



A PRELIMINARY STUDY OF ODONATES DIVERSITY IN MUNDAKKOTTUKURUSSI, PALAKKAD, KERALA

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**ABSTRACT:**The study was conducted to explore diversity and threats of Odonates in Mundakkottukurussi, Palakkad district, Kerala, during August 2020 to November 2020. A total of 21 species of Odonates belonging to 16 genera and 5 families were recorded from the study area. The order Anisoptera was found to be more diverse and predominant with 12 species under 9 genera belonging single family contributed 57%, followed by order-Zygoptera which was less diverse with 9 species under 7 genera belonging to 4 families, contributed 43% of total odonates recorded from study area. In the study it has been found that, the odonates and their habitats are under slight threat due to anthropogenic activities. The study highlights the importance and also provides the baseline information on diversity and composition of Odonates in the selected study area.

**Keywords:**Anisoptera,Diversity,Mundakkottukurussi, Odonates, Zygoptera.

I. INTRODUCTION

Odonates are amphibious hemi-metabolan insects having the aquatic egg and larval (nymph) stages, while the adults are terrestrial. Globally, 6383 species in 693 genera of odonates are known. In India, 493 species and 27 subspecies in 154 genera and 18 families are known [1]. They are one of the fascinating groups of insects. Because of their amphibious life history, relatively short generation time, high trophic position, and diversity, odonates are considered as an important component of freshwater ecosystems as well as good indicators of ecosystem health [2-3]. Dragonfly and damselfly are outstanding insects that can be sensitive to aquatic, terrestrial and environmental changes [4-5]. Odonates are an agronomic significant species, their larva and adults act as a natural bio-controlling agent by controlling pest population [6]. They play a vital role as indicator for good ecosystem functioning and also wetland health [7]. The distribution of odonate larvae depend on many ecological factors such as the pH and temperature of water, type of the water body, as well as the quantity and type of aquatic vegetation, they qualify as good bioindicators of a healthy riverine system [8]. Besides, being important elements of the food chain; they predate on mostly of the harmful insects of crops, orchards and forest, other small insects like mosquitoes, moths, butterflies and thus have a regulatory impact on agro-forestry [9]. Odonates are basically an agronomic and biological significant species, but their number is gradually declining due to loss of their habitat, over expanding, uncontrolled and unorganized urbanization, waste disposal near Odonatan habitat, pollutants, grazing [10].

MATERIALS AND METHOD

A. STUDY AREA

Mundakkottukurussi is one of the most beautiful village in Palakkad (Dist). Mundakkottukurussi is located towards the western boundary of Palakkad district, about 45 kms from Palakkad town. The area lies between 10° 49'50''N and 76° 16'37''E. The paddy fields form an important habitat for Odonata. There are many small and large; natural and manmade water bodies also present, which forms major habitat for odonates.

B. SAMPLING METHOD

Study was conducted during August 2020 to November 2020. The Data collection was conducted between 07:00 am and 10:00 am and from 04:00 pm and 06:00 pm when insects were most active. The odonates observed in the field were primarily identified directly in the field and photographed. Odonates were observed, captured, identified and released immediately to conserve biodiversity. In difficult cases collection of specimens was done with the help of specially design sweeping net.

C. IDENTIFICATION

The collected species were identified with the help of photographs by using reference books and publications and the scientific names [12]. Identification was done by observing wing venation, color pattern, and genitalia described in standard taxonomic literature and field guides. Experts were also consulted for confirmation of the identification personally as well. The taxonomic and nomenclature is used per [13] and common names are after [14]. The occurrence status was decided on number of encounters of species in the study sites: Rare (R) -1 to 2 sightings; Occasional (O) -5 to 10 sightings; Common (C) - 11 to 16; Very common (VC) -above 16 sightings in the study area.

II. RESULTS

A total of 21 species of Odonates belonging to 16 genera and 5 families were recorded from the study area and they were listed in Table-1.



