

The Study of Relationship between Environmental Parameters and Coral Reefs Distribution: A Case Study at Kish Island

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Abstract

In this study, the relationship between environmental parameters and the distribution of coral reefs in Kish Island (Persian Gulf, Iran) were considered and the most important parameters were identified. Environmental parameters, including depth, water temperature, salinity, turbidity, dissolved oxygen, pH and chlorophyll-a were recorded by CTD at 30 stations during summer 2010. Also, at each station, the sediment grain size was determined by sampling, seabed slope was extracted from the bathymetric map and current velocity was obtained from the wave modeling project in Iran. The differences between environmental factors were analyzed by ANOVA and then identified the most important factors influencing in the distribution of coral reefs by Principal Components Analysis (PCA) test. The result of ANOVA showed that there is a significant variation ($P < 0.05$) in the water depth, dissolved oxygen, and the bottom slope between coral and non-coral regions. According to the PCA result, three independent components (PC) were identified that had 73.157 % of the total variations. Also, the result showed highest correlation between turbidity, depth and chlorophyll-a with PC1, salinity, bottom type and bottom slope with PC2, and water temperature and dissolved oxygen with PC3, respectively. The results from present study showed significant variation between aforementioned parameters with distribution of coral reefs in Kish Island.

Keywords: *Environmental Parameters, Coral Reefs, PCA, Kish Island, Persian Gulf.*
