

New records of rare or uncommon dragonflies in Turkey (Odonata)

V.J. Kalkman & G.J. van Pelt

Introduction

Recently, an annotated checklist of the dragonfly fauna of Turkey was published (KALKMAN *et al.*, 2003) and subsequently a great number of new records have become available (KALKMAN *et al.* 2004a; KALKMAN *et al.* 2004b; VAN PELT, 2004). An overview of the dragonflies of the Turkish part of Thracia was given by HACET & AKTAÇ (2004). All available records of Turkish odonates are stored in a data file maintained by the authors, and an internet site (<http://www.libellen.org/epallage/>) dedicated to the dragonfly fauna of the eastern Mediterranean has been created. In an overview of the knowledge of the dragonfly fauna of Turkey (VAN PELT & KALKMAN, 2004), the taxonomic problems that remain were discussed, and it was indicated that the distribution of various species in Turkey is still insufficiently known. Since these publications fieldwork by a number of odonatologist from Germany, The Netherlands, Japan and Great Britain resulted in a large amount of new information on Turkish dragonflies. In this article new records of 29 scarce or rare Turkish species are published.

Material and methods

After the publication of the review on Turkish dragonflies by VAN PELT & KALKMAN (2004) fieldwork by a number of odonatologists from Germany, The Netherlands, Japan and Great Britain has again resulted in a great deal of new information on dragonflies in Turkey. A total of 2462 so-called 'unique' records (a species on a locality on a date) were submitted to us by various persons (see Table 1), and included in the data file. Of these, a selection was made of species that are rare or uncommon in Turkey, i.e. known from only 25 UTM squares (10 by 10 kilometres) or less. As a result, new records of 29 species were selected for publication. In addition, records from eastern Turkey of

Gomphus schneideri and *Cordulegaster picta* are included, as these species were predominantly known from western Turkey (VAN PELT & KALKMAN, 2004). Of the following 17 rare or uncommon species in Turkey, no new records have become available: *Aeshna juncea*, *Anormogomphus kiritshenkoi*, *Brachytriton pratense*, *Coenagrion syriacum*, *C. vanbrinkae*, *Gomphus flavipes*, *Ischnura intermedia*, *Lestes sponsa*, *L. virens*, *Onychogomphus macrondon*, *O. flexuosus*, *Ophiogomphus reductus*, *Pseudagrion syriacum*, *Somatochlora borisi*, *Sympecma paedisca*, *Sympetrum arenicolor*, and *S. haritonovi*.

Results

The records are presented in the taxonomical sequence according to KALKMAN *et al.* (2003). Within each species the records are listed by province in alphabetical order. Each record includes: the name of the province, a description of the locality, the altitude above sea level in meters (asl), the UTM-coordinates (normally as a 10 km² square), the date(s), the name of the observer and/or collector (leg), the person who did the original identification of the material (det), and the collection where the material is preserved (coll). In case not all this information is known it has been left out, or noted as 'unknown'. In case the collector is the same as the identifier the name is given only once. Each record that does not include the name of the collection refers to an observation only. The description of the locality is presented as given by the various contributors, and for this reason the list includes both English and German descriptions. Names of localities have sometimes been changed according to the Turkish spelling, although undoubtedly many names differ from those commonly found on maps. Directions are abbreviated: N – North, S – South, W – West, E – East. Records of the recently established provinces of Düzce

and Osmaniye are listed as such, or under the provinces of Bolu and Adana respectively, as the exact boundaries of these new provinces are unknown to the authors.

Lestes macrostigma

The majority of the records from Turkey are from brackish coastal lagoons. The new records show that it is more widespread in central Turkey than hitherto known.

İçel: Silifke, Göksu delta, peninsula S of Kurtuluş at E side of lagoon (Paradeniz Dalyani) (36SWF91); 24.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, pools in dunes near runway SE of Taşucu (36SWF81); 25.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, pools on limestone plateau SE of Taşucu (36SWF81); 25.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, stream under road between Akgöl and lagoon, SW of Kurtuluş (36SWF81); 25.vi.2003; leg: Schrijvershof, P.

Kayseri: lake and swamp near Soysallı (36SYH05); 06.vii.2003; leg: Schrijvershof, P.

Kayseri: Ovaçiftlik, channel N of Pansiyon Sultan and visitors centre (36SXH93); 06.vii.2003; leg: Schrijvershof, P.

Konya: ca. 15 km W of Ereğli, swamp at E side of road near Adabağ köy (36SWG74); 08.vii.2003; leg: Schrijvershof, P.

Konya: ca. 15 km WSW of Ereğli, pool along road to Adabağ köy (36SWG74); 08.vii.2003; leg: Schrijvershof, P.

