

Mapping land-use changing patterns of Muthurajawela Wetland using GIS and remote sensing techniques

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Urban pressure from rising populations and development projects cause changes in land-use types directly and indirectly. As a unique ecosystem, wetlands are vital in maintaining the balance of the natural processes in the surrounding environment. Muthurajawela Wetland is also under pressure with anthropogenic activities like the recently built Colombo-Katunayake expressway. This study was conducted to analyze land-use changes for both spatial and temporal scales under three different scenarios: before, during and after the expressway construction. Two Landsat satellite images were taken into consideration in each scenario to classify the images into marsh, inland water bodies, boggy areas and urban areas. They were classified using Maximum Likelihood Classification method in ArcGIS (10.5.1) software. Accuracy of the most representative classification was assessed using Kappa statistics derived from an error matrix created from Ground Control Points obtained during the field work and high-resolution images from Google Earth Pro. According to the area calculation, the marsh (52%) was the prominent land-use type in the overall time period. Inland water bodies and boggy areas illustrated changes during four time periods without a continuous pattern and urban areas showed an increment of the land-use coverage during the construction period. Marsh areas decreased during the period of construction. It directly caused the land-use type change and indirectly to the environment. Land-use change in a short time period can change normal equilibrium of the environment and have negative effects.

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