

A Dutch contribution to the distribution of Andalusian odonates in 2014

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ABSTRACT

Dragonflies (Odonata) records gained from various field trips in Andalusia during the summer 2014 are presented.

RESUMEN

Se presentan las citas de libélulas (Odonata) recolectadas en ocasión de varios viajes a Andalucía durante el verano 2014.

INTRODUCTION

In the summer of 2014 the four authors, all from the Netherlands, visited Andalusia to record dragonflies. In this paper we give an overview of our observations, which yielded a total of 46 species in approximately four weeks. Most rewarding species for us were *Onychogomphus costae*, *Paragomphus genei*, *Orthetrum nitidinerve* and *Zygonyx torridus*. However, from a North European point of view more species were interesting. These include species which are (locally) common in Spain, but do not occur in our region. We combined visits to well-known sites of rare species with visits to lesser known sites. This enabled us to see most species of our 'wish list', while contributing to the Andalusian atlas project at the same time. The help of Florent Prunier, Javier Ripoll Rodríguez and Rafa Tamajón was very welcome. They did not only provide us with valuable information, but also with very pleasant companionship during some of our daytrips.

The observations reported here are gathered from a sequence of trips. Albert Vliegenthart travelled from June 21st to July 4th from Málaga, eastwards via the Sierra



Nevada to Sierra María-Vélez, returning by Sierra de Cazorla y Segura to Laguna Grande. Then from Sierra de Andújar to the city of Córdoba and continuing to the southern Sierras of Grazalema. From July 7th to July 12th Albert guided a butterfly tour to the Alpujarras, Sierra Nevada and Sierra de Huétor. During this tour he kept an eye out for dragonflies as well. Antoine van der Heijden joined Albert on July 13th and they both continued to Sierra de Almíjarra and along the Southern coastline to Los Alcornocales. Albert went back to the Netherlands on July 21st, but at the same day Antoine gathered with Tim Termaat and Roy van Grunsven. The three of them travelled from Málaga to Córdoba and concluded the trip in Los Alcornocales again on July 28th. All locations where dragonflies were observed are depicted in Figure 1. The data are available in this journal and on Observation.org. All observations are recorded in the field using ObsMapp, a GPS-based application for mobile phones (freely available at Google Play). For rare species locations are very accurate (<25 m), but often the number of individuals per pond or part of a stream is noted on a single location. A selection of sites and species is discussed below.

Ischnura graellsii en Los Barrios. Photo A.V.

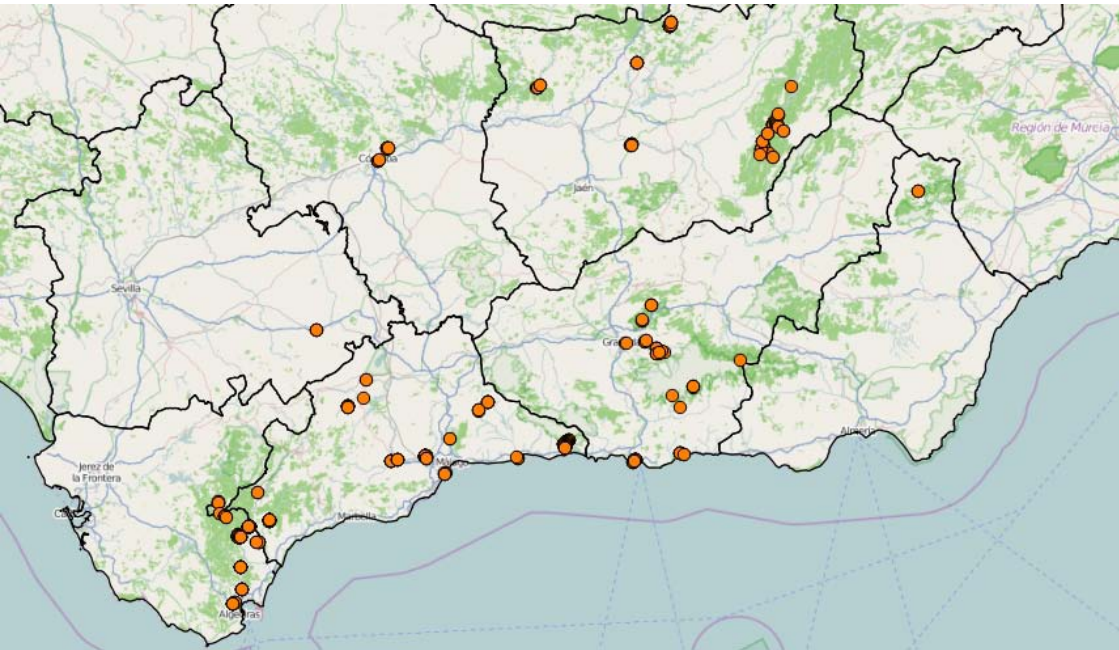
Page 5: Sierra María, Vélez. Hábitat of *Coenagrion caerulescens*. Photo A.V.

