

Dragonfly fauna of district Haripur, Khyber Pakhtunkhwa, Pakistan

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Received 6 April 2020; Accepted 10 May 2020; Published 1 September 2020



Abstract

The present study was conducted from January to September 2018 in district Haripur, KP, Pakistan. A total of 200 specimens were collected and 2 families, 9 genera and 12 species were recorded. Dragonflies of family Libellulidae (170; 94.15%) were present in great abundance while the other two families were less distributed. Minimum number of dragonfly species belong to family Gomphidae (10; 5.85%). *Orthetrum chrysis* was recorded in greater number. We also measured their body length, and length of fore and hind wings. The highest length was found to be in *Pantala flavescens* (Fabricius, 1798), with 23.5±0.4, 17.5±0.4, and 16±2.0 mm length of body, fore and hind wings respectively. Further comprehensive study needed on their ecological role.

Keywords dragonflies; diversity; district Haripur.

Arthropods
ISSN 2224-4255
URL: <http://www.iaees.org/publications/journals/arthropods/online-version.asp>
RSS: <http://www.iaees.org/publications/journals/arthropods/rss.xml>
E-mail: arthropods@iaees.org
Editor-in-Chief: WenJun Zhang
Publisher: International Academy of Ecology and Environmental Sciences

1 Introduction

Dating back well into the Permian the most ancient of winged insects, dragonflies, are among them (Grimaldi et al., 2005). They include in them griffenfly *Meganeuropsis permiana* Carpenter, with a wingspan of 70 cm. Dragonflies are recognized by their long, slender abdomen; large globular eyes, often making up a large portion of the head; short antennae, and long wings. They are indicators of environmental health and are frequently used in the temperate regions of the world. Their sensitivity to habitat quality makes them well-suited agents for monitoring environment (Feulner et al., 2007). To control the insect vectors of dengue fever, Dragonfly can be used which breed in water containers and help to control malaria and filarial diseases, etc (Mitra et al., 2010). Dragonflies belong to the order Odonata, sub-order Anisoptra (the “toothed” insects)(Garrouste et al., 2009). The oldest groups of winged insects we have found so far is Odonata. From all over the world, 630 genera in 28 families and approximately 6000 species and subspecies are known (Seyab et al., 2015). In India, Odonata has 139 genera in 17 families, out of which 499 species and subspecies are present (Sharma et al., 2007). Uneven 5680 extant species, relatively dragonflies are insect’s small order

We used aerial net, insect, scope, fieldbook and cyanide bottle in the investigation.

2.1 Collection and preservation of specimens

By using aerial net we collected dragonflies from different localities of village Chhajjian, District Haripur. After killing them in cyanide bottle placed them in triangular envelope, we carried these collected specimens to the laboratory. Their body parts were properly labeled and mounted, and naphthalene balls were placed in the boxes to keep them safe from the pests.

2.2 Identification of specimens and description

The specimens were examined for identification. By running them through Fraser's (1934) key the identification were done up to the specific level and identified species is placed in National Insect Museum, (NARC). Already recorded from Pakistan valid names along with synonyms, habitat and distribution were given for the species. In the Zoological Museum, Department of Zoology, Hazara University, Mansehra, all the identified specimens were deposited

2.3 Photography and morphometry

Wings abdomen and thorax were measured with a finely pointed divider and a common scale ruler (10 of each 20 identified specimens) were used on top of a bland white sheet of paper after identification.

2.4 Data analysis

By using mean and standard deviation, the morphometry of species were estimated through graphic representation. Species abundance and richness, and monthwise abundance were analyzed

3 Results

During the present survey, a total of 200 specimens were collected belonging to 2 families, 9 generas and 12 species (Fig. 2). Dragonflies belong to family Libellulidae (170; 94.15%) were present in great abundance while the other two families were less distributed Minimum number of dragonfly species belongs to family Gomphidae (10; 5.85%). *Orthetrum chrysis* were recorded in greater number. The greatest length was found in the *Pantala flavescens* (Fabricius, 1798), with 23.5 ± 0.4 , 17.5 ± 0.4 , and 16 ± 2.0 mm length of body, fore and hind wings respectively. Measurements for the other dragonflies are as showed in Table 1.



Fig. 2 A collected species specimen of dragonfly from district Haripur.

Table 1 Body length, length of fore and hind wing from district Haripur.

