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论文

基于最小费用距离模型的生态可占用性分析——以广西西江经济带为例

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摘要:

生态可占用性是指从生态学角度出发,生态系统或者生态空间可以被开发利用的程度,是生态系统本身的属性。论文提出生态可占用性的概念和研究目的,并利用最小费用距离模型,分析了广西西江经济带景观单元的可占用性,提出分区方案。研究表明,可占用性低值区、较低值区、中值区、较高值区和高值区分别占区域总面积的12.17%、18.75%、38.55%、28.69%和1.84%。大部分建设用地分布在较高值区内,其余建设用地中,城镇用地主要分布在高值区,而农村居民点和工矿用地则主要分布在中值区。文章认为,研究能够揭示不同类型建设用地的分布规律和区域生态空间布局;虽然受到源的分布、尺度和空间范围等因素的影响,但所得结论对于引导区域开发、构建生态安全格局具有重要指导意义。

关键词: 区域规划 生态可占用性 最小费用距离 西江经济带

Research of Ecological Occupiability Based on Least-cost Distance Model—A Case Study on Xijiang River Economic Belt in Guangxi

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Abstract:

Ecological occupiability refers to the attribute of ecological space when it was occupied by human being. The space is of low occupiability if the whole ecosystem was damaged from the perspective of structure and function for the occupation. The structure, function and its connections with surroundings are of great importance in determining the ecological occupiability. The least cost distance indicated the work or cost from the source to the destination through units with different resistance. The resistance value indicates the suitability of certain landscape units for distribution of ecological space. Adopting Xijiang River Economic Belt (XREB) for a case study, we designed the resistance of different rasters with a size of 90×90 m^2 based on land use of XREB and built resistance surface. Using nature reserve as sources, we carried out calculation on minimum cumulative resistance from sources to destination through cost-distance model of ArcGIS. The ecological occupiability of landscape unit and zoning of XREB were calculated and established accordingly. Results indicated that the low-, lower-middle-, middle-, higher-middle-, and high-value zones of ecological occupiability accounted for 12.17%, 18.75%, 38.55%, 28.69% and 1.84% of the whole study area, respectively. Moreover, most of the construction land distributed at higher-middle-value zone, accounted for 55.29%, 58.73% and 63.86% of the urban & town land, rural land and industrial & mining land. The distributions of the rest parts of the three types of the construction land were different. Most of the rest of the urban & town land was located in high-value zones; while most of the rest of the rural and industrial & mining lands was located in middle-value zones. Minute quantity of the rural and industrial & mining lands was located in nature reserve. The high-value zone has been already developed intensively, and the optimization of spatial structure and function should be carried out in the future. The higher-middle value zone should be the focus for future urbanization and industrialization, while the middle-value zone could be developed but to a within certain intensity. Ecological construction should be the main task of the lower-middle-and low-value zones. We concluded that the analysis of ecological occupiability based on the least-cost distance model could explain the distribution of various types of construction lands and spatial pattern of ecological space. Although the analysis and corresponding zoning were affected by the spatial distribution of source, extent and scale, it is of great significance for guiding the regional development and establishment of ecological security pattern.

Keywords: regional planning ecological occupiability least-cost distance model XREB

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