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The Dragonfly Family Libellulidae (Insecta: Odonata: Anisoptera) of Shiraz and its Vicinity (Fars Province, Iran)

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ABSTRACT- Thirteen species in five genera of the Libellulidae family were collected in a survey of dragonflies (Odonata) of Shiraz and its vicinity, involving 19 locations, The presented records of the libellulid dragonflies taken from the Fars province comprise a first time collection of two genera, *Sympetrum* and *Pantala*, and seven species, *Orthetrum anceps* Schnider, *Orthetrum taeniolatum* Schneider, *Orthetrum chrysostigma* Burmeister, *Sympetrum fonscolombii* Selys, *Sympetrum meridionale* Selys, *Crocothemis servilia* Drury, *Trithemis kirbyi* Selys, and *Pantala flavescens* Fabricius. A map of the localities of Fars province was provided as a table of the species' distributions and an identification key was presented for the genera and species the Libellulidae family of Shiraz and its vicinity.

Keywords: Dragonfly, Fars province, Iran, Libellulidae, Odonata

INTRODUCTION

Odonata are an aquatic order of insects with about 5500 described species worldwide (3). All known species are predators as adults and larvae. As such, the perform a valuable role as biological control agents for many harmful insects, especially those with aquatic larvae. They are unappreciated allies of mankind, assuredly saving lives through their control of mosquitoes and other disease vectors. Through their habits of eating a wide variety of flying herbivorous insects, they reduce the losses of many wetland crops (6). In addition they are excellent indicators of freshwater quality (3).

Odonata are classified into three suborders: Anisoptera (true dragonflies), Zygoptera (damselflies) and Anisozygoptera (a very small suborder) (3). Anisoptera comprise ten families among which the Libellulidae, with 140 genera and about 962 species is the largest (14). This cosmopolitan family, considered to be the family of most recent origin, contains about a quarter of the known species of living Odonata (1). These are the most common and most recognised dragonflies. On shining, tremulous wings they hover over every pond and pool (11). Members of this group

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are small to large in size and variably colored, occasionally having metallic coloration (2).

Libellulids breed principally in still-water, or lentic habitats, although larvae of some species are stream dwellers. Larvae of most species are secretive, hiding among rotten vegetation at the bottom of the pond or lake; a few others have become secondarily adapted for a more active existence among growing vegetation (4). Many species of Libellulidae can thrive in waters with low dissolved oxygen levels and a few species occupy brackish water habitats. Some species glide and migratory flights may be made up of several libellulid species (14).

As Heidari and Dumont stated "Biogeographically, the Iranian odonate fauna comprises several distinct groups and the dragonfly faunas of large parts of Iran are still little known, and the ranges of individual species remain to be determined" (7).

The present study was conducted to determine the distribution map and to prepare suitable identification keys for the Libellulidae genera and species of Shiraz and its vicinity.

MATERIALS AND METHODS

To collect the libellulid dragonflies, sweep nets were used, with a mouth diameter of 45 cm and extensible handle lengths of maximum 2 m; the color of the net was green or white. The specimens were collected from 19 locations near Shiraz in Fars province (see Map. 1) between April-October 2008.

For preserving, two references were used (9, 10) with some modifications. Brifely, specimens were killed swiftly, using ethyl acetate vapor in a killing jar. The wings of the newly killed specimens were folded back and held in that position by placing the specimen in a special folded envelope on which relevant collecting information such as date and location was recorded. The envelopes were stored in suitable containers for transport. Light blue or green colored specimens, whose colors might have changed after air drying, were exposed to saturated ethyl acetate vapor for 12 hours. This method helps to preserve the natural color of dragonflies. Finally specimens were pinned and mounted with the fore and hind wings and abdominal appendages in their normal positions as in flight. Teneral specimens tend to shrink during mounting and drying, so fully matured adult dragonflies were prefered. In some species, teneral specimens or newly emerged dragonflies do not show permanent color patterns or other key characteristics important for identification, making them difficult to be identified.

A morphological approach was adopted in this study. Some photos from important taxonomic characters were taken using a digital camera attached to a stereoscopic microscope. All specimens are now deposited in the Plant Protection Department, College of Agriculture, Shiraz University.

