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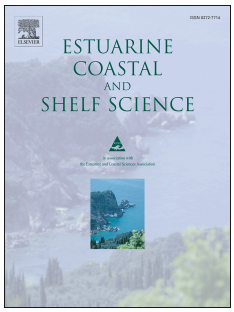

A meta-analysis of coastal wetland ecosystem services in Liaoning Province, China

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A meta-analysis of coastal wetland ecosystem services in Liaoning Province, China[1]

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ABSTRACT: Wetlands are impacted by economic and political initiatives, and their ecosystem services are attracting increasing public attention. It is crucial that management decisions for wetland ecosystem services quantify the economic value of the ecosystem services. In this paper, we aimed to estimate a monetary value for coastal wetland ecosystem services in Liaoning Province, China. We selected 433 observations from 85 previous coastal wetland economic evaluations (mostly in China) including detailed spatial and economic characteristics in each wetland, then used a meta-analysis scale transfer method to calculate the total value of coastal wetland ecosystem services in Liaoning Province. Our results demonstrated that, on average, the ecosystem services provided by seven different coastal wetland types were worth US$40,648 per ha per year, and the total value was $28,990,439,041 in 2013. Shallow marine waters accounted for the largest proportion (83.97%). Variables with a significant positive effect on the ecosystem service values included GDP per capita, population density, distance from the wetland to the city center and the year of evaluation, while wetland size and latitude had negative relationships.

Key Words: Coastal wetland ecosystem services; Meta-Analysis; Scale transfer; Evaluation

1 Introduction

Coastal wetlands are complex ecosystems between the land and ocean, and their structure and internal ecosystem processes result in high productivity and biodiversity (Barbier et al., 2011; Wang et al., 2012; Camacho-Valdez et al., 2013; Zhao et al., 2016). They provide ecosystem services for human society, such as food and raw material production, wave reduction, and hydrological, climate, and gas regulation (Cui, 2002; Groot et al., 2006; Wang and Lv, 2007; Zorrilla et al., 2014). Moreover, some coastal wetlands along bird migratory routes, such as the

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