

PUBLIC PERCEPTIONS OF DEER MANAGEMENT AND DEER WELFARE IN SCOTLAND

Summary methods and results

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1. WHAT DID WE DO?

We used an online questionnaire to measure public perceptions of deer management and deer welfare in Scotland. We developed our questionnaire in conversation with staff from environmental and animal welfare organisations in Scotland and academics who work on deer management, conservation social science, and animal welfare.

Between 16 March and 21 April 2021, 1002 adults living in Scotland responded to our questionnaire. We worked with [Qualtrics](#) to recruit a sample that approximated the Scottish population in terms of gender, ethnicity, and age (Section 3). We deliberately oversampled people from rural areas so that we could compare urban and rural responses.

To give respondents context for the study, our questionnaire began with a short background section describing deer management in Scotland (Appendix A).

Our questionnaire measured:

- respondents' general perceptions of deer (Section 2.1)
- how acceptable it would be to shoot more deer if doing so would help achieve various social and environmental objectives (Section 2.2)
- how important it is that people who shoot deer have certain characteristics (Section 2.3)
- how acceptable it would be for people who shoot deer to use parts of the deer in various ways (Section 2.4)
- how relevant various ethical considerations were to respondents' answers (Section 2.5)
- respondents' demographic characteristics and social identities (Section 3).

We analysed responses to provide a snapshot of how people currently living in Scotland think about deer management and deer welfare, focusing on comparisons between urban and rural respondents.

2. WHAT DID WE FIND?

2.1. What were respondents' general perceptions of deer?

We asked whether respondents enjoy knowing that wild deer live in Scotland and how often they see deer in Scotland.

We found:

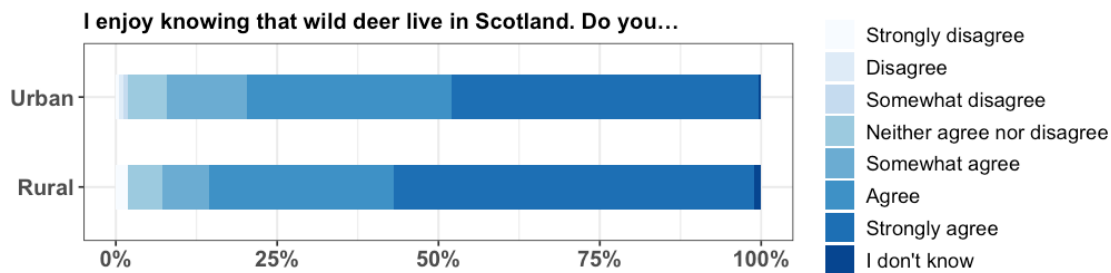


Figure 2.1.1. Reported agreement with the statement “I enjoy knowing that wild deer live in Scotland”, split by urban and rural respondents. Percentage breakdowns given in Table 2.1.1.

Table 2.1.1. Percentage breakdowns of reported agreement with the statement “I enjoy knowing that wild deer live in Scotland”, split by urban and rural respondents.

	Urban	Rural
Strongly disagree	0.6	1.8
Disagree	0.6	0
Somewhat disagree	0.8	0
Neither agree nor disagree	5.9	5.4
Somewhat agree	12.4	7.2
Agree	31.8	28.6
Strongly agree	47.5	55.8
I don't know	0.4	1.1

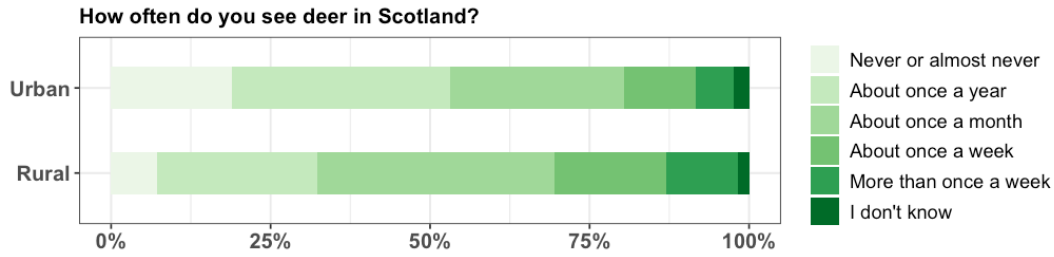


Figure 2.1.2. Reported frequency of seeing deer in Scotland, split by urban and rural respondents. Percentage breakdowns given in Table 2.1.2.

Table 2.1.2. Percentage breakdowns of reported frequency of seeing deer in Scotland, split by urban and rural respondents.

	Urban	Rural
Never or almost never	19.0	7.2
About once a year	34.2	25.0
About once a month	27.3	37.3
About once a week	11.2	17.4
More than once a week	5.9	11.2
I don't know	2.5	1.8

We asked respondents whether, before taking part in our study, they knew that deer were shot for population management in Scotland every year, and their perception of the number of deer in Scotland.