OBSERVATIONS

Coastal areas

The coastline of Andalusia probably harbours most species of dragonflies. Most rewarding sites we have visited are the Guadalhorce delta, Parque Tecnológico de Campanillas near Málaga and Charca de Suárez near Motril. The Guadalhorce delta offers estuaries and the fresh water of the river itself. The small reed-bedded shores are splendid for *Orthetrum trinacria*, *Ischnura graellsii*, *Trithemis annulata* and *Crocothemis erythrea*. Javier Ripoll Rodríguez showed us Parque Tecnológico de Campanillas, a surprisingly rich location with smaller and larger artificial ponds joined by small streams. Many species occur in large numbers including all the species mentioned above but also *Trithemis kirbyi* was common and *Selysiothemis nigra* (a single individual) and *Diplacodes lefebvrii* were seen. The fresh waters and small streams of Charca de Suárez host the same species but *Anax parthenope*, *Anax imperator*, *Erythromma viridulum* and *Orthetrum coerulescens* were also seen. On the arable lands and scrublands *D. lefebvrii* and *Brachythemis impartita* occur,

Figure 1: Location of the sites visited by the authors during 2014.



sometimes accompanied by *S. nigra* (observed in 2013 but not in 2014). The area between Algeciras and Los Barrios is less known than the previous areas. Here, some ditches and scrubland in the agricultural land were excellent to find *Orthetrum chrysostigma*, *Ortherum cancellatum*, *Sympetrum fonscolombii*, *I. graellsii*, *A. parthenope*, *T. annulata*, *C. erythrea*, but also *B. impartita* and *T. kirbyi*.

The Northeastern Sierras

The high diversity in these areas is worth to explore for odonates. E.g. Sierra Mariá-Vélez is a quite unexplored area for this group due to the lack in fresh water. Nevertheless a small population of *Coenagrion caerulescens* was found in a small marshy river bed. The source of the Río Guadalquivir is in Sierra de Cazorra, from here the stream develops in the largest river of Andalucía. At least 30



Trithemis kirbyi en Los Alcornocales. Photo A.V.

species were recorded here, with some very interesting records of *Ceriagrion tenellum*, *Coenagrion mercuriale*, *Gomphus graslinii*, *Macromia splendens* and *Oxygastra curtisii*. The area is worth to visit and we have encountered numerous *Calopteryx virgo*, *Onychogomphus forcipatus*, *Onychogomphus uncatas*, *Boyeria irene*, *Cordulegaster boltonii* and many more.

When travelling from Cazorla to the range of the Sierra Morena it is worth to stop at the Laguna Grande. This area is generally visited in spring and autumn for birdwatching. Nevertheless some less common dragonflies occur here also in hot summer times. *B. impartita* and *S. fonscolombii* are very abundant. A species we have only seen here is *Enallagma cyathigerum* which flies together with *Erythromma lindenii* and *E. viridulum*. *Aeshna affinis* could be recorded as new species for this site.

The small rivers in the Despeñaperros (Cascada de la Cimbarra) and río Jandula in the Sierra de Andújar host among others *Platycnemis accutipennis*, *Calopteryx xanthostoma*, *Pyrrhosoma nymphula*, *O. chryso stigma*, *T. kirbyi* and *T. annulata*. Most species were recorded for the first time at Despeñaperros, the same is true for *Gomphus pulchellus* that we saw only here.

Around Córdoba

The area of Córdoba can best be avoided in summer due to the extreme heat. But if you are looking for *Onychogomphus costae* you have to deal with these circumstances. On both visits we were able to find this species in the city park along the river, but both times we only found a single male. Rafa Tamajón showed us a sandpit, Lago Azul, Campiñuela Alta to the northeast of the city that was also very interesting with *D. lefebvreii*, exuviae of *Anax epphipiger*, *Lestes virens virens* (a different subspecies than we are used to), *B. impartita* and another *O. costae*, a female this time. A population of *Orthetrum nitidinerve* was recently discovered south of Córdoba and thanks to Florent Prunier we could go there to see this enigmatic species. It was easily spotted between the ubiquitous *O. chryso stigma* as the males are paler than the other *Orthetrum* species. This was a species we secretly hoped for, but we had not expected to find it during this trip.

Los Alcornocales

We have extensively visited the area around Jimena de la Frontera since there are numerous splendid rivers here. *Paragomphus genei* was found at a known location close to the village. The majority of the river banks are wooded and shaded here but this location offers a very broad bed that includes a small river in between. The dry and open vegetation on the sandy banks consists of shrubs and grasses, providing a hot micro climate. This might be an important factor for this thermophilic species. On several locations in this area *Zygonyx torridus*, *B. irene* and *O. forcipatus* were recorded. The first primarily at fast flowing parts of the rivers as expected. Egg deposition in *Z. torridus* was occasionally observed and it was featured in all possible modes: in tandem, guarded by the male, single in flight and single perched on a branch or rock. *B. irene* may be under-recorded since many places were visited too early in the day for this species. Lack of observations does not exclude the presence of this species. *C. boltonii* was found chasing along forest edges and mating in trees at higher altitude where small streams are present. At the Rio Guadarranque *O. curtisii* was seen. It is likely that this species is underestimated due to its early emergence.

In conclusion we had a very rewarding trip with many beautiful sites and enigmatic species. Andalusia has much to offer for dragonfly enthusiasts from northern Europe, because of the unique combination of southwestern European species (e.g. *B. irene*, *G. graslinii*), African elements (e.g. *P. genei* and *T. kirbyi*) and species limited to the western Mediterranean (e.g. *O. costae* and *O. nitidinerve*). Add the good accessibility of most sites and Andalusia's famous cuisine and it is clear why we highly recommend this area to anyone who is interested in dragonflies. Finally, we would like to express our gratitude to Florent Prunier, Javier Ripoll Rodríguez and Rafa Tamajón for their tremendous help and hospitality. We also thank Christophe Brochard and Fons Peels for sharing their experiences during previous trips.

Gomphus graslinii en
Cazorla. Photo A.V.

Paragomphus genei.
Photo A. vdH.



Some highlights of our fieldtrip in 2014

Coenagrion caerulescens was discovered in a small river bed in the northern parts of Sierra de María-Vélez. In a small marshy area with standing waters, flanked by sedges, about twenty individuals (underestimated) were recorded here together with *C. brunneum* and *I. graellsii*.

