



Farmers' perceptions of biodiversity: Lessons from a discourse-based deliberative valuation study



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ABSTRACT

In agricultural landscapes farmers have a large impact on biodiversity through the management decisions they apply to their land. Farmers' perceptions of biodiversity and its different values influence their willingness to apply biodiversity friendly farming practices. The results of a discourse-based, deliberative biodiversity valuation are presented in this paper. Organic and conventional farmers' perceptions of the different values of biodiversity were analyzed across three European countries. Focus group methodology was used to explore how farmers perceive biodiversity and how they assess its values.

Our results suggest that farmers' perceptions of biodiversity are strongly embedded in their everyday lives and linked to farming practices. Besides recognizing the importance of species and habitat diversity, farmers also acknowledge wider landscape processes and attach value to the complexity of ecological systems. Organic farmers tended to have a more complex and philosophical approach to biodiversity and they were relatively homogeneous in this aspect, while conventional farmers showed larger heterogeneity. Ethical and social values were important for all farmers. Economic value was more dominant in the conventional focus groups.

The discourse based deliberative valuation method is worth applying in relation to biodiversity for two reasons. First, this method is able to reflect the heterogeneity of non-scientist participants and the context in which they are embedded, which both have a great impact on the results of the valuation. Second, deliberation upon the importance of biodiversity makes possible to understand the competing perceptions of biodiversity and to include different value aspects in the valuation process. The policy oriented consequence of the research can be drawn from the observation that farmers have a strong acknowledgement of ethical and social biodiversity values. This suggests that soft policy tools could also foster biodiversity sensitive farming methods, complementary to mainstream monetary incentives.

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Introduction

The valuation of biodiversity is an important scientific objective as it can support on-going policy actions to halt the loss of biodiversity (see e.g. [TEEB, 2010](#)). The majority of valuation studies

aims at expressing the value of biodiversity in monetary terms and builds the biodiversity value estimation upon solid economic calculations ([Nijkamp et al., 2008](#); [TEEB, 2010](#)). These studies often incorporate personal value judgements of non-scientists, especially if they apply stated preference methods (e.g. contingent valuation) ([Christie et al., 2006](#); [Nijkamp et al., 2008](#)). Participants are usually handled as “consumers” who are asked to put a price on biodiversity, although the motives behind individual willingness-to-pay values are rarely investigated ([Spash, 1997, 2000](#)). This may induce biases in the valuation process for three reasons. First,

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biodiversity is a contentious concept even amongst scientists and it is not easily understood by non-scientists (Christie et al., 2006; Soini and Aakkula, 2007). Second, non-scientists use a different terminology from the language of science (Christie et al., 2006; Fischer and Young, 2007; Soini and Aakkula, 2007). Third, the benefits of biodiversity are often perceived at the level of society instead of the individual “consumer” (Buijs et al., 2008).

These shortcomings can be overcome in different ways. One option is to widen the scope of monetary valuation to include personal value orientations and attitudes, as well as existing knowledge on biodiversity in the analysis. Environmental and social psychology and cultural geography have already begun to study how individuals' value systems and attitudes towards nature emerge and affect behaviour. These disciplines propose many analytic tools to assess the relationships between values, attitudes and behaviour related to biodiversity conservation (e.g. Burgess et al., 2000; Manfredi et al., 2003; Bruskotter et al., 2007; Teel et al., 2007; Buijs et al., 2011; Van Herzele et al., 2011) that can be used to reduce valuation biases by understanding individual preference formation. Another option is to open up the process of valuation and invite participants to formulate preferences together in a transparent way. From the perspective of social constructivism, Vatn (2005) underscores the idea that preferences reflect not only individual characteristics but also the institutional environment in which they are embedded. Market based institutional settings (such as the one lying behind contingent valuation) prompt a utilitarian perspective that shapes the preference formation process, and shed light on economic values that reflect the results of individual utility maximization. However, in these settings values being derived from deontological ethics (i.e. the intrinsic value of nature) and reflecting social preferences are usually crowded out (Vatn, 2005). Deliberation upon the value of public goods, such as biodiversity¹, broadens the scope of valuation by addressing non-scientist participants in the role of citizens instead of consumers (Vatn, 2009). This allows consideration of ethical beliefs, moral commitments and social norms beside individual and collective utility (Sagoff, 1988; Aldred, 1997; Gowdy, 1997), and help respondents articulate a wide range of non-utilitarian values (Satterfield, 2001). Along with this second option, our paper presents an empirical study of farmers' valuation of biodiversity based on a discourse-based, deliberative valuation process.

