

ON THE OCCURRENCE AND ABUNDANCE OF *MESOPODOPSIS*
ORIENTALIS (W. M. TATTERSALL) (CRUSTACEA:
MYSIDACEA) FROM HOOGHLY ESTUARY

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ABSTRACT

A quantitative investigation on the occurrence, density and seasonal periodicity of the mysid, *Mesopodopsis orientalis* from the Hooghly estuary along with fluctuations of the hydrographical conditions is presented. A comparative account on the distribution of mysids from other estuaries of India with that of Hooghly estuary is also given.

Key-words: *Mesopodopsis orientalis*, Mysidacea, Hooghly estuary, West Bengal.

Mysids are of relatively large size in zooplankton and form a useful link in the food web and are well recognised as a constituent of the diet of several fishes in shallow waters (Raymont, 1983). Although considerable literature on this species of the major estuarine systems exists (George, 1958; Pillai, 1969; Goswami, Selvakumar and Goswami, 1979; Chandramohan, 1983) and also from freshwater (Gupta and Gupta, 1984), information is rather meagre on the Hooghly estuary (Dutta, Malhotra and Bose, 1954). Hence the present investigation was conducted in Hooghly estuary around Sagar Island, Sunderbans to study the distribution abundance and seasonal fluctuations in relation to environmental parameters.

During high tide, surface zooplankton samples were collected (March 1980 — February 1981) at fortnightly interval, from five stations around Sagar Island ($88^{\circ} 04' - 88^{\circ} 08' E$ and $21^{\circ} 30' - 21^{\circ} 50' N$) Kachubaria (stn. 1; depth 15 m), Chemagari creek (station 2; depth 5 m), South Sagar (stn. 3; depth 3 m), Mandirtala (stn. 4; depth 4 m) and Mooriganga creek (stn. 5; depth 3 m) (Fig. 1). Measured quantity of water was filtered through a conical net (0.25 m diameter and 0.0695 mm aperture) and samples preserved in 4% buffered formaldehyde in seawater. The preserved plankton samples have been sorted out and individual specimens were segregated for numerical analyses. Water samples were taken simultaneously from each station and analysed for various environmental parameters, (Strickland and Parsons, 1968).

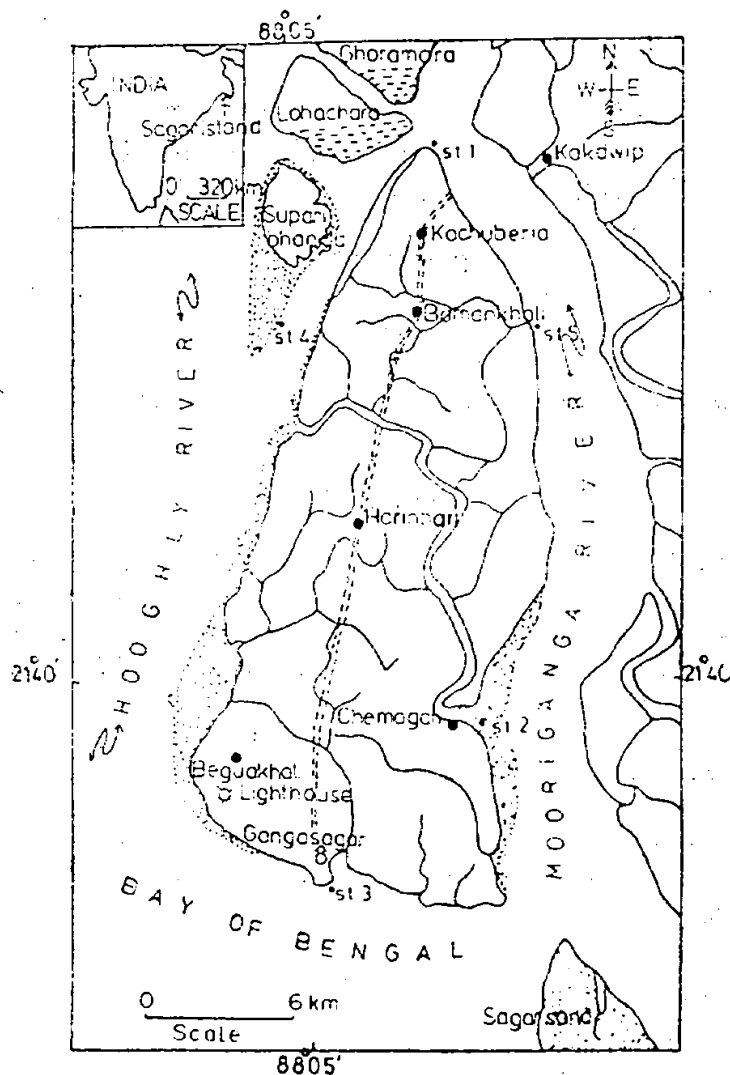


Fig. 1. Map of Sagar Island showing station positions.

