EUROPEAN JOURNAL OF ECOLOGY

EJE 2015, 1(2): 39-44, doi: 10.1515/eje-2015-0015

Does using the ecosystem services concept provoke the risk of assigning virtual prices instead of real values to nature? Some reflections on the benefit of ecosystem services for planning and policy consulting.

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ABSTRACT

This forum article intends to discuss the question if using the ecosystem services concept in planning, management and decision-making can impair nature conservation objectives by hiding the intrinsic values of nature through overemphasizing monetary aspects in environmental assessments. The conclusion is drawn that using ecosystem services in a holistic social-ecological system understanding would help to overcome justified criticisms of a too narrow perspective on the real values of nature.
The article is referring to and reflecting some thoughts and criticism of "Concerns about the use of ES as a tool for nature conservation: From misleading concepts to providing a price for nature, but not a value" by Morelli and Moller (2015).

KEYWORDS

Ecosystem services – planning and policy consulting – IPBES – MAES – intrinsic values of nature

INTRODUCTION

In the letter 'Concerns about the use of ecosystem services as a tool for nature conservation: From misleading concepts to providing a price for nature, but not a value' by Morelli and Moller (2015), the authors critically discuss – from a nature conservation perspective – aspects related to ecosystem services as a means for supporting decisions and assessments in a multi-actor environment. Their perception that recent publications addressing critical issues are written from a merely socioeconomic and anthropocentric point of view (cf. Barnaud & Antona 2014; Schröter et al. 2014; Schröter & van Oudenhoven 2016) is not fully justified. These papers pick-up most prominent arguments for what can be improved to make the concept of ecosystem services operable in planning, decision-making and policy consulting contexts, rather than declassifying nature to 'another commodity'. Other authors (e.g. Margules & Pressey 2000; Weikard 2002; Feld et al. 2010) highlight the importance of the ecosystem service concept for strategic nature conservation planning and particularly its potential of an integrative view on ecosystems and landscapes. In the light of the ongoing implementation of the European Biodiversity Convention, Target 2, Action 5 (Maes et al. 2012, 2013), the criticism that ecosystem services are hiding the view on the intrinsic values of nature becomes even less comprehensible. The primary objective of Action 5 consists in mapping and assessing the state of ecosystems and includes their services to inform how relevant ecosystem degradation and biodiversity losses are for society.

This forum article intends to discuss the question if using the ecosystem services concept in planning, management and decision-making can impair nature conservation objectives by hiding the intrinsic values of nature through overemphasising monetary aspects in environmental assessments. The conclusion is drawn that using ecosystem services in a holistic social-ecological system understanding would help

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to overcome justified criticisms of a too narrow perspective on the real values of nature.

It is correct, that a monetary value cannot be assigned in any case to nature and that using exclusively monetary values would bear the risk to ignore intrinsic values of nature and the multifaceted value perceptions of different actors (Swift et al. 2004; Redford & Adams 2009; Silvertown 2015). However, the authors´ statement that the ES concept aims at 'pricing' of nature is too simplistic: economic methods per se require to consider the ecological, economic and political context in which a comprehensive (e)valuation can be done (Ring et al. 2010) and must not necessarily crowd-out people´s motivations in being engaged in nature conservation (Rode et al. 2014). Furthermore, 'economic' and multi-criteria assessments include a broad range of approaches and measures for identifying 'values' (Burkhard et al. 2012; Koschke et al. 2012; Kandziora et al. 2013; Häyhä & Franzese 2014) that do not solely include monetary values.