We found:

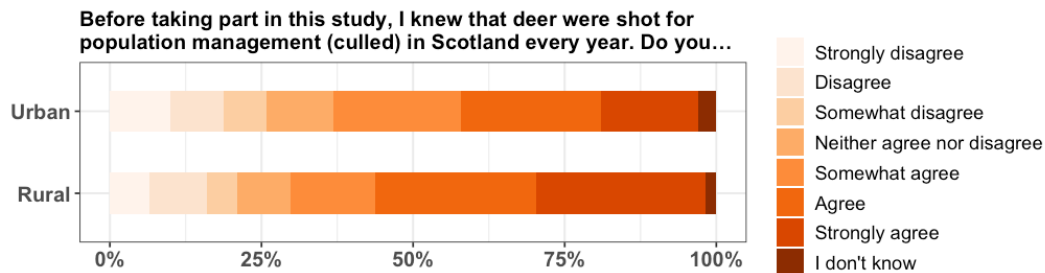


Figure 2.1.3. Reported agreement with the statement “Before taking part in this study, I knew that deer were shot for population management (culled) in Scotland every year”, split by urban and rural respondents. Percentage breakdowns given in Table 2.1.3.

Table 2.1.3. Percentage breakdowns of reported agreement with the statement “Before taking part in this study, I knew that deer were shot for population management (culled) in Scotland every year”, split by urban and rural respondents.

	Urban	Rural
Strongly disagree	9.9	6.5
Disagree	8.8	9.4
Somewhat disagree	7.2	5.1
Neither agree nor disagree	10.1	8.7
Somewhat agree	21.1	14.1
Agree	23.1	26.4
Strongly agree	16.0	27.9
I don't know	3.0	1.8

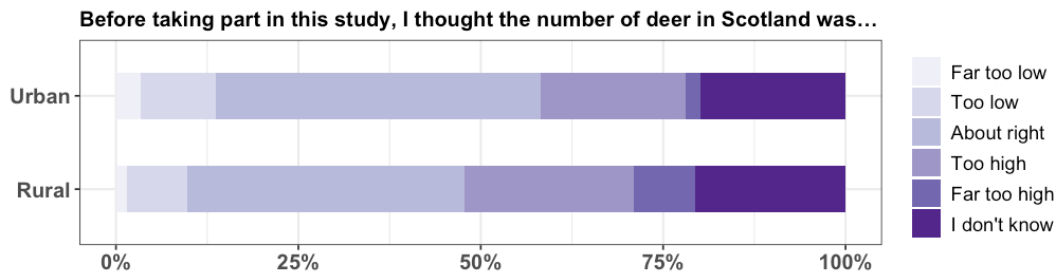


Figure 2.1.4. Reported perception of the number of deer in Scotland prior to taking our study, split by urban and rural respondents. Percentage breakdowns given in Table 2.1.4.

Table 2.1.4. Percentage breakdowns of reported perception of the number of deer in Scotland prior to taking our study, split by urban and rural respondents.

	Urban	Rural
Far too low	3.4	1.5
Too low	10.2	8.3
About right	44.6	38.0
Too high	19.8	23.2
Far too high	2.1	8.3
I don't know	19.8	20.7

2.2. How acceptable it would be to shoot more deer if doing so would help achieve various social and environmental objectives?

We asked:

It would be acceptable for land managers to shoot more deer if doing so would help...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	I don't know
... forests to recover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... peatlands to recover	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... address climate change by storing more carbon from the atmosphere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... reduce the number of deer that starve in winter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... other animals to survive and thrive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... reduce the spread of Lyme disease to people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... create more stalking opportunities for people who like to shoot deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... provide free or low-cost venison for local people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... reduce the number of road accidents involving deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We found:

