



## Research Paper

### Odonates fauna (Arthropoda: Insecta) of Ghughwa Fossil National Park, Dindori district, Madhya Pradesh, India

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**Abstract:** The current study was conducted to investigate the variety of Odonates fauna in Ghughwa Fossil National Park district Dindori of Madhya Pradesh. The study revealed the existence of 38 species, 25 genera with 6 families from the study area, which includes 25 species of Anisoptera (dragonflies) under 18 genera with three families and 13 species of Zygoptera (damselflies) in seven genera with three families. In the suborder Anisoptera-Libellulidae (21 species) and Aeshnidae (3 species) are two dominant families and suborder Zygoptera- Coenagrionidae (8 species) and Lestidae (3 species) are two dominant families were recorded. This study provides some important information on the odonates fauna of Fossil National park, Madhya Pradesh.

**Keywords:** Odonata, bio indicators, Ghughwa Fossil National Park, Dindori.

#### Introduction:

Ghughwa Fossils National Park is a beautiful place, located in the Dindori

district of the state of Madhya Pradesh. The scientists believe that the fossils found here are aged more than millions of years and the exact period is still to be found. It was believed that the areas were covered with dense forests at that time with semi evergreen and evergreen forest that are seen in the Western Ghats. In and around the park have few ponds, streams and nalas. These vegetations and water bodies are attracted several species of insects and other fauna including odoantes. The Park has fossil forms that existed in India between 40 million and 150 million years ago. Dindori Mandla is one exquisite place in India where a treasure trove of fossils has been found. It was declared as a National Park in the year of 1983. The total area of the park is about 0.27 Km<sup>2</sup>. It was found that these fossils were like plants that existed some 65 million years ago. These fossils exist in seven villages of the District. The villagers are Barbaspur, Chanti Hills, Chargaon, Deorakhurd, Deora Khoani, Ghuguwa and Umaria. Fossils of mollusks are also existent within the plant fossils and it is believed that

the locale of the fossils, near Narmada Valley, Mandla, was previously a deep intrusion of the ocean into the peninsular part of India till the Post-Cambrian Age, which dates back to more than 40 million years ago.

Order Odonata, comprising damselflies (Suborder: Zygoptera) and dragonflies (Suborder: Anisoptera) are one of the dominant group of aquatic insects. Odonates are most ancient and beautiful insect that ever roamed earth with fossil records dating back to the Permian era 230 – 280 million years ago (Subramanian, 2009; Tiple *et al.*, 2012). They are among the most popular groups of aquatic invertebrates both among professional entomologists and the general public due to their large size, distinctive coloration and conspicuous behaviour (Barua *et al.*, 2012; Boudot and Kalkman, 2015; Subramanian and Babu, 2020). Being a predator both at larval and adult stage, their role as an important component in wetland ecosystem function is well known (Corbet and Brook, 2008; May, 2019; Kalkman, *et al.*, 2020). They are widely used as ecological indicators of habitat quality and the integrity of freshwater ecosystems (Andrew *et al.*, 2008; Simaika and Samways, 2011).

The various odonates researchers studied and reported from Madhya Pradesh including from the different National Parks, Wildlife Sanctuaries and Biosphere Reserves of Madhya Pradesh (Mitra, 1995; Ramakrishna, 2006; Mishra, 2007; Raju and Narayanan, 2008; Prasad and Mishra, 2009; Talmale, 2011; Tiple and Chandra, 2013; Das, 2013; Talmale, 2016ab; Talmale, 2022) and several water bodies from protected and unprotected forest areas of the state (Tiple *et al.*, 2022; Paunekar and Talmale 2024).

Though the diversity of Odonata had been well documented from different National Park, Wildlife Sanctuaries and Biosphere

Reserves of Madhya Pradesh, consolidated list of Odonata of Ghughwa Fossil National Park and its surrounding areas is not available and hence the present one with an objective of exploring the odonates faunal diversity and abundance.

### Material and Methods:

Odonates were surveyed and collected in different localities of Ghughwa Fossil National Park during 2018-2022 by different survey parties of Zoological Survey of India, Central Zone Regional Centre, Jabalpur by using aerial sweep net. The collected individuals in the field were transferred into insect collection paper packs and were brought to the laboratory of CZRC, where these were properly stretched, pinned, oven dried for 72 hours at 60°C, labeled, identified and preserved in insect collection boxes and kept in Modern Insect Storage Compactors. The Adult specimens were identified with the help of identification keys provided by Fraser (1933, 1934, 1936), Mitra (2006), Andrew *et al.* (2008) and Subramanian (2009)

### Result and Discussion:

A total of 38 species of odonates belonging to 13 genera of 2 suborders and 6 families viz., Libellulidae, Coenagrionidae, Gomphidae, Lestidae, Aeshnidae, Platynemididae were recorded.

