Perceptions of Pine Marten Reintroduction in South-West England: Results of a Q-Method Stakeholder Study and Regional Public Survey

Report for submission to the Two Moors Partnership

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Important notes for all readers

This report discusses opinions and perspectives. The opinions described in this report are those of research participants, as they were articulated to the research team. It is not within the researchers' remit to determine whether a viewpoint is "correct" or "incorrect", and participant statements of "fact" may or may not be scientifically evidenced.

This report deals with perspectives and opinions **only**. Those detailed within these pages are the views of real people living in the south-west, and the reader may or may not agree with these perspectives. All readers are encouraged to read this report with respect for all the diverse opinions that are here presented, regardless of their own view.

Views presented in this report are those of participants as they have been articulated to the researchers. As such, they may not necessarily reflect the personal views of any member of the research team.

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This research was commissioned by the Two Moors Partnership. The partnership includes Devon Wildlife Trust, Woodland Trust, National Trust, Dartmoor National Park Authority, and Exmoor National Park Authority. The two studies presented herein were undertaken independently by researchers from the University of Exeter; the Two Moors Partnership had no oversight of analysis.

Acknowledgments

The authors would like to thank all 909 participants who took part in either of the research activities, as well as all of those who shared the research invitations within their networks. The authors would also like to express gratitude to D. Bavin for his insight, as well as thank W. Elliott and Prof. C. Sox for support during the project timeframe.

Executive Summary

- At the time of writing, a proposal is being put forward by the Two Moors Partnership to reintroduce pine martens (*Martes martes*) to the south-west.

- Neither the University of Exeter nor individual authors of this report are members of the Two Moors Partnership. The authors were commissioned as independent researchers to capture an understanding of perceptions held by key stakeholders and the wider public about pine marten reintroduction in the south-west.

- Between March and July 2023, two studies were completed in parallel. This is a factual report that presents the findings from these two studies.

Part 1. Q-Method: Perspectives of stakeholder representatives and interest groups

- To understand stakeholder views, a method known as Q-Methodology was used. Q seeks to identify shared perspectives that exist within a context and understand the subjectivity in depth. For this study the approach was adapted from a previous, peer-reviewed study (Bavin et al, 2020).

- For participants, the method involves a statement sorting exercise with discussion. Following the analysis procedure, the output resembles a qualitative profile of each identified viewpoint.

- The participants included representatives with backgrounds or interests in: farming; land ownership or management; wildlife or conservation; forestry; shooting or gamekeeping; professional environmentalism; and residents living within or near to a proposed release zone.

- Three distinct perspectives were identified. Full, detailed descriptions are provided within this report. We encourage the reader to read these **in full** to enable a nuanced understanding. For headlines in brief:

    - Perspective 1 is favourable to pine martens and perceives there to be potential benefits from reintroduction, which it supports as a point of principle. This perspective is unsure if there would be negative impacts. Participants associated with this perspective were primarily local residents (some of whom had voluntary wildlife roles), as well as an environmental farm advisor and species conservation professional.
    - Perspective 2 is opposed to pine marten reintroduction. There are strong concerns about the impact of predation on native wildlife, and about predation on poultry and gamebirds. There was a view that there should be more effort to support existing wildlife or habitats before introducing a species which predates. Participants associated with this perspective primarily had interests in farming, landownership, shooting and gamekeeping.
    - Perspective 3 is favourable to pine martens and believes there would be benefits from reintroduction which is strongly supports. However, support for reintroduction is conditional on the process through which

reintroduction takes place, and on there being ecological monitoring. Participants associated with this factor were primarily professionals in forestry, the environment, or conservation.
- Whilst there was a high degree of alignment between Perspectives 1 and 3, there was a high degree of divergence between those two perspectives and Perspective 2.

Part 2. Regional Residents' Survey: Public perceptions

- To capture an understanding of perceptions among the wider public, an online regional public survey was undertaken. This was open for any resident across the South-West.

- 880 responses were received, 814 of which were from participants that identified their county of residence to be within the south-west. (Results from the south-west are prioritised in the remaining summary).

- Through three multiple choice questions, participants demonstrated a familiarity with the species in question. When asked how much participants felt they knew about pine marten reintroduction in the south-west, most answered either 'I know something about it' or "I have heard something but don't know much".

- Participants were asked whether they supported the reintroduction of pine marten in the south-west, to which they could answer on a five-point scale from 'very negative' to 'very positive'. A high majority in this respondent pool took a position of support.
    - Groups statistically more likely to support the reintroduction included respondents aged 16-24 or 25-34, and respondents who identified their occupation to be in 'Education'.
    - Respondents who identified their occupation to be in 'Farming & Agriculture' were statistically less likely to support the reintroduction.
    - A higher proportion of respondents who felt able to express their opinion where it may influence decision makers indicated a position of support, compared to those who did not feel able to do so.
    - Among those very supportive of reintroduction, the most frequently given reasons related to: increased biodiversity creating healthier ecosystems; control of grey squirrel populations; and pine martens being a native/indigenous species.
    - Among those very opposed to reintroduction, the most frequently given reasons related to: concerns over the effect of pine martens on their prey species; a view that another protected predator will have negative effects on the existing ecosystem; and experiences of pine marten damaging property in other parts of the UK or Europe.

- Participants were asked to rank how important each of a set of conditions would be for support of any pine marten reintroduction project on a scale. Among the mean scores, that which scored as most important was monitoring the ecological impacts

of the pine martens, followed by putting in place mitigation measures to manage the risks to pine martens.

- Participants were given a list of management techniques and asked to tick which they would support.
    - Most highly selected among participants who took a position of support on reintroduction was 'Targeted education, advice and support to enable coexistence with pine martens', followed by 'Raising awareness and understanding of pine martens'.
    - Most highly selected among participants who took a position of opposition on reintroduction was 'Lethal control (or culling)', followed by 'Compensation for losses resulting from pine marten predation'.
    - Among all groups, least highly selected was 'No management will be necessary'.

Part 3. Researcher reflections

- The research team are not the decision-makers on whether or how pine marten reintroduction may proceed in the south-west, not part of the Two Moors Partnership. In this report however, four reflections are given in response to results.

- Reflection 1: Perceptions and understandings of predation will be a key factor if this project proceeds. Although challenging, two-way understanding of knowledge, experience, and evidence regarding the role of predation in ecosystems may be required. Stakeholders expect ecological monitoring to be part of a project. Regular and honest dissemination of monitoring findings, as well as information about management / mitigation employed in the event of negative outcomes, is likely to be beneficial.

- Reflection 2: Due to polarisation in perspectives, there is a risk of conflict. To overcome this, consideration should be given to how to facilitate a respectful dialogue with and between groups with different views, in a participatory process grounded in listening. Efforts to reach out and build relationships proactively could facilitate trust and feelings of involvement in the process. One consideration may be to form a participatory stakeholder and community partnership or Steering Group (perhaps informed by the Beaver Management Group approach).

- Reflection 3: The outcomes of this project will be likely to influence future environmental initiatives in the area, whether reintroductions or otherwise. It may be more difficult to engage with parties in future if they feel they have had a negative experience, or alternatively where parties feel their views have been listened to, there may be greater willingness to engage or participate in other future endeavours.

- Reflection 4: The researchers agree with Bavin et al., 2020 that Q-Methodology aides a better understanding of stakeholder perspectives. In future, the researchers suggest undertaking Q *prior to* a public survey to enable opportunity for the Q outcomes to inform the public survey's design.

Contents

i. Background

At the time of writing, a proposal is being put forward by the Two Moors Partnership to reintroduce pine martens (*Martes martes*) to the south-west of England. The Two Moors Partnership includes Devon Wildlife Trust, National Trust, Woodland Trust, Dartmoor National Park Authority, and Exmoor National Park Authority. (*The Partnership does **not** include the University of Exeter*).

Reintroduction is when a species is returned to an environment where it previously used to live. Pine martens are thought to have lived in the South-West of England until 1870-1880. Populations of pine marten remain in Scotland, and in recent years they have been reintroduced to parts of Wales and the Forest of Dean.

At the time of writing, the Two Moors Partnership (of which the researchers are not a part) intend to apply for a license to release pine martens in the region. In such an event, the application will be considered by Natural England who will decide whether a licence is granted. At the time of writing, an application has not been submitted and a decision has not yet been taken by Natural England.

The authors of this report were commissioned by the Two Moors Partnership to undertake two research exercises to facilitate an understanding of perceptions that exist about pine marten reintroduction in the south-west. The first of these activities was focused on developing an understanding of perspectives held by key stakeholders or groups that may have an interest if pine marten were reintroduced, for which a technique known as Q-Methodology was used (see Part 1). The second was to complete an exploratory study to capture perceptions held more broadly among residents in the south-west of England, for which an online perceptions survey was undertaken (see Part 2).

This is a factual results report that details the findings from both studies in turn. Four reflections are also provided from the researchers (see Part 3). The Two Moors Partnership have agreed to attach this document in the form in which it is presented to any licence application. It will also be shared with all participants who have opted in to receive a copy and be made publicly available so as to be transparent about its findings.

ii. Role of the researchers and this report

The authors of this report are independent researchers at the University of Exeter. The activities reported on within this report were undertaken by the research team in a research-only capacity.

Neither the authors nor the University of Exeter are members of the Two Moors Partnership. As such, the researchers are **not** involved in proposing or opposing a pine marten reintroduction, and it is not within the researchers' gift to make decisions about whether or how to proceed regarding pine marten reintroduction.

This is a factual report that outlines the two research activities that the researchers have been involved in **only**. The Two Moors Partnership had no oversight of the analyses here presented.

The researchers have completed these studies in the role of independent researchers and acted in accordance with ethical approval granted by the University of Exeter Geography Ethics Committee (see Section iii). It is also the research teams' intention to follow this report with a text to be submitted for external academic peer review. It is a possibility that these studies may be repeated in future to assess if or how perceptions may change if pine martens are released, but this is not currently funded or arranged. As things currently stand, the researchers will no longer be involved with the Two Moors Project in any capacity beyond the point of this report's submission.

Finally, whilst this report outlines findings from the independent research undertaken by the University of Exeter, the researchers have not been any further involved with the Two Moors Project. Further activities and feasibility study undertaken by the Two Moors Partnership are therefore not reported on within these pages, so it should **not** be assumed that further activities either have or have not taken place on the basis of this report alone.

As it is not the role of the researchers to report upon other Two Moors activities, the reader is advised to contact a member of the Two Moors Partnership if they would like any further information or to ask questions about the Two Moors Project.

iii. Ethics

Prior to recruiting participants, the study was approved through departmental ethics review. The University of Exeter requires all researchers to undertake an ethical review process prior to embarking on any study involving human participants. The following are ethical principles that were applicable to this project:

- All participants were provided with research information before taking part and required to give their informed consent to participate. For the Q-Method study, this required returning a signed consent form. For the online survey, participants were required to tick a box indicating that they had read and agreed to the research information; participation was not possible without ticking this box.
- Participation was voluntary, and participants could withdraw from either study by notifying the researcher prior to the analysis period, without having to provide a reason why. In the survey, participants were not required to answer any questions (asides from the box to indicate informed consent).
- Taking part was on an anonymous basis. To understand participant backgrounds, the survey asked participants to indicate their occupational group, gender, age group, and county of residence, however none of these were required fields and no individually personally identifiable information was requested. For the Q-study, participants were asked to identify their interest/background in a way they felt comfortable and which would protect their individual identities. No personally identifiable information is given in this report.

- Participants were informed that results would be outlined within a report output and could be included in a follow-up text to be submitted for academic peer review.
- All participants were offered opportunity to opt in to receive a copy of this results report and, if they opted in, participants were asked to provide a contact email address. These contact details were stored on a secure University of Exeter site that was accessible only to the researchers. These details will be permanently deleted from the Sharepoint site once the report has been shared back with those respondents that opted in to receive it.

iv. Research timeframe

- The researchers were contracted in March 2023.
- Study procedures were subjected to an ethical review process (see Section iii). This is a requirement for all University of Exeter research involving human participants, and research cannot begin until approval has been granted. The application was submitted on 13th March 2023, with approval granted on 13th April 2023.
- Following the Easter break, finalisation of survey design and data collection took place.
    - The first Q-Sort was arranged with the respective participant for 10th May 2023, and the final Q-sort took place on 13th June 2023.
    - The survey was open for submissions between 10th May 2023 and 5th June 2023.
- Data analysis and the write-up took place between the data collection closure dates and submission of the final report on 21st July 2023. Submission marked the end of the authors' research activities.

Part 1. Q-Method: Perspectives of Stakeholder Representatives and Interest Groups

1.1. Method

1.1.1. An introduction to Q-Methodology

Q-methodology is a recognised technique for eliciting an understanding of perspectives that exist about a topic. It is a semi-qualitative approach to systematically identifying, exploring, and characterising subjective views that exist within a context (Brown, 1996; Eden et al., 2005; Zabala & Pascual, 2016). Whilst it originated in the psychological sciences, it is increasingly used to understand subjectivity related to issues in the environment and conservation (Crowley et al., 2020; Zabala et al., 2018), including within the field of wildlife translocations. For example, it has been used in peer-reviewed studies to explore perspectives on beaver reintroduction among anglers in the River Otter Beaver Trial (Auster, Barr, et al., 2020), in a recent study from Scotland about perspectives on lynx reintroduction (Bavin et al., 2023), and in relation to a previous pine marten reintroduction in Wales (Bavin et al., 2020).

Q-Method does not seek to generalise viewpoints to or understand the prevalence of viewpoints in wider society, as it aims instead to enable in-depth and nuanced understandings of identified perspectives (Auster et al., 2022b; Eden et al., 2005; Watts & Stenner, 2012). Hence, it is effective with a small number of participants (even as few as one) and it is usual for studies to have between 12 and 60 participants (Watts & Stenner, 2012, p72-73).

Q can also distinguish where there is commonality or divergence between views and is sensitive to minority or marginalised viewpoints that could otherwise be overlooked, despite the potential of such viewpoints to have defining consequences for the success of a reintroduction (Bavin et al., 2020, 2023; Watts & Stenner, 2012).

Practically for participants, Q involves a process in which several pre-determined statements are sorted into a matrix (known as a Q-matrix, see Figure 1). The final configuration is known as a Q-sort.

Analytically, a factor analysis examines all Q-sorts holistically, exploring patterns of commonality between them (Auster, Barr, et al., 2020; Brown, 1996; Eden et al., 2005). The analysis results in 'factors', which give exemplar Q-sorts that would be considered typical of each identified perspective. These are then interpreted with the aide of further qualitative discussion undertaken with participants at the time of sorting.

Following interpretation, the final output resembles a set of qualitative profiles, one for each identified perspective.

1.1.2. Study design

The context of this Q-study was to explore perspectives of pine marten and their possible reintroduction in south-west England among representatives of key interest groups or those who may have a stake if reintroduction progresses.

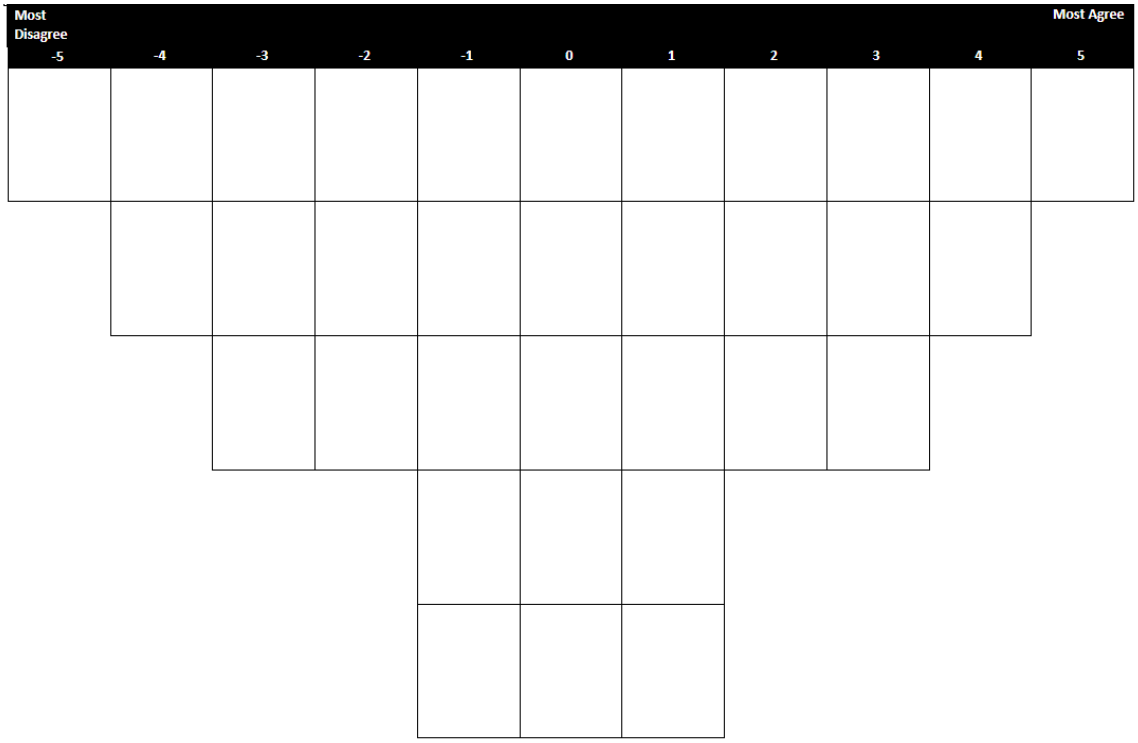
In 2020, a previous Q-Method study on perspectives of pine marten reintroduction in Wales was published in the journal *People and Nature* (Bavin et al., 2020). With the verbal permission of the lead author of that study, the Q-Method approach was adapted for use within this south-west context.

The Q-set comprised of 33 statements, thirty of which were employed from the aforementioned peer reviewed study. There were some minor adaptations to the context, and three new statements were added; in 2022, an exploratory study was undertaken for Cornwall Council in which a Cornwall-wide public survey sought to gain insight into perspectives on the reintroduction of six different species, of which the pine marten was one (Cooper et al., 2023). As this is a location in the south-west, the statements from Bavin et al 2020 were reviewed against the results of that survey's pine marten questions to explore applicability and identify aspects of the topic that may otherwise not yet have been covered. Details of the amendments and additions are outlined in Appendix 1.

Sorting took place in a two-step process. In the first step, participants sorted the statements into three piles – one for statements with which they agreed, one for those with which they disagreed, and one for those about which they had no strong feelings, were unsure about, or did not know. The researcher recorded which statements were placed into each pile prior to the second stage of the sort, where the participants arranged sorts relative to one another in the Q-Matrix.

The Q-matrix was an 11-point scale ranging from 'Most Disagree' to 'Most Agree'. The matrix's configuration (presented in Figure 1) was provided as a guide for participants to sort statements into. There is some discussion among Q-researchers about the merits of a forced distribution (where participants must sort into the matrix shape) versus those of a free distribution (where participants can place statements wherever they so choose). Ultimately however, Q is effective regardless of which approach is taken (Watts & Stenner, 2012, p77-78) so, with participant comfort in mind, we employed a hybrid approach whereby the matrix was provided as a guide, but participants were informed they could place more or fewer statements in each column if they wished.

Figure 1. Example of the Q-Matrix.



1.1.3. Participant invitation

As Q-Method does not seek to generalise opinions statistically to wider society, the sample was selected through both purposive and snowball sampling approaches. The aim was to ensure a range of potential key stakeholder perspectives were included, with the resulting sample including one or more representatives with backgrounds or interests in: farming; land ownership / management; wildlife / conservation; forestry; shooting; and local residents living within/near to a proposed release zone (see next section for more details). This was achieved using the following five targeted approaches to sharing the invitation:

- The Two Moors Partnership had identified a list of stakeholder groups for the purposes of their own activities, including a series of engagement workshops which were separate activities to the activities of the research team. The researchers produced a summary of their research stating the aims, with clarification of the researchers' position. This invitation was shared by the Two Moors Project at the workshops, but participants were invited to express their interest either directly by email to the researcher or through an expression of interest form. The researcher would then follow up independently from the workshop facilitators to formally invite those who had expressed interest. A summary of interest groups and numbers of attendees with which the invitation would have been shared is available in Table 1.

Table 1. Summary of interest groups and attendee numbers at workshops hosted by the Two Moors Partnership.

Workshop date	Interest or stakeholder group	Number of Attendees
18th March 2023	Pied flycatchers	46
6th April 2023	Dormice & small mammals	9
11th April 2023	Birds	5
20th April 2023	Forestry	8
24 April 2023	Forestry	7
27th April 2023	Shooting	9
9th May 2023	Bat conservation	10
2nd May 2023	Landowners/farmers	11
Total no. attendees		105

- The list of workshop attendees invited to workshops (which included several who were unable to attend the events described above) were sent details of the invitation to participate by email. To comply with GDPR requirements, the mailing list was not shared with the researchers. Instead, an invitation document was written by the research team to be circulated on their behalf by the Two Moors Partnership, with a request for interested individuals to contact the researchers directly (and not through the Partnership) if they wished to participate.
- Two further workshop events led by the Two Moors Partnership were undertaken with a different format; two drop-in events were held for members of the local communities, at community spaces within each of the two main identified release zones. Approximately 25-30 people attended the Exmoor drop-in, and 30-35 people attended the Dartmoor drop-in. As participant attendance was more variable and the event format was less well defined than the workshop events, the researcher attended in person. Event attendees were invited to complete a Q-sort if they had the time and willingness to take part. For those who agreed, sorting took place in an area that was separated away from the main event and members of the Two Moors Partnership, so as not to be observed taking part. This included the kitchen area of the village hall used for the first event, and in a storage area of the community space used in the second event. Seven of the sorts were completed at these events.
- Members of the research team contacted other stakeholders that they knew of within the possible release zones to invite them to participate.
- All participants were able to share the research invitation within their networks in a 'snowballing' approach.

