalkman et al., 2004a, 2004b; Van Pelt, 2004).

Worldwide Distribution: North Africa, Europe (except northern Scandinavia), Turkey, Asia Minor, and western Asia, (Askew, 1988; Dumont, 1991; Steinmann, 1997b; Kalkman et al., 2003).

Discussion and Conclusion

In this study, 27 taxa from 17 genera belonging to 9 families were identified, 9 of which are new records for the Odonata fauna of Samsun.

In Turkey some groups of Odonata have taxonomic problems, which have not yet been clarified. In particular, there are some taxonomic problems in the genus *Calopteryx*. The exact taxonomic status, recognition, and distribution of various subspecies of *Calopteryx splendens* in this genus are not clear. Specimens of *C. splendens* from Samsun province were reported by Van Pelt (2004)

as *C. s. amasina*. Material collected from the present study area was compared to descriptions given for the subspecies *amasina* by Beschovski (1994) and Demirsoy (1995). Although the subspecies *amasina* is recorded from Samsun province, the wing spots of our male specimens did not match the wing features of the subspecies *amasina*. As a consequence, the present material is listed here at species level.

References

- Ardıç, A. and Uygun, N. 1996. Doğu Akdeniz Bölgesi Odonata faunasının saptanması, Türk. 3. Ent. Kongr., pp. 415-422.
- Asahina, S. 1973. The Odonata of Iraq. Jap. J. Zool. 17: 17-36.
- Askew, R.R. 1988. The Dragonflies of Europe, Harley, Colchester-England.
- Battin, T.J. 1993. Revision of the *puella* group of the genus *Coenagrion* Kirby, 1890 (Odonata, Zygoptera), with emphasis on morphologies contributing to reproductive isolation. Hydrobiologia 262: 13-29.
- Bei-Bienko, G.Ya. 1964. Keys to the Insects of the European USSR, Apterygota, Palaeoptera, Hemiptera. Academy of Sciences of the USSR. Zoological Institute 1: 157-189. Translated from Russian: Israel Program for Scientific Translations. Jerusalem.
- Beschovski, V. 1964. Odonata from the Bulgarian Black Sea Coast. Academia Bulgare des Sciences. Bull. Inst. Zool. Mus. Sofia 15: 115-129.
- Beschovski, V. 1989. Specimens of families Epallagidae and Calopterygidae (Odonata) from Bulgaria. Acta zool. Bulg. 38: 3-10.
- Beschovski, V. 1994. Fauna Bulgarica. 23 Insecta, Odonata, Bulg. Acad. Sci., Sofia.
- Demirsoy, A. 1982. Türkiye Faunası, Odonata, TÜBİTAK, Ankara.
- Demirsoy, A. 1995. Türkiye Faunası, Odonata, TÜBİTAK, Ankara.
- Dumont, H.J. 1977. A Review of The Dragonfly Fauna of Turkey and Adjacent Mediterranean Islands (Insecta Odonata). Bull. Ann. Soc. r. belge Ent. 133: 119-171.
- Dumont, H.J., Demirsoy, A. and Mertens, J. 1988. Odonata from South-East Anatolia (Turkey) Collected in Spring 1988. Notul. odonatol. 3: 17-36.
- Dumont, H.J. 1991. Fauna Palaestina-Insecta V. Odonata of The Levant, Israel Acad. Sci. & Human., Jerusalem.
- Hacet, N. and Aktaş, N. 1997. Istranca Dağları Odonata Faunası. Turk. J. Zool. 21: 275-289.
- Hacet, N. and Aktaş, N. 2004. Considerations on the Odonate Fauna of Turkish Thrace, with Some Taxonomic Notes. Odonatologica 33: 253-270.
- Kalkman, V.J., Wasscher, M. and Van Pelt, G.J. 2003. An annotated checklist of the Odonata of Turkey. Odonatologica 32: 215-236.
- Kalkman, V.J., Kop, A., Wasscher, M. and Van Pelt, G.J. 2004a. The dragonflies of the surroundings of Lake Köyceğiz and River Eşen, Muğla province, SW Turkey (Odonata). Libellula (Suppl.) 5: 39-63.
- Kalkman, V.J., Lopau, W. and Van Pelt, G.J. 2004b. Hitherto unpublished records of dragonflies from Turkey (Odonata). Libellula (Suppl.) 5: 65-166.
- Longfield, C. 1932. List of Odonata from Asia Minor Collected by Mr. B. P. Uvarov (July-August 1931). Bol. R. Soc. esp. Hist. Nat. Madrid 32: 159-160.
- Morton, K.J. 1914. Notes on a collection of Odonata from Van, Turkey in Asia. Ent. Mo. Mag. 50: 56-59.
- Morton, K.J. 1915. Notes on Odonata from the environs of Constantinople. Entomologist 48: 129-134.
- Salur, A. and Kıyak, S. 2000a. On the systematic and faunistic studies of Anisoptera species (Insecta: Odonata) of Kızılırmak River basin (Kayseri province). J. Inst. Sci. Tech. Gazi Univ. 13: 829-841.
- Salur, A. and Kıyak, S. 2000b. On the systematic and faunistic studies of Zygoptera species (Insecta: Odonata) of Kızılırmak river basin (Kayseri province). J. Inst. Sci. Tech. Gazi Univ. 13: 843-854.
- Salur, A. and Özsaraç, Ö. 2004. Additional Notes on the Odonata Fauna of Çiçekdağı (Kırşehir), Turkey. G.U. J. Sci. 17: 11-19.
- Salur, A. and Kıyak S. 2006. Additional records for the Odonata fauna of East Mediterranean Region of Turkey. Mun. Ent. Zool. 1: 239-252.
- Salur, A. and Kıyak, S. 2007. Additional Records for the Odonata Fauna of South-Western Anatolia-Part I: Anisoptera. Mun. Ent. Zool. 2: 63-78.
- Salur, A. and Mesci, S. 2007. Additional Records for the Odonata Fauna of Çorum Province (Turkey). Mun. Ent. Zool. 2: 169-170.
- Schmidt, E. 1967. Versuch einer Analyse der *Ischnura elegans*-Gruppe (Odonata, Zygoptera). Ent. Tidskr. 88: 188-225.
- Schneider, W.G. 1845. Verzeichniss der von Hr. Prof. Dr. Loew im Sommer 1842 in der Türkei un Kleinasien gesammelten Neuroptera, nebst kurzer Beschreibung der neuen arten. Stettin. Ent. Ztg. 6: 110-116, 153-155.
- Schneider, W. 1981. On a dragonfly collection from Syria. Odonatologica 10: 131-145.

