(200)

Spatial Distribution and Morphological Identification of Edible Oysters of *Crassostrea* spp. Species, Naturally Inhabiting the Negombo Estuary, Sri Lanka

Rodrigo U., Weerakoon D.K*., Marasinghe M.M.K.I.

Department of Zoology and Environment Sciences, University of Colombo, Colombo 03, Sri Lanka
*devaka@sci.cmb.ac.lk

Abstract

Crassostrea spp. is an ecologically and socio-economically important genus in Sri Lanka. It is a dominant export in the country and provides various ecological functions such as providing habitat for commensal macrofauna and provision of food and shelter for its associated organisms. Therefore precise understanding and sustainable utilization of this coastal marine resource are vital for sustaining local livelihoods and ecosystem conservation of its habitat. This is the initiation of the first detailed study conducted from April to June 2022, to understand the *Crassostrea* population in the ecologically and socio-economically important Negombo estuary with special emphasis on the naturally occurring *Crassostrea* oyster species and their distribution. A 100 mx 100 m virtual grid map was superimposed on the estuary using ArcGIS mapping software and 106 grids were randomly selected out of which 54 grids were from the southern half. From each selected grid, one sampling site was selected at the grid center and oysters were counted using a 1 mx1 m quadrat placed on the estuary bed at the selected sampling site. Sediment textures were determined using volume percentages of silt, sand and clay obtained by centrifuged sediment suspensions and applying them on a soil triangle. turbidity, salinity, DO, depth, pH and temperature were recorded. *Crassostrea madrasensis* and *Crassostrea belcheri* were identified via shell morphologies. Based on the southern half sampling points, three sites were oyster positive. Dead oyster sites were frequent along the edges. Live or dead oyster sites contained a higher sand percentage. Sediments from oyster-positive sites were sandy loam or loamy sand. Sediment texture from oyster-absent sites showed diversity, in which the most frequent was, silt loam and the least frequent was sand and loam. Statistical analysis between sediment characteristics and physicochemical parameters in the southern half of the estuary showed that sediment texture was mostly silt loam as the depth increases towards the mid, and oysters prefer edges compared to the middle. Salinities of 1, 3.6 and 3.7 ppt and DO values of 12.13 and 12.49 mg/L fall in the tolerable range. High mortalities were observed in the sites with DO values as low as 0.5 mg/L. Turbidity, salinity, sediment texture, depth and freshwater input are considered important environmental factors that affect the distribution and abundance of oysters in the southern half of the Negombo estuary. This study shows how oysters in the Negombo estuary tend to confine at the edges and therefore recommends optimization of study by the second sampling stage, incorporated with estuary categorization as edge and the middle, and then extrapolating oyster counts for the edge category to obtain correct estimates of the oyster population in the estuary.

*Keyword*s: *Crassostrea* distribution, Habitat preference, Indian backwater oyster, White Scar Oyster

Proceedings of the 27th International Forestry and Environment Symposium 2023 of the Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka

17