When individuals agreed to take part (outside of the drop-in events), the researcher arranged to meet with them one-to-one. Initially the sort was intended as an in-person activity, however requests were received to undertake this sort online. As well as being available to complete in person therefore, the Q-sort was also set up in an online platform called HTML-Q. In a virtual meeting, the researcher shared a link to the web set-up and requested that participants shared their screen so that the researcher could observe and

help guide the participant through the sorting process, in a manner similar to the in-person activity. Ten sorts were completed virtually.

Throughout the sorting process, participants were free to discuss their thoughts or comments about the statements, and they were given a further opportunity for free discussion upon completion of the sort. The researcher took written notes of the verbal discussions to aide interpretation.

1.2. Summary of participants

Twenty-seven Q-Sorts were completed by twenty-nine people* as part of this study (sixteen male participants, nine female participants, and two male-female couples*).

At the time of sorting, participants were asked to describe how they would identify their background or interest group. Table 2 provides a summary of participant backgrounds as they were articulated to the researchers by the individuals, using assigned participant numbers to protect individual identities.

**Two sorts were completed by pairs of individuals jointly as couples. Whilst a sort is usually completed by an individual and a negotiated sort is more unusual, the couples in these instances wished to take part together and the researcher deemed it to be ethically appropriate to enable these individuals opportunity to take part in the manner most comfortable for them. Hence, these two sorts were completed jointly by those couples. The Q analysis examines the negotiated sorts as it would a sort completed by an individual. As an observational note, in both cases the participants verbally agreed with each other on the placement of almost all statements.*

Table 2. Summary of Q-Method study participants.

Participant	Gender	Background / Interest Group
1	Male	Resident in proposed release region and volunteer for environmental organisation
2	Male	Farmer
3	Female	Market trader with farming background
4	Male	Long-time resident in release region
5	Female	Eco-writer and resident near proposed release region
6	Male	Landowner in release site area
7*	Male and Female	Two farmers with poultry
8	Female	Resident with wildlife interest, on committee of an environmental organisation
9	Male	Resident near proposed release region with an interest in wildlife
10	Male	Shooting sports representative
11	Female	Land manager with livestock
12	Female	Volunteer wildlife warden in region of possible release zone
13	Female	Volunteer wildlife warden in region of possible release zone
14	Male	Gamekeeper and conservationist
15*	Male and Female	Farmers and conservationists
16	Male	Independent chartered forester
17	Female	Farmer
18	Male	Farmer
19	Male	Environmental professional
20	Male	Environmental professional and public official
21	Male	Conservation and forestry professional
22	Male	Conservation professional, dedicated to species conservation and enhancement in the UK
23	Female	Conservation professional
24	Male	Environmental farm advisor
25	Male	Landowner and conservationist
26	Female	Species conservation professional
27	Male	Farmer and landowner

1.3. Results

1.3.1. Analysis procedure: Identifying the shared perspectives

To identify shared perspectives (known here as factors), the 27 Q-sorts were compared holistically using a principal component factor analysis and varimax rotation. Varimax rotation is mathematically superior to manual rotation and maximises the amount of variance explained (Watts & Stenner, 2012, p125-126). Analyses were undertaken using KADE software (Banasick, 2019).

As is a common standard, extracted factors were initially retained when their eigenvalues exceeded 1.00 (the Kaiser-Guttman criteria). Two factors met this criteria, but following visual interpretation of the scree plot, a third factor with an eigenvalue of 0.9189 was also retained. Although not meeting the Kaiser-Guttman criteria, it did meet Humphrey's rule for factor extraction where more than two Q-sorts significantly loaded onto the factor and the composite of the two highest loadings is greater than twice the standard error. On preliminary inspection and drawing on their experiences of participant sorting, the researcher also found this factor to be a recognisable viewpoint. Although the above criteria for factor extraction guide decision-making, final decisions on factor retention rest with the researcher (Auster, Barr, et al., 2020; Watts & Stenner, 2012, p105-107). The resulting three-factor solution explained 67% of the total variance.

Factor loading refers to the degree to which a Q-sort is exemplified by a factor. Loadings of 0.45 or higher were initially deemed to be statistically significant at $p<0.001$. At this threshold, 9 sorts loaded onto Factor 1 yet a high number of these were confounded[1] with Factor 3; confounded Q-sorts are typically not used in factor interpretation. The loading threshold was therefore increased to 0.6. Q-sorts which remain loaded at this level contribute proportionally more towards the factor estimate than those which would not remain loaded (Watts & Stenner, 2012, p131). At this threshold, only two Q-sorts were confounded between Factors 1 and 3. (The rotated factor loadings are given in Appendix 2).

The weighted averages of the significantly loaded configurations were used to generate factor arrays, otherwise known as single, exemplar Q-sorts that represent the factor. Each was compared and contrasted to identify defining features. The factor arrays for the three perspectives are provided in Table 3, in which consensus statements are highlighted in blue and statements which were distinguishing for each factor[2] are highlighted in pink.

[1] Loaded onto more than one factor.
[2] $P < 0.001$

Table 3. Summary of factor arrays (i.e. exemplar Q-sorts) for the three identified perspectives.

Statement Number	Statement	Factor 1	Factor 2	Factor 3
1	Pine martens are attractive animals	5	1	3
2	I like the idea of introducing a diversity of wildlife	3	0	2
3	I like the idea that I might be living in the vicinity of pine martens	3	-3	3
4	I think you will face a challenge from the landowning or land management community	1	4	1
5	There may be a positive effect to other wildlife	1	-2	3
6	We might gain the pine marten, but lose other wildlife	0	5	0
7	The pine marten is vermin	-5	0	-5
8	This is humans messing with nature	-4	0	-3
9	I don't see any benefits to come from this project	-4	1	-4
10	If I am losing livestock I will deal with it my own way	-1	-1	-2
11	When animals are overprotected you lose the balance of nature	-2	3	-1
12	If people are not allowed to keep them under control, there will be too many pine martens	-3	1	-2
13	I think pine martens should be in South-West England	2	-3	4
14	I don't think humans should wipe them out	4	2	5
15	There will probably be more tourism in the area	0	-4	-1
16	They might be shot by people who don't want them	2	2	1
17	It would be nice if they became a tourism attraction	0	-3	0
18	If it makes the application for a felling licence more complicated it will be an absolute nightmare	-1	1	-1
19	It is sad that people from my generation, and the generation before, have not had a chance to see them	4	-1	1
20	People will not even know they are here	1	0	1
21	There will be many landowners and land managers who will be sympathetic to the project	1	-2	2
22	I think the translocation is a good step	2	-4	2
23	I think people would pay money to see them	1	-1	0

Statement Number	Statement	Factor 1	Factor 2	Factor 3
24	If they can clear grey squirrels there will be economic and nature conservation benefits	3	-1	4
25	One of my main concerns is bringing disease into the area	-3	-2	-1
26	I have reservations about introducing wild animals back into the countryside	-1	1	0
27	Pine martens were persecuted for a reason	-2	0	1
28	Pine martens have been known to take domestic animals	0	4	0
29	I am very concerned about poultry	-1	3	-3
30	If I lose hens or ducks, it is difficult to prove what caused that loss	-1	2	-1
31	Pine martens are not compatible with the modern rural environment	-2	-1	-4
32	There would be no negative effects of pine martens	0	-5	-2
33	There would be better things to spend money on	-3	3	-3

1.3.2. The three identified perspectives (known as 'factors')

In this section, a complete interpretation of each factor is given (i.e. the identified shared perspectives are described). Participant Q-sorts are referred to using their participant number (e.g. P1 = Participant 1).

References to the statements and their position on the exemplar factors are given in parentheses using the following formula: (statement number, position). Statistically distinguishing statements are identified with bold, red text.

To clarify, 'factor' here means an identified shared 'perspective'. As each factor is an exemplary perspective with which participants align, the interpretations describe the viewpoint of the exemplary factor (rather than each individual sort which aligns with it).

Perspective 1: Favourable to pine marten; perceive benefits from reintroduction; unsure whether there would be negatives.

Seven participants are significantly associated with this factor, including four female and three male participants. These include: P4 - long-time resident; P5 - resident and eco-writer; P8 - resident with wildlife interest, on committee of an environmental organisation; P9 - resident with interest in wildlife; P13 - resident with a voluntary wildlife-related role; P24 - environmental farm advisor; and P26 - species conservation professional. (Two further participants significantly associated with this factor, but were confounded as they associated also with factor 3: P11 - land manager with livestock; and P23 - species conservation professional). The factor had an eigenvalue of 12.84 and accounted for 24% of the explained variance.

Factor 1 feels strongly that pine martens are attractive animals (1, +5) and that it is sad people from their generation, or the one before, had not had chance to see them (**19, +4**). It likes the idea of introducing a diversity of wildlife (**2, +3**) as well as the idea of living in the vicinity of pine martens (3, +3). *"Living around more nature and wildlife is a good thing" (P24)*. There is a strong rejection of the notion that pine marten are vermin (7, -5) and strong agreement that humans should not wipe them out (14, +4). Whilst there is disagreement with the statement that pine martens were persecuted for a reason (**27, -2**) it is thought that whilst there may have been *a* reason for persecution, *the* reason itself was not agreed with. *"I don't think the reason was valid" (P8)*.

Factor 1 agrees pine martens should be in South West England (13, +2) and that translocation would be a good step (22, +2). It rejects the notion that reintroduction is humans messing with nature (8, -4). *"We messed about by making them extinct" (P8).* It somewhat agrees people will not know if pine martens were here (20, +1), but also thinks pine martens may be shot by people who do not want them (16, +2). There is a feeling that there would be landowners and land managers who would be sympathetic to the project (21, +1), but there may also be some challenge from the landowning or land management community (4, +1). *"I'm not a landowner. Some are against and some will be for it, so I think both" (P5)*. Factor 1 views pine marten as compatible with the modern rural environment (31, -2), and rejects the idea there would be too many pine martens if people were not

allowed to keep them under control (12, -3). *"Although populations would increase, they would reach carrying capacity" (P24).* It somewhat disagrees that it has reservations about introducing wild animals back into the countryside (**26, -1**), and is not concerned about bringing disease into the area (**25, -3**). *"I don't know of any associated with pine martens" (P24).*

Although the notion that there would be no benefits to come from the project is strongly rejected (9, -4), Factor 1 is unsure whether there would be negative effects of pine marten (**32, 0**). *"It is difficult to predict due to possible unforeseen consequences or how people may react" (P24).* Similarly, whilst somewhat agreeing that there might be a positive effect for other wildlife (5, +1), there is uncertainty about whether gaining the pine marten may result in other wildlife being lost (6, 0). *"Hopefully there is the evidence to assess potential negative impacts on bats, particularly from predation and disturbance. Being the south-west, this is especially important for Horseshoe bats as they hang free so are sitting targets, especially if it's a hibernation site" (P26).* Nonetheless, Factor 1 agrees that there would be economic and nature conservation benefits if pine marten cleared grey squirrels (24, +3). *"There might be benefits for forestry" (P24).*

The Factor rejects the statement that there would be better things to spend money on (33, -3), and does not think an overprotection of animals would mean the balance of nature is lost (11, -2). There is agreement that people would pay money to see pine martens (23, +1), yet uncertainty around whether there would be more tourism in the area (15, 0), and whether it would be nice if pine martens became a tourist attraction (17, 0). Mixed feelings were expressed by associated participants during sorting on this point; three agreed it would be nice, two disagreed, and two were unsure. *"Of all the things, that's what I'm concerned about, it would seem detrimental and against the project aims" (P4). "[Pine martens] would complement other parts of ecotourism" (P24).*

The factor exhibits slight disagreement with a concern for poultry (29, -1) and the suggestion that if it loses hens or ducks then it could be difficult to prove that loss (30, -1). There is however uncertainty around these points, and whether pine martens have been known to take domestic animals (28, 0). *"I am not a livestock owner" (P8).* Similarly, there is uncertainty around whether it would be a nightmare if it made a felling licence application more complicated (18, -1) or whether the factor would deal with the loss of livestock in its own way (10, -1). (P11, whose sort was confounded, was the only participant who associated with the factor that had livestock. They suggested they would *"seek advice and protect my livestock better, I would take responsibility for securing my livestock"*).

Perspective 2: Opposed to pine marten reintroduction; concern of predation on native wildlife; concern of predation on poultry and gamebirds

Seven participants are significantly associated with this factor, including five male and one female participant, and one of the male-female negotiated sorts. These include: P2 – farmer; P7 – two farmers with poultry (negotiated sort); P10 – shooting sports representative; P14 – gamekeeper and conservationist; P17 – farmer; P18 – farmer; and P27 – farmer and landowner. (Prior to raising the loading threshold, two further participants also associated with this factor: P6 – landowner; and P15 – two farmers and conservationists (negotiated sort)). The factor had an eigenvalue of 4.40 and accounted for 17% of the explained variance.

This perspective strongly rejected the idea that there would be no negative effects of pine martens (**32, -5**) and did not think the translocation was a good step (**22, -4**)**.** Factor 2 does not think there may be a positive effect to other wildlife (**5, -2**) and feels strongly that although we might gain the pine marten, we might lose other wildlife (**6, +5**). *"They would add to the taking of more wildlife when we have already lost more than fifty percent" (P14).* It believes when animals are overprotected, you lose the balance of nature (**11, +3**), and that there would be better things to spend money on (**33, +3**). *"Money is better spent on maintaining and improving the species we have here now" (P27).* Factor 2 neither likes nor dislikes the idea of introducing a diversity of wildlife (**2, 0**), as it was perceived that *"Maintaining and enhancing what's here is more important" (P17)*, and that there should be a focus on "*Get[ting] things back that the predators eat first, before the predators" (P14).*

This factor does not think that pine martens should be in south-west England (**13, -3**) and does not like the idea of living in the vicinity of pine martens (**3, -3**). It has a strong view that there would be a challenge from the landowning or land management community (**4, +4**) and perceives that there will be few landowners or land managers who would be sympathetic to the project (**21, -2**). *"It's a contentious issue. It doesn't mean they'd be unsupportive necessarily, but the way it is done and the timing will cause a challenge" (P27).* Factor 2 believes humans should not wipe out pine martens (14, +2) and somewhat disagrees that pine martens are not compatible with the modern rural environment (31, -1), but there is also some agreement that there will be too many pine martens if people are not allowed to keep them under control (**12, +1**). *"All of the area is a managed environment, so you can't let it run unmanaged" (P27).*

Factor 2 thinks that people will both know and not know pine martens are here (20, 0) dependent upon whether they were the general public or a specific group. *"If you are a chicken farmer or a conservationist you probably will. General public, probably not" (P14).* The factor believes pine martens have been known to take domestic animals (**28, +4**), particularly poultry and gamebirds. *"I have keeper friends in Scotland, and one thing they dread going into the pheasant pen is pine marten" (P14).* There is concern about poultry (**29, +3**) (P7 reported having already twice lost poultry to predation by polecats). There is also a view that, if there is a loss of hens or ducks, it would be difficult to prove what caused that loss (**30, +2**). *"Unless you see it then you can't prove it. If there is a surge in the population [of pine martens], you can't prove it enough for compensation" (P17).* There is disagreement that if livestock are lost they would deal with it in their own way (10, -1), but the factor also

believes pine martens may be shot by others who do not want them (16, +2). *"I probably wouldn't myself and I would follow the rules if they were there" (P27).*

Disease is not a main concern (25, -2) as it would be *"an introduced population so there will be effective control over this" (P27)*. There is however a level of concern about the potential for pine martens to contract TB; P15, who significantly associated with the factor at the lower threshold for loading, suggested *"they should be vaccinated for TB before release, as when they get here they could get TB, that's really important"*. There is also slight agreement that, if the reintroduction of pine martens makes the application for a felling licence more complicated, it will be an absolute nightmare (**18, +1**).

Factor 2 strongly believes pine martens would not bring more tourism in the area (**15, -4**). It is not seen as nice if they became a tourist attraction (**17, -3**), and there is scepticism that people would pay to see them (**23, -1**). *"I don't think people go to Scotland to see pine marten. […] It is a very shy wild animal so you would either need lots of them or a captive enclosure" (P17)*. Similarly, there is scepticism that there will be economic and nature conservation benefits if they can clear grey squirrels (**24, -1**). *"A massive 'IF'. The evidence on how good they are at it is debatable. They are promoted as such, but it is not clear cut" (P7).*

Pine marten are nonetheless seen as attractive animals (1, +1) and not necessarily as vermin (7, 0). "*Something isn't vermin until they start causing damage. Pine marten CAN be vermin, rather than IS vermin" (P17).* Whilst there is neither agreement nor disagreement that pine martens were persecuted for a reason (27, 0), it is thought that there was *a* reason, but that *the* reason would not be something that would be a good reason now. *"It was perceived as a good reason at the time, but in the modern context, it wouldn't be seen to be" (P10)*. Factor 2 does not feel that it is sad people from its generation, or the generation before, have not had a chance to see pine marten (**19, -1**).

Factor 2 does not see benefits to come from the project (**9, +1**). Whilst neither agreeing nor disagreeing that reintroduction is messing with nature (**8, 0**) - *"we're messing with nature in everything we do" (P17)* - there were reservations about introducing animals back into the countryside (26, +1). *"Think it through very carefully. The small bird population is already devastated" (P26); "If people who put together a project might lose their livelihood forever if it went wrong, they might be more mindful of the effect on farmers. The balance between ecosystem services and food is their livelihood" (P17).*

Perspective 3: Favourable to pine marten; perceive benefits from reintroduction; support conditional on process and ecological monitoring;

Seven participants significantly associated with this factor, including six male and one female participant. These include: P12 – resident with a voluntary wildlife role; P16 – independent chartered forester; P19 – environmental professional; P20 – environmental professional and public official; P21 – forestry and conservation professional; P22 – conservation professional dedicated to species conservation; and P25 – landowner and conservationist. (Prior to raising the loading threshold, two further participants also associated with this factor: P1 – resident and volunteer for environmental organisation; and P3 – market trader with farming background. Two further participants significantly associated with this factor, but were confounded as they associated also with factor 1: P11 - land manager with livestock; and P23 - species conservation professional). The factor had an eigenvalue of 0.92 and accounted for 26% of the explained variance.

This perspective feels strongly that pine martens should be in south-west England (13, +4) and believes there may be a positive effect to other wildlife (5, +3). It likes the idea of introducing a diversity of wildlife (**2, +2**) and does not have reservations about introducing wild animals (26, 0) *"if we reintroduce a species which was present before" (P21).* This is however conditional on the process through which it is achieved: *"My reservations wouldn't be about whether it is appropriate, but more about how it is done. If it is done well and is well planned, I have no strong feelings" (P20).* Similarly, Factor 3 thinks the translocation is a good step (22, +2), although this support is conditional on other factors. *"It's a great step, but habitat creation and connectivity is more important" (P21).*

Factor 3 likes the idea that it might be living in the vicinity of pine martens (3, +3) and believes they are attractive animals (1, +3). It very strongly feels that humans should not wipe them out (14, +5) and that they are compatible with the modern rural environment (**31, -4**). It somewhat agrees that it is sad people from its generation, and the generation before, have not had a chance to see them (**19, +1**) and although there is agreement that pine martens were persecuted for *a* reason, there is disagreement with *the* reason (27, +1). *"They were, but for a fundamentally flawed reason. People doing it thought it was right, but it wasn't a correct reason or necessary" (P22).* The factor strongly rejects the notion that pine marten are vermin (7, -5) and thinks there are benefits that would come from this project (9, -4). It does not perceive the project as humans messing with nature (8, -3) as *"this is humans trying to do something to tackle that which we have muddled with already" (P20),* and there is disagreement with the statement that there are better things to spend money on (33, -3). *"In wider society easily, but in the wildlife sector, probably not" (P16).*

There is little concern about poultry (29, -3), although there is a view that pine marten have been known to take some domestic animals, depending on the animal in question (28, 0) *"My cat shouldn't worry, but if I had a chicken coop it might be a worry (P25)"*. There is some disagreement that it would be difficult to prove what caused a loss if it lost hens or ducks (30, -1) and, if it is losing livestock, Factor 3 would not deal with it in its own way (10, -2). *"If I was a landowner I would agree, but it shouldn't happen. If I were, I wouldn't because I know there would be a proper system of doing it" (P22).*

There is some agreement that people will not even know pine martens are here (20, +1) and a view that many landowners and land managers will be sympathetic to the project (21, +2), but there was also some agreement that it will face a challenge from the land owning or land management community (4, +1). (P3, who associated with this factor at the lower threshold for loading, believed the challenge would be about the process and trust *"If handled in the right way and you are willing to take criticism and realise people don't trust you, and have one consistent person they know they can speak to, then you won't face a challenge."*) There is however also a view that they may be shot by people who do not want them (16, +1).

Factor 3 does not think that, if people are not allowed to keep them under control, there will be too many pine martens (12, -2), nor that the balance over nature is lost when animals are overprotected (11, -1). *"Protection is to maintain the balance of nature" (P19).* However, it rejects the idea there would be no negative effects of pine martens (**32, -2**). *"They will impact on some of the small mammals, e.g. dormouse. It's a part of nature, but some people won't like it" (P20).* There is also uncertainty around whether we might gain the pine marten, but lose other wildlife (6, 0). *"I would like to see more evidence. There may be unforeseen consequences, impacts on bats, pied flycatchers. I'd like to see a better review of evidence" (P25).* There is however some lack of concern about bringing disease into the area (25, -1). *"Like beavers, any reintroduction would have to be strongly controlled from a risk point of view" (P19).*

Factor 3 strongly agrees that if pine marten can clear grey squirrels there will be economic and nature conservation benefits (24, +4), with benefits also for forestry. However there was disagreement over the strength of the evidence that this would be achieved: *"There is strong evidence about benefits for forestry. Grey squirrel is the biggest obstacle to growing hardwoods (along with deer)" (P16); "I want to agree but there is lots of anecdote. I'm not sure it's enough. Lack of evidence" (P22).* It was also suggested that potential benefits should not be 'overplayed'. *"It is easy to overplay, like beavers and flooding. Don't play the squirrel thing too hard" (P25).* There was however slight disagreement that if the project makes the application for a felling licence more complicated it will be an absolute nightmare (18, -1). *"Don't think it'll be that hard, but it will have an impact and can be worked around. […] Detailed (and straightforward) guidance […] will be required to advise landowners […] as well as foresters and anybody else that manages woodland and scrub habitats" (P21).*

Factor 3 somewhat disagrees with the notion that there will be more tourism in the area (15, -1). It is uncertain whether people would pay money to see pine martens (23, 0) - *"Easy to overplay that hand" (P25)* – and exhibits mixed feelings on whether it would be nice if pine martens became a tourist attraction (17, 0). *"I don't like the principle of it. Maybe if there were guided walks, but not if it was like a theme park" (P19).*

1.3.3. Comparing perspectives

Three distinct perspectives were identified through the Q-Method process, two of which were favourable towards pine martens and their reintroduction, and a third which was opposed.

