

Ecosystem service card game

Introduction

The ecosystem services card game is a method developed to capture the sociocultural values related to ecosystem services. This method specifically focuses on exploring and understanding human preferences and perceptions on ecosystem services (Fontaine et al., 2013).

The ecosystem services card game method combines photo-elicitation with a rating exercise, and serves a double purpose. On one hand, it encourages interviewees to reflect what an ecosystem services means to him/her and thus provides qualitative information. On the other hand, by rating ecosystem services according to a relevant evaluation criterion, a quantitative ranking of ecosystem services can be obtained and comparisons between ecosystem services can be made. The evaluation criterion usually relates to the demand side of ecosystem services (e.g. importance, usefulness, level of use, desirability), but it could also be used to evaluate the supply side (e.g. occurrence, level of supply).

Keywords

ecosystem services, sociocultural valuation, photo-elicitation, ranking method

Why would I chose this approach?

This method can be used to collect knowledge and opinions about a wide range of ecosystem services, as well as to understand preferences over these ecosystem services.

The method can be used to answer different knowledge questions:

1. Description of the area: Which ecosystem services are currently present in the study area?
2. ES use: Which ecosystem services in the study area are currently used?
3. Identification of ecosystem service stakeholders: Which stakeholders are involved in the regulation, management, use and enjoyment of ecosystem services provided by the area?
4. Desired ecosystem services: Which ecosystem services are desirable for the future?

This information can be used for the following applications:

- The tool is useful for **assessing landscapes** that provide various direct benefits to individuals, especially cultural landscapes which have been shaped by long-term human impacts and which are frequent targets of human use and enjoyment.
- It can also be used as a supporting tool for **vision development** and **priority setting**, as the rating of ecosystem services can be used to identify a priority list of locally relevant ecosystem services.
- The card game also provides information on the preferences and motivations of different stakeholder groups, which can be used as an input to **instrument design** (i.e. when developing access/restriction rules for recreational areas, better balancing benefit and burden).
- The method is suitable for **awareness raising** campaigns as it can highlight a wide range of

benefits and values attached to ecosystem services.

The method can be easily applied at smaller **spatial scales** (from property to municipality or county level). Applying it to larger spatial scales is also possible (depending on the framing of the questions and the list of ecosystem services used in the exercise), but might be slightly more difficult because interviewees usually have less personal experiences with ecosystem services at larger scales. Spatial scale should match the knowledge of the interviewed people. The spatial resolution offered by the method is rather coarse.

What are the main advantages of the approach?

- Relatively simple and quick.
- Card sets can be tailor-made according to specific situations.
- Can easily encompass all local relevant ecosystem services.
- Elicitation of local knowledge and expertise.
- Stimulates stakeholders to think within a holistic ecosystem services framework (“social learning”).
- Especially useful for assessing ecosystem services that directly impact people, such as provisioning and cultural services.

What are the constraints/limitations of the approach?

- Good interview skills are indispensable.
- It is important to keep in mind that the card game only values perceptions of stakeholders.
- Not all classes of ecosystem services might be appropriately valued when valuation methods using stakeholder preference are used (Agbenyega et al., 2009; Carpenter et al., 2006). It is suitable to characterize provisioning and cultural services from the point of view of stakeholders, but regulating services are sometimes undervalued if stakeholder awareness and/or knowledge is limited on these topics.
- Trade-offs between the actual use of services and the use of services in the future (intergenerational trade-offs) are not explicitly addressed.
- Working with a predefined list of ecosystem services has a framing effect on the results (i.e. it restricts the potential list of ecosystem services). This can be solved by keeping an option to add additional services during the ranking).²²

What types of value can the approach help me understand?

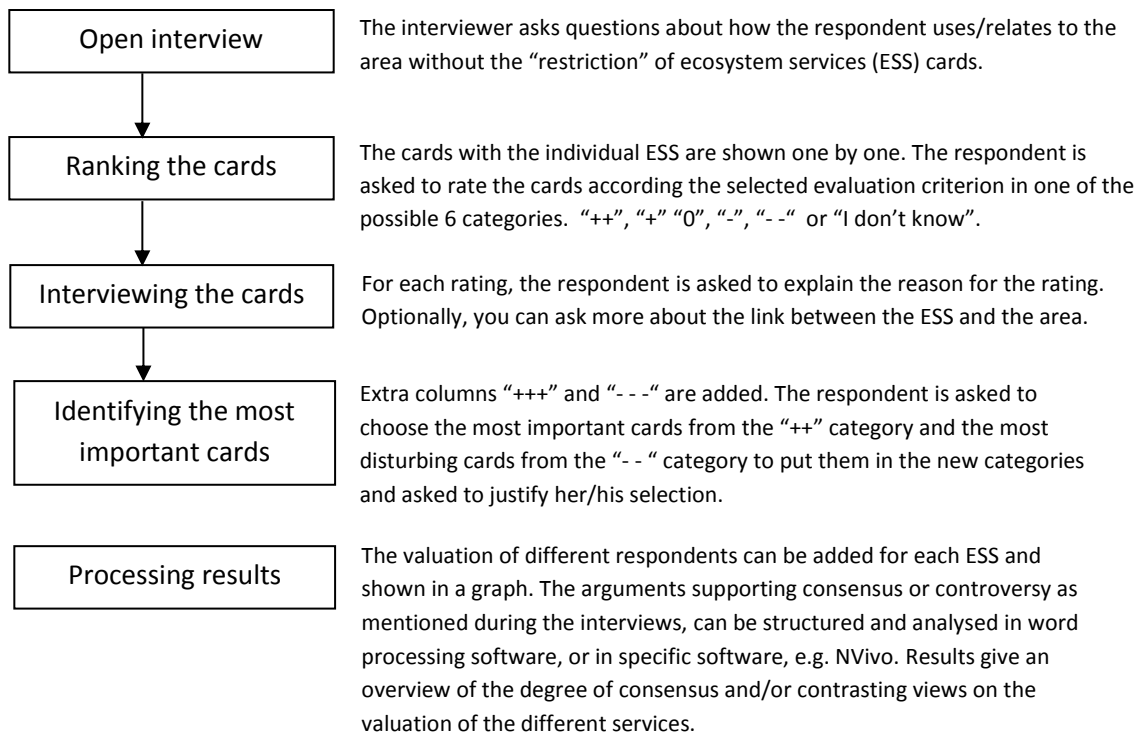
The card game is especially suitable to elicit socio-cultural and anthropocentric (both instrumental and relational) values to ecosystem services. It has limitations to grasp indirect use values, option values and ecological values.