TABLE I. LIST OF IDENTIFIED ODONATE SPECIES COLLECTED FROM STUDY AREA

| Sl  | Scientific name          | Common name                   | Family          | No.of individual | Occurrence |
|-----|--------------------------|-------------------------------|-----------------|------------------|------------|
| 1.  | Vestalisgracilis         | Clear winged forest glory     | Calopterygidae  | 1                | R          |
| 2.  | Aciagrionoccidentale     | Green stripped slender darlet | Coenagrionidae  | 18               | VC         |
| 3.  | Agriocnemispygmaea       | Pigmy dartlet                 | Coenagrionidae  | 17               | VC         |
| 4.  | Ischnurarubilio          | Western golden dartlet        | Coenagrionidae  | 17               | VC         |
| 5.  | ceriagrionolivaceum      | Rusty marsh dart              | Coenagrionidae  | 13               | C          |
| 6.  | Agriocnemispieris        | White dartlet                 | Coenagrionidae  | 16               | C          |
| 7.  | ceriagrioncerinorubellum | Orange-tailed marsh dart      | Coenagrionidae  | 2                | R          |
| 8.  | Lestesnodalis            | Spread Wings                  | Lestidae        | 1                | R          |
| 9.  | Coperamarginipes         | Yellow Bush Dart              | Platycnemididae | 7                | O          |
| 10. | Neurothemistulia         | Piped paddy skimmer           | Libellulidae    | 16               | C          |
| 11. | Neurothemisfulvia        | Fulvous forest skimmer        | Libellulidae    | 10               | O          |
| 12. | Neurothemisintermedia    | Paddy field parasol           | Libellulidae    | 14               | C          |
| 13. | Orthetrumchrysis         | Spine-tufted skimmer          | Libellulidae    | 5                | O          |
| 14. | OrthetrumSabina          | Green marsh hawk              | Libellulidae    | 15               | C          |
| 15. | Crocothemisservilia      | Scarlet skimmer               | Libellulidae    | 6                | O          |
| 16. | Potramarchacongner       | Yellow-tailed ashy skimmer    | Libellulidae    | 15               | C          |
| 17. | Pentalaflorescens        | Wandering glider              | Libellulidae    | 8                | O          |
| 18. | Zygommatopetiolatum      | long-tailed duskdarter        | Libellulidae    | 1                | R          |
| 19. | Tholymistillagra         | coral tailed cloud wing       | Libellulidae    | 10               | O          |
| 20. | Diplocodestrivalis       | chalky percher                | Libellulidae    | 7                | O          |
| 21. | Tetrathemisplatyptera    | pigmy skimmer                 | Libellulidae    | 2                | R          |

Rare (R), Occasional (O), Common (C), Very common (VC)



The order Anisoptera was found to be more diverse and predominant with 12 species under 9 genera belonging single family contributed 57%, followed by order-Zygoptera which was less diverse with 9 species under 7 genera belonging to 4 families, contributed 43% of total odonates recorded from study area. Among the Sub-order-Anisoptera, only the members of the family Libellulidae were recorded with highest number with 12 species. Similarly, among the Sub-order-Zygoptera, it was highest in the family Coenagrionidae with 6 species, followed by Platynemididae, Lestidae and calopterygidae each with single species. In this study, out of 21 dragonfly species examined, 3 were very common and species were *Aciagrion occidentale*, *Agriocnemis pygmaea*, *Ischnur rubilio* they are very common in paddy fields. 6 were Common and 7 were Occasional and 5 were Rare. It was revealed that Anisoptera (dragonflies) was found to be abundant in the study area this might be due to their high dispersal ability and adaptability to wide range of habitats. During the present investigation, the record of abundant Libellulidae (Anisoptera) and Coenagrionidae (Zygoptera) might be due to their shorter life cycle and widespread distribution and tolerant to wide range of habitats. In the study it has been found that, the odonates and their habitats are under slight threat due to anthropogenic activities, like, movement of heavy vehicles around the wetland, presence of predators, habitat alterations such as construction and widening of roads, and human settlements etc., over grazing etc. These activities affect the species abundance. The data of present study works as a baseline data for assessing the changes of environmental conditions in the area, thereby helping in formulating future conservation measures to preserve the wetland habitats and to maintain the ecosystem health, which was an urgent need for their protection.

### III. DISCUSSION

The present study on the odonates of Mundakkottukurussi revealed the presence of 21 species, which accounts 13.63% of total percentage of odonates found in Kerala. Dragonflies are a predaceous, hemi-metabolous and amphibiotic insect, which inhabits all kinds of freshwater habitats either permanent or temporary [15]. [16] revealed that Anisoptera (dragonflies) was found to be abundant in the study area and this similar pattern of predominance was also reported from other wetlands i.e., from Komaranahalli Lake, Chinnar Wildlife Sanctuary, southern Western Ghats [17]. A study by [18] states that family Libellulidae and Coenagrionidae were represent a large proportion of species distributed in every continent due to their great flight ability and preference of open habitats. This worldwide threats to biodiversity are generally a direct result of human impact that contribute to diminution of genetic diversity through habitat loss and fragmentation as a result of increased human development [19].

### IV. CONCLUSION

The present study records the odonates of Mundakkottukurussi of palakkad district. It is an attempt to enlist the diversity of the Odonate fauna and to form a baseline inventory of Odonates from Mundakkottukurussi. Dragonflies are bio indicators of the aquatic ecosystems. Hence, this study is also a preliminary assessment of examining whether the quality of the environment and the water bodies in this study area are suitable for odonates. A total of 21 odonate species belonging to five families, comprising 12 species in order Anisoptera and 9 species in order Zygoptera were recorded. The results of the investigation indicated that odonate diversity of Mundakkottukurussi of the district Palakkad was good but cannot compare with past due to lack of previous data.

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