

## 黄河中游砒砂岩地区长川流域土地利用/覆盖安全格局初探

Preliminary discussion on ecological security pattern of land use and land cover in the soft rock area of Middle Reaches of the Yellow River: a case study of Changchuan watershed, Inner Mongolia, China

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英文关键词: the soft rock area of Middle Yellow River; Changchuan watershed; ecological security; land use and land cover; multi-objective programming

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中文摘要:

生态安全是一个区域的可持续发展不致因生存空间和生态环境遭受破坏而受到威胁的状态。在诸多影响区域生态安全的因素与过程中, 土地利用/覆盖及其格局的变化是影响区域生态安全最重要的方面。在黄河中游砒砂岩地区, 生态环境较为敏感, 以往由于土地的不合理利用, 造成许多流域的植被覆盖下降、土壤侵蚀加剧、水分亏缺增大、生物多样性丧失等, 严重影响到整个区域的生态安全。选择黄河中游砒砂岩地区的一个典型流域——长川流域作为研究对象, 对研究区存在的实际生态问题, 在综合评价流域生态安全的基础上, 借助景观生态学理论, 运用多目标规划方法和GIS手段, 得出优化后的长川流域土地利用结构: 乔木林地、灌木林地、草地和耕地所占比例分别应为3.7%、38.6%、49.4%和6.3%。在调整后的土地利用安全格局下, 流域平均生态安全指数下降至0.85, 整体已处于生态较安全等级。

英文摘要:

Ecological security of Changchuan watershed in the soft rock area of Middle Yellow River was synthetically evaluated and multi-objective programming of land use was forwarded by using RS and GIS techniques along with systems analysis methods. Moreover, according to the landscape ecology theory, digitalized optimum spatial patterns and rational proportion of land use were obtained through computer-aided adjustment with GIS software to get visible images of land use pattern that guarantees ecological security at Changchuan watershed. The results of comprehensive evaluation on ecological security of land use at Changchuan watershed indicate that measures of soil erosion control, ecological and environmental construction certainly improve the situation of ecological security of this region during past decades, but the current situation of ecological security is not satisfactory. The results of multi-objective programming of land use pattern based on the ecological security evaluation indicate the optimum land use structure should be 3.7% of woodland, 38.6% of brushwood, 49.4% of grassland and 6.3% of crop land. Their spatial distributions were also patterned in light of requirement of ecological security. The average ESI in this region is leveled at relative secure, figuring at around 0.85.

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