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Study of the abundance and reproductive seasonality of the sea urchin *Stomopneustes variolaris* in Negombo, Sri Lanka

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Around 950 species of echinoids belonging to the class Echinoidea of the phylum Echinodermata are reported worldwide and some are widely exploited for human consumption. This study aims to assess the abundance, distribution and reproductive seasonality of *Stomopneustes variolaris* distributed in the intertidal waters along the Negombo coast, Sri Lanka. Abundance of *S. variolaris* in the intertidal waters (up to 0.75 m) of Morawala and Dungalpitiya areas of Negombo coast was assessed using a systematic transect survey proposed by Skibo *et.al* (2008) before (March 2018) and after (October 2018) the southwest monsoon. A total area of 6600 m^2 was surveyed at Morawala area using 34 transect lines and 266 quadrats while 34 transects and 204 quadrats were used to survey 4950 m^2 at Dungalpitiya area. Six different habitats where sea urchins were highly abundant were identified before the surveys and abundance was reported with respect to each habitat type. *S. variolaris* were collected ($n = \sim 30$) at Morawala area in each month from January to December 2018 using a 0.5 m x 0.5 m quadrat and Gonado Somatic Index (GSI) and size at first sexual maturity were estimated for pool data (male and female). The results revealed that the density of *S. variolaris* at Dungalpitiya area was significantly higher than Morawala area ($p<0.05$, t-test). Although significant variation in average density of sea urchin was not evident among these two sites with respect to monsoon, density of juveniles found to be significantly higher in both areas after the monsoon ($p < 0.05$; t-test). Abundance of sea urchins found to be varied significantly with respect to habitat type ($p<0.05$, Kruskal Wallis) and the highest abundance of adults was reported at crevices and juveniles were more dominant in rocks and algae associated habitats. Length frequency analysis showed that very small individuals belonging to the mid lengths of 0.5 cm and 1.5 cm were dominant in both sites after the monsoon, but individuals belonging to these size classes were absent before the monsoon. Gonado Somatic Index (GSI) ranged from 2.73 ± 1.28 to 11.35 ± 2.13 and they started to spawn in April and continued till June. *S. variolaris* attains size at first sexual maturity at 4.75 cm. As this species is currently exploited to obtain roe for export market, this species-specific baseline information on local scale will be useful to implement effective conservation efforts in order to sustainable utilization of this valuable resource.

Keywords: *Stomopneustes variolaris,* size at first sexual maturity, abundance, Gonado Somatic Index