There was a high degree of similarity between perspectives 1 and 3, both of which were favourable to pine martens and reintroduction. (This similarity is arguably exhibited by the high number of confounded Q-sorts at the original threshold for factor loading). There were nonetheless distinctions in their viewpoints. Most participants who associated with perspective 1 identified as residents, some of whom with a local, voluntary wildlife role. For this perspective, there was a higher level of agreement with the statements that it liked the idea of introducing a diversity of wildlife, and that it was sad people alive today have not had a chance to see pine martens. This perspective also had fewer reservations about introducing wild animals back into the countryside. Despite being somewhat uncertain about whether there would be negative impacts, this perspective was more favourable towards pine martens and reintroduction as a point of principle. *"Emotionally I like it, but scientifically I am unsure" (P5)*.

Perspective 3 consisted primarily of forestry and environmental or conservation professionals. It similarly exhibited favourable views towards pine martens and their reintroduction, but with higher levels of concern about potential negative effects than perspective 1, particularly regarding impacts of pine martens on other threatened or protected wildlife. Examples of species of concern given by participants included bats (including the Greater Horseshoe), ground-nesting birds (often with curlew as an example), and dormice. There was a desire for further evidence about pine marten impacts and for there to be ecological monitoring or mitigation actions in place. Yet, it nonetheless agreed more strongly than Perspective 1 that pine martens should be in the south-west of England, with the emphasis placed on a potential for restoring native species and ecological function. *"My overriding view is that this is to try and rebalance nature with a species that used to be here, restoring a niche" (P20)*.

Perspective 2 however was concerned and opposed to pine marten reintroduction. Similarly to Perspective 3, there was concern about the impacts of pine marten predation on native wildlife, but these concerns were held more strongly and there was a view that there should be efforts to support existing wildlife or habitats, and / or to restore populations of other species (or "prey species") before introducing a species which predates on others. To illustrate this view, the curlew was often given as an example of a non-predator species restoration that these participants would support. Unlike the other perspectives, there were higher levels of concern about the impacts of predation on poultry and gamebirds, as well as about the management support that may be available in the event of any negative impact, reflective of the fact the interests of participants associated with this perspective were primarily within farming or shooting and gamekeeping. There was a high degree of difference in this perspective relative to Perspectives 1 and 3, with twenty-four (out of thirty-three) statements being distinguishing from the other two more similar factors. *"At this time, introducing another predator is absolutely ludicrous" (P14); "The biggest problem is predation on red-listed birds that are struggling already" (P15).*

There was a consensus across perspectives in having no strong agreement or disagreement with the statement that people would not even know if pine martens were present, but participants in perspective 2 added a qualifier that in their view, whilst most people would not know they were present, they would be known about at times of predation on poultry or gamebirds by those who they perceive would be negatively affected. There was also a consensus in slight disagreement that if livestock were lost then participants would deal with it in their own way, but for perspectives 1 and 3 it was highlighted that they (mostly) did not personally have livestock so were unsure on this point, whereas those who did have livestock (primarily associated with perspective 2) indicated they would deal with such a situation in accordance with the law. There was however also consensus in slight agreement across perspectives that there was a risk that pine martens may be shot by other people who do not want them.

Part 2. Regional Residents' Survey: Public Perceptions

As outlined above, Q-Methodology enables a rich understanding of viewpoints and perspectives that exist and is sensitive to minority viewpoints which may have a significant influence on the success of a project (Bavin et al., 2020, 2023). Here it was used to understand the views of key stakeholder representatives.

To complement this, a second approach was used to gain an exploratory insight into the opinions of residents in the south-west of England more broadly. An online survey was used to do so, which also then provided an opportunity for all individuals who live in the release region (across the south-west) to take part.

2.1. Method

The survey was adapted from a previous peer reviewed study, undertaken by the authors in a different reintroduction context – in that case a nationwide perceptions survey on Eurasian beaver reintroduction (Auster, Puttock, et al., 2020). The approach was adapted to be relevant to this pine marten context, informed by previous surveys undertaken regarding pine marten elsewhere (Ambrose-Oji et al., 2018).

An overview of subjects covered by the questions is given in Table 4. The full set of questions as written is provided through the following sections of this report.

Table 4. Overview of public survey.

Section	Focus	Detail
1	Knowledge of Pine Martens	Three multiple choice questions to give an indicative insight into participant familiarity with pine martens, similarly to previous studies by (Auster, Puttock, et al., 2020) regarding beavers and (Ambrose-Oji et al., 2018) regarding pine martens.
2	Perspectives on pine marten in the south-west	Four questions were adapted to the context from (Auster, Puttock, et al., 2020) to explore whether participants: are familiar with the proposed reintroduction; feel able to express views on pine marten in the south-west in a manner that will influence decision makers; support or oppose the reintroduction of pine marten in the south-west; and which practical methods of management participants would support if pine marten were reintroduced. A fifth question was adapted from Forest Research's perception survey for the Forest of Dean pine marten project (Ambrose-Oji et al., 2018), to query how important a range of conditions would be for participant support of any potential pine marten reintroduction project.
3	Views on reintroduction more broadly	The project funders requested inclusion of questions to understand participant views on reintroductions beyond the case of pine martens. New questions were written to ask: whether participants thought pine marten reintroduction to the south west would influence the likelihood of other species

Section	Focus	Detail
		reintroductions (including how / why); whether they broadly supported reintroductions of native wildlife; whether participants were familiar with any other reintroduction project taking place in the south-west; and what emotions participants feel when thinking about wildlife reintroductions.
4	Participant backgrounds	Demographic details were asked to explore responses in relation to the following variables: gender; age group; county in which participant lives; participation occupation; and where participants heard about the survey.

The aim of the survey was to provide an opportunity for all residents to take part and ensure a range of opinions was encompassed. To achieve this, the survey was distributed in a snowballing approach where individuals with particular characteristics are identified and invited to share details within their networks (Auster, Puttock, et al., 2020; Sadler et al., 2010).

Snowballing was achieved in two ways:

- A press release was issued to invite south-west residents to take part in the survey, which was distributed to press outlets by the University of Exeter press office (as well as via the University website and social media channels). The researchers also personally reached out to twenty-two identified regional news outlets in the south-west. As far as the researchers are aware, at least seven of those outlets picked up the press release.
- An invitation both to take part and to distribute the survey among their interest group networks was circulated to the list of contacts invited to attend the workshops. To comply with GDPR regulations and avoid the sharing of contact details, the invitation was distributed to this contact list on the researchers' behalf by a member of the Two Moors Partnership. The text was written by the researchers and shared as a PDF attachment to the email.

There is a limitation to this approach for numbers cannot be directly inferred to represent prevalence in wider populations. As was the case with the previous beaver survey however, the topic can be politically sensitive so it was important to encompass a spectrum of existing views, including those of harder to reach groups which can be reached through this method of recruitment (Auster, Puttock, et al., 2020; Sadler et al., 2010).

A public opinion survey related to the reintroduction of white stork in the south-east of England has also taken place, and the researchers involved (which do not include this reports' authors) will soon publish their results. That study indicates that individuals with stronger-held views (whether positive or negative) are more likely to be represented in surveys with a recruitment approach similar to that undertaken for this project (White et al., In Review). This is suggestive perhaps that opinions which may not be represented in this survey may be more likely to be those held by people whose views are held less strongly, or the views of people who have less interest in the subject.

2.2. Summary of participants

880 responses were received for this survey.

814 of these were from participants who identified the county in the south-west in which they were resident (see Section 2.2.3). As individuals who identified as residents in the south-west of England, results from this group will be prioritised throughout the remainder of this report and referred to as 'south-west residents'.

A further 66 responses were received from other individuals, including 45 who specified that they were not resident in the south-west, and 21 who did not respond to the question (and so their region of residence is uncertain). Although given less prominence, results from this group are nonetheless included in this report. As a group, these respondents are referred to as 'non-south-west residents' for ease of reference. (The results from this group should not be inferred to represent the views of non-south-west residents more broadly).

Comparison to previous pine marten project survey response rates

In previous pine marten project surveys, methods of participant recruitment (and analysis) varied, including approaches with mixed recruitment methods using both on- and offline surveys. Direct comparisons are therefore not possible, however the response rates can be considered as an indication of the level of success in participant recruitment in this case. For all of the previous pine marten projects, further engagement / consultation / feasibility activities were also undertaken, beyond the scope of these surveys specifically.

- 'People and Pine Marten' project in Wales: 871 responses (Somper, 2014).
- Forest Research Study for 'Project Pine Marten' in the Forest of Dean: 265 responses (Ambrose-Oji et al., 2018).
- University of Cumbria Feasibility Study for 'Back on our Map': 90 responses, plus a further 36 in a farm-specific questionnaire (Mayhew et al., 2022).

2.2.1. Participant summary: Gender

Table 5. Summary of participant genders.

Gender	All respondents	South-west residents	Non-south-west residents
Total	**880**	**814**	**66**
Male	436	397	39
Female	418	401	17
Other gender	4	1	3
Prefer not to say	3	3	0
Unspecified	19	12	7

2.2.2. Participant summary: Age Groups

Table 6. Summary of participant age groups.

Age Group	All respondents	South-west Residents	Non-south-west Residents
Total	**880**	**814**	**66**
16 – 24	30	26	4
25 - 34	80	77	3
35 – 44	108	99	9
45 – 54	151	142	9
55 – 64	217	207	10
65 – 74	203	186	17
75 and Over	69	65	4
Prefer not to say	9	8	1
Unspecified	14	4	9

2.2.3. Participant summary: County of residence

Table 7. Summary of participants' county of residence.

Group	County	n
Total		**880**
South-west residents (n=814)	Bristol	6
	Cornwall	23
	Devon	661
	Dorset	18
	Gloucestershire	29
	Somerset	65
	Wiltshire	12
Non-south-west residents (n=66)	Not resident in south-west	45
	Unspecified	21

2.2.4. Participant summary: Occupation

Table 8. Summary of participant occupational backgrounds.

Occupation	All respondents	South-west residents	Non-south-west residents
Total	**880**	**814**	**66**
Architecture, Energy & Engineering	5	8	0
Arts, Sport & Media	18	24	1
Building & Maintenance	13	12	4
Business & Finance	22	24	1
Community & Social Service	15	18	0
Computer & Mathematical	8	8	1
Education	59	76	4
Environment, Nature & Wildlife	165	153	12
Farming & Agriculture	63	60	3
Fisheries & Aquaculture	2	2	0
Forestry & Woodland Management	8	7	1
Healthcare	32	31	1
Hospitality	10	10	0
Office & Administrative Support	23	23	0
Physical & Social Science	5	5	0
Production / Manufacturing	9	9	0
Retired	256	238	18
Sales	4	3	1
Student	22	21	1
Tourism	6	6	0
Transport	1	1	0
Unemployed (or not currently working)	10	9	1
Other	71	65	6
Unspecified	53	1	11

2.2.5. Participant summary: Where respondents heard about the survey

Table 9. Summary of where participants heard about the survey.

Source	All respondents	South-west residents	Non-south-west residents
Total	**880**	**814**	**66**
Press (ie. Newspaper, News Website etc.)	56	52	4
Television / Radio	1	1	0
Social Media Advertisement	34	29	5
Social Media Post	228	207	21
Wildlife or Nature Organisation	351	335	16
Farming Organisation	4	3	1
Fishing Organisation	0	0	0
Forestry Organisation	2	2	0
Shooting Organisation	16	13	3
Water Organisation	1	0	1
Business Organisation	3	3	0
Tourism Organisation	0	0	0
Local Council	11	11	0
Friend or Family	109	104	5
Flyer at Event	1	1	0
The Researcher Directly	6	6	0
Other	47	44	3
Unspecified	10	3	7

2.3. Results

As this survey sought to provide an opportunity for residents in the south-west to share their view, the priority results for this section are those from the south-west residents group.

Results from non-south-west residents are not analysed in as much detail for this reason, but as these individuals took the time to complete a survey response, a subset of their summary results are included.

Participation was voluntary and participants were not required to answer any question. For each analysis therefore, responses are included only from those who answered the required questions. Hence, the number of responses in each analysis varies throughout.

2.3.1. Knowledge of pine martens

In this first section of the survey, participants were asked three multiple-choice questions about pine martens to provide an indication of respondent familiarity with this species. Each question and a breakdown of responses is given in the following Tables 10 to 12. (Each table provides a summary of results from both the south-west resident and non-south-west resident groups).

Question 1: Which of the following animals is a pine marten?

In this question, participants were given a choice of images of four different animals, and asked to identify which one is a pine marten. (Images are included in Appendix 3)

Table 10. Respondent answers to Question 1: Which of the following animals is a pine marten?"

Correct or Incorrect	Multiple Choice Answer	% of south-west residents *n=808*	% of non-south-west residents *n=60*
Correct	Pine Marten	79.08%	86.67%
Incorrect	Stoat	20.79%	13.33%
	House Marten	0.12%	0.00%
	Pine Cone	0.00%	0.00%

Question 2: Which of the following **best** describes what pine martens eat?

Participants could choose one of five multiple choice options.

Table 11. Respondent answers to Question 2: "Which of the following *best* described what pine martens eat?"

Correct or Incorrect	Multiple Choice Answer	% of south-west residents *n=812*	% of non-south-west residents *n=61*
Correct	Insects, small mammals, birds, and berries	95.07%	98.36%
Incorrect	Mammals only	1.85%	1.64%
	Fish, insects and vegetation	1.60%	0.00%
	Vegetation only	1.48%	0.00%
	Birds only	0.00%	0.00%

Question 3: In which habitat will pine martens be **most** likely to be found?

Participants could choose one of five multiple choice options.

Table 12. Respondent answers to Question 3: "In which habitat will pine martens be *most* likely to be found?"

Correct or Incorrect	Multiple Choice Answer	% of south-west residents *n=812*	% of non-south-west residents *n=60*
Correct	Woodlands and rocky hillsides	92.98%	98.36%
Incorrect	Moorlands and heath	5.79%	1.64%
	Grasslands	0.62%	0.00%
	Hedgerow	0.62%	0.00%
	Marshes	0.00%	0.00%

Questions 1 – 3: Overall scores for pine marten knowledge questions

The total number of correct answers was calculated for the participants who had answered all three of the multiple-choice knowledge questions. A summary of total scores is given in Table 13, which indicates the majority of respondents had a good understanding of the species.

Table 13. Summary of overall scores for pine marten knowledge questions.

Number of correct answers given	% of south-west residents *n=805*	% of non-south-west residents *n=60*
0	0.75%	0.00%
1	3.23%	0.00%
2	23.85%	16.67%
3	72.17%	83.33%

2.3.2. Perspectives on pine marten in the south-west

In this next section of the survey, participants were asked several questions to capture an understanding of their views on pine marten reintroduction and potential management in the south-west.

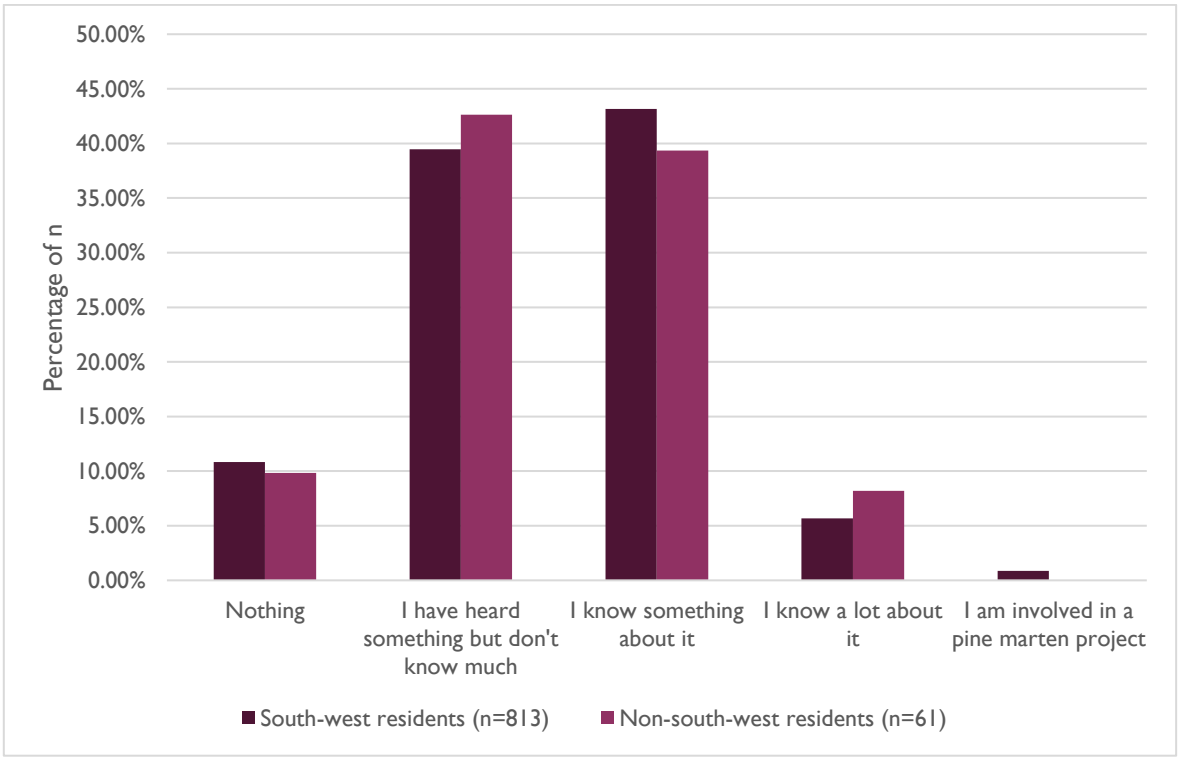
Question 4. How much do you feel you know about the proposed reintroduction of pine martens in the south west?

Respondents could select one of five answers to this question. Of south-west residents who answered *(n=813)*, the most selected option was 'I know something about it' (43.17%%) followed by 'I have heard something but don't know much' (39.48%%). 10.82% of south-west residents indicated that they felt they knew 'Nothing', and 5.66% selected 'I know a lot about it. The remaining 0.86% selected 'I am involved in a pine marten project'.

For non-south-west residents who answered *(n=61)*, the two most frequently selected options were the same as those of south-west residents, but they were ordered the other way around ('I have heard something but don't know much' = 42.52%; 'I know something about it' = 39.34%). 9.84% of non-south-west residents indicated that they felt they knew 'Nothing', and 8.20% selected 'I know a lot about them'. None of the non-south-west residents selected 'I am involved in a beaver project'.

These results are visualised in Figure 2.

Figure 2. Summary of answers to Question 4: "How much do you feel you know about the proposed reintroduction of pine martens in the south west?"



Question 5. Do you feel that you can express your views on pine martens in the South West in a manner that will influence the decision makers?

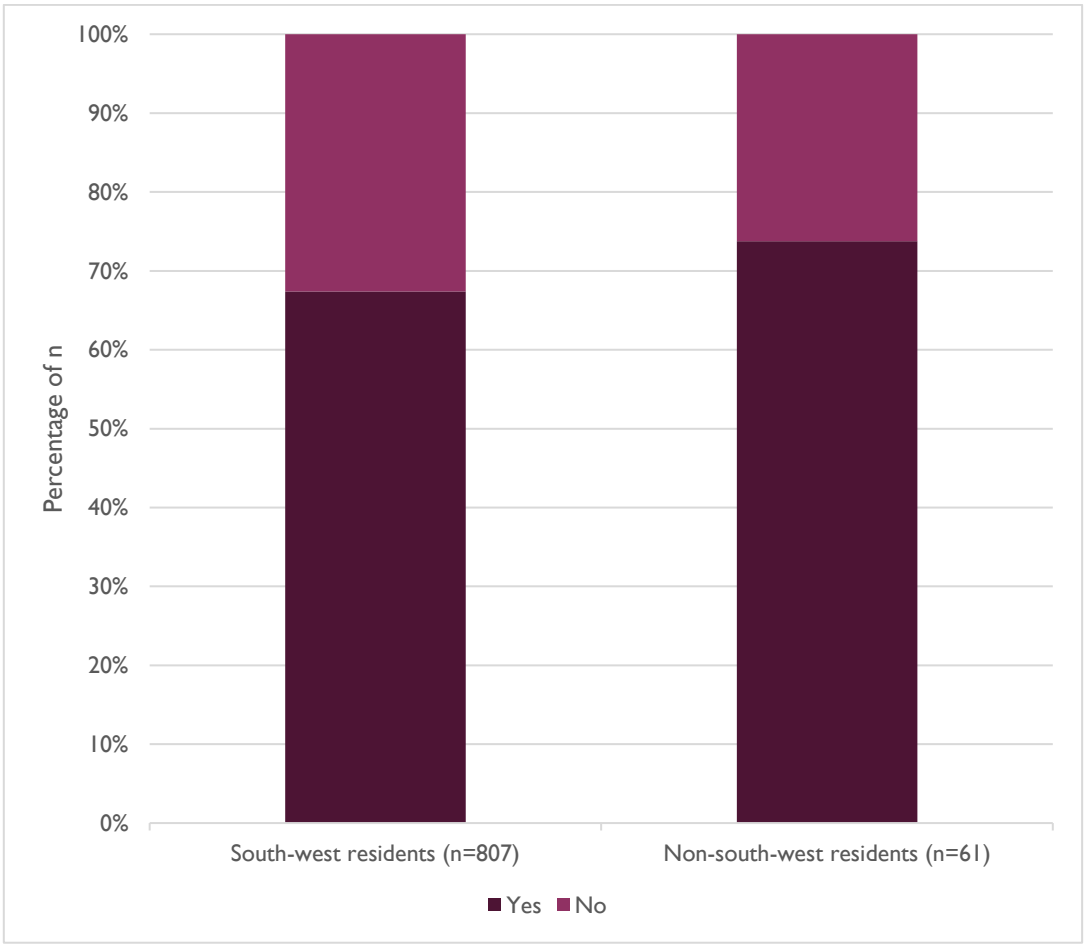
This question provided a binary choice of answers: 'Yes' or 'No'.