Family	Common names	Species	Numbers	Body length (M.D±S.D)	Fore wing (mm) (M.D±S.D)	Hind wing (mm) (M.D±S.D)	
Libellulidae	Slender skimmer	<i>Orthetrum sabina</i> (Drury, 1773)	3	16.5±0.1	12.5±0.2	13±1.4	
	Spine-tufted skimmer	<i>Orthetrum chrysis</i> (Selys, 1891)	11	15±0.4	12±1.7	11.5±0.2	
	Black stream glider	<i>Trithemis festiva</i> (Selys, 1878)	7	10.5±0	8.5±0.7	7.5±0.5	
	Crimson-tailed marsh hawk	<i>Orthetrum pruinosum</i> (Burmeister, 1839)	5	13±0.8	11±0.5	10.5±1.6	
	Black-tailed skimmer	<i>Orthetrum cancelatum</i> (Linnaeus, 1758)	8	16.5±1.0	12.5±1	12±1.5	
	Scarlet skimmer	<i>Crocothemis servalia</i> (Drury, 1773)	7	16.5±1.3	13±1.5	12.5±0.5	
	Keyhole glider		<i>Tramea basilaris</i> (Palisot de Beauvois, 1817)	8	17±0.2	15±0.5	14.5±0.7
				2	12.5±1.4	11.5±0.2	10±1.3
	Globe skimmer		<i>Pantala flavescens</i> (Fabricius, 1798)	12	23.5±0.4	17.5±0.4	16±2.0
Asian pintail		<i>Acisoma panrpoid panrpoid</i> (Rambur, 1842)	6	15.5±0.2	12.5±0.2	13±1.4	
Gomphidae	Common tiger	<i>Ictinogomphus ferox</i> (Rambur, 1842)	7	17.2±0.7	14±0.8	13.8±0.9	
	Clubtails	<i>Onychogomphusbi strigatus</i> (Selys 1854)	10	10.5±1	8.5±0.7	7.5±0.5	
Cordulegasteridae		<i>Cordulegaster brevistigma</i> (Leach, 1815)	5	13±0.5	11±0.5	10.5±1.6	
			13	16.5±1.0	12.5±1	12±1.5	

4 Discussion

The present study was the first reported study from district Haripur. From Poonch District of Azad Jammu and Kashmir, Pakistan, 19 species were reported by Khaliq (1990). 3 new genera and 4 species of Anisoptra from Khyber Pakhtunkhwa were identified by Sahito et al. (2017). From Tehsil Tangi District Charsadda Khyber Pakhtunkhwa, Pakistan, the similar survey were also conducted. This has been showed the large similarity in both study areas (Seyab et al., 2015). From Sindh 122 species of dragonflies belonging to 10 genera and 2 families were recorded. 35 dragonfly species belonging to 22 genera of 12 subfamilies in 3 families from Punjab Rahmananalyzed by Gurkan et al. (2010). From Tehsil Tangi District Charsadda Khyber Pakhtunkhwa, Pakistan, the similar species were also recorded (Anderson et al., 2010). 64 species and subspecies belonging to 24 genera of 6 subfamilies of dragonflies from various localities of West Pakistan were identified by Yousaf (1972). From western 162 odonate species were recorded from Himalaya by Kumar and Prasad (1981). Dragonflies fauna of Pakistan was explored during 2005-2009 in the 10 agro-ecological regions of Pakistan by Perveen (2014). From the results of morphometric data, the minimum head length (3 mm) was recorded in *R. rufa*, *D. lefebvrei*, *O. sabina*, *P. flavescens*, *O. bistrigatus*, *C. brevistigma brevistigma* and maximum length (9 mm) was recorded in *S. decoloratum*. Similarly, minimum thorax length (5 mm) was noticed in *D. trivialis* and

maximum thorax length (14 mm) was noticed in *C. brevistigma brevistigma*. The minimum abdomen length (11 mm) was found in *P. flavescens* and maximum abdomen length (41 mm) was found in *C. brevistigma brevistigma*. Similarly, from the result of morphometric data, the minimum (21 mm) forewing length was recorded in *O. bistrigatus* and maximum (50 mm) forewing length was recorded in *C. brevistigma brevistigma*. The minimum (21 mm) hindwing length was recorded in *D. trivialis* and maximum (49 mm) hindwing length was recorded in *C. brevistigma brevistigma*. As dragonflies are an important topic for research and study they have the great biodiversity all over the world. Although they are used as food and as magical or medicinal resources, dragonflies have little economic value. At the local scale, and to an unknown extent they may influence populations of disease vectors. In the temperate regions of the world, the group features prominently in nature management (Westfall and May, 1996). For environmental health and conservation management, they are often used as indicators (Corbet, 1999).

From the present study it is concluded that there is large diversity of dragonflies in this district and they should be investigated further on a larger scale.

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