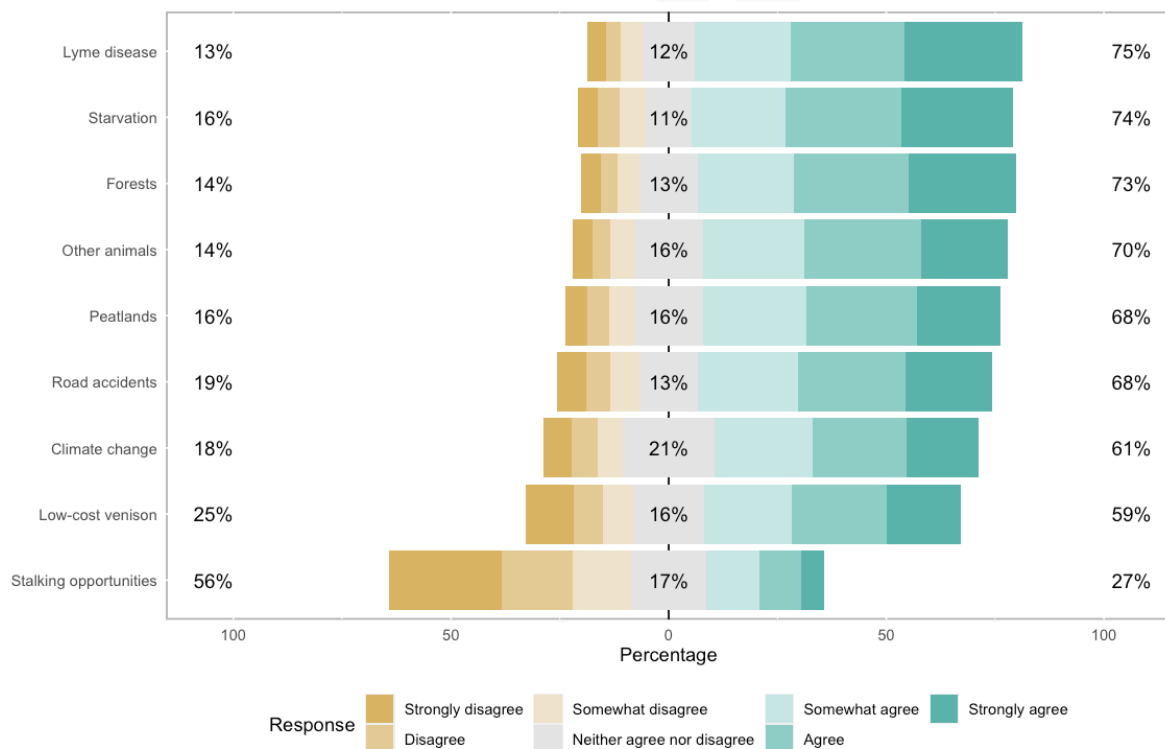


Figure 2.2.1. Reported acceptability of shooting more deer if doing so would help achieve various social and environmental objectives. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed that (left), were indifferent to (middle), or agreed that (right) it would be acceptable to shoot more deer after excluding “I don’t know” responses.

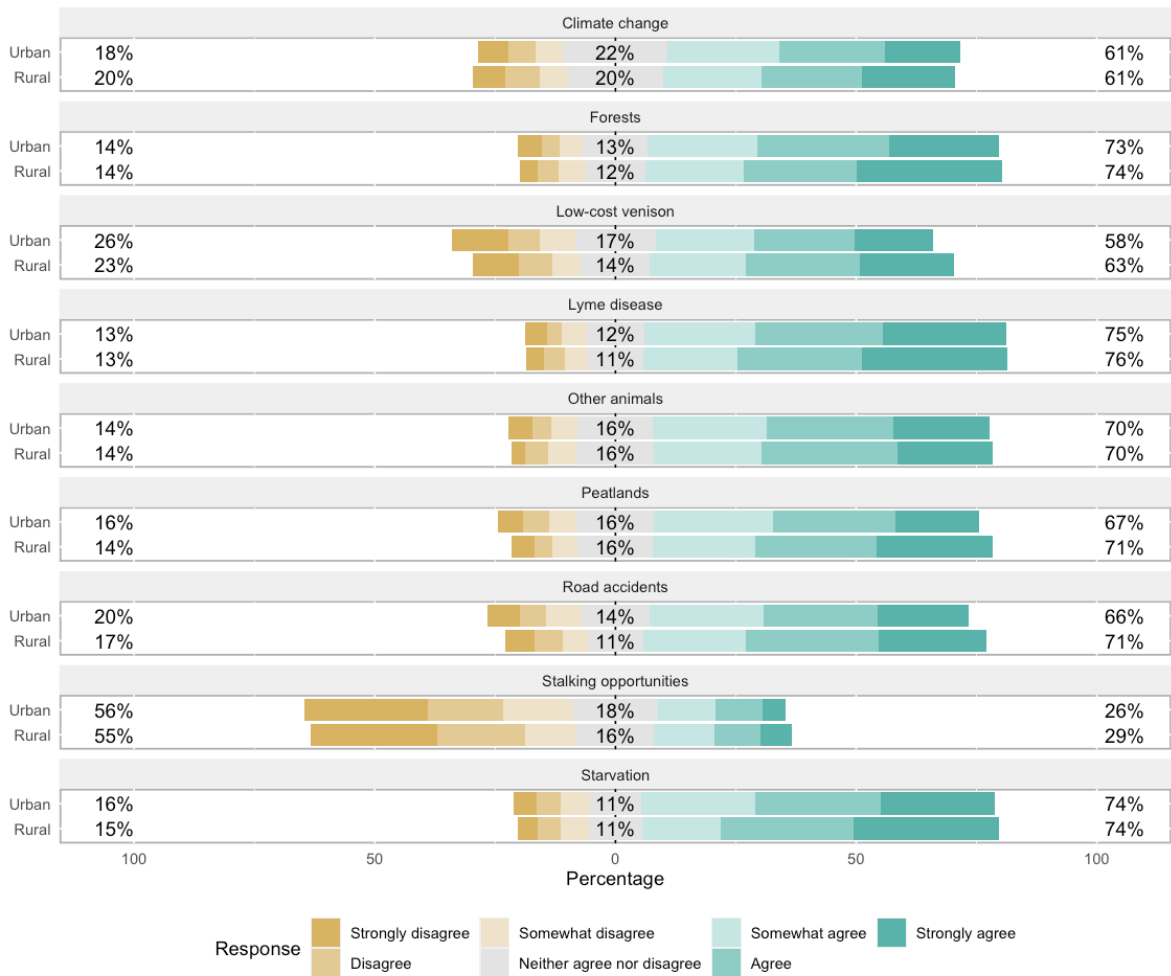


Figure 2.2.2. Reported acceptability of shooting more deer if doing so would achieve various social and environmental objectives, split by urban and rural respondents. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed that (left), were indifferent to (middle), or agreed that (right) it would be acceptable to shoot more deer after excluding “I don’t know” responses.

