RESEARCH ARTICLE

Diversity, Distribution and Abundance of Damselfly (Zygoptera) of Dhimbe Lake Ambegaon tehsil, Pune, (Maharashtra: India)

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ABSTRACT

Damselflies which belong from order Odonata and suborder Zygoptera which undergoes survey of certain wetlands which includes ponds, streams, grasses and forest area. From 120 specimens quarterly Mansoon month survey from 1 June 2013 to 30 Sept. 2013 reported 18 species from damselfly belonging to 4 genera and 8 families, which include Coenagrionidae (14 Species), Chorocyphidae (14 Species), Protoneuridae(14 Species), Chorocyphidae(14 Species), Lestidae(14 Species), and Platycnemididae (14 Species). Out of total 18 species *Pseudagrion rubriceps* Sely, 1876, Ceriagrion coromandelianum (Fabricius, 1798), were abundant or very common, *Ischnura senegalensis* (Rambur, 1842) *Disparoneura quadrimaculata* (Rambur 1842) were common, *Pseudagrion decorum* (Rambur 1842) and *Pseudagrion microcephalum* (Rambur 1842) rare and *Lestes umbrinus* Sely, 1891, *Rhodishnura nersei(Mortan, 1907)* very rare in observation. In Present study reported there is mainly deferent Coenagrionidae shows more abundance. *Lestes umbrinus* Sely, 1891 mostly abundantly found in forest region.

Keyword: Odonata, Damselflies, Dhibhe, Abundance.

INTRODUCTION

Damselflies are Odonates which fly in the atmosphere with help of their membranous wings. Odonata which divided into three suborder such as Anisoptera (Dragonfly), Anisozygoptera and Zygoptera (Damselfly). All over the world there are 6000 species of odonates reported. The taxonomical studies of Zygoptera reported by Fraser (1933) Dhimbe Lake lies in between longitude and latitude and covering about 600 acre area approximately. The forest is naturally well developed and getting low pollution as compare to urbanized cities. Damselflies show amphibiotic mode of adaptation because they most of the time spent in

water where larva and after metamorphosis from egg to adult they are terrestrial mode of adaptation play their larval time in water bodies which mainly consist of pool ditches, river, lake , streams , rice field , marshes places. The adult are catching their pray with the help of legs, mouth pars chewing type while in larval case they are voracious feeder and shows forbidden mouth parts which directly engulf pray (Tiple *et al*., 2012). Depending upon the habitat specificity regarding temperature, atmosphere, changing climate they acted as a very good indicator of environment. As they shows carnivorous mode of feeding habitat they ultimately acted as a bio indicator (Tiple *et al*., 2008).

MATERIALS AND METHODS

Damselflies were surveyed from the Dhimbhe lake region and surrounding habitat which specially include streams, forest, pools, ditches, grassland, and submerged aquatic vegetation, and also from shady region of the lake. Usually collection start at morning to mid day morning for photography and mid day for collection of specimen because during that time they are most active so they are easily seen and also collection cover fast. For collection butterfly net use which has diameter About 30 cm. Specimen are collected by sweeping net in 180 angles. Collected specimen simply identified by using Subramanian field guide 2005. Then accuracy had done by identification keys which provided by Fraser (1933) for Zygoptera. Non Identical are collect in butter paper envelope and some of them are preserve in acetone for proper preservation for 12 hr after that specimen are. Acetone acted upon specimen while dipped into it; as a result of that specimen get dehydrated and fat content also hydrated with color preservation. For some species like *Lestes elatus* get direct effect on color. Acetone is not use the abundance should be done by no. of sighting the particular specimen. For this when (> 100) reported very common in between 50 -100 (VC); common 25-50 (C); and rare 2-10 (R); very rare (< 2) (Tiple et.al.2008).

All resulted name of damselfly are placed in result table according to checklist of Subramanian (2009) ZSI.