Of south-west residents who answered (*n=807*), 67.41% answered 'Yes', and 32.59% answered 'No'.

Of non-south-west residents who answered (*n=61*), 73.77% answered 'Yes', and 26.23% answered 'No'.

These results are visualised in Figure 3.

Figure 3. Summary of answers to Question 5: "Do you feel that you can express your views on pine martens in the South West in a manner that will influence the decision makers?"



Question 6. Do you support the reintroduction of pine marten in the south-west of England?

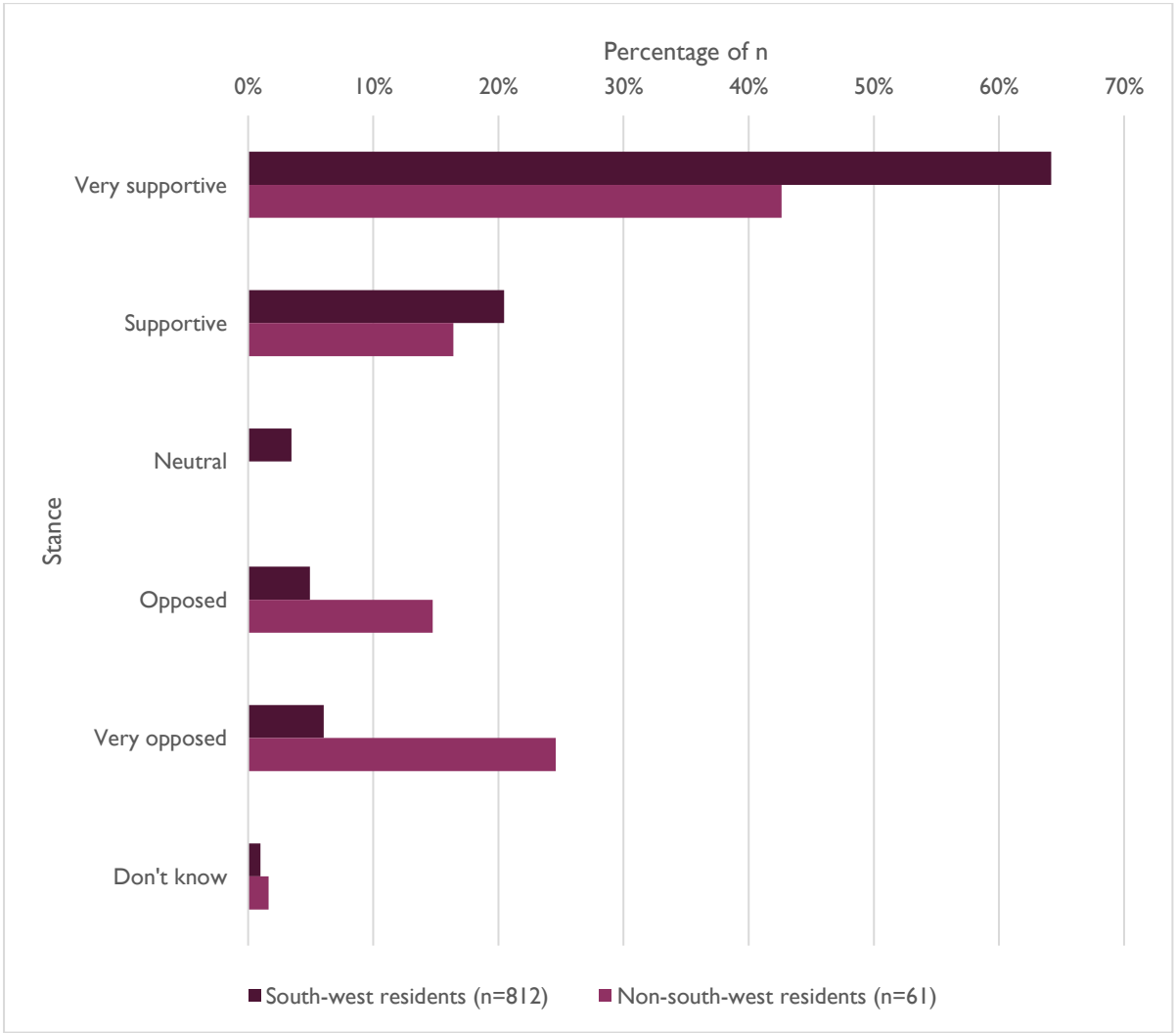
Participants could select from the following options: 'Very supportive'; 'supportive"; "neutral"; "opposed"; "very opposed"; or "don't know".

Of the 812 south-west respondents who answered the question, 84.6% took a position of support (64.16% very supportive and 20.44% supportive) and 10.93% took a position of opposition (6.03% very opposed and 4.93% opposed). 3.45% were neutral on the proposition, and 0.99% did not know.

Of the 61 non-south-west respondents who answered the question, 59.01% took a position of support (42.62% very supportive and 16.39% supportive) and 39.34% took a position of opposition (34.59% very opposed and 14.75% opposed). 0.00% were neutral on the proposition, and 1.64% did not know.

These results are visualised in the Figure 4.

Figure 4. Summary of answers to Question 6: "Do you support the reintroduction of pine marten in the south west of England?"



Participants were then asked to briefly provide the **main** reason for their answer, with an opportunity to provide a free text comment. The reasons given were categorised using an inductive approach, i.e. categories were identified from the data.

The following Tables 14 to 19 provide an overview of the reasons that were given by south-west residents, broken down by participant stances on pine marten reintroduction.

In each table are four columns: the first gives the primary reason given for their stance; the second column gives further detail (meaning either further clarification or a secondary reason given by participants); the third column gives examples of some of the comments made that relate to the reasons given; and the final column gives a count of the number of comments left that related to that reason.

Table 14. Main reasons for answer: Very Supportive (*n=528*)

Reason (Very supportive)	Further detail	Quote	Count
Increased biodiversity creating healthier ecosystems.	- Aid with controlling grey squirrel populations *(mentioned 30 times).* - Aid with the reintroduction of red squirrels. - Native animal. - Ethical motivation.	*"They've been proven to be an important link in the ecosystems they live within. Also, they were always here before and should still be now. "* *"Increasing biodiversity"* *"they are a critical part of a healthy ecosystem."* *"To restore a natural animal and to help reduce the number of grey squirrel so red squirrel can be reintroduced to ultimately "*	187
Control Grey Squirrel population/ allow for the reintroduction of red squirrels.	- Essential part of restoring environment. - Concern over prey including birds eggs. - Native species. - They have helped reduce grey squirrel population in Scotland. - Increase biodiversity, restoring woodland and some small mammal populations such as the dormouse.	*"I understand that they may help to control grey squirrel populations, with a possible future outcome being the reintroduction of red squirrels. Plus they were native, all species that man has wiped out from any area should be introduced, including predators."* *"Pine martens can aid the erradication of grey squirrels"* *"Restoring a balance destroyed by man . Aiding the elimination of grey squirrels and restoration of the indigenous red squirrel and in doing so reduce the damage to trees ."*	86
Pine Martens are native/indigenous species.	- As long as risk to area has been assessed and appropriate management is put in place. - Essential part of the ecosystem.	*"Like beavers, they're a native mammal which should be given every chance to thrive in Devon. They could also be an additional draw for*	72

Reason (Very supportive)	Further detail	Quote	Count
	- Aid the control of Grey Squirrel species and reintroduction of Red Squirrels. - Increase local economy and increase local tourism. - Concern over possible impact on bats.	*tourists in future, which is important to Devon's economy"* *"They were once native here, they are beautiful creatures and could help control grey squirrel populations"* *"Originally native; predate grey squirrels; unlikely to harm ground nesting birds"* *"Restoration of a once native species to the depleted ecosystems"*	
Restoring balance to nature/ecosystem.	- Aid with the control of grey squirrels and reintroduction of red squirrels. - Ethical motivations. - There is a need for more apex predators. - Helps re-balance the food web/chain.	*"I believe Pine Martens are a key species to restore the correct balances in nature."* *"…Reintroducing pine martens as well as other species such as beavers will help to restore balance and give us more of a chance of working towards a better ecosystem…"*	53
Ethical motivation.	- Aid in the control of grey squirrel population. - Restoring balance to nature/ ecosystems. - Humans are responsible for there reintroduction in order to restore biodiversity loss.	*"I strongly believe that humans are the reason why so many species are no longer found in Britain so it is our responsibility to bring them back where possible to improve the ecosystems"* *"They belong here. If humans wiped them out, we have a responsibility to reintroduce them."* *"They are indigenous wildlife that should be here, they were killed off by humans and should be reintroduced"*	45

Reason (Very supportive)	Further detail	Quote	Count
Support for all reintroduction projects	- Pine martens will help control grey squirrel populations. - Ethical motivations.	*"Wildlife reintroduction will benefit everyone in the long run and all projects like this needs support to help with making space for nature to do what it does best."* *"I support the restoration of native species to their former range"*	35
General supporting statement.		***"**They're lovely and wildlife restoration is a worthy ambition."* ***"**What's not to like about a pine marten"*	13
Positive impacts seen from other Pine Marten reintroductions elsewhere within the UK, Ireland and Europe.	- Seen positive impacts from areas in Ireland and Scotland. - Beneficial for the native species and the surrounding environment.	***"**I think the positive impact reintroduction has had in Ireland and other parts of the Uk is great. Especially for red squirrel numbers* ***"…**Similar projects to reintroduce species to their native areas have proven incredibly beneficial, not just to the species itself, but to the surrounding environment…"*	12
Increasing the range of endangered species.	- Aid the control of grey squirrel populations. - Restore native woodland ecosystems.	*"Return of this critically endangered animal is vitally important for both pine marten recovery nationally but also restoration of our native woodland ecosystems"* *"Returning a natural predator to its historical range. Grey squirrel control."*	11
Southwest has suitable habitat for Pine Martens.	- Positive impacts on biodiversity.	*"Ideal habitat for this once indigenous species"* *"…There is lots of suitable habitat and their impact on the ecology around them will only be positive for example grey Squirrel suppression."*	6

Reason (Very supportive)	Further detail	Quote	Count
Responsibly managed with little negative impact.	- Pine martens would get to the Southwest on their own.	*"Fully support as long as it is done responsibly and ensuring little negative impact"* *"although they could get here under their own steam, a managed introduction would be much better and also be studied"*	2
Pine Martens are already in the Southwest.	- Already in Cornwall, North Devon, and Hampshire. - This would be supplementing already existing numbers.	***"…****they're already here, Cornwall and Hampshire two examples. We are not reintroducing pine marten we are supplementing the very small population"*	2
Aid with future reintroductions.		*"Beautiful, fascinating animals that are generally welcomed by communities and can help reset opposition to wider reintroduction of other species."*	1
Increase tourism and wildlife education and in turn helping economic growth.		*"It makes me feel positive about the future and would promote wildlife education and tourism which in turn helps economic growth and raises public awareness and interest in conservation."*	1

Table 15. Main reasons for answer: Supportive (*n=170*)

Reason (Supportive)	Further detail	Quote	Count
Increases biodiversity creating healthier ecosystems.	- Native species belong in environment. - Benefiting the environment. - Natural predator. - Control of grey squirrel numbers. - With robust risk assessed and management.	*"I support the release of native animals to improve biodiversity"* *"Helps regain species diversity, widen food chain and control grey squirrel numbers."* *"Biodiversity restoration"* *"As long as there is a sufficiently robust risk assessment, which I know DWT are leading on, anything that increases biodiversity must be welcomed"*	43
Support for reintroducing and restoring a native/indigenous species.	- Historically part of the southwest ecosystem. - Concern over Pine Martens not having a natural predator. - Concern for ground nesting birds. - Control grey squirrel numbers, make space for red squirrels. - Done with appropriate management.	*"Returning missing native species…. Needs to be evaluation though to assess risk of any significant impact on likely present native prey species before re-introduction. And compliance with all IUCN guidance."* *"The species were here before - my only concern would be for ground nesting birds"* *"rare native species which should be encouraged to return to Souhwest . As a predator has potential to diminish numbers of grey squirrels"*	37
Control grey squirrel population/ allow for the reintroduction of red squirrels.	- Natural remedy to control grey squirrel populations (alien species).	*"So that red squirrel population might stand more chance of survival through pine martens helping eradicate grey squirrels."*	25

Reason (Supportive)	Further detail	Quote	Count
		"We have a problem with the grey squirrel population and pine martens would help remedy this naturally"	
Reinstating and restoring balance to nature/habitat/ecosystems.	- Aid reversing the biodiversity crisis. - Fulfilling ecological niches, and trophic levels.	*"Britain needs to re-balance its natural bio-diversity"* *"The more layers in the food chain the better. And those higher up the chain are really important for the balance of those lower down. "*	19
Ethical motivation	- Lost through human impact. - Restore ecosystem balance.	*"We drove them to extinction by cutting down huge areas of woodland. It is only right that we reintroduce them to the southwest"* *"Mankind removed them from the landscape, so it is good that we can now reintroduce them"*	11
General supporting comment.	- If the reintroduction does not threaten the environment. - Charismatic animals. - Learn to live with wildlife.	*"I believe rewilding to be one of the most important things in today's climate and any species, especially cute one should be reintroduced"* *"if reintroduction of pine martins does not involve significant threats to the environment then it should be supported"*	7
Concerns over the effect of Pine Martens on their prey species.	- Concerned about bird, tree roosting bats, poultry.	*"Generally support re wilding and especially predator control but concern about impact on woodland birds which were already struggling "*	5
Increase Pine Marten current limited range.	- Increase biodiversity.	*"Reintroduction of pine martens would increase their current range and potentially strengthen their chances of survival."*	4

Reason (Supportive)	Further detail	Quote	Count
Insufficient habitat for Pine Martens in the Southwest.	- Lack of woodland due to deforestation. - Widespread monitoring is unfeasible and may have adverse effects.	*"I am not 100% supportive due to uncertainty about habitat space - if there is enough, or if they will outcompete/cause decline of other native species"* *"I am not sure the area can sustain martins. The is due to widespread pollution deforestation and lack of wild areas. If food is scarce, what will impact be on other moorland populations?..."*	3
Previous reintroductions have been successful.	- Provide competition for Grey Squirrels. - Benefits ecosystem.	*"… As has been demonstrated by successful beaver reintroductions throughout the UKs waterways, it can be highly beneficial to reintroduce species…"*	3
Pine Martens are already in the Southwest.	- Current extent of Pine Martens needs to be measured.	*"They are already in the South West, so just how will the University measure the extent of a re introduction when pine martens are already present"*	3
Trust in the organising partners.		*"Because i saw the groups that are involved and i trust all of them to look after our countryside and wildlife"*	3
Reintroduction needs to be mitigated and managed properly.		*"In general in favour of reintroduction of native species provided done in a controlled manner, with plans in place for mitigating and managing population expansion in due course."*	2
Devon has suitable habitat		*"Devon has the habitat for them to thrive"*	2
Similar animals are already in these environments.		*"We already have polecats and weasels and pine martens are related to them. Farmers may have a different view as polecats will take chicks when given a chance, especially if they have young. "*	1

Reason (Supportive)	Further detail	Quote	Count
Do not know all the consequences of the project.		*"Do not know all the consiquenses of the project."*	1
Reintroduction has pros and cons.		*"THere ae pros and cons!"*	1

Table 16. Main reasons for answer: Neutral (*n*=27)

Reason (Neutral)	Further detail	Quote	Count
Concerns over the effect of Pine Martens on their prey species.	- Concerns over woodland bird populations, voles, bats and livestock such as new born lambs and poultry. - Mitigation strategy of Pine Marten numbers. - Likely negative interaction from shoots. - Cause a food web imbalance	*"Concerns for both local wildlife and domestic/farm animals prevent me from fully supporting the reintroduction."* *"I like the idea of reintroduction, but am concerned about the possible detrimental effect on bats in woodlands..."* *"Pine martens can be devastating to the bird life and also small creatures like voles…."* *"Pine martins are particularly difficult to protect against for free range flocks and cause a lot of trouble in areas where they currently…exmoor consists of small and large shoots which are likely to kill any pinemartin on their land so there would be huge areas of potential resistance."*	10
Would like to know more or not enough known on the topic.	- Would like more information on positives, negative and benefits. - Have there been similar Pine Martin reintroductions.	*"I would wish to know more about the effects of pine martens in areas where they have been introduced"* *"I know very little about the negative affect pine martens might have on their new environment. However I like the idea of reintroduction."*	6
Understand the possible control of Grey Squirrels but have concerns for prey species.	- Concern for bird/ ground nesting species - Concern for farmed animals such as chickens	*"I understand they can predate grey squirrels but I worry about their possible impact on nesting birds"*	4

Reason (Neutral)	Further detail	Quote	Count
		"If grey squirrels are the main food source then I'm in favour with the very strong opinion that if they become widespread and affect other species including farmed animals…"	
The South West environment has changed a lot since Pine Martins last roamed.	- Concerns for natural prey species such as willow tits, lesser-spotted woodpeckers, wood warblers, flycatchers etc, along with hazel dormice and woodland populations of bats. - Predator/Prey imbalance	*"I am not sure what the benefits will be for the environment as a whole, the countryside is very different to when they were here before…"* *"…I have concerns about the potential negative impacts of re-introducing a predator into an area that has changed significantly since it last roamed the South West, ie. regarding threatened species now existing at very low population levels in Devon - woodland birds such as willow tits, lesser-spotted woodpeckers, wood warblers, flycatchers etc, along with hazel dormice and woodland populations of bats, all of which might feature in the pine marten diet…"*	2
Referenced negative experience from Pine Marten sites elsewhere.	- Causes problems to house in Bulgaria.	*"I spenda lot of time in Bulgaria where they are common and they cause a lot of problems in houses"*	1
There are risks and benefits to reintroductions.		*"Aware of the benefits - and risks - of reintroductions"*	1
No exit strategy for possible reintroduction fail.	- May disrupt current data gathering.	*"Lack of a cohesive exit strategy if the reintroduction fails. Effects on science data gathering currently in progress, eg piedfly monitoring on Dartmoor reserves."*	1
Existing Pine Marten numbers should be quantified.		*"Pine martens are already in the SW. if the University cannot quantify or acknowledge this first then they should not be talking about re*	1

Reason (Neutral)	Further detail	Quote	Count
		introductions where they are already present. Should"	
If habitat is suitable, they will get here without human intervention.		*"The species will probably get here eventually if habitat is appropriate without human intervention"*	1

Table 17. Main reasons for answer: Opposed (*n=51*)

Reason (Opposed)	Further detail	Quote	Count
Concerns over the effect of Pine Martens on their prey species.	- Concern for ground nesting birds and their eggs, wood warbler, poultry, pheasant, partridge, poults, small mammals including bats, mice and voles. - Disrupt current food web. - Other places (Scotland) with Pine Martens looking to cull. - Doubt to how they will control grey squirrel populations. - More research is needed into possible effects on existing ecosystems.	*"Introduction of additional predator with no clear exit strategy, big threat to woodland birds (some red listed eg wood warbler) which are already under stress, food chain disruption eg voles/wood mice eaten by pine martin reducing food for owls. More research needed and survey of local fauna required so pine martin damaged to already fragile ecosystem can be monitored."* *"This is a predator that will prey on smaller mammals and birds. It's not necessary and may upset the current balance of nature."*	26
Negative experiences with Pine Martens referenced from other projects/countries.	- Pine Martens in Germany, Austria, Scotland and Ireland. - Populations elsewhere have soared, mitigations for population growth needs to be put in place.	*"Sadly I have encountered Pine Marten in Germany, where as a protected species, they became quite a nuisance, particularly if you happened to get one in your roof!"* *"pine martens are a protected species, so the reintroduction is a non-reversible process. we know from ireland and scotland, where marten populations have soared, that there is a mix of benefits and disadvantages. but we will have no control over them."*	5
More research on Pine Martens effects needs to be carried out.	- Research need to be done into long term impacts on pine marten prey species such as bees, bats, birds, insects.	*"I don't feel there is enough research to show the probable impact on all the whole ecosystems specific to the South West.living organisms the specific"*	5

Reason (Opposed)	Further detail	Quote	Count
		"Too little is known about the impact of yet another apex predator…"	
Resources should be concentrated on preserving/helping current declining species.	- Conserving current falling bord populations. - Reintroduction is too PR heavy.	*"I feel that more needs to be done to secure currently extant bird and mammal species prior to reintroduction of a predator"*	4
We do not need another predator introduced.	- Current wildlife is already suffering.	*"Adding another predator to a fragile ecosystem does not seem wise"* *"We really don't need to increase the predator population in our countryside, particularly as currently-perrmitted management of the predator population…"*	4
General opposing comment.	- Concerns on impact once released.	*"I feel that they will cause more destruction than good in this area."* *"Unbalance the natural balance"*	3
Lack of informative stakeholder engagement.	- Landowners have not been informed of Pine Martin reintroduction. - Niche stakeholders interest ignored.	*"The limited opportunities to voice concerns is likely to mean that niche interest groups will be ignored and no mitigations wil lbe put in place to protect those interests"* *"Because as a landowner I have not received information about it."*	2
Dartmoor lacks appropriate habitat for Pine Marten Reintroduction.		*"Dartmoor doesn't have the amount of habitat required to support their territories"*	1
Potential reduction in local biodiversity.		*"Re-introduction would likely reduce biodiversity through predation, in the South West rather than increase it"*	1

