

A preliminary study on the diversity of odonata in Bodoland University and its vicinity, Assam, India

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Abstract- A total of 34 species of odonates, including 26 species of dragonflies (sub-order *Anisoptera*) belonging to 3 families and 8 species of damselflies (sub-order *Zygoptera*) belonging to 3 families were recorded from the Bodoland University between May 2013 to November 2014. From the sub-order Anisoptera, the Libellulidae was the richest family with 20 species and from the sub-order Zygoptera, the Coenagrionidae was the richest family with 6 species. A detailed list of odonates recorded from Bodoland University is presented.

Index Terms- Bodoland University, dragonflies, damselflies, diversity, Kokrajhar, Assam, India

I. INTRODUCTION

Dragonflies and damselflies collectively called odonates are one of the most common insects flying over forest, fields, meadows, ponds and rivers. Odonata are one of the ancient orders of insects. They have been around from the carboniferous era [1]. These flying machines can fly backward, move vertically like a helicopter or stop in turn in the mist of the most rapid progression as if they have been remained into [2]. Odonates, being predators both at larval and adult stages, play a significant role in the wetland ecosystem [3]. Even though most species of odonates are highly specific to a habitat, some have adapted to urban areas and exploit man-made water bodies [4]. Odonates taxa are ideal models for the investigation of the impact of environmental warming and climate change due to their tropical evolutionary history and adaptations to temperate climates [5]. Odonates play crucial role in ecosystem functioning and serve to keep other insects including those harmful to humans (like mosquitoes, blood sucking flies, etc) under control [6]. Eight super families, 29 families and some 58 subfamilies of dragonflies covering approximately 600 genera and 6000 named species have so far been described all over the world [7]. Dragonflies and damselflies of the Indian sub-region (India, Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh and Myanmar are well documented with over 600 species [6]. The study of odonates fauna in Assam has not been comprehensively carried out. Thus

it will provide relevant information about odonates, which would come out helpful for further studies

II. MATERIALS AND METHODS

Kokrajhar town is the gateway to the beautiful North Eastern region of India. Kokrajhar town lies at a latitude of 26° 24'N and a longitude of 90° 16'N. Bodoland University is located in Debargaon area, which is about 9 km away from Kokrajhar town, Assam, India. The area is surrounded by small villages, green paddy fields and the Gaurang river. Visual Surveys of odonates was carried out from the month of May 2013 to November 2014 randomly in between 9 am to 11 am in sunny days. Survey was carried out on paddy fields, open fields, ponds, streams and water canal. Specimens were photographed with Sony digital still camera and in case of difficulties the specimen was captured using net, photographed and released. The odonates were identified upto the species level. All the specimens were identified with the help of following literatures Subramanian (2005) and Kalita, et al., (2014).

RESULTS AND DISCUSSION

A total of 34 species of odonata representing 27 genera from 6 families was recorded from the Bodoland University and its vicinity. From the sub order Anisoptera, family Libellulidae is the dominant by 20 species followed by Aeshnidae with 4 species and Gomphidae with 2 species. While from the sub order Zygoptera, family Coenagrionidae is the dominant by 6 species followed by Chlorocyphidae with 1 species and Platycenemididae with 1 species. Libellulidae was found to be the most abundant family. The highest percentage of diversity of dragonflies (Anisoptera) was recorded from the family Libellulidae (77%), followed by Aeshnidae (15 %) and Gomphidae (8%) (Fig: 1). Among the damselflies (Zygoptera), the highest percentage of diversity was that of the family Coenagrionidae (75%) followed by Chlorocyphidae (12.5%) and Platycenemididae (12.5%) (Fig: 2).