FAUNISTIC RESULTS AND DISCUSSION

Previously, 12 genera and 34 species of Libellulidae were known in Iran, of which six genera and nine species were reported from Fars province (7, 8). The

Table 1. Distribution of libellulid species collected in Shiraz and its vicinity

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Genus: *Crocothemis* Brauer, 1868																			
C. erythraea (Brullé, 1832)							*	*	*	*	*	*				*	*	*	*
C. servilia (Drury, 1773)			*	*	*		*	*	*	*	*	*		*			*		
Genus: *Orthetrum* Newmann, 1833																			
O. anceps (Schneider, 1845)					*									*					
O. brunneum (Fonscolombei, 1837)			*		*	*	*		*			*	*						
O. chrysostigma (Burmeister, 1839)		*														*	*	*	*
O. sabina (Drury, 1770)				*							*								
O. taeniolatum (Schneider, 1845)					*		*											*	
Genus: *Pantala* Hagen, 1861																			
P. flavescens (Fabricius, 1798)			*		*				*		*	*							
Genus: *Sympetrum* Newman, 1833																			
S. Fonscolombeii (Selys, 1840)				*					*	*		*	*	*		*	*		
S. meridionale (Selys, 1841)									*										
Genus: *Trithemis* Brauer, 1868																			
T. annulata (Palisot de Beauvois, 1807)	*		*		*						*						*	*	
T. festiva (Rambur, 1842)				*	*		*	*								*		*	*
T. kirbyi Selys, 1891					*									*					

present study identified 13 species in five genera, including two newly recorded genera for Fars Province, *Sympetrum* and *Pantala*, and seven species, *Orthetrum anceps* (Schneider), *Orthetrum taeniolatum* (Schneider), *Orthetrum chrysostigma* (Burmeister), *Sympetrum fonscolombii* (Selys), *Sympetrum meridionale* (Selys), *Crocothemis servilia* (Drury), *Trithemis kirbyi* Selys, and *Pantala flavescens* Fabricius, (compare, 7).

The list of species and localities

Crocothemis erythraea (Brulle, 1832)

Material examined: Dashte-arzhan, 2 males, 13 Jul 2008; Mahmoodiyeh, 1 male, 20 Aug 2008; Pole-Parwizi, 4 males, 30 Aug 2008; Kherak, 1 male, 9 Sep 2008; Badjgah, 3 males, 22 Sep 2008; Chelehgah, 1 male, 3 Oct 2008; Dry River, 3 males, 13 Oct 2008; Sayed Hossein, 2 males, 22 Oct 2008; Tange-Chowgan, 1 male, 22 Oct 2008.

Crocothemis servilia (Drury, 1773)

Material examined: Dashte-arzhan,1 female, 13 Jul 2008; Pole-Fasa, 2 males 4 females, 15 Jul 2008; Chamran river, 1 female, 29 Jul 2008; Kohmare sorkhi, 1 female, 1 Aug 2008; Cheshmeh Golestan, 1 female, 11 Aug 2008; Mahmoodiyeh, 1

male, 1 female, 20 Aug 2008; Pole-Parwizi, 4 females, 30 Aug 2008; Kherak, 1 female, 9 Sep 2008; Badjgah, 2 females, 22 Sep 2008; Chelehgah, 1 female, 3 Oct 2008; Dry River, 1 female, 13 Oct 2008.

***Orthetrum anceps* (Schneider, 1845)**

Material examined: Kohmare sorkhi, 1 male, 1 female, 1 Aug 2008; Cheshmeh Golestan, 1 female, 11 Aug 2008.

***Orthetrum brunneum* (Fonscolombe, 1837)**

Material examined: Chamran river, 2 males, 4 females, 8 Jul 2008; ghalat, 1 male, 13 Jul 2008; Dashte-arzhan, 1 male, 13 Jul 2008; Mahmoodiyeh, 1 male, 3 females, 20 Aug 2008; Tale-Beyza, 1 male, 22 Aug 2008; Badjgah, 1 male, 22 Sep 2008.

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

Material examined: Jooshak, 2 males, 22 May 2008; Khanzenian, 1 male, 22 Sep 2008; Dry River, 2 males, 13 Oct 2008; Sayed Hossein, 3 males, 22 Oct 2008; Tange-Chowgan, 1 male, 22 Oct 2008**.**

***Orthetrum sabina* (Drury, 1773)**

Material examined: Pole-Fasa, 3 males, 2 females, 15 Jul 2008; Pole-Parwizi, 1 female 30 Aug 2008.

