

## Prioritizing Ecosystem Services for South-Central Regions of Chile: An Expert-Based Spatial Multi-Criteria Approach

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**Abstract :** The ecosystem services (ES) concept has contributed to draw attention to the benefits ecosystems generate for people and how necessary natural resources are for human well-being. The identification and prioritization of the ES constitute the first steps to undertake conservation and valuation initiatives on behalf of people. Additionally, mapping the supply of ES is a powerful tool to support decision making regarding the sustainable management of landscape and natural resources. In this context, the present study aimed to identify, prioritize and map the primary ES in Biobio and Nuble regions using a methodology that combines expert judgment, multi-attribute evaluation methods, and Geographic Information Systems (GIS). Firstly, scores about the capacity of different land use/cover types to supply ES and the importance attributed to each service were obtained from experts and stakeholders via an online survey. Afterward, the ES assessment matrix was constructed, and the weighted linear combination (WLC) method was applied to mapping the overall capacity of supply of provisioning, regulating and maintenance, and cultural services. Finally, prioritized ES for the study area were selected and mapped. The results suggest that native forests, wetlands, and water bodies have the highest supply capacities of ES, while urban and industrial areas and bare areas have a very low supply of services. On the other hand, fourteen out of twenty-nine services were selected by experts and stakeholders as the most relevant for the regions. The spatial distribution of ES has shown that the Andean Range and part of the Coastal Range have the highest ES supply capacity, mostly regulation and maintenance and cultural ES. This performance is related to the presence of native forests, water bodies, and wetlands in those zones. This study provides specific information about the most relevant ES in Biobio and Nuble according to the opinion of local stakeholders and the spatial identification of areas with a high capacity to provide services. These findings could be helpful as a reference by planners and policymakers to develop landscape management strategies oriented to preserve the supply of services in both regions.

**Keywords :** ecosystem services, expert judgment, mapping, multi-criteria decision making, prioritization

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