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Exploring Odonata (Dragonfly & Damselfly) In Selected Regions Of Chirang District, Assam, India: A Preliminary Study

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Abstract

The present study was carried out to investigate Odonata fauna in some selected regions of Chirang district, Assam, India. A total of 27 species of Odonates were recorded, including 21 species of dragonflies belonging to 3 families and 6 species of damselflies belongs to 3 families. Survey was done from October 2024 to May 2025. A list of Odonates (Dragonfly & Damselfly) recorded from water bodies, agricultural fields and some wild areas that revealed that the family Libellulidae of Odonata was dominant with 72%, followed by Aeshnidae (19%) and lowest percentage in Gomphidae family (9%). While Damselflies species composition was observed highest in Coenagrionidae (68%). The present documentation helps in habitat management, provides insights into their population status and reveals the importance to ecosystem.

Key words: Dragonflies, Damselflies, Chirang, Assam, India

Introduction

Odonates are insects belonging to phylum Arthropoda and class Insecta. They play a key role in maintaining ecosystem stability and also serve as critical bioindicators. Their presence or absence represents the health of that particular region. There are 6,442 species of Odonata have been identified globally (Paulson et al., 2025) [14], out of these 508 species were reported from India, and 137 species from Uttarakhand. Odonates includes Dragonflies and damselflies, they are easily distinguishable based on their natural habitats (Masih and Pathak 2022) [11]. Morphologically both of them are different but shares more or less similar life cycle. Dragonflies are having strong, broad body shape with large eyes and hold their wings open while resting, whereas damselflies are thin, having delicate body and fold their wings at rest.

Insects like Damselflies and Dragonflies have significant contribution in ecosystem functioning through their roles in pollination, nutrient cycling, trophic regulation and biological indicators (Dangles & Casas, 2019; Chowdhury et al., 2023) [6, 4]. These insects are commonly found in agricultural fields, near the water bodies, and forest regions (Basumatary, et al., 2015) [2]. Odonate exhibits great strong response to changes in the habitat quality because they are sensitive to pollution (Clark & Samways 1996; Samways & Steytler 1996; Stewart & Samways 1998) [5, 16, 20]. They also

keep other insects such as mosquitoes, blood sucking flies under control. Therefore their species diversity and distribution documentation is a prerequisite for effective habitat management and conservation strategy. Several studies on odonate have been reported from the Northeastern parts of India. There are 53 species were reported from Tripura (Majumder et al., 2014) [10], 90 species from Nagaland (Joshi & Kunte 2014) [8], 68 species from Manipur (Srivastava & Sinha 2004) [19], 64 species from Mizoram were reported (Prasad 2007) [15]. Assam is a part of the Eastern Himalayan biodiversity region representing rich in flora and fauna species. Moreover, various works also have been reported on Odonates from the state of Assam, India. Collectively, 57 species of odonate recorded in Chakrashila Wildlife Sanctuary of western Assam, among them 37 species representing dragonfly (Anisoptera) and damselfly (Zygoptera) by 20 species (Choudhury, et al., 2020) [3]. Similarly, A study was conducted in Dibrugarh district of the state Assam, a total 81 species of odonates belonging to 54 genera and 11 families have been recorded (Das, et al., 2022) [7].

However, a few studies on Odonata fauna have been reported from Lower Assam regions. The current study was carried out in selected regions of Chirang district of Assam, India. It aims to document the inventory survey on Odonata fauna near the ponds, agricultural fields and forests regions. Findings of this work will be helpful for future studies.

Materials and methodology

Study area

The present survey was carried out in Chirang district of the State Assam, India, which is located 90º21' East to 90º56' East Longitude and 26º33' North to 26º54' North Latitude with an area of 1,923 km² (Swargiary et al., 2019) [23]. This study area lies on the Northern plains of the Brahmaputra River. The Chirang district shares the international boundary with the Bhutan on the North, Kokrajhar district in the West, Bongaigaon and Barpeta district on the South and Baksa district on the East.