Ceriagrion georgifreyi

All new records fall within the known range of distribution of this species. The new records show that the species is still on the wing in the beginning of October.

Hatay: Bach bei Sariseki (12 km nördlich von Iskenderun) (37SBA56); 05.vii.2003; leg: Kählert, J.

İçel: Graben bei Anamur, an Feldweg, mit Strömung, ca. 2 km westlich von Anamur, ca. 100 m nördlich der Küstenstraße (36SVE89); 04-12.vii.2003; leg: Kählert, J.

İçel: Karstbach Soğuksu in Yenikas, ca. 5 km westlich von Aydıncık (36SWE29); 04-11.vii.2003; leg: Kählert, J.

Muğla: Fethiye, Calis, several drainage channels (35SPA85); 27.vi.2005; leg: Hope, P.

Muğla: Fethiye, Calis, several drainage channels (35SPA85); 04.x.2004; leg: Hope, P.

Muğla: Fethiye, drainage channels (35SPA85); 27.vi.2005; leg: Hope, P.

Muğla: Fethiye, drainage channels (35SPA85); 27.ix.2005; leg: Hope, P.

Muğla: Fethiye, drainage channels (35SPA85); 04.x.2005; leg: Hope, P.

Coenagrion lunulatum

The species is only known from scattered localities in eastern Turkey but is often abundant when found. In Armenia, it appears to be widespread.

Kars: 15 km E of Ardahan, brooks at crossing roads to Ardahan, Çıldır and Posof (38TLL15); 27.vi.2003; leg: Kalkman, V.J.; coll: RMNH

Table 1. New records of dragonflies from Turkey submitted after 2003.

Contributor	Year(s)	Number of records	Collection
Fliedner, H.	2001	10	
Van Pelt, G.J.	2002-2005	713	RMNH
Felix, R. & M. Hornman	2000	39	
Kählert, J.	2003	181	
Kalkman, V.J.	2003	140	RMNH
Karube, H.	2005	35	Karube
Kop, A.	2003	200	RMNH
Coll Landesmuseum für Natur und Mensch 1)	1994, 1995	71	Oldenburg
Hope, P.	2004, 2005	652	
Van der Burg, E., M. Roos & P. Schrijvershof	2003	380	NA
Various sources		41	

1) Submitted by Kay Fuhrmann

Kars: 6 km E of Ardahan, marsh N of road Ardahan to Çamlıçatak (38TLL15); 27.vi.2003; leg: Kalkman, V.J.

Van: ca. 12 km E of Van, brooklet in valley above Değirmen, asl: 1800m (38SLH76); 11.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Van: ca. 19 km S of Gevaş, brooklet and lake above Gufkan (= Yapılı mezra), ca. 3 km SW of Kayaboğaz (= Görentaş), asl: 2100m (38SLH32); 12.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Van: ca. 19 km S of Gevaş, lake above Gufkan (=Yapılı mezra), ca. 3 km SW of Kayaboğaz (= Görentaş), asl: 2100m (38SLH32); 17.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Coenagrion ponticum

In Turkey this species is apparently restricted to the northeastern Black Sea coastal region.

Artvin: ca. 15 km NE of Savşat: lake Karagöl (38TKL88); 26.vi.2003; leg: Kalkman, V.J.

Artvin: ca. 16 km NE of Savşat: lake Horetba Gölü (38TKL88); 26.vi.2003; leg: Kalkman, V.J.; coll: RMNH

Artvin: ca. 16 NEE of Borçka: lake Karagöl (37TGF38); 06.vii.2003; leg: Kalkman, V.J.; coll: RMNH

Trabzon: ca 6 km W of Araklı, Yanbolu çay (37TEF83); 10.vii.2003; leg: Kalkman, V.J.; coll: RMNH

Coenagrion pulchellum

Although uncommon, this species can be found in most parts of Turkey.

Bolu: brook originating from Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003; leg: Kop, A.

Bolu: marshy field at N shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003; leg: Kop, A.

Bolu: NE shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003 & 27.vi.2003; leg: Kop, A.; coll: RMNH

Kars: 6 km E of Ardahan, marsh N of road Ardahan to Çamlıçatak (38TLL15); 27.vi.2003; leg: Kalkman, V.J.; coll: RMNH

Coenagrion scitulum

This species is widespread in Turkey but is remarkable scarce in the east with no records from the northeastern parts at all.

Edirne: ca. 7 km SE of Edirne: pools just SE of Biology faculty, asl: 40m (35TMG61); 11.vii.2002 & 13.vii.2002; leg: Pelt, G.J. van; coll: RMNH

Kütahya: ca. 10 km NE of Simav: brooklets at W side of lake Gölcük, asl: 1450m (35SPD83); 13.vii.2003; leg: Pelt, G.J. van; coll: RMNH

Van: ca. 19 km S of Gevaş, lake above Gufkan (=Yapılı Mezra), ca. 3 km SW of Kayaboğaz (= Görentaş), asl: 2100m (38SLH32); 17.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Ischnura fontaineae

Still only known from localities near the border with Syria, but as it is also present in Azerbaydhan it will undoubtedly live in other parts of eastern Turkey as well. It has not been reported from Armenia.

