



ISSN : 0973-7057

Species diversity of *Bellamya* (Jousseaume) in the lentic water of east Singhbhum, Jharkhand

Amrita Dutta** & Bushra Raza

^aDepartment of Zoology, Ranchi College, Ranchi University, Ranchi, Jharkhand, India

Received : 5th January 2017; Revised 27th February, 2017

Abstract : Molluscs represent about 4.7% of the total biota in India. An approximate 260 species, 1 subspecies, 98 varieties and 26 forms have been reported from the various freshwaters of Indian subcontinent. The West Singhbhum region of Jharkhand, is the eastern edge of Singhbhum Plateau (21° 58' N to 23° 36' N latitude & 85° 0' E to 86° 54' E), represents a rich diversity of molluscan fauna in the lentic water bodies. The present investigation has been undertaken from Feb'09 to Jan'10 to venture out the present species diversity status of *Bellamya* (Jousseaume) in the lentic waters of the investigation area. Among the collected specimen, *Bellamya bengalensis* (Lamarck) were recorded in greater abundance than other two species viz. *Bellamya dissimillis* (Miller) & *Bellamya variata* (Frauenfeld).

Keywords :- Molluscs, lentic, species diversity, pH, temperature, abundance

INTRODUCTION

Molluscs represent a diverse group of benthic macro fauna of the lentic water bodies. They form an indispensable and essential link in the aquatic food chain as well as are important for commercial, pathological and nutritive purposes. Mollusks are known to survive through fluctuations of temperature and pH, some of them especially the gastropods serve as intermediate hosts of parasites^{1,2}.

The East Singhbhum region is predominantly an iron rich belt, experiencing a monsoonal climate & receives over 152.40mm rainfall. The climate has welded and shaped up the biodiversity of this region which is reflected in the molluscan fauna of lentic waters. The family Viviparidae is represented by 3 species viz. *Bellamya bengalensis* (Lamarck), *Bellamya dissimillis* (Miller) and *Bellamya variata* (Frauenfeld)^{3,4}.

MATERIALS & METHODS

Samples were collected from selected sites including both temporary and permanent lentic, on a monthly basis

Feb'09 to Jan'10, using modified Peterson Grab. The collected sample were then sieved through a standard brass sieve and mollusks were separated. In some cases, a triangular hand net (20 mesh/cm²) was also employed in collection especially in shallow waters. Handpicking was also done randomly from different sampling sites. Preservation of the samples were done in 5% formalin and kept in clean containers for further identification. Mollusks were classified species wise and their density were also noted. The physio-chemical parameters like water temperature, pH were taken during collection on the spot and the average was worked out⁵.

RESULTS & DISCUSSION

In the present investigation, analysis of the collected specimen revealed the presence of *Bellamya bengalensis* (Lamarck) in 3 forms viz. *B. bengalensis*, *f. typical*, *B. bengalensis f. ebrunea* & *B. bengalensis f. mandinensis*, along with *Bellamya dissimillis* (Miller) and *Bellamya variata* (Frauenfeld).

Taxonomic account:-

Class	:	Gastropoda
Subclass	:	Prosobranchia

*Corresponding author :

Phone : 08210745001

E-mail : amritadutta50@gmail.com

Order : Mesogastropoda
 Family : Viviparidae
 Genus : *Bellamya* (Jousseaume 1866)
 Species : 1. *Bellamya bengalensis* (Lamarck)
 Form : 1. *Bellamya bengalensis* form typical
 Form : 2. *Bellamya bengalensis* form mandiensis
 Form : 3. *Bellamya bengalensis* form eburnean
 Species : 2. *Bellamya dissimilis* (Miller)
 Species : 3. *Bellamya variata* (Frauenfeld)

The investigation revealed that *B. bengalensis* was noticed in all various aquatic niches including both temporary and permanent waters. The 3 forms of *B. bengalensis* were found to live in association with one another. *B. dissimilis* was found to be abundantly inhabiting the permanent waters but scarce in temporary waters while *B. variata* was found only in the permanent waters.

Monthly fluctuations in species density were also observed. Maximum density was noted in the month of December – January while lowest density was noticed in the month of July – August. The mean density was highest for *B. bengalensis f. typical* & lowest for *B. variata*. It thus appears that *Bellamya* species density shows a decline during summer, dipping lower in monsoon & after monsoon starts to move towards peak in winters. Low count of species during monsoon can be attributed to decreasing pH & high water turbidity due to rainfall.

B. bengalensis f. typical was found to be the most abundant species forming about 33.2% and 44.12% of the total *Bellamya sp.* in the permanent temporary waters respectively while *B. variata* was the most scarce 5.33% & nil in permanent & temporary waters respectively, the occurrence & presence of the *Bellamya sp.* can be correlated to water temperature & pH of the lentic water bodies *B. bengalensis* (3 forms) & *B. dissimilis* are found at with high pH and moderate temperature. However, *B. variata* are absent at these waters.

The population distribution and presence of the species were also affected by the presence of aquatic plants & organic detritus as it was found that the species appeared to be most abundant at the marginal and sublittoral zones than the deeper zones. Higher species richness was noticed in the perennial ponds especially those with

abundant floating and rooted aquatic weeds. Low species richness was noticed in the temporary waters. The reason can be that they dry up during most time of the year & these react fast to heavy fluctuations of pH & water temperature⁶.

Thus to sum up, relative abundance, density & diversity of the *Bellamya sp.* are affected considerably on the inhabiting the lentic water bodies. Seasonal variations may give valuable insight and information on the population dynamics of the species⁷. Hence, from conservation point of view, there exists an immediate need to find out the vital habitat, community structure and diversity of the *Bellamya sp.*, inhabiting the lentic waters of the East Singhbhum region as they form an important link in the aquatic food chain and play an significant role in nutrient cycling.

REFERENCES

1. **Bose, K.C., M.C. Mahata, A.Dey., 1975;** Fresh water Molluscs of Chotanagpur Plateau, *Ind. Jour. Anim. Res* : 9(2), 107-109
2. **Mahata, M.C., 1991;** Taxonomic and Ecological studies of fresh water Molluscs of Chhotanagpur Plateau (Bihar) *Bellamya. Spp. : proc. 78th Indian Sc. Cong. Part-III ; 94-95 (Sect. of Zool. Ento. & Fish). Abst. Only-Abst. No. 151.*
3. **Mahata, M.C. , 2002;** Edible Shell Fishes (Mollusc) fo Chhotanagpur Plateau, Jharkhand, India ; *Bio-publication*, BRPD, MBI, Orissa ; 133.
4. **Subba Rao, N.V. ,1989;** *Handbook of freshwater mollusksof India : ZSI Culcutta : 225-232*
5. **Subba Rao, N.V.;** Collection and preservation of Vector Molluscs, *Proc. Workshops Tech. Parasitol Zool. Surv. Of India;* 77;215-245
6. **Tonapi, G.T., 1980;** Freshwater animals of India, an ecological approach (Oxford and IBH Publ. Cp.; New Delhi), 341
7. **P. Stiling, 2002, Ecology- Theories & Practice.** Prentice Hall Publication pp-212-241