***Orthetrum taeniolatum* (Schneider, 1845)**

Material examined: Kohmare sorkhi, 2 males, 2 females, 1 Aug 2008; Mahmoodiyeh, 1 male, 20 Aug 2008; Sayed Hossein, 1 male, 22 Oct 2008.

***Pantala. flavescens* (Fabricius, 1798)**

Material examined: Dashte-arzhan, 2 males, 1 females, 13 Jul 2008; Chamran river, 1 male 29 Jul 2008; Kohmare sorkhi, 1 female, 1 Aug 2008; Pole-Parwizi, 3 males, 3 females, 30 Aug 2008; Badjgah, 6 males, 1 female, 22 Sep 2008.

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

Material examined: Dashte-arzhan, 1 male, 13 Jul 2008; Pole-Fasa, 1 female, 15 Jul 2008; Cheshmeh Golestan, 1 male 1 female, 11 Aug 2008; Tale-Beyza, 2 females, 22 Aug 2008; Kherak, 1 female, 9 Sep 2008; Badjgah, 7 males, 2 females 22 Sep 2008; Khanzenian, 2 males, 1 female, 22 Sep 2008; Dry River, 5 males, 1 female, 13 Oct 2008.

***Sympetrum meridionale* (Selys, 1841)**

Material examined: Dashte-arzhan, 1 female, 13 Jul 2008.

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

Material examined: Chamran blvd, 1 male, 15 May 2008; Chamran river, 1 male, 8 Jul 2008; Kohmare sorkhi, 1 male, 1 Aug 2008; Pole-Parwizi, 1 male, 30 Aug 2008; Dry River, 1 male, 13 Oct 2008; Sayed Hossein, 3 males, 22 Oct 2008.

***Trithemis festiva* (Rambur, 1842)**

Material examined: Pole-Parwizi, 1 female, 30 Aug 2008; Kohmare sorkhi, 4 males, 1 female, 1 Aug 2008; Mahmoodiyeh, 1 male, 1 female, 20 Aug 2008; Khanzenian, 1 female, 22 Sep 2008; Chelehgah, 1 female, 3 Oct 2008; Sayed Hossein, 3 males, 22 Oct 2008; Tange-Chowgan, 2 males, 3 females, 22 Oct 2008**.**

***Trithemis kirbyi* Selys, 1891**

Material examined: Kohmare sorkhi, 3 females, 1 Aug 2008; Cheshmeh Golestan, 1 female, 11 Aug 2008.

General Features of Libellulidae

Libellulidae are distinguished from the other family in the superfamily Libelluloidea, the Corduliidae, by having the eyes always confluent and contiguous; the posterior margin of eyes straight (2, 13); the vertex well developed; the labium with middle lobe very small and not fissured, and the lateral lobes very large (2). In this family there is a marked difference between the venation of the fore- and hind wings and the wings are variable in shape and width (Figs. 1, 2, 5 and 6). In the forewing, the discoidal cell is far beyond the arculus and elongates along the breadth of the wing, usually traversed but is retracted to the arculus in the hind wing and elongates in the long axis. The base of hind wing or anal angle is always rounded in both sexes. A membranula is present, occasionally reduced. Antenodal veins are usually numerous, those of the costal space continuous with those of the subcostal space, the last one incomplete in some genera. Primary antenodals are indistinguishable from the others. The foot-shaped or L-shaped anal loop is elongated, reaching its greatest development in this group and the fusion of the veins rising from the arculus is most pronounced (1, 2). The abdomen is cylindrical, triquetral or depressed; segment 2 lacks oreillettes and segment 10 lacks a keel; and the anal appendages are simple and rather generalized throughout the family. Only one pair of hamuli is present (2). The females do not have a well developed ovipositor (1, 13), but the genital lobe is well developed and the vulvar scales are small, rarely elongated (2).

Key to Genera of Libellulidae of the Fars province.

The nomenclature of the wings and genitalia follows Needham and Heywood, 1929 (11).