Sampling method and Identification

Specimens of Dragonflies and Damselflies were collected from various selected regions of the study area during the period of October 2024 to May 2025. During the survey outmost care was taken while taking photographed and it was helpful for further classification of the specimen. The encountered specimens in the field, near the ponds were identified by using various literatures (Subramanian, 2005; Nair, 2011; Subramanian and Babu, 2017) [22, 12, 21] and some are also indentified by visual observations. Individual number of each species was recorded through visual observations for assessing their diversity.

Results and Discussion

A total of 27 species of Odonates including 21 species of Dragonflies and 6 species of Damselflies was recorded from the survey in Chirang district, Assam. Moreover, 21 species of dragonflies under 3 families (Table: 1); Libellulidae, Aeshnidae and Gomphidae, whereas 6 species of damselflies belongs to 3 families (Table: 2); Coenagrionidae, Chlorocyphidae, Platycenemididae were documented. From the sub order Anisoptera, family Libellulidae is dominant by 15 species, followed by Aeshnidae with 4 species and family Gomphidae with only 2 species (Figure 1). On the other hand under the sub order Zygoptera, Coenagrionidae is dominant by 4 species, followed by 1 species each from Chlorocyphidae and Platycenemididae respectively (Figure 3).

During the survey, specimens from Libellulidae family were found to be more common and dominant in the study area. Whereas other families: Chlorocyphidae and Platycenemididae were found to be very rare in appearance. Out of 27 species of Odonates, maximum number of specimens was collected from Wetlands and marsh habitat (Table. 1 and Table. 2). The highest Dragonflies species composition was recorded Libellulidae family (72%), followed by Aeshnidae (19%) and lowest percentage in

Gomphidae family (9%) (Figure 2). While Damselflies species composition was observed highest in Coenagrionidae (68%), followed by Platycenemididae (16%) and Chlorocyphidae (16%).

The present findings of the study revealed that family Libellulidae of Odonata was dominant and it supports the observation made by Shelton and Edwards (1983) [17]. It indicates that its absence indicates the ecosystem health status. Novelo-Gutiérrez & Gómez Anaya (2009) [13] also recorded that family Libellulidae comprises most of the Odonata species with wider distribution and richness. In a study performed by Kalkman et al., (2008) [9], also revealed that family Libellulidae and Coenagrionidae were contributed a large proportion of species diversity because of their great flight ability and open habitat preference. Several studies on Odonates were recorded by different researchers from Northeast India. However, some specimens of Dragonflies and Damselflie, were very rare in the visual abundance. This unevenness may be results of habitat specialization, interspecific competition and change in environmental conditions (Tilman, 1982; Smith & Smith, 2018) [25, 18]. Thakuria et al., (2021) [24] performed study on diversity and the distribution of odonates in Rani Reserve Forest, Assam, and documented 67 species representing 44 genera and 11 families. Similar study was carried out by Baruah et al., (2024) [1] on the diversity of Odonates in two sites of Barpeta District, Assam, India and recorded a total of 30 species belonging to both Dragonflies and Damselflies including 18 Anisoptera and 12 Zygoptera.

Overall, the present data provides a baseline data for future studies on these insects and monitoring the changes of environmental conditions in this particular region. Moreover, the study will be helpful for the habitat management and formulating insights into future conservation strategies.

Table: 1. List of Dragonflies found in selected area of Chirang district, Assam.

Sl. No.	Common Name	Scientific Name	Family	Habitat preferences
1	Ditch jewel	*Brachythemis contaminata*	Libellulidae	Wetlands and marshes
2	Green marsh hawk	*Orthetrum Sabina*	Libellulidae	Ponds , marshes and grasses
3	Scarlet skimmer	*Crocothemis servilia*	Libellulidae	Ponds and vegetation
4	Commom picture wing	*Rhyothemis variegata*	Libellulidae	Wetlands and vegetation ground
5	Ground Skimmer	*Diplacodes trivialis*	Libellulidae	Open fields and wetlands
6	Asian Pintail	*Acisoma panorpoides*	Libellulidae	Wetlands and marshes
7	Brown dusk hawk	*Zyxomma petiolatum*	Libellulidae	Marshes, ponds and river banks
8	Dingy dusk hawker	*Gynacantha subinterrupta*	Aeshnidae	Wetlands and marshes
9	Blue darner	*Anax immaculifrons*	Aeshnidae	Wetlands and marshes
10	Granite ghost	*Bradinopyga geminata*	Libellulidae	Stagnant water bodies and construction sites
11	Rusty darner	*Anaciaeschna jaspidea*	Aeshnidae	Ponds and vegetation
12	Blue tailed green darner	*Anax guttatus*	Aeshnidae	Wetlands and marshes
13	Common hooktail	*Paragomphus lineatus*	Gomphidae	Rivers and near water bodies

