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## AN ASSESSMENT OF BRYOZOAN (PHYLACTOLAEMATA) FAUNA OF KAGZIPURA LAKE, AURANGABAD, MAHARASHTRA, INDIA

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**Abstract:** Freshwater Bryozoa is one of the less explored or ignored animal groups from India. Kagzipura Lake, a rainwater fed water body was surveyed for three years to understand the diversity and distribution of bryozoan fauna. The present study depicts four Phylactolaemata bryozoans species as *Rumarcanella vorstmani*, *Plumatella casmiana*, *Lophopodella carteri* and *Swarupella divina*. The manuscript provides brief descriptions of these species, photomicrographs of statoblasts using scanning electron microscopy and colony characteristics.

**Keywords:** Bryozoa, diversity, Kagzipura Lake, Phylactolaemata, statoblast.

Bryozoans are sessile invertebrates that grow as colonies of identical zooids attached to submerged objects like rocks, macrophytes, metal plates, molluscan shells, even plastic pipes and plastic bags. Within the phylum Bryozoa, class Phylactolaemata live exclusively in freshwater habitats. The phylactolaemates comprises five families (Massard & Geimer 2008). Bryozoan taxonomy is complex and depends largely on microscopic details. Colony morphology and statoblast morphology are used for the identification. Scanning electron microscopy (SEM) photographs are used to describe the surface feature of statoblasts (Wood & Lore 2005). In India, Nelson Annandale was the pioneer of bryozoan studies while Kotapali Rao provided an excellent work

on diversity, distribution and ecology of the same. Genus *Swarupella* was established in India (Shrivastava 1981). The available literature indicates that the studies are restricted to central India. Table 1 shows a complete record of freshwater bryozoans from Maharashtra State.

### MATERIAL AND METHODS

Attempts were made to collect the colonies and statoblasts in fortnightly sampling from May 2010 to April 2013. Material was collected from the Kagzipura reservoir (19°58'16"N & 75°12'31"E) situated 40km northwest of Aurangabad City (Image 1). Bolten silk (No. 25) 40mm mesh plankton net was used for sampling the free floating statoblasts. Colony samples were also collected from the submerged surface or the underside of floating objects like plants, wood, rocks, plastics, etc. Both samples were taken to the laboratory in separate polythene bags. Colonies were examined under stereozoom dissecting microscope. Some statoblasts were stored in the aquarium for germination study while the remaining were stored in 70% alcohol for SEM analysis. The preserved statoblasts were cleaned with 0.1N sodium hexametaphosphate by shaking vigorously to remove debris attached on statoblast (Wood

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**Conflict of Interest:** The authors declare no competing interests.

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ज्ञान - विज्ञानं विमुक्तये

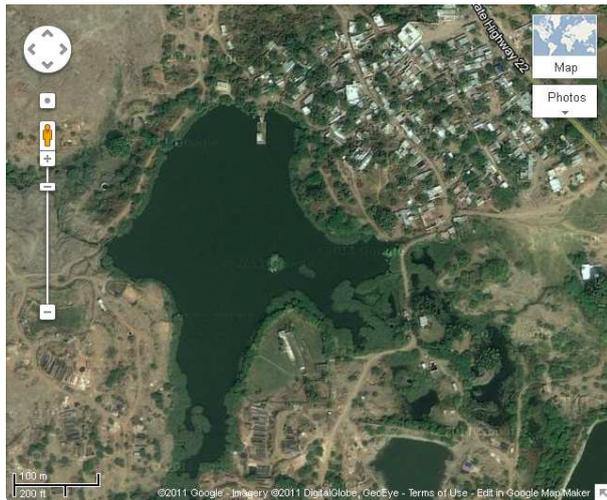


Image 1. Satellite view of Kagzipura Reservoir. Source: Wikimapia.

2001). Species were identified using keys described by Annandale (1911), Lacourt (1968), Rao (1992), and Wood (2006, 2010).

