

Occurrence of *Conochilus Arboreus* (Rotifera: Gnesiotrocha) In a Subtropical Pond, Jammu

S. Kumar

Associate Professor, Department of Zoology, Bareilly College, Bareilly, INDIA

Corresponding Author: drsunilzoology@gmail.com

ABSTRACT

The seasonal behavior and abundance of a colonial form of *Conochilus arboreus* was studied in detail. Its relationship with abiotic and biotic factors was investigated during limnological studies conducted in kunjwani pond for one year.

Keywords-- Subtropical Pond, *Conochilus Arboreus*, Seasonal Behavior

I. INTRODUCTION

Rotifers are highly diverse and among the most conspicuous of freshwater micro-metazoans and occupy key position in aquatic ecosystems. For many fishes, these are basic food in earlier stages of external feeding (Nikolsky, 1963). A critical analysis of freshwater Rotifera indicates that various planktonic and semi-planktonic taxa are fairly well documented (Ahlstrom, 1933; Arora, 1963; 1966; Das and Peer, 1971; George, 1961; Jyoti and Sehgal, 1979; Musharraf et al., 1990; Nayar, 1968; Pejler, 1957; and Raghunathan and Kumar, 2006). While colonial rotifers are still not adequately studied. Bharadwaj et al_ (1978 c.f. Anonymous, 1991) studied few colonial rotifers from Haryana. Micheal (1966) reported *Conochilus madurai* from an astatic pool Madurai and Rajendran (1971) observed *Conochilus arboreus* from Madurai, South India. The paper describes seasonal behavior and abundance of *Conochilus arboreus* in relation to certain hydrobiological features in a Kunjwani pond.

II. MATERIALS AND METHODS

Water and plankton samples were collected fortnightly from four stations during 1989-1990 and analysed by adopting the methods of APHA (1985). Plankton were preserved in 5% formalin. The counting

was done by Lackey's microtransect method (APHA, 1985) and using Sedgwick rafter counting cell (Welch, 1952). Identification was done as per description by Ward and Whipple (1959) and density expressed as number per litre.

III. RESULTS AND DISCUSSION

Colonies of *Conochilus arboreus* of different sizes ranged from 1.0 mm to 2.5 mm in diameter have been collected (Holotype) with many individuals of zooids. These are compact, radially arranged representing spherical or globe shaped structure. The zooids were colourless, transparent elongated and laterally compressed. The body is divided into head, trunk and foot. The corona is horse-shoe shaped. The characteristic features of this colony was its rolling motion caused due to synchronous action of ciliary crown of zooids. The colony exhibits peculiar behavior of pulsation. It contracts and relaxes rhythmically and completes one cycle in 3.0 seconds. The ejection of water by colony may be related to this contraction.

The ranges and averages for various physico-chemical parameters are presented in Table I. In kunjwani pond, *C. arboreus* recorded thrice (August-October) has shown a single annual peak in August. Earlier patil et al_ (1985) have also documented the presence of *Conochilus* sp. during monsoon season from a pond of Jabalpur, however, Sharma and Srivastava (1986) recorded *C. unicornis* during May-July from a Rajan pond, Jammu

C. arboreus is one of the most dominant monsoonal rotifer constituted 97.99% in August, 89.93% in September and 92.15% in October of total population, while its contribution to total zooplankton was 86.10%, 68.61% and 30% in August, September and October respectively.

Table 1- Average, standard error and mean range of physico-chemical parameters in Kunjwani pond.

Parameters	Average (+/-) standard error		Mean range	
1. Air temperature (°C)	30.39	00.54	28.00	31.81
2. Water temperature (°C)	28.31	00.61	25.50	30.19
3. Depth (cm)	93.41	12.17	41.50	143.75

4. Transparency (cm)	24.70	02.18	19.50	34.38
5. Suspended matter (mg/l)	72.50	02.97	62.50	82.50
6. pH	07.57	00.15	07.02	08.27
7. Dissolved oxygen (mg/l)	06.32	00.70	04.26	09.48
8. Free carbon dioxide(mg/l)	01.94	00.43	00.00	03.27
9. Carbonate (mg/l)	01.55	00.66	00.00	04.65
10. Bicarbonate (mg/l)	113.77	04.24	93.58	125.57
11. Chloride (mg/l)	01.33	00.03	01.27	01.45
12. Calcium (mg/l)	21.15	01.06	16.26	24.17
13. Magnesium (mg/l)	05.68	00.26	05.55	05.90
14. Total Hardness (mg/l)	76.19	02.69	63.64	84.69

Distribution of aquatic organisms is controlled by the environmental factors such as temperature, ionic composition of water and food availability. In spite of monsoonal occurrence *C. arboreus* population was highest in August (5142 nosl⁻¹) at water temperature (30.19°C), depth (143.75 cm), transparency (34.38 cm), pH (7.02), DO (5.23 mg/l), FCO₂ (3.27 mg/l), HCO₃⁻ (93.58 mg/l) Cl⁻ (1.29 mg/l), Ca⁺⁺ (16.26 mg/l), Mg⁺⁺ (5.61 mg/l) and total hardness (63.64 mg/l).

Besides the abiotic factors, its population appears to be associated with monsoonal presence of *Asplanchna priodonta*, which recorded during August to October with highest population density in August (73 nosl⁻¹).

During monsoon season this opportunistic form finds environmental factors suitable and hence dominated the rotifer as well as zooplankton community. It increases its population only after summer *Filinia spp.* had disappeared. Kumar *et al* (1981) noticed the presence of *Filinia spp.* from April to July in this pond.

Quantitative August highest peak of *Conochilus arboreus* may also be related to the detritus enrichment, resulting from allogenic inflow of material from catchment along with monsoonal rains and decomposition of submerged macrophytes which recorded their decline in the month of June (Dutta *et al* 1991). Poor production of other rotifers, cladocerans, copepods etc. appear as the additional factor explaining August peak. While highest February peak was observed by Kanagasabapathi and Rajan (2010) from Irrukkanyudi reservoir and Sivakami *et al* (2015) from Pudukkottai lake.

Comparison of seasonal abundance of *C. arboreus* with cladoceran populations reveals a negative relationship. The cladoceran species predominates under favourable conditions because of its greater capability to utilize the available food. As soon as environmental conditions become unfavourable for their existence and these disappear, the rotifer species with a short life span and rapid egg production reacts instantaneously so as to have several quick successive generations and builds up large populations.

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