14	Common club tails	*Ictinogomphus rapax*	Gomphidae	Wetlands and marshes
15	Greater crimson glider	*Urothemis signata*	Libellulidae	Wetlands and marshes
16	Wandering glider	*Pantala flavescens*	Libellulidae	Small water bodies and open fields
17	Fulvous forest skimmer	*Neurothemis fulvia*	Libellulidae	Marshes, wetlands and forest
18	Blacktipped ground skimmer	*Diplacodes nebulosa*	Libellulidae	Wetlands and Open fields
19	Red marsh trotter	*Tramea basilaris*	Libellulidae	Wetlands and grasses
20	Scarlet marsh hawk	*Aethriamanta brevipennis*	Libellulidae	Marshes and vegetation grounds
21	Crimson tailed marsh hawk	*Orthetrum pruinosum*	Libellulidae	Wetlands, marshes and vegetation

Table: 2. Species list of Damselflies found in the survey of Chirang district, Assam.

Sl. No.	Common Name	Scientific Name	Family	Habitat preferences
1	Coromandel marsh dart	*Ceriagrion coromandelianum*	Coenagrionidae	Wetlands, marshes and near water bodies.
2	Blue river damsel	*Pseudagrion microcephalum*	Chlorocyphidae	Wetlands and marshes
3	Orange tailed marsh dart	*Ceriagrion cerinorubellum*	Coenagrionidae	Ponds and marshes
4	Golden darlet	*Ischnura aurora*	Coenagrionidae	Grasslands near water bodies and wetlands
5	Yellow bush dart	*Copera marginipes*	Platycenemididae	Grasslands near water bodies, wetlands and marshes
6	Saffron faced blue dart	*Pseudagrion rubriceps*	Coenagrionidae	Wetlands, marshes and grasslands near water bodies

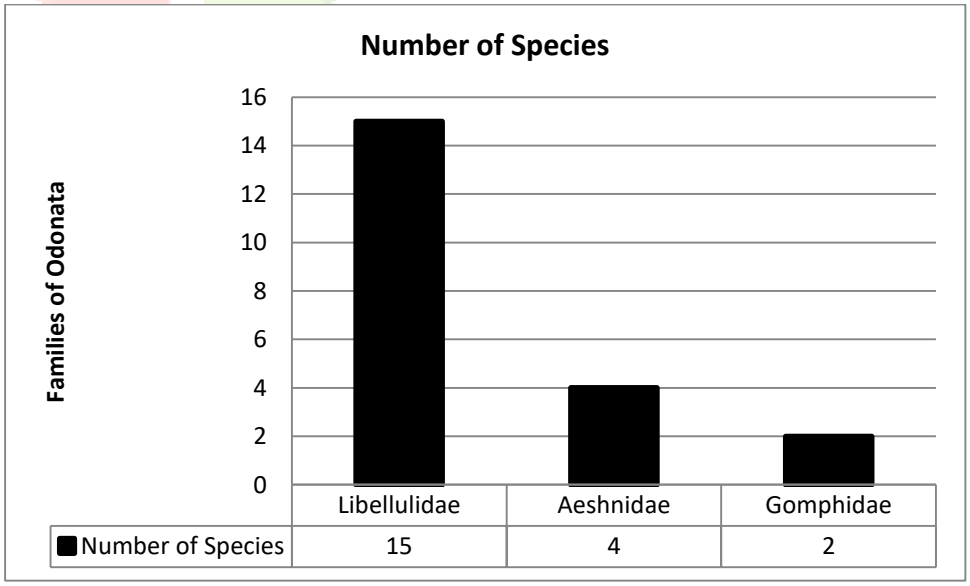

Figure 1: Number of Dragonfly species with their respective families.

