



DICE
University of Kent

School of
Anthropology
and Conservation

Understanding approaches for conserving biodiversity and rewilding on privately owned land

Claire Louise Stewart

Durrell Institute of Conservation and Ecology
School of Anthropology and Conservation
University of Kent, Canterbury

**Thesis submitted for the degree of Doctor of Philosophy in
Biodiversity Management**

February 2023

Word count: 63,821



© Rewilding Britain

Understanding approaches for conserving biodiversity and rewilding on privately owned land

Claire Louise Stewart

Supervised by:

Professor Robert J. Smith

Professor Zoe G. Davies

Professor Humphrey Q. P. Crick

Acknowledgements

I've been lucky to work with a host of wonderful people during my PhD. I am foremost indebted to my fantastic supervisors Bob Smith and Zoe Davies. I will be forever grateful for their boundless patience, generosity, support, and friendship over the past few years. I truly cannot thank them enough. I'd also like to thank Joe Bull, Prue Addison, and Humphrey Crick who have been endlessly kind, enthusiastic, and encouraging with their feedback. Also, thanks to Elysia Davies, Mitchell Rae, and Iris Truscott who were a joy to work with during the weirdness of lockdown.

I'm especially grateful to the farmers and land-managers who gave their time to be interviewed and made this research possible. I've spent countless hours pondering over their interview transcripts and I hope this thesis does them justice.

I'm grateful to all the staff and students at DICE who have made it such a fun and supportive place to work, and I'd like to give a special mention to Addy Lowe, Jess Fisher, Ellie Rankin, Gail Austen, Rachel Sykes, Dee Rundle, and Tally Yoh, who have been the most wonderful friends throughout my PhD journey.

I'm especially grateful that I crossed paths with Georgie Kemsley at an induction event in the first week of my PhD, and I'll always be glad I invited myself to your book club and met Rachel McKeating and Jen Gavin. Our conversations about books, interiors, celebrity gossip and everything in-between are some of my favourite memories from living in Canterbury.

Since my undergraduate days at the University of St Andrews, I've been so lucky to have the support of the 'Unbeatable Team', and I would be completely lost without Rosa Campbell and Holly Edwards. I'd also like to thank Shona Munthe and Emma Sawatzky for always being up for afternoon tea and a shopping trip, and of course Robyn Howie for always being at the other end of the phone with the juiciest gossip! I truly have the best group of friends.

I'd like to thank my family who have always been there for me, even though they have never been quite sure what I do. I'm worried they are going to be disappointed when they find out I'm not a marine biologist! I couldn't have done this PhD without the support of my parents Susan and David Stewart, my sister Heather Stewart, my brother-in-law Liam Johnson, my

parents-in-law Susan and Boyd Murdoch, my gorgeous girlyies Meredith and Christina, and of course the best dog in the world, Ben. Thank you for being the best support system.

Finally, thank you to (Dr) Russell Murdoch. You are my rock and I'm so lucky we are on the same team.

Author declaration

C. L. Stewart wrote all the chapters, with editorial suggestion made by PhD supervisors R.J. Smith and Z.G. Davies. Chapters 3-4 include collaborations with researchers outside of the supervisory team, as outlined below.

Chapter 2 originated during discussions with Z.G. Davies, H.G.P. Crick, and R.J. Smith. The data collection and analyses were conducted by C.L. Stewart with support from all co-authors. C.L. Stewart wrote the chapter with collaborative input from Z.G. Davies and R.J. Smith.

Chapters 3 and 4 originated during discussions with Z.G. Davies, J.W. Bull, P. Addison, and R.J. Smith. The interview design was developed by C.L. Stewart with support from all co-authors. Data collection was led by C.L. Stewart with support from E. Davies, M. Rae, and I. Truscott. All data analyses were conducted by C.L. Stewart with support from Z.G. Davies and R.J. Smith. C.L. Stewart wrote both chapters with collaborative input from Z.G. Davies, J.W. Bull, and R.J. Smith.

Abstract

Increased efforts to conserve nature are needed to stem the biodiversity crisis and avoid the collapse of the planetary support systems that sustain life on Earth. Protected areas will remain central to these efforts, as reflected by Target 3 of the Convention on Biological Diversity's new Kunming-Montreal Global Biodiversity Framework, which aims to protect 30% of land and sea by 2030. However, since the creation of new state-managed protected areas is constrained by high costs, insufficient government budgets, and a lack of support from local communities, global responses are focused on how other area-based and ecosystem-based conservation approaches can help achieve the conservation targets set out in the new framework. With growing interest in how these approaches can be implemented on privately owned land to complement existing protected area networks, it is important to understand what influences participation in private land conservation programmes and approaches, as well as the perceptions of key stakeholders towards new ecosystem-based approaches such as rewilding. In this thesis, I focus on these issues to improve our understanding of conservation on privately owned land.

In Chapter 2, I review the factors that influence participation in the various private land conservation programmes and approaches that exist globally, focusing on the motivations and barriers, as well as the landowner and land characteristics that influence participation. I show that financial incentives and a desire to support nature conservation are the most frequently identified motivations, that high costs and negative economic impacts of participation are the most frequently identified barriers, and that no landowner or land characteristics consistently determine participation. In Chapter 3, I use a combination of qualitative and quantitative methods to explore land-manager perceptions towards the overall concept of rewilding, as well as perceptions and levels of support for different activities related to rewilding. I highlight that most land-managers perceive rewilding to mean the cessation of management, which underpins their concerns regarding their livelihoods and identity, and broader concerns related to food production and security. I also show that land-managers generally only support rewilding on low-quality agricultural land,

and are most supportive of rewilding activities that they are already familiar with and can actively engage with. In Chapter 4, I use Q-methodology to investigate land-manager perspectives towards rewilding, identifying three distinct shared perspectives and demonstrating that land-manager views towards rewilding are not uniform.

Collectively, my research provides a valuable evidence base for understanding participation in private land conservation programmes, as well as the perceptions of key stakeholders towards rewilding. This knowledge can be harnessed by policymakers and practitioners to maximise participation in conservation programmes and activities on privately owned land, to achieve international conservation targets and ultimately improve global conservation outcomes.

Keywords: conservation; biodiversity; rewilding; private land conservation; conservation policy; landowners; land-managers; perceptions

Table of contents

Acknowledgements	3
Author declaration	5
Abstract	6
Table of contents	8
List of tables	11
List of supplementary tables.....	12
List of figures	13
List of supplementary figures.....	14
Chapter 1 Introduction	15
1.1. Biodiversity crisis.....	15
1.2. Protected areas	16
1.2.1. History	17
1.2.2. Effectiveness.....	18
1.2.3. Limitations	20
1.3. Private land conservation	21
1.3.1. Global coverage.....	22
1.3.2. Mechanisms	22
1.3.3. Participation.....	25
1.4 Rewilding.....	26
1.4.1. Pleistocene rewilding	27
1.4.2. Trophic rewilding	28
1.4.3. Passive rewilding	28
1.4.4. Benefits and risks	29
1.4.5. Evidence	30
1.4.6. Policy.....	31
1.4.7. Agriculture.....	31
1.5. Social science and conservation.....	32
1.6. Thesis outline.....	35

Chapter 2	A synthesis of knowledge about the factors that influence participation in private land conservation around the world	37
2.1.	Abstract	37
2.2.	Introduction	39
2.3.	Methods.....	42
2.3.1.	Literature search.....	42
2.3.2.	Data extraction.....	44
2.3.3.	Coding factors.....	46
2.3.4.	Data analysis.....	47
2.4.	Results	48
2.4.1.	Motivations driving participation	49
2.4.2.	Motivation ranks	51
2.4.3.	Barriers preventing participation	51
2.4.4.	Barrier ranks	53
2.4.5.	Characteristics influencing participation.....	54
2.4.6.	Comparing study approaches.....	55
2.5.	Discussion	57
2.5.1.	Overview of landowner participation research.....	57
2.5.2.	Understanding motivations and barriers	59
2.5.3.	Understanding landowner and land characteristics.....	62
2.5.4.	Implications.....	64
2.6.	Supplementary Information.....	66
Chapter 3	Understanding land-manager perceptions of rewilding	114
3.1.	Abstract	114
3.2.	Introduction.....	115
3.3.	Methods.....	117
3.3.1.	Study regions and participant recruitment	117
3.3.2.	Interview development and delivery	118
3.3.3.	Data analysis.....	120
3.4.	Results & Discussion	123
3.4.1.	Description of participants	123
3.4.2.	Levels of support for activities associated with rewilding	124
3.4.3.	Likelihood of land-managers rewilding their land.....	125
3.4.4.	Support for species (re)introductions.....	126
3.4.5.	Perceptions of the term ‘rewilding’	127
3.4.6.	Positive perceptions and support for rewilding.....	128
3.4.7.	Negative perceptions and concerns with rewilding.....	133
3.5.	Conclusion	138
3.6.	Supplementary Information.....	140

Chapter 4	Using Q-methodology to explore land-manager perspectives towards rewilding	162
4.1.	Abstract	162
4.2.	Introduction	163
4.3.	Methods.....	165
4.3.1.	Q-methodology	165
4.3.2.	Q-set creation.....	165
4.3.3.	Study regions and participant recruitment	166
4.3.4.	Data collection	167
4.3.5.	Data analysis and interpretation.....	169
4.4.	Results	171
4.4.1.	Factor 1: ‘Concerned Disbeliever’	175
4.4.2.	Factor 2: ‘Keen Pragmatist’	177
4.4.3.	Factor 3: ‘Cautious Sceptic’	179
4.4.4.	Shared perspectives across factors	181
4.5.	Discussion	181
4.6.	Conclusion	185
4.7.	Supplementary Information.....	186
Chapter 5	Discussion	213
5.1	Overview	213
5.2.	Contributions to the literature	213
5.2.1.	Chapter 2	213
5.2.2.	Chapter 3	214
5.2.3.	Chapter 4	215
5.3.	Synthesis.....	216
5.3.1.	Need to get the economics right	216
5.3.2.	Promote environmental benefits.....	217
5.3.3.	Context is important	218
5.4	Limitations and future research.....	219
5.4.1.	Covid-19	219
5.4.2.	Studies on participation	220
5.4.3.	Comparisons	221
5.4.4.	Relating perceptions to behaviour.....	221
5.5	Recommendations for policymakers and practitioners	222
5.6.	Conclusion	223
References	224	

List of tables

<i>Table 2.1: Keywords used to identify articles</i>	<i>43</i>
<i>Table 2.2: Study approach.....</i>	<i>56</i>
<i>Table 3.1: Socio-demographic and land characteristic predictor variables</i>	<i>122</i>
<i>Table 3.2: Participant land characteristics</i>	<i>123</i>
<i>Table 3.3: Odd ratios and 95% confidence intervals.</i>	<i>126</i>
<i>Table 4.1: Q-sort factor arrays.</i>	<i>172</i>
<i>Table 4.2: Extracted factors.....</i>	<i>175</i>

List of supplementary tables

<i>Supplementary Table 2.1: Studies included in the review</i>	<i>66</i>
<i>Supplementary Table 2.2: Private land conservation programmes and approaches</i>	<i>96</i>
<i>Supplementary Table 2.3: Motivation codes and themes.</i>	<i>97</i>
<i>Supplementary Table 2.4: Barrier codes and themes</i>	<i>100</i>
<i>Supplementary Table 2.5: Characteristic codes and themes</i>	<i>103</i>
<i>Supplementary Table 2.6: Factors investigated and/or identified</i>	<i>106</i>
<i>Supplementary Table 2.7: Factors investigated using closed-ended questions.</i>	<i>107</i>
<i>Supplementary Table 2.8: Motivation factors identified using open- and closed-ended questions....</i>	<i>108</i>
<i>Supplementary Table 2.9: Barrier factors identified using open- and closed-ended questions.</i>	<i>109</i>
<i>Supplementary Table 2.10: Wilcoxon Rank Sum Test for motivation studies.....</i>	<i>110</i>
<i>Supplementary Table 2.11: Wilcoxon Rank Sum Test for barrier studies.</i>	<i>111</i>
<i>Supplementary Table 2.12: Motivation code ranks.</i>	<i>112</i>
<i>Supplementary Table 2.13: Barrier code ranks.....</i>	<i>113</i>
<i>Supplementary Table 3.1: Rewilding interview schedule.....</i>	<i>140</i>
<i>Supplementary Table 3.2: Thematic codes for perceptions of rewilding.....</i>	<i>145</i>
<i>Supplementary Table 3.3: Thematic codes for positive perceptions towards rewilding.</i>	<i>147</i>
<i>Supplementary Table 3.4: Thematic codes for negative perceptions towards rewilding</i>	<i>151</i>
<i>Supplementary Table 3.5: Agricultural land classifications</i>	<i>159</i>
<i>Supplementary Table 4.1: Q-set statements</i>	<i>186</i>

List of figures

<i>Figure 2.1: Country, land type, and programme or approach</i>	<i>49</i>
<i>Figure 2.2: Motivations for participation</i>	<i>50</i>
<i>Figure 2.3: The top three ranked motivations</i>	<i>51</i>
<i>Figure 2.4: Barriers to participation</i>	<i>52</i>
<i>Figure 2.5: The top three ranked barriers</i>	<i>53</i>
<i>Figure 2.6: Landowner and land characteristics that influence participation.....</i>	<i>55</i>
<i>Figure 3.1: Locations for rewilding interview participants</i>	<i>118</i>
<i>Figure 3.2: Participant responses to Likert-scale questions about rewilding</i>	<i>125</i>
<i>Figure 3.3: Participant support for species (re)introductions</i>	<i>127</i>
<i>Figure 4.1: Location of Q-sort participants</i>	<i>167</i>
<i>Figure 4.2: Q-sort grid.....</i>	<i>168</i>

List of supplementary figures

<i>Supplementary Figure 4.1: Screenshot of the Q-method software</i>	<i>211</i>
<i>Supplementary Figure 4.2: Scree plot of unrotated factors</i>	<i>212</i>

Chapter 1 Introduction

1.1. Biodiversity crisis

Human activities are having widespread and profound impacts on the environment, with increasing demands for food, energy, and shelter driving the decline of nature (Díaz *et al.* 2019; Song *et al.* 2018). Land-use changes, including the conversion of natural habitats for agriculture, infrastructure, resource extraction and urbanisation has led to large-scale habitat loss, which is the leading cause of biodiversity declines (Song *et al.* 2018; Chase *et al.* 2020). Coupled with the other main drivers of biodiversity loss (climate change, over-exploitation, invasive species, and pollution; Mazon *et al.*, 2018), we are now experiencing what is considered Earth's sixth mass extinction event (Ceballos *et al.*, 2017), with species extinctions estimated to be over 1000 times greater than background rates (Pimm *et al.* 2014). The loss of species and habitats is having cascading impacts on the functioning of ecosystems and limiting their capacity to deliver the ecosystem services that humanity depends on, such as water and air quality regulation, carbon sequestration, and crop pollination (Chaplin-Kramer *et al.* 2019; Díaz *et al.* 2019). Increased conservation efforts and effective environmental policies are needed to avoid the collapse of the planetary support systems that sustain life on Earth (Williams *et al.* 2020; Leclère *et al.* 2020).

The first global commitment for nature conservation was agreed at the 1992 Rio Earth Summit (UNCED, 1992). In the succeeding three decades, worldwide trends in biodiversity have continued to decline, despite international policy agreements and scientific studies asserting that the protection and sustainable use of biodiversity is a global priority (IPBES, 2019). For example, none of the 20 Aichi Targets set out in the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020 were fully achieved, and only six were partially achieved (CBD, 2020). With human populations and economic developments forecast to increase (Tilman, 2017), there is a consensus among the scientific community that an ambitious new plan to safeguard the natural world and tackle the main drivers of biodiversity loss is required (Mace *et al.* 2018; Leclère *et al.* 2020; Díaz *et al.* 2020). This is why

signatories to the CBD agreed in December 2022 on the Kunming-Montreal Global biodiversity framework, which set out an ambitious “Vision for Biodiversity” for the world to live in harmony with nature by 2050 (CBD, 2022).

The new framework builds on the CBD’s previous Strategic Plan for Biodiversity 2011-2020 (CBD, 2010), with global responses focusing on area-based and ecosystem-based conservation approaches as key strategies for protecting nature and achieving the 2050 vision (Woodley *et al.*, 2019; Bhola *et al.*, 2021; Carver *et al.*, 2021; CBD, 2022). This includes 23 targets that each signatory country has committed to achieving by 2030. One of the most high-profile of these is Target 3, the “30 by 30” target, which states:

“Ensure and enable that by 2030 at least 30 per cent of terrestrial, inland water, and of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities including over their traditional territories”.

1.2. Protected areas

Traditionally, conservation goals have been achieved through the establishment of protected areas (PAs) and setting aside land for the express purpose of preserving wildlife and ecosystems. The International Union for Conservation of Nature (IUCN) defines a PA as “a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley 2008). PAs are central to international conservation policies and considered one of the most important tools for protecting biodiversity and ecosystem services (Geldmann *et al.*, 2014; Geldmann *et al.*, 2015; Rodrigues & Cazalis, 2020). By preventing harmful human activities such as land clearing for agriculture and unsustainable resource extraction, PAs

serve to protect habitats and provide space for wildlife. Although PAs were originally established to protect iconic landscapes and wildlife, expectations placed on PAs have expanded and they are now created to sustain local community livelihoods, bolster national economies through tourism revenue, and play a key role in climate change mitigation and adaptation, among other functions (Naughton-Treves *et al.*, 2005; Watson *et al.*, 2014).

1.2.1. History

Setting aside areas of special significance from disturbance or development is not a new concept in human history (IUCN, 2010). Indigenous communities are known to have established sacred sites of spiritual or religious significance (e.g., sacred forest groves in India; Ormsby & Bhagwat, 2010), while others restricted or prohibited the use of natural resources in certain areas (e.g., “tapu” areas in the Pacific island region; Aburto *et al.*, 2015). In addition, prime hunting grounds were set aside for the sole use of royalty and nobility, for example the New Forest in southern England was designated as a Royal Forest in 1079 by King William I (Newton, 2011). During the 19th century, the concept of setting aside areas to protect nature for its own sake and for the benefit of people emerged in response to increasing human impacts on the natural environment (Chape *et al.* 2005). In 1872, Yellowstone National Park was established as a “*public park or pleasuring ground for the benefit and enjoyment of the people*”, and is generally considered the first example of a modern PA (Phillips 2004). During the first half of the 20th Century, the number and extent of PAs grew steadily, followed by a marked expansion in the 1970s as post-colonial governments began establishing their own PA networks (Juffe-Bignoli *et al.* 2014; UNEP-WCMC & IUCN 2021). Between 1990 and 2015, PAs increased in coverage by 92% for terrestrial and 513% for marine environments (Butchart *et al.* 2015), and it is estimated that PAs now cover approximately 15% of the earth’s land surface and inland waters, and 8% of the global ocean (UNEP-WCMC & IUCN 2022b; Bhola *et al.* 2021).

Although the expansion of the PA network is largely perceived as a positive development for the protection of nature, there are many instances where the creation of PAs has negatively

impacted people. During the late 19th and early 20th Century when the first PAs were being established, governments often used compulsory acquisition as a strategy to convert areas of private and communally owned land into PAs, consequently displacing people living on the land (Kamal *et al.*, 2015; West *et al.*, 2006). By restricting people's access and use of the land, the creation of PAs often led to the impoverishment of the people who had been displaced (Cernea, 2005; Rangarajan & Shahabuddin, 2006). Since the negative associations of PAs in relation to people's land-use rights are now widely recognised, governments have increased efforts to ensure that the protection of nature is not at the expense of local people (Brockington 2004). For example, resettlement incentive programmes exist in countries in East Africa to compensate people for relocating (Schmidt-Soltan & Brockington, 2007), and in India there are policies in place to recognise the rights of traditional owners of the land (Bhullar 2008; Springate-Baginski *et al.* 2009). A recent review study evaluating the impact of PAs on human well-being found consistent evidence that PAs across the developing world can have strong positive impacts on household wealth and health outcomes, indicating that efforts to accommodate people's needs while expanding the PA network are often successful (Naidoo *et al.* 2019).

1.2.2. Effectiveness

To be effective, as outlined by the CBD, PAs should include important areas for biodiversity, be ecologically representative and well connected, and be managed appropriately for both biodiversity and people (Geldmann *et al.* 2015; Maxwell *et al.* 2020). As such, PAs should achieve the long-term conservation of nature within their boundaries, and ideally beyond, as part of an effective PA network (Rodrigues & Cazalis, 2020). However, PAs are not all created equal, thus the extent to which they contribute to nature conservation varies. For instance, the level of intended management can vary from PAs that are strictly managed for biodiversity conservation, to those that allow natural resource use (Dudley 2008). PAs can also vary in the extent that their intended management translates into practical reinforcement, with some having substantial resources in terms of staff and funding, while others are considered "paper parks" as they lack the staff and financial resources required for effective management (Joppa *et al.*, 2008; Juffe-Bignoli *et al.*, 2014). Other factors including PA size, extent, and location can

influence effectiveness, with small, isolated PAs tending to be less effective at countering pressures on biodiversity, compared to large PAs that are part of a well-connected network (Tulloch *et al.* 2016; Venter *et al.* 2018).