2.3 How important is it that people who shoot deer have certain characteristics?

We asked:

It is important that people who shoot deer...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	I don't know
... are from the local area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... have formal hunting or stalking qualifications, including shooting proficiency, to ensure that deer die as quickly as possible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... are professional hunters or stalkers, i.e. hunting or stalking is part of their main paid occupation, not a pastime	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We found:

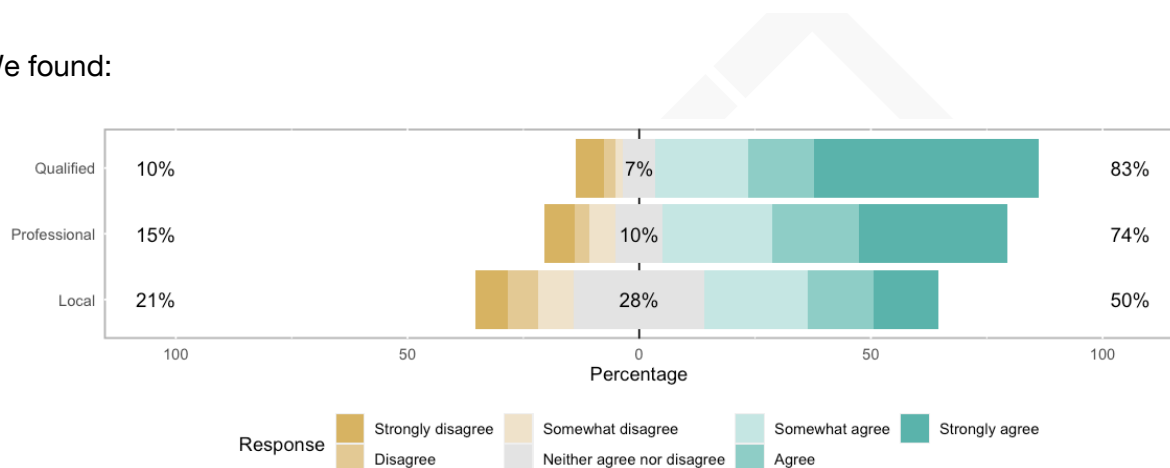


Figure 2.3.1. Reported agreement that people who shoot deer should have certain characteristics. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed with (left), were indifferent to (middle), or agreed with (right) people who shoot deer having each characteristic after excluding “I don’t know” responses.

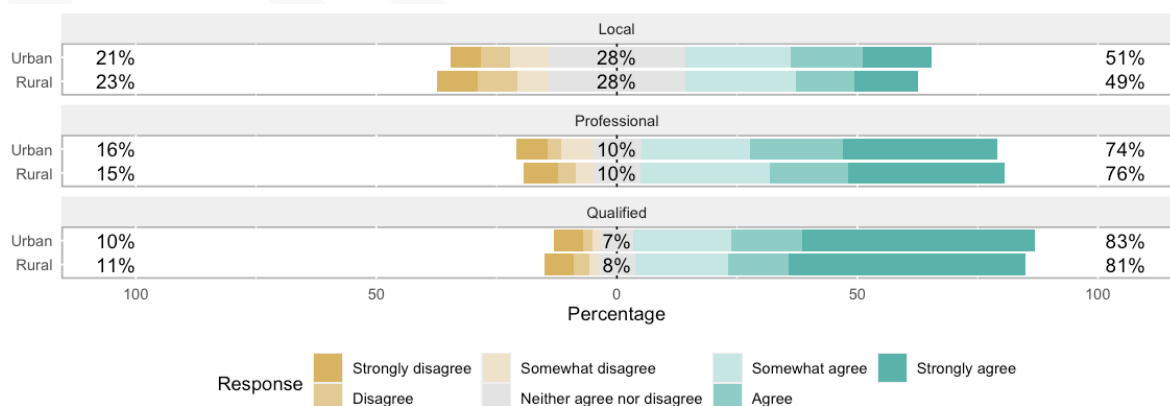


Figure 2.3.2. Reported agreement that people who shoot deer should have certain characteristics, split by urban and rural respondents. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed with (left), were indifferent to (middle), or agreed with (right) people who shoot deer having each characteristic after excluding “I don’t know” responses.

2.4. How acceptable would it be for people who shoot deer to use parts of the deer in various ways?

We asked:

It would be acceptable for people who shoot deer to...

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	I don't know
... keep the meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... give the meat to friends and family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... sell the meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... give the meat to people in need, such as donating it to a food bank or soup kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... keep parts of the deer other than the meat, such as heads, skulls, hides, or antlers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We found:

