



Earmarking conservation: Further inquiry on scope effects in stated preference methods applied to nature-based tourism



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HIGHLIGHTS

- We elicit WTP for conservation of ungulates in an Alpine National Park.
- We use an External Scope test of different WTPs for protection of 1 vs. 4 species.
- Park users are willing to contribute more for protecting 1 than all 4 ungulates.
- Results suggest a preference for punctual earmarking of resources for conservation.

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ABSTRACT

The way people assign value to nature conservation policies has important implications for management choices. Economic valuation surveys are affected by individual behavioural patterns that are not exhaustively explained by traditional sources of bias such as embedding, flagship species, fixed-budget, commodity misspecification and warm glows. Through a Contingent Valuation study of Alpine wildlife, we use an external scope test to evaluate the difference in willingness to pay among tourists for conservation policies targeted either to the ibex alone, or to the four ungulates populating the Gran Paradiso National Park in Northwest Italy (ibex, red deer, roe deer, chamois). We find that park users are willing to contribute significantly more to policies protecting one of the four ungulates than all four of them, a result that we argue should be ascribed to pure aversion to less specific policy objectives, i.e. to a preference for punctual earmarking of resources devoted to conservation.

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1. Introduction

The value people assign to natural heritage and the quality of nature-based recreational opportunities exerts influence on the allocation of resources to conservation and management of parks and protected areas. Not surprisingly, substantial research has been devoted to assessing the recreational value of different natural assets, including threatened species (see Richardson & Loomis, 2009 for a broad meta-analysis), natural reserves (Baral, Stern, & Bhattarai, 2008), coastal ecosystems (Ghermandi & Nunes, 2013)

and marine protected areas (Asafu-Adjaye & Tapsuwan, 2008; Brander, Van Beukering, & Cesar, 2007).

Stated preferences techniques play an important role within that literature, due to their capacity to estimate total economic value rather than just use value sub-components (e.g. Guimarães et al., 2015; Lee & Han, 2002; Lee, Lee, Kim, & Mjelde, 2010). They are also, however, exposed to a number of potential biases inherent in the behaviour of respondents when facing hypothetical markets. Several studies, for example, report that respondents frequently state the same willingness to pay (WTP) for goods that differ significantly in scope or inclusiveness: Toronto residents were found to be willing to pay similar amounts to clean up all polluted lakes in Ontario or a subset of them (Kahneman, 1986); independent samples of respondents showed no statistically significant difference in their WTP to prevent the death of 2,000,

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20,000 or 200,000 migratory birds (Boyle, Desvousges, Johnson, Dunford, & Hudson, 1994); interviewed U.S. residents appeared to be willing to pay only 28 percent more to protect all 57 wilderness areas present in their states than to protect only one of them (McFadden & Leonard, 1993), and so on. This phenomenon, labelled 'scope insensitivity', is generally recognized (using the words of the NOAA panel¹) as 'perhaps the most important internal argument against the reliability of the contingent valuation (CV) approach' (Arrow et al., 1993, p. 4607), and as such has been object of extensive attention in the stated preferences literature. A three decades debate, started with Kahneman's (1986) first discussion of insensitivity to scope, is well described for instance in Lew and Wallmo (2011).

Many explanations of why willingness to pay may not behave as expected when we increase the scale of the object of environmental valuation have been explored: embedding (Kahneman & Knetsch, 1992); flagship species (Kontoleon & Swanson, 2003) and, more generally, label effects (Czajkowski & Hanley, 2009); commodity misspecification (Carson & Mitchell, 1995); fixed-budget effects (Randall & Hoehn, 1996); and warm glows (Cooper, Poe, & Bateman, 2004).

The purpose of this paper is to further investigate the potential determinants of scope insensitivity in stated preference studies, in contexts relevant to nature-based recreational values. Scope insensitivity is generally investigated through scope tests, which consist in 'examining the prediction that respondents should be willing to pay more as the amount or quality of the environmental good to be provided increases' (Czajkowski & Hanley, 2009, p. 522; Giraud, Loomis, & Johnson, 1999). Results of stated preference evaluation studies that, showing insufficient sensitivity to scope, do not confirm this basic prediction of economic theory are seen as failing to pass the test. Through a case study of Alpine wildlife, we evaluate the difference in willingness to pay (WTP) for conservation policies targeted either to the ibex alone, or to the four ungulates populating the Gran Paradiso National Park in Northwest Italy (ibex, red deer, roe deer, chamois).

