

Freshwater Bryozoans

A Treasure of Freshwater Ecosystem

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Freshwater Bryozoans growing on Boats, clothes, bivalve shells, metal and Plastic material

FRESHWATER ecosystems are full of life, from tiny microbes to larger aquatic animals. Hidden among this diversity are freshwater bryozoans, fascinating creatures that many people overlook. These colonial animals are more than just aquatic growths. With their delicate, intricate structures, they form jelly-like or branching colonies on submerged surfaces in ponds, lakes, and streams, quietly thriving underwater.

Bryozoa (also called Ectoprocta, Polyzoa, sea mats, or moss animals) are simple aquatic invertebrates. They attach to underwater surfaces such as wood, rocks, and plastic, and form colonies of identical zooids by budding. These colonies live in ponds, lakes, rivers, streams, and reservoirs. Bryozoans prefer clear water with little sediment and avoid areas with strong waves, many predators like cherry snails, and decaying surfaces.

These small creatures help filter water and keep ecosystems healthy, offering insight into the balance of freshwater habitats. Of the 5700 described species of bryozoans, only a few (about 100) inhabit freshwater. Records of freshwater Bryozoa in India are sparse. Nelson Annandale documented the occurrence of various species across the country. Currently, 29 species have been recorded, with distribution data spanning 18 states and one union territory in India.

Bryozoans are classified into three distinct classes: Gymnolaemata, Stenolaemata, and Phylactolaemata. While the majority of freshwater bryozoans belong to the class Phylactolaemata, a few species from the Gymnolaemata order Ctenostomatida are also found in freshwater habitats. Unlike their marine counterparts, Phylactolaemata produce dormant

asexual bodies called Statoblasts, which, under favourable conditions, can form whole new colonies.

Their taxonomy is complex and relies heavily on microscopic observations. Colony morphology, shape, and arrangement of the lophophore and statoblasts are two important characteristics used to identify the genus and species of Bryozoa.

Bryozoans are made of zooids, each performing important life functions. Each zooid has two parts, the cystid (body wall) and the polypide (organ system). The cystid has an outer layer, the ectocyst, and an inner layer, the endocyst. The endocyst contains the epidermis, muscle layers, and cilia for fluid movement. The endocyst folds to form a vestibule that connects to the lophophore with a tentacle sheath. The opening of the cystid allows the polypide to extend or retract using muscles. The polypide, which includes tentacles and the digestive system, can move into the water or retreat into the zoecium, a protective outer shell that grows with the zooid, and act as a living cage. Bryozoans use a lophophore, a ring of tentacles, to catch food. Some species have U-shaped tentacles, while others circle the mouth. They possess a small brain near the tentacles and anus, with branching nerves.

Life Cycle and Reproduction

Colonies show either all-in-one (hermaphroditic) or separate male and female zooids. Most bryozoans are hermaphrodites. They reproduce both sexually and asexually. Statoblasts are used for asexual reproduction. Sexual reproduction creates a free-swimming larva that settles, becomes a founder zooid, and then buds others. Each zooid can live one to several weeks. Colonies may last from weeks to up to twelve years.