Coenagrion mercuriale was reconfirmed in Río Guadalquivir and Río Borosa. Small streams along the road verge and flooded areas nearby, covered by *Berula erecta* are suitable habitat and consequently many individuals were recorded.

Aeshna affinis is a rare species. At least two males were patiently hunting over a sedge vegetation in Laguna Grande, a new location for this species.

Anax ephippiger is known as an uncommon migrant from Africa. With the help of Rafa Tamajón exuviae were found in a small pond. Unfortunately no adults were seen.

Boyeria irene was seen at several streams. At Río Guadiaro (San Pablo de Buceite) many individuals were seen in the evening but in the afternoon not a single individual was seen even though we spent quite some time at this river.

Gomphus graslinii was reconfirmed near Cazorla and a new location was discovered upstream. It is unclear if the species is resident at the latter location, although suitable habitat seems to be present.

Gomphus pulchellus, a new location was recorded in the Despeñaperros.

Onychogomphus costae is a very rare species. It flies over scrubby vegetation along rivers. Due to its colour it is easily overlooked. Nevertheless we were able to find a single male during both visits to the known population of Córdoba. A quite young female was found at Lago Azul, Campiñuela Alta, approximately 4 km from Río Guadalquivir.

Paragomphus genei was found on the Río Hozgarganta near Jimena de la Frontera. This is a well-known location and despite intensive effort we did not find new locations.

Oxygastra curtisii is rare in the northeast of Andalucía, it is known from the Río Guadalquivir and Río Borosa. Probably due to the season, this species was only recorded in the southern Río Guadarranque.

Macromia spendens was only recorded in Sierra de



Cazorla, probably among the last individuals of the year. As the previous species, intensive search did not yield new locations. It is likely this species does occur at other location but we missed it because we were too late in the year.

Orthetrum nitidinerve was seen on a location south of Cordoba. It is a small artificial stream with patches of detritus and a very high water temperature.

Orthetrum trinacria and ***Diplacodes lefebvrii*** are relatively common in the coastal areas. We found them on several locations along the coast. In Charca de Suárez, Parque Tecnológico de Campanillas and the Guadalhorce delta near Málaga both species were recorded. The latter seems more bound to reed vegetation.

Trithemis annulata and ***T. kirbyi*** were both very common at most visited sites, in a wide variety of habitats. Their dominant occurrence is striking, keeping in mind that *T. annulata* was only found in Spain for the first time in the 1970's and *T. kirbyi* only in 2007.

Brachythemis impartita is getting more and more widespread in southern Spain, where it often occurs in large standing water bodies. A big population of this mainly African species was found in Laguna Grande. Here we observed its typical behaviour to closely follow large animals, including humans, while walking through grassy vegetation. They probably do this to catch small insects which are disturbed by the movement. We found *B. impartita* in smaller numbers at the sandpit Lago Azul, Campiñuela Alta near Cordoba and a reservoir along the way.

Selysiothemis nigra is a rare species. We found a population in Rambla del Acebuchal, where dozens were posting their territories. It was very nice to see the colour development from young to mature males. It is unclear where they reproduce as there was no water visible. Possibly the watertanks of the greenhouses in the area are used or there is an ephemeral pond we did not recognize as such. A single individual was seen at the reservoir in Parque Tecnológico de Campanillas.

Zygonyx torridus was recorded in several locations but all are known populations. We were ambitious to make pictures of flying animals in which we succeeded after many attempts.

APPENDIX: RECORDS

Details for sensitive species (*Zygonyx torridus*, *Macromia splendens*, *Oxygastra curtisii*, *Gomphus graslinii*) have been omitted.

***Calopteryx haemorrhoidalis* (Vander Linden, 1825)**

[48] 28/6/14: 5Ad (AVI); [43] 30/6/14: 2Ad (AVI); [14] 11/7/14: 5Ad (AVI, EdB, RvD); [73] 12/7/14: 2m1Ad (AVI, EdB, RvD); [6] 13/7/14: 8Ad (AvdH, AVI); [2] 14/7/14: 8Ad (AvdH, AVI); [72] 15/7/14: 4Ad (AvdH, AVI); [56] 18/7/14: 20Ad (AvdH, AVI); [57] 18/7/14: 4Ad (AvdH, AVI); [6] 22/7/14: 1Ad (AvdH); [72] 23/7/14: 5Ad (AvdH).

***Calopteryx virgo meridionalis* Selys, 1873**

[46] 27/6/14: 4Ad (AVI); [33] 27/6/14: 4Ad (AVI); [48] 28/6/14: 5Ad (AVI); [49] 28/6/14: 10Ad (AVI); [6] 13/7/14: 1Ad (AvdH, AVI); [57] 18/7/14: 3Ad (AvdH, AVI).

***Calopteryx xanthostoma* (Charpentier, 1825)**

[52] 27/6/14: 15Ad (AVI); [34] 27/6/14: 10Ad (AVI); [39] 27/6/14: 20Ad (AVI); [38] 27/6/14: 15Ad (AVI); [48] 28/6/14: 10Ad (AVI); [49] 28/6/14: 5Ad (AVI); [41] 30/6/14: 1Ad (AVI).

***Lestes virens virens* (Charpentier, 1825)**

[12] 21/7/14: 10Ad (AvdH).

***Chalcolestes viridis* (Vander Linden, 1825)**

[42] 30/6/14: 1Ad (AVI); [31] 07/7/14: 1Ad (AVI, EdB); [73] 12/7/14: 1Ad (AVI, EdB, RvD); [2] 14/7/14: 2Ad (AvdH, AVI).

***Sympecma fusca* (Vander Linden, 1820)**

[4] 22/7/14: 1m (AvdH, RvG).

