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河北省38°N生态样带生态系统服务功能时空变化

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摘要：

河北省38°N生态样带是一条由太行山区—山前平原区—低平原区—滨海平原区组成的典型生态样带。论文引进区域修正系数和环境成本系数对前人的生态系统服务功能价值评估模型进行改进,并对该生态样带土地利用变化驱动下的生态系统服务功能时空变化进行了研究。结果表明:1990—2008年,该生态样带的生态系统服务功能价值总量由334.83×10^8元增至360.13×10^8元,但食物生产功能价值持续减少,累计减少了4.67%。太行山区的生态系统服务功能单位面积价值为西高东低,主要由林地和草地提供;山前平原区和低平原区的生态系统服务功能单位面积价值较低且分布均匀,主要由农田提供;滨海平原区的生态系统服务功能单位面积价值东部明显高于中西部,主要由水体和湿地提供。

关键词： 生态系统服务功能价值 生态样带 系数修正 土地利用变化 河北省

Spatial-temporal Variation of Ecosystem Services in the 38° N Ecological Transect of Hebei Province

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Abstract:

This study has improved the traditional evaluation model of ecosystem services value (ESV) by introducing a regional modification coefficient, an environmental cost coefficient, and by assessing the spatial distribution and temporal trends of the ESV which is driven by land use changes. As an empirical application, this improved assessment model was applied to a case study of a typical ecological transect at 38° N of Hebei Province, Northern China. This area consists of Taihang Mountain area, piedmont plain, the low plain and the coastal plain from the west to the east. It was found that in the Taihang Mountain area, the ESV per unit area in the western part of the region was higher than that in the eastern part of the region; forest and grassland were dominant contributors to the total ESV in the region. In the piedmont plain and the low plain regions, the ESV per unit area was very low and had a homogeneous distribution pattern; the highest total ESV contribution in these two regions came from farmland. In the coastal plain, wetlands, water bodies, and farmlands contributed the majority of the total ESV in the region; the ESV per unit area in the eastern part of this region was significantly higher than that found in the center and western ends of the region; the spatial difference here was more significant compared to the other three ecological zones. From 1990 to 2008,the total ESV of the whole study area had increased from 334.83×10^8 yuan to 360.13×10^8 yuan, which had a lower growth rate (0.92 %) from 1990 to 2000 compared to the rate (6.57%) from 2000 to 2008. The ESV of gas regulation, climate regulation, recreation and culture, water regulation, and biodiversity protection increased from

1990 to 2008 while the ESV of food production showed a decreasing trend(totally decreased by 4.67%)due to the reduction of farmland areas. Therefore, in order to maintain a healthy and stable ecosystem, it is proposed that provincial governments should implement ecological construction projects continuously to promote positive ecosystem services and oppose negative ecosystem services.

Keywords: ecosystem services value   ecological transect   coefficient modification land use changes   Hebei Province

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