

(166)

Land Use and Land Cover Change in Kolonnawa Marsh, Colombo, Sri Lanka

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Abstract

Kolonnawa Marsh (KM) is one of important urban wetland ecosystem in Colombo, Sri Lanka and plays important roles by providing invaluable ecosystem services. KM belongs to the Colombo marsh complex that consists of Heen marsh, Kotte marsh and Parliament lake which surrounded by highly populated and industrialized sites. Owing to the continuous exploitation, reclamation for home states and industries in recent decades, this urban wetland has experienced significant changes. In order to reveal the dynamic changes of the KM at landscape level, the land cover change (LC) since 2000 to 2021 was investigated, using land use maps of 2000 and 2016 from Survey Department of Sri Lanka and Google earth satellite images in 2021. The analysis was conducted using ArcGIS 10.7. The results revealed that in the KM extent has decreased by 34.66 ha from the year 2000 to 30.09 ha in 2016 (reduction percentage 13.2%), while 30.09 ha in 2016 to 28.62 ha in 2021 (reduction percentage 1.47%). Water covered area, marshy area and area covered with woody perennials have been identified as major habitat types in KM. The ratio between water covered areas into marshy land area was reported as 3:6 in 2000 while 1:2 and 1:4 in 2016 and 2021 respectively. Further to that, 18.47 ha of marshy land area has been converted to area dominated with woody perennial in 2021. Therefore, it can be concluded that extent of the KM is decreasing over the study period while transforming to terrestrial ecosystem. Hence, immediate interventions are needed to preserve this valuable freshwater ecosystem.

Keywords: Urban wetland, Remote sensing, Kolonnawa Marsh, Land cover