

Diversity of Dragonflies in the Agro-Forest Ecosystem of Nagbhid, Maharashtra (India)

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Abstract

Dragonflies (Order-Odonata) are among the oldest animal group. The richness in the diversity of dragonflies is significant as they are considered most important bio-indicator of healthy agro-forest ecosystem. The study area presents unique geographical site, having heavy rainfall during rainy season and extreme hot summer. It is the buffer zone of Tadoba National Park where forest area is infiltrated with paddy cultivation. The present study aimed at exploring species diversity of dragonflies which will helps in designing conservation strategy for this important group of animals. In the present study, 25 species of dragonflies belonging to 16 genera of 3 families have been recorded. Among these families, Libellulidae is richest family in terms of dragonfly species diversity while wandering glider, *Pantala flavescens* is the most abundant species.

Keywords: Odonata, bio-indicator, diversity, conservation

1. Introduction

Biodiversity conservation is worldwide concern where determining the level of diversity of indicator group of ecosystem should present the prediction of other taxa in the particular habitat [1]. In the invertebrate animals, odonates (Dragonflies and Damselflies) always attracts human being for their variety of colour, powerful flight and extra-ordinary sense of vision. Globally 5,740 species of odonates are known of which 470 species in 139 genera and 19 families exists in India [2, 3]. Odonata occupy almost all kinds of habitats ranging from running waters and lakes to small temporary rain water ditches [4]. The dragonflies are key predator insects recorded frequently in the aquatic ecosystems, such as streams, ponds, lakes and rivers. They are valuable as bio-indicator of healthy aquatic and terrestrial ecosystem, which play vital role in maintaining trophic status of particular habitat [5]. In the recent years, it has been utilized as ecological tool to assess integrity of aquatic ecosystem because of its sensitivity of human interfere [6]. The present study site Nagbhid, is located on the transect of three districts of Chandrapur, Bhandara and Nagpur. Geographically this region is located in the vicinity of buffer zone of Tadoba Andhari Tiger Project (TATR) of India. The region is represented by evergreen forest of non-buffer zone of TATR infiltrated with lakes and ponds which are the source of

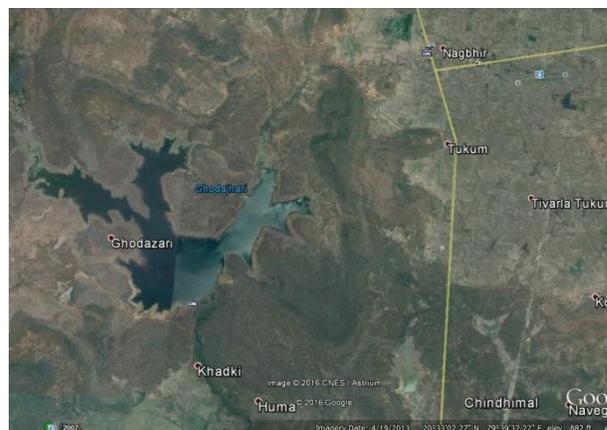
irrigation for paddy fields. This unique climatic condition of agro-forest ecosystem with heavy rainfall provides perfect breeding ground for dragonflies. The diversity of dragonflies has never been explored in this area previously; hence this survey is carried out.

2. Material and Method

The specimens of dragon flies surveyed, collected and photographed from study site located on the latitude 20°33'02.27"N and longitude 79 °39'02.27"E. They are photographed and classified with the help of available literature in the form of research publications, where there is a need experts help is sought after. The dragonflies were photographed in their natural habitat, some were collected with the help of sweeping net and photographed at higher magnification to substantiate their further classification.

3. Results

In the present report, 27 species of dragonflies belonging to 17 genera and 3 families (Gomphidae, Aeshnidae and Libellulidae) have been reported (Table 1) Gomphids or Clubtails are identified by conspicuous black and yellow coloration with well separated eyes. These are medium to large-sized dragonflies with transparent wings. The last abdominal segment appears bulbous to club shape. In the present observation, 1 genera and species (*Ictinogomphus rapax*) belonging to family- Gomphidae.