Gaziantep: Kiesgrubengelände am westlichen Euphrat-Ufer, ca. 3 km nördlich von Birecik (37SDB00); 08-09.vii.2003; leg: Kählert, J.

Pyrrhosoma nymphula

Known from 10 localities in 7 UTM squares in NW Turkey, it is remarkable that this species has not been found further east along the Black Sea coast.

Bolu: ditch along road to Karacasu, 3 km S of Bolu, asl: 700m (36TUL80); 08.vi.2003; leg: Kop, A.; coll: RMNH

Bolu: marshy field at N shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003; leg: Kop, A.; coll: RMNH

Bolu: NE shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003 & 27.vi.2003; leg: Kop, A.; coll: RMNH

Düzce (Bolu); ca. 17 km NNE of Mudurnu: brook on Sinek yayla 5 km NE of Abant göl, asl: 1450m (36TUK59); 28.vii.2003; leg: Pelt, G.J. van; coll: RMNH

Sakarya: ca. 10 km NNW of Pamukova, pools and springbrook just NE of Eski yayla köy, asl: 1000m (36TTK59); 26.vi.2004; leg: Pelt, G.J. van; coll: RMNH

Aeshna cyanea

All records are from northern Turkey, although it may occur in western Turkey as well (Van Pelt & Kalkman, 2004).

Artvin: ca. 16 NEE of Borçka: lake Karagöl (37TGF38); 06.vii.2003; leg: Kalkman, V.J.; coll: RMNH

Bolu: brooklet between Gümüsaova and Cumayeri, asl: 200m (36TUL22); 10.viii.2002; leg: Pelt, G.J. van

Bursa: ca. 4 km SE of Soğukpinar: forest path above Equisetum part of brooklet 1 km NW

- of Güneybudaklar, asl: 1200m (35SPE83); 15.vii.2004; leg: Pelt, G.J. van
 Düzce (Bolu); ca. 22 km NNW of Mudurnu: Tor-
 kul gölet, ca. 10 km NW of Abant, asl: 1300m
 (36TUK49); 28.vii.2003; leg: Pelt, G.J. van;
 coll: RMNH
 Sakarya: ca. 11 km N of Pamukova, 3 km NNE
 of Eski yayla köy, upper course of Akçay, asl:
 800m (36TTK59); 26.vi.2004; leg: Pelt, G.J.
 van; coll: RMNH
 Sakarya: ca. 4.5 km NE of Hendek, path along
 upper tributary to Uludere 0.5 km N of trout
 farm, asl: 250m (36TUL12); 09.viii.2002; leg:
 Pelt, G.J. van; coll: RMNH
 Sakarya: ca. 5 km NE of Hendek, Uludere 1-2
 km N of trout farm, asl: 250m (36TUL12);
 10.viii.2002; leg: Pelt, G.J. van

Anax immaculifrons

All new records fall within the known range in Turkey of this magnificent species. It has not been reported from Armenia.

- Antalya: 35 km NW of Antalya, Termessos
 National Park, Ayalar trout farm (36STF89);
 11.vii.2003; leg: Schrijvershof, P.
 Hatay: Bach 2 an der Küste nordwestlich
 von Samandağ (6,9 km nordwestlich von
 Çevlik, gemessen ab nördlichem Hafenen-
 de) (36SYF60); 06.vii.2003; leg: Kählert, J.
 Hatay: Bach 7 an der Küste nordwestlich
 von Samandağ (18,1 km nordwestlich von
 Çevlik, gemessen ab nördlichem Hafenen-
 de) (36SYF51); 06.vii.2003; leg: Kählert, J.
 İçel: Fluss Limonlu 36 km nordöstlich von
 Silifke, nördlich des Ortes Limonlu, Flussa-
 bschnitt ca. 3 km nördlich der Küstenstraße
 (36SXF14); 04.vii.2003; leg: Kählert, J.
 Muğla: 2 km W of Toparlar, W of Köyceğiz
 (35SPA49); 18-22.vii.2005; leg: Karube, H.;
 coll Karube, H.

Gomphus davidi

Now known from 23 UTM squares, the species has a very limited distribution within Turkey.

- Adana: Haydaraga rivulet near road 817
 (36SYG); 27.vi.2003; leg: Schrijvershof, P.

Gomphus schneiderii

As was expected (VAN PELT & KALKMAN, 2004), the species also lives in eastern Turkey, but it appears to be much less common there than in western Turkey.

