

Exploring Values, Context and Perceptions in Contingent Valuation Studies: The *CV Market Stall* Technique and Willingness to Pay for Wildlife Conservation

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ABSTRACT *Public preferences for conservation and environmental management may be identified in willingness to pay (WTP) studies. Normally part of a contingent valuation exercise, WTP studies elicit monetary estimates of non-market economic goods. This paper describes a new approach to WTP, the CV Market Stall, a technique that adds a discursive, qualitative dimension to contingent valuation. It is suggested that the CV Market Stall technique is a good method for exploring attitudes and responses to environmental project proposals. The flexible format, with an emphasis upon information provision, discussion and learning would also allow contingent valuation to be extended to much more complex and uncertain environmental issues.*

Introduction

Conservation and environmental management are costly, whether they be paid for from the public purse, by private bodies or charitable organisations. Furthermore, conservation and environmental management measures have effects beyond what is being directly managed. For example, managing a wild animal species can have knock-on effects upon wildlife tourism, other rural land uses and the national economy. It is therefore justifiable for the public to be involved in the decision-making process when the outcomes of conservation and environmental management policies can have a direct effect upon, for example, visitor numbers and expenditure, particularly in remote rural communities.

One measure of public preference for wildlife management projects is willingness to pay (hereafter WTP). Monetary estimates of the value of conservation and

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environmental management measures using WTP have traditionally been elicited in contingent valuation studies, a survey technique not without criticism (see, for example, Clark *et al.*, 2000; Macmillan *et al.*, 2002). This paper discusses a new technique, called *CV Market Stall*. It is an innovative technique, designed to address concerns regarding the superficial nature of public surveys by providing participants with more time and information to decide on their WTP. Prior to the completion of the research reported in this paper, the *CV Market Stall* had only been used once (see Macmillan *et al.*, 2002, for details): the new dimension to the methodology reported here is that we have added an in-depth, discursive, qualitative dimension by subjecting qualitative information recorded during the *CV Market Stall* exercise to Content Analysis. This technique allows us to explain decision-making and hence develop further insight into the validity of contingent valuation. The experience of using this innovative methodology suggests that it has the potential to be applied to a wide range of conservation and environmental management scenarios where public preferences are to be recorded.

The paper is structured as follows. Firstly willingness to pay in wildlife, environmental and conservation studies is described before the *CV Market Stall* technique is reviewed in detail. The main section of the paper considers the *CV Market Stall* technique in practice, drawing upon the findings of a research project which assessed public perceptions of, and attitudes towards, the control of wild animal species in Scotland (Philip & Macmillan, 2003). The paper concludes by reviewing the usefulness of the *CV Market Stall* technique to contingent valuation studies in the social and environmental sciences.

Willingness to Pay in Wildlife, Environmental and Conservation Studies and the *CV Market Stall* Technique

Conservation policies produce many types of benefits. In economic terms these can be classified into 'use' and 'non-use' values. 'Use values' for wildlife, for example, include recreation (observation, hunting or fishing) and production (skins, meat, pharmaceutical products). 'Non-use value' relates to the notion that individuals derive utility from environmental resources without expected personal use. For example, an individual can derive satisfaction from knowing that a specific habitat, historic building or endangered species is being conserved (Garrod & Willis, 1999).

Non-use values cannot be provided by the market and, as such, alternative methods are required to value them. Monetary estimates of environmental benefits may be derived by asking the public how much they would be willing to pay to preserve or enhance particular environmental goods. The monetary value of the preferences expressed by the public can then be compared with the monetary costs of the scheme to see if it is worthwhile on cost-benefit grounds. Estimates of WTP for non-use benefits in a range of contexts have been made in the UK, ranging from, for example, native woodland restoration (Macmillan & Duff, 1998), the preservation of historic buildings (Pollicino & Maddison, 2002) and farming (Hanley *et al.*, 1998). Contingent valuation is the main method employed for valuing these benefits, with the word 'contingent' being used because WTP estimates are contingent on a description of what the planned changes are, and how people can pay to have them go ahead (for a detailed review of the method see DETR, 2001).