## RESULTS

In the present study four bryozoan species are recorded, namely *Rumarcanello vorstmani* Toriumi, 1952 (Image 2), *Swarupella divina* Wood, 2006 (Image 3), *Plumatella casmiana* Oka, 1907 (Image 4) and *Lophopodella carteri* Hyatt, 1968 (Image 5). *Rumarcanello vorstmani* floatoblasts are nearly symmetrical laterally, small and short with sides briefly parallel near the centre and the ends broadly rounded, both fenestrae bear small tubercles with hypertubercles, they have irregular annulues. Colony composed of slender branches, which attach to the substratum throughout their length.

*Swarupella divina* floatoblast is broadly oval with substantial annulues on both sides; fenestra has roughly the same proportions as the entire floatoblast. *Swarupella divina* is identified on the basis of statoblast only; the colonial form was not collected or identified during the survey.

*Plumatella casmiana* having capsulated statoblast is a typical plumatellid statoblast with a central capsule surrounded by periblast, dorsal and ventral fenestrae are narrowly oval and elongate but never round, both fenestrae are faintly tuberculated. Colony is usually compact and neat, the tubules short richly branched and lying flat along the substratum.

*Lophopodella carteri* statoblast is oval and flattened at each end and possesses a series of hooked spines on both extremities which is broadly rounded, the longest spines being in the middle and the shortest at the

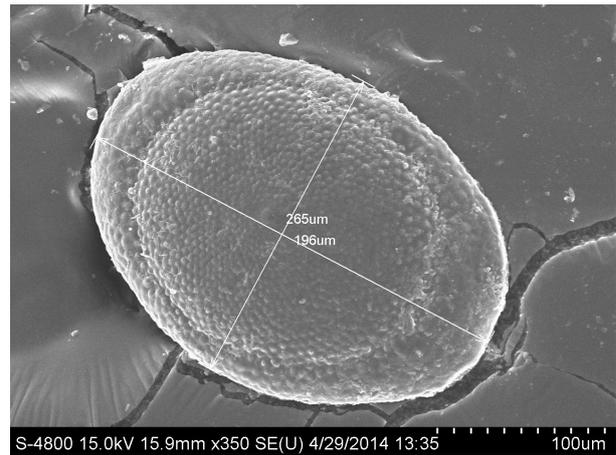


Image 2. *Rumarcanello vorstmani* © Pavan Swami

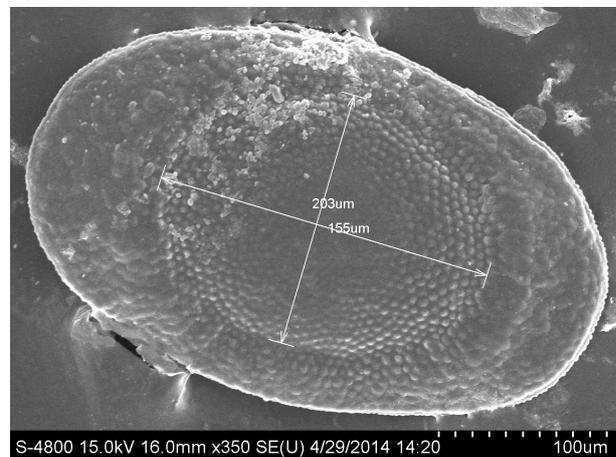


Image 3. *Swarupella divina* © Pavan Swami

ends of the series. The colony is gelatinous and firm, colony wall is soft and transparent. Polypide has an elongated horseshoe shaped lophophore. Colonial form (with well developed lophophores) of *Lophopodella carteri* observed only once in May 2013. The statoblast measurements (length and breadth of overall statoblast and annulus) of all four species are given in Table 2.

## DISCUSSION AND CONCLUSION

Indian studies are restricted to West Bengal and Madhya Pradesh states because Annandale was the first Director of Zoological Survey of India, Kolkata (West Bengal) while Rao's workplace was in Ujjain (Madhya Pradesh). Among the four species reported here, two species (*Plumatella casmiana*, *Lophopodella carteri*) are also previously recorded by us from Mula dam and from central and northern India (Rao 1992).