We find that people are willing to contribute less to conservation policies aimed at the four ungulates than to those aimed at one of them. This is a counterintuitive result, stronger than the typical failures of scope tests previously detected, which rules out, in our case study, the embedding effect as the reason of failure. Nor can the extra value stated for the single species program be attributed to a flagship species premium or to the other previously studied causes: since the protection of ibex is present in both policy options, all of the well-known sources of bias could at best induce an equivalent valuation for the two alternative policies. Our experiment reveals instead that respondents attach a significant *higher* value to programmes targeted to one specific species, with respect to programmes targeted to protect that same species plus several others. None of the other three ungulates selected for this exercise can be suspected to be considered a 'nuisance' species whose presence could be attached a negative value by respondents: red deer, roe deer and chamois are also considered valuable wildlife attractions by the National Park and are not source of damage (e.g. depredation losses) for any existing activity.

We therefore argue that existing explanations of scope insensitivity do not exhaustively deal with the question. We suggest that an important factor, rooted in individuals' utility function, could be a preference for well-defined and circumscribed policies as

opposite to interventions aimed at composite objectives – a preference for earmarking of resources devoted to conservation.

2. Potential sources of scope insensitivity

Embedding is generally recognized as the classic source of insensitivity to scope. Many individuals appear to find it difficult to identify the specific value they attach to one specific thing which is embedded in a set of similar things: one protected area vs. many of them, one endangered species vs. many, a small vs. large number of individuals to be protected, and so on. This effect is also called 'part-whole bias'. The literature abounds of examples in which the elicited WTP is the same for (or not sufficiently differentiated between) preserving environmental commodities that differ from each other in their quantities or qualities (e.g. Boyle et al., 1994; Kahneman & Knetsch, 1992; Mitchell & Carson, 1989; Svedsäter, 2000). These studies typically find that the value assigned by people to more and more inclusive goods increases less than we would expect on the ground of rational behaviour: respondents appear to be willing to pay only marginally larger amounts (or even the same amount) to protect larger and larger areas, more and more individuals of an endangered species, or more species rather than just one.

Kontoleon and Swanson (2003) focus on the issue of flagship species. Meta-analyses of the WTP for individual species have found that there exist preferences for a few charismatic species as compared to the vast number of less well-known species (Leader-Williams & Dublin, 2000; Loomis & White, 1996; Metrick & Weitzman, 1996). In stated preferences studies, these effects may limit the sensitivity to scope, as they may raise the relative value of bids to conserve single flagship species with respect to those aimed at more inclusive conservation programs. If individuals were willing to pay *only* for conserving flagship species, with zero value attached to the less well-known ones, we would observe a limit case in which an equal WTP is elicited for a single charismatic species and for a bundle of species including the charismatic one.

The representative status of the flagship species plays a key role in conservation. Conservation NGOs and natural parks often focus their appeals for funding around threatened charismatic species – an approach that, if a flagship species bias is widespread in individual preferences, could in principle also be functional to general conservation objectives. However, governmental agencies have also been shown to allocate disproportionate amounts of conservation funds to a handful of popular species (Kontoleon & Swanson, 2003), which raises important policy questions on the flagship species approach as an instrument for biodiversity conservation and motivates an interest for detailed investigation of the nature of individual preferences in this field.

A related potential source of insufficient sensitivity to scope are the so-called label effects, that is the fact that part of the estimated value of a good may be related to the label or brand under which it is presented to the respondents. In the context of nature conservation, Czajkowski and Hanley (2009) showed, for example, that a forest biodiversity protection policy involving the designation of the area under protection as national park, a 'label' which is recognized by the respondents as desirable, would elicit a substantially higher WTP with respect to an alternative policy involving the same level of protection but without the label.

Diminishing marginal values of successive extents of environmental protection and income effects, whereby CV respondents allocate limited budgets or sub-budgets for spending on nature conservation, are a further potential explanation for observed scope insensitivity (Randall & Hoehn, 1993, 1996; Veisten, Hoehn, Navrud, & Strand, 2004).

Also a misspecification in the survey design of the amenities

¹ A committee of high profile economists appointed in 1993 by the National Oceanic and Atmospheric Administration (an American scientific agency focusing on the conditions of ocean and atmospheric resources) to elaborate recommendations on the design of contingent valuation studies.

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