Contingent valuation studies normally rely upon face-to-face structured surveys to find out how much people would be willing to pay for changes in the condition or management of environmental assets. Individual contingent valuation studies can involve anything between 100 and 1000 in-person interviews, carried out by professionally trained staff who provide standardised and relatively simplified information about the project or policy during the interview. Interviewees are required to assimilate information about a project or policy they may have no previous knowledge of, recall what they may already know about the topic, come to a WTP judgement based on their preferences and personal economic circumstances and, finally, communicate this judgement to the interviewer. A lot is expected of interviewees in a short period of time and large scale surveys of this type can be expensive to administer with current costs per interview in excess of £20.

Some potentially serious limitations of the interview approach to contingent valuation have been identified (Foster, 1997; Clark *et al.*, 2000; Macmillan *et al.*, 2002). Notably, interviewees have little time in which to make a WTP judgement, the standard of information presented by the interviewer may not be suited to their individual needs, and the interview situation itself may not be suitable for eliciting economic decisions. Another important limitation is that while the interview approach to contingent valuation provides useful quantitative information about interviewees' attitudes and WTP preferences, it does not generate information about the values, context, perceptions, and uncertainties which influence the decisions recorded. Such qualitative information would be a useful addition to valuation methodologies.

The CV Market Stall

A new contingent valuation technique, *CV Market Stall*, was first used by the authors in a project investigating the conservation of wild goose species (Macmillan *et al.*, 2002). The technique evolved out of recent experience with Citizen Juries in environmental decision-making (Coote & Lenaghan, 1997; Kenyon *et al.*, 2001). Citizen Juries are an explicitly participatory method; a forum for debate and discussion. This is very useful when members of the public are being asked to consider a topic such as wildlife conservation or environmental management which they may have limited previous knowledge of. To date, however, Citizen Juries have not been used to elicit WTP. Brown *et al.* (1995) have suggested that they could be used for such a purpose but this would conflict with the social decision-making rather than utilitarian perspective of Citizen Juries.

The *CV Market Stall* combines the participatory methods of Citizen Juries with the requirements of economic valuation and cost-benefit analysis normally met from interview-based encounters. Those participating in the research are given more information and more time to deliberate and then come to a decision than is possible in a structured interview situation. A group format encourages participation: it facilitates debate and provides a forum where questions can be asked and uncertainty dealt with. The technique also encourages those participating in the research to describe *why* they came to the decisions they recorded in the WTP exercise, adding a novel, qualitative dimension to contingent valuation.

Traditionally, contingent valuation techniques used for ascertaining the public's WTP for a specific environmental management or conservation matter have involved single encounters with participants and have discussed a single project. Based around a group format, the *CV Market Stall* approach:

- records participants' attitudes towards general conservation issues and those more pertinent to the project or projects they will later be asked to evaluate;
- provides participants with background information to help them evaluate the project(s) in an informed manner;
- encourages group discussion about issues associated with the project(s) being considered; and
- records the economic value of conservation on a payment card.

Participants are encouraged to write down an explanation for their behaviour during the contingent valuation exercise.

To overcome the 'snapshot in time' weakness of traditional interview-based contingent valuation techniques, participants take part in the group session and a week later complete a telephone interview during which they record their WTP for the project under consideration again. For consistency the group session is moderated by the same person who conducts the telephone interview. Participants also complete a diary between the group meeting and telephone interview. This encourages them to think about the issues discussed in their group and it generates textual information that helps the researchers to develop an understanding of why participants reached certain WTP thresholds. The organisation of the market stall is relatively simple and costs associated with organising group meetings and follow up phone calls are relatively low, particularly if data collection is carried out by the academic research team (it is not uncommon for survey-based CV studies to employ professional market researchers).

The CV Market Stall in Practice: Assessing Public Perceptions of, and Attitudes Towards, the Control of Wild Animal Species in Scotland

The authors used the *CV Market Stall* technique in a project whose aim was to investigate public perceptions of, and attitudes towards, the control of wild animal species in Scotland. In the project support for four different wildlife control measures (population culls, translocation, the protection of species facing extinction and the issue of species reintroduction to Scotland) with reference to four wild animal species (American mink, hedgehogs, capercaillie and European beaver) was investigated. These particular management scenarios were selected, firstly, because they represented very different types of wild animal management options and, secondly, because the management of the four selected species is currently topical in Scotland. Investigating animal welfare and management, as opposed to conservation, is in itself a novel dimension of the research.

