

"Research Note"

ADDITIONS TO THE ODONATA FAUNA OF IRAN*

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Abstract – Forty eight species of Odonata families, including Libellulidae (23 species), Aeschnidae (7 species), Gomphidae (5 species), Cordulegastridae (1 species) from suborder Anisoptera and Euphaeidae (1 species), Calopterygidae (1 species), Lestidae (3 species), Platycnemididae (1 species) and Coenagrionidae (6 species) from suborder Zygoptera were collected from 46 sampling sites in Iran between early May 2001 to mid June 2002. Two species of Libellulidae (*Libellula fulva* and *Sympetrum sinaiticum*), and one species of Gomphidae, (*Paragomphus sinaiticus*) are recorded from Iran for the first time.

Keywords – Odonata, Iran, Palearctic

1. INTRODUCTION

Odonata fauna of Iran has been far less explored than other fauna. Since the review on the odonate fauna of Iran by Schmidt [1], a few additions to the knowledge of the dragonfly fauna of Iran have been published, either in the form of description of species [2-5] or in the framework of biogeographical studies on western Asia [6-10].

The Odonata fauna of Iran were recently noted again by Dumont and Heidari [11] including a small number of new records. They recently published a checklist of the Odonata fauna of Iran [12]. The study of additional collected materials in the present survey, revealed three new records for Iran not reported by Heidari and Dumont (2002) in their annotated checklist of the Odonata of Iran.

2. MATERIAL AND METHODS

This study is based mainly on 170 adult specimens from several provinces of Iran in the collection of the Natural History Museum of Bou Ali Sina University (Hamadan) deposited by the second author, and 337 adult specimens from Fars province which were collected and deposited in the Collection of the Department of Biology, Shiraz University (CBSU) by the first author. Identification keys were based on measurements and morphological features using Dumont [13]. Silsby's book (2001) [14] about dragonflies of the world was also used for some biogeographic information. For final verification, the identified specimens were inspected and confirmed by Prof. H. J. Dumont from Gent University, Belgium.

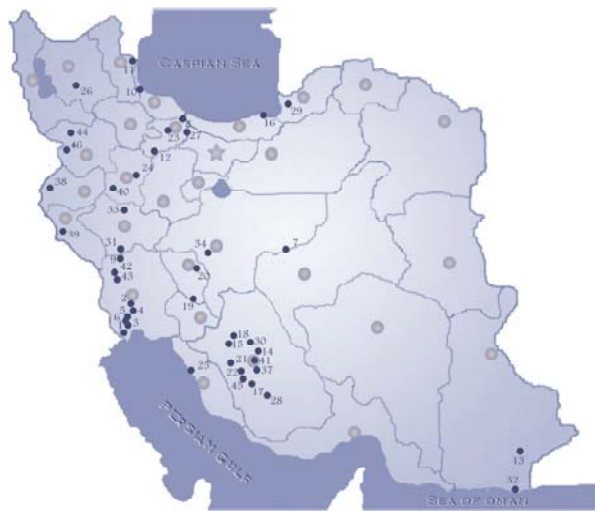
In this study 46 locations listed below were examined (Map 1):

1. Abadan (Haffar-e- sharghi, Khoozestan Prov.); 2. Ababdan (Ahwaz road, 4 km. to Ahwaz, Khoozestan Prov.); 3. Abadan (Ahwaz road, near Abadan, Khoozestan Prov.); 4. Ababdan (Ahwaz road, 35 km. to

