



Studies on the Species Diversity of Damselflies and Dragonflies (Odonata: Insecta) around the Tributary of Tons River, Dehradun, Uttarakhand, India

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ABSTRACT: A detailed study on the species diversity of odonates has been conducted around the tributary of Tons river, Dehradun, Uttarakhand, India during 2019-20 and recorded about 23 species belongs to 05 families under 2 suborders of order Odonata. The family Libellulidae was the most dominant family of order Odonata, represented by 15 species, followed by Coenagrionidae 04 species, Gomphidae 02 species and Aeshnidae, Chlorocyphidae each having 01 species. The mass emergence of *Rhyothemis variegata* (Linnaeus) and the migratory species *Pantala flavescens* (Fabricius) was recorded in the months of July-September.

Keywords: Odonata, diversity, tons river, Dehradun, Uttarakhand, India.

I. INTRODUCTION

The order Odonata under class Insecta consists of three suborders the Zygoptera (damselflies), Anisoptera (dragonflies) and Anisozygoptera (a relict group having characters of both damsel & dragonflies). They 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 (Subramanian and Babu, 2020) [10]. Perusal of literature reveals that no consolidated account is available on the Odonata fauna around the tributary of Tons river, Dehradun, Uttarakhand, India. Therefore, the present studies had made a modest attempt to explore the existing diversity of odonates around the tributary of Tons river, Dehradun, Uttarakhand, India.

II. MATERIALS AND METHODS

The detailed study on odonates has been made around the tributary of Tons river, near Kaulagarh village, Dehradun, Uttarakhand, India during March, 2019 to February, 2020. The extensive studies of odonates was made on first and third Saturday/Sunday of each month in 1 km stretch around the tributary of Tons river, near Kaulagarh village, Dehradun, Uttarakhand, India and observation on species diversity and reproductive behaviour of odonates was made in the field. The unidentified odonates were caught in the field by using insect net and after taking photographs, observation and identification of the species, the live individuals were released. The very few selected unidentified individuals of odonates were collected and transferred into insect collection paper packs and were brought to the

laboratory and identification of the collected specimens was carried out using identification keys provided by Fraser (1933, 1934 & 1936). Also studied the collection of odonates preserved in National Zoological Collections of Northern Regional Centre, Zoological Survey of India, Dehradun.

III. RESULTS AND DISCUSSION

The studies on the Odonata fauna around the tributary of Tons river, Dehradun, Uttarakhand, India had recorded about 23 species belongs to 05 families under 2 suborders of order Odonata. The study reveals that *Ceriagrion coromandelianum* (Fabricius), *Orthetrum sabina* (Drury), *Brachythemis contaminata* (Fabricius), *Crocothemis servilia* (Drury) and *Trithemis festiva* (Rambur) were the dominant species in the study area. The mass emergence of *Rhyothemis variegata* (Linnaeus) and the migratory species *Pantala flavescens* (Fabricius) was recorded in the months of July-September, 2020.

Annotated checklist of Odonata around the tributary of Tons river, Dehradun, Uttarakhand, India.

Order - Odonata

(1) Suborder - Zygoptera

(a) Family - Coenagrionidae

1. *Ceriagrion coromandelianum* (Fabricius)
2. *Ischnura aurora* (Brauer)
3. *Ischnura nursei* (Morton)
4. *Pseudagrion rubriceps* Selys

(b) Family - Chlorocyphidae

5. *Rhinocypha quadrimaculata* Selys

(2) Suborder - Anisoptera

(c) Family - Gomphidae

6. *Paragomphus lineatus* (Selys)

7. *Ictinogomphus rapax* (Rambur)

(d) Family- Aeshnidae

8. *Anax immaculifrons* Rambur

(e) Family- Libellulidae

9. *Acisoma panorpoides* Rambur

10. *Brachythemis contaminata* (Fabricius)

11. *Crocothemis servilia* (Drury)

12. *Diplacodes trivialis* (Rambur)

13. *Neurothemis tullia* (Drury)

14. *Orthetrum glaucum* (Brauer)

15. *Orthetrum pruinatum* (Burmeister)

16. *Orthetrum sabina* (Drury)

17. *Orthetrum triangulare* (Selys)

18. *Palpopleura sexmaculata* (Fabricius)

19. *Pantala flavescens* (Fabricius)

20. *Rhyothemis variegata* (Linnaeus)

21. *Trithemis aurora* (Burmeister)

22. *Trithemis festiva* (Rambur)

23. *Trithemis pallidinervis* (Kirby)

The family Libellulidae was the most dominant family of order Odonata, represented by 15 species, followed by Coenagrionidae 04 species, Gomphidae 02 species and Aeshnidae, Chlorocyphidae each having 01 species. The dominance of family Libellulidae was reported by many earlier workers as Kumar and Mitra (1998) [7] recorded 42 species from Sahstradhara, Dehradun, out of which 18 species represented family Libellulidae; Prasad (2002) [8] recorded 162 species from Western Himalaya, out of which 42 species represented family Libellulidae; Kumar (2002) [8] recorded 109 species in Jharkhand state, out of which 40 species represented family Libellulidae; Vashishth *et al.* (2002) [11] recorded 17 species in Rajaji National Park, out of which 9 species represented family Libellulidae; Kandibane *et al.* (2005) [5] recorded 12 species of odonates in an irrigated rice field of Madurai, out of which 7 species represented family Libellulidae; Emiliyamma *et al.* (2005) [1] recorded 137 species of odonates from Kerala, out of which 56 species represented family Libellulidae; Sharma (2019) [9] recorded 22 species of odonata in the four selected localities of Districts Solan and Sirmaur, Himachal Pradesh, in that 16 species represented family Libellulidae. The present study reveals that the study area the tributary of Tons river, Dehradun, Uttarakhand, India is rich in Odonata fauna and provide a suitable natural habitat for their survival, still more efforts are required in the field to explore the different selected localities throughout the tons river flowing in the parts of Himachal Pradesh and Uttarakhand.

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