- Kars: 13 km N of Kars, 1 km E of Boğazköy,
 along Kars çay (38TLL40); 28.vi.2003; leg:
 Kalkman, V.J.; coll: RMNH

- Kars: 13 km N of Kars, 4 km E of Boğazköy,
 along Kars çay (38TLL40); 28.vi.2003; leg:
 Kalkman, V.J.; coll: RMNH

- Kars: 15 km E of Ardahan, brooks at cross-
 ing roads to Ardahan, Çıldır and Posof
 (38TLL15); 27.vi.2003; leg: Kalkman, V.J.;
 coll: RMNH

- Kars: 7 km N of Kars where small brook enters
 the Kars çay (38TLL30); 28.vi.2003; leg:
 Kalkman, V.J.; coll: RMNH

Gomphus vulgatissimus

In Turkey, this species appears to be restricted to Thracia. See also HACET & AKTAÇ (2004).

- Edirne: forested area at NW side of Edir-
 ne near Tunca river, asl: 40m (35TMG61);
 12.vii.2002; leg: Pelt, G.J. van

Lindenia tetraphylla

This species was reported from Turkey for the first time in 1992 and is now known from 14 UTM squares. Whether it reproduces in running water habitats in Turkey is still unknown. KALKMAN *et al.* (2004a) discussed its ecological requirements at Lake Köyceğiz and assumed that there the dense mat of reed roots is the actual habitat of the larvae. Yet, the highest numbers of exuviae were found where the reed plants stood on solid ground. On Gökçeada island, it was found in two barrage lakes, and especially the Eşelek barrage lake is devoid of vegetation. The population consists of several hundred individuals, and exuviae were found in great numbers especially alongside the moderately sloping W and E shores of the lake, on stones and branches of dead trees, but none on steep rocky parts of the shore. The Zeytinli barrage lake has a marshy W shore, whereas the S shore is rather steep, making the shoreline less accessible in both cases; the species and its exuviae was encountered here in smaller numbers. The majority of the exuviae collected were covered with mud, suggesting that the larvae live partly buried, possibly in an ambush position. The lake in Tunisia where the species was recently rediscovered has also hardly any vegetation (KUNZ & KUNZ, 2001).

- Çanakkale: ca. 4 km SW of Gökçeada (Imroz);
 SW side of Zeytinli barrage lake, asl: 200m
 (35TME04); 06.vii.2003; leg: Pelt, G.J. van;
 coll: RMNH

Çanakkale: ca. 6 km SSE of Gökçeada (Imroz); Eşelek barrage lake, S and E side, asl: 100m (35TME04); 05.vii.2003; leg: Pelt, G.J. van; coll: RMNH

Çanakkale: ca. 6 km SSE of Gökçeada (Imroz); Eşelek barrage lake, W side, asl: 100m (35TME04); 04.vii.2003; leg: Pelt, G.J. van; coll: RMNH

Gaziantep/Şanlı Urfa: Euphrat bei Birecik (37SDA09); 08.vii.2003 & 09.vii.2003; leg: Kählert, J.

Gaziantep: Birecik, gravel pits at W bank of Fırat nehir (37SDA09); 01.vii.2003; leg: Schrijvershof, P.

Gaziantep: Birecik, near apricot orchard at W bank of Fırat nehir (37SDB00); 01.vii.2003; leg: Schrijvershof, P.

Gaziantep: Fluss Tahtaköprü hinter dem Stausee Tahtaköprü Baraj (37SBA98); 07.vii.2003; leg: Kählert, J.

Gaziantep: Kiesgrubengelände am westlichen Euphrat-Ufer, ca. 3 km nördlich von Birecik (37SDB00); 08.vii.2003-09.vii.2003; leg: Kählert, J.

Muğla: Dalyan Delta (35SPA47); 01.vi.2005; leg: Hope, P.

Muğla: E of Köyceğiz town, Lake Köyceğiz (35SPA59); 18.vii.2005-22.vii.2005; leg: Karube, H.; coll: Karube, H.

Muğla: Köyceğiz lake (35SPA59); 18.vii.2005; leg: Hope, P.

Şanlı Urfa/Adiyaman: 10 km NW of Yaylak, bridge over Fırat nehir near Karababa (37SDB34); 03.vii.2003; leg: Schrijvershof, P.

Şanlı Urfa: Halfeti, Fırat nehir at boulevard (37SDB02); 02.vii.2003; leg: Schrijvershof, P.

Şanlı Urfa: Halfeti, hill side just S of Halfeti (37SDB02); 02.vii.2003; leg: Schrijvershof, P.

Şanlı Urfa: Halfeti, pool S of Halfeti near Fırat nehir (37SDB02); 02.vii.2003; leg: Schrijvershof, P.