Whilst agricultural activity often takes advantage of the benefits of biodiversity, intensification of agriculture is one of the main threats to biodiversity worldwide (Krebs et al., 1999; Benton et al., 2003; Hole et al., 2005; Sattler and Nagel, 2010; Batáry et al., 2012). Thus, it has become a policy objective to involve farmers in the conservation of biodiversity through agri-environmental schemes (Poláková et al., 2011; Kampmann et al., 2012). Farmers are in continuous touch with biodiversity through their daily work on the farm and gain very personal experiences related to it, which tends to be very different from those of scientists or other social groups (Soini and Aakkula, 2007; Junge et al., 2009). To be able to include the specific approach of farmers in policy discussions, it is useful to explore how they perceive biodiversity and its different values.

There has been relatively little research concentrating on this particular topic (Soini and Aakkula, 2007). Some studies investigated how biodiversity is perceived by people who are not scientists (Christie et al., 2006; Fischer and Young, 2007; Buijs et al., 2008; Lindemann-Matthies and Bose, 2008) and even fewer studies have addressed farmland biodiversity (Soini and Aakkula, 2007; Junge et al., 2009; Stilma et al., 2009) or investigated only farmers (Herzon

and Mikk, 2007). Some research projects focused on the motivations of farmers to accept conservation measures and participate in conservation related programmes (see e.g. Beedell and Rehman, 1999; Siebert et al., 2006; Farman-Bowers and Lane, 2009; Sattler and Nagel, 2010), but they did not consider farmers' perceptions of biodiversity or associated values. Only a few studies explored how farmers perceive the environment in general and how these perceptions are related to their practices (Fairweather and Campbell, 2003; Michel-Guillou and Moser, 2006; Schneider et al., 2010), but none focused directly on biodiversity. Our research project tried to fill this gap by exploring the perceptions of the different values of biodiversity expressed by farmers. We carried out six focus groups in France, Italy and Hungary with organic and conventional farmers in 2010–2011 as part of a European research project aiming at formulating biodiversity indicators for organic and low-input farming systems.

Our study targeted two contrasting communities of farmers: those using conventional versus organic management systems. It is frequently argued that organic agriculture contributes to biodiversity protection by applying environmentally-friendly agricultural practices such as the limited use of chemicals, reduced tillage, crop rotations and mulching, as well as maintaining natural or semi-natural infrastructure (e.g. Sommaggio et al., 1995; Paoletti et al., 1997, 2007; Bengtsson et al., 2005; Hole et al., 2005; Norton et al., 2009; Gomiero et al., 2011). Investigations contrasting the perception of biodiversity and its values by organic versus conventional farmers seem lacking, although differences can be expected. Organic farming is a cultural movement with a long and strong tradition (Conford, 2001; Lockeretz, 2007; Gomiero et al., 2011). Farmers involved are committed to adopt farming practices that stick to the principles of health, ecology, fairness and care (IFOAM, 2006; Luttikholt, 2007). Our principal aim was, thus, to investigate the organic versus conventional farmers' perceptions of different values of biodiversity. We hypothesized that organic farmers are more aware of biodiversity than conventional farmers, and their actions are also driven by a moral and ethical ideal about the human-nature relationship, as well as by a strong concern about future generations.

The paper is structured as follows. Introduction is followed by a brief explanation of the concepts used and the methodology applied. In the next section results from six focus groups are presented around three issues: (1) how farmers perceive biodiversity; (2) what are the values of biodiversity from the farmers' perspective; and (3) what is the perceived role of the different actors in the conservation of biodiversity. In the discussion the insights of organic and conventional farmers are compared and some important lessons of the applied methodology are highlighted. Finally, conclusions are drawn with some policy implications.

Core concepts

The scientific definitions of biodiversity in the context of agriculture

The definition from the Convention on Biological Diversity (CBD) was chosen to specify the term ‘biodiversity’ in our research: “the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part” (Convention on Biological Diversity, 1992, Article 2). Biodiversity is usually defined at three levels of biological organization: genetic, species and ecosystems (Convention on Biological Diversity, 1992; MA, 2005a). All three levels can be interpreted in an agricultural context, although the emphasis diverges between them. Genetic diversity is usually connected to local species, varieties and breeds. In organic agriculture,

¹ From an economic point of view, biodiversity is a public good (it is characterized by non-rivalry and non-excludability), which is not traded in markets and directly not paid for by consumers (Ostrom, 2005).

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