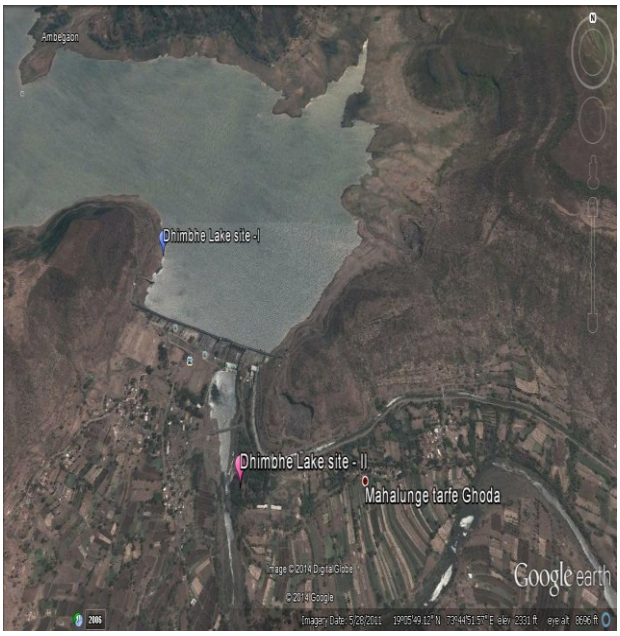


Fig.1: Satellite overview of Dhimbe Lake

Fig. 2: Collection site at Dhimbe Lake

Table No. 1 Details of study localities

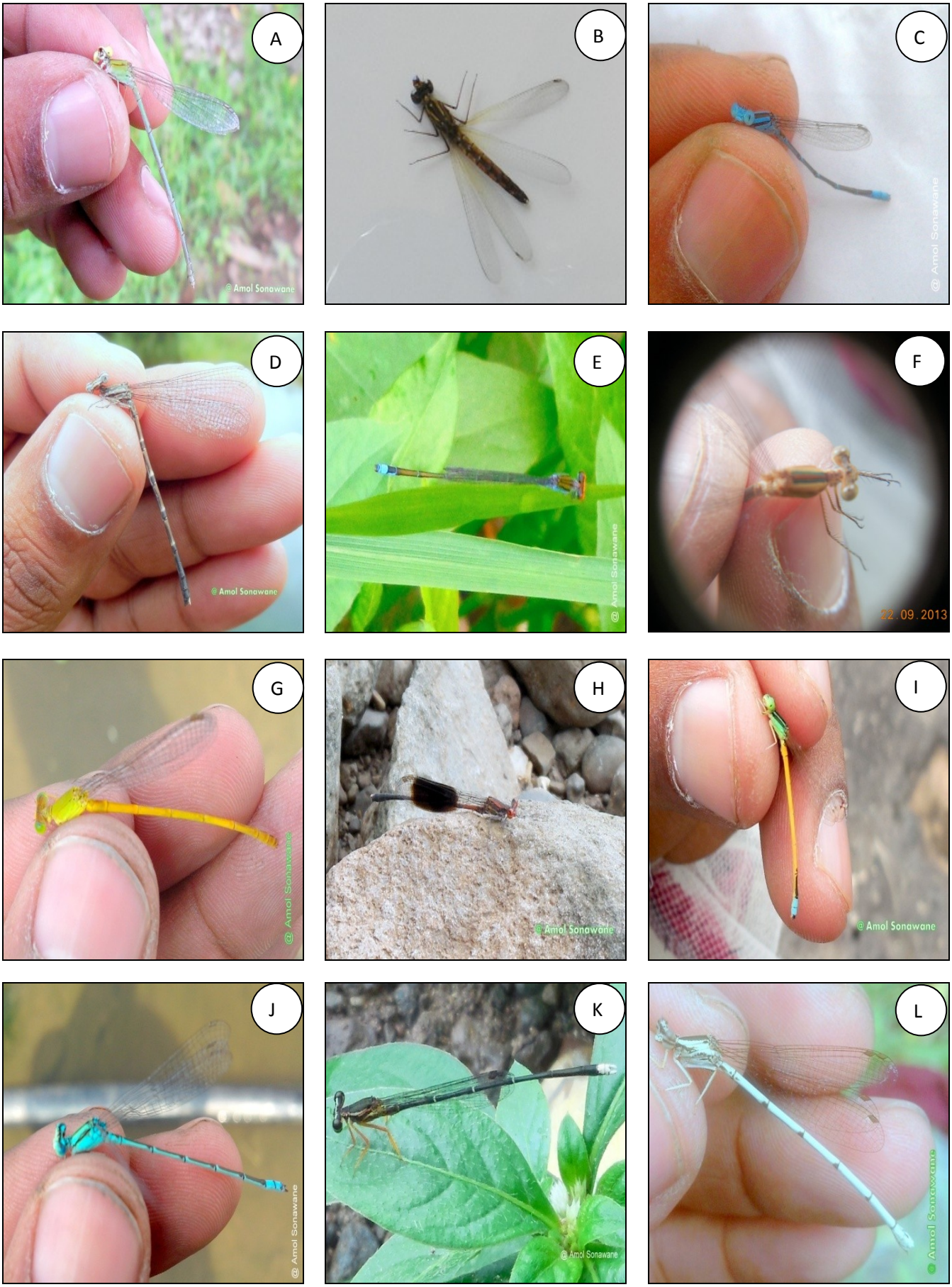
Locality	Land use type	Latitude	Longitude	Altitude (m)	Annual Mean temp.
A.A. College Lake	Forest Lake	19.004786	73.572674	706	24
Station No. 1	Pool	19.004149	73.571630	710	23
Station No. 2	Stream forest	19.003999	73.571630	716	24
Station No. 3	Forest	19.004670	73.571617	721	24

