



E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2015; 3 (2): 260-263
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Received: 20-02-2015
Accepted: 04-03-2015

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A preliminary check list of Odonates from Calicut university campus, Calicut, Kerala, South India

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Abstract

Dragonflies and damselflies, collectively called odonates, are one of the most common insects flying over forest, fields, meadows, ponds and rivers. Approximately 6500 extant species in over 600 genera and 28 families are known all over the world. About 474 species in 142 genera and 18 families are identified from India, out of which 154 species are from Kerala. Here we developed a preliminary checklist of Odonata populations found in Calicut University Campus. The study revealed 27 species coming under 4 families and 21 genera. Suborder Anisoptera (dragonflies) were represented by the family Libellulidae, Aeshnidae and Gomphidae while the suborder Zygoptera by the family Coenagrionidae. The two dominant families of Odonates – Libellulidae and Coenagrionidae – were found to exist in all habitats under the study.

Keywords: Odonata, Calicut University Camps, checklist

1. Introduction

Odonata are a striking aquatic and aerial component of environment in terms of both biomass and their influence as predators ^[1]. These attributes have prompted studies of odonate life histories, behavior, and diet ^[2]. The fossil record of these species dates back to carboniferous period over 350 million years ago. Odonata are classified into three suborders: Anisoptera (true dragonflies), Zygoptera (damselflies) and Anisozygoptera (a very small suborder having two species confined to Japan and Himalaya). They are unappreciated allies of mankind, assuredly saving lives through their control of mosquitoes and other disease vectors. Through their habits of eating a wide variety of flying herbivorous insects, they reduce the losses of many wetland crops ^[3]. In addition they are excellent indicators of freshwater quality ^[3, 4, 5]. The larvae are predatory, aquatic and occur in all manner of inland waters.

Adult Odonates are medium to large in size, often conspicuous and brightly colored insects and are aerial predators hunting by sight. They generally are found at or near fresh water although some species roam widely and may be found far from their breeding sites. All known species are predators as adults and larvae. As such, they perform a valuable role as biological control agents for many harmful insects, especially those with aquatic larvae. The head of the adult is large and is dominated by the compound eyes. They possess a pair of short antenna with the thorax is skewed for enhancing grasping and perching abilities. The legs are strong enough to perch or hold prey but not suitable for walking. The abdomen is long, flexible and divided into ten segments. Both male and female odonates have clasping organs at the end of the abdomen. The females sometimes have an ovipositor under abdominal segments with which to they lay their eggs. Unlike other insects they cannot fold their wings under the body. Dragonflies rest with their wings pointed straightedge out to the sides while damselflies usually rest with their wings more upward, fitting nearly along the top of the abdomen. In the present study an attempt has been made to enlist the odonates found in the Calicut University campus.

2. Methodology

The University of Calicut is a State University located at tirurangadi Taluk, Malappuram District, Kerala, South India. The campus locates spread over around 600 acres in rural outskirts of Malappuram. The area around the campus is enriched with various aquatic habitats like ponds, paddy fields, reservoirs and terrestrial habitats like primary and secondary vegetative invasions. It lies between 11.25°N to 75.77°E and the temperature varies from 28.9°C to 30.5°C. The average rainfall is 327 cm mostly from the South – West Monsoon in June to August and North – East Monsoon during September to November.

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The Odonates of the Calicut University were studied for one year from January 2013 to January 2014. Observation has been done in three different seasons: summer, monsoon and winter. The survey has been conducted to know about the species diversity in Calicut University campus. Odonates were collected by hand netting sweeping method and images were photo documented. The specimens were identified with the help of keys [5] and from expert consultation.

3. Results and Discussion

A total of 27 species of Odonata under 4 families and 21 genera were collected from Calicut University campus which accounts about 17.5% of total species of Odonates from Kerala (Table 1). Sub order Anisoptera were represented by 3 subfamilies Libellulidae, Aeshnidae and Gomphidae (Figure 1) and suborder Zygoptera by the family Coenagrionidae (Figure 2). The two dominant families of Odonates at Calicut University campus are Libellulidae and Coenagrionidae

comprising 19 species of Libellulidae and 6 species of Coenagrionidae (Figure 3).

Both the suborders have large heads with very large compound eyes relative to the rest of their body. By contrast, their antennae are tiny. All members have a prehensile labium, which can be extended forward from underneath. The rear wings in dragonflies are larger with a broader base while in damselflies front and hind wings similar in shape. The distribution of various genus and species of odonates is highly variable. Some are widespread while others are highly localized. The occurrence of dragonflies and damselflies can be taken as an indicator of ecosystem health and quality. Some species can tolerate a broad range of conditions while others are very sensitive to their environment. It can be concluded that Libellulidae is representing the dominant Odonate family from Kerala [4]. From the collected data *Pantala flavescens*, *Neurothemis tullia* and *Ceriagrion cerinorubellum* were most abundantly found in all the habitats.