***Platycnemis acutipennis* Selys, 1841**

[43] 30/6/14: 2Ad (AVI); [54] 01/7/14: 2Ad (AVI); [66] 05/7/14: 1Ad (AVI, EdB, MW, RvD); [62] 20/7/14: 1Ad (AvdH).

***Platycnemis latipes* Rambur, 1842**

[35] 27/6/14: 2Ad (AVI); [39] 27/6/14: 10Ad (AVI); [52] 27/6/14: 15Ad (AVI); [33] 27/6/14: 4Ad (AVI); [43] 30/6/14: 1Ad (AVI); [13] 02/7/14: 10Ad (AVI); [73] 12/7/14: 5Ad (AVI, EdB, RvD); [8] 13/7/14: 20Ad (AvdH, AVI); [6] 13/7/14: 5Ad (AvdH, AVI); [2] 14/7/14: 16Ad (AvdH, AVI); [71] 15/7/14: 2Ad (AvdH, AVI); [68] 16/7/14: 14Ad (AvdH, AVI); [62] 20/7/14: 1Ad (AvdH); [61] 20/7/14: 3Ad (AvdH); [76] 21/7/14: 4Ad (AvdH); [13] 21/7/14: 3Ad (AvdH); [6] 22/7/14: 5Ad (AvdH); [72] 23/7/14: 1Ad (AvdH).

***Ceriagrion tenellum* (Villiers, 1789)**

[52] 27/6/14: 40Ad (AVI).

***Coenagrion caerulescens* (Fonscolombe, 1838)**

[1] 25/6/14: 20Ad (AVI).

***Coenagrion mercuriale* (Charpentier, 1840)**

[37] 27/6/14: 10Ad (AVI); [52] 27/6/14: 20Ad (AVI).

***Enallagma cyathigerum* (Charpentier, 1840)**

[40] 29/6/14: 6Ad (AVI).

***Erythromma lindenii* (Selys, 1840)**

[44] 29/6/14: 3Ad (AVI); [43] 30/6/14: 4Ad (AVI); [7] 13/7/14: 8Ad (AvdH, AVI); [8] 13/7/14: 24Ad (AvdH, AVI); [6] 13/7/14: 1Ad (AvdH, AVI); [3] 14/7/14: 2Ad (AvdH, AVI); [71] 15/7/14: 12Ad (AvdH, AVI); [72] 16/7/14: 2Ad (AvdH, AVI); [61] 20/7/14: 1Ad (AvdH); [65] 20/7/14: 1Ad (AvdH); [9] 22/7/14: 1f2Ad (AvdH); [72] 23/7/14: 5Ad (AvdH).

***Erythromma viridulum* (Charpentier, 1840)**

[40] 29/6/14: 1Ad (AVI); [29] 07/7/14: 2Ad (AVI, EdB, RvD); [30] 07/7/14: 1Ad (AVI, EdB, MW, RvD); [27] 19/7/14: 1Ad (AvdH).

***Ischnura graellsii* (Rambur, 1842)**

[66] 21/6/14: 5Ad (AVI); [27] 22/6/14: 3Ad (AVI); [1] 25/6/14: 10Ad (AVI); [52] 27/6/14: 10Ad (AVI); [44] 29/6/14: 10Ad (AVI); [41] 30/6/14: 1Ad (AVI); [42] 30/6/14: 10Ad (AVI); [55] 01/7/14: 4Ad (AVI); [66] 05/7/14: 3Ad (AVI, EdB, MW, RvD); [16] 11/7/14: 2Ad (AVI, EdB, RvD); [75] 12/7/14: 6Ad (AVI, EdB, RvD); [7] 13/7/14: 2Ad (AvdH, AVI); [10] 14/7/14: 28Ad (AvdH, AVI); [27] 17/7/14: 2Ad (AvdH, AVI); [27] 19/7/14: 5Ad (AvdH); [62] 20/7/14: 1Ad (AvdH); [61] 20/7/14: 1Ad (AvdH); [63] 20/7/14: 3Ad (AvdH); [65] 20/7/14: 1Ad (AvdH); [12] 21/7/14: 10Ad (AvdH); [76] 21/7/14: 3Ad (AvdH); [13] 21/7/14: 1Ad (AvdH); [9] 22/7/14: 1Ad (AvdH).

***Pyrrhosoma nymphula* (Sulzer, 1776)**

[53] 27/6/14: 6Ad (AVI); [41] 30/6/14: 3Ad (AVI); [29] 07/7/14: 7Ad (AVI, EdB, RvD); [30] 07/7/14: 1Ad (AVI, EdB, MW, RvD); [17] 11/7/14: 1m2Ad (AVI, EdB, RvD).

***Aeshna affinis* Vander Linden, 1820**

[40] 29/6/14: 2Ad (AVI).

***Aeshna mixta* Latreille, 1805**

[50] 28/6/14: 1Ad (AVI); [16] 11/7/14: 2Ad (AVI, EdB, RvD).

***Anax ephippiger* (Burmeister, 1839)**

[12] 21/7/14: 10Ex (AvdH).

***Anax imperator* Leach, 1815**

[27] 22/6/14: 1Ad (AVI); [15] 23/6/14: 1Ad (AVI); [52] 27/6/14: 1Ad (AVI); [42] 30/6/14: 2Ad (AVI); [16] 11/7/14: 1m2Ad (AVI, EdB, RvD); [19] 11/7/14: 3Ad (AVI, EdB, RvD); [75] 12/7/14: 1Ad (AVI, EdB, RvD); [9] 13/7/14: 2Ad (AvdH, AVI); [72] 16/7/14: 2Ad (AvdH, AVI); [62] 20/7/14: 1Ad (AvdH); [64] 20/7/14: 1Ad (AvdH); [72] 23/7/14: 1f1Ad (AvdH).

