

## Opportunities and limits of the ecosystem services framework in capturing the cultural dimension of sustainable regional and landscape development in protected areas

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### Abstract

With regard to protected areas, the concepts of ecosystem services and the cultural dimension of sustainable development (SD) are increasingly under debate. This contribution analyses the role of cultural aspects within the ecosystem services framework using the Millennium Ecosystem Assessment classification as a reference. The limits of the ecosystem services framework in capturing the cultural dimension are highlighted. Potential ways of strengthening the position of cultural values within this framework are discussed.

### Keywords

Ecosystem services, sustainable regional development, cultural services, cultural values, nonmaterial benefits, cultural landscape, cultural landscape research, protected areas, Millennium Ecosystem Assessment

### Introduction

In sustainable regional and landscape development (SRLD) research, cultural aspects are rarely or only selectively and unsystematically analysed. Thus far, the cultural dimension has not been discussed in depth. However, cultural aspects are of great practical relevance in SRLD, particularly in protected areas, where the biodiversity now found is largely due to diverse patterns of use that have been adapted to environmental conditions, particularly in agriculture and forestry. Past human activity has markedly contributed to the diversity which we today consider worth protecting. Culture drives ecosystem change through both traditional and new uses in order to maintain multi-functionality. Cultural factors, such as a sense of place and belonging and the desire to protect the region in which one lives and finds valuable and aesthetically pleasing, are common incentives that have led to the establishment of protected areas (DANIEL et al. 2012). According to RODEWALD et al (2003), it is only because of their particular aesthetic and socio-cultural qualities that we perceive of and name our surroundings as 'landscape'.

There are various discourses that deal with cultural aspects and their significance in the context of SRLD. Since the ecosystem services framework is important in order to know, evaluate and communicate the manifold services which ecosystems deliver, this contribution analyses its opportunities and limits in capturing the cultural dimension of SRLD in protected areas.

The ultimate aim of this contribution is to reflect on the cultural dimension of the millennium ecosystem services framework. The significance of cultural aspects is analysed and reasons for their relevance within this framework are discussed. Furthermore, this contribution aims to increase the relevance of the cultural dimension, thereby promoting SRLD and reinforcing arguments for preserving diversity in protected areas.

This contribution focuses on the following questions:

- What are the aims of ecosystem services frameworks? How are ecosystem services defined? What is the millennium ecosystem assessment and which cultural aspects are considered in its classification of ecosystem services?
- To what extent does research on ecosystem services consider cultural aspects and what are the reasons for this?
- What are the potential advantages of increasing the emphasis on cultural services within the ecosystem services framework?
- What are the opportunities and limits of the ecosystem services framework in capturing the cultural dimension?
- What can be done to increase the significance of cultural services within the ecosystem services framework?

Cultural aspects are inherent facets of the development of protected areas. Culture shapes the perception of a protected area, both materially and tangibly as well as nonmaterially and intangibly. Lived culture shapes the way of life in protected areas through factors such as human desires, aesthetic perceptions and values, as well as ecosystem use and social structures, through cultural tangibles (e.g. buildings) and intangible heritage (e.g. use). The development of ecosystems is influenced by cultural factors that are subject to change and interpretation over time. As previously mentioned, understanding the establishment of protected areas cannot be separated from

cultural aspects. Human ideas, perceptions, values and goals are always the starting point for initiating the protection of an area, which is then undertaken through personal engagement and motivating public support (DANIEL et al. 2012, DE GROOT 1992, FROHN 2012). Aesthetic arguments in particular are often of central importance here.

## Methods

The research methodology applied included systematic literature searches in data banks and libraries. The data thus gathered was evaluated through systematic analysis of the chosen discourses on the ecosystem services framework according to defined criteria.

## Results

Ecosystem services frameworks were expanded upon to systematically identify and describe the state of ecosystems, the services and benefits they deliver, and to reveal and communicate their connection to and relevance for human wellbeing. It is hoped that the results of these findings will increase motivation to prevent further degradation and and promote further protection and preservation.

Ecosystem services can be defined as the services and benefits that humans receive from ecosystems and which contribute to wellbeing. This implies that ecosystem services do not exist on their own, but that humans must first acknowledge their benefits and value. Therefore, the concept is anthropogenic (LOFT & LUX 2010).

There are different classification systems that capture the many functions, goods and services delivered by ecosystems (e.g. MA 2005, DE GROOT et al. 2002). We refer to the Millennium Ecosystem Assessment classification system (MA 2005), which is the best known in the field of research into ecosystem services and their contributions to human wellbeing (LOFT & LUX 2010). The Millennium Ecosystem Assessment has significantly contributed towards promoting concepts focusing on the benefits of ecosystems for humans (KIENAST 2010). Since the publication of the Millennium Ecosystem Assessment, the number of publications on ecosystem services has increased considerably (OTEROS-ROZAS et al. 2012, FISHER et al. 2009). In the Millennium Ecosystem Assessment, ecosystem services are defined as the benefits obtained from ecosystems that contribute to human wellbeing and subdivided into four categories. These include:

- provisioning services (e.g. food)
- regulating services (e.g. regulation of drought)
- supporting services (e.g. climate regulation)
- cultural services (e.g. aesthetic values, sense of place).

Conceptual frameworks focusing on the functions ecosystems deliver, which capture cultural services in the Millennium Ecosystem Assessment as information functions (e.g. DE GROOT et al. 2002) are not discussed here.

