

A CHECKLIST OF DRAGONFLIES AND DAMSELFLIES (ODONATA: INSECTA) OF PAINGANGA WILDLIFE SANCTUARY OF YAVATMAL DISTRICT, MAHARASHTRA (INDIA)

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Abstract

The present study provides a comprehensive checklist of dragonflies and damselflies (Order: Odonata) from the Painganga Wildlife Sanctuary, located in Yavatmal district, Maharashtra, India. Recognized as sensitive bioindicators of freshwater ecosystem health, odonates are vital to understanding regional biodiversity and ecological integrity. Field surveys conducted using opportunistic sampling and photo documentation methods across varied habitats within the sanctuary recorded a total of 55 species, comprising 37 dragonflies (Suborder: Anisoptera) and 18 damselflies (Suborder: Zygoptera), spanning eight families. Among these, the families Libellulidae (25 species) and Coenagrionidae (10 species) were the most dominant. The diversity and distribution patterns observed reflect the sanctuary's rich habitat mosaic, ranging from wetlands and streams to forest edges and agricultural landscapes. This baseline inventory not only adds to the existing knowledge of Odonata diversity in the Vidarbha region but also underscores the ecological significance of the Painganga Wildlife Sanctuary as a key freshwater biodiversity hotspot. The findings highlight the need for ongoing monitoring and targeted conservation strategies to safeguard these vital insect communities and their aquatic habitats.

Keywords: Biodiversity, Conservation, Damselflies, Dragonflies, Painganga Wildlife Sanctuary, Yavatmal District

Introduction

Dragonflies and damselflies (Order: Odonata) are among the most charismatic and ecologically significant groups of insects, serving as vital bioindicators of freshwater ecosystems (Corbet, 1999; Kadoya *et al.*, 2004). Their sensitivity to habitat quality, water pollution, and climatic changes makes them crucial tools for monitoring environmental health (Clausnitzer *et al.*, 2009; Simaika & Samways, 2012). Odonates also play an essential role in the food web, acting both as predators of smaller invertebrates and as prey for birds, amphibians, and other insects, thereby contributing to the ecological balance of their habitats (Subramanian, 2005).

India, with its diverse topography, climatic zones, and ecosystems, harbours a rich assemblage of Odonata species over 500 recorded so far (Subramanian *et al.*, 2018). The state of Maharashtra, known for its ecological diversity, encompasses several protected areas that sustain a wide variety of flora and fauna, including odonates. However, many regions within the state remain underexplored, and baseline data on Odonata diversity is often incomplete or outdated (Joshi and Sawant, 2013; Tiple, 2012).

Painganga Wildlife Sanctuary, located in the Yavatmal district of eastern Maharashtra, represents one such under-studied region. The sanctuary comprises a mosaic of dry deciduous forests, wetlands, ephemeral streams, and

agricultural lands—habitats that are typically suitable for a range of Odonate species. Despite its ecological significance, there has been limited documentation of the Odonate fauna of this area (Olambe *et al.*, 2024).

The present study aims to fill this knowledge gap by compiling a comprehensive checklist of dragonflies and damselflies observed in Painganga Wildlife Sanctuary. This baseline data not only enhances our understanding of the region's biodiversity but also serves as a reference point for future ecological, taxonomic, and conservation-related research. By documenting the occurrence and diversity of Odonata, the study highlights the importance of continued biodiversity assessments and calls for targeted conservation strategies to protect freshwater habitats in the region.