Table 18. Main reasons for answer: Very Opposed (*n*=62)

Reason (Very opposed)	Further detail	Quote	Count
Concerns over the effect of Pine Martens on their prey species.	- Concern over potential prey species including small and nesting birds, Skylark, Goshawks, small mammals, poultry and game birds, bird eggs, dormice and capercaillie. - Small nesting and song bird populations already struggling, they do not need another predator reintroduced. - Effects on farming and shooting shocks and economy. - Will not stop at just predating the grey squirrel. - Lack of natural predators as well as being a protected predator.	*"Impact on ground nesting birds such as the skylark, people with poultry/game birds and a lack of natural predation of pine martens"* *"They are a vicious predator and would be a real danger to Devon's birds in particular, also mammals."* *"Impact on dormice, birds and small mammals"* *"The impact on farming, wildlife and the rural community. In areas of abundant food, they will flourish and imbalance delicate ecosystems and already harsh farming environments. delicate ecosy"*	32
Another protected predator will have negative effects on existing ecosystem.	- Concern over potential prey species including Curlew, Lapwing and Corn Bunting, Capercaillie, small mammals, small/nesting birds and hedgehogs. - Already been predators of small mammals reintroduced. - Effect the farming and shooting economy.	*"I do not see with all the existing pressures on vulnerable species why it is the right time to add another predator to the countryside"* *"… introducing a very adaptable top predator into environments that are already struggling, and where we are already managing predators to protect more vulnerable species…"*	15
Experienced Pine Marten damaging property in other parts of the UK/Europe.	- Caused damage to property and vehicles, seen in France, Switzerland, and UK. - Damage to chicken coops and chickens.	*"…in Scotland and has experienced the damage that pine martens can do to wildlife, livestock (especially chickens, but also lambs) and buildings. I feel that farmers and*	6

Reason (Very opposed)	Further detail	Quote	Count
	- Stakeholder have not been consulted properly. - Other environmental issues should be priorities.	*landowners haven't been informed and consulted properly…"* *"…they do cause extensive damage to property and vehicles (I speak from personal experience while living from living in France / Switzerland), not to speak of potential damage to fruit, crops and poultry. "*	
General negative comment.		*"Vermin"* *"Foolish and irresponsible"*	2
Existing struggling and endangered species should be priorities.	- Can current native species tolerate another predator? - Concern over impact on farmed/pet poultry such as chickens.	**"***We need to get the native species that are already in the area to such a state that they can survive with another predator on the ground. We also need to think about back yard chicken flocks and other human interests."*	2
Not enough is known about reintroductions, they need to be proven to be beneficial.	- Upset the ecological balance.	*"…unless they can be proven to be beneficial to the environment then it is probably best not to reintroduce them.* *"…Not enough is known about the full impact of reintroducing these and how their artificial introduction will destroy the balance we are trying to create"*	2
Lethal trapping of Grey Squirrels will have to stop.	- Insufficient prey not on red/amber list. - Too many human conflicts.	*"There are many reasons, firstly the leathal trapping of grey squirrels will have to cease incase a mate is caught. There is insufficient prey species that are not red or amber listed. Two many possibilities of human conflict"*	1

Reason (Very opposed)	Further detail	Quote	Count
Against reintroductions.		*"I totally reject all this reintroducing lark proposed by urbanistas who can't bear to let the countryside work in its own way."*	1
Insufficient space for Pine Martens in the Southwest.		*"Insufficient space for a viable, unmolested population."*	1

Table 19. Main reasons for answer: Don't Know (*n*=9)

Reason (Don't know)	Further detail	Quote	Count
Concern over their impact as a predator.	- How will populations be controlled? - Pine Marten reintroduction harm birds and their eggs.	*"In many ways I would welcome them but I do have concerns about their impact on bird populations which are already in trouble and nowhere near as healthy as when Pine Martens were resident in the SW."* *"What is the predator for the pine martin?..."*	4
Need more information on the possible positive and negative effects of Pine Martens.		*"I think there needs to be more information about how the re-introduction works and impacts both positive and negative"*	3
Don't know enough about Pine Martens	- How will they interact with other animals in the ecosystem, can they co-exist?	*"I don't know enough about the life of the pine marten & what the consequences are likely to be for ecology…."*	2

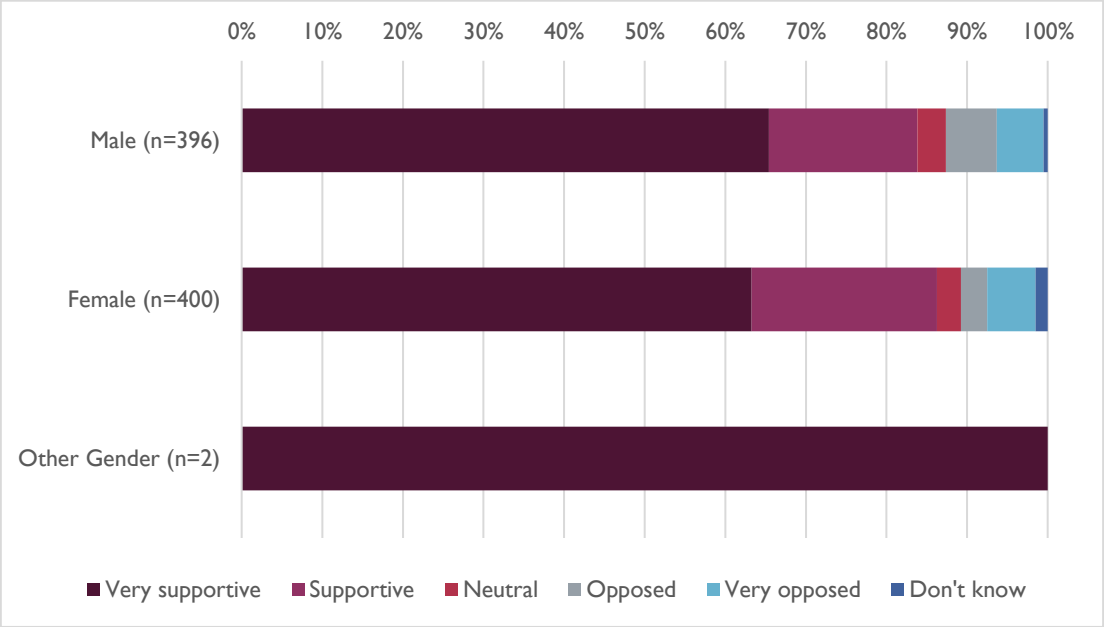
Levels of support or opposition in relation to background variables

The levels of support or opposition were then analysed in relation to the participant background variables.

Gender (*n=798*)

The relationship between gender and support or opposition to pine marten reintroduction is visualised in the following graph.

Figure 5. Stance on pine marten reintroduction in relation to participant gender.



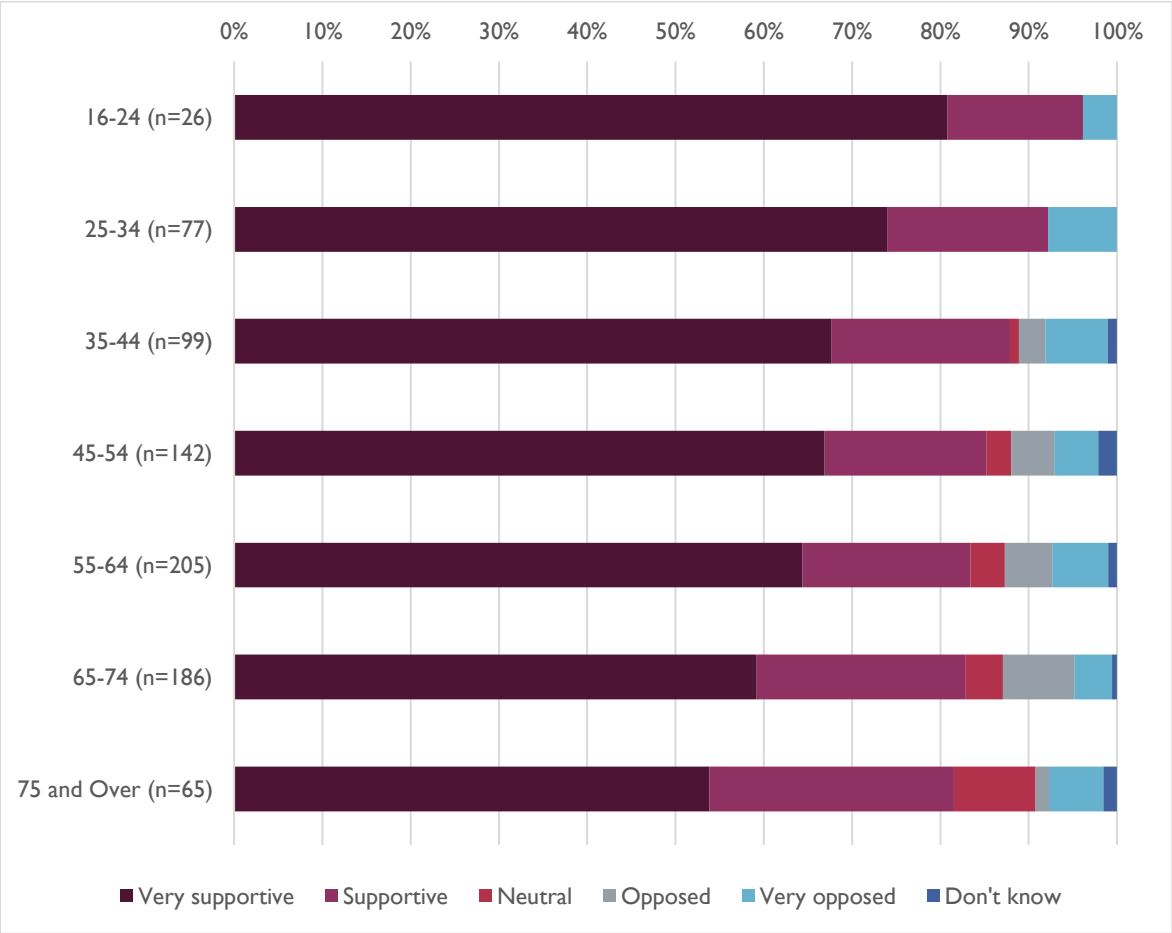
Ordinal regression was used to examine levels of support for reintroduction in relation to participant gender[3] (*n=802*; those who did not know whether they supported pine marten reintroduction or preferred not to specify their gender were not included in the model). The models accounted for less than 0.01% of variance in the data, had no statistical significances, and indicated gender was not a useful predictor of support for or opposition to pine marten reintroduction.

[3] Each gender was compared to the remaining respondent pool using dummy variables.

Age group (*n=800*)

The relationship between age group and support or opposition to pine marten reintroduction is visualised in the following graph.

Figure 6. Stance on pine marten reintroduction in relation to participant age groups.



Ordinal regression was used to examine levels of support for reintroduction in relation to participant age groups. (*n=792*; those who did not know whether they supported pine marten reintroduction or preferred no to indicate their age group were not included in the model). As this variable was on a scale, age 75 and over was used as the reference category. The model explained 1.7% of variance in the data.

- The odds of those aged '16-24' supporting pine marten reintroduction was 2.288 times that of the reference category[4]; they were statistically *more* likely to support pine marten reintroduction.
    - In this age group (*n=26*): 96.15% took a position of support (80.77% very supportive), 3.85% took a position of opposition (all of which were very opposed), and none were neutral or did not know.

[4] Wald $\chi^2_{(1)} = 4.695$, $p < 0.05$, 95% CI: 1.121-9.852.

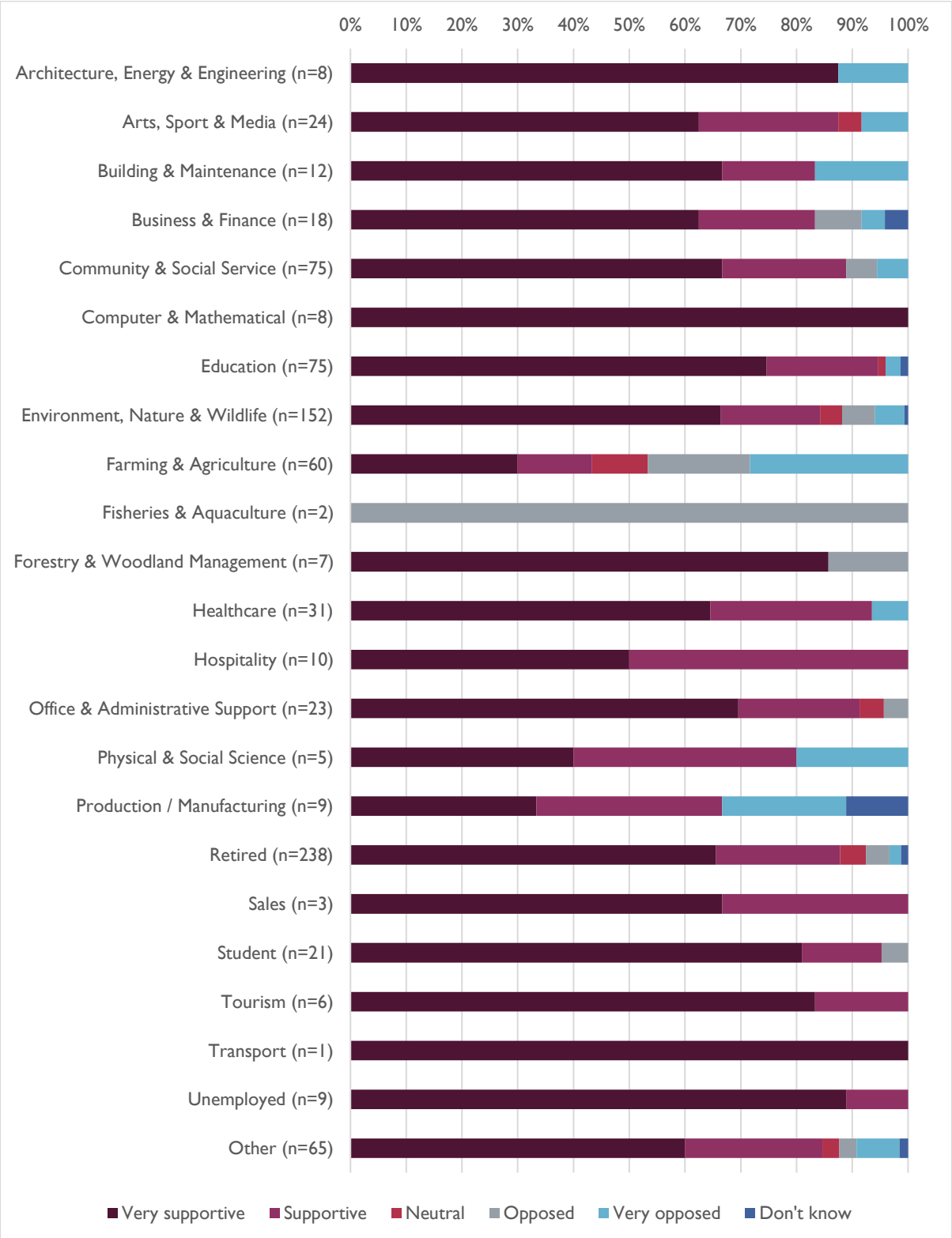
- The odds of those aged '25-34' supporting pine marten reintroduction was 2.202 times that of the reference category[5]; they were statistically *more* likely to support pine marten reintroduction.
    - In this age group (*n*=77): 92.21% took a position of support (74.03% very supportive), 7.79% took a position of opposition (all of which were very opposed), and none were neutral or did not know.

[5] Wald $\chi^2_{(1)} = 5.002$, $p < 0.05$, 95% CI: 1.103-4.396.

Occupation (*n=811*)

The relationship between occupation and support or opposition to pine marten reintroduction is visualised in the following graph.

Figure 7. Stance on pine marten reintroduction in relation to participant occupations.



Ordinal regression was used to examine levels of support for reintroduction in relation to participant occupations[6]. (*n*=776; those who did not know whether they supported pine marten reintroduction were not included in the model). The model explained 12.1% of variance in the data.

- The odds of those who identified their occupation to be in 'Education' supporting pine marten reintroduction was 2.339 times that of those who did not work in 'Education'[7]; they were statistically *more* likely to support pine marten reintroduction.
    - In this occupational sector (*n=152*): 94.67% took a position of support (74.67% very supportive), 2.67% took a position of opposition (all of which were very opposed), 1.33% were neutral, and 1.33% did not know.

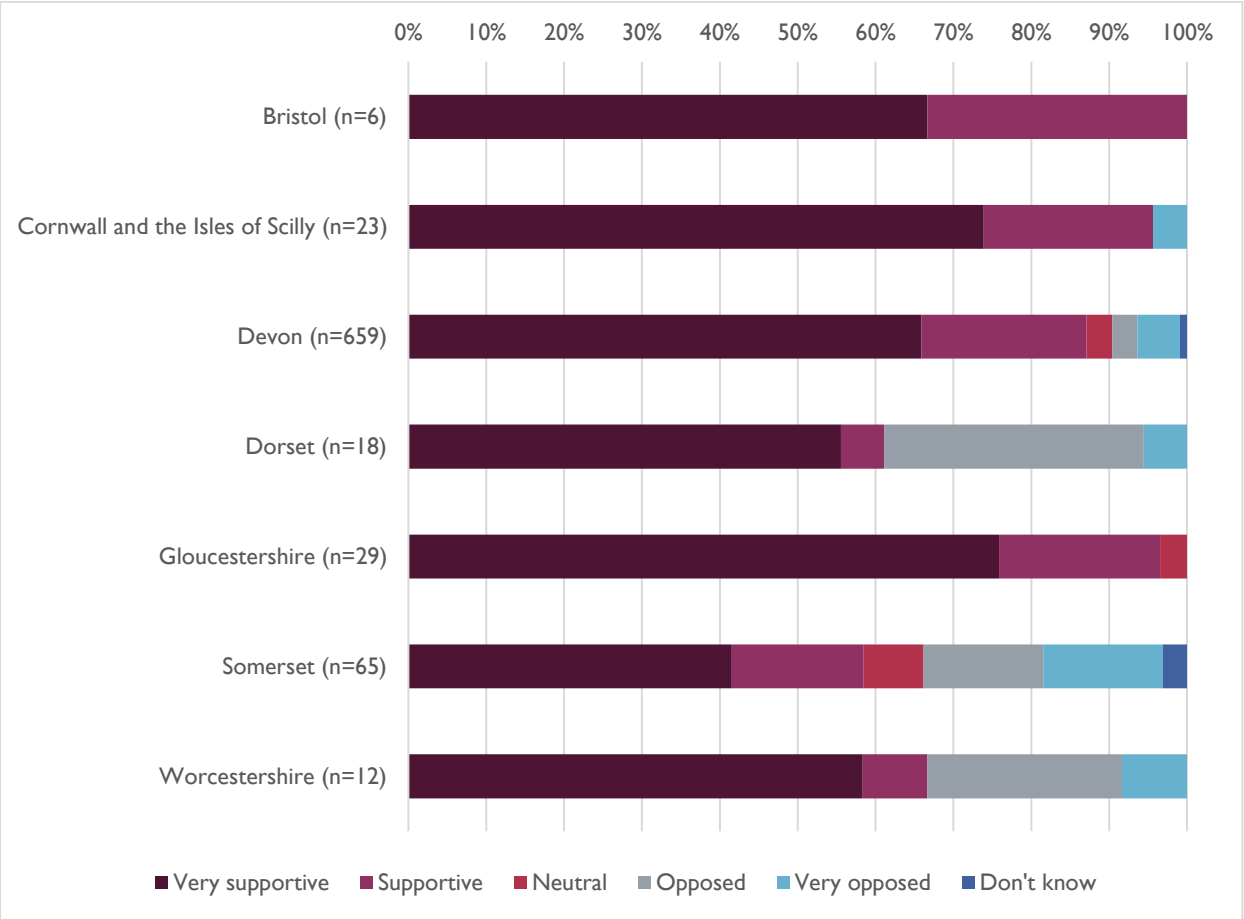
- The odds of those who identified their occupation to be in 'Farming & Agriculture' supporting pine marten reintroduction was 0.184 times that of those who did not work in 'Farming & Agriculture'[8]; they were statistically *less* likely to support pine marten reintroduction.
    - In this occupational sector (*n=152*): 43.33% took a position of support (30.00% very supportive), 46.67% took a position of opposition (28.33% very opposed), 10.00% were neutral, and none indicated that they did not know.

[6] Each occupation was compared to the remaining respondent pool using dummy variables.
[7] Wald $\chi^2_{(1)} = 5.027$, $p < 0.05$, 95% CI: 1.113 to 4.915.
[8] Wald $\chi^2_{(1)} = 24.059$, $p < 0.001$, 95% CI: 0.093 to 0.361.

County of residence (*n=812*)

The relationship between county of residence and support or opposition to pine marten reintroduction is visualised in the following graph.

Figure 8. Stance on pine marten reintroduction in relation to participant counties of residence.