1.Arculus at or distal to antenodal$_2$; last antenodal in forewing complete (Fig. 1); mature adults often blue pruinescent, especially males……..……. *Orthetrum*

-.Arculus between first and second antenodals$_2$; last antenodal in forewing incomplete (Fig. 2); color patterns and size variable 2

2.Hind lobe of pronotum large, erect, fringed with long hairs (Fig. 7); body ground color red orochraceous……..……...*Sympetrum*

-.Hind lobe of pronotum small…….....…3

3.Discoidal field (i.e. cell rows projecting beyond d) in hind wing at least slightly expanded at wing margin (Fig.5)……*Crocothemis*

-.Discoidal field in hind wing, parallel or contracted at wing margin (Fig. 6)…….…..4

4.Pterostigma in all wings equal (about 2.5 mm long); hind wing not conspicuously broadened at its base; legs or femur black and tibia red……..…..*Trithemis*

-Pterostigma in forewing longer than that in hind wing; hind wing broadened at its base……*Pantala*

Crocothemis Brauer, 1868

Males colored partly red, females brown. Posterior lobe of pronotum small. Legs short. Abdomen depressed. Wings hyaline or partly colored at base with amber spot. No cells between IR_3 and Rspl doubled;. arculus situated between $first_1$ and second $antenodals_2$. Last antenodal is incomplete. Pterostigma and membranula large. In male accessory genitalia, lamina depressed and base of hamuli rectangular, with outer branch narrowing distally in side view, foliate in ventral view; inner hook strongly curved, with one to several apical and subapical spines. Genital lobe elongate-oval, bent over backwards. Females colors paler than males, often yellowish brown. Vulvar part have an erected scale.Two species are found in Shiraz and its vicinity.

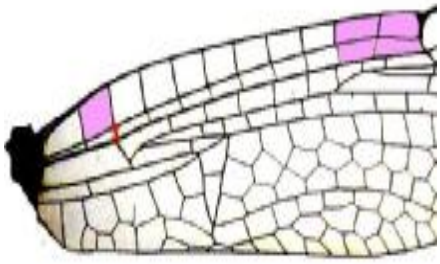


Fig. 1. *Orthetrum* sp. Forewing

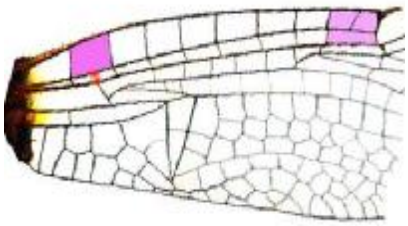


Fig. 2. *Crocothemis* sp. Forewing

Fig. 3. *Orthetrum* sp. Posterior lobe of pronotum

Fig. 4. *Orthetrum* sp. Head

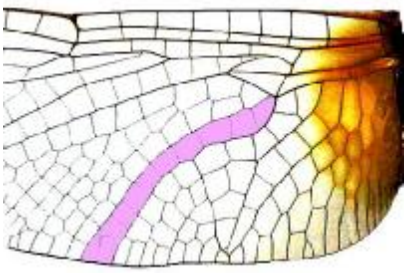


Fig. 5. *Crocothemis* sp. Hind wing

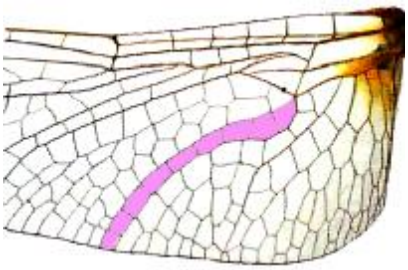


Fig. 6. *Sympetrum* sp. Hind wing

Fig. 7. *Sympetrum* sp. Pronotum and head

Key to species of *Crocothemis*

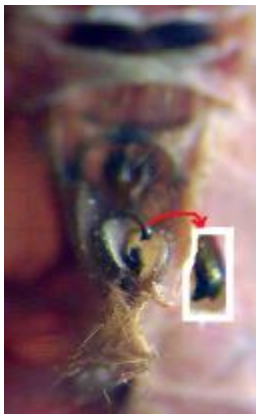
1. Abdominal segments over 3mm wide; wing apices smoky; inner branch of hamule bearing a single apical hook which is not bifid (Fig. 8); in females each side of vuIvar scale with a distinct basal swelling directed towards the head (Fig. 9)……..……*C. servilia*
2. Abdominal segments less than 3mm wide; wing apices hyaline; inner branch of hamule with distinctly bifid apex (Fig. 10); in females each side of vulvar scale with a weakly developed basal swelling directed posteriorly…….*C. erythtraea*

