

Physico-chemical parameters affecting the seasonal variation of marine crustacean in the coastal region of southern Sri Lanka

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Crustacean Zooplankton of the southern coastal region off Dondra were quantitatively and qualitatively investigated during a two year period. Ecological parameters were also determined and their effects upon the crustacean of the region were studied.

Zooplankton were collected from a depth of 50 m. with an AWP-2 plankton net (mesh size 90 μ m, mouth area of 0.25m²) and volume of water passed through the net was measured using a calibrated flow meter. Samples were preserved in 4% formaldehyde and sub sampled by a Kott's plankton splitter. Simultaneously with the zooplankton sampling, sea water samples were collected from the surface using a Ruttner sampler. The dissolved oxygen content (Winkler method), salinity and nutrient content (soluble reactive phosphate, nitrate/nitrite) were measured. The surface water temperature was also recorded. Estimation of chlorophyll was carried out.

Dissolved oxygen values showed that the surface layers were well oxygenated throughout the year (mean 7.22 \pm 0.61 mg/l). Surface water temperature ranged between 25.5 – 31.25 ^oC and the salinity varied between 30.47–36.07 ppt. The monthly variation on the mean values of soluble reactive phosphate and nitrate/nitrite in surface waters are 0.4764 \pm 0.2761 μ g/l and 3.4974 \pm 4.8738 μ g/l respectively. Calanoids represented by more than 15 species were the most abundant group (40.04 \pm 9.13%) followed by crustacean larvae (22.70 \pm 8.08%), cyclopoids (14.92 \pm 5.52%), harpacticoids (11.45 \pm 4.54%) and poecilostomatoid (9.94 \pm 3.39%) while others formed less than 1% of the total crustacean population. The crustacean density varied in relation to the NO₃⁻/NO₂⁻ content (R²=0.62).

The present investigations revealed that even though fresh water influx through the Nilwala river during monsoon season did not significantly reduce surface sea water salinity (R²= 0.0085); other environmental factors such as nutrient content are highly important in governing the seasonal changes in the occurrence and abundance of the crustaceans in coastal waters off Dondra.