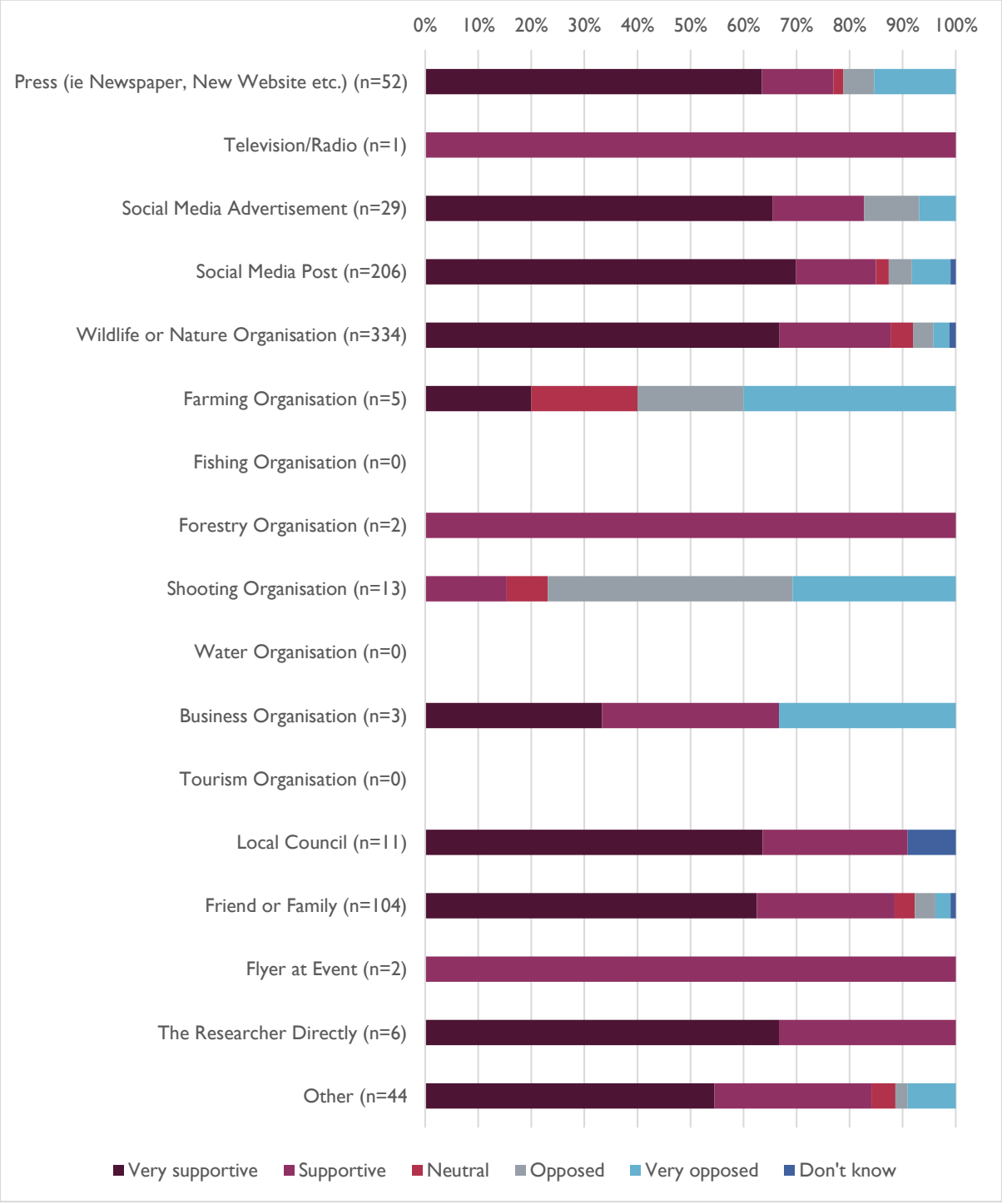
Ordinal regression was used to examine levels of support for reintroduction in relation to participants' county of residence[9]. (*n=804*; those who did not know whether they supported pine marten reintroduction were not included in the model). The model explained 3.9% of variance in the data, however it indicated that no county was a predictor of support for or opposition to pine marten reintroduction.

[9] Each county of residence was compared to the remaining respondent pool using dummy variables.

Where respondent heard about the survey (*n=812*)

The relationship between support or opposition to pine marten reintroduction and where respondents heard about the survey is visualised in the following graph.

Figure 9. Stance on pine marten reintroduction in relation to where participants heard about the survey.



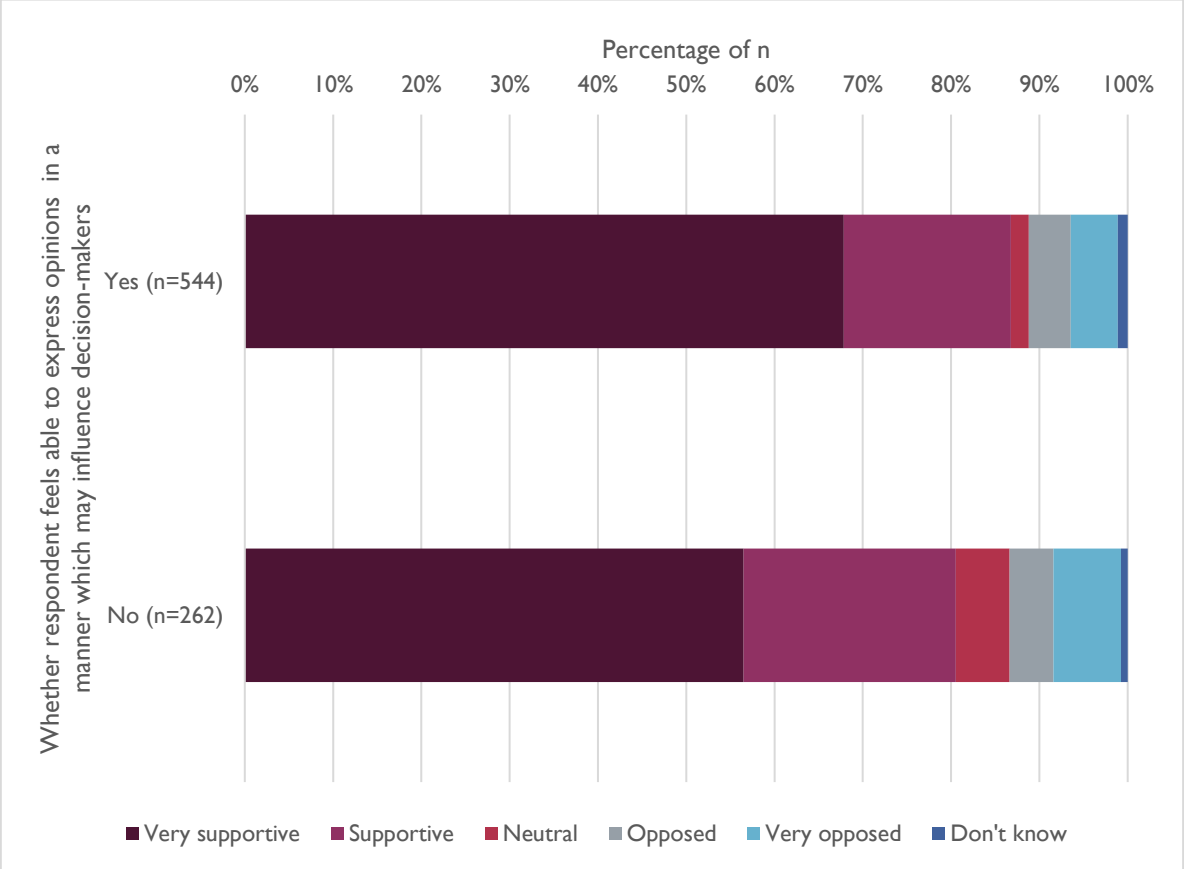
Ordinal regression was used to examine levels of support for reintroduction in relation to where participants had heard about the survey[10]. (*n=804*; those who did not know whether they supported pine marten reintroduction were not included in the models. The sources of Fishing, Water or Tourism Organisations were also not analysed as no respondent indicated that they had heard about the survey from any of these three sources). The model explained 7.5% of variance in the data, however there were no statistical significances to indicate any information source as a predictor of support for or opposition to pine marten reintroduction.

[10] Each information source was compared to the remaining respondent pool using dummy variables.

Whether respondents felt able to express their opinions on pine marten reintroduction in a way that may influence decision makers

The relationship between support or opposition to pine marten reintroduction and whether respondents felt able to express their opinions on pine marten reintroduction in a way that may influence decision makers is visualised in the following graph.

Figure 10. Stance on pine marten reintroduction in relation to whether participants feel able to express their opinion where it may influence decision-makers.



Of those that answered 'Yes' (n=544)), 86.76% took a position of support whilst 10.11% took a position of opposition. 2.02% were neutral on pine marten reintroduction, and 1.10% did not know.

Of those that answered 'No' (n=262), 80.53% took a position of support, whilst 12.60% took a position of opposition. 6.11% were neutral on pine marten reintroduction, and 0.76% did not know.

A chi-square test of independence indicated that there was a statistical significance to this relationship[11].

[11] $\chi^2_{(5)} = 16.358$, $p < 0.01$.

Question 7: How important are the following conditions to ensuring your support of any potential pine marten reintroduction project?

This question was adapted from the Forest Research study (Ambrose-Oji et al., 2018). Eight conditions were presented, and participants were invited to rank each measure on a scale of 1 to 10, where 1 = 'not at all important' and 10 = 'very important'.

Table 20 details the mean score provided by participants who provided a response for each condition among both the south-west resident group and the non-south-west resident group, and the rank order of those mean scores. The mean scores and rank order from the Forest Research study are provided to offer a comparison.

Table 20. Mean participant scores for importance of management conditions.

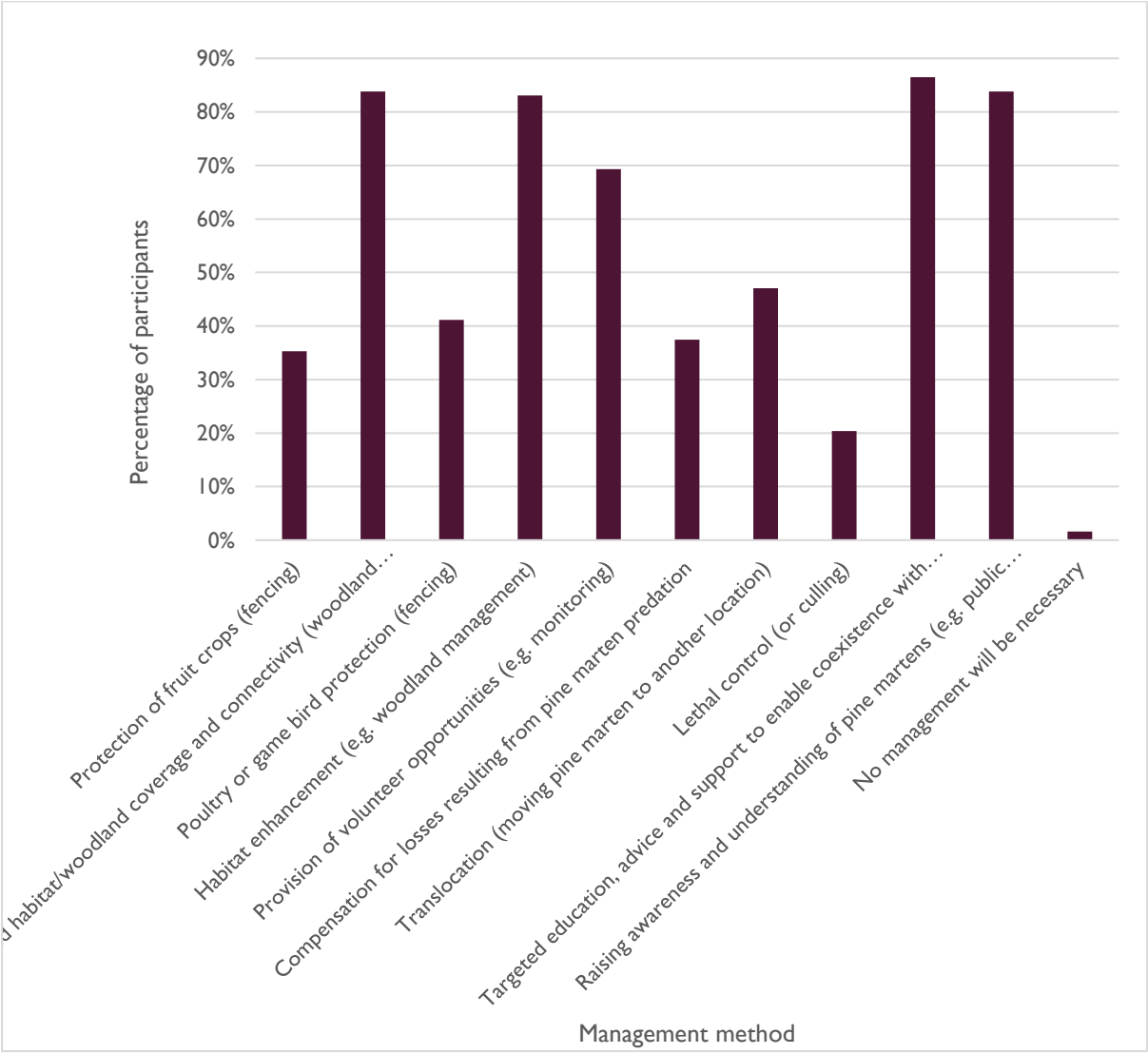
Condition	South-west residents *(n=812)*		Non-south-west residents *(n=46)*		Forest Research (Ambrose-Oji et al., 2018)	
	Rank	Mean Score	Rank	Mean Score	Rank	Mean Score
Monitoring the ecological impacts of the pine martens (i.e. monitoring impacts on the natural environment or other wildlife)	1	8.8	1	9.1	1	8.2
Mitigation measures to manage the risks to pine martens (i.e. ways to minimise harm to pine martens)	2	8.1	5	7.5	5	7.5
Continuing communication from the reintroduction project team	3	8.0	3	8.3	3	7.9
Putting in place mitigation measures to manage any ecological risks posed by pine martens (i.e. using techniques to try and prevent negative impacts)	4	8.0	2	8.6	2	8.0
The inclusion of community representatives in reintroduction management	5	7.9	8	7.0	4	7.8
Having an agreed plan to deal with problem animals	6	7.4	4	8.1	7	7.4
The establishment of stakeholder forums to input into reintroduction management	7	7.2	5	7.5	8	6.8
Having a robust exit strategy (i.e. having a plan to stop and reverse the reintroduction if required)	8	6.9	7	7.1	5	7.5

Question 8: If pine marten are reintroduced, which (if any) methods of management would you support? Tick all that apply.

Participants were provided with a list of ten management methods and the option of 'No management will be necessary'. They were permitted to select multiple answers. An overview of support for management methods among all south-west participants is provided in Figure 11.

All 814 south-west participants provided an answer to this question. Of these, the most highly selected management method was 'Targeted education, advice and support to enable coexistence with pine martens (e.g. for landowners)' (86.49%), followed by 'Increased habitat/woodland coverage and connectivity (woodland planting)' (83.78%) and then 'Raising awareness and understanding of pine martens (e.g. public events)' (83.05%). The least highly selected was 'No management will be necessary', followed by 'Lethal control (or culling)' (20.39%) and then 'Protection of fruit crops (fencing)' (35.26%).

Figure 11. Levels of support among participants for management methods.



Support for management methods examined in relation to support or opposition to pine marten reintroduction (*n=812*)

An overview of support for management methods in relation to whether respondent support or oppose pine marten reintroduction is provided in Table 21. For the purposes of this table (to avoid overcomplication), positions of support and opposition have been grouped together. i.e. 'Position of Support' here refers to 'very supportive' and 'supportive' combined, and 'Position of Opposition' here refers to 'very opposed' and 'opposed' combined.

The most supported method(s) for each stance on pine marten reintroduction is highlighted in blue, and the least supported highlighted in pink. These highlight distinction between the most highly supported techniques among those supportive or neutral on pine marten reintroduction, and those who are opposed. 'No management will be necessary' was the least supported option across all stances.

Table 21. Levels of support for management methods, in relation to participant stance on pine marten reintroduction

Management method	Position of support *(n=687)*	Neutral *(n=28)*	Position of opposition *(n=89)*	Don't know *(n=8)*
Protection of fruit crops (fencing)	36.1%	39.3%	24.7%	62.5%
Increased habitat/woodland coverage and connectivity (woodland planting)	92.6%	57.1%	25.8%	62.5%
Poultry or game bird protection (fencing)	37.7%	53.6%	64.0%	50.0%
Habitat enhancement (e.g. woodland management)	90.0%	64.3%	36.0%	75.0%
Provision of volunteer opportunities (e.g. monitoring)	78.0%	46.4%	11.2%	50.0%
Compensation for losses resulting from pine marten predation	31.7%	57.1%	74.2%	62.5%
Translocation (moving pine marten to another location)	47.5%	50.0%	41.6%	50.0%
Lethal control (or culling)	10.0%	50.0%	87.6%	37.5%
Targeted education, advice and support to enable coexistence with pine martens (e.g. for landowners)	94.2%	64.3%	34.8%	75.0%
Raising awareness and understanding of pine martens (e.g. public events)	92.7%	53.6%	23.6%	87.5%
No management will be necessary	1.9%	0.0%	0.0%	0.0%

2.3.3. Views on reintroduction more broadly

This final section of the survey sought to capture an understanding of participant views on reintroductions more broadly.

Question 9: If pine martens are reintroduced to the south west, do you think this will influence the likelihood of reintroduction of other species in the area?

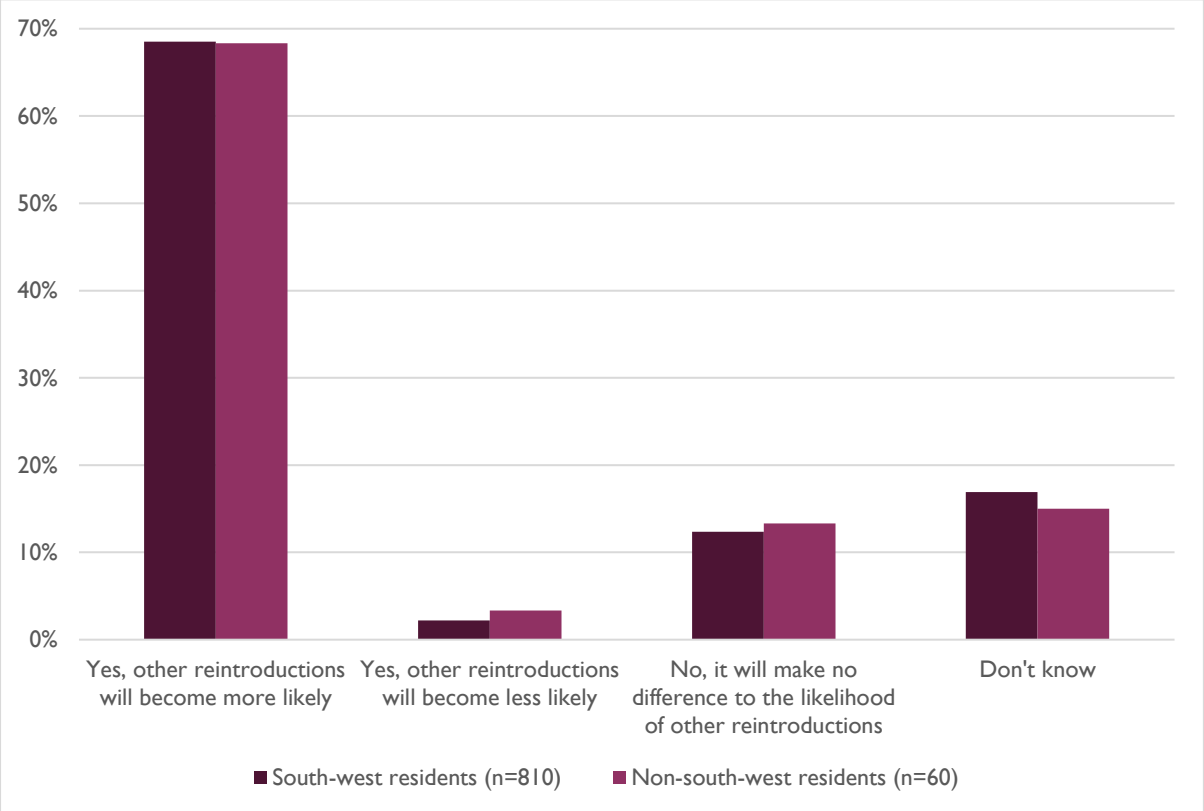
In this question, participants could choose one of four options.

Of south-west residents who answered the question (*n=810*): 68.52% answered 'Yes, other reintroductions will become more likely'; 2.22% answered 'Yes, other reintroductions will become less likely'; 12.35% answered 'No, it will make no difference to the likelihood of other reintroductions'; and 16.91% selected 'Don't know'.

Of non-south-west residents who answered the question (*n=60*): 68.33% answered 'Yes, other reintroductions will become more likely'; 3.33% answered 'Yes, other reintroductions will become less likely'; 13.33% answered 'No, it will make no difference to the likelihood of other reintroductions'; and 15.00% selected 'Don't know'.

These results are visualised in the Figure 12.

Figure 12. Summary of answers to Question 9: "If pine martens are reintroduced to the south west, do you think this will influence the likelihood of reintroduction of other species in the area?"



Participants were then asked to briefly give the **main** reason for their answer, to which they had opportunity to provide a free text comment. The reasons given were then categorised using an inductive approach, i.e. categories were identified from the data.

The following Tables 22 to 25 provide an overview of the reasons that were given by south-west residents, broken down by the four possible responses.

In each table are four columns: the first gives the primary reason for their stance; the second column gives further detail (meaning either further clarification or a secondary reason); the third column gives examples of some of the comments made that relate to the reasons given; and the final column gives a count of the number of comments left that related to that reason.