Orthetrum Newmann, 1833

Dragonflies of variable size. Frons wider than clypeus. Vertex with a groove. Hind rim of pronotum large, erect, emarginate medially, hairy. Abdomen variously shaped, often more or less constricted at S_3; lamina usually erect anteriorly; hamuli species specific; vesica sperminalis with a flagellum and flanges (alae); vulvar scales little developed. Females with sides of S_8 more or less foliate; arculus situated at antenodal$_2$; discoidal cell in forewing just beyond that in hind wing, and discoidal cell in hind wing situated at level of arculus; discoidal field beginning with 3 rows of cells in forewing and expanding to 4 or more at wing margin; membranula large. Abdomen and thorax of males, covered by a blue pruinosity in mature adults.
Five species found in Shiraz and its vicinity.

Fig. 8. Male accessory genitalia of *C. Servilia, Servilia*

Fig. 9. Female genitalia part of *C.* ventral & lateral views



Fig, 11. Dark membranula of *O. sabina*

Fig. 10. *C. erythtraea,* Male accessory genitalia **Fig. 11. Dark membranula of *O. Sabina***

Key to Species of *Orthetrum*

1. Membranula black or dark brown (Fig. 11) 2
-. Membranula pale grey or white..... 4

2. A trace of basal amber spot on hind wing (Fig. 11); size about 4 cm or more.3
-.No amber spot in hind wing; size smaller than 4cm.……..……..……..*O. taeniolatum*

3.S_{1-2} bulbously swollen, abruptly constricted at S_3; S_{7-10} expanded more than $S_{4-5;}$ appendages pale yellow; males without pruinesence (Fig. 12).……..……..*O. sabina*
-S_{1-2} expanded but not bulbously swollen, gently constricted over the entire length of S_3; appendages dark; males often with blue pruinesence in fully mature adults ..... …….*O. chrysostigma*

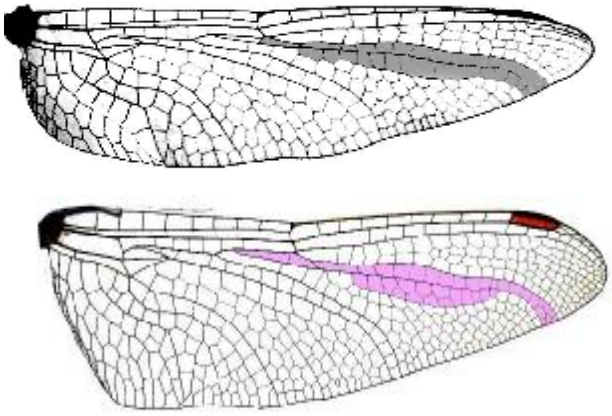
4. One row of cells between Rs and Rspl (Fig. 14).……..……..*O. anceps*
-Two full rows of cells between Rs and Rspl, or at least several cell doublings (Fig. 15)

5. Male lamina anteriorly with short hairs; genital lobe rounded; anterior hook of hamuli strong, turned outwards, pointed, posterior hook rounded, well posterior to and below anterior hook; cleft between them deep and wide (Fig. 18). In female abdomen sides of S_8 rather strongly foliate (Fig. 17); four or more cells between IR3 and Rspl are doubled (Fig. 15); ……..……..*O. brunneum*

6. Male lamina anterior with long hairs; genital lobe rectangular; anterior hook of hamuli small, outwardly turned, pointed; posterior hook ending in hirsute ridge below and external to the anterior hook (Fig. 16). In females abdomen sides of S_8 not foliated; cells between IR3 and Rspl variable.……..……..*O. taeniolatum*

Fig. 12. *O. Sabina,* Male abdomen

Fig. 13. *O. chrysostigma,* Male accessory genitalia



Figs. 14 and 15. *O. anceps* (up) *O. brunneum* (down), Hind wing

Fig. 16. *O. taeniolatum,* Male accessory genitalia

Fig. 17 and 18. *O. brunneum,* Male accessory genitalia (left). Female vulvar area (right)

Pantala Hagen, 1861

Medium sized dragonflies. Head very large. Pronotum small, legs long. Wings long; hind wing very broad at base; forewing pterostigma longer than hind wing pterostigma; arculus between antenodal$_{1,2}$; last antenodal in forewing incomplete; R_2 strongly bisinuous. Hind wing with two cross-veins between triangle and wing base.
One species: *Pantala flavescens* found in Shiraz and its vicinity. This species is global in distribution (but is rare in Europe). Male accessory genitalia as in Fig. 19, Female vulvar area as in Fig. 20.

