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The impacts of knowledge of the past on preferences for future landscape change.

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Abstract— In this paper, we investigate whether people's knowledge of the past influences their preferences and values towards future landscape change. "Knowledge of the past" is one aspect of the information set held by individuals, and a well-established finding in stated preference work is that changes in information can change preferences and values. The case studies used here relate to prospective changes in woodland cover in a UK national park the Lock Lomond and Trossachs. We find that people who are made aware that the landscape has changed over time are more likely to favour changes to the current landscape. Knowledge of the past therefore seems to have an impact on preferences for future landscapes.

Keywords— environmental economics, landscape valuation, national parks.

INTRODUCTION

What people know about an environmental good partly determines their preferences over possible changes in the quality or quantity of this good, and the economic value they place on a particular change in quantity or quality. This has been argued to be the case theoretically, and shown to be true empirically, in a great number of stated preference studies for environmental goods such as wildlife and habitat conservation (see, for example, the review in Munro and Hanley, 1999). What people conceive of as "landscape quality" may thus very well depend on what they believe about past uses of a landscape, and how its nature has changed over time.

Moreover, conservation actions in Europe and the US are often now presented in terms of restoring the environment to some "better" past condition; for example, by re-introducing species which have become locally extinct such as wolves or sea eagles, or by re-foresting areas that have become devoid of their

woodland cover over time. Much of the debate on the restoration of habitats and indeed water quality in North America and Europe is based on an ideal of returning systems to "natural conditions" – by which is often meant "pre-anthropogenic" or "pre-industrial" conditions (Worster, 1993). Information on what an environment was like in the past (its appearance, its species) is thus important to guiding current decisions over managing that environment.

In this paper, we are interested in the effects of the acquisition of information regarding the landscape history of the Lock Lomond and Trossachs (the Trossachs henceforth) national park in the UK. This is of particular policy interest given questions about what landscapes should be preserved, and whether the current appearance of a landscape is that which we are trying to conserve, or whether some past ideal of the landscape is preferred instead. To do that two sets of "past information" on the landscape history of the national park are introduced to survey respondents. Using a split-sample design, we then investigate the effects of this information on peoples' preferences towards future landscape changes in the areas, and their willingness to pay (WTP) to have these changes come about. Our findings show that new information and perceptions both impact on preferences and values, but not in all the cases considered.

STUDY DESIGN AND METHODOLOGY

Two sorts of historical information were included in the design of our questionnaires representing information on past landscape change. We showed respondents two maps each one showing the extent of

woodland cover in the study area. The maps were drawn in the 1750s and in 1890, and show changes in both the extent and distribution in the Park relative to current woodland cover. To identify differences in preferences we used the following split-sample design: 25% of the sample received neither map, 25% were shown the 1750s map, 25% the 1890 map, and 25% were shown both maps.

To investigate the effects of this historical information on preferences and values, we used the multinomial logit model (MNL) and the contingent valuation (CV) method. The environmental change used in the CV was changes in future woodland cover in the national parks. Dependent on whether an individual preferred reducing forest cover or increasing forest cover, they were asked their maximum WTP to have this option go ahead. The elicitation format used was a payment card showing 4 amounts. Individuals were asked whether they would definitely pay, probably pay, or definitely not pay each amount. Payment levels were based on a pilot survey in each area of 50 respondents which used an open-ended payment question design. Sampling was carried out by a market research firm using face-to-face interviews; we obtained 504 responses, divided equally between tourists and local residents.

RESULTS AND CONCLUSIONS

A majority of respondents are in favour of an increase in woodland cover. Preferences differ between visitors and residents: residents are more likely to prefer the felling option and visitors are more likely to prefer the planting option. We can reject the null hypothesis that the two groups are independent in their choice (chi-square = 30.20, 1 df., $p=0.000$). To investigate whether information treatment affected the proportion of respondents who expressed preference for felling, planting, or the status quo, a MNL model was estimated. The estimated model predicts the probability of choosing (expressing a preference for) each of the three options as a function of the landscape history information set given to respondents, and a set of socio-demographic characteristics and landscape perceptions. Of particular interest is the effect that landscape history information treatments had on

choices. A joint test of all three information treatments showed that the treatments did impact choice probabilities, and that the differences were statistically significant at the 5% level. Treatment effects did not differ between residents and visitors.

In order to better understand the direction of the treatment effects, the probability of choosing each of the three options was calculated from the estimated model for different types of respondents and for different treatments. Most strikingly, all treatments that involved showing a map of past woodland cover to respondents reduced the probability of the respondent choosing the status quo as the preferred option. This seems to suggest that learning that the landscape has been different in the past reduced peoples' preference for keeping the current landscape. In other words, learning that landscape evolves in physical terms reduces peoples' desire to keep the current landscape as fixed and un-changing.

To estimate the WTP for an increase or a decrease in woodland cover we used a spike model (Kristrom, 1997) assuming that WTP was distributed as a logistic function. We estimated results when responses from residents and visitors are pooled together, and where these groups are separated. In the first case respondents who preferred planting had higher WTP for this landscape change than did respondents who preferred felling. Looking at residents and visitors separately, visitors are WTP less for the felling option than are residents. For planting, visitors are WTP more than residents. If we consider the effects of environmental history information on these WTP amounts the main result is that WTP for felling is highest when no impression is given of past changes in landscape or past impressions of that landscape. For those that prefer the planting option a higher WTP is observed by respondents who saw the 1850 map. However, due to the small sample size, the imprecision of the WTP estimates (given by the width of the 95% confidence intervals) implies that none of these information effects is statistically significant at the 95% level in any case. For this reason, we believe that evidence for the effects of environmental history information on preferences as inferred from the choice model is likely to be more informative than effects on mean WTP.

The main results that emerge are that knowing that a landscape was different in the past or have changed over time seems to reduce preferences for keeping the landscape as it is today, and to increase preferences for changing this landscape in the future by planting more woodland. In other words, becoming aware of landscape as a dynamic concept whose physical structure and perception varies over time decreases the demand for the status quo.

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