Materials And Methods

Study area: Painganga Wildlife Sanctuary is a protected forest on the side of the Painganga River which is divided into Vidarbha and Marathwada region. This sanctuary is surrounded by water from three sides. During the monsoon, one can experience real treasure of nature. Sahastrakund Waterfall in Painganga River near Jewali village is 50 km away from Umarched. Visitors come here in August, September and October. Painganga Sanctuary was founded on 1 January 1986. The area of the sanctuary is approximately 325 sq. km. During 2014, borders were extended to 424 sq. km. with adding new area of 100.27 sq. km. Akola

deputy conservator Wildlife has supervision and direct control of the sanctuary (Gazette of India, 2016). The climate of this region is characterized by a hot summer, well-distributed rainfall during the south-west monsoon season and generally dry weather during the rest of the year. The cold season is from December to February. This is followed by the hot season from March to May. The southwest monsoon season is from June to September while October and November constitute the post-monsoon season (Falling Rain Genomics 2024-2025).

Field visits and Identification of Species:

Opportunistic sampling and photo documentation were conducted in selected areas of Painganga Wildlife Sanctuary and its surrounding areas. Most of the samplings were done between 1000 h and 1400 h, when odonates control their body temperature in sunlight (Subramanian 2009; Koli *et al.* 2014; Payra and Tiple 2019; Tiple *et al.*, 2022). Identification of odonates was primarily made directly in the field from specimens collected with handheld aerial sweep nets and subsequently released without harm. Photographs of specimens taken from various angles aided their identification using field guides (Andrew *et al.* 2008; Subramanian 2009; Nair 2011).

Results And Discussion

During study period, a total of 37 species of dragonflies (Suborder: Anisoptera) and 18 species of damselflies (Suborder: Zygoptera) were recorded (Table 1).

A total of 37 species of dragonflies belonging to the suborder *Anisoptera* were recorded, distributed across four families: Aeshnidae (5 species), Gomphidae (5 species), Libellulidae (25 species), and Macromiidae (2 species). Among these, the family Libellulidae was the most diverse and dominant, accounting for 25 species. This high representation suggests a broad ecological adaptability and a strong presence across a variety of habitats.

A total of 18 species of damselflies under the suborder *Zygoptera* were recorded, belonging to four families: Chlorocyphidae (1 species),

Coenagrionidae (10 species), Lestidae (3 species), and Platycnemididae (4 species). The family Coenagrionidae was the most represented, with 10 species observed. This dominance reflects their preference for still or slow-moving aquatic habitats such as ponds, rice paddies, and marshlands.

Dragonflies and damselflies, belonging to the order Odonata, exhibit distinct habitat preferences that are closely tied to the availability and quality of freshwater ecosystems. Both groups favor habitats with clean, slow-moving or still water bodies such as ponds, lakes, marshes, and streams, which are essential for their aquatic larval stages. Dragonflies generally prefer open, sunlit areas with abundant vegetation near water, which supports hunting and mating activities, while damselflies often inhabit more shaded or vegetated zones along the water’s edge. Factors such as water chemistry, temperature, presence of predators, and vegetation structure significantly influence their distribution and abundance. These insects also serve as important bioindicators, reflecting the ecological health of their freshwater habitats.

The observed species composition was found to be in well agreement with many of previous studies that mainly deals with molluscan diversity of lake ecosystem. These recent studies mainly included Nair (2011); Neesemann *et al.*, (2011); Manwar *et al.*, (2012), Kulkarni, and Subramanian (2013; Bora and Meitei (2014); Karthika and Krishnaveni (2014); Manwar *et al.* (2014); Charjan *et al.* (2015); Paris *et al.* (2015); Muthukumaravel *et al.* (2015); Tiple and Koparde (2015); Satpathi and Mondal (2016); Mukherjee *et al.* (2016); Subramanian and Babu (2017); Saha and Mondal (2018); Bora (2019); Jere *et al.*, (2020); Johari and Jain (2020); Chandran *et al.* (2021); Chandran and Jose (2021); Singh *et al.* (2021); Bharathi and Koparde (2022); Ahire (2022); Masih and Pathak (2022); Aghade *et al.* (2022); Tiple *et al.* (2022); Zilpe *et al.* (2023); Aghade and Saraf (2023); Sayak *et al.* (2023); Chiranjit *et al.* (2024); Reghu and Aravind (2024); Basudev *et al.* (2024); Bibha and Kulkarni (2024); Chandran *et al.* (2025) and name a few.

