



Analysis

Psychographic profile affects willingness to pay for ecosystem services provided by Mediterranean high nature value farmland



Tamara Rodríguez-Ortega^{a,*}, Alberto Bernués^{a,b}, Frode Alfnes^c

^a Centro de Investigación y Tecnología Agroalimentaria, Avda. Montañana 930, 50059 Zaragoza, Spain

^b Dept. of Animal and Aquacultural Sciences, Norwegian University of Life Sciences, N-1432 Ås, Norway

^c School of Economics and Business, Norwegian University of Life Sciences, N-1432 Ås, Norway

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ABSTRACT

Our aim was to examine how psychographic profiles affect willingness to pay for ecosystem services in Mediterranean high nature value farmland. We combined psychographic analysis and economic valuation to: i) identify different psychographic profiles based on attitudes towards the economy and environment, rural development and agricultural intensification, food quality and consumption, and agri-environmental policy; and ii) measure the economic value that the psychographic profiles assign to key ecosystem services in different agricultural policy scenarios. We analysed two populations in Spain (the general population and the local residents of the study area). We identified two psychographic profiles in each population focusing on productivist and conservationist attitudes. Respondents in all profiles were highly concerned about forest wildfires, followed by the availability of quality products for those with productivist profiles, the biodiversity maintenance for the general conservationists and a more human-intervened landscape for the local conservationists. The willingness to pay for ecosystem services altogether differed between the psychographic profiles, from 88€ of general productivists to 334€ of local conservationists. We demonstrated that attitudes concerning ecosystem services have a strong influence on their willingness to pay. We argued that psychographic differences should be considered when designing and legitimising EU agri-environmental and conservation policies.

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1. Introduction

High nature value farmland (HNVF) with low-intensity farming systems is predominant in mountainous regions (Lomba et al., 2014). It provides a wide range of ecosystem services (ES), distributed to beneficiary populations across both highland and lowland areas (EEA, 2010), that helps sustain and satisfy human life (Daily, 1997). Traditionally, agriculture has been valued primarily for its capacity to provide food and other raw materials to the economy; however, with the increased economic efficiency of agricultural production there is an increasing need to also investigate the social demands at which multiple ES should be provided. In this context, the different attitudes, perceptions and willingness to pay (WTP) for the ES are still unknown.

HNVF is the result of a long history of co-evolution between natural and social systems. HNVF in Europe is concentrated in mountainous regions containing upland grasslands, heathlands and forest pastures in combination with bottom-valley meadows and small areas of crops

that are used to produce forage for winter to feed the livestock (Lomba et al., 2014). Traditional low-input farming is important not only because it is one of the few activities available for developing in marginal areas, but also because maintenance of sustainable farming practices is essential for the provision of multiple ES. In the Mediterranean context, the literature shows an intrinsic link between pasture-based livestock systems and the delivery of ES from both a biophysical (Cooper et al. 2009) and socio-cultural perspective (Bernués et al. 2014). These ES are preservation of the agricultural landscape (Lasanta-Martínez et al., 2005), maintenance of the biodiversity (Schmitzberger et al., 2005), reduction of wildfire risk (Ruiz-Mirazo et al., 2011), and the availability of quality products linked to the territory (products with extrinsic quality attributes such as origin or environmentally-friendly production methods) (Bernués et al., 2012; Bernués et al. 2014; Pereira et al., 2005).

Mediterranean HNVF is normally associated with low economic efficiency and a high opportunity cost of labour (e.g., labour dedicated to tourism or more profitable alternatives of livestock production). Farmers in these areas have little economic incentive to provide many ES that constitute non-marketable goods (Cooper et al. 2009). Current policy measures have been insufficient for preventing abandonment of HNVF areas, despite this being an

* Corresponding author.

E-mail address: trodriego@cita-aragon.es (T. Rodríguez-Ortega).

explicit objective of EU rural development policy (EEA, 2004). Therefore, it is important to recognize the economic value these ES provide and compensate farmers accordingly, for example, by establishing payments for ecosystem services (PES) and shifting the emphasis of the Common Agricultural Policy towards ES supply as demanded by society.

Quantifying the societal value of ES requires biophysical (see Rodríguez-Ortega et al. (2014) for a review), socio-cultural (Lamarque et al., 2011; Oteros-Rozas et al., 2014; Pereira et al., 2005) and economic assessments (Campbell, 2007; Sayadi et al., 2009; Zander et al., 2013). However, there are few studies that integrate these disciplines, for example by analysing attitudes and motivations that influence WTP for ES provided by Mediterranean HNVF. In fact, there is little integration of social sciences in the literature related to the adoption of agricultural practices (Price and Leviston, 2014), despite the ability of social sciences to illuminate the attitudes, values and motivations of diverse stakeholders with respect to environmental conservation (Phillipson et al., 2009).

Better knowledge of the underlying attitudes and motivations that influence people's perception and valuation of ES constitutes a relevant issue in conservation policies (Castro et al., 2011). This analysis allows to: i) include the social dimension in decision-making processes and legitimise them based on the interest of the public; ii) determine which aspects link human well-being and conservation; and iii) identify conflicts of interest between different sectors of society, as well as potential disputes associated with new management and planning practices.