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Ahwaz, Khoozestan Prov.); 5. Ababdan (Ahwaz road, 45 km. to Ahwaz, Khoozestan Prov.); 6. Ababdan (Ahwaz road, 25 km. to Abadan, Khoozestan Prov.); 7. Aghda (65 km Naiin-Yazd road, Yazd Prov.); 8. Alamout (Kooshk, Ghazvin Prov.); 9. Andimeshk (Andimeshk- Poldokhtar road, 35 km to Andimeshk, Khoozestan Prov.); 10. Anzali (Rezvanshahr road, Kapoorchal, Gilan prov.); 11. Astara (Ardabil road, Heiran area, Ardabil Prov.); 12. Avaj (Hamedan-Takestan road, Hamedan Prov.); 13. Bandan (Sarbaz river, Sistan & Baluchistan Prov.); 14. Band-e Amir (15 km S. Marvdasht, Fars Prov.); 15. Behesht-e-gomshodeh (Kamfiruz, Fars Prov.); 16. Behshahr (Abbas abad, Mazandaran Prov.); 17. Bijagh (Sadd-e-Bahman, Firoozabad, Fars Prov.); 18. Bizjan village (82 km Shiraz-Doroodzan road, Fars Prov.); 19. Chelgard (Dimeh spring, Chaharmahal & Bakhtiary Prov.); 20. Choghakhor lake (Chaharmahal & Bakhtiary Prov.); 21. Dasht-e Arjan (Shiraz-Kazerun road, Fars-Prov.); 22. Esmailabad (Shiraz-Firoozabad road, 25 km to firoozabad, Fars Prov.); 23. Evan lake (Alamout, Ghazvin Prov.); 24. Famenin village (Hamedan Prov.); 25. Genaveh (Bushehr Prov.); 26. Ghale Babak (East Azarbayjan Prov.); 27. Ghestin-e-Lar (Ghazvin Prov.); 28. Ghir (19 km W. Ghir, Ghir-Firoozabad road, Fars Prov.); 29. Golestan National Park (Golestan Prov.); 30. Beyza (Banesh road, Haftkhon, 79 km N. Shiraz); 31. Hosseinieh-Balarood (Poldokhtar-Andimeshk road, Lorestan Prov.); 32. Jakigor village (Chabahr- Rask road, 20 km to Rask, Sistan & Baluchistan Prov.); 33. Kahman village (Alashtar, Lorestan Prov.); 34. Khomeinishahr (Isfahan Prov.); 35. Nashtarood (Mazandaran Prov.); 36. Pir Sohrab, Sistan & Baluchistan Prov.); 37. Pol-e-Berenji, 16 km S. Shiraz, Fars Prov.); 38. Rijab (Eslamabad-Sarpol-e-zahab road, 20 km to Sarpol-e-Zahab, Kermanshah Prov.); 39. Sarab-e Golan (Ilam – Mehran road, 56 km W. Ilam, Ilam Prov.); 40. Sarab-e-Maran (30 km Nahavand-Kangavar road, Hamedan Prov.); 41. Shiraz (Fars Prov.); 42. Shoosh (Karkheh river, Khoozestan Prov.); 43. Shoosh (Khoozestan Prov.); 44. Sirvan (Marivan, Kordestan Prov.); 45. Zanjiran (Shiraz-Firoozabad road, Fars Prov.); 46. Zarivar lake (Marivan, Kordestan Prov.);



Map 1. Distribution map of examined localities in this study

3. RESULTS

The results are based on the study of 425 adult dragonflies (Anisoptera) (Table 1) and 122 adult damselflies (Zygoptera) (Table 2). The Tables have mainly been prepared based on the identified adults, since the Odonata larval taxonomy, especially on species level is difficult and there is little information available. A total of 14 species of Zygoptera and 35 species of Anisoptera have been collected and identified. Three of these dragonflies, *Libellula fulva pontica* (Selys) [15], *Sympetrum sinaiticum* (Dumont) and *Paragomphus sinaiticus* (Morton) are new records for Iran. A single specimen from Kazeroon also did not demonstrate quite typical features and seems to require more study.

Table 1. List of species, Suborder Zygoptera, recorded from Iran, The numbers refer to the list of localities.

No.	Family	Species	Locality
1	Calopterygidae	<i>Calopteryx splendens</i> (Harris, 1782)	30, 40, 45
2	Coenagrionidae	<i>Coenagrion vanbrinckae</i> Lohmann, 1993	26, 30
3	"	<i>Enallagma cyathigerum</i> (Charpentier, 1840)	1, 43
5	"	<i>Ischnura elegans</i> (Vander Linden, 1825)	14, 18, 21, 30, 37
6	"	<i>Ischnura evansi</i> Morton, 1919	14, 37, 41, 43
7	"	<i>Ischnura fauntaineae</i> Morton, 1905	14, 18, 37
8	"	<i>Ischnura pumilio</i> (Charpentier, 1825)	38, 44
4	Euphaeidae	<i>Epallage fatime</i> (Charpentier, 1840)	22, 28, 29, 37, 44, 45
9	Lestidae	<i>Lestes barbarus</i> (Fabricius, 1798)	27
10	"	<i>Lestes virens</i> (Charpentier, 1825)	36
11	"	<i>Lestes viridis</i> (Vander Linden, 1825)	36
12	Platycnemididae	<i>Platycnemis daelbata</i> Selys & Hagen, 1850	22, 30, 37, 42

Table 2. List of species, Suborder Anisoptera, recorded from Iran, The numbers refer to the list of localities. New records from Iran are indicated by*.