Table 1: A Checklist of Dragonflies and Damselflies of Painganga Wildlife Sanctuary

Species	Common Name	OS	TS
Suborder: Anisoptera			
Family: Aeshnidae			
<i>Anax guttatus</i> (Burmeister, 1839)	Lesser Green Emperor	VC	LC
<i>Anax immaculifrons</i> (Rambur, 1842)	Blue Darner	C	LC
<i>Anax parthenope</i> (Selys, 1839)	Lesser Emperor	R	LC
<i>Anax indicus</i> (M. Lieftinck, 1942)	Elephant Emperor	R	LC
<i>Gynacantha bayadera</i> (Selys, 1891)	Parakeet Darner	C	LC

Family: Gomphidae			
<i>Gomphidia t-nigrum</i> (Selys, 1854)	Indian Tiger		
<i>Ictinogomphus rapax</i> (Rambur, 1842)	Common Clubtail	VC	LC
<i>Macrogomphus annulatus</i> (Selys, 1854)	Keiser's Forktail	FC	DD
<i>Microgomphus torquatus</i> (Selys, 1854)	Pygmy Clubtail	R	DD
<i>Paragomphus lineatus</i> (Selys, 1850)	Common Hooktail	C	LC
Family: Libellulidae			
<i>Acisoma panorpoides</i> (Rambur, 1842)	Trumpet Tail	C	LC
<i>Aethriamanta brevipennis</i> (Rambur, 1842)	Scarlet Marsh Hawk	VR	LC
<i>Brachythemis contaminata</i> (Fabricius, 1793)	Ditch Jewel	VC	LC
<i>Bradinopyga geminate</i> (Rambur, 1842)	Granite Ghost	VC	LC
<i>Bradinopyga sobrina</i> (Rambur, 1842)	Blue Marsh Hawk	FC	LC
<i>Crocothemis servilia</i> (Drury, 1770)	Scarlet Skimmer	VC	LC
<i>Diplacodes lefebvrii</i> (Rambur, 1842)	Black Percher	R	LC
<i>Diplacodes nebulosa</i> (Fabricius, 1793)	Charcoal-Winged Percher	R	LC
<i>Diplacodes trivialis</i> (Rambur, 1842)	Chalky Percher Or Ground Skimmer	VC	LC
<i>Lathrecista asiatica</i> (Fabricius, 1798)	Asiatic Blood-Tail.		
<i>Neurothemis fulvia</i> (Drury, 1773)	Fulvous Forest Skimmer	C	LC
<i>Neurothemis intermedia</i> (Rambur, 1842)	Paddyfield Parasol	VC	LC
<i>Neurothemis tullia</i> (Drury, 1773)	Pied Paddy Skimmer	C	LC
<i>Orthetrum Chrysis</i> (Selys, 1891)	Brown-Backed Red Marsh Hawk	FC	LC
<i>Orthetrum glaucaum</i> (Brauer, 1865)	Blue Marsh Hawk	VC	LC
<i>Orthetrum pruinosum</i> (Burmeister, 1839)	Crimson Tailed Marsh Hawk	VC	LC
<i>Orthetrum luzonicum</i> (Brauer, 1868)	Tri-Coloured Marsh Hawk	VC	LC
<i>Orthetrum sabina</i> (Drury, 1773)	Green Marsh Hawk	VC	LC
<i>Orthetrum taeniolatum</i> (Schneider, 1845)	Small Skimmer	VC	LC
<i>Pantala flavescens</i> (Fabricius, 1798)	Wandering Glider	VC	LC
<i>Potamarcha congener</i> (Rambur, 1842)	Yellow-Tailed Ashy Skimmer	VC	LC
<i>Trithemis aurora</i> (Burmeister, 1839)	Crimson Marsh Glider	VC	LC
<i>Trithemis festiva</i> (Rambur, 1842)	Black Stream Glider	VC	LC
<i>Trithemis pallidinervis</i> (Kirby, 1889)	Long-Legged Marsh Glider	VC	LC
<i>Urothemis signata</i> (Rambur, 1842)	Greater Crimson Glider	FC	LC
Family: Macromiidae			
<i>Epophthalmia vittata</i> (Burmeister, 1839)	Common Torrent Hawk.	C	LC
<i>Macromia cingulata</i> (Rambur, 1842)	Torrent Hawk	C	LC
Suborder: Zygoptera			
Family: Chlorocyphidae			
<i>Libellago lineata</i> (Burmeister, 1839)	River Heliodor	C	LC
Family: Coenagrionidae			
<i>Aciagrion pallidum</i> (Selys, 1891)	Pale Slender Dartlet	FC	LC
<i>Aciagrion occidentale</i> (Laidlaw, 1919)	Green Striped Slender Darlet	C	LC
<i>Agriocnemis femina</i> (Brauer, 1868)	Senegal Golden Darlet	R	LC
<i>Agriocnemis pygmaea</i> (Rambur, 1842)	Pygmy Darlet	VC	LC
<i>Ceriagrion coromandelianum</i> (Fabricius, 1798)	Coromandel Marsh Dartet	VC	LC
<i>Ischnura aurora</i> (Brauer, 1865)	Golden Dartlet	VC	LC
<i>Ischnura senegalensis</i> (Rambur, 1842)	Senegal Golden Dartlet	VC	LC
<i>Pseudagrion decorum</i> (Rambur, 1842)	Three-Striped Blue Dart.	VC	LC
<i>Pseudagrion rubriceps</i> (Selys, 1876)	Saffron-Faced Blue Dart.	VC	LC
<i>Ischnura nursei</i> (Morton, 1907)	Pixie Dartlet	FC	LC
Family: Lestidae			
<i>Lestes elatus</i> (Selys, 1862)	Emerald Spreadwing	FC	LC
<i>Lestes umbrinus</i> (Selys, 1891)	Brown Spreadwing	VC	DD
<i>Lestes viridulus</i> (Vander Linden, 1825)	Western Willow Spreadwing	VC	LC