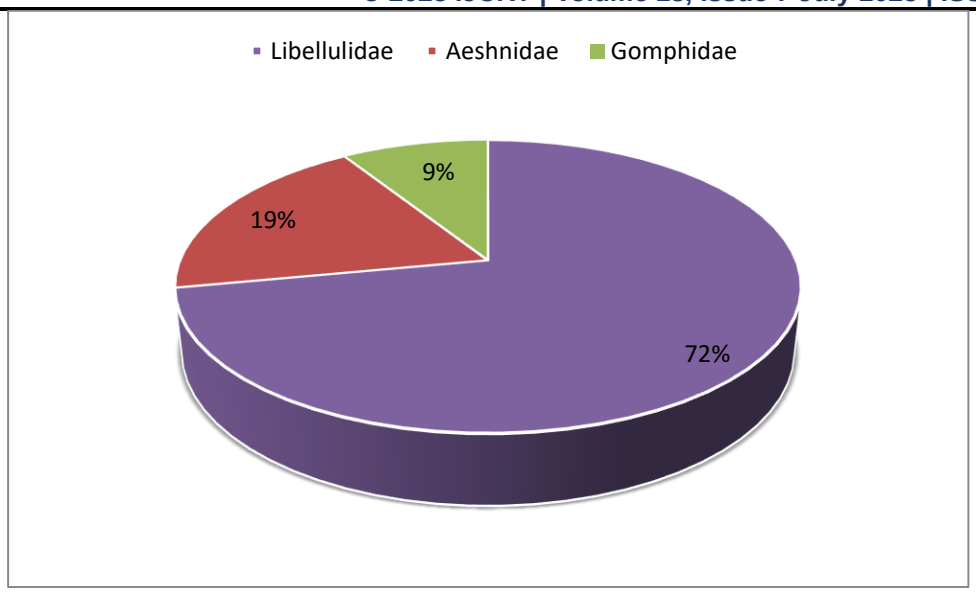

Figure 2: Percentage of Dragonfly Species present in each families of Odonates in the study area.

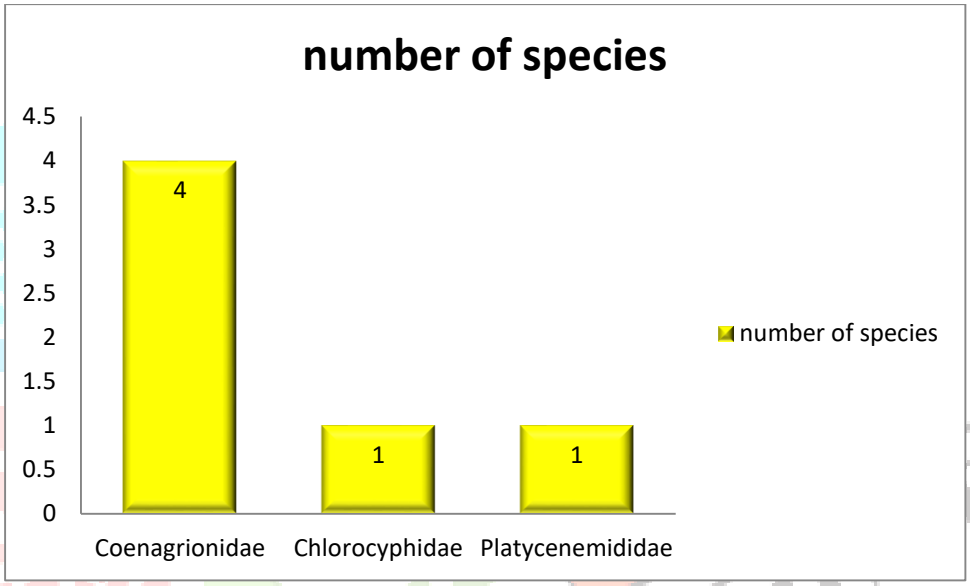

Figure 3: Number of Damselfly species recorded from each family of Odonata.

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