The relationship between corals and reef fish on the Eastern coast of Sri Lanka

E.P.D.N. Thilakarathne*, N.W. Ramawickrama, S.C. Jayamanne and N.P.P. Liyanage

Department of Animal Science, Faculty of Animal Science and Export Agriculture, Uva Wellassa University, Badulla, Sri Lanka

Coral reefs are diverse ecosystems that provide habitats for various fish communities, therefore, this study focused on investigating the relationship between corals and reef fish in Pigeon Island Reef (PIR), Parrot Rock Reef (PRR), Adukkuparu Reef (AR), Kayankerni Reef (KR), and Passikudah Reef (PR) on the Eastern coast of Sri Lanka in 2020. 30 of 30 m long, Line Intercept Transects (LIT) and Fish Belt Transects (FBT) of each site were used simultaneously to investigate the corals and reef fish respectively. Altogether 101 coral species under 16 families and 272 reef fish species under 35 families were verified**.** The highest (48.81%) and lowest (6.34%) relative abundance of fish species was found respectively at KR and AR. The highest Shannon-Weiner Index (3.68), Simpson's Index (0.96), and Pieolu's evenness (0.55) for reef fish were recorded in PRR while the highest fish richness (181) was recorded in PIR. The lowest fish diversity (0.66) was recorded at PR. Coral species exhibited the highest Shannon-Weiner Index (3.38), Simpson's Index (0.93), and species richness (58) at PRR, but the highest Pieolu's evenness (0.74) at PR. Coral species showed significant ($p < 0.05$) positive correlations with fish species at the KR, AR, and PRR, but there were no significant correlations at PIR and PR. Among all sites, the coral family Dendrophylliidae showed strong positive correlations with fish families of Pomacentridae ($r = 0.855$) and Blenniidae ($r = 0.906$). Coral families Alcyoniidae ($r = 0.797$), Plumulariidae ($r = 0.760$), Mussidae ($r = 0.772$), and Poritidae ($r = 0.643$) had moderate positive correlations with the fish family Lutjanidae. Coral family Acroporidae had also a moderate positive correlation ($r = 0.575$) with fish family Pomacanthidae. Coral family Agaricidae had moderate positive correlations with fish families of Pomacentridae ($r = 0.556$), Haemulidae ($r = 0.544$), Pseudochromidae ($r = 0.579$), and Holocentridae ($r = 0.548$). Anthropogenic and natural threats would have significant impacts on both parties. Therefore, strategies for the conservation and management of both corals and reef fishes are mandatory.

Keywords: coral-fish interaction, live coral cover, reef fish habitats, tropical reefs

*Corresponding author- email: darshana@uwu.ac.lk