Table 1: Checklist of dragonflies and damselflies from Calicut University Campus

Sl. No.	Common Name	Scientific Name	Family
SUBORDER ANISOPTERA			
1	Trumpet tail	<i>Ascisoma panorpoides</i>	Libellulidae
2	Little blue marsh Hawk	<i>Brachydiplax sordina</i> (Rambur,1842)	Libellulidae
3	Ditch Jewel	<i>Brachythemis contaminata</i> (Fabr., 1793)	Libellulidae
4	Granite ghost	<i>Bradinopyga geminate</i> (Rambur,1842)	Libellulidae
5	Scarelet skimmer	<i>Crocothemis servilia</i>	Libellulidae
6	Ground skimmer	<i>Diplacodes trivalis</i> (Rambur,1842)	Libellulidae
7	Coral tailed cloud wing	<i>Lathresia asiatica</i>	Libellulidae
8	Fulvous forest skimmer	<i>Neurothemis fulvia</i> (Drury,1773)	Libellulidae
9	Pied paddy skimmer	<i>Neurothemis tullia</i> (Drury,1773)	Libellulidae
10	Green Marsh Hawk	<i>Orthetrum sabina</i> (Drury,1770)	Libellulidae
11	Brown Red Marsh Hawk	<i>Orthetrum chrysis</i> (Selys,1891)	Libellulidae
12	Blue Marsh Hawk	<i>Orthetrum glaucum</i> (Brauer,1865)	Libellulidae
13	Wandering glider	<i>Pantala flavescens</i> (Fabricius,1798)	Libellulidae
14	Yellow-tailed skimmer	<i>Potamarcha congener</i> (Rambur,1842)	Libellulidae
15	Rufous Marsh Glider	<i>Rhodothemis rufa</i> (Rambur,1842)	Libellulidae
16	Common picture wing	<i>Rhyothemis variegata</i> (Linnaeus,1763)	Libellulidae
17	Coral tailed cloud wing	<i>Thylomis tillarga</i> (Fabricius,1798)	Libellulidae
18	Crimson Marsh glider	<i>Trithemis aurora</i> (Burmeister,1839)	Libellulidae
19	Greater Crimson Glider	<i>Urothemis signata</i> (Rambur,1842)	Libellulidae
20	Common club tail	<i>Ictinogomphus rupax</i> (Rambur,1842)	Gomphidae
21	Green-eyed Hawker.	<i>Aeshna isosceles</i>	Aeshnidae
SUBORDER ZYGOPTERA			
22	White Dartlet	<i>Agriocnemis pieris</i> (Laidlaw,1919)	Coenagrionidae
23	Pigmy Dartlet	<i>Agriocnemis pygmaea</i> (Rambur,1842)	Coe Coenagrionidae
24	Orange tailed Marsh Dart	<i>Ceriagrion cerinorubellum</i> (Brauer,1865)	Coe Coenagrionidae
25	Coromandel Marsh Dart	<i>Ceriagrion Ncoromendalium</i> (Fabr.,1798)	Coenagrionidae
26	Blue grass Dartlet	<i>Pseudagrion microcephalum</i> (Rambur, 1842)	Coenagrionidae
27	Saffron faced Blue Dart	<i>Pseudagrion rubiceps</i> (Selys,1876)	Coenagrionidae