Table 22. Reasons for answer: Yes, other reintroduction will become more likely *(n=545)*

Reason	Further detail	Quote	Count
Successful Pine Marten reintroduction will pave the way for more reintroductions.	- Negative impacts to stakeholders should be compensated for. - There are already feasibility studies out for other reintroductions. - Results can inform management, planning and strategy for future reintroductions. - Boost tourism within local areas. - Depends on good reporting and PR. - Positive effect on biodiversity. - *Note: Red squirrel reintroductions get mentioned 26 times in this category.*	*"Success will lead to more acceptance"* *"Seeing the positive impact of Pine Martins will, I hope, encourage more native species to be reintroduced"* *"If successful, it could encourage other reintroductions if feasible, e.g red squirrel, that have a positive relationship with the pine marten"* *"If the reintroduction is successful and the habitats and other species benefit, then this will probably spur on other reintroductions to create more biodiverse habitats."* *"I'd think, if it were successful, it would establish protocol to follow with other species."*	154
Proven success/positive impact of Pine Marten reintroduction will make people more supportive of future reintroductions.	- With careful management - Greater confidence comes from a positive experience. - Experience will be demonstrated to local stakeholders.	*"As people see a positive impact on the eco system by introducing one species they are likely to be more supportive of others"* *"If the Pine Marten is successfully reintroduced, and doubters realise reintroducing can be done successfully, attitudes towards other reintroductions will be more positive."* *"A successful reintroduction will demonstrate the process to local stakeholders"* *"Public confidence will be influenced by previous success ot failure"*	83

Previous reintroductions have paved the way for this reintroduction proposal	- Other reintroductions done in the UK/Europe/Internationally have been successful. - Reintroduction of other animals such as the beaver, sea eagles, ect have already been successful. - Other reintroductions have already started education on reintroductions. - *Note: beaver reintroductions are mentioned 66 times as an example.*	*"South West has probably been encouraged by other introductions (Forrest of Dean) so therefore things will follow on."* *"… the success of high profile species like sea eagles, beavers and pine martens there is a growing evidence base for the positive impacts of these reintroductions"* *"Successful reintroduction encourages further reintroduction. The Beavers in East Devon have had a huge impact on peoples understanding of the need for wildlife to return to our nature depleted countryside and the benefits that brings."* *"Rewilding projects internationally have been well regarded by locals and the wider public have supported further reintroduced species, eg at Yellowstone national park"*	80
Sets precedent for future projects.	- Is the catalyst for other reintroductions. - Allows an example of good management and public engagement. - Show the ecological benefit of reintroductions.	*"flagship project, inspiration, setting a precedent"* *"It paves the way forward, it shows people that reintroduction can be done successfully and beneficially."* *"The more that is known and tried, the better we can learn from any mistakes and mitigate problems in future projects."*	46
Increase biodiversity and restore nature.	- Restoration of natural environment will inspire people to support future reintroduction.	*"Successful implementation makes us more open to the benefits of biodiversity in our ecosystem"* *"I hope that everyone will see that we desperately need to restore the balance and increase biodiversity"*	43

General supporting statements.			*"the general opinion now is that to reintroduce native species is beneficial"* *"I feel there will be general support and great success, making future reintroductions more easy"*	27
Raise public awareness and education on reintroductions and increasing biodiversity.	-	Further education od stakeholders will lead to more support.	*"Once people understand that we need to help the whole ecosystem recover then hopefully they will see that it's not just one species that needs to be reintroduced"* *"It will demonstrate and educate the public that these reintroductions are beneficial "*	24
General opposing comment.	-	Lack of evidence shown on impact of reintroductions on current flora and fauna, could cause imbalance in biodiversity.	"*Once the door is open to this madness theres no stopping this level of stupidity"* *"the so called conservation body is keen to reintroduce any extinct species into the countryside with no exit policy. "*	22
	-	Lack of exit policy.		
If this projects is well managed with good public outreach project.	-	Provide proof that these projects can be well managed, adequate public engagement and monitoring.	*"Assuming this is a well managed and communicated project public acceptability for new introductions will be enhanced"* *"People will realise that careful planning and community consultation always precedes any reintroduction program."*	17
Ethical motivation	-	Re-encourage increased biodiversity previously lost through anthropogenic activity.	*"Humanity has eradicated many large mammal species and reintroducing these larger species will help rebalance current imbalance in nature in this country. "*	11
Public fear of reintroduction will be reduced.			*"people will become familiar with the concept of reintroductions and this will be enhanced by positive reporting and education"* *"Normalizing re-introductions is important"*	10
With more reintroductions the public will get more	-	More familiar to the concept will have a more positive reaction.	*"The more re-introductions that take place the more likely it is that people will become familiar with this approach to the diversity of our wild life"*	7

familiar with the subject.		*"Normalizing re-introductions is important"*	
Concerns over selected species for future reintroductions.	- Small mammals accepted; larger predator species have less favour. - Lack of full understanding of reintroduced species.	*"This would depend on the species being reintroduced. Larger predators may face more resistance."* *"Careful return of a native animal. Suitable in present times, unlike E.g. wolves."*	9
Depend on landowners/stakeholders support.	- Rewilding may not be supported by landowners/stakeholders.	*"If it can be made to work for the environment and landowners, then further rewinding is welcome."*	4
Increase local economy.	- Give more job opportunities. - Increase tourism.	*"obvious tourism benefits…"*	2
Reintroduction is an 'in fashion' topic.	- Neglects the short and long term impacts on those living near reintroduction sites.	*"there is a fashion for reintroductions."*	2
There is financial benefit from reintroduction.		*"Because you get paid for the reintroductions"*	1
There either is or is not support for reintroductions.		"Re-introductions are something that people either support in principle or not"	1

Table 23. Reasons for answer: Yes, Reintroduction will become less likely *(n=18)*

Reason	Further detail	Quote	Count
Pine martens are predators.	- Populations will need to be controlled. - Negatively effect other species populations/ farmed species.	*"The resulting predation on vulnerable species with negatively impact on the willingness of land managers and those concerned for vulnerable species to accept further introductions."*	6
Reintroduction could be unsuccessful.	- Based on other reintroduction projects in the UK. - Pine Martens could be outcompeted or prey. - Reintroductions are taking money away from issues faced by current wildlife. - Unsuccess could dissuade future stakeholders. - Issues with Pine Marten nature.	*"….but fear that money and resouces may get swallowed up be high profile species… if they prove to have negative impacts or money is wasted might turn the public and landowners off futher projects."* *"I foresee problems, based on the PM experience in Scotland."* *"They are somewhat invasive and very territorial."*	5
Reintroductions will have opposition from various stakeholders.	- Reintroductions should be staggered.	*"I think that it needs to be done in stages too much change is likely to anger or upset local people. There is still a lot of unknown with how successful reintroductions are…. too many animal reintroduction could be met with strong opposition…"* *"There will probably be outcry from various groups leading to persecution and less chances of future reintroductions"*	3
Previous reintroductions are already influencing possibly future reintroductions.		*"Beavers have been a success and if they hadn't been there would be less incentive to introduce pine martens."*	2
Conservation of current wildlife		*"protection of birds /voles and lack of habitat more important to humanity elimination of mink would be better for wildlife before pine martin re introduction"*	1

should be prioritised.		
Management of Pine Martens would have to be put in.	*"One only has to look at the reintroduction of Red Kyte, which probably not in my lifetime, but my children's, will result in control methods being necessary. Whilst I acknowledge Both Kyte's and Marten existed here. Reintroduction will impact on wildlife which has become established. Here"*	I

Table 24. Reasons for answer: No, it will make no difference to the likelihood of other reintroductions occurring (*n*=97)

Reason	Further detail	Quote	Count
Each new reintroduction species should be evaluated independently.	- Reintroduction of Beavers has not influenced Pine Martens. - Not all suitable habitat is conflict free. - Pine Martens will have little effect on other reintroductions. - Public perceptions weigh the outcomes of future projects.	*"Each reintroduction should be looked at on its own, though of course everything connects, the public will respond better by being properly informed, therefore each one should assed separately, I believe this will also help the scientific case."* *"Reintroductions should be on a case by case basis, each reintroduction is individual to that species and consideration."* *"Every case has to be evaluated in its own merits. Not all possible reintroductions have suitable habitats/areas with minimal conflict and hence all these factors influence decision making."* *"Each species reintroduction needs to be considered on its own merit."*	38
Multiple other factors effects reintroduction such as species and/or location.	- Different reintroductions will have different impacts. - Depends on current reintroduction results. - Depends on programme management. - Depends on threat posed by species.	*"Depends on which species are being reintroduced and timing. Its difficult to assess whether other species would reintroduced but its unlikely that it would automatically lead to other species reintroductions."* *"Reintroductions must be dependent upon a managed programme influenced by the particular species and their environmental characteristics and long term sustainability."* *"I don't think their reintroduction will have any influence because reintroduction of species will only happen if habitat and circumstances are right for them. "*	16
Will have no effect/no likely to	- May only effect reintroduction of Red Squirrel	*"Pine martens are small and an insignificant threat to agriculture and tourists."*	10

have effect on future reintroductions.	- Not a controversial species	*"There is no evidence to suggest other reintroductions would follow."*	
Public/stakeholder opinions will change depending on the reintroduced species.	- Smaller uncontroversial species easier to reintroduce. - Farmers may disagree with larger predator reintroductions. - Larger suggest species reintroductions gets more of a push back	*"Species are different whether this goes well or badly wont be a key to public perception on other species."* *"Farmers will not want lager predators roaming the area."* *"There aren't many more "target" species for reintroduction I can think of - largely because the natural habitat is already over-developed. Eg: Lynx - no. Wolf - certainly noto."*	10
Research and consultation is required before reintroductions progress.		*"Each reintroduction must go through a rigorous evaluation process, from looking at the feasibility or reintroduction to development and continued involvement of stakeholders and the public to carefully reintroducing animals and monitoring them. No reintroduction will be the same….."* *"I would hope that all reintroduction attempts would be on a solid scientific basis following significant research and planning."*	6
Depends on political agendas.	- Reintroduction is the new hot topic. - These large projects overshadow current issues face with current wildlife. - Scientific evidence not used. - Reintroduction is being stalled by stakeholder disagreement.	*"Groups will push the agenda for their own introductions having little regard for our current suffering wildlife populations."* *"The powers that be just seem to do what they want"*	7
Reintroduction will depend on availability of funds and management.	- Infrastructure in place for reintroduction control.	*"Not unless there is a clear rationale due to cost and time."*	3

Lacking National Policy.		*"At this point, we aren't operating under any national or regional strategy. It's totally ad hoc."*	I
Unapproved releases will occur anyway.		*"If the release of beavers is any example, there will be unapproved release in other areas of the species regardless."*	I
Reintroduction may not be successful.	- Cause conflict	*"Once martins are established they will cause conflict between themselves and the general population."*	I
Reintroductions should not occur.		*"The reintroduction should not happen in the first place. Putting a thief in a sweet shop is foolish."*	I
Reintroductions will occur anyway.		*"I feel that reintroductions would happen regardless."*	I
Reintroduction is positive		*"All re-introduction of indigenous species is positive."*	I
Other species have already been reintroduced.		"They have steady reintroduced beavers and soon wild cat"	I

Table 25. Reasons for answer: Don't know *(n=104)*

Reason	Further detail	Quote	Count
Depends on the success and outcomes of this reintroduction project.	- Positive outcome may influence more, negative outcome may slow the process in the future. - Public and stakeholder perceptions of this reintroduction project. - Impact on the surrounding habitats and biodiversity. - Depend on what monitoring results. - Concern over shooting lobby input.	*"This will depend on how damaging the release of pine martens is and is perceived to be by local landowners and farmers / small holders…"* *"I think that reintroduction of other species will depend on the response and relative success of the current species reintroduction (e.g. beavers, pine martins)."* *"It depends on the success of the project. If the pine martens integrate into the environment harmoniously, the public will be more inclined to take on another species."*	37
Not enough known on topic.		*"dont know anything about this project, so i know nothing about any other proposed projects."* *"Insufficient knowledge"*	21
Each new reintroduction species should be evaluated independently.		*"I think all wildlife reintroductions have to thought about on their own merits and only on their own merits... Trying to bring back bio-diversity has to be the way forward but we can't do it blindly like we have everything else."* *"It may impact the possibility of other reintroductions in a general sense but comparisons of the impact of pine marten compared to other species will be hard to make. "*	14
Multiple other factors effects reintroduction such as species and/or location.	- Depends on the intended reintroduced species, the location, their effect on current biodiversity. - Depends on habitat availability.	*"Each reintroduction will depend on the individual species, its impacts and level of support. I dont think you can directly correlate this to the successful reintroduction of other species."* *"Introducing new species needs to be considered very broadly to ensure balance in nature is maintained."*	13

Lack of information.		*"Not enough information."* *"Zero information provided to me as a landowner."*	5
Pine Martens will not effect future reintroductions	- Maybe with the acceptation of Red Squirrels	*"It may lead to the reintroduction of red squirrels as their populations could be directly linked to the presence of pine martens, but I don't think it would change the general principle of species reintroduction in the southwest."*	3
Not sure what else is being reintroduced.	- Larger mammal reintroduction seems unlikely. - Focus and funds should go on current land management and biodiversity.	*"I am not sure what other species might be earmarked for reintroduction in the South West, given we have also had the beaver, while lynx and wolf appear unlikely.... We are losing far too much biodiversity and the focus needs to be on proper habitat management…"*	3
General supporting comment.		*"I hope it will."* *"As a suburban dweller the downsides of reintroductions of animals are not very visible."*	2
Too much public/stakeholder opinion variability.		*"There is such hostility from some quarters to the idea of reintroduction…"* *"Public responses will vary"*	2
Future politics.		*"depends on seeing the future minds of politicians."*	1
Possible negative effects of more reintroductions.		*"… the reintroduction does likely mean more reintroductions even if they have a negative impact on other local wildlife. The group managing this need to be unbiased but alas the likelihood this won't be ..."*	1
Reintroductions should not occur.		*"I would prefer not to introduce any species as co-existence unknown."*	1
Illegal reintroductions have already occurred.		*"The beavers in east Devon were illegally released yet have stayed,"*	1

Question 10: More broadly than just for pine martens, do you support the reintroduction of native wildlife?

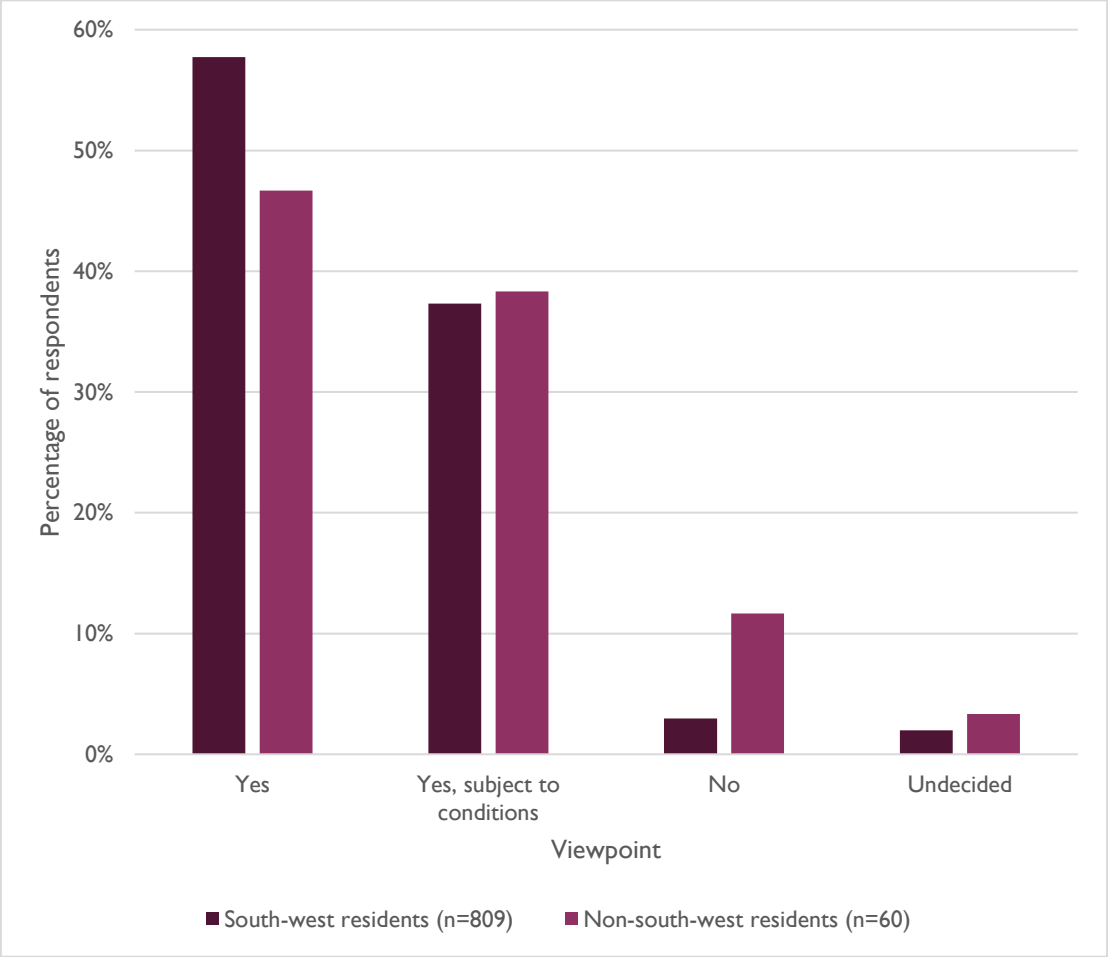
In this question, participants could answer with one of four options: 'Yes'; 'Yes, subject to conditions'; 'No'; or 'Undecided'.

Of south-west residents who answered the question (*n=809*): 57.73% answered 'Yes'; 37.33% answered 'Yes, subject to conditions'; 2.97%% answered 'No'; and 1.98% selected 'Undecided'.

Of non-south-west residents who answered the question (*n=60*): 46.67% answered 'Yes'; 38.33% answered 'Yes, subject to conditions'; 11.67%% answered 'No'; and 3.33% selected 'Undecided'.

These results are visualised in Figure 13.

Figure 13. Summary of answers to Question 10: "More broadly than just for pine martens, do you support the reintroduction of native wildlife?"



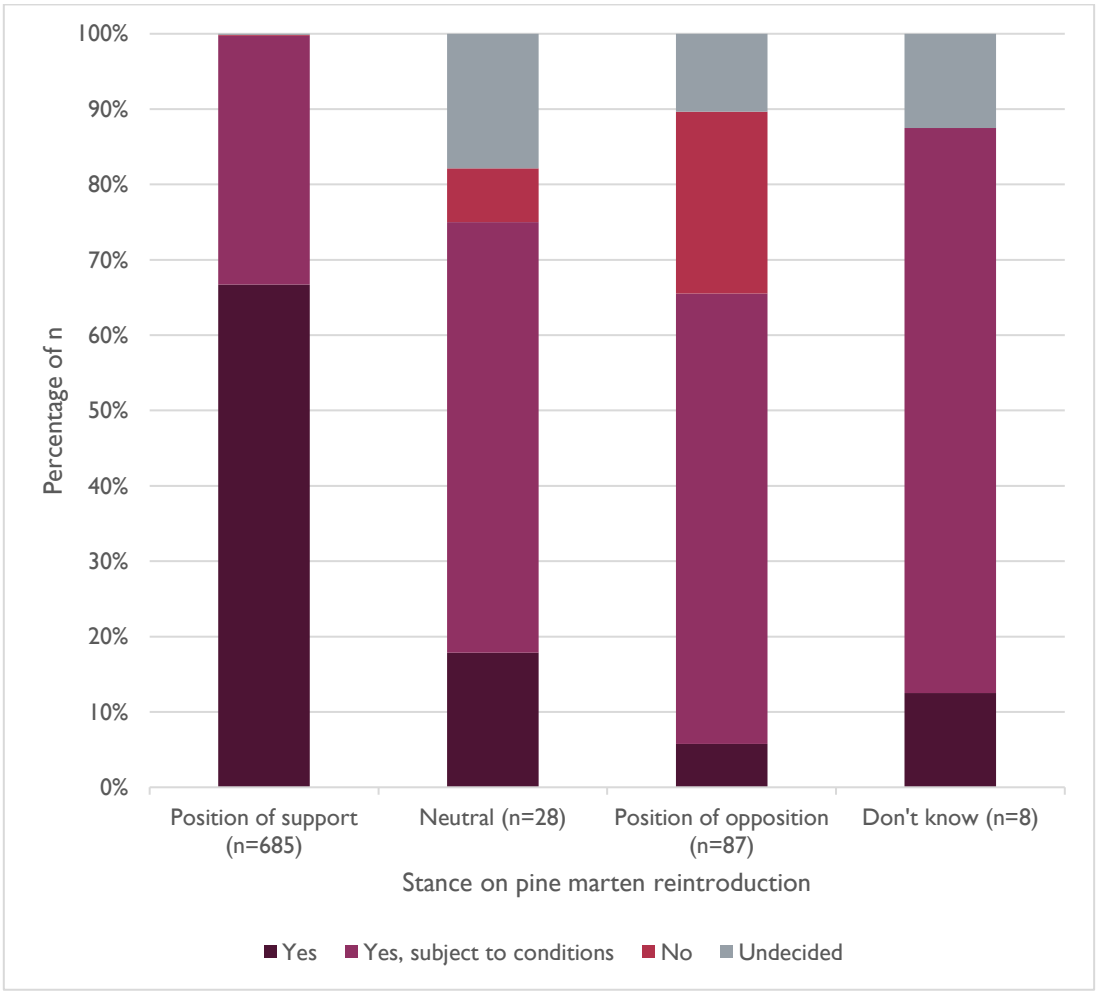
The results for south-west residents were compared against whether respondents supported or opposed pine marten reintroduction (Question 6) using a chi-square test of independence. Positions of support and opposition were grouped together in this analysis (to avoid overcomplication). There was found to be a statistically significant relationship[12].

Of those who took a position of support on pine marten reintroduction, 66.72% supported reintroduction more broadly, with a further 32.99% supporting reintroductions subject to conditions. 0.15% did not support reintroductions more broadly.

Of those who took a position of opposition on pine marten reintroduction, 5.75% supported reintroduction more broadly, with a further 75.00% supporting reintroductions subject to conditions. 12.50% did not support reintroductions more broadly.