Table: 1, Checklist of dragonflies (sub order- Anisoptera) of Bodoland University, Assam, India

Sl. No.	Family	Common name	Scientific name	Status
1	<i>Aeshnidae</i>	Rusty darner	<i>Anaciaeschna jaspidea</i>	Rare
		Blue tailed green darner	<i>Anax guttatus</i>	Rare
		Blue draner	<i>Anax immaculifrons</i>	Rare
		Brown darner	<i>Gynacantha dravida</i>	Rare
2	<i>Gomphidae</i>	Common club tails	<i>Ictinogomphus rapax</i>	Common

		Common hooktail	<i>Paragomphus lineatus</i>	Common
3	<i>Libellulidae</i>	Trumpet tail	<i>Acisoma panorpoides</i>	Rare
		Scarlet marsh hawk	<i>Aethriamanta brevipennis</i>	Rare
		Ditch jewel	<i>Brachythemis contaminata</i>	Common
		Granite ghost	<i>Bradinyopyga geminata</i>	Common
		Ruddy marsh skimmer	<i>Crocothemis servilia</i>	Common
		Blacktipped ground skimmer	<i>Diplacodes nebulosa</i>	Very common
		Ground skimmer	<i>Diplacodes trivialis</i>	Very common
		Amberwinged marsh glider	<i>Hydrobasileus croceus</i>	Common
		Asiatic blood tail	<i>Lathrecista asiatica</i>	Rare
		Fulvous forest skimmer	<i>Neurothemis fulvia</i>	Very common
		Pied paddy skimmer	<i>Neurothemis tullia</i>	Common
		Blue marsh hawk	<i>Orthetrum glaucum</i>	Rare
		Crimson tailed marsh hawk	<i>Orthetrum pruinosum</i>	Common
		Green marsh hawk	<i>Orthetrum Sabina</i>	Very common
		Wandering glider	<i>Pantala flavescens</i>	Very common
		Common picture wing	<i>Rhyothemis variegata</i>	Common
		Coral tailed cloud wing	<i>Tholymis tillarga</i>	Rare
		Red marsh trotter	<i>Tramea basilaris</i>	Rare
		Crimson marsh glider	<i>Trithemis aurora</i>	Rare
		Greater crimson glider	<i>Urothemis signata</i>	Common

Table: 2, Checklist of damselfies (sub order- Zygoptera) of Bodoland University, Assam, India

Sl. no.	Family	Common name	Scientific name	Status
1.	<i>Chlorocyphidae</i>	River heliodor	<i>Libellago lineate</i>	Very rare
2.	<i>Coenagrionidae</i>	Pigmy darlet	<i>Agriocnemis pygmaea</i>	Rare
		Orange tailed marsh dart	<i>Ceriagrion cerinorubellum</i>	Common
		Coromandel marsh dart	<i>Ceriagrion coromandelianum</i>	Common
		Black tailed marsh dart	<i>Ceriagrion fallax</i>	Rare
		Golden darlet	<i>Ischnura aurora</i>	Common
		Saffron faced blue dart	<i>Pseudagrion rubriceps</i>	Very rare
3.	<i>Platycenemididae</i>	Yellow bush dart	<i>Copera marginipes</i>	Common