The theory of planned behaviour (Ajzen, 1991) is a much used model from social psychology explaining how attitudes, subjective norms and perceived behaviour can predict people's intent to perform real behaviour. According to Stern (2000) and Price and Leviston (2014), environmentally significant behaviour depends on a broad range of interacting causal factors, both personal and contextual, including attitudes, values, norms, capabilities, habits and routines. Nevertheless, it seems that attitudinal causes have the greatest predictive value for behaviours that are not strongly constrained by context or personal capabilities (Stern, 2000).

Additionally, many studies report that social factors or socio-economic characteristics such as education, gender and place of residence influence the WTP for landscape enjoyment and landscape conservation (García-Llorente et al., 2012) and other ES (Martín-López et al., 2012; Oteros-Rozas et al., 2014). However, Kahneman et al. (1999) claim that WTP responses to public issues represent psychological attitudes rather than personal economic circumstances. Similarly, Spash et al. (2009) note that standard socio-economic variables have lower predictive capacity than those related to social psychology and ethics when studying willingness to pay for improving biodiversity. The latter variables offer a better understanding of the motives behind responses to the economic valuation. Furthermore, some analyses reveal a strong correlation between individuals' attitudes towards particular species and their stated willingness to allocate funds for conservation of those species (Martín-López et al., 2007). Others suggest there is class-specific preference heterogeneity based on consumers' attitudes towards functional foods, and they emphasize the importance of attitudinal data in explaining consumer choice behaviour (Bechtold and Abdulai, 2014). However, to our knowledge, there are no similar studies on ES provided by Mediterranean HNVF.

The aims of this work were: i) to identify different psychographic profiles based on attitudes towards aspects that play an important role in the provision of ES; and ii) to measure the economic value that these differential psychographic profiles assign to key ES delivered by Mediterranean HNVF under different agricultural policy scenarios. We used a Natural Park located in northeast Spain as study case and targeted two populations: the region where the case study is located (general population) and the local

residents in the case study area (local population). First, we used a cluster analysis of responses to Likert-type statements (on the economy and the environment, rural development and agricultural intensification, food quality and consumption, and agricultural and environmental policy) to segregate the general and local populations into psychographic profiles. Second, we used stated-preference methods (choice experiment) to determine the marginal utility and thereby the WTP of ES for each psychographic profile in each population.

2. Materials and Methods

2.1. The Study Area

HNVF occupies large areas in eastern and southern Europe and Spain represents 25% of total HNVF in the EU-27 (Paracchini et al., 2008). We used as study case the 'Sierra y Cañones de Guara' Natural Park (SCGNP), a protected area of 80,739 ha in Northeast Spain (47°17'N, 0°13'W). This area constitutes a good example of Mediterranean HNVF according to the definition given by EEA (2004) and Lomba et al. (2014); i.e., it is a mountainous area characterised by extensive, low-input (low stocking densities, low use of chemical inputs, etc.) and low-output (low productivity) farming (Asensio and Casasús, 2004; Riedel, 2007). The SCGNP was declared in 1990 because of "the beauty and spectacular nature of its landscapes, the great scientific interest of its vegetal and animal communities and the historical, cultural and educational value of its spots" (BOA:8, 1991). The Park includes three Sites of Community Importance (EU Habitats directive) and a Special Protection Area for Birds (EU Birds Directive). For a detailed physical description see Asensio et al. (2004) and Bernués et al. (2014). The Park also provides a wide range of ES including agricultural landscapes, biodiversity maintenance, forest wildfire prevention and product quality linked to the territory; that are well recognized by society (Bernués et al. 2014). However, agriculture in the Park is undergoing a dual trend of management system intensification and abandonment of the remote/marginal rangeland areas, as well as a reduction in grazing pressure (Bernués et al., 2005). As a consequence, a general process of vegetation encroachment and landscape closure is happening in many areas of the Park (Riedel et al. 2013), threatening this agro-ecosystem and its values.

2.2. Survey and Questionnaire

We performed a pilot face-to-face interview with 70 respondents in March–April 2013 to check the coherence of the questionnaire. The final interviews were carried out in the summer of 2013. For the general population, 402 persons above 18 years old were interviewed through a professional online panel. The panellists were recruited by invitation, ensuring the representativeness of the adult population in the region where the SCGNP is located (Aragón, Spain, N = 1,103,864). To collect the local opinions, 102 adult persons living inside the SCGNP or in neighbouring villages (N = 934) were interviewed face-to-face at their households or working sites. Judgement sampling based on age, gender and profession was utilized due to difficulties to ensure a probability sampling.

The questionnaire had three parts. After explaining the purpose of the study and the structure of the questionnaire, the first part included 20 attitudinal statements (see description below). The second part of the questionnaire included the choice experiment after a brief introduction to the attributes and scenarios (below). The third part of the questionnaire collected socio-economic (age, gender, family size, education, income) and contextual (profession, family agricultural background, membership in consumer or nature associations, number of visits to the park and motives for visiting) information.

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