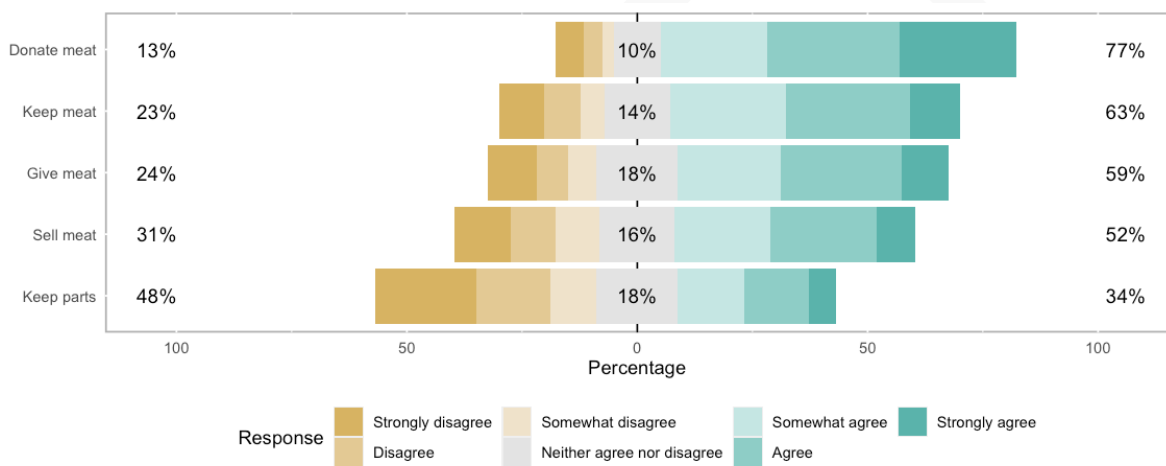


Figure 2.4.1. Reported agreement that it would be acceptable for people who shoot deer to use parts of the deer in various ways. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed that (left), were indifferent to (middle), or agreed that (right) it would be acceptable for people who shoot deer to use parts of the deer in various ways after excluding “I don’t know” responses.

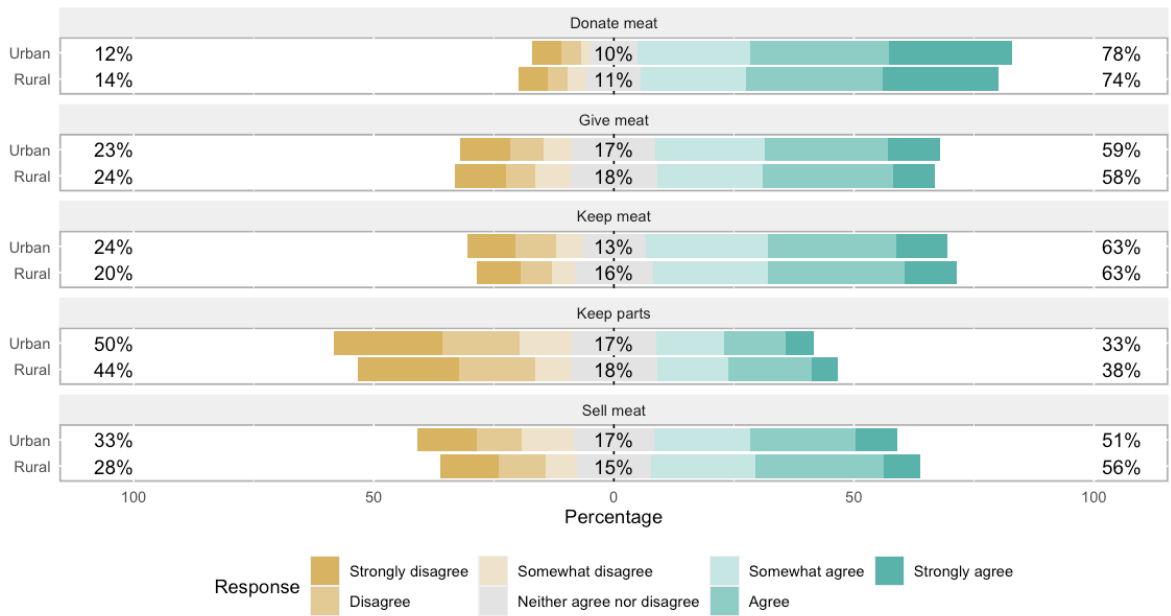


Figure 2.4.2. Reported agreement that it would be acceptable for people who shoot deer to use parts of the deer in various ways, split by urban and rural respondents. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed that (left), were indifferent to (middle), or agreed that (right) it would be acceptable for people who shoot deer to use parts of the deer in various ways after excluding “I don’t know” responses.

2.5. How relevant were various ethical considerations to respondents' answers to the questions in Sections 2.2, 2.3, and 2.4?

We asked:

While you were answering these questions, to what extent were the following considerations relevant to your thinking?

Please select the answer that fits best for each item. If you do not know or are unsure, please select "I don't know".

	Not at all relevant	Somewhat relevant	Relevant	Very relevant	I don't know
Social justice, such as fairness and equality among people who live in Scotland	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental conservation, such as protecting forests, peatlands, climate, or biodiversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public health and safety, such as disease transmission and road accidents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welfare, such as pleasure or suffering, of deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Welfare, such as pleasure or suffering, of animals other than deer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We found:

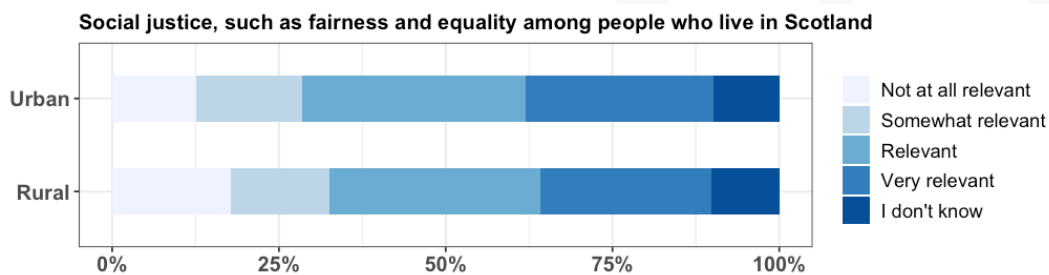


Figure 2.5.1. Reported relevance of social justice when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural responses. Percentage breakdowns given in Table 2.5.1.

Table 2.5.1. Percentage breakdowns of reported relevance of social justice when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents.