RESULTS AND DISCUSSION

Study revealed the presence of 15 species of damselfly in four deferent localities of Annasaheb Awate College, Manchar (Pune) Campus including four deferent unidentified species. The species identified *Agriocnemous Pygmaea, Enallagma Porum, Agriocnemous femina,* Ceriagrion Coromandelianum, *Ischnura aurora, Ischnura senegalensis, Pseudagrion spencei, Rhodishnura nersei, Libelago lineata, Pseudagrion microcephalum, Copera marginipines, Disparoneura quadrimaculata, Pseudagrion decorum, Pseudagrion rubriceps,* and *Lestes elatus. Ceriogrion coromandelianum* and *Pseudagrion rubriceps* are found to be common in distribution in the study area *Enallagma Parvum, Lestes elatus* and *Pseudagrion spencei were found in very less in number.* Coenagrionidae family has 7 genera and 11 species are found.Platycnemididae and Lestidae family which has only one genus which belonging 1 species each found. Protoneuridae and Chlorocyphidae family which have only one species are reported; as *Lestis viridulus* which shows different location and which having different morphological coloration its commonly called as spread wings. Mostly the abundance of the family: Coenagrionidae which reported an important biological aspect for certain environmental aspect. Such as, pollution free part of the forest.

Table 2: Abundance of damselfly among the June, July, August and Sept as follows (* Very Rare, ** Rare, * very common).**

Sr. No.	Name of Species	Month				Remark	No. of Species Found
		June	July	Aug	Sept		
	Family: Coenagrionidae						
1	*Agriocnemous Pygmaea* (Rambur,1842)	2	3	3	2	***	10
2	*Enallagma Parvum (*Sely, 1876)	0	0	1	4	*	4
3	*Agriocnemous femina* (Brauer,1865)	0	2	4	1	**	7
4	*Ceriagrion coromandelianum* (Fabricius ,1798)	4	4	4	4	***	14
5	*Ischnura aurora* (Brauer,1865)	3	0	4	2	**	9
6	*Ischnura senegalensis* (Rambur,1842)	4	3	4	0	***	11
7	*Pseudagrion decorum* (Rambur 1842)	0	2	0	4	**	6
8	*Pseudagrion rubriceps* Sely, 1876	4	3	3	3	***	13
9	*Pseudagrion microcephalum* (Rambur 1842)	2	0	4	0	**	6
10	*Pseudagrion hypermelas* Selys, 1876	0	0	0	2	*	2
11	*Rhodishnura nersei (Mortan, 1907)*	0	0	1	0	*	1
	Family: Chlorocyphidae						
12	*Libelago lineata (Burmeister,1839)*	0	3	3	2	**	8
	Family: Protoneuridae						
13	*Disparoneura quadrimaculata* (Rambur 1842)	1	3	4	3	***	11
	Family: Platycnemididae						
14	*Copera marginipines* (Rambur1842)	0	0	0	9	**	9
	Family: Lestidae						
15	*Lestes viridulus* Sely, 1891	0	1	0	0	*	1
16	Unidentified	2	1	3	0	**	6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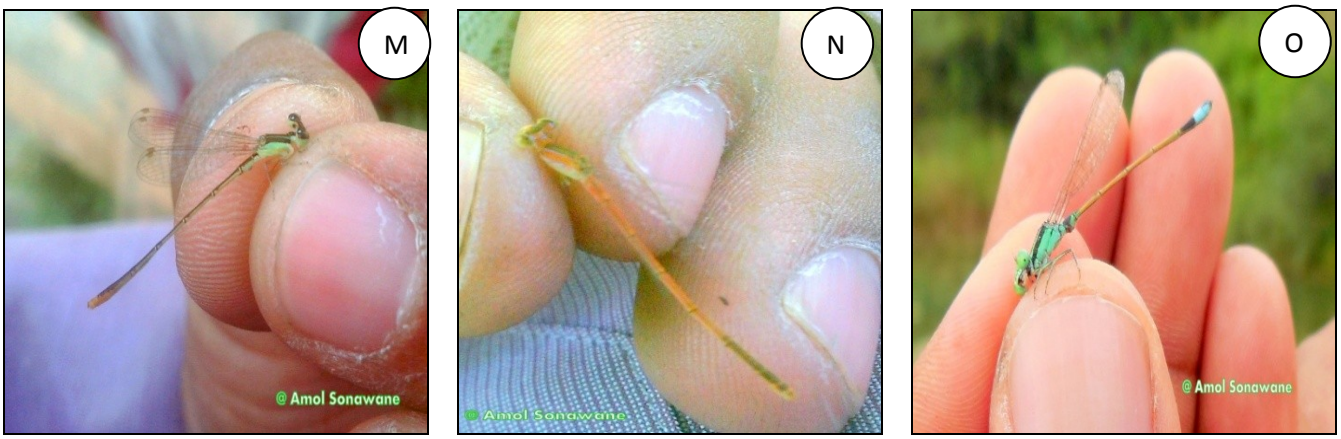

