Dynamic patterns of transport and migration of zooplankton at Catuama Inlet (Pernambuco, Brazil), with emphasis on the planktonic Decapoda

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Abstract

Studies about the zooplankton flux between the Santa Cruz Channel (SCC) – at Catuama inlet – and the Adjacent Continental Shelf (ACS) were carried out to quantify this exchange and to define the planktonic Decapoda transport mechanism and migration. Sampling were done at spring (05 and 06/08/2001) and neap (11 and 12/08/2001) tides, each 3 hours interval, during 15 hours at spring tide (n = 32 samples) and 24 hours at neap tide (n = 56 samples). The samples were collected in three fixed stations (Middle or Convergence, Continent and Island) in three depths (surface, middle and bottom). Each sample was obtained with a pump and the water was filtered through a plankton net (300 µm), from 3 to 5 minutes. After collection the samples were fixed with 4% neutralized formaldehyde. Simultaneous current velocity and direction data were obtained using an acoustic current profile (ADCP), besides temperature, salinity and dissolved oxygen data. In laboratory, the samples were weighted to obtain the plankton biomass wet weight. Each sample was totally inspected under a estereomicroscope. The Catuama Inlet presented a high biomass data variability, with higher values mainly during the spring tide. The instantaneous biomass average transport was 98.10±75.92 $mg.m^{-2}.s^{-1}$, during spring tide, and of 31.46±26.52 $mg.m^{-2}.s^{-1}$, during neap tide. Higher biomass transport levels were associated to high density of Brachyura, Calanoida and Sergestoida. In relation to the organisms average transport the values were 831.47±1192.53 $org.m^{-2}.s^{-1}$, during spring tide and of 342.33±445.80 $org.m^{-2}.s^{-1}$, during neap tide. Higher biomass and organisms transport were observed during the night (flood and ebb tides). The importation and exportation flux did not present significative differences ($p>0.05$), suggesting that in some periods of the year the values can have the same magnitude order. Probably, this was caused by a strong marine influence in the studied area due estuarine fronts in the SCC, and time of the year of low larvae liberation, besides strong impact by planktivorous fishes over the meroplankton. The statistical analysis showed significative zooplankton accumulation in the covergence zones only during the diurnal period, considering the three stations, showing that during the night, besides the convergence zones some taxa use other mechanism transport. It was identified 29 planktonic Decapoda taxa, outranking the first stage of *Lucifer faxoni*, *Acetes americanus*, *Pinnixa* spp., Ocypodidae Morphotype A, *Uca* spp., *Petrolisthes armatus*, *Upogebia* spp. and Alpheidae. Most registered taxa presented vertical migration in synchrony with tide and photoperiod. The SCC is, probably, a reproductive area to Sergestoida, as it was observed an important flux (both import and export), of all stages of this taxon. The role of the SCC tropical estuary as Decapoda larvae source to coastal areas was confirmed in the present research. Our data showed that Decapoda larvae are exported from CSC to the ACS, however the high number of first larval stages in most of identified taxa, suggest that these species development occurs in the area close to Catuama Inlet.

Key-words*:* zooplankton; Decapoda larvae; estuarine area; tidal cycle; export and retention strategies; ADCP

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Inclui bibliografia e apêndices.

1. Oceanografia biológica - Zooplâncton. 2. Decapoda planctônicos – Transporte e migração vertical – Estuários – Barra de Catuama, Itamaracá, PE. 3. Larvas de Decapoda – Estratégias de exportação e retenção. I. Título.

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