

Recreation and Environmental Quality of Tropical Wetlands: A Social Media Based Spatial Analysis

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Abstract : Passively crowdsourced data, such as geotagged photographs from social media, represent an opportunistic source of location-based and time-specific behavioral data for ecosystem services analysis. Such data have innovative applications for environmental management and protection, which are replicable at wide spatial scales and in the context of both developed and developing countries. Here we test one such innovation, based on the analysis of the metadata of online geotagged photographs, to investigate the provision of recreational services by the entire network of wetland ecosystems in the state of Kerala, India. We estimate visitation to individual wetlands state-wide and extend, for the first time to a developing region, the emerging application of cultural ecosystem services modelling using data from social media. The impacts of restoration of wetland areal extension and water quality improvement are explored as a means to inform more sustainable management strategies. Findings show that improving water quality to a level suitable for the preservation of wildlife and fisheries could increase annual visits by 350,000, an increase of 13% in wetland visits state-wide, while restoring previously encroached wetland area could result in a 7% increase in annual visits, corresponding to 49,000 visitors, in the Ashtamudi and Vembanad lakes alone, two large coastal Ramsar wetlands in Kerala. We discuss how passive crowdsourcing of social media data has the potential to improve current ecosystem service analyses and environmental management practices also in the context of developing countries.

Keywords : coastal wetlands, cultural ecosystem services, India, passive crowdsourcing, social media, wetland restoration

Conference Title : ICCPMR 2018 : International Conference on Coastal Protection, Management and Restoration

Conference Location : Venice, Italy

Conference Dates : August 13-14, 2018