	Urban	Rural
Not at all relevant	12.7	17.8
Somewhat relevant	15.8	14.9
Relevant	33.5	31.5
Very relevant	28.1	25.7
I don't know	9.9	10.1

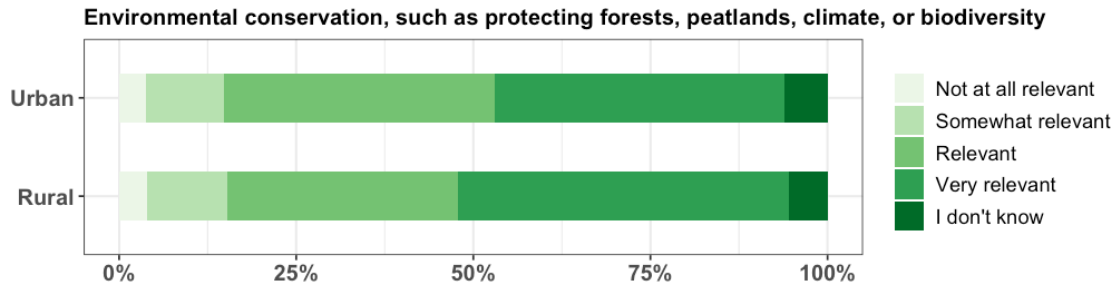


Figure 2.5.2. Reported relevance of environmental conservation when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents. Percentage breakdowns given in Table 2.5.2.

Table 2.5.2. Percentage breakdowns of reported relevance of environmental conservation when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents.

	Urban	Rural
Not at all relevant	3.9	4.0
Somewhat relevant	11.0	11.2
Relevant	38.1	32.6
Very relevant	40.9	46.7
I don't know	6.1	5.4

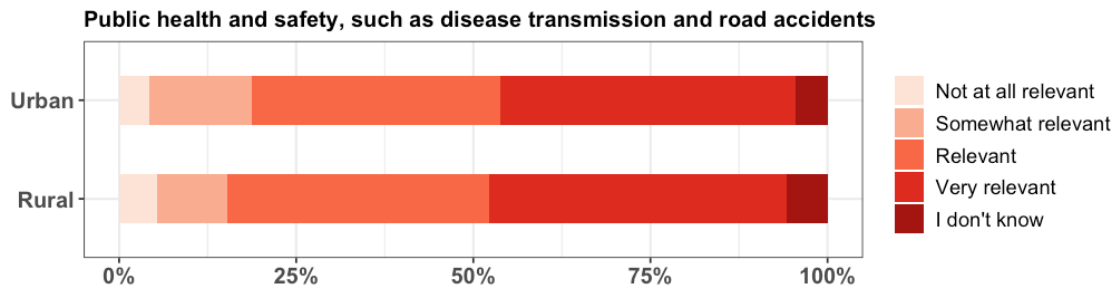


Figure 2.5.3. Reported relevance of public health and safety when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents. Percentage breakdowns given in Table 2.5.3.

Table 2.5.3. Percentage breakdowns of reported relevance of public health and safety when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents.

	Urban	Rural
Not at all relevant	4.3	5.4
Somewhat relevant	14.5	9.8
Relevant	35.1	37.0
Very relevant	41.6	42.0
I don't know	4.5	5.8

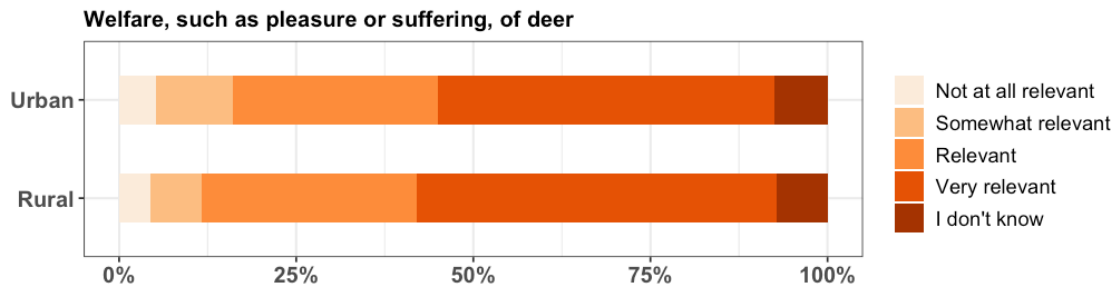


Figure 2.5.4. Reported relevance of deer welfare when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents. Percentage breakdowns given in Table 2.5.4.

Table 2.5.4. Percentage breakdowns of reported relevance of deer welfare when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents.

	Urban	Rural
Not at all relevant	5.2	4.3
Somewhat relevant	10.7	7.2
Relevant	29.1	30.4
Very relevant	47.5	50.7
I don't know	7.4	7.2

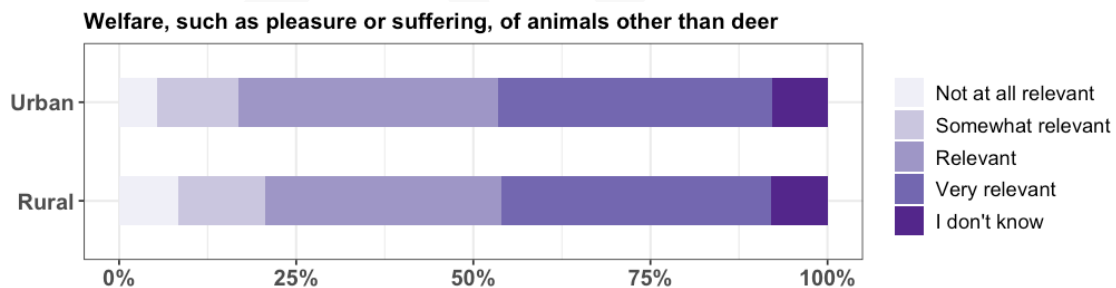


Figure 2.5.5. Reported relevance of welfare of animals other than deer when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents. Percentage breakdowns given in Table 2.5.5.