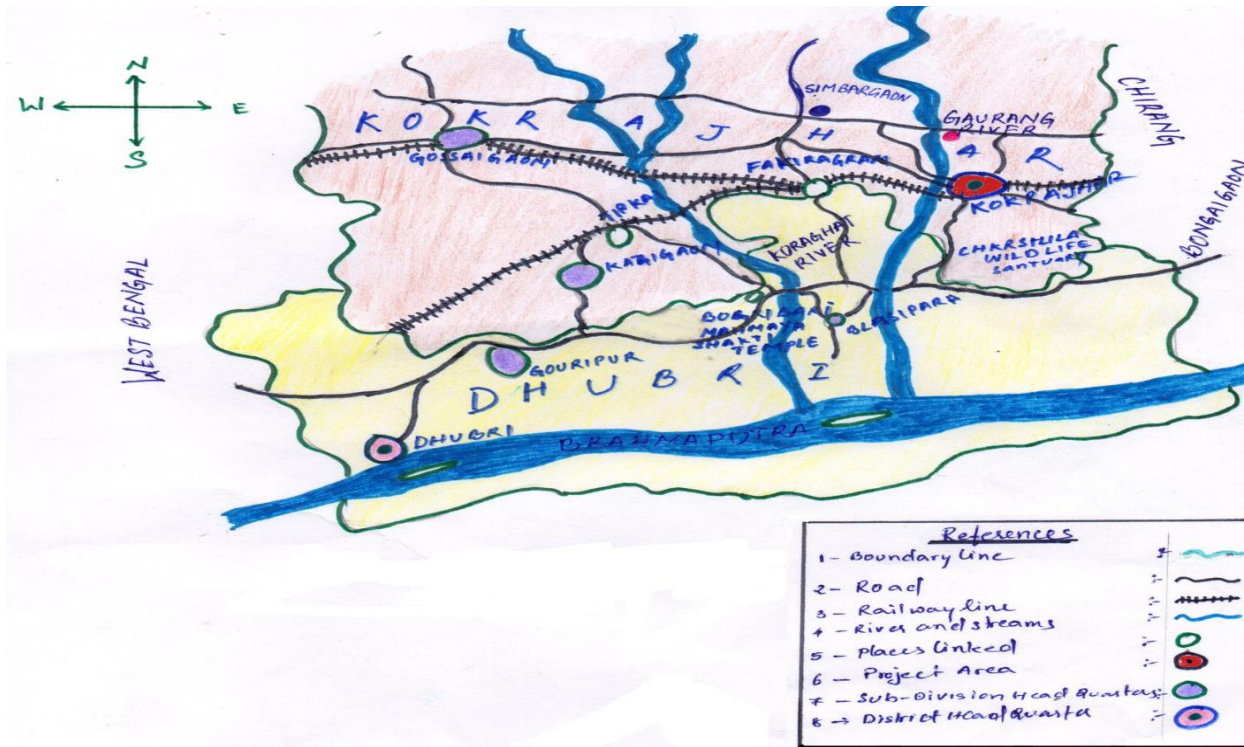


Fig: 1, Map showing the study area of the project.

Dragonfly (Anisoptera)

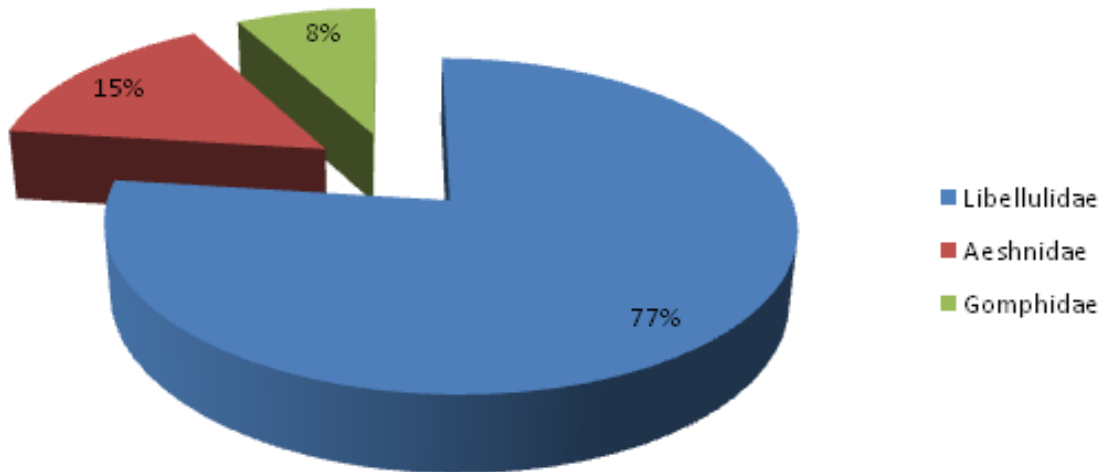


Fig: 2, Percentage of occurrences of dragonfly (Anisoptera) from Bodoland University and its vicinity, Assam, India.

