A HISTORICAL RESUMÉ OF INDIAN LIMNOLOGY

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Abstract

A broad categorisation of Indian freshwater investigations published so far is presented. The lacunae are pointed out. Problems and priorities for further limnological researches in the context of India's limited water resources are highlighted.

Studies on Indian freshwaters extend back to the latter half of last century and were in the nature of presenting species lists and descriptions of taxa new to the then Indian sub-continent (Carter, 1855; Baird, 1859, 1860; Sars, 1887, 1900; Anderson, 1889; Alcock, 1897; Gurney, 1906, 1925a, b, 1930; Bhatia, 1930, 1936; Arora, 1931; Prasad, 1931; Bond, 1934; Edmondson and Hutchinson, 1934; Brehm, 1936, 1950, 1953, 1963; Brehm & Woltereck, 1939; Hauer, 1936, 1937a, b; Kiefer, 1936, 1939). For purposes of brevity the references on algae and nekton are excluded from this review, although some of the significant Monographs on algae are those of Desikachary (1959) on Cyanophyta, Philipose (1967) on Chlorococcales, Venkataraman (1961) on Vaucheriaceae and of Ramanathan (1964) on Ulotrichiales containing extensive bibliographies on the subject.


It may be pointed out that in spite of the works enumerated above, still many groups need to be tackled taxonomically. Non availability of extensive taxonomic treatises for zooplankton, weed and benthic fauna acts as a deterrent and many a junior worker has 'fallen by the wayside'. In these days of instrumental sophistication, less and less of younger workers are attracted towards taxonomic work, but increasing application of computerised numerical methods, enzyme electrophoresis and SEM in taxonomic studies should be a challenge to many investigators in the field.

The primary attempts on the seasonality of Indian freshwater plankton were that of Sewell (1934) on the fauna of the tank (pond) in the Indian Museum Compound, Calcutta. Earlier, Pruthi (1933) described the seasonal changes of the physical and chemical characteristics of the water in the same system. Following this, there were a long series of hydrobiological studies of freshwater impoundments mostly on ponds and reservoirs, in different parts of the country. Many of these were initiated to obtain baseline information of plankton and
water chemistry to be of use in fishery practices since it was pointed out that such a gap proved to be a serious handicap to Indian fishery workers (Hora, 1951; Job, 1951).


In the past years some interest had been shown on the general ecology of aquatic insects (Tonapi, 1959; Tonapi & Ozarkar, 1969; Julka, 1965, 1969, 1973, 1977; Alfred, 1974; Swamy & Rao, 1974; Rao, 1976; Tagore et al., 1974; Tagore, 1977; Sen, 1979). Vazirani (1955, 1966, 1970, 1974) had done considerable taxonomic work on aquatic beetles. Nevertheless, the taxonomic hurdles associated with the larva-pupa-adult links are serious bottlenecks for a thorough study of various orders of aquatic insects. However, pioneering attempts in this direction are being made to correlate larval and adult taxonomy along with detailed ecological studies. In this context two significant works, one on family Chironomidae (Alfred, 1973) and the other on Ephemeroptera (Gupta, 1979) are worth mentioning. The larval taxonomic works on Indian Odonata by Kumar (1972, 1973a, b) are valuable. Studies on the role of aquatic insects in relation to fish culture are carried out at this laboratory (Ahmed, 1979). Many more systematic and long term investigations for different geographic regions of this country are very much needed.

General works on the weed fauna (Michael, 1968a) and benthos (Srivastava, 1956, 1959; Hussainy, 1965b; Michael, 1968b; Mandal & Moitra, 1975; Gupta, 1979) are still very limited.

In recent years few studies on aquatic macrophytes and their production were conducted (Kaul, 1971; Unni, 1971a, 1976; Nasar & Datta Munshi, 1971; Rai & Munshi, 1979). A comparative account of soil-water relationship in three tropical ponds was described by Sumitra (1973). A set of interesting papers on Indian thermal springs were published recently (Jana, 1970, 1973b; Jana & Sarkar, 1971a, b; 1972, 1978).