Intangible and noneconomic values can be respected in ecosystem services assessments (Chan et al. 2012). Already Farber *et al*. (2002) highlight the extended understanding of values and value systems referring to 'intrapsychic constellations of norms and precepts that guide human judgment and action' in the context of ecosystem services valuation. Value systems addressing the plurality of values, including local and indigenous aspects can be used to put the assessment of ecosystems, their status and services into specific socia-ecological context and thus support communicating the need for management adaptation or conservation measures for the sake of biodiversity (Duraiappah et al. 2013; Martin-Lopez et al. 2014). Particularly regulating and cultural services can only be assessed in a place-based, sociocultural context (Raymond et al. 2009) having the potential to support bottom-up governance of nature such as community-based conservation (Berkes et al. 2007). In this context, ecosystem services are considered as a valuable asset in developing sustainable societies, making people aware of and supporting them in choosing their individually valued lifestyles through integration of the environmental dimension in well-being assessments (Polishchuck & Rauschmayer 2012).

Conceptual frameworks as provided in the 'Common International Classification of Ecosystem Services' (Potschin & Haines-Young 2011) or by the Intergovernmental Panel for Biodiversity and Ecosystem Services (Diaz et al. 2015a, b) demonstrate that the implementation of ecosystem services for policy consulting respects nature as an intrinsic value. Subsequent to the assessment of ecosystem services, monetary valuation can be used as an instrument to communicate the relevance of losses in biodiversity and the degradation of ecosystems to policy makers. Ecosystem services support to compare economic targets that are key drivers for societal development with costs of human interventions in intact natural systems (Spash 2007). As such, the use of monetary values can provide convincing arguments to renounce on critical interventions that destroy nature and disturb ecological processes even though there are critical voices warning that monetisation and markets might not necessarily warrant improved protection of biodiversity (Silvertown 2015) (see most recent concerns about the increased use of the ecosystem services concept in research programmes raised by: Admiraal et al. 2016). Ecosystem services can also be used to explore to which extent the use and management of ecosystems is still sustainable and does not endanger ecological integrity (Carpenter et al. 2009).

It is not generally true that using ecosystem services would lead to the misunderstanding that ecosystem degradation and biodiversity losses can be purchased and that payments for ecosystem services would generally lead to a loss in biodiversity or spatial inequities (Tacconi 2012). Calculation of biotope values as basis for compensation measures in environmentally relevant projects whose impact assessment is legally framed (Directive 2014/52/EU) practices already the approach to assign monetary values to ecosystems and pay for their destruction through ascertainable measures (e.g. Villaroya & Puig 2010). Such measures can include investments in forests to improve their structure and ecological value (Leefken & Möhring 2008), require the re-establishment of the same biotope with the same size elsewhere or of a 'more valuable' biotope that can then also be smaller than the damaged one (Rundcrantz & Skärbäk 2003). The concept of ecosystem services embedded in the principles of landscape ecology could greatly help to improve such compensation schemes that usually ignore the functional connectivity of ecosystems and thus do not really counterbalance ecological degradation and biodiversity losses (Tischew et al. 2010). Furthermore, payments for ecosystem services could help to balance conflicts between private economic considerations of land owners such as maximum harvest and revenue (e.g. Ficko & Boncina 2014) and nature conservation objectives, which might be endangered through the invasive potential of economically highly interesting, fast growing, but non-native tree species (Dickie et al. 2014).