Damselflies (Zygoptera)

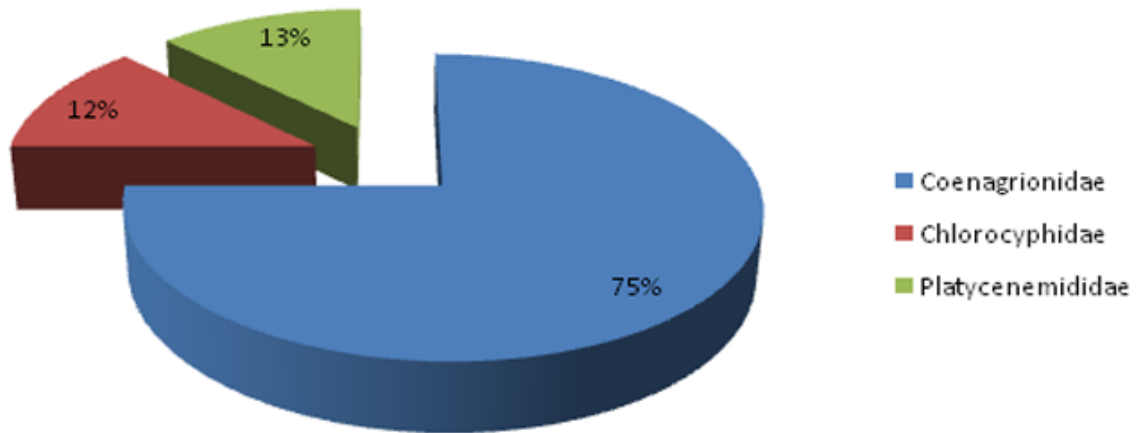


Fig: 3, Percentage of occurrences of damselfly (Zygoptera) from Bodoland University and its vicinity, Assam, India.



Orthetrum sabina



Rhyothemis variegata



Brachythemis contaminata



Orthetrum pruinatum



Ictinogomphus rapax



Tholymis tillarga



Neurothemis tullia



Neurothemis fulvia



Bradinopyga geminata



Orthetrum glaucum



Diplacodes trivalis



Trithemis aurora



Ceriagrion cerinorubellum



Pseudodagrion rubriceps



Ischnura aurora



Agriocnemis pygmaea



Ceriagrion coromandelianum



Libellago lineata

III. CONCLUSION

Odonates are predatory in nature, but also a good source of energy to different animals, especially for birds and other insects such as spiders^[8]. Odonates are the important link between aquatic and terrestrial ecosystem changes in aquatic communities such as mowing of shoreline vegetation or introduction of aquatic exotic species reduce the quality of odonates habitat^[9]. Odonates are important indicators of water quality and pollution levels^[8]. They inhabit diversified habitats near water bodies ranging from stagnant pond water to flowing streams^[8]. Although, Bodoland University has a huge diversity of odonates, gradual increase in human pressure in and around open fields and water bodies is affecting the sustainability of this insects. Therefore, protection measures are necessary for these creatures. Much more elaborate study is required to access the biodiversity of these unique creatures.

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REFERENCES

- [1] Subramanian, K.A., Dragonflies and Damselflies of Peninsular India – A Field Guide. Project life scape. Indian Academy of Science, Bangalore, India. 2005, pp118.
- [2] Mitra, T.R., Occupational paper. 1999, 170: 1-63.
- [3] Prasad et al; Odonate Diversity of Manjeera Wildlife Sacntuary with notes on Female Polymorphism of *Neurothemis tullia* (Drury, 1773) (Odoanta: Libellulidae) and Some Species Hitherto Unreported From Andhra Pradesh, India. ISSN 2320-7078, JEZS 2013; 1(4): 99-104.

- [4] Prasad, M and Varshney, RK. Oriental Insects. 1995, 29:385-428.
- [5] Neseemann, H ., Shah, R.T. and Shah, D.N. Journal of threatened Taxa. 2011, 3 (9): 2045-2060.
- [6] Nair, M.V., Dragonflies and Damselflies of Orissa and Eastern India. Wildlife Organization, Forest & Environmental Department , Government of Orissa . 2011; pp 254.
- [7] Silsby, J. Dragonflies of the world. Natural History Museum in association with CSIRO Publishing, UK and Europe. 2011; pp 216.
- [8] Kalita, G.J., Boruah, B and Das, G.N. An observation on odonata (damselflies and dragonflies) fauna of Manchabandha reserve forest, Baripada, Orissa. ISSN: 0976-8160. Advances in Applied Science Research, 2014, 5 (1): 77-83.
- [9] Miller, P.L., Dragonflies. Naturalists Handbooks No 7 Cambridge University Press. Cambridge.pp 92

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