The research design for the project assumed that eight market stall groups would be convened with 10 participants in each group. The study was primarily about developing and enhancing the market stall methodology therefore a large, representative sample was not of particular importance. Participants were recruited

from the general public living in and around Aberdeen. The recruitment process involved circulating an email to a variety of public and private sector organisations in Aberdeen asking for volunteers to participate in a study investigating wildlife management in Scotland. About 150 responses to the email and from other people who had been told about the research project were received. Nine groups were scheduled. Due to some last minute cancellations, a total of 71 participants completed the market stall exercise. Four moderators ran the market stall research. *Post-hoc* tests found no statistically significant moderator effects (for full details of the recruitment see Philip & Macmillan, 2003).

The Background Questionnaire

The *CV Market Stall* exercise started with a background questionnaire, completed by all respondents when they arrived for the group meeting and before they took part in the main contingent valuation exercise. It is normal for information such as age group, income and occupation to be recorded in contingent valuation studies, but it has not been normal practice to record in any detail existing attitudes to topics that will be covered in the WTP exercise. The market stall is, in part, a learning process for participants. Attitudes can change through completing the market stall exercise. Comparing existing attitudes with those expressed in the market stall exercise allows the influence of the deliberative, participatory element of the exercise to be assessed. The traditional survey approach cannot do this in the level of detail possible with the market stall method.

In the study reported in this paper information about general attitudes towards environmental and conservation issues was obtained. The ranking of relative priorities is a standard feature of contingent valuation methods. Although respondents considered spending on the environment to be a low priority when considered against other areas of public expenditure such as health and education, they ranked spending on the environment higher than spending on defence, transport, the police and overseas development. Respondents were also asked to rank various types of government spending on countryside policies. The answers recorded that protecting wildlife was the top priority in this area of government expenditure for almost two-thirds of respondents. In terms of attitudes towards wildlife management, most respondents approved in principle of humane culls, considered measures to boost numbers of endangered species to be worthwhile and were supportive of the principle of reintroducing once native species to Scotland. The attitudes towards measures designed to boost the numbers of endangered species and plans to reintroduce extinct native species to Scotland recorded in the background questionnaire and during the WTP exercise were broadly similar (see Table 1).

The 'baseline' support for humane culls to protect rare and endangered species recorded in the background questionnaire was similar to the support expressed for the mink and hedgehog culls considered in the study. Support for the eradication of non-native species to protect native species, however, saw considerably lower support expressed in the background questionnaire than during the *CV Market Stall* exercise. This suggests that hypothetical approval rates for proposals involving a wildlife cull cannot be used as a proxy for gauging approval of a specific wildlife management proposal involving culling.

Table 1. Support for different types of wildlife conservation before and during the *CV Market Stall* exercise

	Background questionnaire	Group meeting	Telephone interview
Support boosting numbers of endangered species	83.1%	Capercaillie proposal 85.9%	Capercaillie proposal 83.1%
Support reintroduction of native species	70.4%	Beaver proposal 73.2%	Beaver proposal 71.8%
Support humane culls to protect rare species	74.6%	Mink proposal 76.9%	Mink proposal 82.1%
		Hedgehog proposal 78.1%	Hedgehog proposal 75%
Support eradication of non-native species to protect native species	37.5%	Mink proposal 76.9%	Mink proposal 82.1%
		Hedgehog proposal 78.1%	Hedgehog proposal 75%

What Factors Influenced Support (or Lack of Support) for each Wildlife Conservation Proposal?

Traditionally, WTP studies have not in any detail asked why respondents choose to support or not support a given environmental management or conservation project. In the wildlife management research project respondents were invited to record, in their own words on the payment sheets completed at the *CV Market Stall* group meeting, why they felt as they did about the projects they were considering. The responses were coded (themed) following the principles of classical content analysis (see, for example, Silverman, 2001; Ryan & Bernard, 2000). Notwithstanding the limitations of content analysis, the technique is a useful way of making sense of the written comments provided in the *CV Market Stall* exercise by respondents. By means of illustration, attitudes towards reintroducing an extinct native species, the European beaver to Scotland, will be presented.

Almost three-quarters of respondents (73.2%) were in favour of a pilot project in Argyll, western Scotland, which would see the reintroduction of European beaver in a suitable habitat. Table 2 summarises the themes describing why respondents supported the reintroduction proposal and how frequently those themes were referred to.