Assessing the effectiveness of individual PAs, as well as the success of the PA network, is challenging as there are many interconnected factors that need to be considered (Rodrigues & Cazalis, 2020). For instance, PAs are often located in areas that are less accessible (e.g., remote, high elevations, steep slopes) and less economically valuable, therefore are less likely to be at risk from harmful human activities compared to other sites. Hence the apparent effectiveness of PAs may be due to their location rather than the legal protection they confer (Joppa & Pfaff, 2009; Butchart *et al.*, 2012; Venter *et al.*, 2018). Also, the establishment of a PA can displace damaging human activities such as development or hunting to neighbouring areas, and this “spillover” effect can lead to reduced pressure on species and habitats inside PAs while increasing pressure outside (Roberts *et al.*, 2001; Andam *et al.*, 2008). Thus, these factors can bias estimates in favour of PA effectiveness (Fuller *et al.* 2019), with one study estimating that the reduction in deforestation inside PAs may be overestimated by as much as 65% by researchers failing to account for biases in PA location (Andam *et al.* 2008). To account for these biases and assess PA effectiveness more accurately, recent studies have used matched pairs of protected and unprotected sites with similar potential confounding variables, such as slope, elevation, and level of management (e.g., Nelson & Chomitz, 2011; Gray *et al.*, 2016).

Despite the challenges associated with assessing the effectiveness of PAs, there is considerable evidence that well-managed PAs are effective at reducing habitat loss, which is the principal threat to biodiversity (Joppa & Pfaff, 2011; Feng *et al.*, 2021). For example, in the Brazilian Amazon PAs are effective at reducing and mitigating deforestation (Barber *et al.* 2014; Pfaff *et al.* 2014; Nolte *et al.* 2013), and a review study found habitat loss was greater outside terrestrial PAs than inside in 82% of 76 studies (Geldmann *et al.* 2013). In terms of preserving species, a global review study found species richness and abundance is 10.6% and 14.5% higher respectively inside terrestrial PAs compared with outside (Gray *et al.* 2016). In addition, positive outcomes inside PAs have been observed for threatened marine mammals in New

Zealand (Gormley *et al.* 2012), coral reef communities in Australia (Mellin *et al.* 2016), threatened mammals in Bhutan (Dorji *et al.*, 2019), tiger populations across Asia (Walston *et al.* 2010), penguins in Chile (Reyes-Arriagada *et al.* 2013), and waterbirds in Moroccan wetlands (Kleijn *et al.* 2014). There is also evidence that PAs are more effective than other management strategies for maintaining species populations in both terrestrial (Karanth *et al.* 2009; Taylor *et al.* 2011) and marine environments (Lester *et al.* 2009; Sciberras *et al.* 2013).

However, there are examples of population declines occurring within PA boundaries (Tittensor *et al.*, 2014; WWF, 2020). For example, flying insect biomass has declined by more than 75% inside some PAs in Germany (Hallmann *et al.* 2017), and the abundance of large mammals in 78 PAs across Africa has declined on average by 59% since 1970 (Craigie *et al.* 2010). There is also evidence that PAs have failed to prevent the decline of amphibian and butterfly species in the USA (Schlicht *et al.*, 2009), bird species in Spain (Sergio *et al.* 2005), and the extinction of a primate species in Indonesia (Meijaard & Nijman, 2000), due to factors such as over-hunting, poaching, invasive species, climate change, and natural disasters. This indicates that the legal protection of PAs is not always sufficient for preventing stochastic environmental factors and human activities that can cause the decline of species populations.

1.2.3. Limitations

Despite pronounced increases in both the size and extent of PA coverage over recent decades, global biodiversity has continued to decline (Butchart *et al.* 2015). One reason for this is an increase in the direct and indirect threats facing biodiversity (Maxwell *et al.* 2016; Jones *et al.* 2018), but there are also broader issues that affect the extent to which PAs are able to fulfil their conservation role (Rodrigues & Cazalis, 2020). Since PA establishment is biased towards areas that minimise conflict with agriculture and other industries, PAs often poorly represent threatened species and habitats (Armsworth *et al.* 2011; Gaston *et al.* 2008). Consequently, 17% of threatened vertebrates are not found inside a single PA (Venter *et al.* 2014; Venter *et al.* 2018), 59-68% of ecoregions have inadequate coverage (Butchart *et al.* 2015), and one-third of Key Biodiversity Areas (KBAs) are not protected (UNEP-WCMC & IUCN, 2021). In addition,

since only 10% of the terrestrial PA network is considered structurally connected, many PAs are too small and fragmented to sustain viable populations or for ecological processes to function effectively (Ward *et al.* 2020). Furthermore, it is estimated that between 20-50% of PAs are not managed appropriately (Leverington *et al.* 2010; Laurance *et al.* 2012; Gill *et al.* 2017; Watson *et al.* 2014), despite evidence that effectively managed PAs are better able to reduce anthropogenic pressures on biodiversity (Amano *et al.*, 2018; Geldmann *et al.*, 2018; Wauchope *et al.*, 2022).

Due to the limitations of the current PA network, as well as increasing pressures on biodiversity from human activities such as illegal hunting, pollution, agriculture (Jones *et al.*, 2018; Geldmann *et al.*, 2019) and the impacts of climate change (Shrestha *et al.* 2021), there is a broad consensus that the expansion and more effective management of PAs is required to safeguard biodiversity (Tilman *et al.*, 2017; Maron *et al.*, 2018; Allan *et al.*, 2022). However, the creation of new state-managed PAs is constrained by high establishment and management costs, insufficient government budgets, and often a lack of support from local communities (Venter *et al.* 2014). This has led to growing interest in how conservation approaches on privately owned land can be used to complement the global PA network, help achieve international conservation targets, and improve global biodiversity outcomes (Butchart *et al.* 2015; Dudley *et al.* 2018; Capano *et al.* 2019).

1.3. Private land conservation

With privately owned land covering a large proportion of many countries (e.g., 60% of the USA and 73% of South Africa; Drescher & Brenner, 2018), private land conservation has an increasingly important role for achieving global conservation targets and ensuring the global conservation network is comprehensive, adequate, and representative (Mitchell *et al.* 2018; Capano *et al.* 2019). For areas of private land to contribute towards achieving global conservation targets (e.g., the “30 by 30” target outlined in the Kunming-Montreal Global biodiversity framework to protect 30% of land and sea by 2030; CBD, 2022), they must be either classed as a privately protected area (PPA) or an “other effective area-based

conservation measure” (OECM; UNEP-WCMC & IUCN, 2021). A PPA is a protected area (PA), as defined by the IUCN, which is governed by private actors, has legal or other effective means of protection in place, and is primarily engaged in long-term biodiversity conservation activities (Stolton *et al.* 2014; Palfrey *et al.*, 2022). An OECM is an area governed and managed to deliver “*positive and sustained long-term outcomes for the in situ conservation of biodiversity*”, however they are not recognised as PAs since biodiversity conservation is not necessarily their primary objective (CBD, 2018; Mitchell *et al.*, 2018).

1.3.1. Global coverage

Despite incomplete data, a recent study found PPAs increase global PA coverage and connectivity as they account for 3.4% of land under protection and they increase PA network connectivity by 7.05% (Palfrey *et al.*, 2022). In terms of the current global protected and conserved area network, PAs (including PPAs) now cover 15.8% of terrestrial and inland waters and 8.16% of marine areas, increasing to 16.98% and 8.26% respectively when OECMs are included (UNEP-WCMC & IUCN, 2022a). However, countries have only recently begun to identify and report on their OECMs because official guidance on how to recognise or report on OECMs was not provided until 2018 (CBD, 2018; Alves-Pinto *et al.*, 2021). It is expected that governments and the conservation sector will focus much more strongly on identifying and registering OECMs in the coming years, especially because they are likely to play an important role in efforts to achieve the “30 by 30 target” (Laffoley *et al.*, 2017; Gurney *et al.*, 2021; CBD, 2022; Dudley & Stolton, 2022).

1.3.2. Mechanisms

Generally private land conservation refers to PPAs and some current and potential OECMs, however various definitions, policy approaches and governance systems are used to represent land that is privately owned and managed to achieve biodiversity conservation (Kamal *et al.*, 2015; Stolton *et al.* 2014; Capano *et al.* 2019). Most existing policy approaches that promote or enable conservation on private land are involuntary, voluntary, or a combination of both (Kamal *et al.*, 2015). In the case of involuntary private land conservation, the decision to engage

is not made by the landowner. Instead, government agencies or central authorities enforce either mandatory land-use regulations or total acquisition of the land (Rangarajan & Shahabuddin, 2006). Total acquisition by governments is no longer commonplace as it often led to conflict over property rights (Rissman, 2013; Moon *et al.*, 2021), however there are still circumstances where landowners are obligated to manage the land in a particular way, for instance Sites of Special Scientific Interest (SSSI) in the UK (Natural England 2022). In contrast, voluntary private land conservation approaches are based on a landowner's decision to implement conservation actions or engage with conservation initiatives that are funded or supported by governments or non-governmental organisations (NGOs). There are a diverse range of binding and non-binding voluntary policies used by governments and NGOs to facilitate private land conservation, and the main mechanisms include conservation easements, incentive-based conservation programmes, and non-binding voluntary conservation activities (Bingham *et al.* 2017; Kamal *et al.*, 2015; Mitchell *et al.* 2018).

Conservation easements are voluntary legal agreements between a landowner and an organisation (e.g., a land trust or government agency), where the landowner agrees to permanently restrict certain uses of the property to protect the landscape from activities such as development in exchange for economic benefits through direct payments or tax relief from the sale of development rights (Merenlender *et al.*, 2004; Rissman *et al.*, 2007; Davies *et al.*, 2010). The use of conservation easements began in the 1950s in the United States to protect natural habitats on privately owned land (NCED, 2022), and they are now considered one of the most popular private land conservation strategies used in many countries around the world including the UK, South Africa, and Australia (Capano *et al.* 2019; Kamal *et al.*, 2015). Since conservation easements are attached to the land and typically agreed in perpetuity, future owners remain subject to the restrictions of the easement (Figgis 2004; Gattuso 2008). This means conservation organisations tend to perceive easements as a secure and fiscally responsible approach for facilitating conservation on private land, however concerns related to the restrictive impact of easements can act as a barrier to adoption (Cooke & Corbo-Perkins, 2018; Kemink *et al.*, 2020).

Numerous types of incentive-based conservation programmes exist around the world that offer landowners economic benefits to enhance or restore the land, or otherwise limit or prevent activities that will negatively impact biodiversity (Spiteri & Nepal, 2006; Capano *et al.*, 2019). Agri-environment schemes (AES) that exist as part of the European Union (EU) Common Agricultural Policy (CAP) are the most well-known and widely implemented example of an incentive-based private land conservation programme (Kamal *et al.*, 2015). AES were introduced in Europe in 1962 to offer landowners and land-managers compensation for the loss of income associated with less intensive management practices and for carrying out environmentally beneficial activities (Kleijn & Sutherland, 2003; Hodge *et al.*, 2015). The EU has spent around €54 billion per year on AES payments under CAP since 2006 (Scown *et al.*, 2020), and with over half of the European landscape under agricultural management, budgets for AES exceed the amount spent on other conservation approaches in most countries (Batáry *et al.* 2015). In the United States, many state governments offer incentive and cost-share programmes that operate in a similar manner to European AES (e.g., The Conservation Reserve Program, The Wetland Reserve Program, The Healthy Forests Reserve Program, The Grassland Reserve Program, and the Department of Agriculture's Wildlife Habitat Incentive Program), where landowners receive payments in exchange for carrying out conservation actions (NRCS, 2022).

Various government programmes exist around the world that encourage landowners to engage in voluntary conservation activities (Farmer *et al.* 2017). Since these types of voluntary programmes do not offer landowners financial incentives, minimal financial resources are required from the government. However, this also means participation is non-binding and landowners can choose to halt conservation activities or remove land from protection at any time (Kamal *et al.*, 2015). Growing awareness of the need to tackle the biodiversity and climate crises, as well as the potential economic benefits associated with nature conservation, means an increasing number of landowners are engaging in voluntary conservation activities on their land (Kamal *et al.*, 2015; Cortés-Capano *et al.* 2020). For example, the establishment of private reserves is popular among landowners in countries with rich mega-fauna due to the economic opportunities associated with ecotourism and game management (Sims-Castley *et al.* 2005;

Lindsey *et al.* 2006). Similarly, many landowners are choosing to employ less intensive management techniques or adopt conservation farming practices, due to the benefits associated with improved soil quality for agricultural production and being able to market products as environmentally friendly (Knowler & Bradshaw, 2007; Arslan *et al.*, 2014).

1.3.3. Participation

The voluntary nature of these private land conservation policy mechanisms means their overall success largely depends on landowners' willingness and capacity to participate (Farmer *et al.* 2017; Hardy *et al.* 2017). This requires governments and NGOs to design and implement policies that appeal to the preferences, needs and capabilities of landowners, while also delivering biodiversity conservation (Cooke *et al.* 2012; Selinske *et al.* 2017). Offering monetary benefits is one of the main approaches used by both conservation easements and incentive-based programmes to encourage participation, however many programmes also offer non-monetary incentives such as management training, support, advice, and opportunities to establish social networks (Cetas & Yasué, 2017; Cortés-Capano *et al.*, 2020). Although the relative importance of financial and non-financial incentives for driving participation in voluntary conservation programmes is poorly understood, there is concern that financial incentives may "crowd out" other motivations for conservation and foster financial dependency, creating a situation whereby landowners come to depend on the financial support of voluntary conservation programmes and will only carry out conservation activities in exchange for financial rewards (Selinske *et al.*, 2017; Cooke & Corbo-Perkins, 2018; Akers & Yasué, 2019).

The challenge of achieving landowner participation in voluntary conservation programmes has led to numerous studies investigating the factors that influence participation in specific programmes (e.g., participation in European AES; Pavlis *et al.*, 2016). Various studies have also reviewed studies on participation in specific programmes (e.g., participation in perpetual conservation easements; Kemink *et al.*, 2020), however the findings are not conclusive. For example, some studies find younger landowners are more likely to participate (e.g.,

Giannakis, 2014) while others find they are less likely (Ito *et al.* 2018). Improving our understanding of landowner participation in voluntary private land conservation programmes is crucial if we are to improve participation in existing programmes and encourage landowners to adopt programmes focused on new ecosystem-based conservation approaches, such as rewilding, on their land.

1.4 Rewilding

The term rewilding has no single definition, but it generally refers to reinstating natural ecological processes that would have occurred in the absence of human activity by reintroducing missing species and reducing human influences on nature (Lorimer *et al.*, 2015; Pettorelli & Durant, 2019). Rewilding was first used in the academic literature by North American conservation scientists Soulé & Noss (1998). They introduced rewilding as an alternative approach to mainstream conservation, which at the time was largely focused on protecting important sites for biodiversity. They outlined rewilding as a strategy for securing large, well-connected core areas and reintroducing keystone species, which became known as the “3Cs approach”:

1. Cores: Creating large areas with minimal human intervention
2. Corridors: Establishing connections between the core areas
3. Carnivores: Introducing large predator species

The 3Cs approach is underpinned by two key concepts, keystone species (Paine 1966) and island biodiversity theory (Wilson & MacArthur, 1967). Soulé & Noss (1998) described keystone species as those “*whose influence on ecosystem functioning and diversity are disproportionate to their numerical abundance*” and emphasised that the removal of keystone species can have cascading impacts on ecosystems and lead to the loss of biodiversity. They pointed out that keystone species are often top carnivores as they exhibit top-down pressure on other species in the food chain (Terborgh 1988). They also referred to island biodiversity theory to justify the need for large segments of land to be rewilded. Island biodiversity theory states that species richness is a product of the size of an island and distance from the mainland,

where islands that are smaller and further from the mainland have lower species richness (Wilson & MacArthur, 1967). It also asserts there is a correlation between island size and extinction rates, with species on small islands more vulnerable to extinction (Diamond 1975). Since human activities have shrunk many natural areas to “islands” that consist of small, isolated populations, Soulé & Noss (1998) argued there is a need to establish large core areas connected by corridors, especially for large apex predators that require large territories and tend to be wide-ranging. Over the last three decades, various versions and interpretations of rewilding have been put forward, with three main distinct framings recognised in the academic literature: “Pleistocene rewilding”, “trophic rewilding” and “passive rewilding” (Pettorelli & Durant, 2019).

1.4.1. Pleistocene rewilding

The 3Cs vision of rewilding was expanded upon by Donlan *et al.*, (2006), who coined the term “Pleistocene rewilding” and called for megafauna replacements to be reintroduced to parts of North America using the Pleistocene epoch (between approximately 2.6 million and 11,000 years ago) as an inspirational ecological baseline. The Pleistocene was marked by fluctuations in temperature corresponding with glacial and interglacial stages, the arrival of early forms of *Homo sapiens*, and the loss of much biodiversity, particularly large terrestrial species (du Toit 2019; Sandom *et al.* 2014). Donlan *et al.* (2006) put forward ecological arguments for reintroducing species as proxies for the megafauna that humans hunted to extinction after their arrival in North America, in attempt to restore the evolutionary and ecological potential lost during the Pleistocene extinctions. For example, they proposed introducing African or Asian elephants as a surrogate for the American mastodon, and the African lion in place of the American lion (Donlan 2005; Donlan *et al.* 2006). Pleistocene rewilding attracted controversy for its aspirations to restore nature to a specific point in history and over the suggestion that extinct species can be replaced by extant close relatives, considering the risks and uncertainties associated with introducing exotic species (Rubenstein *et al.*, 2006; Caro, 2007; Oliveira-Santos & Fernandez, 2010). Although there is now general acceptance that linking rewilding to a historical baseline is flawed because nature is continually changing, Pleistocene rewilding highlighted two concepts that are still broadly championed: the

importance of top-down effects of megafauna for ecosystem structure and function, and; that the functional properties of extinct species can be replaced through taxonomic substitutions (du Toit 2019).

1.4.2. Trophic rewilding

Trophic rewilding does not put any emphasis on a particular baseline or historical benchmark for biodiversity. Instead it is based on introducing species to “*restore top-down trophic interactions and associated trophic cascades, to promote self-regulating biodiverse ecosystems*” (Svenning *et al.* 2016b). It recognises the importance of large herbivores and the direct effect they can have on vegetation structure via herbivory, disturbance, and seed dispersal (Smit *et al.* 2015; Cornelissen *et al.* 2014), as well as the effect large carnivores can have on the density and behaviour of herbivores and mesocarnivores (Terborgh & Estes 2013; Ripple *et al.*, 2014). The reintroduction of wolves to Yellowstone National Park in the 1990s is perhaps the best known example of trophic rewilding, where wolves exhibit top-down effects on American elk through predation and altering their foraging behaviour, resulting in vegetation changes and subsequently beneficial impacts for species including beavers, bison and songbirds (Ripple & Beschta, 2012; Dobson, 2014). Other examples of trophic rewilding include the introduction of giant tortoises in Mauritius and the Galapagos Islands as taxonomic replacements for extinct giant tortoise species, to suppress weeds and aid seed dispersal, and thereby restore historic vegetation assemblages (Griffiths *et al.* 2010; Hansen *et al.* 2010; Hunter *et al.* 2013). The top-down effects of herbivores have also been observed at Oostvaardersplassen in the Netherlands, where red deer and de-domesticated breeds of cattle and horses have been introduced. Their grazing has strongly reduced woody vegetation cover and generated greater vegetation heterogeneity, which has had positive impacts on bird diversity (Vera 2009; Cornelissen *et al.* 2014).

1.4.3. Passive rewilding

Passive rewilding is based on the reassertion of ecological processes in response to the reduction or removal of human impacts on ecosystems (Sandom 2016). It does not specify a

desired historical baseline to which the land should aspire to, nor does it include the deliberate introduction of species, but instead relies on natural processes to determine which species colonise the land (Carver 2019). Passive rewilding can occur intentionally by the alleviation of human impacts such as hunting, or unintentionally through natural vegetation succession on abandoned land (Lorimer *et al.*, 2015; Sandom & Bull, 2016). For example, a series of economic, social, cultural, political, and environmental drivers has led to the abandonment of agricultural land across Europe and other world regions, enabling ecological succession to occur (Poore 2015; Levers *et al.* 2018; Benayas *et al.* 2007). The most well-known example of unintentional passive rewilding through land abandonment is likely the 30 km exclusion zone surrounding the Chernobyl Nuclear Power Plant in Ukraine, where, in the absence of human influences after the nuclear reactor meltdown in 1986, significant populations of megafauna including wolves, bear, lynx, and moose have returned to the area (Webster *et al.*, 2016; Carver, 2019).

1.4.4. Benefits and risks

Rewilding has been described as an optimistic approach for restoring nature and is associated with a variety of potential benefits for both nature and people (Lorimer *et al.* 2015; Svenning 2020; Perino *et al.* 2019). For example, rewilding has been hailed as a cost-effective strategy for reinstating natural vegetation succession and restoring top-down trophic processes, thereby improving biodiversity and ecosystem functioning (Navarro & Pereira, 2015; Svenning *et al.*, 2016). It is also associated with strengthening ecosystem services such as flood alleviation, thus making these ecosystems more resilient to environmental change and climate change impacts (Cromsigt *et al.* 2018; Thakur *et al.* 2020). Additionally, proponents advocate that rewilded landscapes can provide opportunities for people to reconnect with nature (Perino *et al.* 2019), and for local communities to gain socio-economic benefits through nature-based tourism (Hall, 2019; Svenning, 2020). Nonetheless, rewilding has attracted criticism over limited empirical evidence and risks related to uncertain outcomes, since studies assessing the impact of rewilding projects are relatively scarce (Rubenstein & Rubenstein, 2016; Nogués-Bravo *et al.*, 2016). There are concerns that introducing novel species could have unexpected or negative consequences for extant biodiversity and ecosystem functioning, for example,

reintroduced species could pose a disease risk to native species (Caro & Sherman, 2009). Also that rewilding could bring negative consequences for people, as species introductions could increase human-wildlife conflicts (Bautista *et al.* 2019; Bruskotter *et al.* 2017; Duckett *et al.* 2022), and the restoration of large wilderness areas with minimal human intervention could exclude people from natural spaces and constrain economic and cultural activities (Jørgensen, 2015; Deary & Warren, 2019). More broadly, there are concerns that rewilding may not be as effective at maintaining or restoring biodiversity as targeted conservation approaches involving more focused human interventions (Lorimer *et al.* 2015).