***Anax parthenope* (Selys, 1839)**

[75] 12/7/14: 3Ad (AVI, EdB, RvD); [3] 14/7/14: 4Ad (AvdH, AVI); [27] 17/7/14: 2Ad (AvdH, AVI); [27] 19/7/14: 1Ad (AvdH).

***Boyeria irene* (Fonscolombe, 1838)**

[35] 27/6/14: 2Ad (AVI); [43] 30/6/14: 2Ad (AVI); [14] 11/7/14: 3Ad (AVI, EdB, RvD); [73] 12/7/14: 4Ad (AVI, EdB, RvD); [6] 13/7/14: 2Ad (AvdH, AVI); [2] 14/7/14: 2Ad (AvdH, AVI); [71] 15/7/14: 2Ad (AvdH, AVI); [57] 18/7/14: 8Ad (AvdH, AVI); [58] 18/7/14: 12Ad (AvdH, AVI); [6] 22/7/14: 6Ad6Ex (AvdH).

***Gomphus graslinii* Rambur, 1842**

[-] -/6/14: 1Ad (AVI); [-] -/6/14: 4Ad (AVI).

***Gomphus pulchellus* Selys, 1840**

[42] 30/6/14: 2Ad (AVI).

***Onychogomphus costae* Selys, 1885**

[13] 02/7/14: 1Ad (AVI); [13] 21/7/14: 1Ten. (AvdH); [12] 21/7/14: 1Ten. (AvdH).

***Onychogomphus forcipatus unguiculatus* (Vander Linden, 1823)**

[38] 27/6/14: 1Ad (AVI); [43] 30/6/14: 4Ad (AVI); [73] 12/7/14: 4Ad (AVI, EdB, RvD); [6] 13/7/14: 2Ad (AvdH, AVI); [72] 15/7/14: 2f (AvdH, AVI); [71] 15/7/14: 4Ad (AvdH, AVI); [68] 16/7/14: 4Ad (AvdH, AVI); [6] 22/7/14: 5m (AvdH); [72] 23/7/14: 3Ad (AvdH).

***Onychogomphus uncatus* (Charpentier, 1840)**

[33] 27/6/14: 3Ad (AVI); [52] 27/6/14: 6Ad (AVI); [38] 27/6/14: 5Ad (AVI); [48] 28/6/14: 5Ad (AVI); [49] 28/6/14: 1Ad (AVI); [23] 10/7/14: 1Ad (AVI, EdB); [58] 18/7/14: 2Ad (AvdH, AVI); [57] 18/7/14: 4Ad (AvdH, AVI); [56] 18/7/14: 6Ad (AvdH, AVI).

***Paragomphus genei* (Selys, 1841)**

[9] 13/7/14: 2Ad (AvdH, AVI); [8] 13/7/14: 2Ad (AvdH, AVI); [9] 22/7/14: 1m (AvdH).

***Cordulegaster boltonii* (Donovan, 1807)**

[15] 23/6/14: 1Ad (AVI); [46] 27/6/14: 2Ad (AVI); [36] 27/6/14: 1Ad (AVI); [34] 27/6/14: 1Ad (AVI); [53] 27/6/14: 2Ad (AVI); [33] 27/6/14: 1Ad (AVI);

[45] 27/6/14: 2Ad (AVI); [35] 27/6/14: 1Ad (AVI); [48] 28/6/14: 2Ad (AVI); [50] 28/6/14: 1Ad (AVI); [47] 28/6/14: 1Ad (AVI); [49] 28/6/14: 1Ad (AVI); [25] 06/7/14: 3Ad (AVI, EdB, MW, RvD); [29] 07/7/14: 2Ad (AVI, EdB, RvD); [30] 07/7/14: 1Ad (AVI, EdB, MW, RvD); [23] 10/7/14: 4Ad (AVI, EdB); [24] 10/7/14: 4Ad (AVI, EdB, RvD); [22] 11/7/14: 3Ad (AVI, EdB); [21] 11/7/14: 1Ad (AVI); [14] 11/7/14: 1Ad (AVI, EdB, RvD); [4] 15/7/14: 2Ad (AvdH, AVI); [57] 18/7/14: 4Ad (AvdH, AVI); [58] 18/7/14: 2Ad (AvdH, AVI).

***Cordulegaster boltonii iberica* Boudot & Jaquemin, 1994**

[25] 06/7/14: 1Ad (AVI, EdB, MW, RvD); [30] 07/7/14: 1Ad (AVI, EdB, MW, RvD).

***Cordulegaster boltonii algerica* Morton, 1915**

[4] 22/7/14: 2m2Ad (AvdH, RvG).

***Macromia splendens* (Pictet, 1843)**

[-] -/6/14: 1Ex (AVI); [-] -/6/14: 2Ad (AVI).

***Oxygastra curtisii* (Dale, 1834)**

[-] -/6/14: 2Ad (AVI); [-] -/6/14: 1Ad (AVI); [-] -/7/14: 2Ad (AvdH, AVI).

***Selysiothemis nigra* (Vander Linden, 1825)**

[32] 17/7/14: 8Ad (AvdH, AVI); [65] 20/7/14: 1Ad2Ex (AvdH); [32] 24/7/14: 6Ad (AvdH).

***Brachythemis impartita* (Karsch, 1890)**

[66] 21/6/14: 1Ad (AVI); [40] 29/6/14: 15Ad (AVI); [10] 14/7/14: 4Ad (AvdH, AVI); [71] 15/7/14: 2Ad (AvdH, AVI); [60] 20/7/14: 7Ad (AvdH); [12] 21/7/14: 10Ad (AvdH).

