

ABSTRACT

Often regarded as the largest intact wetland in the Philippines, the Ligawasan Marsh complex is home to different habitats that support rich biodiversity. Particularly, the complex, consisting of three adjoining marshes, is a key biodiversity area known for diverse bird species, among other taxonomic groups, documented by several field surveys in the area. However, field assessments in the complex have been intermittent and limited in spatial and temporal coverage, considering the geopolitical situation in the region. With that, the extent of environmental degradation caused by onsite and offsite threats remains unclear, posing a threat to the fragile ecosystems present in the area amidst the growing population in the region. In this regard, remote sensing techniques provide complementary information to the independent field assessments conducted in the complex. As such, this study aims to evaluate the ecological quality of the Ligawasan Marsh complex from 1998 to 2025 using the Remote Sensing Ecological Index (RSEI). Specifically, the spatiotemporal variabilities of ecological quality within the complex will be analyzed, considering the population growth situation in the region. Landsat satellite imagery will be used to extract the necessary spectral and thermal bands to generate the ecological indices representing dryness, greenness, wetness, and heat. Principal component analysis (PCA) will be employed to determine the corresponding weights of the indices, which will be used to calculate the RSEI. Given the RSEI values, spatiotemporal analyses will be performed to investigate the patterns and trends of ecological quality within the complex over time. The findings of this study will offer comprehensive insights into the ecological status of the complex over broader spatial and temporal scales.

Keywords: Ligawasan Marsh, key biodiversity area, Remote Sensing Ecological Index, Landsat