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Faculty of Science

University of Ruhuna

Matara 81000, Sri Lanka

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*Faculty of Science, University of Ruhuna, Matara, Sri Lanka*

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## **Evaluation of coral and non-coral community structure and water quality of the southern coast of Kayankerni Marine Protected Area, Batticaloa, Sri Lanka**

*S.Priyanchanaa\**, *T. Keerthanaram*, *K. Arjunan*

Department of Bio-science, Faculty of Applied Science, University of Vavuniya, Sri Lanka

Kayankerni Marine Protected Area (MPA), located on the south-eastern coast of Sri Lanka, supports ecologically important coastal habitats, including coral reefs and associated benthic communities. This study aimed to quantify coral and non-coral benthic cover and document selected physio-chemical water quality parameters at designated sampling stations within the MPA. Benthic composition along a 1.5 km shoreline was assessed using systematic transects and underwater photographic sampling, and analyzed using Coral Point Count with Excel extensions (*CPCe, version 4.1*). Five major transects for every 300m shoreline (each 50m perpendicular to the seaward) were established. Among these, major transects 3 and 4 were divided further into six systematic sub-transects (each 200m perpendicular to the seaward). A total of 30 point-count stations were evaluated within the six sub-transects. Both the Small Polyp Stony (SPS), *Acropora* and *Montipora* of Scleractinian corals were observed in the study area but, *Montipora* only found outside the transects. Mean coral cover of Genus *Acropora* was estimated at 36.34%, while non-coral components such as coral rubble and algal categories especially *Padina sp.*, comprising a substantial proportion of the non-coral cover for remaining. Water quality parameters, including pH, electrical conductivity, salinity, and turbidity ( $7.95 \pm 0.11$ ,  $50.34 \pm 0.24$  mS,  $4.3 \pm 0.03$  Brix %, and  $0.62 \pm 0.045$  NTU, respectively), were within ranges generally reported for coastal reef environments. Also, the observed *Acropora*, was in highly bleached state which may due to environmental stressors, primarily elevated sea temperatures which needs to be further studied. The findings provide a quantitative baseline of coral cover, benthic composition, and water quality conditions in the Kayankerni MPA, which may support future monitoring and management initiatives aimed at sustaining reef-associated biodiversity.

**Keywords:** *benthic composition; coral cover; coastal resource management; shallow coast; Kayankerni MPA*

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\*Corresponding author: spchanaa28@gmail.com