Onychogomphus assimilis

Not uncommon in southern and eastern Turkey, all new records fall within the known range of this species in Turkey. The observation in Artvin was made along the Çoruh river which is a torrential river fed by melting water. The water is very cold and except for *Epallage* no other dragonflies were found along its banks. Based on our own observation we get the

impression that the species favours higher places to sit than is normally seen in for instance *O. forcipatus*. At the Çoruh river it was seen sitting on branches hanging a few meters above the water. The species seems to favour cold rivers and sitting higher might just be an adaptation in order to avoid the cold breeze above the water.

Adana: path above Ecemis Çayı and Kamişli brook 2 km ESE of Kamişli, asl: 1300m (36SXG75); 02.vii.2004; leg: Pelt, G.J. van; coll: RMNH

Artvin: Çoruh nehir, in the village of Yusufeli (37TGF12); 03.vii.2003; leg: Kalkman, V.J.

Içel: Lama Çay 15 km NW of Limonlu, cliff and fordable place in river (36SXF05); 26.vi.2003; leg: Schrijvershof, P.

Karaman: Göksu nehir near Buçakkişla, asl: 350-400m (36SWF08); 27.vi.2005; leg: Pelt, G.J. van; coll: RMNH

Onychogomphus lefebvrei

All new records fall within the known range of this species in Turkey, and it appears to be restricted to the southeastern part.

Adana - Osmaniye: Bach 'Horu' westlich von Bahçe (an der Strecke Gaziantep – Osmaniye) (37SBB81); 09.vii.2003; leg: Kählert, J.

Adana - Osmaniye: Ceyhan Nehri an der Brücke der Straße ca. 20 km nordwestlich von Osmaniye (37SBA41); 09.vii.2003; leg: Kählert, J.

Adana/Osmaniye: ca. 5 km SW of Bahçe, brooklet between Savarlar and Çolaklı, asl: 700m (37SBB81); 21.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Adana/Osmaniye: ca. 6 km SW of Bahçe, brooklet in Çolaklı, asl: 750m (37SBB81); 21.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Adiyaman: 15 km WSW of Adiyaman, bridge over Çakalı brooklet (37SDB27); 03.vii.2003; leg: Schrijvershof

Gaziantep: Bach 'Hasanke' an der Straße von Hassa nach Kilis (an der Straßenbrücke) (37SCA07); 07.vii.2003; leg: Kählert, J.

Hatay: zw. Karaçay u. Taula, SW-Antakya (37SBA30); 12.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

Içel: Bach in Tece, ca. 300m nördlich der Küstenstraße (20 km südwestlich von Mersin) (36SXF26); 11.vii.2003; leg: Kählert, J.

Mardin: ca. 17 NNE of Midyat, brooklet 2 km NE of Gercüs, asl: 700m (37SGB16); 19.vii.2005; leg: Pelt, G.J. van; coll: RMNH
Siirt: ca. 20 km SE of Batman, brooklet 1 km NW of Suceken, under ruins of small village, asl: 600m (37SFB98); 19.vii.2005; leg: Pelt, G.J. van; coll: RMNH

Paragomphus lineatus

Now known from 10 UTM squares, the species has a very limited distribution within Turkey.

Adana: Kütüklü, Ceyhan Fluß, Ceyhan Delta (36SYF27); 06.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

Hatay: Asi Nehri Fluß, zw. Demirköprü u. Suvatli, NE-Antakya (37SBA61); 11.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

Şanlı Urfa: 1.5 km NW of Harran, irrigation channel (37SDA98); 03.vii.2003; leg: Schrijvershof, P.

Şanlı Urfa: Harran (37SDA98); 03.vii.2003; leg: Schrijvershof, P.

Cordulegaster picta

Predominantly known from western and northern Turkey, although the species is also known from Azerbaydzhan. Not yet reported from Armenia. It appears that the species is present in eastern Turkey but much less common than in other parts.

Van: 8 km N of Muradiye; Bendimahi şelalesi (38SLJ92); 30.vi.2003; leg: Kalkman, V.J.; coll: RMNH

Cordulia aenea

This species had been reported from Turkey from two localities only, both in the northwestern part. The record from Artvin is a large extension of its known range within Turkey, and the species may prove to be present throughout the northern provinces.

Artvin: ca. 15 km NE of Savşat: lake Karagöl (38TKL88); 26.vi.2003; leg: Kalkman, V.J.

Bolu: NE shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003 & 27.vi.2003; leg: Kop, A.; coll: RMNH

Bolu: small lake surrounded by Phragmites, 2 km W of Gerece, asl: 1400m (36TVL31); 11.vi.2003; leg: Kop, A.; coll: RMNH

Somatochlora flavomaculata

Known from several localities in coastal areas, the new records show that the species also lives at higher altitudes in Turkey.

