



SEASONAL VARIATION IN FAT CONTENT OF SARDINELLA LONGICEPS BY MATURITY STAGE

A.H.G.S. Udari, M.V.E. Attygalle

Department of Zoology, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

shanika.udari@gmail.com

The Indian oil sardine (*Sardinella longiceps*) is a commercially important small pelagic fish in the Indo-Pacific region. During one year of sampling, 833 fish were collected on monthly basis and were studied for the seasonal variations in maturity stages and fat content of edible tissue. A macroscopic eight-stage maturity scale was used to determine the gonadal maturity state of the fish which were classified as virgin-I, maturing virgin-II, developing- III, developed-IV, Gravid-V, spawning-VI, spent-VII, resting-VIII. All eight stages were observed in the males, whereas one of the stages, “female-spawning VI” was not observed in the present study. The above stages were broadly categorized into four phases as, immature phase (stages I,II), developing phase (stages III,IV), mature phase (stages V,VI), spent phase (stages VII, VIII) for ease of analysis.

Analysis on GSI variations according to different maturity stages of female revealed that females in mature phase recorded GSI values of more than 7 and were recorded only during July. According to the seasonal variation in mean GSI of females, GSI values started increasing gradually from March reached a maximum (above 7) in July and decreased rapidly to September. The rapid decline of GSI from July to September suggests that spawning occurs during this period. Seasonal variations in mean GSI for both males and females showed a similar pattern.

The results suggest that sexual maturity of the males and females are synchronized. The active phase of the sexual cycle extended from April to September for females, and from May to September for males. The period of maturation occurred in July for females and from July to August for males.

The fat content varied considerably with the season in both sexes. High fat values were recorded in fish in the immature phase which extended from October (5%), through December (9%) to February (6%). Fat values gradually decreased in the developing and mature phases through April (5%) to July (2%), suggesting fat mobilization from body reserves to the maturing gonads. Following spawning, in the spent phase fat levels gradually built up again during recovery from September (4%) through December (7%) to February (6%).

Keywords: *Sardinella longiceps*, *Maturity stages*, *GSI*, *Seasonal variations*, *Fat content*