



DIVERSITY OF ODONATA OF DISTRICT PULWAMA OF KASHMIR

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ABSTRACT

This baseline field study carried out from April 2019 to September 2020, in the Pulwama district of Kashmir Himalayan Region reported a total of 11 species of Odonata- under two suborders namely Anisoptera (Dragonflies: 7 genera and 9 species) and Zygoptera (Damselflies: 2 genera and species each). Family Libellulidae, suborder Anisoptera (Dragonflies) with seven species distributed in five genera was the most dominant family. *Pantala flavescens* was the most common species.

Key words: Odonata, dragonflies, damselflies, Pulwama, Kashmir Himalayan Region, biodiversity, distribution, status, *Pantala flavescens*

The Insect order Odonata predatory insects viz., dragonflies and damselflies (Kalkman et al., 2008). Their biodiversity, ecology and evolutionary biology is well documented, are relatively easy to identify and are key components of wetland ecosystem. They are amphibiotic insects, since adults are terrestrial and the larvae aquatic (Subramanian and Babu, 2018). These are often used as indicators for environmental health and conservation management (Kalkman et al., 2008). Dragonflies and Damselflies are predators throughout their life, and act as an important natural biocontrol agent of various harmful insects. The district Pulwama of Kashmir is with a temperate climate (33.8716°N, 74.8946°E, 1300-2000 masl). The Odonate fauna occurring in the localities of Kashmir Himalayan Region (KHR) including district Pulwama are not fully known. Very few workers like Fraser (1933, 1934, 1936), Singh and Baijal (1954), Kumar and Prasad (1981), Lahiri and Das (1991), Dar et al., (2002), Mitra (2003), and Subramanian and Babu (2018), have contributed to the Odonata biodiversity of this Himalayan Region. Dar et al. (2002) gave a list of 31 species of Odonata from the Kashmir valley; and Mitra (2003) listed 24 species under 16 genera from Kashmir. Odonates of this Himalayan Region are also facing serious threats. Hence, Odonata biodiversity of the KHR needs to be brought out and the present preliminary work provides data pertaining to the biodiversity of Odonata of district Pulwama.

MATERIALS AND METHODS

Field surveys were conducted from April 2019 to September 2020 in habitats like marshy lands, aquatic areas, gardens, parks, mountains, forests, orchids, vegetated and open fields, agricultural areas etc of district Pulwama. Specimens were mostly identified in the field and collected by either using aerial net or by handpicking. Borror et al. (1976) was followed for field surveys and preservation. Species were identified following field guides of Mitra (2002; 2006), Subramanian (2005) and Andrew et al., (2008). The collected specimens have been deposited in the Biodiversity Museum, Biodiversity, Biosystematics & Climate Change (B2C2) Research Lab, Mantaqi Centre for Science & Society, Islamic University of Science & Technology, Awantipora, Kashmir.

RESULTS AND DISCUSSION

Surveys from April 2019 to September 2020 in various habitats/ areas of district Pulwama revealed a total of 11 species of Odonata under two suborders Anisoptera (dragonflies) and Zygoptera (damselflies) under 3 superfamilies and families each falling in nine genera (Table 1). Anisoptera is the most dominant with nine species under seven genera; Zygoptera is represented by only two. The surveyed areas include Aripal (34.0175° N, 75.0713° E), Awantipora (33.9232° N, 75.0128° E), Barsoo (33.9515° N, 74.9910°