Ecosystem services as such require a demand or a consumption, otherwise they are not a 'service', but a 'function' that exists without being related to a concrete benefit, but does as such not minder the value of an ecosystem or a landscape or a natural resource (de Groot et al. 2002). The term 'service' that is criticised by the authors, implies instead that also 'non-resource-based' benefits exist that can be simply enjoying nature (as a cultural service) or ecological processes that add to storing carbon in vegetation and soils as a contribution to global climate regulation (e.g. Wallace 2007). Consequently, the use of ecosystem services as a decision criterion requires even more the conservation and/or sustainable management of nature than a purely resource-oriented view. Losses in regulative capacities that increase the vulnerability against disturbances and accelerate the impact of extreme events cannot be assessed from a resource-oriented point of view. Flooding events, for instance, result from processes at the ecosystem and the landscape scale, so that the contribution of each single ecosystem cannot be evaluated as simple and clear as the authors suggest being the benefit of a natural resource-oriented point of view (e.g. Bommarco et al. 2013). Particularly, the IPBES framework (Diaz 2015a, b) includes already aspects of considering natural processes and resources separately from processing chains and human assets. The return to a 'nature resource' oriented view as suggested by the authors would be much more a step backwards with a much less comprehensive and holistic view on human-nature interactions. It would compromise the particular value of biogeophysical structures and their relevance for processes at different scales, even if it could be argued that nature resources in contrast to services are not directed and thus might touch more a common interest rather than a specific or individual one. This, however, lies in the nature of a service (see CICES cascade, Potschin & Haines-Young 2011; Spangenberg et al. 2014) that can – in a classic understanding – only be produced in the interaction between nature and human beings, while without this interaction, it would be a function that, nevertheless, holds an intrinsic value. Nowadays, services provided by artificial land cover and infrastructure so called 'non-services' (Cumming et al. 2014) need to be equally considered in their landscape context and emphasise even more, that a purely nature resource-oriented view would be too limited. To take better into account the ambivalent nature of services, it would be even recommendable to replace the term 'ecosystem services' by 'social-ecological system services' that express better that services are already a translation of nature´s intrinsic values towards human perception and understanding of nature (Huntsinger & Oviedo 2014).

Figure 1 illustrates by few examples how biogeophysical and artificial structures and eco-hydrological processes on the one side, and benefits and values on the other are connected through the CICES cascade (Potschin & Haines-Young 2011, modified). Furthermore, the figure intends to show how social-ecological system services are related to decision making by explaining a status or expressing an impact that subsequently leads to management, policy or planning responses.

Conflicts in the equal access to services through different potential beneficiaries are subject to studies, for example, in research on how to govern best ecosystems and their services (Gomez-Baggethun et al. 2013; Dickie et al. 2014). However, the finding of Morelli and Moller (2015) that such conflicts should be much more actively considered to avoid addressing theoretical values of nature while ignoring their availability is correct and a valuable suggestion for best standards in ecosystem services-based assessments.

Finally, we should not forget that biodiversity as subject of conservation aims implies understanding the role of disturbances – natural and human ones included. Many ecosystems in cultural landscapes that are considered to be particularly valuable due to their high or specific species diversity such as forest meadows and coppices, heathlands, or extensively used pastures in the mountains were developed in a co-evolutionary approach between human interventions and natural processes. They provide habitats to meanwhile rare species (e.g. Barbati & Marchetti 2005; Bergmeier et al. 2010; Garcia et al. 2013). In their case, an intended human benefit created through a particular management form (grazing, short-rotation) resulted in an unintended, but welcome benefit for rare species and led often to the decision to declare such areas