Table 2 shows that three themes dominated the reasons why respondents were in favour of the proposals to reintroduce European beaver to Scotland. The most

Table 2. Why did respondents support the beaver reintroduction proposal?

Theme	Theme cited by how many respondents?
In favour of the reintroduction of once native species	14
Environment could benefit from reintroduction	13
Reintroducing beavers could boost tourism	12
Supported the idea of a pilot project	8
Reintroduction would increase species diversity	7
Reintroduction is unlikely to harm the environment	5
Reintroduction could benefit freshwater systems	4
Would like to see beaver in Scotland again	4
Reintroduction has been successful elsewhere in Europe	3
Potential benefits outweigh negative aspects of project	3
Reintroduction could lead to forestry improvements	2
Approve because species has only been extinct for a short period of time	2
Would not be too costly a project to implement	2
Could be economic benefits	2
Likelihood of success is high	1
Project would be controlled and monitored	1
Pilot study would create a living ecological laboratory for study	1

Note: comments were received from the 52 respondents who recorded support for the beaver reintroduction proposal (note that respondents could refer to more than one theme).

frequently cited reason, that respondents were simply in favour of the reintroduction of once native species, was mentioned by 27% of the respondents who supported the project. Their comments included:

I believe the reintroduction of extinct but previously native species to be important. (Respondent 133)

The beaver was a native species and as such has helped, albeit a long time ago, shape the natural Scotland. (Respondent 9)

A further 13 respondents (25%) thought that the reintroduction of beaver would be beneficial to the environment. Comments falling under this theme included:

Reintroduction would have an impact on the environment which I would regard as positive. (Respondent 9)

I support any project which will improve habitats for all native wildlife. (Respondent 123)

Strong support for reintroduction to increase diversity of wildlife. (Respondent 58)

The third most frequently cited theme was the view that introducing beavers could promote the further development of tourism in remote areas of Scotland. This theme was cited by 12 respondents (23% of those in favour of the reintroduction project). The wildlife management proposal was thus seen by those respondents as being closely related to rural development. Comments included:

I feel it would be of economic and conservation value to the rural environment. (Respondent 92)

I think beavers would improve tourism as people would visit them in their natural habitat and [be] educated about them therefore increasing support in the project. (Respondent 52)

Considering the rural economy, the wider mix of attractions to visitors, the more sustainable rural tourism will be to the fragile rural economies. (Respondent 10)

A minority of respondents, seven, did not support the beaver reintroduction proposal. Their explanations fell into seven themes, with all but one respondent giving at least two reasons for not supporting the proposal. The most frequently cited reason for not supporting the proposal was the opinion that existing wildlife management programmes should take precedence over any plans to reintroduce a once native species. Five of the seven respondents opposed to the project gave comments falling into this theme, including:

Existing conservation projects should take precedence within the UK. (Respondent 36)

Money probably could be better spent on preserving native habitats and species etc. (Respondent 138)

Not sure that reintroducing a species makes as much sense as protecting one from our activities. (Respondent 113)

The payment card format allowed respondents to record a ‘not sure’ verdict about the wildlife management projects considered in the research. In the case of the beaver reintroduction proposal, 13 respondents recorded that they were ‘not sure’ about the project. Explanations for the ‘not sure’ response encompassed six themes, shown in Table 3, and most respondents cited a single theme in their explanation for recording a ‘not sure’ response.

The ecological impacts of reintroduction was the most frequently cited theme prompting an inability to record a ‘support’ or ‘not support’ verdict. Comments included:

Not sufficient information given as to the possible impact of introduction [of beavers] on the ecology of the area—too many ‘may bees’. (Respondent 53)

Do not know enough about their [beavers’] behaviour and damage they may do. (Respondent 96)

Uncertainty about the proposal to reintroduce European beaver to Scotland was handled in two distinct ways by respondents at the *CV Market Stall* group meeting. Some respondents noted that they were ‘not sure’ (see above) while others recorded support with reservations (a qualified support) for the proposal.

Table 3. Why were respondents unsure about the beaver reintroduction proposal?