1.4.5. Evidence

Recently there has been an increase in studies assessing the impact and effectiveness of rewilding. For instance, a study in the United States found reintroducing bison doubled plant diversity in a tallgrass prairie over a 29-year period, and that grasslands grazed by bison are more resilient to drought compared to areas grazed by domestic cattle (Ratajczak *et al.* 2022). Another study using satellite data found introducing large herbivores to agricultural land in southern England resulted in a 40% increase in areas with trees, a sixfold increase in shrub areas, and widespread increases in primary productivity over a 20-year period (Schulte to Bühne *et al.* 2022). These long-term studies on the top-down effects of large herbivores provide evidence for trophic rewilding in restoring biodiversity. Similarly, studies investigating the long-term impacts of the removal of human influences provide evidence for passive rewilding, with one study in England showing that closed-canopy woodland can readily re-establish on abandoned farmland close to existing woodlands within a 50 year period (Broughton *et al.* 2021). Another study in France found recent forests that afforested on agricultural land during the 20th century have higher taxonomic, functional and phylogenetic richness compared with ancient forests, providing empirical evidence that recent woodlands can regain phylogenetically rich and functionally resilient plant communities through passive rewilding (Morel *et al.* 2020).

1.4.6. Policy

Rewilding has captured the attention of policymakers and the conservation community as a bold and ambitious approach for tackling the biodiversity and climate crises, however, at present, there are few references to rewilding in international and national legislation (Cretois *et al.*, 2019; Böhne *et al.*, 2022). For instance, there is no explicit reference to rewilding in the Kunming-Montreal Global biodiversity framework (CBD, 2022). This is in part due to rewilding being a relatively new concept that is currently defined and approached in several different ways, thus limiting its application as a conservation approach (Carver *et al.* 2021). Despite the current lack of consensus around what rewilding entails, policy discussions regarding nature conservation and land management are increasingly focused on rewilding, particularly in the UK and Europe (Lorimer *et al.*, 2015; Svenning, 2020; Alison & Wentworth, 2016; Sandom *et al.*, 2019; UK Government, 2019). For instance, there are proposals to reform AES payments in Europe to encourage rewilding on marginal farmland (Merckx & Pereira, 2015; Granado-Díaz *et al.*, 2022), and for rewilding to be included as an option in the new Environmental Land Management (ELM) schemes that are set to become the cornerstone of England's agricultural policy following the UK's departure from the EU (Rewilding Britain 2020f; Harvey 2022)). In response to growing interest, the IUCN Commission on Ecosystem Management recently established a "Rewilding Thematic Group" to develop a clear definition and understanding of rewilding, to aid its application as a conservation approach in policy and practice (IUCN, 2020; Carver *et al.*, 2021).

1.4.7. Agriculture

Throughout much of human history, most of the world's land was natural wilderness in the form of grassland, shrubland and forest ecosystems (Ellis *et al.* 2010). As human societies have developed and expanded, global land-use has transformed and half of the world's habitable land is now used for agricultural production (Ritchie & Roser, 2019), which has led to the fragmentation and domestication of wild landscapes and is considered one of the greatest threats to biodiversity (Baudron & Giller, 2014; Watson *et al.*, 2016). In discussions about reducing the impact agriculture has on biodiversity, rewilding has attracted the interest of a diverse range of stakeholders as an approach for creating more space for nature and restoring

natural habitats in agricultural landscapes (Perino *et al.*, 2019; Pettorelli & Durant, 2019). However, rewilding approaches can differ in their position in relation to agriculture. Some align more with “land sparing” principles where agricultural intensification allows land to be taken out of production and rewilded, while others align more with “land sharing” principles where rewilding occurs in synergy with other socio-economic priorities including farming (Phalan *et al.*, 2011; Merckx & Pereira, 2015; Navarro & Pereira, 2015; Fraanje & Garnett, 2022). With agriculture being a dominant land-use, farmers and other land-managers are important stakeholders for potential rewilding projects regardless of whether they are aligned more with land sparing or land sharing principles (Gordon *et al.*, 2021; Mikołajczak *et al.*, 2022). Understanding the attitudes and perceptions of key stakeholders towards rewilding will be crucial if rewilding is to be successfully included as a conservation approach in future conservation and agri-environmental policies.

1.5. Social science and conservation

Although conservation as a discipline is traditionally grounded in biology, conservation scientists are increasingly embracing the social sciences, with the term “conservation social science” being used to represent the diverse branches of social science that can be harnessed to improve conservation policies, practices, and outcomes (Saunders *et al.*, 2006; Moon & Blackman, 2014; Bennett *et al.*, 2017; Reddy *et al.*, 2017; Selinske *et al.*, 2018). This has come with the recognition that environmental problems, from pollution to climate change, are related to human activities and the choices people make (Schultz, 2011; Kareiva & Marvier, 2012). Social science approaches can be applied to focus on issues at individual, local, national, and global scales (Chatterton 2017; Bennett *et al.* 2017). For instance, at the individual scale, social science methods can be used to study people’s individual attributes such as their values, beliefs, knowledge, motivations, preferences, perceptions, and behaviours. A better understanding of these attributes can be used to provide insights into constructing effective solutions and designing effective policies to tackle environmental problems.

Conservation scientists are increasingly working with psychologists to better understand the cognitive, social, and motivational processes that influence human behaviour, since most environmental problems are rooted in human behaviour and the solutions will therefore require behaviour change (Schultz, 2014; Clayton & Myers, 2015; Reddy *et al.*, 2017). A variety of models have been developed to enhance our understanding of why people behave as they do (Darnton 2008). Most are based on standard economic theory and rely on the assumption that individuals make rational, reasoned choices by considering the perceived costs and benefits of an action based on their knowledge (Sen, 1977; Tversky & Kahneman, 1989). Hence, conservation campaigns often focus on raising awareness, with the assumption that appropriate knowledge will evoke pro-environmental behaviour in the target audience (e.g., Wi & Chang, 2019; Petersen *et al.*, 2020). However, knowledge is not the only determinant of behaviour, with other determinants such as norms, beliefs, motives, and intentions featuring in popular models of human behaviour (Darnton 2008; Avis 2016).

One of the most well-known models used to explain and predict human behaviour is the Theory of Planned Behaviour (TPB; Ajzen, 1985), which is an extension of the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1977). The TRA posits that a person's beliefs about behavioural outcomes influences their attitude towards a behaviour, and in conjunction with subjective norms (beliefs about how other people will perceive a behaviour), this determines their intention to perform a behaviour, and crucially that intentions directly lead to behaviour (Fishbein & Ajzen, 1977). However, it was later recognised that there is sometimes a gap between what people intend to do and what they actually do, because a person's ability to perform a behaviour is not always within their control (Sheeran 2002). Hence the TRA was extended into the TPB, which hypothesises that behavioural intentions are a function of attitude towards a behaviour, subjective norms, as well as perceived and actual control over the behaviour (Ajzen, 1985; Sheeran *et al.*, 2003). Therefore, the TPB holds that intentions reflect an individual's motivations, and that if an individual has a positive attitude towards a behaviour, the behaviour is positively perceived by people who influence the individual, and the individual has a sense of control over the behaviour, they are likely to perform the behaviour (Ajzen 1991).

Although the TPB performs with better predictive ability than the TRA (Rivis & Sheeran, 2003), it has been criticised for its neglect of potentially important factors such as impulsivity, habits, unconscious influences, and the role of emotions beyond anticipated outcomes in influencing behaviour (Michie *et al.*, 2011; Conner *et al.*, 2013; Sheeran *et al.*, 2013). Extended forms of the TPB have been put forward to account for other potential determinants of behaviour (Conner & Armitage, 1998), for instance, the “model of goal-directed behaviour” builds on the TPB by recognising that emotions (positive and negative) and past behaviour (in terms of frequency and recency) can influence the choices we make and should be considered when designing behaviour change interventions (Perugini & Bagozzi, 2001). However, some scientists argue that the TPB should be retired in place of new theories to explain human behaviour (Sniehotta *et al.*, 2014). For example, the “COM-B model” was devised to aid in the design of behaviour change interventions and proposes that the three components that determine behaviour are “capability”, “opportunity”, and “motivation”, hence at least one of these components would need to be altered to result in a behaviour change (Michie *et al.*, 2011). Although there is not a single unifying theory or model that explains human behaviour, an improved understanding of the various factors that influence behaviour can be used to inform the design and implementation of appropriate approaches to influence the behaviour of key actors, for instance, landowners in regards to their participation in private land conservation programmes (Reddy *et al.* 2017).

Perceptions are another important attribute that can be used to provide insights when designing policies and solutions to tackle environmental problems. Perceptions, as defined by Bennett (2016), are “*the way an individual observes, understands, interprets, and evaluates a referent object, action, experience, individual, policy, or outcome*”. Perceptions are highly individual and can be influenced by a myriad of factors including a person’s gender, race, socio-economic status, past experiences, knowledge, beliefs, values, and preferences. Hence peoples’ perceptions of the same situation can be vastly different and change over time (Satterfield *et al.* 2009). Conservation scientists can study perceptions to provide insights on people’s observations, understandings, and interpretations of conservation management, initiatives or policies. For instance, researchers can investigate how people perceive the ecological outcomes

of a conservation initiative and whether they view the social impacts as just or equitable (Christie, 2005; Ezebilo & Mattsson, 2010; Leleu *et al.*, 2012). Perceptions can also be used to understand the social acceptability of conservation, such as PA policies and management practices, in relation to different social, cultural, political, and economic contexts (Berlanga & Faust, 2007; Eagles *et al.*, 2013; Bennett & Dearden, 2014). Positive perceptions towards a conservation initiative, not just objective scientific evidence of its effectiveness, are necessary to achieve the support of local people and enable its long-term success. Thus, research on perceptions can be used as evidence to inform decision-making for monitoring, evaluating, and adapting conservation policies and practices, to ultimately improve conservation outcomes (Bennett 2016).

1.6. Thesis outline

There is extensive literature on private land conservation and the factors that influence participation in specific voluntary programmes. However, there is scope to build on this literature as no effort has been made to synthesise the factors that influence participation in the various conservation programmes and approaches that exist around the world. Since rewilding is a relatively new concept and conservation approach, there are significant knowledge gaps surrounding the attitudes and perceptions of key stakeholders towards rewilding. In this thesis I address these important topics through the following research:

Chapter 2: Reviews the factors that influence participation in the voluntary private land conservation programmes and approaches that exist globally, focusing on the motivations and barriers, as well as the landowner and land characteristic factors that influence participation. I show that financial incentives and a desire to support nature conservation are the most frequently identified motivations, while high costs and negative economic impacts of participation are the most frequently identified barriers, and that there are no consistent landowner or land characteristics that determine participation.

Chapter 3: Explores English and Scottish land-manager perceptions towards rewilding using both qualitative and quantitative methods. I describe how land-managers perceive rewilding and how these perceptions influence their support for activities related to rewilding. These

insights can be used as evidence by policymakers to inform the design of rewilding policies and initiatives.

Chapter 4: Employs Q-methodology to explore the perspectives of English and Scottish land-managers towards rewilding. I identified three distinct shared perspectives, revealing that land-manager views towards rewilding are not uniform and that there may be more support for rewilding among these stakeholders than one would expect from public discourse.

Chapter 5: Discusses the key findings and conclusions from across the thesis, highlighting the contributions to the field, how they can be applied to policy and practice and some suggestions for future research directions are made.

Chapter 2 A synthesis of knowledge about the factors that influence participation in private land conservation around the world

2.1. Abstract

Private land conservation is increasingly recognised as an approach to complement the protected area network and achieve area-based conservation targets, and a large body of literature has explored the factors that influence landowner participation in specific conservation programmes. In this study, used a systematic evidence review to synthesise the motivation, barrier, landowner, and land characteristic factors that influence participation in the various private land conservation programmes and approaches that exist globally, and compared the different study approaches used to investigate participation. The factor identified most frequently as a motivation for participation in private land conservation programmes and approaches is financial incentives. This coincides with high costs and the negative economic impacts of participation being most frequently identified as barriers. However, the second most frequently cited motivation is wanting to support nature conservation outcomes, indicating that landowners' decision-making around participation is not solely about financial considerations. Overall, there are no landowner and land characteristic factors that consistently determine participation, and most characteristic factors are not investigated by enough studies to draw conclusions about how they affect participation. However, for the three landowner and land characteristics that are most frequently investigated, age has a negative effect on participation more often than a positive effect, while both education and farm size have a positive effect more often than a negative effect. We also found that overall, there was no difference between study approaches that used open-ended questions or closed-ended questions for investigating and identifying motivation and barrier factors. However, since some factors were only identified by studies that used open-ended questions, future studies should include open-ended questions to allow respondents to fully explain their reasons for participation or non-participation, to ensure that important factors are not overlooked. Future research should also address gaps in the

literature by focusing on understudied conservation programmes and approaches, as well as the countries and regions that have few studies on participation.

2.2. Introduction

Global biodiversity is in decline and area-based conservation is considered the most effective strategy to overcome the main threats responsible for the loss of biodiversity, including habitat loss and over-exploitation (Maxwell *et al.* 2020; Geldmann *et al.* 2021). State-owned and managed protected areas (PAs) are the most used governance system for area-based conservation, and have undergone a rapid expansion over the past decade in both terrestrial and marine environments (UNEP-WCMC & IUCN 2022b; Watson *et al.* 2014). Despite this expansion, global biodiversity has continued to decline as PAs are often located in areas that minimise conflict with agriculture and other industries, hence they are often small, fragmented, and poorly represent species and habitats (Armsworth *et al.* 2011; Venter *et al.* 2018; Ward *et al.* 2020; Butchart *et al.* 2015). Due to these limitations, there is a broad consensus that the expansion and more effective management of PAs and other conservation areas is required to safeguard biodiversity (Tilman *et al.*, 2017; Maron *et al.*, 2018; Allan *et al.*, 2022). Since the creation of new state-managed PAs is constrained by high establishment and management costs, limited government budgets, and a lack of support from local communities (Venter *et al.* 2014), there is growing interest in how conservation on private land can be used to complement the global PA network and help achieve global area-based conservation targets (Butchart *et al.* 2015; Dudley *et al.* 2018; Capano *et al.* 2019).

For areas of private land to contribute towards achieving global conservation targets, such as the “30 by 30” target to protect 30% of land and sea by 2030 in the Kunming-Montreal Global Biodiversity Framework (CBD, 2022), they must be either classed as a privately protected area (PPA) or an “other effective area-based conservation measure” (OECM; UNEP-WCMC & IUCN, 2021). PPA’s are protected areas (PAs) that are governed by private actors, have legal or other effective means of protection in place, and are primarily engaged in long-term biodiversity conservation activities (Stolton *et al.* 2014; Bingham *et al.* 2021; Palfrey *et al.*, 2022), while OECMs are governed and managed to deliver “*positive and sustained long-term outcomes for the in situ conservation of biodiversity*”, but are not recognised as PAs since biodiversity conservation is not necessarily their primary objective (CBD, 2018; Mitchell *et al.*, 2018). To facilitate and encourage landowners to manage their land as a PPA or OECM for the benefit

of biodiversity and the provision of ecosystem services; governments, NGOs, and private organisations have established various types of private land conservation policies, programmes, and approaches (Kamal *et al.*, 2015; Stolton *et al.* 2014; Capano *et al.* 2019). For instance, conservation easements are one of the most popular programmes used to conserve biodiversity on private land, where a landowner agrees to permanently restrict certain uses of their property in exchange for economic benefits (Rissman *et al.*, 2007; Fishburn *et al.*, 2009; Davies *et al.*, 2010). Other popular programmes, such as payment for ecosystem service (PES) schemes and agri-environment schemes (AES), offer landowners and farmers financial incentives for implementing environmentally beneficial management practices (Spiteri & Nepal, 2006; Redford & Adams, 2009; Hodge *et al.*, 2015; Kamal *et al.*, 2015). Landowners can also choose to adopt non-incentivised conservation approaches, such as conservation agriculture, conservation farming, organic farming, and voluntary stewardship, on their land (Corbeels *et al.*, 2014; Rodriguez *et al.*, 2018; Luther *et al.*, 2020).

Despite the various private land conservation programmes and approaches that exist globally, conservation efforts on private land have not yet succeeded in stemming global biodiversity declines (Díaz *et al.* 2019; Stokstad 2010), although there are many examples of species specific successes (e.g., Helden *et al.*, 2015; Heath *et al.*, 2017). This is likely because landowner participation in private land conservation programmes is relatively low (Kusmanoff *et al.* 2016; Borsotto *et al.* 2008; Comerford 2013). The voluntary nature of private land conservation programmes and approaches means that their success in terms of landowner participation depends on governments and NGOs designing and implementing programmes and approaches that appeal to the preferences, needs, and capabilities of landowners, while also delivering biodiversity conservation (Cooke *et al.* 2012; Selinske *et al.* 2017; Farmer *et al.* 2017; Hardy *et al.* 2017). However, the factors that influence participation are poorly understood (Cortés-Capano *et al.* 2020), with recent studies countering popular wisdom about what influences the adoption of private land conservation (e.g., Ferraro *et al.*, 2021; Weigel *et al.*, 2021). For example, many programmes offer landowners financial incentives to encourage participation, yet there is concern that these incentives may “crowd out” other motivations for conservation and foster financial dependency (Selinske *et al.*, 2017; Cooke & Corbo-

Perkins, 2018; Akers & Yasué, 2019). Thus, an improved understanding of the factors that influence landowner participation in conservation programmes and approaches on private land is crucial if we are to go beyond PAs and incorporate private land conservation to achieve the “30 by 30” target outlined in the Kunming-Montreal Global Biodiversity Framework (CBD, 2022).

The challenge of achieving landowner participation in voluntary conservation programmes has led to a large body of empirical studies investigating the factors that influence participation in specific programmes, as well as a number of review studies focusing on participation in specific conservation programmes. For example, studies have reviewed the landowner and land characteristics associated with participation in forest conservation programs (Ma *et al.* 2012), the adoption of conservation agriculture (Knowler & Bradshaw, 2007), best management practices (Baumgart-Getz *et al.*, 2012), and agricultural conservation practices (Prokopy *et al.* 2019). Other studies have reviewed the factors that influence landowner decision-making regarding participation, for example, the motivations that drive participation in conservation covenants (Kabii & Horwitz, 2006) and perpetual conservation easements (Kemink *et al.* 2020), and the motivations and barriers that influence the adoption of conservation practices and programmes (Ranjan, Church, *et al.* 2019). However, these existing reviews tend to focus on what motivates landowner participation, rather than the factors that prevent participation, and few factors have identified as consistent determinants of conservation programme participation. Also, empirical studies use different study approaches (e.g., open-ended and closed-ended questions) to investigate participation (Schuman & Presser, 1979; Newing, 2010), however the effectiveness of these different study approaches in identifying factors that influence participation has not been evaluated.

Systematic evidence reviews are an explicit and rigorous approach for evaluating large amounts of information to generate reproducible research findings (Lockwood & Oh, 2017; Owens, 2021). Hence, here we used a systematic evidence review approach to synthesise the factors that influence participation in the various private land conservation programmes and approaches that exist globally, focusing on the motivations and barriers, as well as the landowner and land characteristics that influence participation. We also compared the

different study approaches used to evaluate the effectiveness of open- and closed-ended question study approaches for understanding the motivation and barrier factors that influence participation.

2.3. Methods

2.3.1. Literature search

We carried out literature searches in the online bibliographic databases Web of Science, Google Scholar, and Scopus using search terms that we identified through an iterative process. We developed the search string by selecting words commonly used in the title and abstracts of relevant papers on landowner participation in private land conservation programmes and approaches, and expanding the list of terms to find additional papers until no new search terms were identified (Table 2.1). We included a wide range of search terms for all types of private land conservation programmes and approaches, including alternative terms for well-known approaches (e.g., “easement” and “covenant”). Terms like “motivate” and “constrain” were used to elicit literature on the factors that influence landowners’ participation, and we used terms like “landowner”, “farmer”, and “landholder” because we were solely interested in individuals who own the land and we wanted to capture the different potential land-uses and occupations of these landowners, including farmers and foresters, as well as those who own and manage strict protected areas or nature reserves that allow grazing.

Table 2.1: Keywords used to identify articles on landowner participation in private land conservation programmes and approaches. *Indicates wildcard search terms. Searches were undertaken with these keywords in three online bibliographic databases: Web of Science, Google Scholar, and Scopus

Search terms		Search terms		Search terms
"motivat*" OR	AND	"private land*" OR	AND	"landowner*" OR
"incentiv*" OR "factor*"		"conservation program*" OR		"farmer*" OR
OR "drive*" OR		"conservation measure*" OR		"landholder*" OR
"influenc*" OR "adopt*"		"agri-environment*" OR		"owner*"
OR "uptake" OR		"scheme*" OR "program*" OR		
"willing*" OR		"easement*" OR "private		
"determin*" OR		protected area*" OR "ecosystem		
"decision*" OR		service*" OR "voluntary*" OR		
"characteristic*" OR		"stewardship*" OR "best		
"participat*" OR		management*" OR "tender*"		
"accept*" OR "barrier*"		OR "covenant*" OR "auction*"		
OR "constrain*"		OR "non-industrial private		
		forest*" OR "revolving fund*"		
		OR "conservation farming*" OR		
		"organic farming*" OR		
		"conservation agriculture*"		

We did not specify any specific threshold date limit for studies, but instead limited our search to the first 10,000 hits from each database as of 10th December 2020. Only English language papers were retained. In addition, we searched the reference lists of all relevant papers, including review articles, to locate further pertinent primary research studies. Our search produced a total of 11,478 potentially relevant papers once duplicates were removed.