The highest number of Odonate were recorded belonging to the Libellulidae (21 species), followed by Coenagrionidae (8), Aeshnidae (3 species), Lestidae (3 species), Platynemididae (2 species) and Gomphidae (1 species). The list of odonates along with their common name is provided in Table and dominance of different families, genera and species in Figure.

The several researchers studied odonates fauna from different districts and National Parks, Wildlife Sanctuaries and Biosphere

Reserves of Madhya Pradesh. Mitra (1995), while working on Odonata fauna of Indravati Tiger Reserve, enhanced the number of species to 48 from Madhya Pradesh. Srivastava and SuriBabu (1997) studied the damselflies of Sagar. Mishra (2007) studied the Odonata of Madhya Pradesh and reported a total of 70 species belonging to 40 genera and 9 families distributed in different localities.

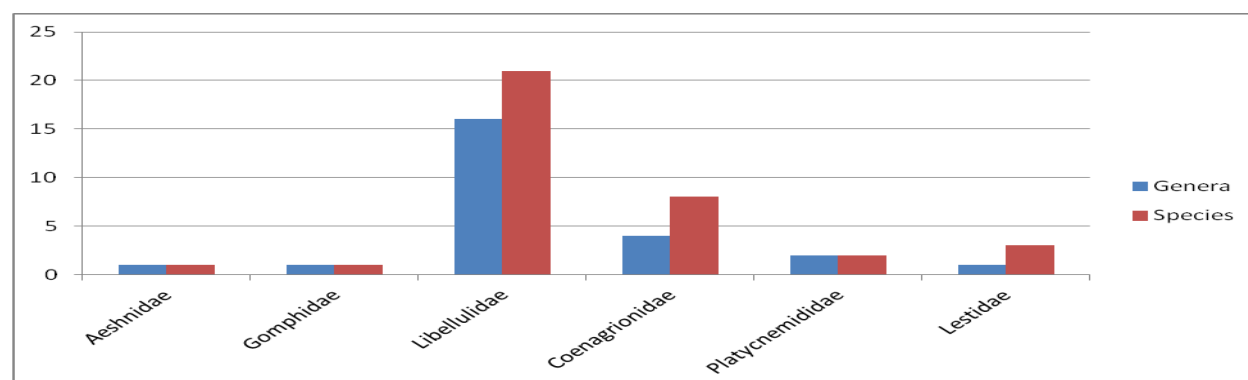
Ramakrishna *et al.* (2006) conducted the surveys in Pench as well as Satpura National Parks and reported 24 and 11 species of odonates respectively. Mishra (2009) recorded 32 species of odonates was reported from Bandhavgarh Tiger Reserve of Madhya Pradesh. Prasad and Mishra (2009) recorded 14 species from Panchmarhi Biosphere Reserve. Talmale (2011) recorded 26 species from Singhori Wildlife Sanctuary. Tiple *et al.* (2011) recorded 36 species of Odonates belonging

to 2 suborders and 7 families from Kanha National Park. Tiple (2012) recorded 70 species of odonates belonging to 47 genera of 2 Suborders and 12 families from Achanakmar- Amarkantak Biosphere Reserve. Das *et al.* (2013) recorded 47 species from three Tiger Reserves of Madhya Pradesh, Central India, including Kanha, Pench and Bandhavgarh, within 7 families and 31 genera. They recorded 44 species from Kanha, 41 species from Pench and 37 species from Bandhavgarh Tiger Reserve. Thirty-five species were recorded in all three tiger reserves. Talmale (2022) recorded 50 species belonging to 33 genera of 7 families of odonates from Nauradehi Wildlife Sanctuary. Recently, Paunikar and Talmale (2024) reported 38 species belonging to 24 genera under 7 families and 2 suborders of order Odonata from Sanjay-Dubri National Park, Sidhi districts of Madhya Pradesh.