Theme	Theme cited by how many respondents?
Wanted more information about the ecological impacts of reintroduction	5
Concern about project costs	4
In principle approve, but only if it is not detrimental to other species	3
Measures to protect rare and threatened species more important than a reintroduction programme	2
Not convinced that the project will be successful	1
Didn’t have strong views for or against reintroduction	1

Note: comments received from the 12 respondents who recorded that they were unsure whether or not they supported the beaver reintroduction proposal (note that each respondent could mention more than one theme in their response).

There was an overlap between 'not sure' themes and the reservations expressed by the fifteen respondents who had noted that they supported the reintroduction proposals. Reservations and uncertainty were most closely associated with the view that existing wildlife management programmes should take precedence and concerns about potential environmental impacts of the reintroduction programme. An example of the former is:

Yes to feasibility study but I am definitely uneasy about the cost of this kind of project. I feel there are many other endangered species in need of considering before we start reintroducing species. (Respondent 104)

while the latter theme was expressed, for example, as:

Would want to know what ecological consequences would be—change in balance of prey (increase in predators perhaps?). (Respondent 86)

Why did some respondents record qualified support whereas others, some of whom expressed the same type of reservation, decided to record a 'not sure' verdict? In part this could be explained by attitudes towards risk, with risk averse people more likely to record a 'not sure' answer. Scrutinising findings from all the wildlife management proposals considered in the research suggested that respondents who expressed uncertainty were more likely to express qualified support for a project if the outcome was positive (boosting numbers of an endangered species or supporting a reintroduction proposal) and record a *not sure* response if the outcome was negative (such as requiring a cull). This 'uncertainty' issue only came to light during the analysis phase of the project and is something that should be followed up in future research.

A number of overarching issues emerged following the content analysis. The reasons for (not) supporting a specific wildlife management proposal were varied and attitudes towards the four different types of wildlife management projects considered (population culls, translocation, the protection of species facing extinction and species reintroduction) did not follow common themes. This demonstrated that respondents discriminated between the different projects they considered. Previous contingent valuation studies have tended to consider a single project. This study suggests that more than one project can be considered in a single *CV Market Stall* exercise. Finally, the way in which uncertainty about the wildlife management proposals was reflected in the decisions respondents made was intriguing, raising questions not addressed in similar research to date. Reducing uncertainty was a feature of the two-stage *CV Market Stall* technique and will be considered below.

What Factors Influenced the Bids Recorded in the Willingness to Pay Exercise?

A central part of the *CV Market Stall* is recording WTP for the non-market good being considered. Respondents were asked if they would be willing to pay different sums to fund the proposal they had been presented with. Payment was conceptualised as being the extra tax (assumed to encompass both direct and indirect taxation) respondents would be willing to pay over a 10-year period to fund

the project. Respondents were presented with payment levels ranging from £2 to £200 (the values were not presented in numerical order) and were asked to indicate on the payment card whether they definitely would pay, probably would pay, were not sure if they would pay, probably would not pay and definitely would not pay each amount. The payment levels were based upon WTP data obtained from a pilot study and are similar to those used in other UK wildlife studies. Mean WTP was derived from analysis using the method of Welsh and Poe (1998) on the assumption that maximum WTP pay lay somewhere in the interval between the largest amount that the respondent said that he or she would 'definitely pay' and the next bid level on the payment card (WTP with 95% CIs are presented in Table 4. More detail regarding the statistical method is given in Appendix 1).

The proposal to boost numbers of capercaillie received the highest WTP. The capercaillie is an endangered species in Scotland whose numbers peaked in the 1970s at approximately 20 000 individuals. There are now estimated to be only 1073 individuals in Scotland (Petty, 2000). The translocation proposal, to remove hedgehogs threatening rare native birds from the Western Isles to the mainland—the non-native hedgehogs eat the eggs of rare birds including dunlin, lapwing and snipe (Uist Wader Project, 2002)—received the lowest bids. Contingent valuation studies to date have been able to assess an individuals' WTP in relation to household income, age group, occupation and gender if such information has been collected from participants. In the wildlife management research computation of the Mann-Whitney U-test and the Kruskal-Wallis test demonstrated that of the socio-economic variables age, gender, income, educational status and employment and of the importance respondents gave to expenditure to protect wildlife the only variable that showed a consistent relationship with WTP was age.