We developed a systematic evidence review protocol according to accepted standards in the literature (Moher *et al.* 2009), then sequentially screened the papers for relevance based first on their titles and abstracts, then full text, applying the inclusion/exclusion criteria, determined *a priori*, in a conservative manner. Since some papers reported on multiple studies, we applied the inclusion/exclusion criteria to each study independently. Studies were included if they (i) were based on empirical data and (ii) reported on "factors" that determine

or influence landowner participation or non-participation in a conservation programme or approach. Studies were excluded if they (i) were simulation-based or based on modelled data, (ii) investigated intentions or willingness to participate, since these are not necessarily good predictors of behaviour (Wossink 2003), or (iii) if the dependent variable of the analysis could not be clearly identified as landowner participation or non-participation in a conservation programme or approach. A subset of studies were evaluated independently by two of the authors and the level of agreement between decisions to accept or reject a study was assessed using Cohen's kappa statistic (Cohen 1960) and a threshold of >0.7, to ensure the inclusion/exclusion criteria were correctly and consistently applied. The review process identified 404 relevant studies that reported on factors that influence landowner participation in private land conservation programmes and approaches (Table S2.1). Of these, 222 studies reported on "motivations" that drive participation, 168 studies reported on "barriers" to participation, and 225 studies reported on landowner and land "characteristics" that influence participation.

2.3.2. Data extraction

For each study we recorded: (i) the continent and country where the research was conducted, (ii) the land type, (iii) the conservation programme or approach, and (iv) the study approach used to investigate participation. We recorded the land type as either "farmland", "forest", or "private", with "private" representing land that is privately owned but not specified as either farmland or forest by the study authors. We grouped the type of conservation programme or approach into six categories, using the descriptions reported in each study (Table S2.2). For example, we grouped environmentally friendly management specifically related to farming, such as conservation agriculture, organic farming, and nature-friendly farming, into the category "Conservation Farming", and we grouped conservation activities and environmentally friendly management carried out voluntarily on land that is not farmland into the category "Voluntary Stewardship". The other four categories: "Agri-environment Scheme", "Conservation Easement", "Payment for Ecosystem Services", and "Private Protected Area", were described as such by the study authors and did not require further grouping.

We also documented the study approach by recording whether each study used “open” or “closed” ended questions to investigate participation, and whether the factors identified as influencing participation were ranked in order of importance by the study respondents. The study approach was recorded as “open” if respondents were able to provide their own reasons for participation or non-participation with no options to choose from. The study approach was recorded as “closed” if respondents were asked to select which factors influenced their decision-making about participation or non-participation from a pre-determined list provided by the study authors, or if participation was statistically assessed against a pre-determined list of factors decided by the study authors (Schuman & Presser, 1979; Newing, 2010). For example, Kragt *et al.*, (2017) investigated “financial incentives” as a potential motivation factor and described its influence on participation as *“20% of adopters named financial incentives through government programs as a driver of carbon farming uptake”*. Therefore, for this study, we recorded the study approach as “closed” and that the factors were ranked, since respondents were asked to identify which factors motivated their participation from a pre-determined list of options and the authors reported the percentage of respondents who selected each factor.

For each study, we recorded a description of the dependent and predictor variables as described by the study authors. The dependent variable was the landowners’ participation or non-participation in the conservation programme or approach being investigated. Predictor variables were the motivation, barrier, landowner, and land characteristic factors that could potentially influence participation. For example, “social opportunities” was a predictor variable investigated by Ernst and Wallace (2008) as a potential motivation for participation, which they described as *“wanted to join with others in community who are protecting land”*.

For each study, we recorded the effect that each factor (the predictor variable) had on participation (the dependent variable), which could be either positive, negative, mixed, or no effect. For studies that investigated participation using quantitative data analysis techniques (e.g., logistic regression), we used the significance reported in the study to record the effect each factor had on participation, using $p < 0.05$ to determine significance. For example, Hounscome (2006) found larger farms were significantly more likely to participate so the factor

“farm size” was recorded as having a positive effect on participation in this study, while Tambo and Mockshell (2018) found large farms were significantly more likely to uptake some conservation farming practices but significantly less likely to uptake others, so “farm size” was recorded as having a mixed effect on participation in this study.

We standardised how we recorded variables, since not all binary variables were recorded in the same format across the reviewed studies. For example, gender was often treated as a binary variable and most studies used male as the reference category. Therefore, to ensure all binary variables were recorded in a standardised manner, we chose the most frequently used reference variable as the default variable. Thus, for studies that used female as the reference category, we assumed the opposite effect to represent males, and recorded that effect in our review summary.

Because this review study is not a meta-analysis but rather a synthesis of the variables that the current literature has examined, we included studies that used summary statistics and qualitative descriptions to investigate factors that could influence landowner participation in conservation programmes and approaches. We recorded the effect of each factor on participation as reported by the study authors. For example, Januchowski-Hartley *et al.*, (2012) used qualitative interviews to investigate barriers that prevented landholders from participating in riverine restoration on their land, reporting that 15% of respondents identified issues related to “impractical programs” as a barrier, hence we recorded “impractical programs” as a barrier factor for this study.

2.3.3. Coding factors

Many studies investigated similar or the same factors; however, each study used their own terms to describe them. Therefore, one author (CLS) grouped related factors into codes, then grouped the related codes into parent themes for each of the three study categories: (1) “motivation” factors (Table S2.3), (2) “barrier” factors (Table S2.4), and (3) landowner and land “characteristic” factors (Table S2.5), which were checked for consistency by one other

author (ZGD). For example, factors such as “lack of time” (Padilla-Bernal *et al.* 2018), “time availability” (Whitby 2018), and “time constraints” (Simmons *et al.* 2020) were identified as barriers to participation in different studies, hence all barrier factors related to time constraints were grouped into the code “time” within the parent theme “personal” (Table S2.4). Due to the large variety of characteristic factors investigated across all studies, we only included a landowner or land characteristic code in the review summary if it comprised factors investigated by 10 or more studies.

2.3.4. Data analysis

To assess the factors investigated and/or identified for each of the three study categories (motivations, barriers, and characteristics), we summed the total number of factors investigated and/or identified for each study category, and recorded whether the factors were “identified” by a study that used open-ended questions or “investigated” by a study that used closed-ended questions (Table S2.6). For studies that used closed-ended questions, we recorded the number of factors “investigated and identified” as influencing participation, and the number of factors “investigated but not identified” as influencing participation (Table S2.7).

To examine the influence of factors in each code, for each study we recorded whether factors in each code were: identified by a study using either closed-ended or open-ended questions; not identified by a study using closed-ended questions; not investigated by a study using closed-ended questions; or not cited by respondents in a study using open-ended questions.

To evaluate the effectiveness of open- and closed-ended question study approaches for understanding the motivation and barrier factors that influence participation, we compared the proportion of studies that identified factors in each code using open- and closed-ended questions for motivation studies (Table S2.8) and barrier studies (Table S2.9). We also used Wilcoxon Rank Sum Tests to compare the number of codes investigated by closed-ended

questions and identified by open-ended questions for motivation studies (Table S2.10) and barrier studies (Table S2.11).

To assess which factors were identified or ranked by study respondents as the most important for influencing participation most often, we summed the number of times factors in each code were ranked as the most, second, and third most important in motivation studies (Table S2.12) and barrier studies (Table S2.13) that had ranked three or more factors in terms of importance.

2.4. Results

Most of the 404 studies in the review were from North America (n=149; 37%) and Europe (n=134; 33%), with 30% (n=123) from the United States of America, 10% (n=41) from the United Kingdom and 12% (n=49) from Australia (Figure 2.1a). The majority (n=332; 82%) were carried out on farmland (Figure 2.1b). The conservation programmes most frequently investigated were payment for ecosystem services schemes by 29% (n=126) of studies and agri-environment schemes by 27% (n=113; Figure 2.1c).

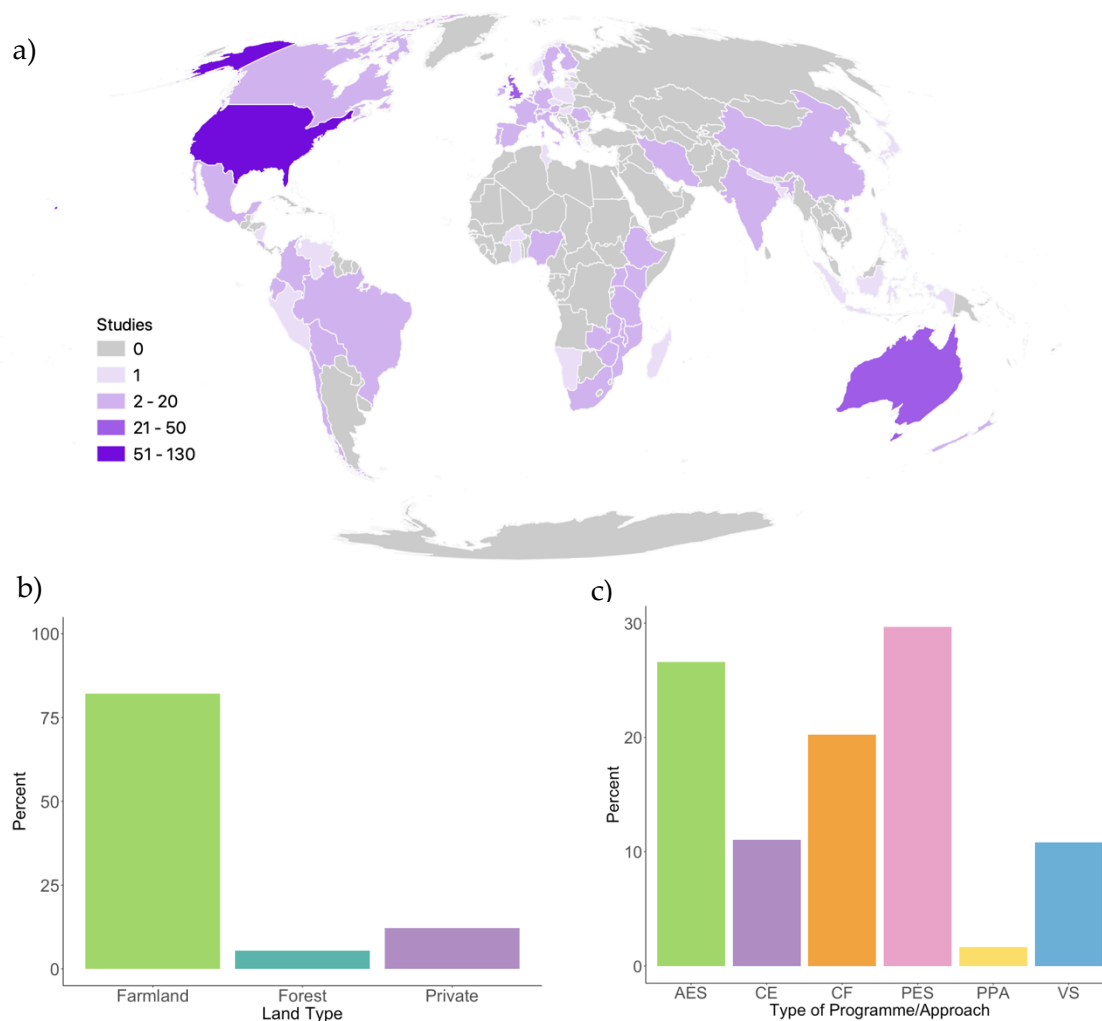


Figure 2.1: (a) The number of studies in each country, (b) the percentage of studies on each land type, and (c) the percentage of studies on each type of private land conservation programme or approach (N=404). Private refers to land that was not described by the study authors as either farmland or forest. The different types of private land conservation programmes and approaches include: AES (Agri-Environment Schemes), CE (Conservation Easements), CF (Conservation Farming, which encompasses conservation activities related to farming practices), PES (Payment for Ecosystem Services), PPA (Private Protected Areas), and VS (Voluntary Stewardship, which encompasses conservation activities carried out voluntarily not on farmland).

2.4.1. Motivations driving participation

We extracted 1,135 factors from the 222 studies that reported on landowner motivations for participation in private land conservation programmes and approaches, and grouped them into 26 codes and seven parent themes (Table S2.3). The codes most frequently identified by

studies that investigated motivations for participation (Figure 2.2), were “financial incentives” by 55% of studies (n=123), “nature” conservation by 47% (n=105), and “business” benefits by 36% (n=80). However, 3% (n=7) of studies that investigated factors in the code “financial incentives” did not identify them as important for motivating participation. Other factors that were often identified as motivations include personal “values” identified by 29% (n=64) of studies and personal “self” benefits by 23% (n=50). However, factors in 19 of the 26 codes were not identified as motivations for participation by more than 80% (n=323) of studies, either because they were not investigated by studies that used closed-ended questions or they were not cited by respondents in studies that used open-ended questions.

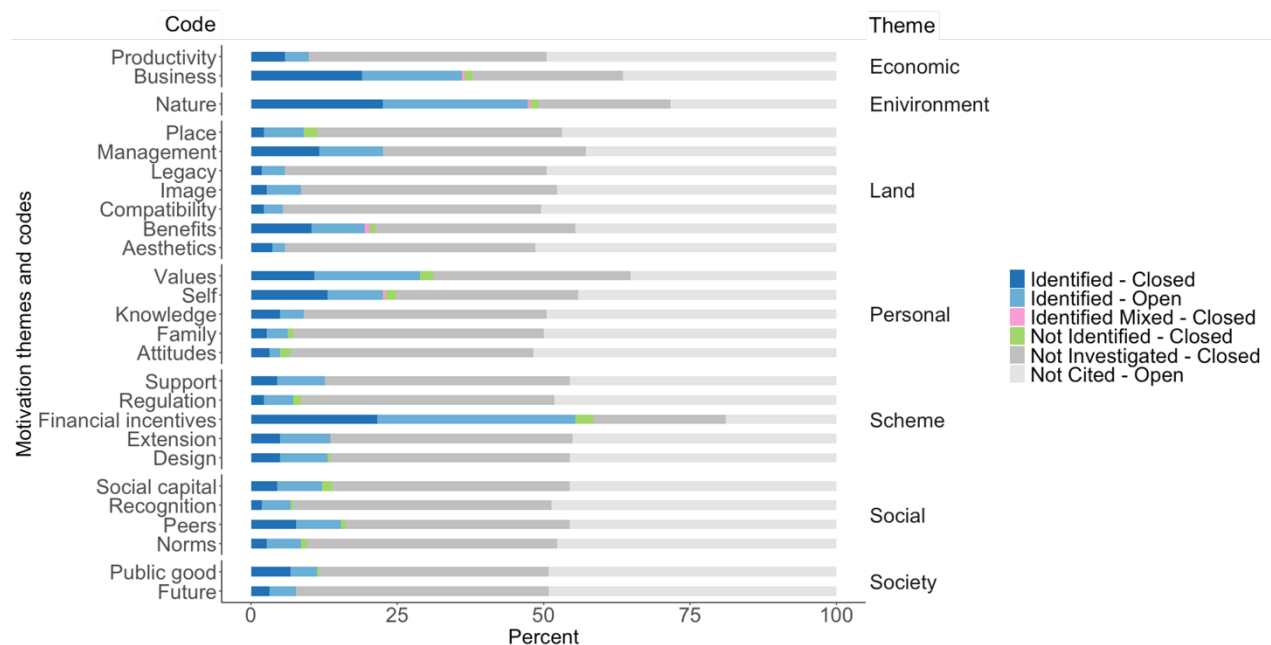


Figure 2.2: The percentage of studies (N=222) that: used closed-ended questions and identified factors in each code as a motivation for participation; used open-ended questions and identified factors in each code as a motivation for participation; used closed-ended questions and identified factors in each code as having a mixed influence on motivating participation; used closed-ended questions and did not identify factors in each code as a motivation for participation; used closed-ended question and did not investigate factors in each code as potential motivations for participation; and used open-ended questions but respondents did not cite factors in each code as a motivation for participation.

2.4.2. Motivation ranks

Of the 222 motivation studies, 42% (n=93) ranked three or more factors in terms of importance for influencing participation (Table S2.12). The codes with factors ranked as most important (i.e., first) for motivating participation most often were “financial incentives” by 19% (n=18) of these studies, and “nature” conservation by 16% (n=15; Figure 2.3). However, factors in the code “nature” conservation were ranked in the top three motivations by 57% (n=53) of these studies, ahead of “financial incentives” which was ranked in the top three by 39% (n=36), followed by 32% (n=30) for “business” benefits and 28% (n=26) for land “benefits”.

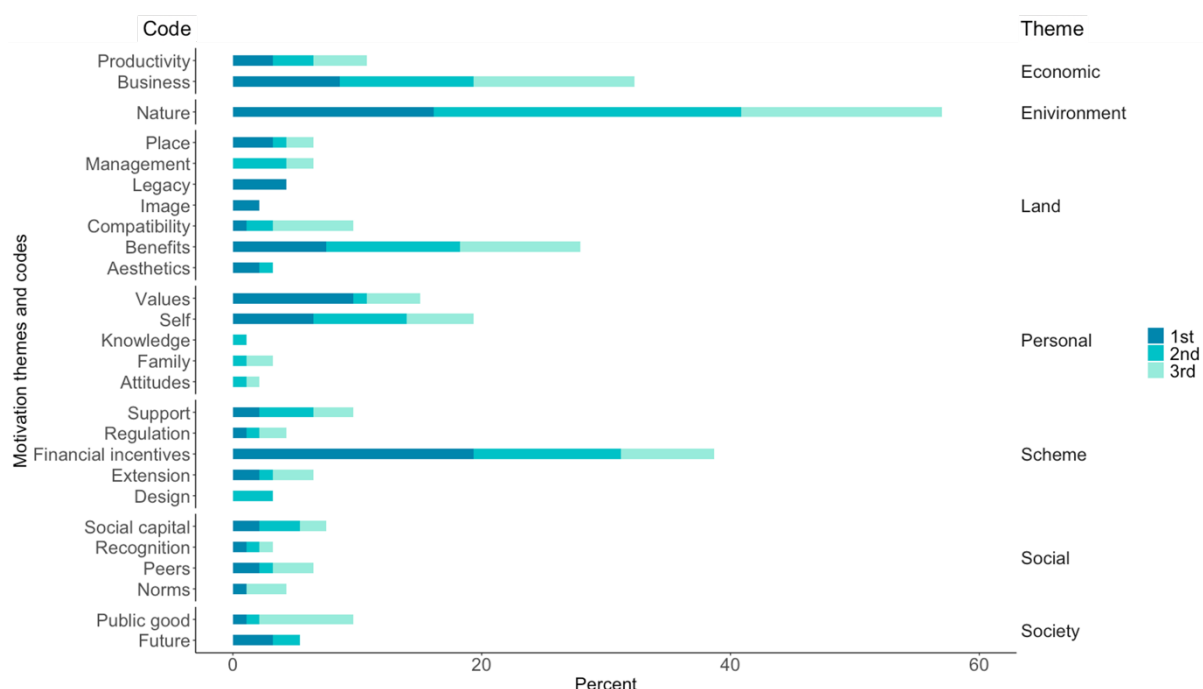


Figure 2.3: The percentage of studies (N=93) that identified factors in each code as the most important (1st), the second most important (2nd), and third most important (3rd) for motivating landowner participation in private land conservation programmes and approaches, in studies that ranked three or more factors.

2.4.3. Barriers preventing participation

We extracted 913 factors from the 168 studies that reported on barriers to landowner participation in private land conservation programmes and approaches, and grouped them into 28 codes and six parent themes (Table S2.4). The codes most frequently identified by studies that investigated barriers to participation (Figure 2.4) were “costs” (n=69; 41%) and

the economic impact on the landowner's "business" (n=56; 33%). Factors related to the programme or scheme were also often identified as barriers to participation, with scheme "restrictions" identified by 29% (n=49) of studies, scheme "design" by 27% (n=45), scheme "bureaucracy" by 23% (n=39), and the scheme "financial incentives" being insufficient by 23% (n=39). However, factors in 19 of the 28 codes were not identified as barriers to participation by more than 80% (n=134) of studies, either because they were not investigated by studies that used closed-ended questions or they were not cited by respondents in studies that used open-ended questions. No studies that used closed-ended questions investigated factors in the code "social norms".