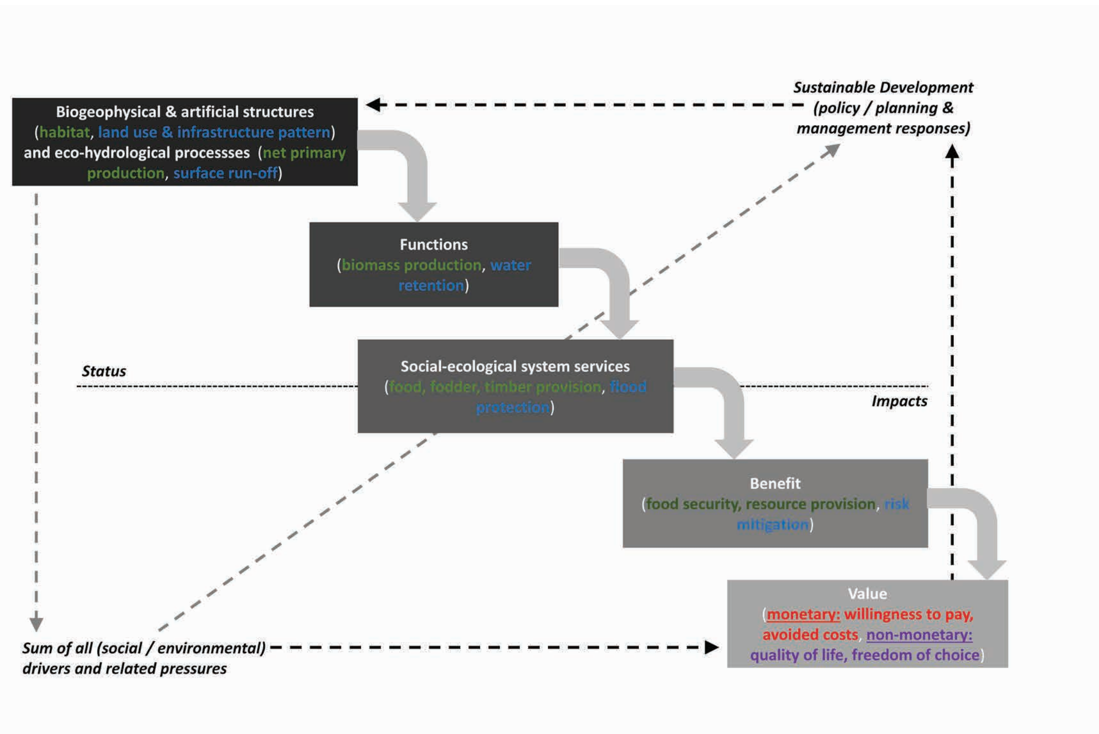

Figure 1: The role of ecosystem services in the CICES cascade (adapted from Haines-Young & Potschin 2011) and in deriving policy, planning and management responses according to the DPSIR framework (Smeet & Weterings 1999).

as nature conservation hot spots. On the other hand, ecosystem processes and functions might provoke both, desirable and detrimental effects, so-called disservices. For instance, economically highly important plant groups such as conifers or many cereals rely on the wind dispersal of their pollen (anemochory), which creates a welcome service (pollination) for successful farming or forestry. On the other hand, this completely natural process might impede many persons that suffer from allergies (von Döhren & Haase 2015).

Ecosystem services are certainly not the one-and-only concept to communicate why nature conservation, restoration and concerns about biodiversity losses must be respected in all policy sectors and concepts for sustainable development (Luck et al. 2012). However, they urge us to look for hidden trade-offs from a comprehensive and holistic perspective that keeps open what kind of values we prefer to use (de Groot et al. 2010). Consequently, it is not the application of ES in planning, management and policy consulting that should provoke criticism, but how they are implemented. A too limited selection of ecosystem services in consulting policies and planning that considers preferably those services that are easy to be assessed (data availability) or are considered to be most important from today's point of view (intergenerational equity) would invalidate the holistic approach of ecosystem services.

What we really need to bring forward the usability and relevance of the concept and operationalise its mainstreaming in planning and policy consulting are, therefore, agreements on best practices in assessments (Cowling et al. 2008). These should ensure that all aspects of nature and its values – intrinsic ones and those with directly measurable benefits for human well-being – are equally and sufficiently considered (Wilson et al. 2014).

Acknowledgements
The critical paper of Morelli and Anders motivated me to reflect a bit the added value of ecosystem services in planning and policy consulting. I am highly grateful to Federico Morelli for the exchange of thoughts, ideas and papers in the development of this paper. And I wish to see it as a further discussion input to push the development, but also implementation of ecosystem services as a means to help understanding the real value of nature and support decisions towards a sustainable co-development of nature and humans.

I wish also to thank warmly the editors of the European Journal of Ecology to suggest discussing more in detail the ideas and motivations of the ecosystem services concept. Finally, I am highly grateful to the two anonymous reviewers for their inspiring and thoughtful comments and recommendations.

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