The two species *Swarupella divina* and *Plumatella vorstmani* are reported for the first time from this

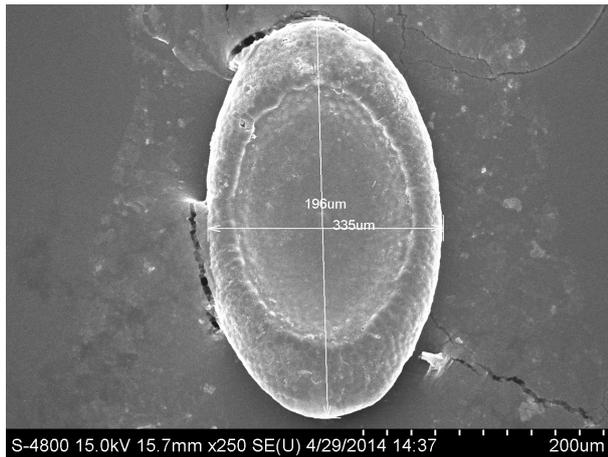
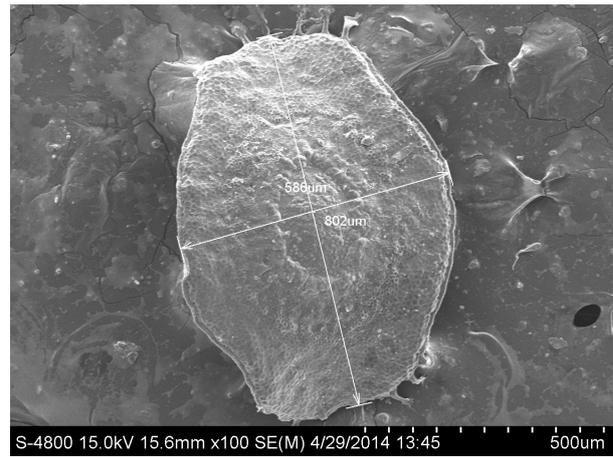
Image 4. *Plumatella casmiana* © Pavan SwamiImage 5. *Lophopodella carteri* © Pavan Swami

Table 1. Complete record of freshwater bryozoans from Maharashtra State

Species	Site	Reference
<i>Asajirella gelatinosa</i>	University Lake, Pune	Tonapi & Varghese 1983
<i>Fredericella indica</i>	Igatpuri Lake, Nashik District	Annandale 1909
<i>Hislopia lacustris</i>	Ghanewadi Reservoir, Jalna District,	Author 2013
<i>Lophopodella carteri</i>	Igatpuri Lake, Nashik District	Annandale 1908
<i>Plumatella bombayensis</i>	Igatpuri Lake, Nashik District	Annandale 1908
<i>Plumatella casmiana</i>	Ghanewadi Reservoir, Jalna District,	Authors 2013

region. *Rumarcanelle vorstmani* was first described in 1929 from Indonesia by Adriana Vorstman as *Plumatella javanica*; *P. vorstmani* was recently placed in a new genus, *Rumarcanelle* (Hirose & Mawatari 2011).

*Swarupella divina* was described from a single colony collected at Bung Borophet in Thailand. The proportions of the floatoblast and its fenestrae are very similar to those in *Rumarcanelle vorstmani* but the floatoblast in *Swarupella divina* is about 20% larger overall (Wood et al. 2010). The identification of *Swarupella divina* is confirmed by Prof. Timothy Wood on the basis of statoblast morphology and dimensions. This is the first report on the occurrence of *Swarupella divina* (statoblast) from India. None of the species encountered in this study is endemic to the region and wide distributions of the species are possibly related to the dispersability of floatoblasts by birds or other living organisms (Hirose & Mawatari 2007). The species discovered in this region has been serendipitous and many undescribed species are likely to exist. Much of western and southern India

Table 2. Statoblast dimensions (length and breadth of statoblast and annulus)

Species	Overall		Annulus	
	Length (mm)	Breadth (mm)	Length (mm)	Breadth (mm)
<i>Rumarcanelle vorstmani</i> (Image 2)	265±6	196±30	186±2	161±15
<i>Swarupella divina</i> (Image 3)	354±14	225±02	203±4	155±78
<i>Plumatella casmiana</i> (Image 4)	335±08	196±19	221±09	152±31
<i>Lophopodella carteri</i> (Image 5)	802±43	586±21	307±16	316± 3

is still unexplored for bryozoans so the probability of encountering additional new species remains high; and we are optimistic that even more species will eventually be revealed in this region.

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