



Valuing biodiversity through multi-criteria analysis

Social and economic aspects should be considered alongside environmental issues when valuing benefits provided by ecosystems and biodiversity. A recently published study outlines the use of multi-criteria assessment methods for valuation that simultaneously take into account a wide variety of economic, social and environmental decision criteria.

Ecosystems are very complex and comparing the value of different ecosystems can be difficult. For example, when using a mitigation banking system to manage ecosystems in a sustainable manner, ecosystems must be valued in order to decide whether to protect important ecosystems, restore some areas, or allow certain areas to be developed, in which case areas of equal value must be found to offset any areas released for development.

This study explored how to identify the criteria used in assessing ecosystems and compare stakeholder perspectives of the assessment. Multi-criteria analysis is a useful tool to compare ecosystems in conservation planning that captures the many economic, social and environmental perspectives associated with ecosystem management.

Assessing biodiversity using a multi-criteria framework involved:

- 1) Identifying the decision criteria through stakeholder analysis. This encompasses:
 - identifying all significant stakeholders in the area
 - developing a questionnaire for the stakeholders
 - choosing the relevant environmental, social and economic criteria identified by the stakeholders
 - asking stakeholders to grade the importance of the identified criteria for the region
- 2) Identifying the different territories to be compared
- 3) Integrating all relevant decision criteria. Priorities identified by the stakeholders can be integrated with ecological data, such as species richness and number of tourists, for the region.

Using all the relevant criteria, different sites in the region can then be compared. For example, one multi-criteria assessment method allows sites to be placed in different categories, enabling each site to be ranked from 'extremely valuable' to 'not at all valuable'.

Identifying criteria for a multi-criteria assessment was illustrated by a case study of the Nature Reserve of Crau, which is part of an extensive network of protected areas in the south of France. Decision makers have to determine which of 60 or 70 environmentally important sites in or next to the reserve should be part of the reserve, and which areas could be released for development, such as for a gas pipeline scheme.

All key stakeholders with an interest in the Nature Reserve of Crau, including scientists, government officials, managers, farmers and financiers, participated in the survey. From these consultations, 35 (14 environmental, 12 social and nine economic) decision criteria were identified. For example, ecological criteria included 'grass cover', economic criteria included the 'benefit of tourism' and the 'production of lamb meat', and social criteria included 'access to the reserve'. Significantly, no single criterion was commonly identified by all the stakeholders and only a few criteria were shared by all the stakeholders, potentially creating difficulties for the acceptance of any outcome.

In addition to using multi-criteria assessment as part of sustainable governance of the reserve, the study recommends other actions, including: making sure there is accurate and relevant information on which to make decisions, managing potential conflict between stakeholders and developing fair rules based on stakeholder consultations.

Source: Shmelev, S.E. (2010) Multi-criteria Assessment of Ecosystems and Biodiversity: New Dimensions and Stakeholders in the South of France. Queen Elizabeth House, University of Oxford. *QEH Working Paper Series – QEHWPS181* (33 pages). The paper can be accessed at: www.geh.ox.ac.uk/dissemination/wpDetail?or_id=339

Contact: stanislav.shmelev@googlemail

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