***Crocothemis erythraea* (Brullé, 1832)**

[44] 29/6/14: 2Ad (AVI); [42] 30/6/14: 4Ad (AVI); [41] 30/6/14: 2Ad (AVI); [43] 30/6/14: 5Ad (AVI); [55] 01/7/14: 5Ad (AVI); [74] 12/7/14: 1Ad (AVI, EdB, RvD); [9] 13/7/14: 2Ad (AvdH, AVI); [10] 14/7/14: 16Ad (AvdH, AVI); [3] 14/7/14: 2Ad (AvdH, AVI); [27] 17/7/14: 2Ad (AvdH, AVI); [56] 18/7/14: 4Ad (AvdH, AVI); [27] 19/7/14: 1Ad (AvdH); [67] 19/7/14: 1Ad (AvdH); [61] 20/7/14: 5Ad (AvdH); [64] 20/7/14: 2Ad (AvdH); [63] 20/7/14: 2Ad (AvdH); [9] 22/7/14: 1Ad (AvdH); [32] 24/7/14: 1Ten. (AvdH).

***Diplacodes lefebvreii* (Rambur, 1842)**

[27] 22/6/14: 1Ad (AVI); [27] 17/7/14: 6Ad (AvdH, AVI); [28] 17/7/14: 4Ad (AvdH, AVI); [27] 19/7/14: 1Ad (AvdH); [64] 20/7/14: 1Ad (AvdH); [12] 21/7/14: 3Ad (AvdH).

***Libellula depressa* Linnaeus, 1758**

[43] 30/6/14: 1Ad (AVI); [42] 30/6/14: 1Ad (AVI); [31] 07/7/14: 1Ad (AVI, EdB).
Orthetrum brunneum (Fonscolombe, 1837)

[20] 23/6/14: 1Ad (AVI); [1] 25/6/14: 2Ad (AVI); [44] 29/6/14: 2Ad (AVI); [41] 30/6/14: 2Ad (AVI); [43] 30/6/14: 10Ad (AVI); [54] 01/7/14: 1Ad (AVI); [55] 01/7/14: 5Ad (AVI); [24] 10/7/14: 2Ad (AVI, EdB, RvD); [14] 11/7/14: 1Ad (AVI, EdB, RvD); [17] 11/7/14: 1m3Ad (AVI, EdB, RvD); [74] 12/7/14: 1Ad (AVI, EdB, RvD); [68] 16/7/14: 2Ad (AvdH, AVI); [76] 21/7/14: 1Ad (AvdH).

***Orthetrum cancellatum* (Linnaeus, 1758)**

[40] 29/6/14: 1Ad (AVI); [44] 29/6/14: 3Ad (AVI); [55] 01/7/14: 1Ad (AVI); [66] 05/7/14: 1m2Ad (AVI, EdB, MW, RvD); [16] 11/7/14: 1m2Ad (AVI, EdB, RvD); [3] 14/7/14: 6Ad (AvdH, AVI); [62] 20/7/14: 1Ad (AvdH).

***Orthetrum chrysostigma* (Burmeister, 1839)**

[44] 29/6/14: 1Ad (AVI); [42] 30/6/14: 3Ad (AVI); [55] 01/7/14: 5Ad (AVI); [30] 07/7/14: 4Ad (AVI, EdB, MW, RvD); [74] 12/7/14: 4Ad (AVI, EdB, RvD); [73] 12/7/14: 3Ad (AVI, EdB, RvD); [9] 13/7/14: 8Ad (AvdH, AVI); [6] 13/7/14: 2Ad (AvdH, AVI); [10] 14/7/14: 8Ad (AvdH, AVI); [71] 15/7/14: 8Ad (AvdH, AVI); [68] 16/7/14: 2Ad (AvdH, AVI); [72] 16/7/14: 8Ad (AvdH, AVI); [56] 18/7/14: 4Ad (AvdH, AVI); [64] 20/7/14: 2Ad (AvdH); [61] 20/7/14: 4Ad (AvdH); [12] 21/7/14: 1Ad (AvdH); [6] 22/7/14: 1Ad (AvdH); [9] 22/7/14: 1Ad (AvdH); [72] 23/7/14: 5Ad (AvdH).

***Orthetrum coerulescens* (Fabricius, 1798)**

[27] 22/6/14: 1Ad (AVI); [51] 27/6/14: 8Ad (AVI); [39] 27/6/14: 5Ad (AVI); [37] 27/6/14: 5Ad (AVI); [52] 27/6/14: 100Ad (AVI); [49] 28/6/14: 10Ad (AVI); [26] 08/7/14: 2f1Ad (AVI, DvdS, EdB); [24] 10/7/14: 1m5Ad (AVI, EdB, RvD); [17] 11/7/14: 1Ad (AVI, EdB, RvD); [14] 11/7/14: 2m (AVI, EdB, RvD); [69] 15/7/14: 12Ad (AvdH, AVI); [70] 15/7/14: 4Ad (AvdH, AVI); [57] 18/7/14: 2Ad (AvdH, AVI); [9] 22/7/14: 1Ad (AvdH).

***Orthetrum trinacria* (Selys, 1841)**

[66] 05/7/14: 1m3Ad (AVI, EdB, MW, RvD); [27] 17/7/14: 2Ad (AvdH, AVI); [28] 17/7/14: 2Ad (AvdH, AVI); [27] 19/7/14: 1Ad (AvdH); [64] 20/7/14: 3Ad (AvdH); [63] 20/7/14: 3Ad1Ex (AvdH); [61] 20/7/14: 1Ad (AvdH); [65] 20/7/14: 3Ad (AvdH).