Qualitative information collected in the *CV Market Stall* exercise offers a more detailed explanation for WTP decisions. Respondents were asked to write down what had influenced their WTP choices in an attempt to establish what general factors, if any, could explain their bids. Although it was found that some payment choices were explicitly related to the project being considered, content analysis identified common themes explaining why respondents recorded the payment choices they did across all the wildlife management projects considered in the project. Some themes were only mentioned if a project was supported, whereas others were only associated with respondents who did not support a particular proposal. The most important themes, in terms of the number of respondents who indicated that a particular reason had influenced their payment choices, are outlined below:

Supported the projects

1. Support for the specific objectives of the project: associated most with the capercaillie and beaver projects.
2. WTP influenced by personal financial circumstances and / or household spending priorities: associated with all but the hedgehog translocation project.
3. Relative importance of the project being considered *vis à vis* other environmental / conservation projects: most associated with the beaver project.
4. WTP influenced by the fact that wider environmental benefits were associated with the project: associated only with the beaver and capercaillie projects.

Table 4. Mean willingness to pay per household per year for 10 years

	Mean WTP per household per year for 10 years (£)				
	Hedgehog eradication	Hedgehog translocation	Mink eradication	Reintroduction of beaver	Boost number of capercaillie
Group meeting	£19.82	£9.49	£16.97	£22.10	£28.54
95% CI	£10.70 – £37.57	£5.26 – £15.61	£12.41 – £22.89	£14.59 – £31.29	£20.32 – £38.49
Telephone interview	£18.72	£8.99	£21.59	£24.22	£28.00
95% CI	£9.97 – £36.79	£4.50 – £15.23	£13.55 – £35.26	£17.15 – £34.76	£19.79 – £38.54

5. WTP considered in relation to the perceived total costs of the project being considered: most associated with the mink and capercaillie projects.
6. WTP influenced by the amounts given as charitable donations and / or annual subscriptions or membership fees for charitable organisations: associated most with the mink and hedgehog eradication projects.

Did not support the projects

7. Did not want to pay at all for a project that was not supported by the respondent: associated with all projects.
8. Relative importance of the project being considered *vis à vis* other environmental / conservation projects: associated with the beaver, capercaillie and mink projects.

Unsure about the project

9. Not convinced that the project would be successful: particularly associated with the hedgehog translocation and capercaillie projects.
10. Relative importance of the project being considered *vis à vis* other environmental / conservation projects: not associated at all with the mink and hedgehog eradication projects (the projects associated with a cull).
11. Belief that the project should not be funded solely by the taxpayer / other stakeholders should contribute: exclusively associated with the capercaillie project.

The reasoning of most people who supported the projects under review was consistent with neo-classical theory in the sense that they clearly considered their preferences for the project and considered what they could afford. However there was evidence that some participants adopted alternative strategies for responding to the WTP question: comment 5 above indicates that the cost rather than the benefits of the project dominated the decision, while comment 6 is evidence that WTP was determined with reference to charitable donations.

The reasons given for supporting a project were consistent with rational choice. Of the reasons given by respondents who were unsure about the projects, two (9 and 10 above) were consistent with expectations regarding 'unsure' respondents while the third, comment 11, suggests that there were concerns about tax being used as a payment mechanism. In this case we cannot be sure that the recorded WTP reflected the participants' true valuation of the project.

Overall, payment choices were influenced by a wide range of factors, not just the financial circumstances of the respondent. The fact that some respondents did not respond favourably to the idea that payment was through taxation, they preferred to think in terms of charitable donations or a subscription, means that the payment method itself may have had an influence upon the WTP bids recorded (although this concurs with previous research the fact that alternative payment mechanisms were formally noted by respondents in their comments is a useful finding). It was also apparent that respondents' payment choices were influenced by what they considered to be the relative importance of the project they were

considering. Overall, the proposals that did not require a cull were valued most highly, but respondents also discriminated between, for example, eradicating hedgehogs *in situ* or translocating them to the mainland. This offers some reassurance that respondents did not inflate their bids simply because discussing a wildlife management proposal had made them think it was of intrinsic importance and worthy of financial support.

Did the Two-Stage CV Market Stall Technique Record that Respondents Changed Their Minds about any Aspect of the Contingent Valuation Exercise?

The *CV Market Stall* is a two-stage method where WTP is recorded twice, first during a group meeting and secondly, a week later, during a telephone interview. In the wildlife management project 23 respondents changed their minds about a project, representing approximately a third of all those who participated in the research. Women were more likely to change their minds than men. The changes are shown in Table 5.