No.	Family	Species	Locality
1	Aeschnidae	<i>Aeschna affinis</i> (Vander Linden, 1820)	10
2	"	<i>Aeschna mixta</i> (Latreille, 1805)	26
3	"	<i>Anax immaculiferons</i> Rambur, 1842	28
4	"	<i>Anax imperator</i> (Leach, 1815)	10, 35, 40
5	"	<i>Anax parthenope</i> (Selys, 1839)	41
6	"	<i>Anaciaeschna isosceles</i> Schmidt, 1839	10, 38
7	"	<i>Caliaeschna microstigma</i> (Schneider, 1845)	6, 15, 17
8	Gomphidae	<i>Paragomphus lineatus</i> (Selys, 1850)	3
9	"	<i>Gomphus kinzelbachi</i> Schneider, 1984	2
10	"	<i>Gomphus vulgatissimus</i> (Selys & Hagen, 1850)	29
11	"	<i>Onychogomphus lefebvrei</i> (Rambur, 1842)	22, 45
12	"	<i>Paragomphus sinaiticus</i> Morton, 1929	22
13	Libellulidae	<i>Selysiothemis nigra</i> (Vander Linden, 1825)	9, 19
14	"	<i>Diplocodes lefebvrei</i> (Rambur, 1842)	31
15	"	<i>Brachythemis fuscopallata</i> (Selys, 1887)	46
16	"	<i>Orthetrum brunneum</i> (B.de Fonscolombe, 1837)	2, 15,18,22, 23, 24, 39
17	"	<i>Orthetrum sabina</i> (Drury, 1773)	4, 25, 32, 35, 37
18	"	<i>Orthetrum taeniolatum</i> (Schneider, 1845)	1, 13, 18, 21,37,39,46
19	"	<i>Orthetrum chrysostigma</i> (Burmeister, 1839)	1, 22, 37, 45
20	"	<i>Orthetrum cancellatum</i> (Linnaeus, 1758)	7, 11, 13, 21, 33
21	"	<i>Orthetrum anceps</i> (Schneider, 1845)	22, 37, 41
22	"	<i>Sympetrum sinaiticum</i> (Dumont, 1977)	1, 20
23	"	<i>Sympetrum fonscolombei</i> (Selys, 1840)	14,16,18,23,25,26,31,34,37,41
24	"	<i>Sympetrum striolatum</i> (Charpentier, 1840)	19
25	"	<i>Sympetrum sanguineum</i> (Muller, 1764)	19, 31
26	"	<i>Crocothemis servilia</i> (Drury, 1770)	14, 18, 31,36,37,41
27	"	<i>Crocothemis erythraea</i> (Brulle, 1832)	5, 14, 19,31,36, 37, 41
28	"	<i>Trithemis festiva</i> (Rambur, 1842)	3, 13, 35, 37
29	"	<i>Trithemis annulata</i> (Palisot de Beauvois, 1805)	5, 23, 37
30	"	<i>Trithemis arteriosa</i> (Burmeister, 1839)	5, 22
31	"	<i>Trithemis kirbyi</i> (Selys, 1891)	42
32	"	<i>Libellula quadrimaculata</i> Linnaeus, 1758	23
33	"	<i>Libellula depressa</i> Linnaeus, 1758	13,8
34	"	<i>Libellula fulva</i> Muller, 1764	1
35	"	<i>Pantala flavescens</i> (Fabricius, 1798)	14, 18, 36, 41
36	Cordulegasteridae	<i>Cordulegaster insignis</i> Schneider, 1845	10, 15, 29

4. CONCLUSION

With corrections and additions to Schmidt's seminal paper [1], the Odonata fauna of Iran stood at 73 species and subspecies. The recent checklist by Heidari and Dumont [8] includes 95 species and subspecies, 28 species more than previously recorded species for Iranian fauna. To these, we now add three new species to the checklist, two species of family Libellulidae (*Libellula fulva pontica* and *Sympetrum sinaiticum*), and one species of family Gomphidae (*Paragomphus sinaiticus*). This is indicative of the gaps that existed and, no doubt, continue to exist in our knowledge of dragonfly fauna of this vast country. The recognized distribution of *P. sinaiticus* ranges from Niger and Sudan to Oman. It is currently unclear where the boundaries of the range of *L. fulva pontica* should be situated. To the north and west it extends to East Anatolia, Georgia and Armenia, but how far west and south into Anatolia it reaches is currently unknown. *Sympetrum sinaiticum* is a species of arid regions. This species is distributed from north Africa to the Middle East and has recently been reported from southern and eastern Spain.

With 97 species and subspecies, Iran comes close to Turkey in species richness which now has about 105 species on record [16], a number believed to be as close to the ultimate total as that of most West-European countries. *Enallagma cyathigerum* is a puzzling species; it looks like *E. cyathigerum risi*, but on different geographic ground. The 2010 IUCN Red List of threatened species (IUCN 2010) includes three species distributed in the region, *Brachythemis fuscopalliata*, *Paragomphus sinaiticus* *Libellula fulva pontica* as vulnerable species.

These new data will improve our knowledge of the biodiversity and distribution of the species in Iran.

Totally, two biogeographic zones meet in the Iranian region, The Palaearctic (including Eurosiberian and some Mediterranean elements) and the Oriental zones. Eurosiberian group seems to be dominant in the north-west, west and central provinces although nothing is known about the fauna of the western provinces. Most endemic dragonflies of Iran, as Heidari and Dumonts (2002) noted, are subspecies of sibling species to Eurosiberian taxa. In the south of Iran the Oriental group is dominant, and is prominent along the Persian gulf from the west to the east. This part has also been poorly studied. Two series of mountain belts dominate Iran, at least from north and west: in the north the Alborz Mountains and in the west the Zagros Mountains. The region includes a large variety of habitats ranging from the forests of Alborz to the deserts of central and south-eastern Iran. Then, the faunal composition differs from that of the vast plains of Siberia in the north, and of the deserts of Syria and Saudi Arabia in the west and south and of the Indian fauna in the east. The majority of Iranian fauna, as known so far, have a mainly Palaearctic distribution. Some species from Africa reach southern Iran through the Arabian Peninsula. Various species of Oriental origin are also found in the south of Iran.

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