Fig. 19. *Pantala flavescens,* Male accessory genitalia

Fig. 20. *Pantala flavescens* Female vulvar area

Sympetrum Newman, 1833

These are rather small, mostly autumnal dragonflies, brilliant red in color when mature. The teneral color is usually olivaceous or yellow. Pronotum with very strongly developed posterior collar, fringed with long hairs; stripes of white (reduced sometimes to inferior spots) often appear upon the sides of the thorax, sometimes narrower ones occur anteriorly in teneral specimens, but these tend to disappear completely with age, the entire thorax becoming reddish brown. The sides of abdominal segments 3 to 9 bear a line of black triangles which tend to spread over the dorsum and are their widest on S_8; abdomen cylindrical or triquetral in cross-section, S_8 not dilated in the female. Genitalia variable and species-specific in both sexes. Wings hyaline or marked with brown and yellow, with flavescent tinge at the base, of very variable extent, varying from almost none at all to over half of the wing, veins often red; arculus situated between $antenodal_1$ and $antenodal_2$; discoidal field with 3 rows of cells initially and throughout, contracting near wing margin; Rspl with 1 or 2 rows of cells; membranula moderately large; last antenodal incomplete; discoidal cell in forewing narrow, traversed; in hind wing situated at base of arculus. Sectors of arculus fused briefly in forewing, but with longer fusion in hind wing.
Two species are found in Shiraz and its vicinity.

Key to Species of *Sympetrum*

1. Hind wing with basal amber spot extending across cubito-anal cross-vein and along the membranula; face of male bright red; anterior branch of hamule is small and clearly shorter than the posterior branch (Fig. 21); synthorax with thick black markings and well developed; female vulvar scale barely projecting; the apical edge of the vulvar scale bilobed; vulvar aperture with lips swollen laterally and vulvar opening in a deep U-shaped invagination.....*S. fonscolombii*
2. Hind wing with trace of basal amber spot; face of male almost pale; anterior branch of hamule is long and rounded at tip; synthorax with black markings extremely reduced (Fig. 22); female vulvar scarcely projecting, hardly visible in lateral view……..*S. meridionale*

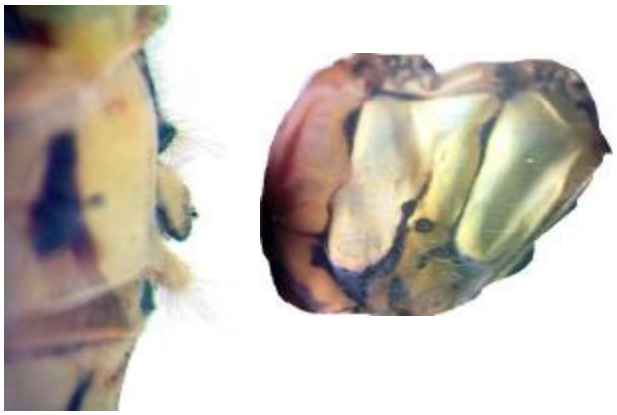


Fig. 21. *S. fonscolombii,* Male accessory genitalia (Left) synthorax, Synthorax in lateral view (Right)

Fig. 22. *S. meridionale* Female in lateral view

***Trithemis* (Brauer, 1868)**

Dragonflies of small to moderate size, with red abdomen, or black with yellow markings, often pruinose. Head small, eye contact short. Pronotum with small, rounded hind lobe; synthorax small to moderately large; legs rather long and slim, black in color, or femur black and tibia reddish. Abdomen variable, slender or depressed in adult males, yellow, red, purple or black and cylindrical in most females. Male accessory genitalia prominent, hamuli always with a strong apical hook; females without foliate expansions on S_8; vulvar valvules very small. Wings moderately to very long, fairly wide; membranula medium sized; discoidal in forewing narrow or wide, situated slightly distal to discoidal in hind wing; arculus proximal to antenodal$_2$; sectors of arculus fused at their origin; pterostigma small and about 2.5 mm long; last antenodal usually incomplete; discoidal cell in forewing traversed, in hind wing usually entire, discoidal field composed of three rows of cells throughout; R_3 generally nearly straight, Rspl with two rows of cells, several cells between IR_3 and Rspl doubled (rarely absent). Three species are found in Shiraz and its vicinity.

