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Assessing changes of habitat quality for shorebirds in stopover site: A case study in Yellow River Delta, ChinaXiaowei Li¹, Xiyong Hou¹, YangSong¹, Kai Shan², ShuyuZhu², Xiubo Yu² and Xunqiang Mo³¹Chinese Academy of Sciences, China²The Yellow River Delta Nature Reserve Bureau, China³Tianjin Normal University, China

The population of shorebirds in the East Asian-Australasian Flyway (EAAF) is on a severe, long-term decline. One of the reasons is low survival during stopover sites in Yellow Sea Ecoregion due to habitat degradation. In this paper, we focused on the shorebird habitat quality in Yellow River Delta (YRD), which is a representative shorebirds stopover site in the Yellow Sea Ecoregion on EAAF. We adapt the habitat quality model of the InVEST for the assessment of shorebirds habitat quality change in YRD during 2000-2015 and future, considering the effects of anthropogenic threats on shorebirds habitat. In our results, the abundance of 11 species of shorebirds had significant downward trends (70-97% reduction) during 1999-2015. The most prominent land use changes in the YRD during 2000-2015 are the shrinkage of estuarine delta and dense-grass, along with the expansion of city, saltern and mariculture. The area of estuarine delta, unused land, tidal flats and sparse grass reduced 30214, 21792, 6510, 6166 ha, respectively during the 15 years. There was high spatial heterogeneity in modeled habitat quality in the YRD. Tidal flats areas in the nature reserve (part 2) had higher habitat quality than areas in the northwestern (part 1) and eastern (part 4) parts of the study area, where the major mariculture occurs. Mean habitat quality in the part 1 and part 4 was 26% and 44% lower than mean habitat quality in part 2, respectively. The mean habitat quality in part 1 and part 4 decreased 27% and 31% during 2000-2015, respectively. Optimal habitat in YRD declined from 1433 km² in 2000 to 1154 km² in 2015. The habitat quality shows a significant downward trend in the southeast and northeast of YRD during 2015-2020. The results would help decision makers avoid inefficiencies in land use management.

Biography

Xiaowei Li has completed BSc degree from the Ocean University of China in 2005 and then served as a Visiting Doctoral Researcher in Land and Water at CSIRO, Australia (2008-2009) and received her PhD from IGSNRR in 2012. She was a Postdoctoral Researcher at IGSNRR (2012-2014). Her areas of specialization include ecosystem-based management and adaptation and ecosystem monitoring and assessment. More recently, she has been interested in assessment and valuation of coastal ecosystem services, recognizing the trade-offs between migratory bird protection, human well-being and social-economic development. She brings her experience with spatial valuation of coastal wetlands to the study of coastal mudflats and migratory bird habitat in particular.

xwli@yic.ac.cn

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