Bolu: NE shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003 & 27.vi.2003; leg: Kop, A.; coll: RMNH

Konya: brooklet along road 695, 35 km S of Beyşehir (36SUG74); 04.vii.2004; leg: HORNMAN *et. al.*; det: HORNMAN *et. al.*

Somatochlora meridionalis

Known only from Thracia and near Istanbul within Turkey (HACET & AKTAÇ, 2004), the record from Muğla represents a remarkable extension of its distributional range.

Edirne: ca. 16 km SW of Hayrabolu, pools of brooklet just NW of Kutluğun, asl: 150m (35TMF94); 14.vii.2002; leg: Pelt, G.J. van; coll: RMNH

Kırklareli: channel 1 km NW of Inece, asl: 100m (35TNG01); 17.vii.2002; leg: Pelt, G.J. van; coll: RMNH

Muğla: Cetibeli, asl: 5m (35SPA19); vi.2005; leg: Hope, P.

Brachythemis leucosticta

This species was known from 2 localities near Adana only, the record from Muğla represents a great extension of its range. All records pertain to a single male and it is not sure if the species breeds in Turkey. It is common in the Jordan Valley (DUMONT, 1991), but is remarkable rare in Turkey.

Muğla: Günlükbaşı (35SPA85); 20.vi.2005; leg: Hope, P.

Crocothemis servilia

The new records are all from known localities. Due to confusion with *C. erythraea*, the distribution of this species in Turkey remains unclear. It was recently reported from Armenia (pers. com. M. TAILLY)

İçel: Silifke, Göksu delta, 4 km NE of Taşucu (36SWF81); 24.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, rice fields E of Taşucu (36SWF81); 23.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, channel S of Kurtuluş (36SWF92); 24.vi.2003; leg: Schrijvershof, P.

Leucorrhinia pectoralis

In Turkey this species has been found at a small number of scattered localities only. The population found in the Kars province is very large with 100 males, 10 females and 5 tan-

dems seen. It is present in a marsh with an outline of roughly 1500m surrounded by dry open country. It was estimated that this populations might hold more than a 1000 specimens. At this locality it co-occurred with *Libellula quadrimaculata*, and *Coenagrion lunulatum*. The marsh is largely covered with *Carex* with in between patches of open water with *Potamogeton* and *Utricularia*. On the borders of the marsh were patches of *Hippuris vulgaris*.

Artvin: ca. 16 km NE of Savşat: lake Horetba Gölü (38TKL88); 26.vi.2003; leg: Kalkman, V.J.

Bolu: NE shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003 & 27.vi.2003; leg: Kop, A.; coll: RMNH

Kars: 6 km E of Ardahan, marsh N of road Ardahan to Çamlıçatak (38TLL15); 27.vi.2003; leg: Kalkman, V.J.

Libellula pontica

One new locality has become known, where only a single male was observed.

Niğde: 4 km E of Çamardı, troutfarm Akpınar, asl: 1400m (36SXXG78); 04.vii.2004; leg: Pelt, G.J. van; coll: RMNH

Sakarya: ca. 5 km S of Taraklı: springs and brook Kamuslik in cultivated area 2 km SE of Dumanköy, asl: 800m (36TTK96); 22.vi.2004; leg: Pelt, G.J. van; coll: RMNH

Libellula quadrimaculata

The number of records of this species from Turkey has increased significantly over the past decade, and it is now known from 18 UTM squares throughout the country. The population reported from the Van province is estimated to encompass several hundreds of specimens.

Ağrı: 12 km S of Ağrı, small brook flowing towards Murat and seepage (38SLJ28); 02.vii.2003; leg: Kalkman, V.J.

Artvin: ca. 15 km NE of Savşat: lake Karagöl (38TKL88); 26.vi.2003; leg: Kalkman, V.J.; coll: RMNH

Artvin: ca. 16 km NE of Savşat: lake Horetba Gölü (38TKL88); 26.vi.2003; leg: Kalkman, V.J.; coll: RMNH

Artvin: ca. 16 NEE of Borçka: lake Karagöl (37TGF38); 06.vii.2003; leg: Kalkman, V.J.

Bolu: marshy field at N shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003; leg: Kop, A.; coll: RMNH

Bolu: NE shore of Abant Gölü, asl: 1400m (36TUK59); 09.vi.2003; leg: Kop, A.

Düzce (Bolu); ca. 16 km NNE of Mudurnu: brook at N side of Abant göl, asl: 1400m (36TUK59); 28.vii.2003; leg: Pelt, G.J. van; coll: RMNH

Kars: 6 km E of Ardahan, marsh N of road Ardahan to Çamlıçatak (38TLL15); 27.vi.2003; leg: Kalkman, V.J.

