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Study of Dragonflies & Damselflies (Odonata) in Painganga Wildlife Sanctuary, Yavatmal District (M.S) India

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ABSTRACT

The study was conducted to explore diversity of Odonata (dragonflies and damselflies) in Painganga Wildlife sanctuary of Yavatmal District. The dragonflies (Anisoptera) and damselflies (Zygoptera) are amphibiotic insects, which belong to the order Odonata. They are one of the most common insects flying and soaring over forest, cultivated fields, meadows, ponds and rivers and play a crucial role in ecosystem functioning as biological indicator of environmental quality. They are good bio- indicators of environmental changes which should be protected to conserve the biodiversity and environment. The study was carried out during June-2022 to Jan-2023. In the present investigation total 13 species of odonates belonging to 2 sub-order and 5 families were recorded. Under the order Odonata and suborder Anisoptera 8 species belonging to family Libellulidae, 1 species belonging to family Aeshnidae, and 1 species belonging to family Gomphidae were recorded and under the sub-order Zygoptera. The 2 species belonging to family Coenagrionidae and only 1 species belonging to family Chlorocyphidae were recorded.

Keywords: Diversity, Dragonflies, Damselflies, Libellulidae, Painganga wildlife sanctuary, Yavatmal

INTRODUCTION

Dragonflies (Anisoptera) and damselflies (Zygoptera) are insects belonging to the order Odonata. They are one of the most common insects flying and soaring over forest, cultivated fields, meadows, ponds and rivers. They often termed as the bio-indicators of the aquatic ecosystem. They are ancient creatures, with fossil records dating back over 300 million years. They represent the status of freshwater ecosystems as a Sensitive taxon Odonata are charismatic, culturally important species. They play important functional roles in ecosystems as both predators and prey and have the potential to provide valuable pest-control services to agricultural systems (Corbet, 1999). It constitutes a small, well-known order of insects that are

widely distributed all over the world (Tillyard, 1917). Adult are predacious feeds on harmful insects and also on own kind larvae are carnivorous and voracious feeders (Andrew *et al*., 2008). They are also actively used in controlling causative agent of malaria and filaria throughout the world (Tiple *et al*., 2008). Due to their sensitivity to environmental conditions odonates are considered as excellent biological indicators of environmental conditions (Brown, 1991; Smith et al., 2007). They are one of the flagship species of insect communities which indirectly influence the tropic level of an ecosystem. Globally the distribution of odonates indicated that 5,740 species are known, of these 470 species in 139 genera and 19 families exist in India (Subramanian, 2009). The importance and appropriateness of invertebrate taxa as an ecological indicator in monitoring ecosystem health are well recognized (Merritt *et al*., 2008; Majumder *et al*., 2013). These insects are popular among entomologists and nature enthusiasts due to their vibrant colours, intricate wing patterns, and unique behaviours.

The diversity of dragonflies and damselflies is impressive, with thousands of species described worldwide. They are found on all continents except Antarctica, showcasing their adaptability and ability to inhabit a wide range of environments. Odonates are especially abundant in tropical and temperate regions, where they contribute to insect biodiversity significantly. In India there exist 470 species belonging to 139 genera and 19 families (Subramanian, 2009).
Apart from studying the odonata diversity and enlisting the species of dragonflies and damselflies an attempt was made to highlight their seasonality and relative abundance in the different habitats of the study area. The present study was undoubtedly the first comprehensive effort to investigate the odonata diversity of Painganga Wildlife Sanctuary, District Maharashtra.

MATERIAL AND METHODS

Study Area: The Painganga wildlife sanctuary is located in eastern Vidarbha region situated in Umarkhed Tahsil of Yavatmal district of Maharashtra. It is located between 19° 36’ to 19° 7’ North latitudes and 77° 42’ to 77° 7’ East longitudes. It is an exotic Sanctuary with area of about 325 sq.km and vast variety of flora & fauna. There are five water reservoirs in the forest. This region is rich in diverse flora and fauna suitable for diversity and abundance of exploration of odonates. Odonata diversity and enlisting the species of dragonflies and damselflies an attempt will be made to highlight their seasonality and relative abundance in the different habitats of the study area.

Fig 1. Natural Habitats of Painganga Wildlife Sanctuary.