Table 1. Distribution of Odonata in Pulwama

Species	Common name	Status	Remarks
Zygoptera			
Lestoidea			
Lestidae			
1. <i>Lestes barbarus</i> (Fabricius, 1798)	Southern Emerald Damselfly, Shy Emerald Damselfly, Migrant Spreadwing	Least concern (Clausnitzer, 2020)	It is a migrant and highly erratic species (Assandri, 2019). Samraoui and Corbet (2000), gave its occurrence in Algeria from April to October. Now, it was found active from June to November. Earlier, Fraser (1933), Dar et al., (2002) and Mitra (2003) gave its distribution in Kashmir Himalayan Region.
2. <i>Sympecma paedisca</i> (Brauer, 1877)	Siberian Winter Damselfly	Least concern (Kalkman, 2014)	It was seen active from June to October. Fraser (1933), Dar et al., (2002) and Mitra (2003) gave its distribution from Kashmir. It is regarded as critically endangered as per Italian Red List (Assandri, 2019)
Anisoptera			
Superfamily: Aeshnoidea			
Aeshnidae			
3. <i>Aeshna juncea</i> (Linnaeus, 1758)	Common Hawker, Moorland Hawker, Sedge Darner	Least concern (Boudot, 2017)	Found flying from June to September. Distribution in Kashmir known (Fraser, 1936; Dar et al., 2002; Mitra, 2003). Found up to 1200 m
4. <i>Anax parthenope</i> (Selys, 1839)	Lessor Emperor	Least concern (Ferreira, 2010; Ferreira et al., 2010; Kalkman, 2010)	Found active from June to September. Samraoui and Corbet (2000) reported it from April to October in Algeria. Fraser (1936), Kumar and Prasad (1981), Dar et al., (2002), and Mitra (2003) gave its distribution in Kashmir.
Libelluloidea			
Libellulidae			
5. <i>Crocothemis erythraea</i> Brulle, 1832	Broad Scarlet, Common Scarlet-Darter, Scarlet Darter, Scarlet Dragonfly	Least concern (Clausnitzer, 2016)	Found active from June to October. Samraoui and Corbet (2000) found it active from April to October in Algeria
6. <i>Crocothemis servilia</i> (Drury, 1770)	Scarlet Skimmer, Ruddy Marsh Skimmer	Least concern (Dow, 2017)	Found active from June to October. They have been observed flying in the altitudinal range up to 1000 m. During the present investigations, Observed frequently during mid-day flying up to 10 m, some flying during morning hours. Nair (2011) gave its flight period from May to September in India. Widely distributed in Oriental and Australian region (Subramanian, 2005). Andrew et al., (2008) called it as a commonest red dragonfly.
7. <i>Orthetrum luzonicum</i> (Brauer, 1868)	Marsh Skimmer, Tricolored Marsh Hawk, Slender Blue Skimmer, Luzon Skimmer	Least concern (Dow, 2010a)	Breeds in habitats like marshes, wet areas, rice fields and open and disturbed areas; widespread at upland streams, ponds, marshland, edge of forests, etc. No conservation measures are needed (Dow, 2010a). Seen up to 1500 m (Dow, 2010a). Found flying from June to September. Lahiri and Das (1991) reported it from Kashmir.

(contd.)

8. <i>Orthetrum triangulare</i> (Selys, 1878)	Blue Tailed Forest Hawk	Least concern (Dow, 2010b)	Found mostly during mid-day time and comes to the same perch/ place in the next days, and sit under sunny spots. Fraser (1936), Dar et al., (2002) and Mitra (2003) gave its distribution from Kashmir. Fraser (1936) gave its altitudinal range between 1200-2400 m. Found flying from June to November.
9. <i>Pantala flavescens</i> (Fabricius, 1798)	Wandering Glider, Globe Skimmer, Globe Wanderer	Least concern (Boudot, et al., 2016)	Highly migratory species (Andrew et al., 2008; Nair, 2011). It is widely distributed in the Indian subcontinent/ Oriental region and the most common (Mitra, 2003; Andrew, et al., 2008). Found active from June to November, commonly in paddy fields, playgrounds, wetlands, orchids, forests, open areas, etc. Mitra (2003), gave its distribution from Kashmir.
10. <i>Sympetrum commixtum</i> (Selys, 1844)	Mountain Meadow Hawk	Least concern (Dow, 2010c)	Widely distributed in Himalayan Region and India, Nepal and Bhutan (Mitra, 2006). Found near ponds, orchids, paddy fields, flying from June to September. Fraser (1936), (Dar et al. (2002), and Mitra (2003) gave its distribution in Kashmir.
11. <i>Trithemis aurora</i> (Burmeister, 1839)	Crimson Marsh Skimmer	Least concern (Subramanian and Dow, 2010)	It is distributed throughout India (Sharma, 2014) and is common (Subramanian and Dow, 2010). Found in both terrestrial and freshwater, such as ponds, lakes, marshes, wet paddy fields, streams, open areas, rivers, and irrigation canals. Found flying from June to September. Subramanian and Dow (2010) mentioned its distribution from Kashmir.

E), Beighpora (33.8784° N, 75.0093° E), Chersoo (33.8852° N, 75.0254° E), Dadsara (33.9043° N, 75.0855° E), Kakapora (33.9468° N, 74.9296° E), Kandizal (33.9925° N, 74.9136° E), Khrew (34.0209° N, 74.9998° E), Koil (33.8782° N, 74.9472° E), Ladhu (33.9925° N, 74.9935° E), Lajoora (33.8989° N, 74.9588° E), Lassipora (33.8134° N 74.9408° E), Lethpora (33.9675° N, 74.9647° E), Lurgam (33.9710° N, 75.0918° E), Malangpora (33.8918° N, 74.9811° E), Midoora (33.9301° N, 75.0609° E), Newa (33.9159° N, 74.8818° E), Naibugh (33.9138° N, 75.0918° E), Newa (33.9159° N, 74.8818° E), Padgampora (33.9092° N, 74.9972° E), Pampore (34.0060° N, 74.9238° E), Pastuna (33.9931° N, 75.0758° E), Pulwama town (33.8716° N, 74.8946° E), Rajpora (33.8243° N, 74.8531° E), Ratnipora (33.9209° N, 74.9438° E), Shadimarg (33.8040° N, 74.8229° E), and Tral (33.9342° N, 75.1137° E). The family Libellulidae was the most dominant with 7 species under 5 genera. *Pantala flavescens* was the most common and dominant species. More sighting was during summer season. As per the IUCN Red List of Threatened Species, all the species reported here are categorized under least concern species category.

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