Table 2.5.5. Percentage breakdowns of reported relevance of welfare of animals other than deer when answering questions in Sections 2.2, 2.3, and 2.4, split by urban and rural respondents.

	Urban	Rural
Not at all relevant	5.4	8.3
Somewhat relevant	11.4	12.3
Relevant	36.6	33.3
Very relevant	38.7	38.0
I don't know	7.9	8.0

3. WHO ANSWERED OUR QUESTIONNAIRE?

At the end of our questionnaire, we asked respondents to provide some demographic information.

Table 3.1. Descriptive statistics for overall sample, and split by rural and urban respondents.

<i>Item</i>	<i>Response options</i>	<i>Overall % (n=1002)</i>	<i>Urban % (n=726)</i>	<i>Rural % (n=276)</i>
Gender identity	Female	49.8	49.9	49.6
	Male	49.7	49.4	50.4
	Transgender	0.1	0.1	0
	Non-binary	0.3	0.4	0
	Other	0	0	0
	Prefer not to say	0.1	0.1	0
Ethnicity	White (Scottish/British/other)	95.3	94.1	98.6
	Asian (Scottish/British/other)	2.7	3.4	0.7
	African, black, or Caribbean (Scottish/British/other)	1.0	1.2	0.4
	Arab (Scottish/British/other)	0	0	0
	Mixed or multiple ethnicity	0.5	0.7	0
	Other ethnicity	0.3	0.4	0
	Prefer not to say	0.2	0.1	0.4
Age group	18-34	29.5	31.1	25.4
	35-44	15.4	17.2	10.5
	45-59	26.6	27.8	23.6
	60+	28.4	23.8	40.6
Highest education completed	Primary school	0.4	0.4	0.4
	Secondary school	37.2	36.2	39.9
	College or university degree	52.6	53.2	51.1
	Postgraduate degree	9.8	10.2	8.7
Grew up rural or urban	Very urban (e.g. a city or large town)	29.7	35.8	13.8
	Quite urban	39.9	49.6	14.5
	Quite rural	20.2	8.3	51.4
	Very rural (e.g. a small village or the countryside)	10.2	6.3	20.3
Land owned	None	71.4	73.7	65.2
	Less than one hectare	24.6	22.7	29.3
	1-10 hectares	3.8	3.6	4.3
	More than 10 hectares	0.3	0	1.1
Trust Scottish Government to make the right decisions	Never	11.6	10.4	14.5
	Only now and then	22.0	23.6	17.8
	Some of the time	35.7	35.7	35.9
	Most of the time	25.3	25.0	26.4
	Always	4.1	4.3	3.6
	I don't know	1.3	1.1	1.8

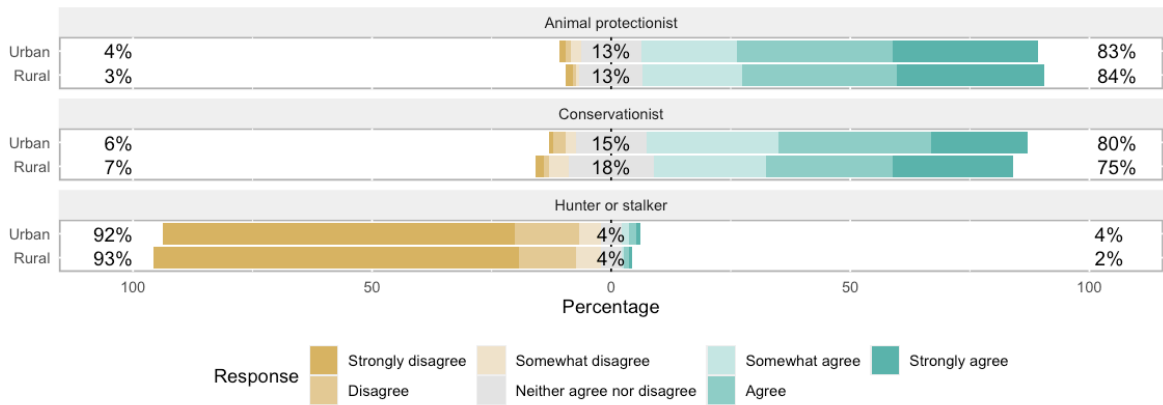


Figure 3.1. Reported agreement that respondents consider themselves to be hunters or stalkers, advocates for environmental conservation, and advocates for animal protection, split by urban and rural respondents. Bars show distribution of responses, coloured by disagreement (browns), indifference (grey), and agreement (greens). Percentages show proportions of respondents who disagreed that (left), were indifferent to (middle), or agreed that (right) they considered themselves to be members of each social identity group after excluding “I don’t know” responses.