Kayseri: lake and swamp near Soysallı (36SYH05); 06.vii.2003; leg: Schrijvershof, P.

Van: ca. 19 km S of Gevaş, lake above Gufkan (= Yapılı mezra), ca. 3 km SW of Kayaboğaz (= Görentaş), asl: 2100m (38SLH32); 17.vii.2005; coll: RMNH

Pantala flavescens

This highly migratory species was recently reported from Thracia (HACET & AKTAÇ, 2004) and it was also encountered in NE Greece (<http://www.libellen.org/epallage/>). On the Greek island of Rodos a young female was collected (LAISTER, 2005) making it likely that it will also reproduce in the adjacent parts of Turkey.

Muğla: Cetibeli, asl: 5m (35SPA19); 2005; leg: Hope P.

Selysiothemis nigra

The number of new records presented here is rather large, but all fall within the known range of the species in Turkey.

Adana: Ceyhan river near bridge and Hemite kale (37SBB41); 28.vi.2003; leg: Schrijvershof, P.

Adana: Yılanlıkale (Schlangenburg), Ceyhan (36SYF49); 05.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

Gaziantep/Şanlı Urfa: Euphrat bei Birecik (37SDA09); 08.vii.2003-09.vii.2003; leg: Kählert, J.

Gaziantep: Birecik, near apricot orchard at W bank of Firat nehir (37SDB00); 02.vii.2003; leg: Schrijvershof, P.

Gaziantep: Kiesgrubengelände am westlichen Euphrat-Ufer, ca. 3 km nördlich von Birecik (37SDB00); 08.vii.2003-09.vii.2003; leg: Kählert, J.

Gaziantep: Tümpel an der Straße 410 von Hassa nach Kilis, ca. 3 km östlich von Yolbaşı, vor der Eisenbahnbrücke (37SBA97); 07.vii.2003; leg: Kählert, J.

İçel: Akgöl, Göksu Delta, Silifke (36SWF81); 03.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

İçel: Bach 38 km nordöstlich von Aydıncık (ca. 300 m oberhalb der Küstenstraße) (36SWF10); 11.vii.2003; leg: Kählert, J.

İçel: Fischteiche, Göksu Delta, Silifke (36SWF81); 05.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

İçel: Göksu Delta, Silifke, (36SWF82); 04.viii.1994; det: Fuhrmann, K.; coll: Oldenburg

İçel: Silifke, Göksu delta, channel S of Kurtuluş (36SWF92); 24.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, N edge of Akgöl 5 km NE of Taşucu (36SWF81); 24.vi.2003; leg: Schrijvershof, P.

İçel: Silifke, Göksu delta, pools on limestone plateau SE of Taşucu (36SWF81); 25.vi.2003; leg: Schrijvershof, P.

Muğla: W of Köyceğiz town, Lake Köyceğiz (35SPA49); 18.vii.2005-22.vii.2005; leg: Karube, H.; coll: Karube, H

Şanlı Urfa/Adiyaman: 10 km NW of Yaylak, bridge over Fırat nehir near Karababa (37SDB34); 03.vii.2003; leg: Schrijvershof, P.

Şanlı Urfa: Birecik, Fırat nehir near ibis nursery (37SDB00); 30.vi.2003; leg: Schrijvershof, P.

Şanlı Urfa: Harran, irrigation channel Harran II and swampy area (37SDA98); 03.vii.2003; leg: Schrijvershof, P.

Sympetrum depressiusculum

The new records from the northwest of Turkey are mainly from rice fields, were the species was not uncommon.

Düzce (Bolu); ca. 9 km N of Düzce: rice field 1 km NNW of Konuralp, asl: 200m (36TUL43); 28.vii.2003; leg: Pelt, G.J. van; coll: RMNH

Samsun: Gockun canal 3-5 km NE of Alaçam, asl: 10m (36TYM11); 20.vi.2003; leg: Kop, A.; coll: RMNH

Sinop: canal entering Gökirmak river, just N of Durağan, asl: 700m (36TXL78); 22.vi.2003; leg: Kop, A.; coll: RMNH

Sinop: dry fields next to Gökirmak, 2 km S of Durağan, asl: 700m (36TXL78); 22.vi.2003; leg: Kop, A.; coll: RMNH

Sinop: field with muddy pool 3 km E of Boyabat, asl: 350m (36TXL59); 23.vi.2003; leg: Kop, A.

Sinop: rice fields W of Gökirmak river, 3 km E of Boyabat, asl: 350m (36TXL59); 23.vi.2003; leg: Kop, A.; coll: RMNH

Sympetrum pedemontanum

The population reported from Thracia is estimated to encompass several hundreds of specimens.