Hydrography

Pooled mean values of hydrological parameters at five stations are presented in Table I. Water temperature and salinity values at each station showed a similar trend of distinct seasonal variations. A bimodal temperature oscillation was a distinguished feature. Variations in surface water temperature were normal for a tropical estuary with maximum in June (31.8°C at stn 3) and minimum in Jan/Feb. (21.6°C at stns. 1 and 3). Salinity increased to maximum during premonsoon months (Mar/Jun.) at all stations concomitant with increasing temperature and decreased during monsoon months (Jul-Oct.). During postmonsoon period (Nov-Feb.), the salinity gradient kept a gradual rising trend and attained a maximum value through the premonsoon months. Seasonal variations in dissolved oxygen was not much. pH of the surface water was found to be in the alkaline range throughout the year (7.9-8.3).

Table 1. Seasonal trends in the density (no./m³) of *Mesopodopsis orientalis* in relation to hydrological parameters (pooled mean values of five stations).

Month	mysid no./m ³	water temp. °C	salinity (‰)	D.O. (ml/l)	pH	zooplankton biomass ml/m ³
March 1980	8.6 ±	26.3 ± 0.36	18.5 ± 3.36	2.7 ± 0.11	8.1 ± 0	0.42 ± 0.11
April	5.4 ±	29.0 ± 0.69	21.8 ± 3.31	2.5 ± 0.18	8.1 ± 0.07	0.33 ± 0.09
May	4.6 ±	29.8 ± 0.24	26.08 ± 2.51	2.8 ± 0.06	8.1 ± 0.05	0.45 ± 0.12
June	21.4 ±	31.2 ± 0.53	23.9 ± 4.52	2.6 ± 0.11	8.2 ± 0.05	0.71 ± 0.20
July	9.6 ±	30.4 ± 0.92	13.2 ± 6.1	3.0 ± 0.15	8.2 ± 0.12	0.54 ± 0.22
August	10.8 ±	29.8 ± 0.93	6.1 ± 3.34	3.4 ± 0.22	7.9 ± 0	0.28 ± 0.16
September	10.2 ±	30.0 ± 0.69	3.7 ± 3.3	3.4 ± 0.05	8.0 ± 0	0.17 ± 0.04
October	3.0 ±	30.4 ± 0.38	3.7 ± 2.34	3.3 ± 0.05	7.9 ± 0	0.12 ± 0.03
November	2.2 ±	28.2 ± 0.59	7.1 ± 3.64	3.06 ± 0	8.0 ± 0	0.18 ± 0.09
December	6.2 ±	25.3 ± 0.80	9.1 ± 3.95	3.0 ± 0.05	8.2 ± 0	0.25 ± 0.10
January 1981	18.6 ±	22.2 ± 0.83	10.4 ± 3.72	3.2 ± 0.08	8.2 ± 0.08	0.68 ± 0.63
February	19.0 ±	21.7 ± 0.61	12.34 ± 4.45	3.1 ± 0.19	8.3 ± 0	0.97 ± 1.06

Mesopodopsis orientalis

Poor occurrence of mysid constitutes very low percentage of the total zooplankton with peak (60 no/m^3) in June 1980 at station 4 when the salinity and temperature values were fairly high. The species showed trend of increase during premonsoon months — depletion in the population of this species during late monsoon and early postmonsoon (Nov-Dec.) (Table I). The mysids were scarce at stations 1 and 3 probably due to high turbid condition prevailing in the areas. This species was euryhaline, tolerating a wide range of salinity (1.60 to 31.33‰). In the Godavari estuary, Chandramohan (1983) observed the range of salinity tolerance of the species to be 19.00 — 31.80‰ and considered it as endemic form. This common mysid is widely distributed throughout shallow coastal waters of India. It has been recorded in backwaters, estuaries and even upto the inner reaches of rivers, where the water is almost fresh (Panikkar and Aiyar, 1937; Devasundaram and Roy, 1954; George, 1958; Gupta and Gupta, 1984). In Cochin backwaters, George (1958) observed that the mysid occurred throughout the year and considered it to be strictly a brackish-water form. In the lower stretch of Hooghly estuary, Dutta, Malhotra and Bose (1954) encountered this species in small numbers during September and October. In the present study, this mysid was collected almost throughout the study period at all the stations (little increase in pre-and postmonsoon months) and could be considered as endemic form.

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