***Sympetrum fonscolombii* (Selys, 1840)**

[18] 23/6/14: 1Ad (AVI); [24] 10/7/14: 1Ad (AVI, EdB, RvD); [9] 13/7/14: 2Ad (AvdH, AVI); [5] 13/7/14: 2Ad (AvdH, AVI); [11] 14/7/14: 2Ad (AvdH, AVI); [59] 16/7/14: 4Ad (AvdH, AVI); [67] 19/7/14: 1Ad (AvdH); [62] 20/7/14: 1Ad (AvdH); [61] 20/7/14: 1Ad (AvdH); [65] 20/7/14: 1Ad (AvdH); [64] 20/7/14: 2Ad (AvdH); [13] 21/7/14: 1Ad (AvdH).

***Trithemis annulata* (Palisot de Beauvois, 1807)**

[44] 29/6/14: 2Ad (AVI); [54] 01/7/14: 2Ad (AVI); [55] 01/7/14: 1Ad (AVI); [66] 05/7/14: 4Ad (AVI, EdB, MW, RvD); [16] 11/7/14: 9Ad (AVI, EdB, RvD);

[6] 13/7/14: 5Ad (AvdH, AVI); [7] 13/7/14: 6Ad (AvdH, AVI); [9] 13/7/14: 8Ad (AvdH, AVI); [8] 13/7/14: 4Ad (AvdH, AVI); [3] 14/7/14: 10Ad (AvdH, AVI); [72] 15/7/14: 6Ad (AvdH, AVI); [72] 16/7/14: 10Ad (AvdH, AVI); [32] 17/7/14: 2m (AvdH, AVI); [65] 20/7/14: 4Ad (AvdH); [62] 20/7/14: 1Ad (AvdH); [64] 20/7/14: 2Ad (AvdH); [61] 20/7/14: 1Ad (AvdH); [12] 21/7/14: 10Ad (AvdH); [13] 21/7/14: 1Ad (AvdH); [6] 22/7/14: 5Ad (AvdH); [9] 22/7/14: 5Ad (AvdH); [72] 23/7/14: 5Ad (AvdH).

***Trithemis kirbyi* Selys, 1891**

[44] 29/6/14: 2Ad (AVI); [43] 30/6/14: 4Ad (AVI); [73] 12/7/14: 5Ad (AVI, EdB, RvD); [8] 13/7/14: 2Ad (AvdH, AVI); [6] 13/7/14: 2Ad (AvdH, AVI); [9] 13/7/14: 2Ad (AvdH, AVI); [2] 14/7/14: 2Ad (AvdH, AVI); [10] 14/7/14: 2Ad (AvdH, AVI); [71] 15/7/14: 12Ad (AvdH, AVI); [68] 16/7/14: 2Ad (AvdH, AVI); [72] 16/7/14: 2Ad (AvdH, AVI); [56] 18/7/14: 2Ad (AvdH, AVI); [62] 20/7/14: 1Ad (AvdH); [65] 20/7/14: 3Ad (AvdH); [61] 20/7/14: 3Ad (AvdH); [64] 20/7/14: 5Ad (AvdH); [76] 21/7/14: 3Ad (AvdH); [12] 21/7/14: 10Ad (AvdH); [6] 22/7/14: 10Ad (AvdH); [9] 22/7/14: 2Ad (AvdH); [72] 23/7/14: 10Ad (AvdH).

***Zygonyx torridus* (Kirby, 1889)**

[-] -/7/14: 4Ad (AvdH, AVI); [-] -/7/14: 4Ad (AvdH, AVI); [-] -/7/14: 2Ad (AvdH, AVI); [-] -/7/14: 1f10Ad2Ex (AvdH); [-] -/7/14: 2m1Ad (AvdH).

APPENDIX: VISITED LOCALITIES

Provinces: AL Almería ; CÁ Cádiz ; CÓ Córdoba ; GR Granada ; JA Jaén ; SE Sevilla. Coordinates of localities are expressed in MGR system at the square kilometer level.

Nº	Pro.	UTM	Municipality	Wetland/River name	Locality
Terrestrial hábitat					
1	CÁ	TF7149	Jerez de la Frontera		Ctra. A-375, km 16
2	GR	VG6009	Güejar Sierra		Camino Mirador de las Víboras
3	GR	VG6111	Güejar Sierra		Castañar de Güejar Sierra
4	GR	VG6210	Güejar Sierra		Centro Visitantes el Dornajo
5	GR	VG6110	Güejar Sierra		Haza Llana
6	GR	VF5063	Motril		Punta del Santo
7	MÁ	TF8852	Cortes de la Frontera		Fuente del Adalid
River Guadalquivir water catchment					
9	CÓ	UG4698	Córdoba	Canteras Campiñuela	//
10	CÓ	UG4393	Córdoba	Río Guadalquivir	Sotos de la Albolafia
11	GR	VG5524	Alfacar	Fuente de la Teja	//
12	GR	VG5615	Dúdar	Río Aguas Blancas	Aguas Blancas W
13	GR	VG4714	Granada	*	La Alhambra
14	GR	VG6112	Güejar Sierra	Embalse de Canales	Cabecera
15	GR	VG6410	Güejar Sierra	Río Genil	Cortijo Chiquito
16	GR	VG6311	Güejar Sierra	Río Genil	primer puente sobre el río des
17	GR	VG5930	Huétor de Santillán	Fuente de los Potros	Barranco de Fuente Grande
18	JA	VH6748	Aldeaquemada	Arroyo de Martín Pérez	Camino de la Cimbarra
19	JA	VH6750	Aldeaquemada	Río Guarrizas	Las Pasaderas
20	JA	VH6748	Aldeaquemada	Río Guarrizas	Molino de la Cimbarra
21	JA	VH1224	Andújar	Río Jándula	aab Embalse Encinarejo
22	JA	VH1022	Andújar	Río Jándula	Puente de Hlerro
23	JA	VG5098	Baeza	Laguna Grande	Camino de las Casillas
24	JA	WG1093	Cazorla	Arroyo de la Garganta	Nava de San Pedro
25	JA	WG0995	Cazorla	Arroyo de la Garganta	Nava del Espino
26	JA	WG0698	Cazorla	Río Guadalquivir	Cerrada del Utrero