Appendix1. Some of the Damselflies Photographed from the study sites.

A-*Pseudagrion rubriceps* (♂) ;***B***- *Libelago lineata* , **C-** *Enallagma parvam;* **D-** *Disparoneura quadrimaculata* ; **E-** *Pseudagrion rubriceps* (♂) ; **F-** *Lestes viridulus* ; **G-** *Ceriogrion coromandelianum* (♀); **H-***Disparoneura quadrimaculata*(♂); **I-** *Ischnura aurora* (♂) ; **J-** *Pseudagrion decorum* (♂); **K-** *Copera marginipines;* **L-** *Copera sps;* **M-** *Agriocnemis pygmea.* (♂); **N-** *Agriocnemis pygmea.*(♀), **O-** *Ischnura senegalensis* (♂).

Table 3: Distribution of genera and species of different families of damselflies in A.A. Awate college campus. Manchar (Pune: Maharashtra)

Family	Genera	Species	Total count	% of species
Coenagrionidae	5	11	83	73.33
Chorocyphidae	1	1	8	6.66
Protoneuridae	1	1	11	6.66
Platycnemididae	1	1	9	6.66
Lestidae	1	1	1	6.66
Unidentified	-	-	6	
Total	9	15	118	-

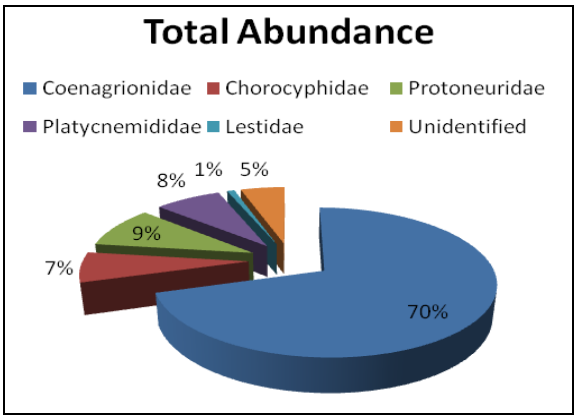

Fig. 3: Percentile distribution According to the genera and species with Abundance of particular family.

The endemic species *Rhodishnura nersei (Mortan, 1907) reported during this surveys stud only one throughout.* It shows variety of coloration on the abdomen which is the unique remark of the specimen. This species generally hide in between the grass to avoid enemy attack due to bright coloration. The order Odonata is ideal taxon, in present interpretation have been seen that distribution of deferent species at 4 deferent localities in Annasaheb Awate college, Manchar some species are found in Lake region and some are found station no.1, in large amount and another station no, 2 and 3 in small amount some in short this variation can be seen due to the presence of grasses, submerged vegetation, large forest, shaded areas, flowing water, wetlands shrubs, large trees, large grass land, garden. In Lake Region there are 8 species which are found, in site no. 1 (slight stagnant water) get 4 species, in site no. 2. (Flowing water) found 2 species. And site no. 3 (Forest area) found 1 species. Certain species like *Ischnura senegalensis* and *Pseudagrion coromandelianum* are more dominating species in all campus area. This type of variation of 15 species is present due to the certain environmental condition; Site No. 3 shows most endemic species *Lestes viridulus* Sely, 1891 *w*hich occur especially into the forest area. Damselflies mostly prefer aquatic wetlands which feed on aquatic small entities (water bodies), in larval stages forbidden jaw they capture prey. From above discussion shows that Damselfly shows their appearance more diversity where suitable water bodies are present.

CONCLUSION

The present study concluded that due to presence of natural environmental condition in forest and all campus diversity of Damselfly is more appreciable, still due to urbanization of Manchar city now days it will affect some species sewage water which comes from Manchar city it will mixing in some extent.

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