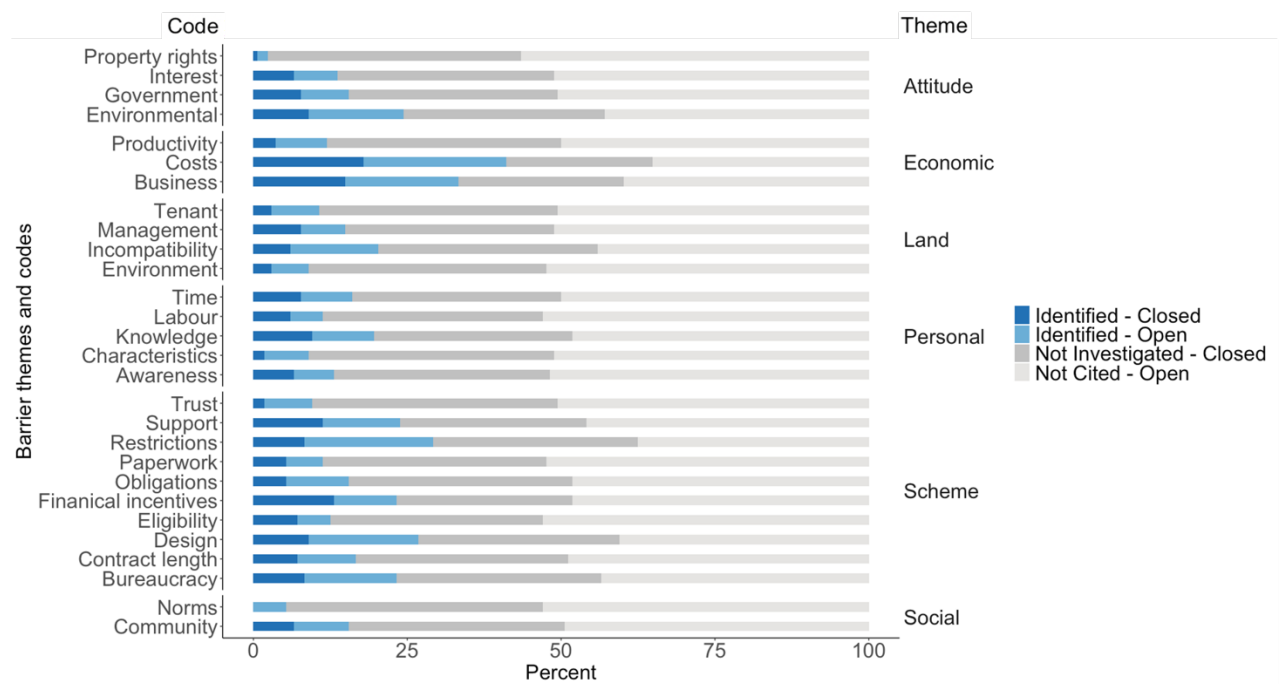


Figure 2.4: The percentage of studies (N=168) that: used closed-ended questions and identified factors in each code as a barrier to participation; used open-ended questions and identified factors in each code as a barrier to participation; used closed-ended questions and did not investigate factors in each code as potential barriers to participation; and used open-ended questions and respondents did not cite factors in each code as a barrier to participation.

2.4.4. Barrier ranks

Of the 168 barrier studies, 42% (n=71) ranked three or more factors in terms of importance for preventing participation (Table S2.13). Factors in the code economic “costs” were ranked as the most important (i.e., first) most often by 14% (n=10) of these studies (Figure 2.5). Other factors related to finances were often ranked in the top three most important barriers, with the factors in the code “business” ranked in the top three by 28% (n=20) of these studies, while factors in the code “financial incentives” ranked in the top three by 27% (n=18). No studies identified factors in the code social “norms” or attitudes towards “property rights” in the top three most important barriers to participation.

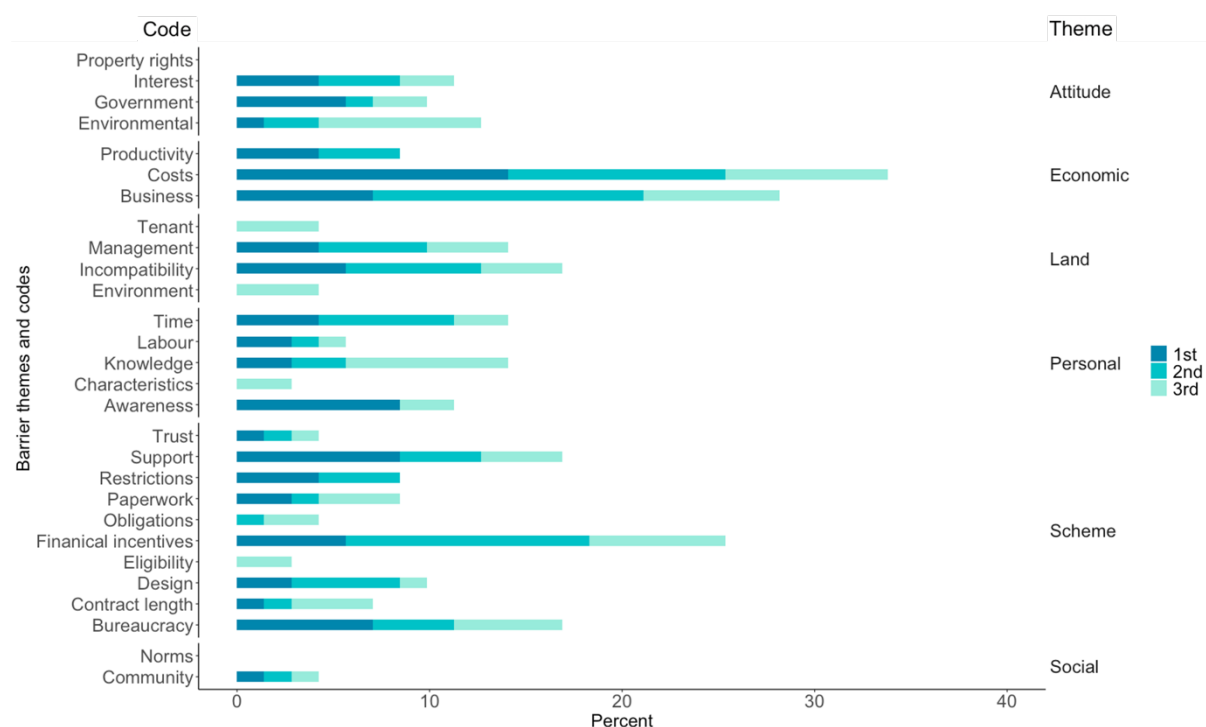


Figure 2.5: The percentage of barrier studies (N=71) that identified factors in each code as the most important (1st), the second most important (2nd), and third most important (3rd) barriers to landowner participation in private land conservation programmes and approaches, in studies that ranked three or more factors.

2.4.5. Characteristics influencing participation

We extracted 2,744 factors from the 225 studies that reported on landowner and land characteristics that influence with participation, and grouped them into 27 codes and two parent themes (Table S2.5). The codes most frequently identified as influencing participation by studies that investigated landowner and land characteristics (Figure 2.6) were “age” (n=88; 39%), “education” (n=80; 36%) and “farm size” (n=97; 43%). However, these findings are not straightforward. For the code “age”, 14% (n=32) of studies found older landowners were significantly more likely to participate, 24% (n=54) found older landowners were significantly less likely to participate, 1% (n=2) found mixed results, while 42% (n=94) found age had no significant effect on participation. For “education”, 33% (n=75) of studies found landowners who had completed higher education were significantly more likely to participate, 2% (n=5) found landowners who had completed higher education were significantly less likely to participate, while 37% (n=84) found education had no significant effect on participation. For “farm size”, 36% (n=80) of studies found landowners with larger farms were significantly more likely to participate, 7% (n=16) found landowners with larger farms were significantly less likely to participate, 0.4% (n=1) found mixed results, and 33% (n=75) found farm size had no significant effect on participation. Factors in 21 of the 27 codes were not identified as influencing participation by more than 80% (n=180) of studies because they were not investigated by those studies.

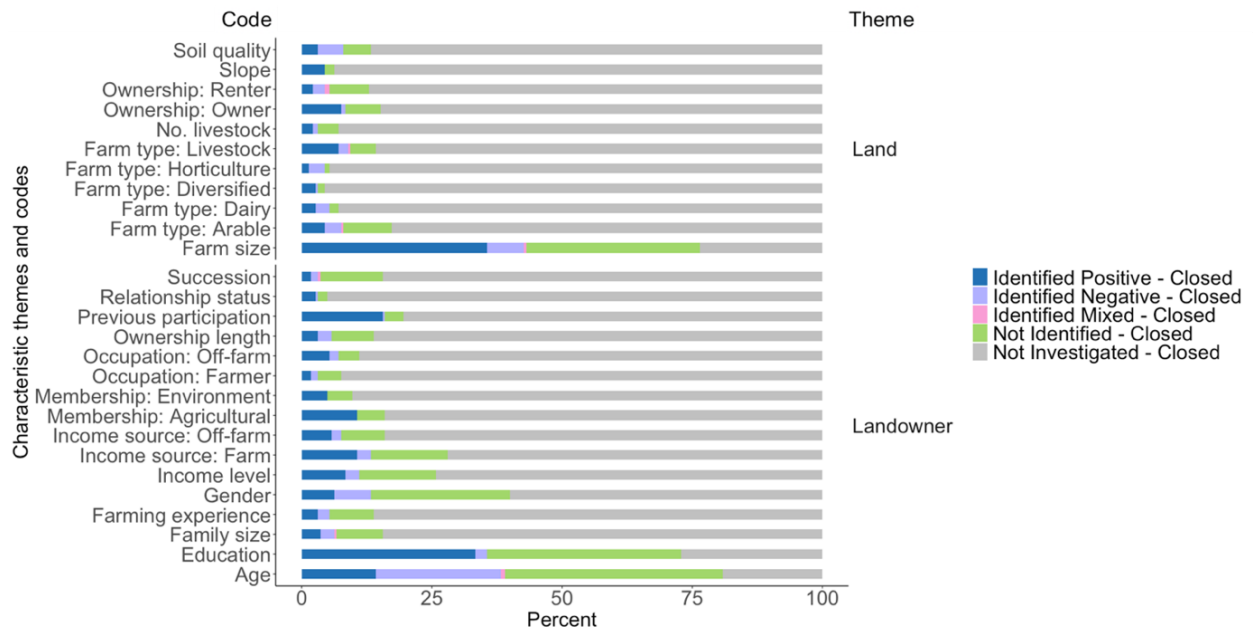


Figure 2.6: The percentage of studies (N=225) that: used closed-ended questions and identified factors in each code as having a positive effect on participation; used closed-ended questions and identified factors in each code as having a negative effect on participation; used closed-ended questions and identified factors in each code as having a mixed effect on participation; used closed-ended questions and did not identify factors in each code as influencing participation; used closed-ended questions and did not investigate factors in each code.

2.4.6. Comparing study approaches

Closed-ended questions were used in 46% (n=103) of the 222 studies that investigated landowner motivations for participation in private land conservation programmes and approaches, 42% (n=70) of the 168 studies that investigated barriers to participation, and 100% of the 225 studies that investigated landowner and land characteristics that influence participation (Table 2.2).

Table 2.2: *The number and percentage of studies that used open- and closed-ended questions to investigate landowner participation in private land conservation programmes and approaches in each study category.*

Study category	Total no. studies	Open-ended question studies	Closed-ended question studies
Motivations	222	119 (54%)	103 (46%)
Barriers	168	98 (58%)	70 (42%)
Characteristics	225	0 (0%)	225 (100%)

Of the 1,135 factors investigated and/or identified by motivation studies, 50% (n=571) were investigated by studies using closed-ended questions (Table S2.6), of which 89% (n=509) were identified as important for motivating participation (Table S2.7). Of the 913 factors investigated and/or identified by barrier studies, 40% (n=365) were investigated by studies using closed-ended questions (Table S2.6), of which 100% were identified as a barrier to participation (Table S2.7). In other words, if a barrier factor was investigated in a study, respondents always selected it as a reason why they had not participated.

The proportion of motivation studies that identified factors in each code was similar for studies that used open- and closed-ended questions, with a mean of 0.16 for studies that used open-ended questions and 0.15 for studies that used closed-ended questions (Table S2.8). For barrier studies, the proportion that identified factors in each code was the same for studies that used open- and closed-ended questions, with a mean of 0.17 (Table S2.9).

There was no significant difference (n=222, W=6218, p=0.85) between the number of codes investigated by motivation studies that used closed-ended questions or identified by motivation studies that used open-ended questions (Table S2.10). There was also no significant difference (n=168, W=3303, p=0.60) between the number of codes investigated by barrier studies that used closed-ended questions or identified by barrier studies that used open-ended questions (Table S2.11).

2.5. Discussion

2.5.1. Overview of landowner participation research

We found strong geographical biases in the literature on landowner participation in private land conservation programmes and approaches, with 70% (n=283) of the studies in our review conducted in Europe or North America (Figure 2.1a). This echoes previous research that found studies on private land conservation tend to focus on Australasia, Europe, and North America (Capano *et al.* 2019). The geographic bias we identified is likely due to two reasons. First, there are genuine geographic differences in the extent of private land conservation programmes, with some nations having a long history of agri-environment schemes and conservation easements (Merenlender *et al.*, 2004; Figgis *et al.*, 2005; Batáry *et al.*, 2015). Second, there are likely geographic differences in how well participation in private land conservation programmes and approaches are studied, and whether the results are published in English, both which are likely to have impacted our findings (Konno *et al.*, 2020; Nuñez & Amano, 2021). This geographic bias in the literature is an important problem, particularly if different factors influence participation in different countries (Kamal *et al.*, 2015; Drescher & Brenner, 2018), and especially since much biodiversity exists on privately-owned land in understudied tropical countries (Bateman *et al.* 2015). It also likely explains why almost half of studies investigated participation in agri-environment schemes (n=113; 28%) and conservation farming (n=86; 21%), while only 5% (n=22) investigated participation in forest conservation programmes (Figure 2.1b). There is therefore a need for review studies that include studies in languages other than English, and more research on participation in private land conservation in under-studied countries and forest conservation programmes, especially given the important role of forests for achieving biodiversity and climate targets (Watson *et al.*, 2018; Goldstein *et al.*, 2020).

For our set of studies included in this review, just over half used open-ended questions to investigate motivations and barriers that influence landowner participation (Table 2.2). The advantages and disadvantages of open-ended question and closed-ended question study approaches are widely known (Schuman & Presser, 1979; Schwarz, 1999). Studies that use

closed-ended questions ask respondents to select factors from a list of options which allows the quick collection of data from a large number of people (Newing 2010), but depends on researchers producing a list of options that do not overlook potentially important factors (Vaus 2013). Open-ended questions allow people to explain their reasons for participation or non-participation in their own words (Schuman 1966), which gives respondents the opportunity to discuss a wider range of factors. However, important factors can be missed due to the question wording (Schwarz 1999), or if researchers leave out factors that are mentioned less frequently or they find less interesting (Onwuegbuzie & Leech, 2007; Noble & Smith, 2015).

While there are ongoing debates about the merits and drawbacks of both study approaches, our results suggest that less well-known factors can be overlooked by studies that use closed-ended questions. For example, none of the barrier studies that used closed-ended questions gave respondents the option to select a factor related to “social norms”, whereas respondents in 5% (n=9) of studies that used open-ended questions cited these factors (Figure 2.4). This suggests “social norms” may have been overlooked by studies using closed-ended questions. Our results also suggest that studies using closed-ended questions may prompt respondents to identify factors than they otherwise would not have cited, with 100% (n=365) of the factors investigated by barrier studies that used closed-ended questions being identified as reasons for non-participation (Table S2.7). Although this could reflect researchers carefully choosing key factors to investigate, it is likely that some of the factors identified as important for influencing participation was due to this prompting bias. Despite these issues, we found there was no overall difference between the codes identified by open- and closed-ended motivation (Table S2.8) and barrier studies (Table S2.9). This suggests researchers carrying out studies using closed-ended questions tend to select appropriate factors to investigate, probably through extensive survey piloting and a good understanding of the literature (Newing 2010). However, it could also be that researchers using open-ended questions only report what they consider to be the most relevant factors based on the literature, or to avoid overwhelming the reader with too many factors (Onwuegbuzie & Leech, 2007; Noble & Smith, 2015). Either way,

our findings suggest open- and closed-ended question approaches are comparable for identifying factors that influence participation.

2.5.2. Understanding motivations and barriers

We found factors in the code “financial incentives” motivate participation most frequently (Figure 2.2) and are ranked as the top motivation most often (Figure 2.3). This finding is consistent with other reviews of participation in conservation covenants (Kabii & Horwitz, 2006) and endangered species conservation programmes (Messick *et al.*, 2020). Many studies find financial incentives are vital for participation as they reduce economic impediments (Moon & Cocklin, 2011; Sorice *et al.*, 2013) and can therefore broaden the numbers and types of landowners who can engage in private land conservation programmes (Yasué & Kirkpatrick, 2018). However, we found financial incentives are often not the sole or most important reason why landowners participate (Figure 2.3). This is because most studies find participation is motivated by a variety of factors, some not related to economic considerations (Ruseva *et al.*, 2015; Ramsdell *et al.*, 2016; Selinske *et al.*, 2017), and not all studies identify financial incentives as an important motivation (Figure 2.2).

Factors in the code “nature” conservation were identified second most frequently for motivating participation (Figure 2.2), and as the second top-ranking motivation (Figure 2.3), with respondents motivated to participate in private land conservation programmes and approaches to improve species conservation (Silva & Mosimane 2014; Lute *et al.* 2018a; Messick *et al.*, 2020), and due to broader environmental concerns (Coyne *et al.* 2021; Laney and Moses 2021). It is encouraging for conservationists and policymakers that wanting to support nature and conservation outcomes is a frequently cited motivation for participation, as it indicates landowners may already demonstrate pro-environmental behaviours and will carry out conservation activities beyond the programme requirements and length (Primmer & Karppinen, 2010; Selinske *et al.*, 2017). It may be worth bearing in mind that motivations are self-reported so respondents may only identify or cite nature conservation as a motivation due to social desirability bias (Vesely & Klöckner, 2020). However, since “nature”

conservation was identified by almost half of motivation studies (Figure 2.2), this suggests it is an important motivation for participation. Therefore, there is probably an opportunity for policymakers to harness this passion and maximise participation in private land conservation programmes by demonstrating the nature conservation benefits of the programme to attract nature-motivated landowners.

The other main factors that motivate participation were economic benefits for the “business”, personal “self” benefits, as well as land “benefits” (Figure 2.3), which is consistent with other reviews on participation in specific conservation programmes (Pavlis *et al.*, 2016; Ranjan *et al.*, 2019; Messick *et al.*, 2020). With consumers increasingly willing to pay premium prices for organic products (Nandi *et al.* 2015), conservation programmes that enable landowners to market products as organic or nature-friendly can motivate participation due to the business benefits associated with charging higher prices and enhanced sales (Gabel *et al.*, 2018; Łuczka & Kalinowski, 2020). Likewise, conservation practices that result in yield improvements provide an economic motivation for the business related to increased sales (Roesch-Mcnally *et al.*, 2017). Similarly, conservation programmes that bring about land benefits such as erosion reduction or soil health improvements (Arbuckle & Roesch-McNally, 2015; Barnes *et al.*, 2019), or personal benefits such as personal satisfaction or health and lifestyle improvements (Veisi *et al.*, 2017; Whitby, 2018; Coyne *et al.*, 2021) can also motivate participation. To encourage participation, policymakers should consider emphasising the benefits associated with programme adoption beyond outright economic incentives to help negate perceptions that participation in conservation programmes is risky or not worth the effort (Reimer *et al.*, 2012; Roesch-Mcnally *et al.*, 2017).

When it comes to barriers to participation, we generally found the mirror image of the motivations results, with economic “costs” of participation and the economic impact on the “business” most frequently identified as barriers (Figure 2.4). Similarly, the economic “costs”, impact on the “business”, and an insufficient or lack of “financial incentives” were top ranking barriers (Figure 2.5). This is consistent with other reviews that have also identified economic costs and reduced business profitability as dominant factors hindering the adoption

of conservation practices and programmes in the USA (Ranjan, Church, *et al.* 2019), conservation agriculture in southern Africa (Andersson & D’Souza, 2014), agri-environment schemes in Europe (Pavlis *et al.* 2016), and endangered species conservation programmes in the USA (Messick *et al.*, 2020). This highlights why the direct and indirect costs of participation are increasingly recognised as barriers, with the phrase “*you cannot go green if you are in the red*” being used to emphasise that a landowners’ business must remain profitable for them to participate in private land conservation programmes and approaches, and deliver environmental benefits (UK Parliament 2017; Tasker 2019).

Other factors frequently identified as barriers to participation in private land conservation programmes were related to the scheme or programme itself (Figure 2.4), with scheme “restriction” including excessive requirements, red tape, and geographic restrictions (Coyne *et al.* 2021), and the fear of losing flexibility and control over management practices (Mills *et al.* 2013; Wezel *et al.* 2018), often given as reasons for non-participation. Complex programme “design” and “bureaucracy” were also often reported as barriers, with one study finding the most common reasons for not joining a payment by results agri-environment scheme were the scheme being deemed ‘*too complicated*’ and would involve ‘*more work*’, ‘*more paperwork*’ and be ‘*too time consuming*’ (Schroeder *et al.* 2013). This echoes other reviews that also identify scheme design, restrictions, and bureaucracy as key barriers to participation in specific private land conservation programmes (Ranjan, Church, *et al.* 2019; Mills *et al.* 2020; Pavlis *et al.* 2016), demonstrating that policymakers should aim to make programme adoption as easy as possible to not discourage participation.

While it is important to highlight the factors identified by the most studies to understand what tends to motivate or prevent participation, it is also important to note that we grouped the motivation factors into 26 codes (Figure 2.2) and the barrier factors into 28 codes (Figure 2.4), demonstrating that there are a wide range of factors that can potentially influence participation. Thus, while factors in less commonly identified codes may only be important in some contexts or for some landowners, they should be considered by policymakers when

designing private land conservation programmes and initiatives to ensure they appeal to a wide range of landowners.