For all wildlife management proposals considered the number of 'not sure' responses decreased between the group meeting and the follow-up telephone interview. This suggests that giving respondents time to think about the wildlife management projects at their leisure reduced their uncertainty. The intervening week allowed respondents to ponder whether or not they supported the management proposals, regardless of what they stated at the group meeting. Although those who had initially recorded a 'not sure' response were the respondents most likely to change their minds, changes were not exclusively their preserve. The only type of change that did not occur was a 'did not support' view at the group meeting being followed by a telephone 'not sure'.

Table 5. Support for the wildlife conservation proposals at the two elicitation

	Total who changed their mind	Support?	Group meeting	Telephone interview
Mink eradication	12.8%	Support	76.9%	82.1%
		Did not support	10.3%	12.8%
		Not Sure	12.8%	5.1%
Hedgehog eradication	15.6%	Support	78.1%	75%
		Did not support	6.3%	12.5%
		Not Sure	15.6%	12.5%
Hedgehog translocation	21.9%	Support	18.8%	25%
		Did not support	34.4%	56.3%
		Not Sure	46.9%	18.8%
Capercaillie conservation	8.5%	Support	85.9%	83.1%
		Did not support	2.8%	7%
		Not Sure	11.3%	9.8%
Beaver reintroduction	12.7%	Support	73.2%	71.8%
		Did not support	8.5%	14.1%
		Not Sure	18.3%	12.7%

Respondents were most likely to change their mind about the hedgehog translocation project. They were least likely to change their mind about the capercaillie project, the project that received the highest level of support in the *CV Market Stall* exercise. Of those who changed their mind, most only changed their minds about one project, suggesting that a change of opinion was a carefully thought through decision, made after reflecting upon the species and project proposal information provided at the group meeting. In addition, the fact that almost a third of respondents changed their mind about at least one of the projects they considered in the *CV Market Stall* exercise illustrates the importance of the technique in recording a 'valid' opinion from respondents in the second WTP elicitation. Traditional WTP techniques, where an opinion is only recorded once, may inadvertently over or undercount support or lack of support for proposals.

At the group meeting the highest WTP was recorded for capercaillie conservation. The project with the lowest mean household WTP was the hedgehog translocation proposal. If respondents changed their minds about supporting or not supporting a proposal it is logical to ask whether they also reviewed their payment choices. Many respondents revised the maximum amount they would definitely be willing to pay between the group meeting and the telephone interview. The mean differences (percentage change) were as follows:

- Mink eradication: mean WTP increased by £4.62 (+ 27%)
- Beaver reintroduction: mean WTP increased by £2.12 (+ 10%)
- Hedgehog translocation: mean WTP decreased by £1.10 (– 5%)
- Capercaillie conservation: mean WTP decreased by £0.54 (– 2%)
- Hedgehog eradication: mean WTP decreased by £0.50 (– 5%)

The number of respondents who revised their bids was equally divided between those who revised their bids upwards and those who revised their bid downwards, hence overall mean WTP was not really affected and none of the changes were statistically significant. This is similar to the application of *Market Stall* to wild goose conservation, where WTP increased but not significantly (at 5% level). This finding could be read as evidence that the two-stage elicitation of WTP is unnecessary because the variation in overall mean willingness to pay was not statistically significant between the two elicitations. On the other hand, there were fewer *unsure* responses in the second elicitation and qualitative information (comments made during the telephone interviews and information recorded in the diaries) indicates that most participants took the opportunity to revise their WTP and had fewer reservations second time round: they were more content about their decisions for each project and thus the payment choices recorded during the telephone interviews are a more valid record of respondents WTP. Giving people time to think about conservation proposals results in a more confident, valid response.

Assessing the Utility of the *CV Market Stall* Technique

The *CV Market Stall* has proven to be a good method for exploring attitudes about and responses to complex environmental project proposals. It has four main strengths over traditional contingent valuation techniques. First, it fosters

deliberative, participatory consultation, following the principles underpinning Citizen Juries. Second, it records detailed qualitative information describing individual respondents' decisions which helps to explain findings recorded in the quantitative element of contingent valuation and supplements our understanding of public values for wildlife projects. The qualitative information facilitates methodological triangulation, an internal validation of findings which improves confidence in the findings. Third, it leads respondents to make confident, considered decisions about the various projects they were questioned about and involves them more fully and positively in the policy debate than traditional interview based surveys. Finally, the technique allows for variations in the degree of support for management options to be ascertained. It is clear from this research that a decision to support a project does not necessarily mean that the proposal is supported 100%.