Kırklareli: channel 1 km NW of Inece, asl: 100m (35TNG01); 17.vii.2002; leg: Pelt, G.J. van; coll: RMNH

Trithemis arteriosa

The species is now known from 10 UTM squares, and appears to be limited to the eastern part of the Mediterranean coast.

Hatay: Bach 3 an der Küste nordwestlich von Samandağ (9,2 km nordwestlich von Çevlik, gemessen ab nördlichem Hafeneinde) (36SYF51); 06.vii.2003; leg: Kählert, J.; coll:

İçel: Lama Çay 12 km NW of Limonlu, tributary brooklets and meadows NW of bridge (36SXF05); 25.vi.2003; leg: Schrijvershof, P.

Acknowledgements

The following people submitted their records of Turkish dragonflies for inclusion in the database on Turkish Odonata: Eus van der Burg, Heinrich Fliedner, Rob Felix, Kay Fuhrmann, Menno Hornman, Paul Hope, Jens Kählert, Haruki Karube, Arjan Kop, Marijke Roos and Paul Schrijvershof.

Vincent J. Kalkman & Gert Jan van Pelt
National Museum of Natural History,
P.O. Box 9517,
NL-2300 RA Leiden,
The Netherlands
e-mail: kalkman@naturalis.nnm.nl

References

- DUMONT, H.J., 1977. A review of the dragonfly fauna of Turkey and adjacent Mediterranean islands (Insecta: Odonata). *Bulletin des Annales de la Societ  royale entomologique de Belgique* 113: 119-171
- DUMONT, H.J., 1991. Odonata of the Levant. Fauna Palaestina. Insecta V. Israel Academy of Sciences and Humanities.
- HACET, N. & N. AKTAÇ, 2004. Considerations on the odonate fauna of Turkish Thrace, with some taxonomic notes. *Odonatologica*, 33: 253-270.
- KALKMAN, V.J., M. WASSCHER & G.J. VAN PELT, 2003. An annotated checklist of the Odonata of Turkey. *Odonatologica*, 32: 215-236.
- KALKMAN, V.J., A. KOP, G.J. VAN PELT & M. WASSCHER, 2004a. The dragonflies (Odonata) of the surroundings of Lake K yceğiz and the River Eşen, Muğla province, SW Turkey. *Libellula Supplement* 5: 39-63.
- KALKMAN, V.J., W. LOPAU & G.J. VAN PELT, 2004b. Hitherto unpublished records of dragonflies from Turkey (Odonata). *Libellula Supplement* 5: 65-166.
- KUNZ, B. & D. KUNZ, 2001. *Lindenia tetraphylla*: Wiederfund f r Nordafrika (Odonata: Gomphidae). *Libellula* 20 (1/2): 79-85.
- LAISTER, G., 2005. *Pantala flavescens* auf Rhodos, mit eine  berblick  ber den Status der Art in Europa (Odonata: Libellulidae). *Libellula Supplement* 6: 33-40
- VAN PELT, G.J. & V.J. KALKMAN, 2004. Research on dragonflies (Odonata) in Turkey: present status and future aims. *Libellula Supplement* 5: 167-192.
- VAN PELT, G.J., 2004. New records of dragonflies (Odonata) from Turkey. *Libellula Supplement* 5: 3-38.

Summary

Kalkman, V.J. & G.J. van Pelt, 2006. New records of rare or uncommon dragonflies in Turkey (Odonata). *Brachytron* 10(1): 154-162.

More than 130 new records are published of 29 species known to be rare or uncommon in Turkey, including the following species: *Aeshna cyanea*, *Anax immaculifrons*, *Brachythemis leucosticta*, *Ceriagrion georgifreyi*, *Coenagrion lunulatum*, *C. ponticum*, *C. pulchellum*, *C. scitulum*, *Cordulia aenea*, *Crocothemis servilia*, *Gomphus davidi*, *G. vulgatissimus*, *Ischnura fontaineae*, *Lestes macrostigma*, *Leucorrhinia pectoralis*, *Libellula pontica*, *L. quadrimaculata*, *Lindenia tetraphylla*, *Onychogomphus assimilis*, *O. lefebvrei*, *Pantala flavescens*, *Paragomphus lineatus*, *Pyrrhosoma nymphula*, *Selysiothemis nigra*, *Somatochlora flavomaculata*, *S. meridionale*, *Sympetrum depressiusculum*, *S. pedemontanum* and *Trithemis arteriosa*. In addition, records from eastern Turkey of species predominantly known from western Turkey (being *Gomphus schneiderii* and *Cordulegaster picta*) are included. All records add important information on the distribution of these species within Turkey.

Keywords

Odonata, Turkey, records, rare species
Libellen, Turkije, waarnemingen, zeldzame soorten