2.5.3. Understanding landowner and land characteristics

We found few overall patterns or trends with how landowner and land characteristics influence participation, which echoes the results of previous reviews on landowner participation in specific conservation programmes (Pannell *et al.*, 2006; Knowler & Bradshaw, 2007; Baumgart-Getz *et al.*, 2012; Burton, 2014; Prokopy *et al.*, 2019). Landowner “age” was investigated by the most studies and nicely illustrates the lack of an overall pattern, with no influence found in 42% (n=94) of studies, a negative influence in 24% (n=54) of studies, and a positive influence in 14% (n=32) of studies (Figure 2.6). This reflects that in some contexts younger landowners are more environmentally aware and more willing to take long-term decisions regarding their land (Wilson & Hart 2000; Giovanopoulou *et al.*, 2011; Giannakis 2014), but in other contexts older landowners are better able to afford the costs of participation and are more interested in land-management for recreational purposes over profit (Borsotto *et al.*, 2008; Burton, 2014; Khanal *et al.*, 2019). In studies that find age does not influence participation, this likely reflects that other factors such as farm size or education are more influential in determining participation (Wilson 1997; Finger & Lehmann 2012; Siebert *et al.* 2010). Although we cannot change age or other demographic characteristics, information about how these characteristics influence participation can be useful for policymakers and practitioners when considering what type of conservation programme may or may not appeal to certain types of landowners.

“Farm size” had a positive effect on participation more often (36% of studies; n=80) than a negative effect (7%; n=16; Figure 2.6), which is likely in part because large farm size is correlated with income and wealth, hence owners of large farms often have an increased capacity to participate as they are better able to afford the costs of participation (Prokopy *et al.* 2019; Xavier *et al.* 2015). They also tend to have sections of land that are less agriculturally productive and so are better able to set aside some areas for conservation (Hammes *et al.* 2016;

Pavlis *et al.* 2016; Berger *et al.* 2003). Large farm size is also often correlated with programme participation, simply because landowners with more land qualify for more programmes (Mullendore *et al.*, 2015) and incentive payments are often paid per hectare so are more attractive to larger landowners (Hammes *et al.* 2016). “Education” also had a positive effect on participation more often (33% of studies; n=75) than a negative effect (2%; n=5; Figure 2.6), with studies showing that landowners with higher levels of education have an increased awareness of environmental issues (Drescher *et al.* 2017; Uliczka *et al.* 2004), increased confidence to seek information about conservation programmes (Prokopy *et al.*, 2019), and an enhanced ability to deal with the administration, bureaucracy, and requirements associated with programme participation (Siebert *et al.* 2006; Ruto & Garrod, 2009). Although other reviews also find farm size and education are often positively associated with participation (Siebert *et al.*, 2006; Prokopy *et al.*, 2008; Xavier *et al.*, 2015; Prokopy *et al.*, 2019), the relationship between education and participation is not conclusive as some reviews do not find education is positively linked with participation (Knowler & Bradshaw, 2007; Baumgart-Getz *et al.*, 2012; Burton, 2014). Despite this heterogeneity, the knowledge that education and farm size are often positive predictors of participation can help policymakers and practitioners target messaging towards landowners with these characteristics to maximise conservation programme adoption.

For the other landowner and land characteristics investigated by studies included in this review, it is difficult to draw conclusions about their effect on participation because they are not investigated by enough studies. For example, “income level”, “previous participation”, and “membership” in an agricultural or environmental organisation are often positively associated with programme participation (Figure 2.6), but these factors need to be included in more studies to draw firmer conclusions. Moreover, while our decision to only present results on factors investigated in ten or more studies avoided over-whelming the reader, it meant that we excluded potentially important factors such as mental health (Hounscome *et al.*, 2006), road distance (Mohebalian & Aguilar, 2016), and ethnicity (Xie *et al.*, 2018) from the review summary.

2.5.4. Implications

The CBD's new Kunming-Montreal Global Biodiversity Framework has called for 30% of the Earth's land and sea to be protected by 2030 (Dinerstein *et al.*, 2019; CBD, 2022), and over 90 countries have pledged to meet this target (HAC 2022). This will require conservation efforts to go beyond expanding state-managed protected areas and focus on managing private land for conservation through PPAs and OECMs (Dudley *et al.* 2018; Bhola *et al.* 2021; Woodley *et al.* 2019). Our results show that more research is needed on what influences programme participation in under-studies countries and on privately owned forests due to their high biodiversity and carbon value (Watson *et al.*, 2018; Goldstein *et al.*, 2020).

We found that overall, there was no difference between open-ended and closed-ended question study approaches for identifying factors in each code for both motivation (Table S2.8) and barrier studies (Table S2.9), however some codes were only identified by studies that used open-ended questions. Future studies on participation should consider including open-ended questions (Singer & Couper, 2017) to ensure important factors are not overlooked. The inclusion of open-ended questions has been shown to improve the validity of quantitative research (Schuman, 1966; Singer & Couper, 2017; Neuert *et al.*, 2021), for instance, data obtained in patient satisfaction surveys (Semyonov-Tal & Lewin-Epstein, 2021). By ensuring respondents have the opportunity to cite the diverse factors that influence their decision-making regarding participation, policymakers will be able to take these factors into account when designing new conservation programmes.

We found there are few consistent landowner or land characteristics that determine programme participation, as corroborated by other reviews on specific conservation programmes (Knowler & Bradshaw, 2007; Prokopy *et al.*, 2008, 2019; Baumgart-Getz, *et al.*, 2012; Burton, 2014). Since the most frequently investigated characteristic factors (age, education, and farm size) are not consistent predictors of participation (Figure 2.6), future studies should investigate under-studied landowner socio-demographic and land characteristics to better understand how they influence participation. We also found most studies that use closed-ended questions do not investigate many of the potential motivation (Figure 2.2) or barrier factors (Figure 2.4) that could be important for participation. Since

participation in private land conservation programmes is generally low (Kusmanoff *et al.* 2016), more research on these understudied factors is needed as they could be important for attracting landowners who have not previously engaged with conservation programmes.

Overall, two things have come through clearly from this review. First is that participation in a private land conservation programme needs to make economic sense for the landowner. Among many diverse motivations, financial incentives are identified most frequently as a motivating factor (Figure 2.2) as they can reduce economic barriers to participation, encourage participation in conservation programmes from individuals who lack the interest or financial means to participate, and improve landowners' capacity for long-term conservation stewardship (Race & Curtis, 2013; Selinske *et al.*, 2017). Additionally, the high costs and negative economic impacts associated with participation are identified as barriers to participation most often (Figure 2.4). Policymakers therefore need to reduce the economic burden of participation and ensure financial incentives are sufficient to offset participation costs to maximise landowner participation, and thus maximise the environmental potential of conservation programmes. Second is that one of the main reasons landowners participate in private land conservation programmes and approaches is because they are motivated by a desire to improve nature on their land and contribute towards wider environmental goals (Figure 2.2). To harness this passion, private land conservation programmes should emphasise the nature conservation benefits associated with participation to attract nature-motivated landowners.

2.6. Supplementary Information

Supplementary Table 2.1: The 404 studies included in the review investigating the “motivations”, “barriers”, landowner and land “characteristic” factors that influence participation in the different types of private land conservation programmes and approaches that exist globally.

Author and date	Title	Type of factor(s) investigated
(Fleury <i>et al.</i> 2015)	"Flowering Meadows", a result-oriented agri-environmental measure: Technical and value changes in favour of biodiversity	Motivations
(Wollstein & Davis, 2017)	A "hammer held over their heads": voluntary conservation spurred by the prospect of regulatory enforcement in Oregon	Motivations
(Moon & Cocklin, 2011)	A Landholder-Based Approach to the Design of Private-Land Conservation Programs	Motivations
(Hounscome <i>et al.</i> , 2006)	A note on the effect of farmer mental health on adoption: The case of agri-environment schemes	Characteristics
(Ito <i>et al.</i> 2018)	A Policy Evaluation of the Direct Payment Scheme for Collective Stewardship of Common Property Resources in Japan	Characteristics & Motivations
(Lambert <i>et al.</i> 2014)	A study of cattle producer preferences for best management practices in an East Tennessee watershed	Characteristics
(Petrzelka <i>et al.</i> , 2012)	Absentee landowners and conservation programs: Mind the gap	Barriers & Characteristics
(Del Corso <i>et al.</i> , 2017)	Acceptance of a Payment for Ecosystem Services Scheme: The Decisive Influence of Collective Action	Motivations
(Mohebalian & Aguilar, 2016)	Additionality and design of forest conservation programs: Insights from Ecuador's Socio Bosque Program	Characteristics
(Macgregor & Warren, 2006)	Adopting sustainable farm management practices within a Nitrate Vulnerable Zone in Scotland: The view from the farm	Barriers & Motivations
(D'Souza & Mishra, 2018)	Adoption and Abandonment of Partial Conservation Technologies in Developing Economies: The Case of South Asia	Characteristics

(Manda <i>et al.</i> 2016)	Adoption and impacts of sustainable agricultural practices on maize yields and incomes: Evidence from rural Zambia	Characteristics
(Arslan <i>et al.</i> 2014)	Adoption and intensity of adoption of conservation farming practices in Zambia	Barriers & Characteristics
(Gailhard <i>et al.</i> , 2015)	Adoption of Agri-Environmental Measures by Organic Farmers: The Role of Interpersonal Communication	Characteristics
(Finger & Lehmann, 2012)	Adoption of agri-environmental programmes in Swiss Crop production	Characteristics
(Cross <i>et al.</i> 2011)	Adoption of conservation easements among agricultural landowners in Colorado and Wyoming: The role of economic dependence and sense of place	Barriers, Characteristics, Motivations
(Ashoori <i>et al.</i> , 2017)	Adoption of conservation farming practices for sustainable rice production among small-scale paddy farmers in northern Iran	Characteristics
(Mitchell <i>et al.</i> 2007)	Adoption of conservation tillage in California: current status and future perspectives	Barriers
(Wang <i>et al.</i> 2016)	Adoption of eco-friendly soil-management practices by smallholder farmers in Shandong Province of China	Characteristics & Motivations
(Alarima <i>et al.</i> 2018)	Adoption of sawah eco-technology in rice production by farm households in Kebbi State, Nigeria	Characteristics
(Mugonola <i>et al.</i> 2013)	Adoption of soil and water conservation technologies in the Rwizi catchment of south western Uganda	Characteristics
(Wauters <i>et al.</i> 2010)	Adoption of soil conservation practices in Belgium: An examination of the theory of planned behaviour in the agri-environmental domain	Barriers
(Gachango <i>et al.</i> , 2015)	Adoption of voluntary water-pollution reduction technologies and water quality perception among Danish farmers	Characteristics
(Schroeder <i>et al.</i> 2013)	Agri-environment schemes: Farmers' acceptance and perception of potential 'Payment by Results' in grassland - A case study in England	Barriers & Characteristics
(Juhasz 2014)	Agri-Environmental Management in Southern Ontario: Enhanced Program Participation through Better Understanding of Dairy Farmers' Social Dynamics	Characteristics

(Bertoni <i>et al.</i> 2008)	Agri-Environmental Measures Adoption: New Evidence from Lombardy Region	Characteristics
(Yeboah <i>et al.</i> , 2015)	Agricultural landowners' willingness to participate in a filter strip program for watershed protection	Characteristics & Motivations
(Leite <i>et al.</i> 2014)	Agricultural production and sustainable development in a Brazilian region (Southwest, Sao Paulo State): motivations and barriers to adopting sustainable and ecologically friendly practices	Barriers, Characteristics, Motivations
(Perez-Espejo <i>et al.</i> , 2011)	Agriculture and Water Pollution: Farmers' Perceptions in Central Mexico	Characteristics
(Lawrence <i>et al.</i> 1992)	Agroforestry practices of nonindustrial private forest landowners in Washington-state	Barriers
(Addison & Pavey, 2017)	Alignment between values of dryland pastoralists and conservation needs for small mammals	Barriers
(Rochecouste <i>et al.</i> 2015)	An analysis of the socio-economic factors influencing the adoption of conservation agriculture as a climate change mitigation activity in Australian dryland grain production	Motivations
(McLean-Meyinsse <i>et al.</i> , 1994)	An Empirical Analysis of Louisiana Small Farmers' Involvement in the CRP	Barriers & Motivations
(Kauneckis & York, 2009)	An Empirical Evaluation of Private Landowner Participation in Voluntary Forest Conservation Programs	Barriers & Characteristics
(Horton <i>et al.</i> 2017)	An evaluation of landowners' conservation easements on their livelihoods and well-being	Barriers & Motivations
(Murphy <i>et al.</i> 2014)	An investigation into the type of farmer who chose to participate in Rural Environment Protection Scheme (REPS) and the role of institutional change in influencing scheme effectiveness	Characteristics
(Gatto <i>et al.</i> , 2019)	Analysing the role of factors affecting farmers' decisions to continue with agri-environmental schemes from a temporal perspective	Characteristics & Motivations

(Veisi <i>et al.</i> 2009)	Analyzing the Causes of Non-adoption of IPM Technologies Among Rice Farmers in Mazandaran and Guilan Provinces	Barriers
(Jellinek <i>et al.</i> 2013)	Are incentive programs working? Landowner attitudes to ecological restoration of agricultural landscapes	Characteristics
(Raymond & Brown 2011a)	Assessing conservation opportunity on private land: socio-economic, behavioral, and spatial dimensions	Characteristics & Motivations
(Schroeder 2012)	Assessing farmers' acceptance and perception of agri-environment schemes by ex-post application of the 'Theory of Planned Behaviour' A case study in England	Barriers & Motivations
(Siebert <i>et al.</i> 2010)	Assessing German farmers' attitudes regarding nature conservation set-aside in regions dominated by arable farming	Barriers, Characteristics, Motivations
(Jacobson 2003)	Assessment of farmer attitudes and behavioral intentions toward bird conservation on organic and conventional Florida farms	Characteristics
(Pötsch & Groier, 2005)	Attitude of Austrian farmers towards agro-environmental programs and aspects of nature conservation	Barriers
(Natural England 2012)	Attitudes to Uplands Entry Level Stewardship	Barriers & Motivations
(Fisher <i>et al.</i> 2018)	Awareness and adoption of conservation agriculture in Malawi: what difference can farmer-to-farmer extension make?	Characteristics
(Kagoya <i>et al.</i> , 2018)	Awareness and Adoption of Soil and Water Conservation Technologies in a Developing Country: A Case of Nabajuzi Watershed in Central Uganda	Characteristics
(Drost <i>et al.</i> 1996)	Barriers to adopting sustainable agriculture practices	Barriers
(Rodriguez <i>et al.</i> 2009)	Barriers to adoption of sustainable agriculture practices: Change agent perspectives	Barriers
(Mills <i>et al.</i> 2020)	Barriers to and opportunities for the uptake of soil carbon management practices in European sustainable agricultural production	Barriers
(Sharifi <i>et al.</i> 2010)	Barriers to conversion to organic farming: A case study in Babol County in Iran	Barriers

(Markowski-Lindsay <i>et al.</i> 2011)	Barriers to Massachusetts Forest Landowner Participation in Carbon Markets	Barriers
(Johnson <i>et al.</i> 2018)	Barriers to PES programs in Indigenous communities: A lesson in land tenure insecurity from the Hopi Indian reservation	Barriers
(Fisher 1989)	Barriers to the adoption of organic farming in Canterbury	Barriers, Characteristics, Motivations
(Carolan 2005)	Barriers to the adoption of sustainable agriculture on rented land: an examination of contesting social fields	Barriers
(Łuczka & Kalinowski, 2020)	Barriers to the Development of Organic Farming: A Polish Case Study	Barriers & Motivations
(Fischer & Bliss, 2008)	Behavioral assumptions of conservation policy: Conserving oak habitat on family-forest land in the Willamette Valley, Oregon	Motivations
(Filson <i>et al.</i> 2009)	Beneficial Management Practice Adoption in Five Southern Ontario Watersheds	Barriers & Characteristics
(Wossink 2003)	Biodiversity conservation by farmers: analysis of actual and contingent participation	Characteristics
(Ruseva <i>et al.</i> , 2015)	Can incentives make a difference? Assessing the effects of policy tools for encouraging tree-planting on private lands	Characteristics & Motivations
(Holden <i>et al.</i> 2018)	Can lead farmers reveal the adoption potential of conservation agriculture? The case of Malawi	Barriers & Characteristics
(Ernst & Wallace, 2008)	Characteristics, motivations, and management actions of landowners engaged in private land conservation in Larimer County Colorado	Characteristics & Motivations
(Lynch & Lovell, 2003)	Combining Spatial and Survey Data to Explain Participation in Agricultural Land reservation Programs	Characteristics
(Van Rensburg <i>et al.</i> , 2009)	Commonage land and farmer uptake of the rural environment protection scheme in Ireland	Characteristics

(King <i>et al.</i> , 2017)	Community-Based Grazing Marketing: Barriers and Benefits Related to the Adoption of Best Management Practices in Grazing Systems	Barriers
(Perry-Hill & Prokopy, 2014)	Comparing different types of rural landowners: Implications for conservation practice adoption	Barriers & Characteristics
(Moon 2013)	Conditional and resistant non-participation in market-based land management programs in Queensland, Australia	Barriers
(Gosling & Williams, 2010)	Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers	Motivations
(Sumner <i>et al.</i> , 2017)	Conservation agriculture and gendered livelihoods in Northwestern Cambodia: decision-making, space and access	Characteristics
(Penot <i>et al.</i> 2018)	Conservation Agriculture to buffer and alleviate the impact of climatic variations in Madagascar: farmers' perception	Barriers
(Conradie <i>et al.</i> 2013)	Conservation begins after breakfast: The relative importance of opportunity cost and identity in shaping private landholder participation in conservation	Characteristics
(Mann 2018)	Conservation by Innovation: What Are the Triggers for Participation Among Swiss Farmers?	Characteristics & Motivations
(Greiner <i>et al.</i> , 2008)	Conservation covenants and conservation management agreements in the NT: a pastoralists' perspective	Barriers & Motivations
(Cumming 2007)	Conservation incentives for private commercial farmers in the Thicket Biome, Eastern Cape, South Africa	Barriers & Motivations
(Xie <i>et al.</i> 2018)	Conservation Payments, Off-Farm Labor, and Ethnic Minorities: Participation and Impact of the Grain for Green Program in China	Characteristics
(Lubell <i>et al.</i> 2013)	Conservation Program Participation and Adaptive Rangeland Decision-Making	Characteristics
(Gould <i>et al.</i> , 1989)	Conservation tillage: the role of farm and operator characteristics and perception of soil erosion	Characteristics
(Greiner 2016)	Contract preferences and psychological determinants of participation in agri-environment schemes	Motivations
(Underwood <i>et al.</i> 2011)	Contributions of Private Landowners to the Conservation of the Gopher Tortoise (<i>Gopherus polyphemus</i>)	Barriers

(Darnhofer <i>et al.</i> , 2005)	Converting or not converting to organic farming in Austria: Farmer types and their rationale	Barriers & Motivations
(Molnar <i>et al.</i> , 2001)	Core Conservation Practices: Adoption Barriers Perceived by Small and Limited-Resource Farmers	Barriers & Characteristics
(Arbuckle & Roesch-McNally, 2015)	Cover crop adoption in Iowa: The role of perceived practice characteristics	Barriers, Characteristics, Motivations
(Manley & Mathias, 2015)	CREP: Cattle Receiving Enhanced Pastures? Investigating Landowner Response to Federal Incentives	Characteristics
(Amsalu & de Graaff, 2007)	Determinants of adoption and continued use of stone terraces for soil and water conservation in an Ethiopian highland watershed	Characteristics
(Grabowski <i>et al.</i> 2016)	Determinants of adoption and disadoption of minimum tillage by cotton farmers in eastern Zambia	Barriers & Motivations
(Toma & Mathijs, 2005)	Determinants of Romanian Farmers' Participation in Agri-Environmental Programmes	Characteristics
(Vanslebrouck <i>et al.</i> , 2002)	Determinants of the willingness of Belgian farmers to participate in agri-environmental measures	Barriers & Characteristics
(Rodríguez-Entrena <i>et al.</i> , 2014)	Determining economic and social factors in the adoption of cover crops under mower control in olive groves	Characteristics
(Pasquini <i>et al.</i> 2010)	Devising appropriate policies and instruments in support of private conservation areas: lessons learned from the Klein Karoo, South Africa	Barriers & Motivations
(Tambo & Mockshell, 2018)	Differential Impacts of Conservation Agriculture Technology Options on Household Income in Sub-Saharan Africa	Characteristics
(Korhonen <i>et al.</i> , 2013)	Diffusion of voluntary protection among family forest owners: Decision process and success factors	Motivations
(Bell <i>et al.</i> 2018)	Do As They Did: Peer Effects Explain Adoption of Conservation Agriculture in Malawi	Motivations
(Coent <i>et al.</i> , 2018)	Do farmers follow the herd? The influence of social norms in the participation to agri-environmental schemes	Characteristics

(Murphy <i>et al.</i> 2011)	Do farmers in Agri-Environmental Schemes make appropriate ecological choices for the habitats on their farms? Modelling the biodiversity undertakings chosen within the Irish Rural Environment Protection Scheme	Characteristics
(Yasué & Kirkpatrick, 2018)	Do financial incentives motivate conservation on private land?	Characteristics & Motivations
(Suter <i>et al.</i> , 2008)	Do Landowners Respond to Land Retirement Incentives? Evidence from the Conservation Reserve Enhancement Program	Characteristics
(De Martino <i>et al.</i> 2016)	Do They Do As They Say? Stated versus Revealed Preferences and Take Up in an Incentives for Conservation Program	Barriers & Motivations
(Ng'ombe <i>et al.</i> , 2017)	Does adoption of conservation farming practices result in increased crop revenue? Evidence from Zambia	Characteristics
(Campbell <i>et al.</i> , 2011)	Does collaboration promote grass-roots behavior change? Farmer adoption of best management practices in two watersheds	Characteristics
(Barreiro-Hurlé <i>et al.</i> , 2010)	Does intensity of change matter? Factors affecting adoption of agri-environmental schemes in Spain	Characteristics
(Toorminae <i>et al.</i> 2017)	Double cropping in paddy fields of northern Iran: Current trends and determinants of adoption	Characteristics
(Bravo-Monroy <i>et al.</i> , 2016)	Drivers influencing farmer decisions for adopting organic or conventional coffee management practices	Characteristics
(Garini <i>et al.</i> 2017)	Drivers of adoption of agroecological practices for winegrowers and influence from policies in the province of Trento, Italy	Motivations
(Blackmore & Doole, 2013)	Drivers of landholder participation in tender programs for Australian biodiversity conservation	Characteristics & Motivations
(Paloniemi & Tikka, 2008)	Ecological and social aspects of biodiversity conservation on private lands	Motivations
(Langholz <i>et al.</i> 2000)	Economic considerations of privately owned parks	Motivations
(Grillos 2017)	Economic vs non-material incentives for participation in an in-kind payments for ecosystem services program in Bolivia	Characteristics & Motivations
(Langholz 1996)	Economics, objectives, and success of private nature reserves in sub-Saharan Africa and Latin America	Motivations