Nº	Pro.	UTM	Municipality	Wetland/River name	Locality
27	JA	WG0697	Cazorla	Río Guadalquivir	Embalse Cerrada del Utrero
28	JA	WG0594	Cazorla	Río Guadalquivir	Puente de las Herreras
29	JA	WG0696	Cazorla	Río Guadalquivir	Vadillo Castril
30	JA	WH1504	Iruela, La	Río Borosa	Cerrada del Puente de la Piedra
31	JA	WH1207	Iruela, La	Río Borosa	Maleza de Santiago
32	JA	WH1306	Iruela, La	Río Borosa	Vado Rosales
33	JA	WG0699	Iruela, La	Río Guadalquivir	Arroyo Frio
34	JA	WH0802	Iruela, La	Río Guadalquivir	El Chaparral
35	JA	WH1107	Santo Tomé	Río Borosa	Piscifactoria Borosa
36	JA	VH5332	Vilches	Río Guarrizas	Embalse de la Fernandina
37	JA	WH1823	Santiago-Pontones	Embalse del Tranco de Beas	Cortijo Solana
38	JA	WH1311	Santiago-Pontones	Río Guadalquivir	Coto Ríos
39	JA	WH1108	Santiago-Pontones	Río Guadalquivir	La Hortizuela
40	JA	WH1106	Santiago-Pontones	Río Guadalquivir	Puente Cortijo del Toril
41	SE	UG1521	Osuna	Arroyo Salado	Ctra. A-378, km 1,9
River Segura water catchment					
42	AL	WG7279	María	Arroyo Caramel	Puente ALP-764, km 11,3
Mediterranean water catchments					
43	CÁ	TF7605	Barrios, Los	*	cantera
44	CÁ	TF7705	Barrios, Los	Río de las Cañas	Las Pilas
45	CÁ	TF8021	Castellar de la Frontera	Río Guadarranque	Venta Jarandilla
46	CÁ	TF8731	Jimena de la Frontera	Río Guadiaro	La Herradura
47	CÁ	TF8438	Jimena de la Frontera	Río Guadiaro	San Pablo de Buceite
48	CÁ	TF8831	Jimena de la Frontera	Río Guadiaro	Vega de la Campona
49	CÁ	TF7935	Jimena de la Frontera	Río Hozgarganta	Jimena
50	CÁ	TF8034	Jimena de la Frontera	Río Hozgarganta	Pasada de Alcalá
51	CÁ	TF8011	San Roque	Río Guadarranque	Molino de Fuego
52	GR	VF6791	Capileira	Río Mulhacén	Cortijo de la Sacristia N
53	GR	VG9607	Ferreira	Arroyo del Palancón	Puerto de la Ragua
54	GR	VF5164	Motril	Charca de Suárez	R.N.C. Charca de Suárez
55	GR	VF7167	Rubite	Rambla del Acebuchal	Tunel del Acebuchal
56	GR	VF7795	Trevélez	Río Trevélez	Junta con Barranco del Peñalbón
57	GR	VF7695	Trevélez	Río Trevélez	Trevélez N

Nº	Pro.	UTM	Municipality	Wetland/River name	Locality
58	GR	VF7086	Taha, La	Río Trevélez	Fondales
59	MÁ	UF7174	Málaga del Fresno	Río Guadalmedina	Ctra. N-331, km 160,2
60	MÁ	UF8889	Alfarnatejo	Río Sabar	Venta de San Miguel
61	MÁ	UG3600	Campillos	Laguna Salada	//
62	MÁ	UF3592	Campillos	Río Guadalhorce	Embalse Guadalteba
63	MÁ	UF4665	Cártama	Río Grande	Puente Manguarra
64	MÁ	UF4865	Cártama	Río Guadalhorce	Junta ríos Guadalhorce y Grande
65	MÁ	TF7144	Cortes de la Frontera	Arr. Trib. Garganta Diego Duro	Ctra. CA-3331, km 63,5
66	MÁ	TF7443	Cortes de la Frontera	Río Hozgarganta	Las Cañillas
67	MÁ	VF2170	Frigiliana	Río Chillar	Cruz del Punto
68	MÁ	VF2171	Frigiliana	Río Chillar	El Salto
69	MÁ	VF2373	Frigiliana	Río Chillar	El Salto NE
70	MÁ	TF9340	Gaucín	Río Genal	puente A-377
71	MÁ	UF6166	Málaga	Charca entrada	Parque Tecnológico de Campanillas
72	MÁ	UF6166	Málaga	Laguna central	Parque Tecnológico de Campanillas
73	MÁ	UF6067	Málaga	Laguna Ingenia	Parque Tecnológico de Campanillas
74	MÁ	UF6959	Málaga	Río Guadalhorce	desembocadura, Guadalmar
75	MÁ	UF8486	Riogordo	Río de la Cueva	Riogordo W
76	MÁ	UF2888	Teba	Río Guadalteba	Huertas y montes
77	MÁ	VF0066	Vélez-Málaga	Río Vélez	Puente A-335, km 269

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Keywords: Faunistic, Odonata, Andalusia, Spain

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Zygonyx torridus. Photo T.T.