Sr. No.	Family	Species	Common name
1	Ashnidae	<i>Anax guttatus</i> (Burmeister, 1839)	Blue tailed green Darner
2		<i>Anax immaculifrons</i> (Rambur, 1842)	Blue Darner
3		<i>Hemianax ephippiger</i> (Burmeister, 1839)	Ochre tailed blue Darner
4	Gomphidae	<i>Ictinogomphus rapax</i> (Rambur, 1842)	Common club-tail
5	Libellulidae	<i>Acisoma panorpoides</i> (Rambur, 1842)	Trumpet tail
6		<i>Brachydiplox sorbina</i> (Rambur, 1842)	Little blue Marsh Hawk

7	<i>Brachythemis contaminata</i> (Fabricus, 1793)	Ditch Jewel
8	<i>Bradynopyga germinata</i> (Kirby, 1893)	Granite Ghost
9	<i>Crocothemis servilia</i> (Drury, 1770)	Rudey Marsh Skimmer
10	<i>Diplocodes travialis</i> (Rambur, 1842)	Ground Skimmer
11	<i>Diplocodes nebulosa</i> (Fabricus, 1793)	Black-tipped Ground Skimmer
12	<i>Neurothemis tulia</i> (Drury, 1773)	Pied Paddy Skimmer
13	<i>Orthretrum chrysis</i> (Selys, 1891)	Brown backed red marsh Hawk
14	<i>Orthretrum Sabina</i> (Drury, 1770)	Green Marsh Hawk
15	<i>Orthretrum taeniolatum</i> (Schneider, 1885)	Small Skimmer
16	<i>Orthretrum luzonicum</i> (Brauer, 1865)	Tri-coloured Marsh Hawk
17	<i>Orthretrum pruniosum</i> (Burmester, 1839)	Crimson tailed Common Marsh Hawk
18	<i>Orththretrum glaucum</i> (Brauer, 1865)	Blue Marsh Hawk
19	<i>Pantala flavescens</i> (Fabricus, 1798)	Wandering Glider
20	<i>Potomorcha congener</i> (Rambur, 1842)	Yellow tailed ashly Skimmer
21	<i>Tholymis tillarga</i> (Fabricus, 1798)	Coral-tailed cloud Wing
22	<i>Tramea brasillaris</i> (Palisot de Beauvois, 1805)	Red marsh Trotter
23	<i>Tramea Virginia</i>	Coral Marsh Trotter
24	<i>Trithemis aurora</i> (Burmester, 1839)	Crimson Marsh Skimmer
25	<i>Trithemis festiva</i> (Rambur, 1842)	Black Stream Skimmer
26	<i>Trithemis pallidines</i> (Kirby, 1889)	Long legged Marsh Skimmer
27	<i>Rhyothemis variegata</i> (Linnaeus, 1763)	Common Picture Wing

The body of Aeshnids or Darners are medium to large sized dragonflies with fused eyes along their dorsal margins. It has long anal appendages and abdomen is longer than the wings. These are found near stagnant water. 2 genera and 3 species (*Anax guttatus*, *Anax immaculifrons* and *Hemianax ephippiger*) are reported from family- Aeshnidae. Libellulids or Skimmers are the most diverse group of dragonflies. The wings are varying in size, shape, and width; eyes are broadly confluent and joined on top. These are observed near standing and slow flowing waters. 24 species belongs to 14 genera are included in Family-Libellulidae.

4. Dissusion

Anisoptera was abundant in most of the water bodies sampled. This might be due to their high dispersal ability^[6,7] and their adaptability to wide range of habitats^[8].

In the present investigation maximum number of species were reported from family Libellulidae, followed by Aeshnidae and Gomphidae. Dragonflies are a predaceous, hemimetabolous and amphibiotic insect, which inhabits all kinds of freshwater habitats either permanent or temporary (Silsby, 2001). Subramanian (2009) reported 11 dragonfly families, of which Libellulidae (972) and Gomphidae (958) are major families containing maximum species throughout the world followed by Aeshnidae (436), Corduliidae (249) and Macromiidae (123). In India, out of 11 families, Libellulidae and Gomphidae are major families consisting of 85 species each. These are followed by Aeshnidae (45), Macromiidae (17), and Corduliidae (16). A very least number of species are reported in family- Chlorogomphidae (10) and Cordulegastridae (9).

In Orissa and Eastern India, Nair (2011) recorded 45, 9, 8 and 3 species belongs to family- Libellulidae, Gomphidae, Aeshnidae and Cordulegasteridae. In Western Ghats, the Anisoptera has 53 genera, 107 species with 31 endemics. The families Libellulidae (49 species), Gomphidae (26 species) and Corduliidae (22 species) are the most species-rich,

followed by Aeshnidae (8 species) Cordulogasteridae and (2 species) (Subramanian *et al.*, 2011).

The study area of eastern Vidarbha in present investigation, having paddy cultivation interspersed with tropical rainforest. In this area ponds and lakes are abundant with large water body Ghodazari lake is prominent. This agro-forest ecosystem presents typical breeding grounds in the form of paddy fields and numerous temporary ditches. In the present survey, rich diversity of dragonflies indicates healthy ecosystem.

5. References

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