This relationship is visualised in Figure 14.

Figure 14. Participant stance on the reintroduction of native wildlife, in relation to their stance on the reintroduction of pine marten.



[12] $\chi^2_{(9)} = 315.93$, $p < 0.01$

Question 11: Are you familiar with any other reintroduction project(s) taking place in the south west?

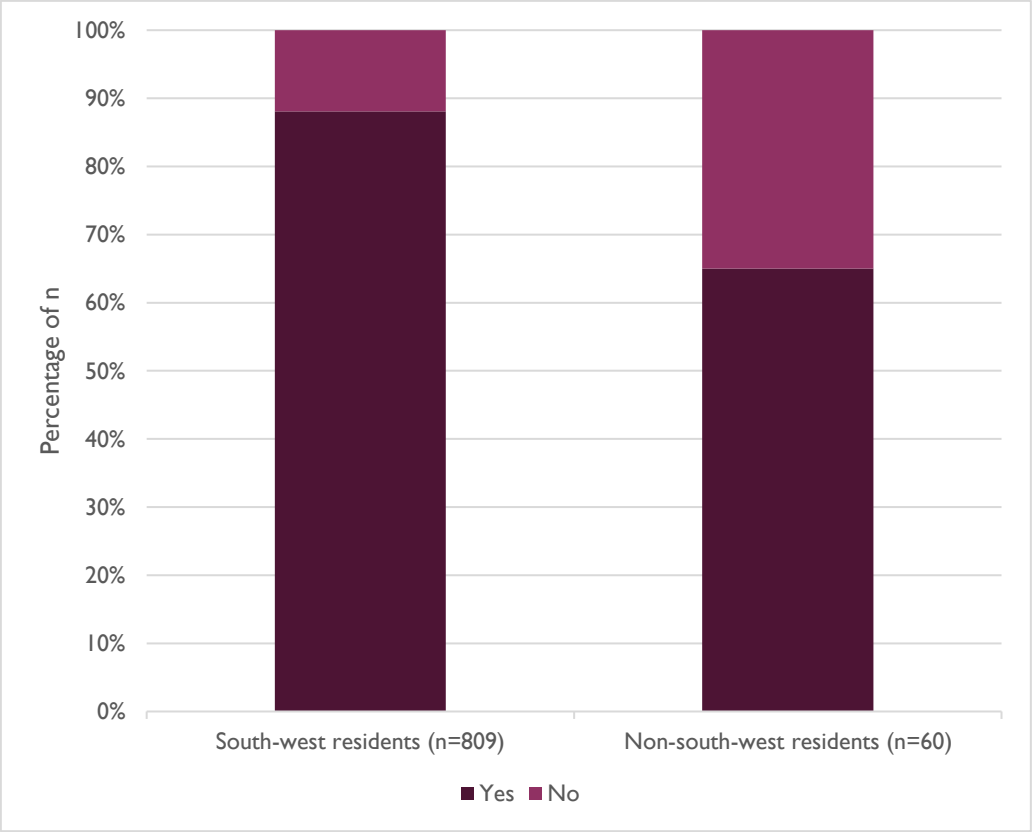
This was a question with a binary choice of answers: 'Yes' or 'No'.

Of south-west residents who answered the question *(n=809)*, 88.50% answered 'Yes' and 11.50% answered 'No'.

Of non-south-west residents who answered the question *(n=60)*, 65.00% answered 'Yes' and 35.00% answered 'No'.

These results are visualised in Figure 15.

Figure 15. Summary of answers to Question 11: "Are you familiar with any other reintroduction project(s) taking place in the south west?"



Question 12: What emotions do you feel when you think about wildlife reintroductions? Please summarise these in 1-3 words.

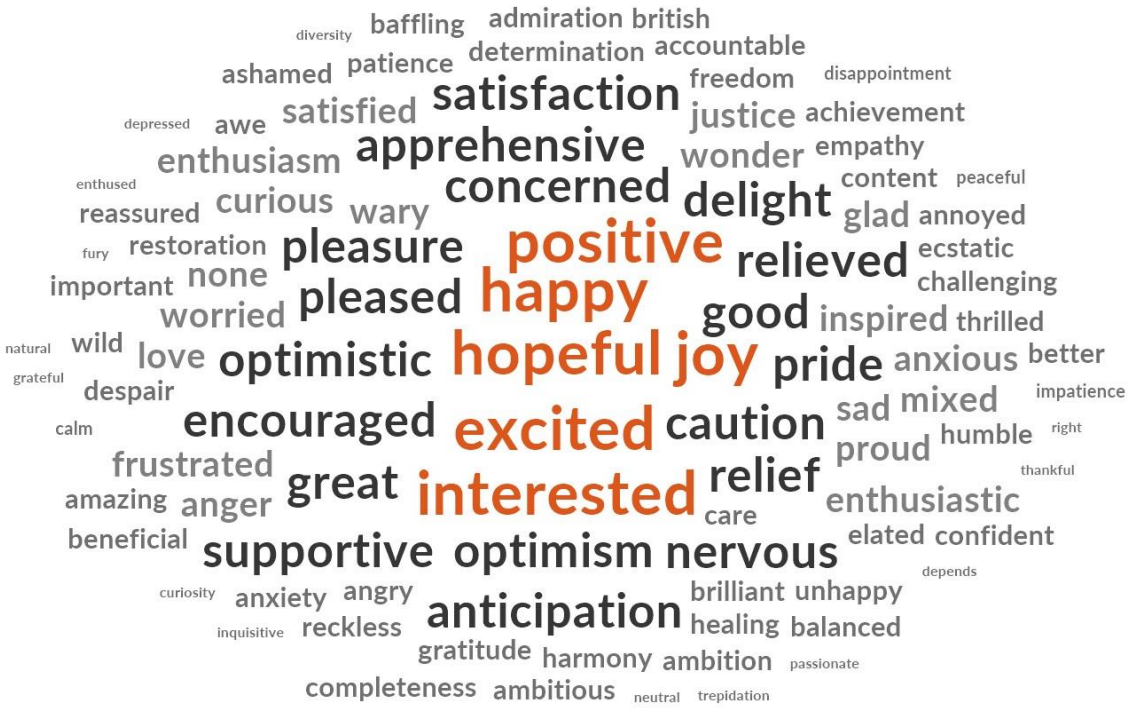
A text field was provided for participants to respond to this question. 785 south-west residents provided an initial answer. Following a review of answers, non-emotion words were excluded and the number of usable responses was revised to 721.

646 responses contained a positive emotion word, 139 contained a negative emotion word, and 26 responses were more neutral. 84 responses contained both positive and negative emotion words.

To examine the most commonly cited emotion words, word frequency analyses were conducted on: all words; positive emotion words; negative emotion words; and neutral emotion / other words. The analyses were run with stemmed words included (e.g. 'excited' and 'exciting' would be combined together into the single word 'excited').

Of all 1307 emotion words given in 721 responses, the five most highly cited were: hopeful (201 counts); happy (155 counts); excited (154 counts); positive (90 counts); and joy (50 counts). The following word cloud in Figure 16 visualises the frequency of words used, with those used most frequently represented in larger text (and vice versa).

Figure 16. Word cloud representing the frequencies of all emotion words used.



Of 1114 positive emotion words given in 646 responses, the five most highly cited were: hopeful (201 counts); happy (155 counts); excited (154 counts); positive (90 counts); and joy (50 counts). The following word cloud in Figure 17 visualises the frequency of words used, with those used most frequently represented in larger text (and vice versa).

Figure 17. Word cloud representing the frequencies of positive emotion words used.

Of 166 negative emotion words given in 139 responses, the five most highly cited were caution (28 counts); concerned (28 counts); apprehensive (9 counts); wary (8 counts); and worried (8 counts). The following word cloud in Figure 18 visualises the frequency of words used, with those used most frequently represented in larger text (and vice versa).

Figure 18. Word cloud representing the frequencies of negative emotion words used.

Of 27 emotion words which were more neutral (or other words that indicated a lack of emotional response) given in 26 responses, the four most highly cited were none (or no emotions; 7 counts); mixed (5 counts); depends (3 counts, all of which clarified this to mean 'depends on species'); and neutral (3 counts). All other words used occurred only once. The following word cloud in Figure 19 visualises the frequency of words used, with those used most frequently represented in larger text (and vice versa).

Figure 19. Word cloud representing the frequencies of neutral emotion words used.

Part 3. Researcher Reflections

In this report, the results of two studies have been outlined which explore perspectives of key stakeholder representatives using Q-Methodology, and of the wider public using a regional online survey. In this final section, the researchers share a series of four analytical reflections on the understanding that has been garnered.

As has been outlined in Section ii, the authors of this report are not members of the Two Moors Partnership so are not proposing nor opposing a reintroduction, and it is not within the researchers' gift to make decisions about how to proceed if the project goes ahead; the researchers' involvement will currently end upon submission of this independent report.

These reflections are shared to provide insights that the researchers have independently developed, for readers and the Two Moors Partnership to consider in their approaches if a reintroduction is to take place.

Reflection 1: Perceptions on the role of predation

Perceptions and understandings of predation will be a key factor in this reintroduction, both of pine marten predation specifically and of predation in ecosystems more broadly, for these inter-relate. For some, predation is viewed as a component of a functioning ecosystem, and the reintroduction of pine martens is perceived as an action that will contribute towards restoring a lost ecological niche. For others, the reintroduction of a species which predates on other animals is perceived as a threat to wildlife which is already struggling (with emphasis on protected species), as well as a risk to poultry and gamebirds and the rural livelihoods associated with those. Among this latter viewpoint, this was often informed by a wider view that native species are under existing threat from what they perceived as an abundance of predatory animals in the landscape already; reintroducing pine marten was perceived as adding a further predator to an issue.

Consequently, two-way sharing of knowledge, experience, and evidence regarding the role of predation in ecosystems may be required if the project is to proceed. Given the divergence between these viewpoints and their interaction with wider values, this is likely to be challenging, and among those who hold negative views on predation in a wider sense, there is likely to be continued opposition to a reintroduction as a point of principle (Bavin *et al.* (2020). However, where there are opportunities for cross-sectoral dialogue (discussed in Reflection 2) it would be appropriate to include dialogue about ecological monitoring taking place within the project. Ecological monitoring was expected by participating stakeholders in the Q-study, and was the condition for support that was ranked as of the highest importance by public survey participants in Question 7. Regular and honest dissemination of ongoing ecological monitoring and its results may help to provide some reassurance, as might the sharing of information on any management or mitigation measures being employed (or that could be employed) in the event of outcomes that may be considered as negative.

Reflection 2: Polarised views and managing the risk of conflict

In the Q-Method study, there was a high degree of polarisation between the two perspectives that were favourable towards reintroduction, and the perspective that did not hold a favourable view (with the latter exhibiting a high quantity of distinguishing statements). Thus, there is a potential for conflict between people or groups that may associate with these varied perspectives. If a reintroduction takes place in the region, a project will need to consider approaches to facilitating a respectful dialogue with and between these groups to reduce the risk of conflict escalation. Should this not be achieved, there is a higher risk of marginalisation of those with opposing views, particularly if they perceive their livelihood to be one which could be negatively affected, and this may influence the likelihood of project success; whilst Q-Method participants indicated they would not do so themselves and would abide by the law, there was a consensus of slight agreement that pine martens may be shot by other people that do not want them (with scores of +1 or +2). Should a conflict escalate, it will become more difficult to resolve later (Cusack et al., 2021), influencing the ability to which renewed coexistence between people and pine martens can be achieved. Thus, proactive intervention to initiate cross-party dialogue is advised.

Whilst it is unlikely (and should not be expected) that all parties will come to a singular consensus view on whether to reintroduce pine marten or on the specifics of management approaches, *how* the process of reintroduction is undertaken will influence levels of trust in those leading the project, or those with a management role in the future. Efforts to reach out and build relationships across different viewpoints, with a process of listening embedded at the core, would be more likely to help facilitate feelings of empowerment in the development of (and familiarisation with) the project and management strategies, even if participating groups hold varied or contrasting viewpoints (Auster et al., 2022c). As part of this, honest communication about challenges alongside potential benefits may help to inspire confidence. It is likely to be impossible to avoid conflicts in entirety so it should be expected some will still arise, but if trust and feelings of empowerment in the process can be achieved, the risk of future conflict between people about pine martens, or between humans and pine martens directly, is likely to be lower (Auster et al., 2023; Bavin et al., 2020; Cusack et al., 2021; Decker et al., 2016).

There will be various possible approaches towards achieving respectful cross-party dialogue, and the way in which to attempt this is a decision for the Two Moors Partnership to take, rather than for the independent research team to direct. One suggestion to consider however may be the formation of a participatory stakeholder and community partnership or Steering Group that seeks to bring together and involve stakeholders and communities in the reintroduction process. In the case of beaver reintroduction in the south-west, recently established 'Beaver Management Groups' seek to provide fora for the engagement of, and sharing of knowledge between, local stakeholders as beavers recolonise the landscape. These adaptive groups aim to familiarise people with the animal and discuss available management support, until such time as the reintroduced species is seen as part of local wildlife (Auster et al., 2022a, 2023). Whilst species-specific management groups are resource intensive, adaptation of the Beaver Management Group approach to this context might be beneficial, if reintroduction takes place.

Reflection 3: An influence on future projects

During the process of this study, it has become clear that participant viewpoints are influenced by prior experiences and awareness of reintroductions or environmental projects. For example, local beaver reintroductions in Devon and discussions of pine marten management for capercaillie conservation in Scotland were raised in both the Q and survey studies, to support certain viewpoints being expressed. During the Q-study, two participants also referenced a previous non-reintroduction project proposal made by one of the Two Moors partners. The participants who raised it said they had felt excluded from its development and alleged there had been a loss of trust in that partner.

Thereby, it is clear the outcomes of this project will be likely to influence other future initiatives, whether that be further reintroduction proposals or environmental projects, and whether they are enacted by Two Moors partners themselves or other actors. This will be an important consideration for partners to bear in mind as it is supportive of the recommendation to involve stakeholders and communities in the reintroduction process. If stakeholders or communities feel disempowered or as if the project has been imposed, it may be more difficult to gain their trust and their input in future initiatives (Coz & Young, 2020). However, this is also a potential opportunity for, although they may not agree with an outcome, if these groups have felt their viewpoints have been listened to and respected in the process, there may be higher levels of trust and a greater willingness to engage with (or even partake in) future endeavours.

Reflection 4: Methodological learning points

The researchers would also like to share self-reflective methodological learning points, to inform future social feasibility researchers. Firstly, the researchers support the conclusion of Bavin *et al*. (2020) that "*Q-methodology offers an effective tool to achieve better understanding of diverse stakeholder perspectives*" (p1127). As well as the researchers feeling the experience of conducting the study to have been productive, feedback from participants was broadly positive, for example with comments that the activity was 'thought-provoking', 'interesting', and 'engaging'. One participant did however indicate they personally would have preferred to have just commented on each statement, rather than also completing a sorting process.

In future studies, the researchers would like to suggest that Q is undertaken *prior* to undertaking a public survey rather than in parallel, as was done here due to the project timeframe. Whilst this may be of practical help for communication during participant recruitment (by sharing one invitation at a time), of greater benefit is perhaps an opportunity afforded for Q results to inform a survey design. This is for two reasons. In the first instance, Q provides a rich understanding of perspectives from which a survey could be developed. In the second, it could be that a follow-up survey is designed to explore the prevalence of identified shared perspectives in wider society. As a further note, Q recognises marginal perspectives so, if a survey is designed in response to a study that has recognised these voices, this may be helpful in inspiring confidence in the survey from individuals whose own viewpoints may align with those perspectives.

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Appendix 1 – Adaptations of the Q-Set

Statements in the Q-Set were adapted from a previous, peer-reviewed study (Bavin et al., 2020). For that study, the statements were developed from 9 context-relevant interviews.

The previous study was completed in Wales. Prior to administering the Q-Sort in the south-west therefore, the statements were reviewed to ensure they would be relevant to the context.

In the first instance, the research team (who are both resident in the area and have completed reintroduction-themed research in the region) reviewed the statements with their experience.

In the second instance, the statements were 'ground-truthed' through a review against the qualitative responses given to a question about support / opposition to pine marten in nearby Cornwall (Cooper et al., *In Prep*). The statements were deemed to be reflected among those responses, and three new statements were added, informed by those responses.

Statement Number	Original statements from Bavin et al, 2020	Revised or added statements *(If blank, no change was made to the original statement)*	Notes or explanation
1	Pine martens are attractive animals		
2	I like the idea of introducing a diversity of wildlife		
3	I like the idea that I might be living in the vicinity of pine martens		
4	I think you will face a challenge from the farming community	I think you will face a challenge from the landowning / land management community	Broadened to reflect other forms of land management practice, as others are also relevant in the area.
5	There may be a positive effect to other wildlife		
6	We might gain the pine marten, but lose other wildlife		
7	The pine marten is vermin		
8	This is humans messing with nature		

Statement Number	Original statements from Bavin et al, 2020	Revised or added statements *(If blank, no change was made to the original statement)*	Notes or explanation
9	I don't see any benefits to come from this project		
10	If I am losing lambs I will deal with it my own way	If I am losing livestock I will deal with it my own way	Sheep farming remains relevant within the south-west context, but there are also other forms of livestock farming common to the area. This was broadened to reflect this context.
11	When animals are overprotected you lose the balance of nature		
12	If people are not allowed to keep them under control, there will be too many pine martens		
13	I think pine martens should be in Wales	I think pine martens should be in South-West England	Adapted the statement from 'Wales' to 'South-West England' to reflect the appropriate context
14	I don't think humans should wipe them out		
15	There will probably be more tourism in the area		
16	They might be shot by people who don't want them		
17	It would be nice if like red kites they became a tourism attraction	It would be nice if they became a tourism attraction	Red kite reintroduction is relevant to the context of the previous study. Red kites are presently less common in the south-west, so this detail specification was removed. They key point in the statement remains.

Statement Number	Original statements from Bavin et al, 2020	Revised or added statements *(If blank, no change was made to the original statement)*	Notes or explanation
18	If it makes the application for a felling licence more complicated it will be an absolute nightmare		
19	It is sad that people from my generation, and the generation before, have not had a chance to see them		
20	People will not even know they are here		
21	There will be many farmers who will be sympathetic to the project	There will be many landowners and land managers who will be sympathetic to the project	Broadened to reflect other forms of land management practice, as others are also relevant in the area.
22	I think the translocation is a good step		
23	I think people would pay money to see them		
24	If they can clear grey squirrels there will be economic and nature conservation benefits		
25	One of my main concerns is TB, and bringing disease into the area	One of my main concerns is bringing disease into the area	Broadened to enable reflection on diseases more broadly. As participants have the opportunity for free discussion around the statements, this allowed flexibility for participants to names diseases of concern. Whilst TB may be raised, other diseases may also be suggested to be of higher (or lower) concern in this region.

Statement Number	Original statements from Bavin et al, 2020	Revised or added statements *(If blank, no change was made to the original statement)*	Notes or explanation
26	I have reservations about introducing wild animals back into the countryside		
27	Pine martens were persecuted for a reason		
28	Pine martens have been known to take lambs	Pine martens have been known to take domestic animals	Sheep farming is relevant within the south-west context. As there are other forms of livestock farming and domestic animal ownership in the region, this was broadened to reflect this context.
29	I am very concerned about poultry		
30	If I lose hens or lambs, it is difficult to prove what caused that loss	If I lose hens or ducks, it is difficult to prove what caused that loss	The relationship between pine marten and poultry farming was highlighted to be relevant in this context by the Two Moors Project. As such, this statement was amended so one statement was more specific to the keeping of birds and perhaps evoke comments / offer participants opportunity to comment on the relationship between pine marten and bird keeping. *(Statements 10 and 28 continue to relate to pine marten and other livestock types, offering opportunity to discuss*

Statement Number	Original statements from Bavin et al, 2020	Revised or added statements *(If blank, no change was made to the original statement)*	Notes or explanation
			any relationship with other farming types).
31		Pine martens are not compatible with the modern rural environment	New statement informed by reflection on the Cornwall Council survey results. The researchers have previous research experience in the field of reintroduction and recognise this viewpoint from previous work.
32		There would be no negative effects of pine martens	New statement informed by reflection on the Cornwall Council survey results.
33		There would be better things to spend money on	New statement informed by reflection on the Cornwall Council survey results. The researchers have previous research experience in the field of reintroduction and recognise this viewpoint from previous work.

Appendix 2 – Q-Study Factor Loadings

The following table gives the rotated factor loadings for the 27 Q-Sorts. Sorts that load significantly onto an identified factor following the increase in loading threshold to 0.6 are indicated with an *. P11 and P23 were confounded Q-Sorts at the increased loading threshold, and are indicated as such with a †.

Q-Sort	Factor 1	Factor 2	Factor 3
P1	0.19	-0.03	0.54
P2	-0.15	0.77*	-0.16
P3	0.30	0.22	0.55
P4	0.67*	-0.31	0.51
P5	0.63*	0.05	0.51
P6	0.18	0.58	0.51
P7	-0.42	0.66*	-0.13
P8	0.66*	-0.17	0.50
P9	0.67*	-0.16	0.50
P10	0.24	0.74*	0.16
P11	0.70†	-0.13	0.60†
P12	0.58	-0.06	0.63*
P13	0.78*	-0.08	0.44
P14	-0.32	0.66*	-0.27
P15	-0.44	0.58	-0.01
P16	0.21	-0.06	0.71*
P17	-0.29	0.79*	-0.05
P18	0.09	0.66*	-0.31
P19	0.54	-0.09	0.72*
P20	0.27	-0.18	0.68*
P21	0.37	-0.10	0.78*
P22	0.53	-0.15	0.62*
P23	0.64†	-0.13	0.64†
P24	0.64*	-0.22	0.57
P25	0.46	0.18	0.66*
P26	0.75*	0.08	0.36
P27	0.38	0.72*	0.37