**Table: Odonates of Ghughwa Fossil National Park, Dindori district, Madhya Pradesh.**

Sl. No.	Family	Scientific Name	Common Name
1	Aeshnidae	<i>Anax ephippiger</i> (Burmeister, 1839)	Vagrant Emperor
2	Aeshnidae	<i>Anax guttatus</i> (Burmeister, 1839)	Blue-Tailed Green Darner
3	Aeshnidae	<i>Anax immaculifrons</i> Rambur, 1842	Magnificent Emperor
4	Gomphidae	<i>Ictinogomphus rapax</i> (Rambur, 1842)	Indian Common Clubtail
5	Libellulidae	<i>Acisoma panorpoides</i> (Rambur, 1842)	Trumpet-Tail
6	Libellulidae	<i>Brachythemis contaminata</i> (Fabricius, 1793)	Ditch Jewel
7	Libellulidae	<i>Bradinopyga geminata</i> (Rambur, 1842)	Granite Ghost
8	Libellulidae	<i>Brachydiplax sobrina</i> (Rambur, 1842)	Little Blue Marsh Hawk
9	Libellulidae	<i>Crocothemis servilia</i> (Drury, 1770)	Ruddy Marsh Skimmer
10	Libellulidae	<i>Diplacodes trivialis</i> (Rambur, 1842) Blue	Ground Skimmer
11	Libellulidae	<i>Neurothemis fulvia</i> (Drury, 1773)	Fulvous Forest Skimmer
12	Libellulidae	<i>Neurothemis tullia</i> (Drury, 1773)	Pied Paddy Skimmer
13	Libellulidae	<i>Orthetrum pruinsum</i> (Burmeister, 1839)	Crimson-tailed Marsh Hawk
14	Libellulidae	<i>Orthetrum sabina</i> (Drury, 1770)	Green Marsh Hawk
15	Libellulidae	<i>Orthetrum glaucaum</i> (Brauer, 1865)	Blue Marsh Hawk
16	Libellulidae	<i>Pantala flavescens</i> (Fabricius, 1798)	Wandering Glider

17	Libellulidae	<i>Potamarcha congener</i> (Rambur, 1842)	Yellow-tailed Ashy Skimmer
18	Libellulidae	<i>Palpopleura sexmaculata</i> (Fabricius, 1787)	Blue –tailed Yellow Skimmer
19	Libellulidae	<i>Rhyothemis variegata</i> (Linnaeus, 1763)	Common Picturewing
20	Libellulidae	<i>Tholymis tillarga</i> (Fabricius, 1798)	Coral-tailed Cloudwing
21	Libellulidae	<i>Tamea limbata</i> (Desjardins, 1832)	Black Marsh Trotter
22	Libellulidae	<i>Tamea basilaris</i> (Palisot de Beauvois, 1805)	Red Marsh Trotter
23	Libellulidae	<i>Trithemis aurora</i> (Burmeister, 1839)	Crimson marsh Skimmer
24	Libellulidae	<i>Trithemis festiva</i> (Rambur, 1842)	Black Stream Skimmer
25	Libellulidae	<i>Zyxomma petiolatum</i> (Rambur, 1842)	Brown Dusk Hawk
26	Coenagrionidae	<i>Agriocnemis pygmaea</i> (Rambur, 1842)	Pygmy Dartlet
27	Coenagrionidae	<i>Ceriagrion cerinorubellum</i> (Brauer, 1865)	Orange-tailed Marsh Dart
28	Coenagrionidae	<i>Ceriagrion coromandelianum</i> (Fabricius, 1798)	Coromandel Marsh Dart
29	Coenagrionidae	<i>Ischnura aurora</i> (Brauer, 1865)	Golden dartlet
30	Coenagrionidae	<i>Ischnura senegalensis</i> (Rambur, 1842)	Senegal Golden Dartlet
31	Coenagrionidae	<i>Pseudagrion microcephalum</i> (Rambur, 1842)	Blue Grass Dart
32	Coenagrionidae	<i>Pseudagrion rubriceps</i> (Selys, 1876)	Saffron-faced Blue Dart
33	Coenagrionidae	<i>Pseudagrion decorum</i> (Rambur, 1842)	Three- line Sprite
34	Platynemididae	<i>Copera marginipes</i> (Rambur, 1842)	Yellow –bushdart
35	Platynemididae	<i>Disparoneura quadrimaculata</i> (Rambur, 1842)	Black- wing Bombaootail
36	Lestidae	<i>Lestes elatus</i> Hagen in Selys, 1862	Emerald Spreadwing
37	Lestidae	<i>Lestes viridulus</i> Rambur, 1842	Emerald-striped Spreadwing
38	Lestidae	<i>Lestes umbrinus</i> Selys, 1891	Brown Spreadwing



**Figure: Dominance of different Odonata families, genera and species**

### Summary:

An account of Odonata fauna known from Ghughwa Fossil National Park, Dindori district, Madhya Pradesh is presented here. The species wise detailed account of 38 species belonging to 18 genera of 6 families is included. All the species are reported from the Ghughwa Fossil National Park area for the first time.

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