Key to Species* of *Trithemis* of Fars province

*****Since some species of this genus are strictly heterochromous, males and females are separated in this key. No male for *T. kirbyi* and no female for *T. annulata* were found in this study.

1. Female……..……..……..2
Male…….……..……..4
2. Vulvar valvules shallowly emarginate and seems straight; sides of S_{3-10} with extensive black markings.…….……*T. annulata*
-.Vulvar valvules medially emarginate and deeply U-shaped as in (Fig. 25); sides of S_{3-10} without black markings……..…….3
3. Base of all wings broad amber coloration, extending to antenodal$_4$ and beyond tip of discoidal cell in hind wing (Fig. 24); membranula white or pale grey; wing venation red and orangeish ……..……*T. kirbyi*
-. Base of hind wing with small dark brown spot; membranula dark brown; wing venation black.……...*T. festiva*
4. Broad amber spot between wing base and midway to nodus on all four wings.……....*T. kirbyi*
-Wing spot in base of hind wings……..……..5
5. Wing spot on hind wing rather small and dark, brownish; abdomen not depressed, most of thorax and abdomen blue-black (Fig. 27); accessory genitalia as in (Fig. 28).……..…*T. festiva*
-.Wing spot on hind wing clear amber colored; abdomen depressed, S_4 and S_5 about twice as long as wide; abdomen reddish with purple sheen (Fig. 29); accessory genitalia as in (Fig. 30).…….. *T. annulata*

Fig.23. *T. festiva,* Vulvar area

Fig. 24. *T. kirbyi,* Female

Fig. 25. *T. kirbyi,* Vulvar area

Fig. 26. *T. festiva,* Female

Fig. 27. *T. festiva,* Male

Fig. 28. *T. festiva,* Male accessory genitalia

Fig. 29. *T. annulata,* Male

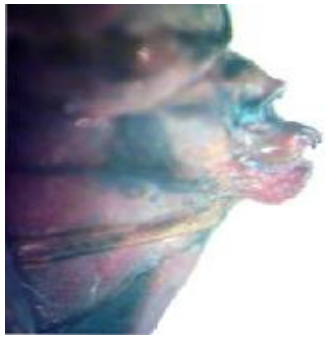


Fig. 30. *T. annulata,* Male accessory genitalia

Legend of Map1:

1. **Chamran blvd.**
2. **Jooshak**
3. **Chamran river**
4. **Pole-Fasa**
5. **Kohmare sorkhi**
6. **Ghalat**
7. **Mahmoodiyeh**
8. **Chelehgah**
9. **Dashte-arzhan**
10. **Kherak**
11. **Pole-Parwizi**
12. **Badjgah**
13. **Tale-Beyza**
14. **Cheshmeh Golestan**
15. **Anjireh**
16. **Khanzenian**
17. **Dry River**
18. **Sayed Hossein**
19. **Tange-Chowgan**

Map 1. Sampling locations in Shiraz and its vicinity from Fars Province of Iran

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آسیابک‌های خانواده‌ی (INSECTA: ODONATA: ANISOPTERA) Libellulidae شیراز و حومه (استان فارس، ایران)

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چکیده در پژوهشی که بر روی فون طیاره مانند های خانواده‌ی Libellulidae در شیراز و حومه در نوزده جایگاه از استان فارس انجام پذیرفت، سیزده گونه از پنج جنس در خانواده‌ی Libellulidae جمع‌آوری شدند. دو جنس: *Sympetrum* و *Pantala* و هفت گونه: *Orthetrum anceps* Schnider, *Orthetrum taeniolatum* Schneider, *Orthetrum chrysostigma* Burmeister, *Sympetrum fonscolombeii* Selys, *Sympetrum meridionale* Selys, *Crocothemis servilia* Drury, *Trithemis kirbyi* Selys, and *Pantala favescens* Fabricius, برای اولین بار از استان فارس گزارش می‌شوند. نقشه‌ی جایگاه های جستجو شده در استان، جدول پراکندگی گونه‌ها و کلید شناسایی جنس‌ها و گونه‌های Libellulidae ارائه شده است.

واژه های کلیدی: **آسیابک Odonata، Libellulidae، استان فارس، ایران**

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