

An Integrated Ecosystem Service-based Approach for the Sustainable Management of Forested Islands in South Korea

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Abstract : Implementing sustainable island forest management policies requires categorizing islands into groups based on key indicators and establishing a consistent management system. Building on the results of previous studies, a typology of forested islands was established: Type 1 - connected islands with high natural vegetation cover; Type 2 - connected islands with moderate natural vegetation cover; Type 3 - connected islands with low natural vegetation cover; Type 4 - unconnected islands with high natural vegetation cover; Type 5 - unconnected islands with moderate natural vegetation cover; and Type 6 - unconnected islands with low natural vegetation cover. An AHP analysis was conducted with island forest experts to identify priority ecosystem services (ESs) for the sustainable management of each island type. In connected islands, provisioning services (natural resources, natural medicines, etc.) assumed greater importance than regulating (erosion control) and supporting services (genetic diversity). In unconnected islands, particularly those with a small proportion of natural vegetation, regulating services (erosion control) requires greater emphasis in management. Considering that Type 3 islands require urgent management as connectivity to the mainland makes natural vegetation-sparse island forest ecosystems vulnerable to anthropogenic activities, the land-use scoring method was carried out on Jin-do, a Type 3 forested island. Comparisons between AHP-derived expert demand for key island ESs and the spatial distribution of ES supply potential revealed mismatches between the supply and demand of erosion control, freshwater supply, and habitat provision. The framework developed in this study can help guide decisions and indicate where interventions should be focused to achieve sustainable island management.

Keywords : ecosystem service, sustainable management, forested islands, Analytic hierarchy process

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