

Estimation of Vegetation Structure and Investigation of Environmental Issues on Pigeon Island National Park, Trincomalee, Sri Lanka

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This study was carried out to assess the floristic diversity in Pigeon Island National Park (PINP), and to recognize the involved activities of stakeholders for the upcoming threats and issues on PINP. The assessment was conducted from April to September 2019 and twenty-one plots ($16 \times 16 \text{ m}^2$) were randomly laid in PINP to assess the floristic diversity. Moreover, data were collected through questionnaire survey (80 individuals) and investigated PCZRSM project activities followed by outcome evaluation to analyze threats, issues and the mitigation actions shadowed by the stakeholders of PINP. Diversity and evenness of each plot was calculated using Shannon-Wiener diversity index and Pielou's evenness index respectively. General Linear Model (ANOVA) and correlation were employed to analyze the data using MINITAB 16 software. Results indicated that the study site is composed of 72 different floral species and Shannon-Wiener diversity index and evenness ranged from 0.593- 3.429 and 0.568-0.972, respectively. There were significant differences in diversity and evenness among plots ($p < 0.05$). The outcomes demonstrated that the plant species diversity of entire PINP region contemplated was 3.693 and the evenness was 0.751. Such values imply that the PINP comprises rich floristic diversity, and it plays a unique role in coastal vegetation due to its biological and ecological significance. The results of questionnaire survey indicated that 65% of individuals said the actions of stakeholders and PCZRSM Project support for the development of PINP. Further, analyzed outcome evaluation revealed that management measures made for the long-term sustainability of the park by the stakeholders are needed. Moreover, developed Pigeon Island Management Plan with community co-management schedule is needed for this national park. Achievement of the co-management framework through Pigeon Island Management Committee is also vital to coordinate with all other stakeholders for the effective administration measures.

Keywords: Co-management plan, Floral diversity, Pigeon Island, Shannon-Wiener diversity index