Beyond the methodological strengths, *CV Market Stall* has the potential to assist policy makers. The debate about public policy and wildlife management has, in the past, tended to become polarised between animal welfare groups and organisations seeking to manage or exploit the species, often for commercial reasons. The study reported in this paper demonstrates that the public are willing to pay for programmes that manage, control or conserve wildlife that have no market value, indicating that public money is being spent on projects with public support and that it is worthwhile to involve the public in the decision making process, adding another voice to the policy–management debate. Taxpayers' money spent on wildlife conservation, despite the largely negative press such issues can receive, normally represents good value for money.

The research reported in this paper confirmed the finding reported in Macmillan *et al.* (2002), that the *CV Market Stall* allows us to canvass and explore the views of ordinary members of the public in a reasoned and rational way. The additional time and information available to participants in the *CV Market Stall* setting encourages them to express both their underpinning attitudes to wildlife management and their considered response to specific project. It identifies a much more detailed understanding about public preferences than would have been possible in more conventional interviews and questionnaire methods. The qualitative dimension of the technique, first employed in detail in this research, increases our understanding of the decision making process associated with the recording of WTP. It is inevitable that a new technique will be further developed and refined in future use. This paper demonstrated that the technique deals with respondent uncertainty: this is an issue worthy of more detailed consideration in future research. The format for the second elicitation of WTP could be developed further. For example, a longer time period between first and second elicitation could be explored, as could requesting respondents to complete the second elicitation on paper, in private.

The *CV Market Stall* approach throws up new and interesting possibilities for research into monetary valuation of environmental management projects generally, including, for example, wildlife and habitat management, landscape preservation, pollution control mechanisms and water quality. The flexible format, with the emphasis on information provision, discussion and learning would allow contingent valuation to be extended to much more complex and uncertain environmental issues, where issues of scope and embedding need to be explicitly addressed (McDaniels *et al.*, 2003, provide an example of how small groups can be used to alleviate

embedding in environmental valuation). It could conceivably be extended to consider non-environmental issues where public expenditure decisions need to be made, for example, deciding which one of four rural development strategies should be given funding or what strategic priorities identified by an education department should be implemented. The preferences of distinctive groups in society could also be explored and reported in greater depth than is possible in a generalised survey of public attitudes, where only the 'average' value is often reported. As such the *CV Market Stall* is a technique that may be used by social and environmental scientists from a variety of disciplines to investigate a variety of public policy issues. Policy makers should not shy away from involving the public in deciding where financial resources should be targeted.

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Appendix 1. Estimation of willingness to pay

The payment cards asked respondents to consider whether they would definitely pay, probably pay, not sure if they would pay, probably not pay or definitely would not pay the following values (which were presented as listed): Level 1 = £2; Level 2 = £12; Level 3 = £38; Level 4 = £20; Level 5 = £200; Level 6 = £60; Level 7 = £6; and Level 8 = £120. Using the payment card data, an analysis was conducted using the method of Welsh and Poe (1998) on the assumption that maximum willingness to pay lay somewhere in the interval between the largest amount that the respondent said that he or she would “definitely pay” (X_{iL}) and the next bid level on the payment card (X_{iU}).

It was assumed that WTP has a logistic distribution. The log-likelihood function is therefore

$$\ln(L) = \sum_{i=1}^k \ln \left(\frac{1}{1 + e^{-(\alpha + \beta X_{iU})}} - \frac{1}{1 + e^{-(\alpha + \beta X_{iL})}} \right)$$

Estimates of α and β were obtained by maximizing this likelihood. The fact that bids must be non-negative was allowed for by left-truncating the logistic curve. The nonnegative mean is given by $\frac{\ln(1 + \exp(-\alpha))}{\beta}$. Confidence intervals were obtained by a bootstrapping procedure. New samples were formed by sampling with replacement from the original sample until a sample of the same size as the original one has been generated. This procedure was repeated 500 times and confidence intervals for the nonnegative mean were obtained from the sample quantiles.