- Schneider, W. 1985. Dragonflies records from SE-Turkey. *Senckenberg. biol.* 66: 67-78.
- Schneider, W. 1986. Systematik und Zoogeographie der Odonata der Levante unter besonderer Berücksichtigung der Zygoptera, Mainz, Univ., Fachbereich Biologie, PhD Thesis, 3 vols: VIII + 202 pp. (vol. 1), 151 maps (vol. 2), 547 (vol. 3).
- Selys-Longchamps, M. 1887. Odonates de l'Asie Mineure et revision de ceux des autres parties de la faune dite Europeenne. *Annales Soc. Ent. Belg.* 33: 1-85.
- Steinmann, H. 1997a. World Catalogue of Odonata, Volume I Zygoptera, Walter de Gruyter, Berlin.
- Steinmann, H. 1997b. World Catalogue of Odonata, Volume II Anisoptera, Walter de Gruyter, Berlin.
- St-Quentin, D. 1965. Zur Odonatenfauna Anatoliens und der angrenzenden Gebiete. *Ann. Naturhistor. Mus. Wien.* 68: 531-552.
- Van Pelt, G.J. 1999. On dragonflies Greece in the RMNH collection, Leiden, The Netherlands. *Libellula (Suppl.)* 2: 77-90.
- Van Pelt, G.J. 2004. New records of dragonfly from Turkey (Odonata). *Libellula (Suppl.)* 5: 3-38.