Family: Platycnemididae			
<i>Caconeura ramburi</i> (Fraser, 1922)	Indian Blue Bambootail	VR	DD
<i>Copera marginipes</i> (Rambur, 1842)	Yellow Bush Dart	VC	LC
<i>Copera vittata</i> (Selys, 1863)	Blue Bush Dart	C	LC
<i>Disparoneura quadrimaculata</i> (Rambur, 1842)	Black-Winged Bambootail	VC	LC
Checklist of Odonata: OS—Occurrence status TS—Threat status as assigned from IUCN (2014). NA—Not available LC—Least concern DD—Data deficient VU—Vulnerable NT—Near Threatened.			

Conclusion

The present study reveals a rich and diverse assemblage of dragonflies and damselflies (Order: Odonata) in the Painganga Wildlife Sanctuary, highlighting the ecological importance and habitat heterogeneity of the region. A total of 55 species were documented that comprises 37 dragonflies (Anisoptera) and 18 damselflies (Zygoptera) across eight families, with *Libellulidae* and *Coenagrionidae* emerging as the most dominant groups. The diversity of species observed suggests that the sanctuary supports a wide range of aquatic habitats, from stagnant and slow-moving water bodies to fast-flowing forest streams and ephemeral pools. The co-existence of widespread, generalist species with localized or habitat-specific taxa underscores a high biogeographic overlap and indicates ecological integrity within the landscape. These findings validate the role of the Painganga Wildlife Sanctuary as a critical freshwater biodiversity hotspot in the Yavatmal district of Maharashtra.

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