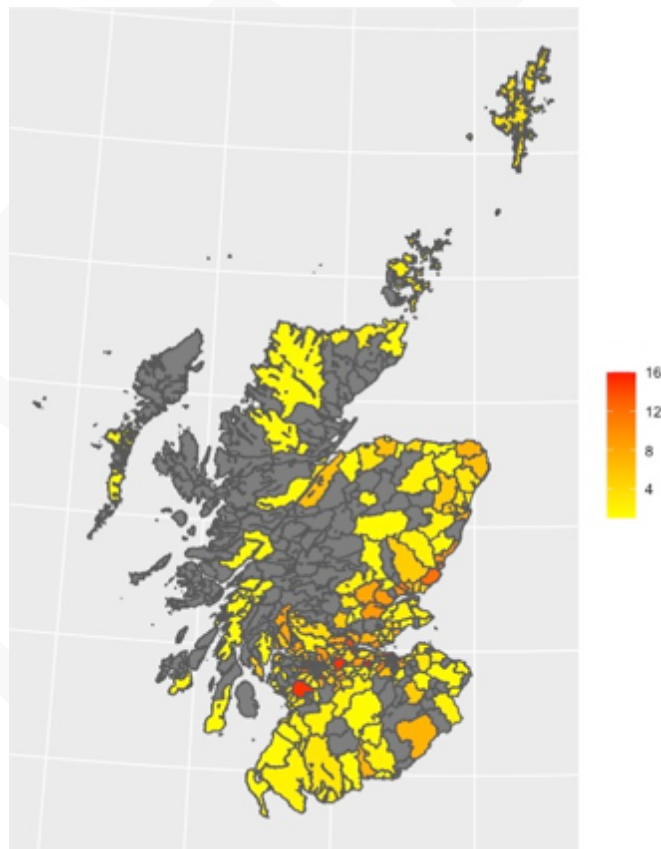


Figure 3.2. Distribution of respondents by postcode district. Colours show number of respondents in each postcode district. Postcode districts with no respondents are grey. Map generated from 980 valid postcode districts provided by respondents.

APPENDIX A: QUESTIONNAIRE DETAILS

Questionnaire flow

To prevent priming effects, we randomised the order in which respondents received questions within each section of our questionnaire, as well as in which respondents received the sections of the questionnaire measuring acceptability of shooting more deer, characteristics of people who shoot deer, and acceptability of using deer parts.

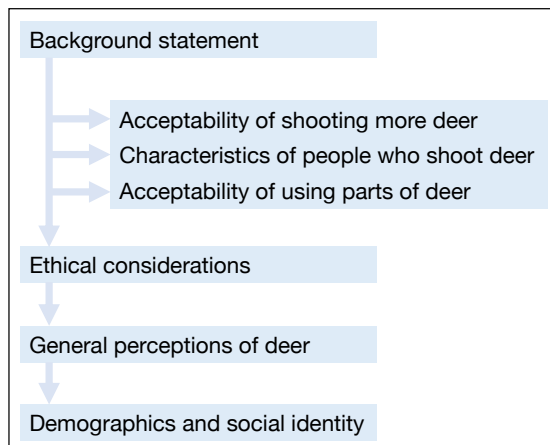


Figure A1. Questionnaire flow. All respondents received the background statement first, followed by the sections on acceptability of shooting more deer, characteristics of people who shoot deer, and acceptability of using deer parts in random order. All respondents then received the sections on ethical considerations, general perceptions of deer, and demographics and social identities.

Background section text

Please carefully read the information below, which describes wild deer management in Scotland.

Nearly one million wild deer live in Scotland.

Wild deer are an important part of Scottish culture and the natural world. Deer are iconic Scottish animals, and deer management provides jobs for people in rural Scotland. Many of these jobs involve shooting deer for food, sport, or environmental conservation.

Hundreds of years ago, people in Scotland drove natural deer predators (such as lynx, wolves, and bears) to extinction. In the absence of these natural predators, deer populations have grown.

There are currently more deer in Scotland than ever before. High deer numbers are associated with increasing environmental impacts, Lyme disease, and road traffic accidents.

High deer numbers damage peatlands and prevent forests from regenerating. These impacts impede Scotland's efforts to store carbon from the atmosphere, and make it difficult for other wild animals and plants to thrive.

Deer carry ticks that can pass Lyme disease to people, causing severe and long-lasting illness. More deer means more ticks and more opportunities for Lyme disease to spread.

Thousands of deer starve to death each winter because the land cannot support them. Thousands more deer, as well as many people, are injured or die every year in collisions with cars on Scottish roads.

Every year land managers in Scotland shoot approximately one hundred thousand deer. Despite this annual cull, the number of deer in Scotland continues to grow. Viable alternative ways of reducing deer numbers, such as contraception, do not currently exist.

Some people would like land managers to shoot many more deer every year, arguing that this would help protect the environment, lower the spread of Lyme disease, and reduce the number of deer that die of starvation or in road accidents.

DRAFT

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This study was a collaboration between Scottish Environment LINK, Oxford University, and Cornell University. It was funded by Scottish Environment LINK and the John Muir Trust. It was reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee (reference R74567/RE001) and Cornell University Institutional Review Board for Human Participants (protocol 2103010182).

Results in this document have not yet undergone independent peer review.

For more information, contact Dr. Darragh Hare, Wildlife Conservation Unit, Department of Zoology, Oxford University: darragh.hare@zoo.ox.ac.uk.