STATUS OF CORAL REEF ECOSYSTEMS AND THEIR PERSISTENCE WITH RESPECT TO LONG TERM SEA SURFACE TEMPERATURE (SST) ANOMALIES IN THE EASTERN COAST OF SRI LANKA

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ABSTRACT

Coral reefs are dynamic, complex and highly sensitive underwater ecosystem in the world. That provide a greater number of advantages to the wider range of reef organisms. The reef fish and macroinvertebrate surveys had been conducted using the fish belt transect method in selected areas of along the Eastern coast i.e., Pigeon Island, Adukkuparu, Kayankerni and Passikudha. A total of 86 reef fish and 64 coral species have been recorded and they belong to 32 fish and 12 coral families respectively. The dominant coral species belonging to the families Acroporidae, Faviidae, and Muscidae. Adukkuparu had been heavily degraded.

Coral reefs are dynamic and complex marine habitat which are highly sensitive and susceptible to elevated Sea Surface Temperature (SST) than their optimal maximum temperature (27°C). Satellite remote sensing data can be effectively and efficiently used to spatially and temporally analyzing of SST. The 1km Multiscale Ultrahigh Resolution (MUR) Level 4, SST data from NASA from 2005 to 2020 (15 years) were used for this study also. The area of reefs extended less than 10m were demarcated by field surveys followed by polygon layers created by Google Earth Pro (7.3.3). Highly biodiverse and popular shallow reefs (<10m) along the Eastern coast i.e., Pigeon Island, Parrot Rock, Adukkuparu, Kayankerni and Passikudha were selected. The annual average SST from 2005 to 2020 were as 28.95°C, 28.96°C, 28.71°C, 28.71°C, 28.71°C respectively. They will be expected as 29.29°C, 29.29°C, 29.31°C 29.39°C, 29.75°C by 2030 and may vanish the most of remaining live corals. Predominantly extreme SST recorded between 30°C to 31°C in April to May in 2010, 2016 and April to June in 2019 due to El Niño conditions and they were more sevier in Kayankerni and Passikudha reefs. During the past fifteen years period, mean SST value during the South-West Monsoon (May to September) was calculated as 29.22°C and the mean SST value during North-East Monsoon (December to February) was 27.48 °C.