Sampling Method:

The study was carried out in the above-mentioned study area from June -2022 to Jan-2023. The species collection was conducted in the morning 7.00 am to 10.00 am and Evening 3.00 pm to 5.00 pm in Painganga wildlife sanctuary. Species were observed, captured photographed and identified in natural habitats and release immediately to conserve the biodiversity. Species were photographed by using a camera.

Identification:

The adult species were identified with the help of identification keys provided by Subramanian (2005; 2009 and Andrew *et al.,* 2008). The hand book on common odonates of central India and introduction of Odonata were used. For the identification of the length of the abdomen, the wing size, colour and size of the eye and wing spot were observed. Those specimens which were difficult to identify in the field, it is collected & identified in the laboratory with the help of taxonomic keys (Fraser 1933; 1934; 1936).

RESULTS AND DISCUSSION

A Total of 13 species of odonates belonging to 2 sub-order and 5 families were recorded. Under the order Odonata and suborder Anisoptera 8 species belonging to family Libellulidae, 1 species belonging to family Aeshnidae, and 1 species belonging to family Gomphidae were recorded. In sub-order Zygoptera 2 species belonging to family Coenagrionidae and only 1 species belonging to family Chlorocyphidae were recorded (Table 1). We observed that out of total species recorded near about 61 % are of Libellulidae family, 8 % are of Aeshnidae family, 8 % are of Gomphidae family, and 15 % are of Coenagrionidae family while remaining 8 % belonged to Chloroocyphidae showed least number of species.

Table 1. Number of Sub-order, Family, and Species recorded in Painganga wildlife Sanctuary.

Sub-order	Family	Species	Total
Anisoptera	Libellulidae	8	10
	Aeshnidae	1	
	Gomphidae	1	
Zygoptera	Coenagrionidae	2	3
	Chlorocyphidae	1	

Table 2. List of dragonflies recorded in Painganga wildlife Sanctuary.

Sr. No.	Family	Species	Common Name
1	Libellulidae	*Brachythemis cantaminata* (Fabricius, 1793)	Ditch Jewel
2		*Diplacodes trivialis* (Rambur,1842)	Ground Skimmer
3		*Diplacodes lefebvrii* (Rambur, 1842)	Black Percher
4		*Orthetrum pruinosum* (Burmeister, 1839)	Crimson tailed Marsh Hawk
5		*Orthetrum Chrysis* (Selys, 1891)	Brown-backed Red Marsh Hawk
6		*Orthetrum ransonnetii* (Brauer, 1865)	Desert Skimmer
7		*Trithemis aurora* (Burmeister, 1839)	Crimson Marsh Glider
8		*Trithemis festiva* (Rambur, 1842)	Black Stream Skimmer
9	Aeshnidae	*Anax guttatus* (Burmeister, 1839)	Blue-tailed green Darner
10	Gomphidae	*Ictinogomphus rapax* (Rambur, 1842)	Common Clubtail

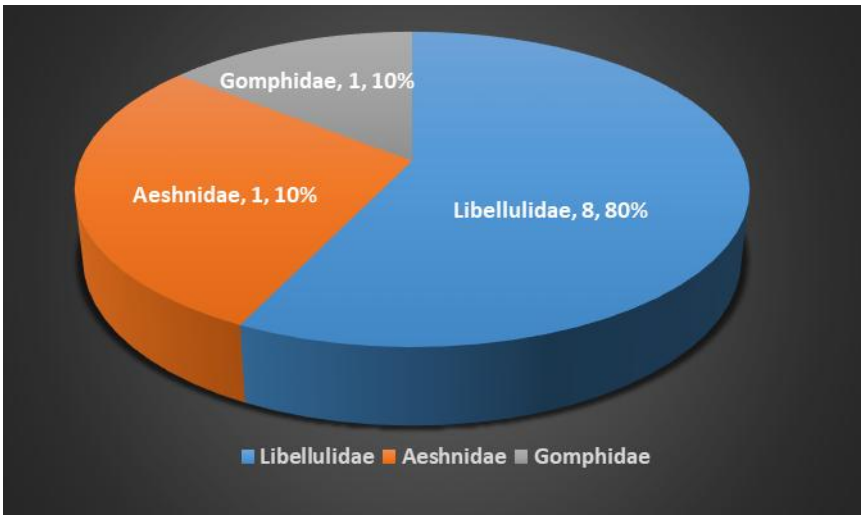

Fig.2 Family wise dragonflies recorded in Painganga wildlife Sanctuary.