(Raedeke <i>et al.</i> , 2001)	Ecosystem management and landowner concern about regulations: A case study in the Missouri Ozarks	Barriers
(Wynne-Jones 2013)	Ecosystem Service Delivery in Wales: Evaluating Farmers' Engagement and Willingness to Participate	Motivations
(Keenan <i>et al.</i> , 2019)	Ecosystem services in environmental policy: Barriers and opportunities for increased adoption	Barriers
(Kramer & Jenkins, 2009)	Ecosystem services, markets, and red wolf habitat: results from a farm operator survey	Barriers
(Ramsey <i>et al.</i> 2019)	Effects of Farmers' Yield-Risk Perceptions on Conservation Practice Adoption in Kansas	Characteristics
(Van Herzele <i>et al.</i> 2013)	Effort for money? Farmers' rationale for participation in agri-environment measures with different implementation complexity	Motivations
(Sheeder & Lynne, 2011)	Empathy-conditioned conservation: "Walking in the Shoes of Others" as a Conservation Farmer	Characteristics
(Messick 2020)	Endangered Species Conservation and Private Landowners: Investigating Landowner Participation in a Safe Harbor Agreement	Barriers & Motivations
(Meadows <i>et al.</i> , 2014)	Engaging Australian small-scale lifestyle landowners in natural resource management programmes – Perceptions, past experiences	Barriers & Motivations
(Mills <i>et al.</i> 2017)	Engaging farmers in environmental management through a better understanding of behaviour	Motivations
(Lant <i>et al.</i> , 1995)	Enrollment of filter strips and recharge areas in the CRP and USDA easement programs	Barriers
(McCann <i>et al.</i> 1997)	Environmental awareness, economic orientation, and farming practices: a comparison of organic and conventional farmers	Characteristics
(Smithers & Furman, 2003)	Environmental farm planning in Ontario: exploring participation and the endurance of change	Motivations
(Toma & Mathijs, 2007)	Environmental risk perception, environmental concern and propensity to participate in organic farming programmes	Characteristics
(Luo <i>et al.</i> 2016)	Environmentally-friendly agricultural practices and their acceptance by smallholder farmers in China - A case study in Xinxiang County, Henan Province	Barriers
(Zhong <i>et al.</i> 2016)	Essays on farmer willingness to participate in best management practices in the Kentucky River watershed	Characteristics
(Bonnieux <i>et al.</i> , 1998)	Estimating the Supply of Environmental Benefits by Agriculture: A French Case Study	Characteristics

(Defra, 2007)	Evaluation of the Introduction and Operation of Environmental Stewardship	Barriers & Motivations
(Khanal <i>et al.</i> 2019)	Examining organic, agritourism, and agri-environmental diversification decisions of American farms: are these decisions interlinked?	Characteristics
(Foley 2013)	Examining the voluntary adoption of agricultural conservation practices in northern Malheur Country, Oregon	Barriers & Motivations
(Burton <i>et al.</i> , 2008)	Exploring farmers' cultural resistance to voluntary agri-environmental schemes	Barriers
(Triste <i>et al.</i> 2018)	Exploring participation in a sustainable farming initiative with self-determination theory	Motivations
(Grammatikopoulou <i>et al.</i> , 2016)	Exploring the determinants for adopting water conservation measures. What is the tendency of landowners when the resource is already at risk?	Characteristics
(Veisi 2012)	Exploring the determinants of adoption behaviour of clean technologies in agriculture (case of integrated pest management)	Characteristics
(Veisi <i>et al.</i> , 2017)	Exploring the motivations and problems of farmers for conversion to organic farming in Iran	Barriers & Motivations
(Kunzekweguta <i>et al.</i> , 2017)	Factors affecting adoption and intensity of conservation agriculture techniques applied by smallholders in Masvingo district, Zimbabwe	Characteristics
(Brodt <i>et al.</i> 2009)	Factors affecting adoption of hedgerows and other biodiversity-enhancing features on farms in California, USA	Barriers, Characteristics, Motivations
(Rolfe & Gregg, 2015)	Factors affecting adoption of improved management practices in the pastoral industry in Great Barrier Reef catchments	Barriers
(Sattler & Nagel, 2010)	Factors affecting farmers' acceptance of conservation measures-A case study from north-eastern Germany	Motivations
(Defrancesco <i>et al.</i> 2008)	Factors affecting farmers' participation in agri-environmental measures: a northern Italian perspective	Characteristics
(Welsh <i>et al.</i> , 2018)	Factors affecting landowner enrollment in wetland restoration in northeastern New York State	Motivations

(Womack 2008)	Factors affecting landowner participation in the candidate conservation agreements with assurances program	Barriers & Motivations
(Willcocks 2016)	Factors affecting participation in group agri-environment schemes: a case study of the Dartmoor Commons	Motivations
(Wandel & Smithers, 2000)	Factors affecting the adoption of conservation tillage on clay soils in Southwestern Ontario, Canada	Barriers, Characteristics, Motivations
(Alarima <i>et al.</i> 2011)	Factors affecting the adoption of sawah technology system of rice production in Nigeria	Barriers & Characteristics
(McDowell 1988)	Factors affecting the conservation of renosterveld by private landholders	Characteristics
(Camboni & Napier, 1993)	Factors affecting use of conservation farming practices in east central Ohio	Characteristics & Motivations
(Soltani <i>et al.</i> , 2018)	Factors affecting Willingness to Accept compensation for crops conversion programs: a farm level study in Tunisia	Characteristics
(Ma <i>et al.</i> 2012)	Factors associated with landowner involvement in forest conservation programs in the US: Implications for policy design and outreach	Characteristics
(Miller <i>et al.</i> 2011)	Factors Impacting Agricultural Landowners' Willingness to Enter into Conservation Easements: A Case Study	Barriers
(Featherstone & Goodwin, 1982)	Factors influencing a farmer's decision to invest in long-term conservation improvements	Characteristics
(Wilson 1997)	Factors influencing farmer participation in the environmentally sensitive areas scheme	Barriers, Characteristics, Motivations
(Schenk <i>et al.</i> , 2007)	Factors influencing the acceptance of nature conservation methods - a qualitative study in Switzerland	Barriers & Motivations
(Rouleau <i>et al.</i> 2016)	Failure to Communicate: Inefficiencies in Voluntary Incentive Programs for Private Forest Owners in Michigan	Barriers

(Bell <i>et al.</i> 2019)	Family-forest owner decisions, landscape context, and landscape change	Characteristics
(Peerlings & Polman, 2009)	Farm choice between agri-environmental contracts in the European union	Characteristics
(Gailhard & Bojnec, 2015)	Farm size and participation in agri-environmental measures: Farm-level evidence from Slovenia	Characteristics
(Falconer 2000)	Farm-level constraints on agri-environmental scheme participation: a transactional perspective	Barriers
(Mills <i>et al.</i> 2013)	Farmer attitudes and evaluation of outcomes to on-farm environmental management	Barriers & Motivations
(Quillérou <i>et al.</i> , 2011)	Farmer Compensation and its Consequences for Environmental Benefit Provision in the Higher Level Stewardship Scheme	Characteristics
(Wilson 1996)	Farmer environmental attitudes and ESA participation	Characteristics & Motivations
(de Krom 2017)	Farmer participation in agri-environmental schemes: Regionalisation and the role of bridging social capital	Motivations
(Wilson & Hart, 2001)	Farmer participation in agri-environmental schemes: towards conservation-oriented thinking?	Barriers & Motivations
(Reimer & Prokopy, 2014)	Farmer Participation in U.S. Farm Bill Conservation Programs	Barriers & Motivations
(Potter & Gasson, 1988)	Farmer participation in voluntary land diversion schemes: some predictions from a survey	Barriers & Motivations
(Guillem & Barnes, 2013)	Farmer perceptions of bird conservation and farming management at a catchment level	Motivations
(McCann & Claassen, 2016)	Farmer Transaction Costs of Participating in Federal Conservation Programs: Magnitudes and Determinants	Barriers & Characteristics
(Cross & Franks, 2007)	Farmer's and advisor's attitudes towards the Environmental Stewardship Scheme	Barriers & Motivations
(Mzoughi 2011)	Farmers adoption of integrated crop protection and organic farming: Do moral and social concerns matter?	Characteristics

(Ryan <i>et al.</i> , 2003)	Farmers motivations for adopting conservation practices along riparian zones in a midwestern agricultural watershed	Motivations
(Page & Bellotti, 2015)	Farmers value on-farm ecosystem services as important, but what are the impediments to participation in PES schemes?	Barriers & Motivations
(Finger & El Benni, 2013)	Farmers' adoption of extensive wheat production – determinants and implications	Characteristics
(Zhang <i>et al.</i> 2015)	Farmers' attitudes towards the introduction of agri-environmental measures in agricultural infrastructure projects in China: Evidence from Beijing and Changsha	Barriers
(Cordeau <i>et al.</i> , 2011)	Farmers' fears and agro-economic evaluation of sown grass strips in France	Barriers
(Dupraz <i>et al.</i> , 2002)	Farmers' participation in European agri-environmental policies	Characteristics
(Vanslebrouck 2005)	Farmers' Participation in Several Agri-Environmental Schemes: A European Perspective	Characteristics
(Ntshangase <i>et al.</i> , 2018)	Farmers' Perceptions and Factors Influencing the Adoption of No-Till Conservation Agriculture by Small-Scale Farmers in Zashuke, KwaZulu-Natal Province	Characteristics
(Wezel <i>et al.</i> 2018)	Farmers' perceptions, preferences, and propositions for result-oriented measures in mountain farming	Barriers & Motivations
(Alló <i>et al.</i> , 2015)	Farmers' preferences and social capital regarding agri-environmental schemes to protect birds	Barriers & Motivations
(Kisaka & Obi, 2015)	Farmers' Preferences for Management Options as Payment for Environmental Services Scheme	Characteristics
(Genghini <i>et al.</i> , 2002)s	Farmers' attitudes toward the carrying out of wildlife habitat improvement actions (WHIA) in intensive agricultural areas of Northern Italy	Characteristics
(Greiner & Gregg, 2011)	Farmers' intrinsic motivations, barriers to the adoption of conservation practices and effectiveness of policy instruments: empirical evidence from northern Australia	Barriers & Motivations
(Damianos & Giannakopoulos, 2002)	Farmers' participation in agri-environmental schemes in Greece	Characteristics

(Van der Meulen <i>et al.</i> , 1996)	Farmers' perception of unsprayed crop edges in the Netherlands	Motivations
(Rois-Díaz <i>et al.</i> 2018)	Farmers' reasoning behind the uptake of agroforestry practices: evidence from multiple case-studies across Europe	Barriers & Motivations
(Saxby <i>et al.</i> , 2018)	Farming on the Edge': Wellbeing and Participation in Agri-Environmental Schemes	Motivations
(Vollmer-Sanders <i>et al.</i> , 2011)	Financial and environmental consequences of a voluntary farm environmental assurance program in Michigan	Motivations
(Wilson & Hart, 2000)	Financial imperative or conservation concern? EU farmers' motivations for participation in voluntary agri-environmental schemes	Barriers & Motivations
(Mitani & Lindhjem, 2015)	Forest Owners' Participation in Voluntary Biodiversity Conservation: What Does It Take to Forgo Forestry for Eternity?	Barriers, Characteristics, Motivation
(Campera <i>et al.</i> 2021)	Fostering a Wildlife-Friendly Program for Sustainable Coffee Farming: The Case of Small-Holder Farmers in Indonesia	Barriers
(Buckley & de Vasconcellos Pegas, 2015)	Four hurdles for conservation on private land: the case of the golden lion tamarin in Brazil's Atlantic Forest	Barriers
(Posthumus <i>et al.</i> , 2010)	From participation to adoption: comparing the effectiveness of soil conservation programs in the Peruvian Andes	Characteristics
(Parks <i>et al.</i> , 2014)	Gender and conservation agriculture: constraints and opportunities in the Philippines	Barriers
(Manley & Mathias, 2012)	Getting the Most for Federal Dollars: Landowner Responsiveness to Conservation Incentives	Characteristics
(Markwell & Fellows, 2008)	Habitat and biodiversity of on-farm water storages: A case study in Southeast Queensland, Australia	Motivations
(Mudaca <i>et al.</i> 2015)	Household participation in Payments for Ecosystem Services: A case study from Mozambique	Characteristics & Motivations
(Di Falco & Veronesi, 2013)	How can African agriculture adapt to climate change? A counterfactual analysis from Ethiopia	Characteristics
(Matzdorf & Lorenz, 2010)	How cost-effective are result-oriented agri-environmental measures? An empirical analysis in Germany	Characteristics

(Silva & Mosimane, 2014)	How could I live here and not be a member? Economic versus social drivers of participation in Namibian conservation programs	Barriers & Motivations
(Yuan <i>et al.</i> 2017)	Identification of Non-Economic Influencing Factors Affecting Farmer's Participation in the Paddy Land-to-Dry Land Program in Chicheng County, China	Characteristics
(Coyne <i>et al.</i> 2021)	Identifying economic and societal drivers of engagement in agri-environmental schemes for English dairy producers	Barriers & Motivations
(Karali <i>et al.</i> 2014)	Identifying the Factors That Influence Farmer Participation in Environmental Management Practices in Switzerland	Motivations
(Parker 2006)	Incentives and disincentives for conserving renosterveld remnants and the potential impacts of property rate rebates	Motivations
(Franks & Emery, 2013)	Incentivising collaborative conservation: Lessons from existing environmental Stewardship Scheme options	Barriers
(Ingram <i>et al.</i> 2013)	Incorporating agri-environment schemes into farm development pathways: A temporal analysis of farmer motivations	Motivations
(Mary <i>et al.</i> 1998)	Incorporating agroforestry practices in the management of walnut plantations in Dauphine, France: an analysis of farmers' motivations	Motivations
(Chouinard <i>et al.</i> , 2016)	Inferences from sparse data: An integrated, meta-utility approach to conservation research	Characteristics & Motivations
(Kabii 2004)	Influences on the uptake of covenant mechanisms for nature conservation on private lands in Australia	Barriers, Characteristics, Motivations
(Crabtree <i>et al.</i> , 1998)	Information for policy design: modelling participation in a farm woodland incentive scheme	Characteristics
(Schirmer <i>et al.</i> , 2012)	Informing conservation policy design through an examination of landholder preferences: A case study of scattered tree conservation in Australia	Characteristics
(Morrison & Lockwood, 2014)	Informing Program Design for Connectivity Conservation in the New South Wales Southern Highlands, Australia	Barriers & Motivations

(Polman & Slangen, 2008)	Institutional design of agri-environmental contracts in the European Union: the role of trust and social capital	Characteristics & Motivations
(Gutwein & Goldstein, 2013)	Integrating Conservation and Financial Objectives on Private Rangelands in Northern Colorado: Rancher and Practitioner Perceptions	Barriers
(Parker 2013)	Integrating culture and community into environmental policy: community tradition and farm size in conservation decision making	Characteristics
(Raymond <i>et al.</i> 2016)	Integrating different understandings of landscape stewardship into the design of agri-environmental schemes	Barriers
(Asbjorsen <i>et al.</i> 2017)	Interactions between payments for hydrologic services, landowner decisions, and ecohydrological consequences: synergies and disconnection in the cloud forest zone of central Veracruz, Mexico	Motivations
(Stobbelaar <i>et al.</i> 2009)	Internalization of agri-environmental policies and the role of institutions	Motivations
(Mettepenningen <i>et al.</i> 2013)	Investigating the influence of the institutional organisation of agri-environmental schemes on scheme adoption	Characteristics
(Gebremedhin & Swinton, 2003)	Investment in soil conservation in northern Ethiopia: the role of land tenure security and public programs	Characteristics
(Hordowick 2001)	Involving landowners in wetland conservation: Barriers and motivations for action and implications for stewardship program planning	Barriers & Motivations
(Mishra & Khanal, 2013)	Is participation in agri-environmental programs affected by liquidity and solvency?	Characteristics
(Curtis & De Lacy, 1996)	Landcare in Australia: does it make a difference?	Motivations
(Curtis & Van Nouhuys, 1999)	Landcare participation in Australia: the volunteer perspective	Barriers, Characteristics, Motivations
(Morgan <i>et al.</i> 2015)	Landholder adoption of low emission agricultural practices: a profiling approach	Barriers & Motivations

(Mendham <i>et al.</i> , 2007)	Landholder participation in native vegetation management in irrigation areas	Barriers & Motivations
(Lute <i>et al.</i> 2018)	Landowner and Practitioner Perspectives on Private Land Conservation Programs	Barriers, Characteristics, Motivations
(Mitchell & Kimmel, 2009)	Landowner Attitudes and Perceptions Regarding Wildlife Benefits of the Conservation Reserve Program	Barriers & Motivations
(Kaetzel 2008)	Landowner Decisions and Motivations on the Tennessee Northern Cumberland Plateau: Willingness to Participate in Government Assistance Programs and Reasons for Owning Woodland	Characteristics
(Pradhananga <i>et al.</i> , 2015)	Landowner Motivations for Civic Engagement in Water Resource Protection	Motivations
(Rosenberg & Margerum, 2008)	Landowner motivations for watershed restoration: lessons from five watersheds	Barriers, Characteristics, Motivations
(Nielsen <i>et al.</i> , 2018)	Landowner participation in forest conservation programs: A revealed approach using register, spatial and contract data	Characteristics
(Cross 2009)	Landowner participation in the wetlands reserve program: evidence from nine Oklahoma counties	Barriers, Characteristics, Motivations
(Mathhews <i>et al.</i> 1993)	Landowner perceptions and the adoption of agroforestry practices in southern Ontario, Canada	Characteristics
(Stroman & Kreuter, 2016)	Landowner Satisfaction with the Wetland Reserve Program in Texas: A Mixed-Methods Analysis	Barriers & Characteristics
(Forshay <i>et al.</i> 2005)	Landowner satisfaction with the wetlands reserve program in Wisconsin	Motivations
(Barnes <i>et al.</i> 2019)	Landowners and the Conservation Reserve Program	Motivations
(Rilla 2002)	Landowners, while pleased with agricultural easements, suggest improvements	Motivations

(Hansson <i>et al.</i> , 2012)	Landowners' incentives for constructing wetlands in an agricultural area in south Sweden	Motivations
(Brook <i>et al.</i> , 2003)	Landowners' responses to an Endangered Species Act listing and implications for encouraging conservation	Barriers & Characteristics
(Harrington <i>et al.</i> , 2006)	Learning conservation: the role of conservation covenants in landscape redesign at Project Hindmarsh, Victoria	Motivations
(Mante & Gerowitt, 2009)	Learning from farmers' needs: Identifying obstacles to the successful implementation of field margin measures in intensive arable regions	Barriers & Motivations
(Bergtold & Molnar, 2010)	Limited Access to Conservation: Limited-Resource Farmer Participation in the Conservation Security Program in the Southeast	Characteristics
(Warren <i>et al.</i> 2016)	Limited adoption of short rotation coppice: The role of farmers' socio-cultural identity in influencing practice	Barriers
(Taylor & Van Grieken, 2015)	Local institutions and farmer participation in agri-environmental schemes	Barriers
(Selinske <i>et al.</i> 2017)	Locating financial incentives among diverse motivations for long-term private land conservation	Motivations
(Gruver <i>et al.</i> 2017)	Making Decisions About Forestland Succession: Perspectives from Pennsylvania's Private Forest Landowners	Motivations
(Giovanopoulou <i>et al.</i> , 2011)	Modeling farmer participation in agri-environmental nitrate pollution reducing schemes	Characteristics
(Wynn <i>et al.</i> , 2001)	Modelling Farmer Entry into the Environmentally Sensitive Area Schemes in Scotland	Barriers, Characteristics, Motivations
(Giannakis 2014)	Modelling farmers' participation in agri-environmental schemes in Greece	Characteristics
(Hynes & Garvey, 2009)	Modelling farmers' participation in an agri-environmental scheme using panel data: An application to the Rural Environment Protection Scheme in Ireland	Characteristics
(Selinske <i>et al.</i> 2019)	Monitoring and evaluating the social and psychological dimensions that contribute to privately protected area program effectiveness	Motivations