Cultural services are “nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences” (MA 2005b: 40). These include cultural diversity, spiritual and religious values, knowledge systems, educational values, inspiration, aesthetic values, social relations, sense of place, cultural heritage values, recreation and ecotourism (Ebd.). Many of these aspects overlap. This is also the case for cultural aspects with services from other categories, which underlines the importance of cultural aspects (DANIEL et al. 2012). Cultural aspects and their perception and value depend to a great extent on individual experience (e.g. the appreciation of scenery) and cannot be measured without integrating individual points of view (DE GROOT 1992). The interpretation and attribution of value to the perception of landscape is shaped by individual notions of culture, which have been learned and experienced (GRÉT-REGAMEY et al. 2012).

Although amongst other ecosystem services cultural aspects are an important part of the ecosystem services framework, research activities are very different. An analysis of recent literature on ecosystem services reveals that there is much concentration on provisioning and regulating services (KIENAST et al. 2009). The number of publications focusing on the cultural dimension in the field of ecosystem research is much smaller (SCHAICH et al. 2010).

One reason for the intensive examination of provisioning und regulation services is that databases are extensive and appropriate valuation methods easy to achieve (BOLLIGER & KIENAST 2010). According to WILLEMEN et al. (2008), the situation regarding cultural services has neither sufficient, appropriate data nor valuation methods. SCHAICH et al. (2010) refer to a 2009 publication (REY BENAYAS et al. 2009) that lists the number of indicators for biodiversity and ecosystem services used in worldwide ecological restoration projects. This publication reveals that not a single study had explicitly measured cultural services. Particularly those cultural services that are closely linked to wellbeing and quality of life are only roughly defined and as yet neither quantifiable nor assessable (PLIENINGER et al. 2010). Another problem lies with the aesthetic aspect, which is of relevance in the cultural dimension but cannot be directly measured (RODEWALD et al. 2003).

A central problem regarding the appropriate integration of cultural aspects in the ecosystem services framework is that they are often judged as intangible, subjective, difficult to quantify, and therefore difficult to translate into monetary value (DANIEL et al. 2012, SCHAICH et al. 2010), which is an important aim of the ecosystem services framework (COSTANZA et al. 1997).

Tradeoffs and synergies are central motivations for better integrating cultural services into the ecosystem services framework and strengthening their role. Because ecosystems support many services, tradeoffs and synergies can

be a natural result. An example of a tradeoff is a recreational service such as mountainbiking, which can damage soil structure. Synergies can emerge if, for example, places of spiritual significance arouse motivation to support protection initiatives.

As long as knowledge about these services and their potential effects does not exist, tradeoffs and synergies cannot be included in planning and management processes and decisions remain arbitrary (DANIEL et al. 2012). DE GROOT (2006) maintains that “economists, ecologists and social scientists need to collaborate more to obtain better insights in the tradeoffs involved in land use change decisions”. As cultural aspects are associated with more than cultural services, information about them should be expanded.

While the ecosystem services framework is useful for quantifying and evaluating many of the listed services, cultural services have been neglected (SCHAICH et al. 2010), particularly in evaluation and planning, as GRUNEWALD & NAUMANN (2012) illustrate with their example of a case study on the assessment of ecosystem services in the Jahna river basin in Saxony, Germany. If the relevance of the cultural dimension within the ecosystem services framework is to be increased, adequate means must be developed.

## Discussion

There is fundamental criticism regarding including cultural services in the ecosystem services framework: KIRCHHOFF (2012) appraises the notion of ‘service’ as being inadequate in combination with ‘culture’ because many cultural values cannot be appropriately described. Kirchhoff also criticizes the integration of cultural values into the ecosystem services framework as such. While instrumental values adhere to ecosystems, cultural values of nature adhere to aesthetic-symbolic objects. His example is of the shimmering surface of a lake that invites contemplation and is not an ecological object but an entity with symbolic meaning and therefore a product of a specific way of seeing. Thus, fundamental cultural values of the environment refer to the unique character of the area, which cannot be captured within the parameters of descriptions of ecosystems (Ebd.). This point of view contrasts with others claiming that the provision of cultural services such as aesthetic values and sense of place is based on the performance of ecological structures, processes and functions (MÜLLER et al. 2010). These conflicting positions reveal how much assessments regarding the value of integrating cultural aspects into the ecosystem services framework differ and that much work still has to be done to clarify the role and assessment of cultural aspects within this framework.

## Conclusion

An important limit of the ecosystem services framework with regard to the cultural dimension is that, compared to other services, it is neglected and so appears to be only of secondary consequence. One possibility of enhancing the relevance of the cultural dimension within the ecosystem services framework lies in integrating cultural aspects into the monetary system. We are not convinced about this possibility because not all services, especially many cultural aspects, can be assigned monetary value (GRUNEWALD & BASTIAN 2010). We propose approaching the question from another angle: DANIEL et al. (2012) state that cultural ecosystem services are not yet adequately integrated into the ecosystem services framework but that, according to social and behavioural sciences findings, there is potential for defining cultural services in terms of socio-ecological models to enable a better fit into the ecosystem services framework (Ebd.).

From our point of view, a promising effort appears to be integrating methods and results from cultural landscape research (SCHAICH et al. 2010) and increasing application of cultural aspects on cultural landscapes with their respective manifold history of use and settlement (PLIENINGER et al. 2010). Databases could thereby be improved whilst facilitating their application to protected areas. Protected areas could thereby contribute to improving databases of cultural services whilst benefiting from a better-developed ecosystem services framework that is enriched by cultural landscape research. This could assist management of protected areas to pay more attention to cultural aspects and to better integrate them into management processes, thereby better fulfilling their task of contributing to SRLD.

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