Ascisoma panorpoides



Brachydiplax sordina



Brachythemis contaminata



Bradinopyga geminate



Crocothemis servillia



Diplacodes trivalis



Lathresia asiatica



Neurothemis fulvia

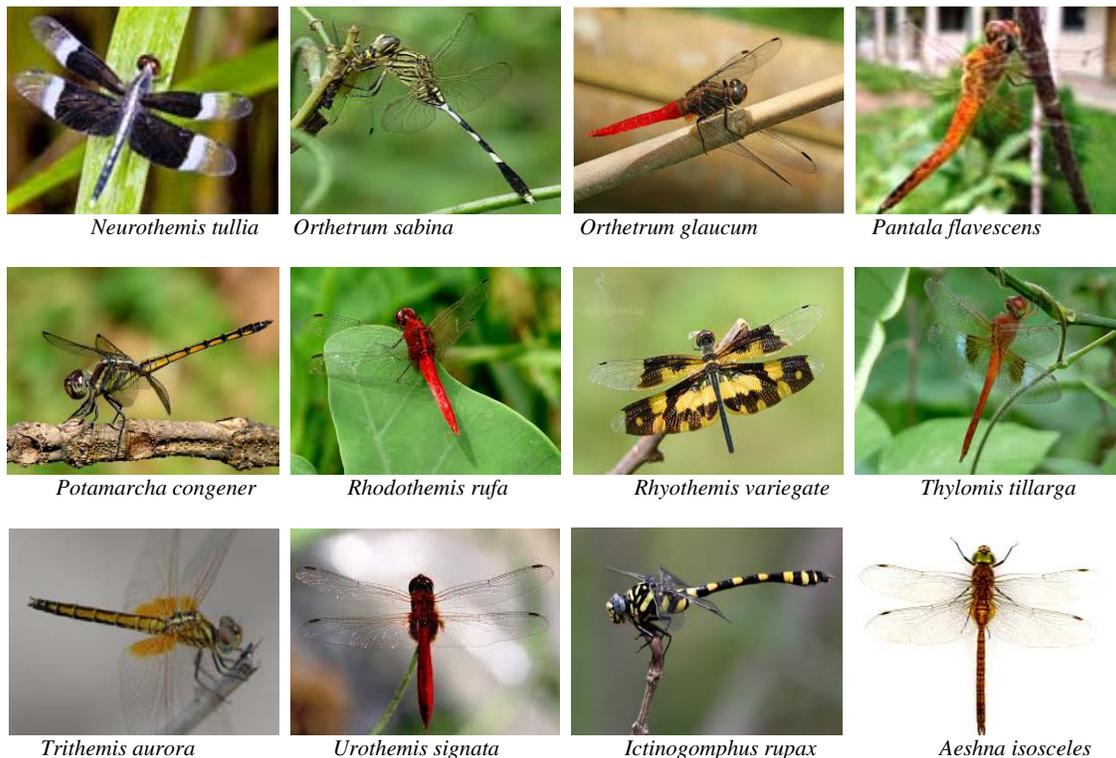


Fig 1: Checklist of common dragonflies from Calicut University Campus

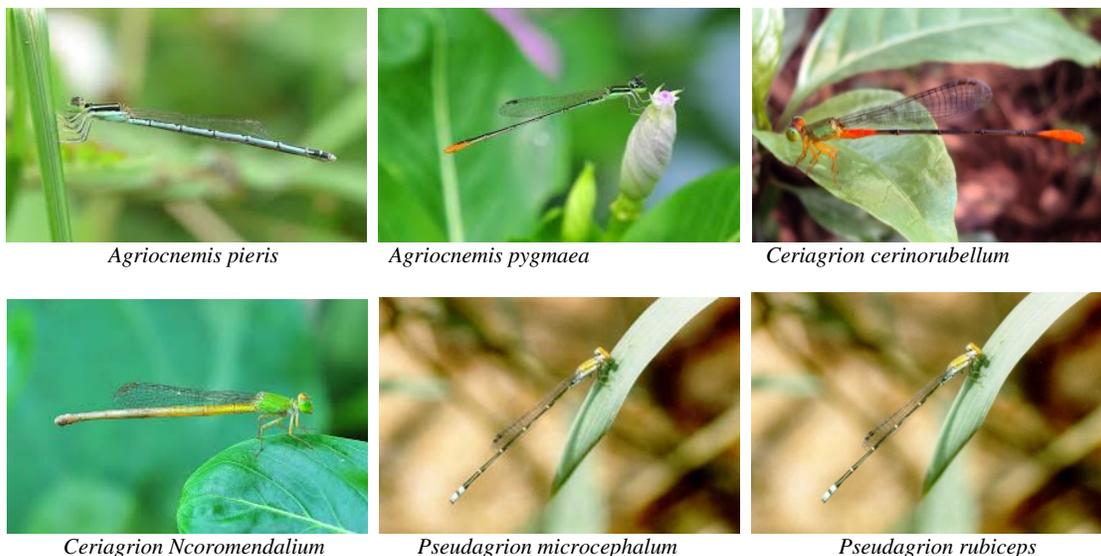


Fig 2: Checklist of common damselflies from Calicut University Campus

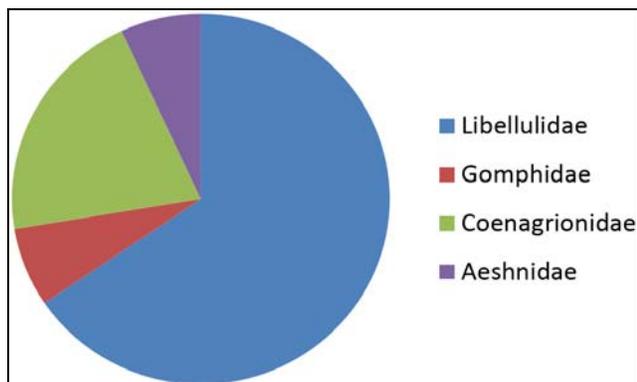


Fig 3: Pie diagram showing the family life distribution of Odonates in Calicut University Campus

4. Acknowledgement

The financial assistance from Kerala State Council for Science Technology and Environment, Thiruvananthapuram under Science Research Scheme is gratefully acknowledged.

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