
Influence of environmental factors on catch rates of flotsam associated Indian Scad (*Decapterus Russellii*) in the Indian Ocean

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The Indian Scad is an important Carangidae fish species caught in ring net, gillnet, and longline fishery. The fishes of the family Carangidae are one of the important fishery resources in Sri Lankan waters as they constitute nearly 34% of the annual marine fish landings of 32956 metric tons pelagic fish landing during 2019. The present study was undertaken to study the relative influence of oceanographic environment factors on their Catch Per Unit Effort (CPUE) in the Indian Ocean. The relationships were examined for the oceanographic environment factors namely, Sea Surface Chlorophyll (SSC), Mixed Layer Depth, Sea Surface Height (SSH), Salinity, Sea Surface Temperature (SST). In addition, two variables indicating the geographical location (Latitude (Lat), Longitude (Lon)) were used as explanatory variables. The data was obtained from the National Aquatic Resources Research and Development Agency (NARA) for three consecutive years 2018-2020. A Generalized Additive Model (GAM) was fitted for describing the relationships between oceanographic factors and CPUE. The relationships between oceanographic factors and the CPUE are mostly expected as non-linear. Once the shape of the relationships between the CPUE and each explanatory was identified, the appropriate functions were used to parameterize these shapes in the GAM model. The CPUE as a function of oceanographic factors were included in the analysis using GAM. The results show that SSC, Lat, and SST have significant impact on Indian Scad catch rate ($p < 0.05$) at 0.05 level of significance. The results obtained show that the high CPUE of Indian Scad occurred when SSC about 0.2mgm^{-3} . The GAM results show that Lat has influence on Indian Scad catch rates in the region between latitudes 4°N and 6°N . The higher catch rates of Indian Scad were observed from the areas where SST varied between $28.5\text{-}30^\circ\text{C}$.

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