Plates: Dragonflies recorded during the study period

Family: Libellulidae

Ditch Jewel
Brachythemis cantaminata

Ground Skimmer
Diplacodes trivialis

Black Percher
Diplacodes lefebvrii

Crimson tailed Marsh Hawk
Orthetrum pruinosum

Family: Libellulidae

Brown-backed Red Marsh Hawk
Orthetrum Chrysis

Desert Skimmer
Orthetrum ransonnetii

Crimson Marsh Glider
Trithemis aurora

Black Stream Skimmer
Trithemis festiva

Family: Aeshnidae & Gomphidae

Blue-tailed green Darner
Anax guttatus

Common Clubtail
Ictinogomphus rapax

Table 3. List of damselflies recorded in Painganga wildlife Sanctuary.

Sr. No.	Family	Species	Common Name
1	Coenagrionidae	*Aciagrion pallidum* (Selys,1891)	Pale Slender Dartlet
2		*Ischnura aurora* (Brauer,1865)	Golden Dartlet
3	Chlorocyphidae	*Libellago lineata* (Burmeister,1839)	River Heliodor

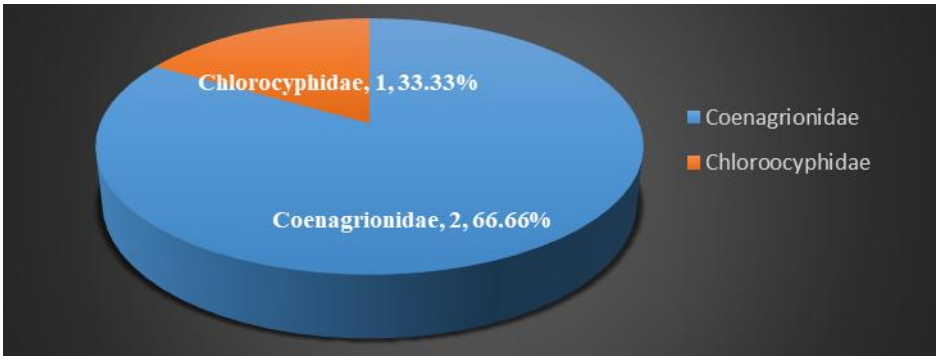

Fig.3 Family wise damselflies recorded in Painganga wildlife Sanctuary.

Plates: - Damselflies recorded during the study period

Family: - Coenagrionidae

Pale Slender Dartlets
Aciagrion pallidum

Golden Dartlet
Ischnura aurora

Family: - Chlorocyphidae

River Heliodor
Libellago lineata

Similar observation were recorded by Thomas *et al*., (2018) during species diversity of dragonfly along the waterside of Kallar river base of Pathanamthitta district Kerala. A total 15 species of dragonflies were identified during six month period of study. Dragonfly and Damselfly (odonata) species diversity was studied in the Bor Wildlife Sanctuary, Wardha. Out of 72 investigated species of odonates belonging to 8 families were recorded (Tiple *et al*., 2020; 2022). Similar type of work done was also carried out in Murtizapur taluka of Akola district where studied and 19 species of dragonflies belonging to 2 families and 10 genera were recorded. Under the order odonata and suborder anisoptera 18 species belonging to family Libellulidae and only 1 species belonging to Gomphidae family were recorded (Charjan et al., 2015).

CONCLUSION

Odonata are more sensitive and colourful insects. Certain anthropogenic events can cause expansion, industrial and urban pollution and riverine deforestation, resulting in the erosion of aquatic ecosystems and ultimately the loss of fresh water ecosystems worldwide. The present study recorded the diversity of odonates in Painganga wildlife sanctuary. A total of 13 species odonates belonging to 2 sub-order and 5 families were recorded. Among the Dragonflies (Anisoptera), the family Libelluidae includes 8 species, family Aeshnidae includes 1 species and family Gomphidae includes 1 species and Damselflies (Zygoptera), the family Coenagrionidae includes 2 species and the family Chlorocyphidae includes only 1 species. Thus, the present study focused not only on the diversity of odonates at painganga wildlife sanctuary but on the thermal sensitivity of odonates due to environmental changes, which affect their life, so these findings might be helpful for future research and conservation of odonates.

Conflict of Interest: The authors declare no conflict of interest in relation to this research.

Data Availability Statement: Not applicable.

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