How does the approach address uncertainty?

Uncertainty can be captured in narrative ways (e.g. ‘how certain are you about the rankings?’, provide an option not to score an ecosystem service if the respondent feel that s/he has insufficient knowledge to score a certain ecosystem service).

How do I apply the approach?

A preliminary step of the card game is to identify the relevant ecosystem services (that are presented on the cards). This can happen based on expert local knowledge and scientific information. To this end, review of scientific literature and expert interviews can be conducted. The actual steps followed during the card game are presented below.



Requirements

Requirements		Comments
Data	<ul style="list-style-type: none"> <input type="checkbox"/> Data is available <input type="checkbox"/> Need to collect some new data (e.g. participatory valuation) <input type="checkbox"/> Need to collect lots of new data (e.g. valuation based on surveys) 	Data is collected through in-depth face-to-face interviews or via group discussions (lasting approx. 60-90 minutes). The ideal number of interviews/group discussions depends on the heterogeneity of stakeholders and the size of the research area. As a rule of thumb, each key stakeholder group should be represented by at least 2-4 representatives in the sample. In average, the number of interviewees ranges between 20-25 people.
Type of data	<ul style="list-style-type: none"> <input type="checkbox"/> Quantitative <input type="checkbox"/> Qualitative 	The method elicits both quantitative (rating the ESS cards) and qualitative (narrative explanation of the cards) information.
Expertise and production of knowledge	<ul style="list-style-type: none"> <input type="checkbox"/> Working with researchers within your own field <input type="checkbox"/> Working with researchers from other fields <input type="checkbox"/> Working with non-academic stakeholders 	The identification of the ESS during the preparation phase requires local expertise and scientific expertise. The interviewing phase requires social scientific skills and expertise. Non-academic stakeholders are involved through the interviews.

Software	<ul style="list-style-type: none"> □ Freely available □ License required □ Advanced software knowledge required 	The valuation of different respondents can be presented in a graph with a spreadsheet application. The arguments mentioned during the interviews, can be structured and analysed in word processing software, or in specific software, e.g. NVivo
Time resources	<ul style="list-style-type: none"> □ Short-term (less than 1 year) □ Medium-term (1-2 years) □ Long-term (more than 2 years) 	Average number of interviews is around 20-25 (depends on the heterogeneity of stakeholders), average length of interviews ranges between 60-90 minutes.
Economic resources	<ul style="list-style-type: none"> □ Low-demanding (less than 6 PMs) □ Medium-demanding (6-12 PMs) □ High-demanding (more than 12 PMs) 	Both time requirements and economic resources depends on how many participants are involved in the valuation study. If only a small sample (<25) is used, less than 6 PMs can be enough.
Other requirements	-	

Where do I go for more information?

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Agbenyega O., Burgess P.J., Cook M., Morris J. (2009). Application of an ecosystem function framework to perceptions of community woodlands. *Land Use Pol* 26(3):551-557.

Carpenter S.R., Bennett E.M., Peterson G.D. (2006). Scenarios for ecosystem services: an overview. *Ecology and Society* 11(1):29.

Demeyer, R. (2014). Huidig en gewenst landschapsgebruik in De Cirkel. Een maatschappelijke bevraging. Rapporten van het Instituut voor Natuur- en Bosonderzoek. INBO, Brussel.

Fontaine, C.M., De Vreese, R., Jacquemin, I., Marek, A., Mortelmans, D., Dendoncker, N., Devillet, G., François, L., Van Herzele, A. In: Valuation Of Terrestrial Ecosystem Services In A Multifunctional Peri-Urban Space (The VOTES project). Final Report. Brussels: Belgian Science Policy 2013– 95 p. (Research Programme: Science for a Sustainable Development)