(Niemiec <i>et al.</i> 2016)	Motivating residents to combat invasive species on private lands: social norms and community reciprocity	Motivations
(García-Amado <i>et al.</i> , 2013)	Motivation for conservation: assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere reserve, Mexico, Chiapas	Motivations
(Greiner 2015)	Motivations and attitudes influence farmers' willingness to participate in biodiversity conservation contracts	Motivations
(Kragt <i>et al.</i> , 2017)	Motivations and barriers for Western Australian broad-acre farmers to adopt carbon farming	Barriers, Characteristics, Motivations
(Birge & Herzon, 2014)	Motivations and experiences in managing rare semi-natural biotopes: A case from Finland	Characteristics & Motivations
(Abdollahzadeh <i>et al.</i> , 2016)	Motivations for adopting biological control among Iranian rice farmers	Motivations
(Pfrimmer <i>et al.</i> 2017)	Motivations for Enrollment Into the Conservation Reserve Enhancement Program in the James River Basin of South Dakota	Motivations
(Home <i>et al.</i> 2014)	Motivations for implementation of ecological compensation areas on Swiss lowland farms	Barriers & Motivations
(Lokocz <i>et al.</i> , 2011)	Motivations for land protection and stewardship: Exploring place attachment and rural landscape character in Massachusettes	Motivations
(Gabel <i>et al.</i> 2018)	Motivations for Swiss lowland farmers to conserve biodiversity: Identifying factors to predict proportions of implemented ecological compensation areas	Motivations
(Farmer 2009)	Motivations for the adoption of a conservation easement: a Midwestern perspective	Motivations
(Farmer <i>et al.</i> , 2011)	Motivations for Using Conservation Easements as a Land Protection Mechanism: a Mixed Methods Analysis	Motivations
(Farmer <i>et al.</i> 2011)	Motivations Influencing the Adoption of Conservation Easements	Motivations
(Banack & Hvenegaard, 2010)	Motivations of landowners to engage in biodiversity-friendly farming practices in Alberta's central parkland region	Barriers & Motivations

(Corbett 2002)	Motivations to participate in riparian improvement programs - Applying the theory of planned behavior	Barriers, Characteristics, Motivations
(Greiner <i>et al.</i> , 2009)	Motivations, risk perceptions and adoption of conservation practices by farmers	Motivations
(Jenkins 1997)	Native vegetation on farm survey 1996 – a survey of farmers’ attitudes to native vegetation and landcare in the Wheatbelt of Western Australia	Barriers
(Holstead <i>et al.</i> 2017)	Natural flood management from the farmer’s perspective: criteria that affect uptake	Barriers & Motivations
(Birge & Fred, 2011)	New ideas for old landscapes: using a social-ecological approach for conservation of traditional rural biotopes - a case study from Finland	Characteristics
(Fisher 2012)	No pay, no care? A case study exploring motivations for participation in payment for ecosystem services in Uganda	Motivations
(Greene <i>et al.</i> , 2004)	Nonindustrial private forest owner use of federal income tax provisions	Barriers & Characteristics
(Kuhfuss <i>et al.</i> 2015)	Nudges, social norms, and permanence in agri-environmental schemes	Motivations
(Traore <i>et al.</i> , 1998)	On-Farm Adoption of Conservation Practices: The Role of Farm and Farmer Characteristics, Perceptions, and Health Hazards	Characteristics
(Farley <i>et al.</i> , 2017)	Opportunities and obstacles for rangeland conservation in San Diego County, California, USA	Barriers & Motivations
(Ulrich-Schad <i>et al.</i> 2016)	Out-of-state, out of mind? Non-operating farmland owners and conservation decision making	Barriers & Characteristics
(Moon & Cocklin, 2011b)	Participation in biodiversity conservation: motivations and barriers of Australian landholders	Barriers & Motivations

(Kosoy <i>et al.</i> , 2008)	Participation in payments for ecosystem services: Case studies from the Lacandon rainforest, Mexico	Barriers & Motivations
(Borsotto <i>et al.</i> 2008)	Participation in rural landscape conservation schemes in Italy	Characteristics
(Pascucci <i>et al.</i> 2013)	Participation of Italian farmers in rural development policy	Characteristics
(Pavlis <i>et al.</i> 2016)	Patterns of agri-environmental scheme participation in Europe: Indicative trends from selected case studies	Barriers, Characteristics, Motivations
(Garbach <i>et al.</i> , 2012)	Payment for Ecosystem Services: The roles of positive incentives and information sharing in stimulating adoption of silvopastoral conservation practice	Motivations
(Bottazzi <i>et al.</i> 2018)	Payment for Environmental “Self-Service”: Exploring the Links Between Farmers' Motivation and Additionality in a Conservation Incentive Programme in the Bolivian Andes	Motivations
(Van Hecken & Bastiaensen, 2010)	Payments for ecosystem services in Nicaragua: do market-based approaches work?	Barriers & Motivations
(Cheatum <i>et al.</i> 2011)	Payments for ecosystem services: a California rancher perspective	Barriers
(Cary & Wilkinson, 1997)	Perceived profitability and farmers' conservation behaviour	Motivations
(Farmer <i>et al.</i> 2016)	Perpetual private land conservation: the case for outdoor recreation and functional leisure	Characteristics
(Moon <i>et al.</i> , 2012)	Personal circumstances and social characteristics as determinants of landholder participation in biodiversity conservation programs	Barriers & Characteristics
(Marshall 2009)	Polycentricity, reciprocity, and farmer adoption of conservation practices under community-based governance	Characteristics
(Nettier <i>et al.</i> 2010)	Practices and motivation of farmers who sign contracts to preserve grassland biodiversity	Motivations
(Clements <i>et al.</i> , 2016)	Predators on private land: broad-scale socioeconomic interactions influence large predator management	Motivations
(Špur <i>et al.</i> , 2018)	Predictive model for meadow owners' participation in agri-environmental climate schemes in Natura 2000 areas	Characteristics
(Raymond <i>et al.</i> 2015)	Private land manager capacity to conserve threatened communities under climate change	Characteristics

(Rodriguez <i>et al.</i> 2012)	Private landowner interest in market-based incentive programs for endangered species habitat conservation	Characteristics
(Drescher <i>et al.</i> 2017)	Private landowners and environmental conservation: a case study of social-psychological determinants of conservation program participation in Ontario	Characteristics
(Farmer <i>et al.</i> 2017)	Private Landowners, Voluntary Conservation Programs, and Implementation of Conservation Friendly Land Management Practices	Characteristics
(Pasquini 2007)	Privately-owned lands and biodiversity conservation: analysing the role of Private Conservation Areas in the Little Karoo, South Africa	Motivations
(Lambert <i>et al.</i> 2007)	Profiles of US farm households adopting conservation-compatible practices	Characteristics
(Simmons <i>et al.</i> 2020)	Program Awareness, Social Capital, and Perceptions of Trees Influence Participation in Private Land Conservation Programs in Queensland, Australia	Barriers, Characteristics, Motivations
(Nagubadi <i>et al.</i> 1996)	Program participation behavior of nonindustrial forest landowners: a probit analysis	Characteristics
(Kreye <i>et al.</i> , 2018)	Protecting Imperilled Wildlife Species on Private Lands: Forest Owner Values and Response to Government Interventions	Barriers, Characteristics, Motivations
(Hansen <i>et al.</i> 2018)	Rancher Preferences for a Payment for Ecosystem Services Program in Southwestern Wyoming	Characteristics
(Morris 1993)	Recruiting farmers in conservation: an analysis of participation in agri-environmental schemes in lowland England	Barriers, Characteristics, Motivations
(Morris & Potter, 1995)	Recruiting the new conservationists: farmer's adoption of agri-environmental schemes in the UK	Barriers & Motivations
(Giomi <i>et al.</i> , 2018)	Reducing agrochemical use for nature conservation by Italian olive farmers: an evaluation of public and private governance strategies	Motivations

(Stuart <i>et al.</i> , 2014)	Reducing nitrogen fertilizer application as a climate change mitigation strategy: Understanding farmer decision-making and potential barriers to change in the US	Barriers
(Race & Curtis, 2013)	Reflections on the effectiveness of market-based instruments to secure long-term environmental gains in southeast Australia: understanding landholders' experiences	Barriers
(Russi <i>et al.</i> 2016)	Result-based agri-environment measures: Market-based instruments, incentives or rewards? The case of Baden-Wurttemberg	Barriers & Motivations
(Sorice 2012)	Retooling the traditional approach to studying the belief–attitude relationship: explaining landowner buy-in to incentive programs	Barriers & Motivations
(Roellig <i>et al.</i> 2016)	Reviving wood-pastures for biodiversity and people: A case study from western Estonia	Motivations
(Sorice <i>et al.</i> 2018)	Scaling participation in payments for ecosystem services programs	Motivations
(Jacobsen <i>et al.</i> 1991)	Selected characteristics of North Dakota farm families engaged in sustainable agricultural practices	Characteristics
(Grover & Gruver, 2017)	Slow to change': Farmers' perceptions of place-based barriers to sustainable agriculture	Barriers
(Gallagher 2018)	Small-scale farmers' intentions to carry out conservation-oriented agriculture through participation in the Entry-Level Stewardship Agri-Environment Scheme	Barriers & Motivations
(Nandi <i>et al.</i> 2015)	Smallholder organic farmer's attitudes, objectives and barriers towards production of organic fruits and vegetables in India: A multivariate analysis	Barriers & Motivations
(McCracken <i>et al.</i> 2015)	Social and ecological drivers of success in agri-environment schemes: the roles of farmers and environmental context	Motivations
(Januchowski-Hartley <i>et al.</i> 2012)	Social factors and private benefits influence landholders' riverine restoration priorities in tropical Australia	Barriers
(Huenchuleo <i>et al.</i> , 2012)	Social psychology predictors for the adoption of soil conservation measures in Central Chile	Barriers & Characteristics
(Risgaard <i>et al.</i> , 2007)	Socio-cultural processes behind the differential distribution of organic farming in Denmark: a case study	Motivations
(Battershill & Gilg, 1997)	Socio-economic constraints and environmentally friendly farming in the Southwest of England	Characteristics

(Bekele & Drake, 2003)	Soil and water conservation decision behavior of subsistence farmers in the Eastern Highlands of Ethiopia: a case study of the Hunde-Lafto area	Characteristics
(Boncinelli <i>et al.</i> 2016)	Spatial analysis of the participation in agri-environment measures for organic farming	Characteristics
(Yang & Sharp, 2017)	Spatial Dependence and Determinants of Dairy Farmers' Adoption of Best Management Practices for Water Protection in New Zealand	Barriers, Characteristics, Motivations
(Buckley <i>et al.</i> , 2012)	Supply of an ecosystem service - Farmers' willingness to adopt riparian buffer zones in agricultural catchments	Barriers
(Hillis <i>et al.</i> , 2018)	Sustainability partnerships and viticulture management in California	Characteristics
(Kennedy <i>et al.</i> , 2016)	Sustainable Grassland Management: An Exploratory Study of Progressive Ranchers in Nebraska	Motivations
(Unay-Gailhard & Bojnec, 2016)	Sustainable participation behaviour in agri-environmental measures	Characteristics
(Sereke <i>et al.</i> 2016)	Swiss farmers don't adopt agroforestry because they fear for their reputation	Barriers & Motivations
(Nowak 1987)	The adoption of agricultural conservation technologies: economic and diffusion explanations	Characteristics
(Vitale <i>et al.</i> 2011)	The adoption of conservation tillage practices in Oklahoma: Findings from a producer survey	Characteristics
(Laney & Moses, 2021)	The adoption of wildlife practices through a payments-for-environmental-services (PES) agri-environment scheme	Barriers, Characteristics, Motivations
(Hammes <i>et al.</i> 2016)	The attitude of grassland farmers towards nature conservation and agri-environment measures - A survey-based analysis	Barriers & Characteristics
(Whitby 2018)	The barriers to, and opportunities for, restoring wetland ecological function on privately-owned New Zealand farms	Barriers, Characteristics, Motivations

(Honig <i>et al.</i> 2015)	The conditions under which farmers are likely to adapt their behaviour: A case study of private land conservation in the Cape Wine lands, South Africa	Motivations
(Potter & Lobley, 1992)	The conservation status and potential of elderly farmers: results from a survey in England and Wales	Characteristics & Motivations
(Kaufmann <i>et al.</i> 2011)	The Diffusion of Organic Farming in Lithuania	Barriers, Characteristics, Motivations
(Bayard <i>et al.</i> , 2007)	The economics of adoption and management of alley cropping in Haiti	Characteristics
(Kim <i>et al.</i> , 2004)	The Effect of Economic Factors on the Adoption of Best Management Practices in Beef Cattle Production	Barriers & Characteristics
(Karali <i>et al.</i> 2013)	The Effect of Farmer Attitudes and Objectives on the Heterogeneity of Farm Attributes and Management in Switzerland	Motivations
(Murphy & Galway, 2013)	The impact of farmers' implementation decisions on environmental effectiveness in the Rural Environment Protection Scheme (REPS)	Characteristics
(Comerford 2013)	The impact of permanent protection on cost and participation in a conservation programme: A case study from Queensland	Barriers, Characteristics, Motivations
(Mould <i>et al.</i> , 2020)	The importance of relational values in river management: understanding enablers and barriers for effective participation	Barriers & Motivations
(Reimer <i>et al.</i> , 2012)	The influence of perceptions of practice characteristics: An examination of agricultural best management practice adoption in two Indiana watersheds	Barriers & Motivations
(Pedzisa <i>et al.</i> 2015)	The Intensity of adoption of Conservation agriculture by smallholder farmers in Zimbabwe	Characteristics
(van den Born <i>et al.</i> 2018)	The missing pillar: Eudemonic values in the justification of nature conservation	Motivations
(Torabi <i>et al.</i> 2016)	The money or the trees: What drives landholders' participation in biodiverse carbon plantings?	Motivations

(Peterson <i>et al.</i> 2012)	The Motivation for Organic Grain Farming in the United States: Profits, Lifestyle, or the Environment?	Motivations
(Cranfield <i>et al.</i> , 2010)	The motives, benefits, and problems of conversion to organic production	Barriers & Motivations
(Reimer <i>et al.</i> , 2012)	The multi-dimensional nature of environmental attitudes among farmers in Indiana: implications for conservation adoption	Barriers & Motivations
(Birge 2017)	The nature of farmers: farm-level decision making for farmland conservation targets	Barriers & Motivations
(Emery & Franks, 2012)	The potential for collaborative agri-environment schemes in England: can a well-designed collaborative approach address farmers' concerns with current schemes?	Barriers
(Bossange <i>et al.</i> 2016)	The potential for conservation tillage adoption in the San Joaquin Valley, California: A qualitative study of farmer perspectives and opportunities for extension	Barriers, Characteristics, Motivations
(Morrison <i>et al.</i> , 2011)	The primacy of human capital and social capital in influencing landholders' participation in programmes designed to improve environmental outcomes	Characteristics
(Gooden & Grenyer, 2018)	The psychological appeal of owning private land for conservation	Motivations
(Willock <i>et al.</i> 1999)	The role of attitudes and objectives in farmer decision making: Business and environmentally-oriented behaviour in Scotland	Characteristics
(Saha <i>et al.</i> 2011)	The socioeconomic context of carbon sequestration in agroforestry: a case study from homegardens of Kerala, India	Characteristics
(McGinlay <i>et al.</i> , 2017)	The threat of abandonment in socio-ecological landscapes: Farmers' motivations and perspectives on high nature value grassland conservation	Motivations
(Roesch-Mcnally <i>et al.</i> 2017)	The trouble with cover crops: Farmers' experiences with overcoming barriers to adoption	Barriers
(Lokhorst <i>et al.</i> 2014)	There is an I in nature: The crucial role of the self in nature conservation	Characteristics

(Hua <i>et al.</i> , 2004)	To adopt or not to adopt: conservation decisions and participation in watershed groups	Characteristics
(Mumaw 2017)	Transforming urban gardeners into land stewards	Motivations
(Burns 2017)	Trust and Conservation Opportunity: the importance of trust in landholders' decisions to participate in conservation programs	Motivations
(Ranjan, Wardropper, <i>et al.</i> 2019)	Understanding barriers and opportunities for adoption of conservation practices on rented farmland in the US	Barriers
(Gaines-Day & Gratton, 2017)	Understanding Barriers to Participation in Cost-Share Programs For Pollinator Conservation by Wisconsin (USA) Cranberry Growers	Barriers
(Mills <i>et al.</i> 2018)	Understanding farmers' motivations for providing unsubsidised environmental benefits	Motivations
(Farmar-Bowers & Lane, 2009)	Understanding farmers' strategic decision-making processes and the implications for biodiversity conservation policy	Motivations
(Curtis & Robertson, 2003)	Understanding landholder management of river frontages: the Goulburn Broken	Barriers, Characteristics, Motivations
(Rubino & Pienaar, 2018)	Understanding South African private landowner decisions to manage rhinoceroses	Barriers & Motivations
(Kreutzwiser <i>et al.</i> 2011)	Understanding stewardship behaviour: factors facilitating and constraining private water well stewardship	Barriers & Motivations
(Tian <i>et al.</i> 2015)	Understanding the Factors Influencing Nonindustrial Private Forest Landowner Interest in Supplying Ecosystem Services in Cumberland Plateau, Tennessee	Characteristics
(Corbeels <i>et al.</i> 2014)	Understanding the impact and adoption of conservation agriculture in Africa: A multi-scale analysis	Barriers & Motivations

(Boardman <i>et al.</i> , 2017)	Understanding the influence of farmer motivations on changes to soil erosion risk on sites of former serious erosion in the South Downs National Park, UK	Motivations
(Selinske <i>et al.</i> 2015)	Understanding the Motivations, Satisfaction, and Retention of Landowners in Private Land Conservation Programs	Motivations
(Klapproth & Johnson, 2009)	Understanding the Science Behind Riparian Forest Buffers: Factors Influencing Adoption. Virginia Cooperative Extension Publication	Barriers & Motivations
(Comerford 2014)	Understanding why landholders choose to participate or withdraw from conservation programs: A case study from a Queensland conservation auction	Barriers & Motivations
(Mullendore <i>et al.</i> , 2015)	US farmers' sense of place and its relation to conservation behavior	Characteristics
(Napier & Camboni, 1993)	Use of conventional and conservation practices among farmers in the Scioto River Basin of Ohio	Characteristics
(Ramsdell <i>et al.</i> , 2016)	Using financial incentives to motivate conservation of an at-risk species on private lands	Motivations
(Padilla-Bernal <i>et al.</i> 2018)	Views on sustainability and the willingness to adopt an environmental management system in the Mexican vegetable sector	Barriers, Characteristics, Motivations
(Kooistra <i>et al.</i> 2018)	Western Oregon forest landowner beliefs about the outcomes of mandatory riparian buffer regulations	Characteristics & Motivations
(Darragh & Emery, 2018)	What Can and Can't Crowding Theories Tell Us about Farmers' 'Environmental' Intentions in Post-Agri-Environment Scheme Contexts?	Motivations
(Luther <i>et al.</i> , 2020)	What drives voluntary adoption of farming practices that can abate nutrient pollution?	Characteristics & Motivations
(Capitanio <i>et al.</i> , 2011)	What explains farmers' participation in Rural Development Policy in Italian southern region? An empirical analysis	Characteristics
(Blicharska & Rönnbäck, 2018)	What factors enable or hinder engagement of civil society in ecosystem management? The case of "pike factories" and wetland restoration in Sweden	Barriers & Motivations

(Bremer <i>et al.</i> , 2014)	What factors influence participation in payment for ecosystem services programs? An evaluation of Ecuador's SocioParamo program	Barriers, Characteristics, Motivations
(Seabrook <i>et al.</i> , 2008)	What influences farmers to keep trees?: A case study from the Brigalow Belt, Queensland, Australia	Characteristics
(Schroeder <i>et al.</i> , 2015)	What influences farmers' acceptance of agri-environment schemes? An ex-post application of the 'Theory of Planned Behaviour'	Barriers & Motivations
(Drescher 2014)	What is it like to take care of the land? Toward an understanding of private land conservation	Motivations
(Rodriguez <i>et al.</i> 2018)	What is private land stewardship? Lessons from agricultural Opinion Leaders in North Carolina	Motivations
(Brotherton 1991)	What Limits Participation in ESAs?	Barriers
(Ma <i>et al.</i> 2009)	What motivates farmers to participate in sustainable agriculture? Evidence and policy implications	Characteristics
(Atari <i>et al.</i> 2009)	What motivates farmers to participate in the Nova Scotia environmental farm plan program? Evidence and environmental policy implications	Characteristics & Motivations
(Chapman <i>et al.</i> , 2019)	When value conflicts are barriers: Can relational values help explain farmer participation in conservation incentive programs?	Barriers & Motivations
(Nebel <i>et al.</i> 2017)	Which Factors Contribute to Environmental Behaviour of Landowners in Southwestern Ontario, Canada?	Characteristics & Motivations
(Bond <i>et al.</i> , 2018)	Who participates in conservation incentive programs? Absentee and group landholders are in the mix	Characteristics
(Méndez-López <i>et al.</i> 2019)	Who participates in conservation initiatives? Case studies in six rural communities of Mexico	Characteristics
(Farmer <i>et al.</i> 2015)	Why agree to a conservation easement? Understanding the decision of conservation easement granting	Characteristics & Motivations
(Brain <i>et al.</i> , 2014)	Why do cattle ranchers participate in conservation easement agreements? Key motivators in decision making	Motivations
(Zanella <i>et al.</i> , 2014)	Why do farmers join Payments for Ecosystem Services (PES) schemes? An Assessment of PES water scheme participation in Brazil	Barriers & Characteristics

(McCallum 2015)	Why do landowners restore wetlands? A case study from east central Ontario	Barriers & Motivations
(van Wenum & Wossink, 2001)	Wildlife conservation by farmers: analysis of actual and contingent participation	Characteristics
(Mumaw & Bekessy, 2017)	Wildlife gardening for collaborative public-private biodiversity conservation	Motivations
(Grammatikopoulou <i>et al.</i> , 2012)	Willingness of farmers to participate in agri-environmental auctions in Finland	Characteristics & Motivations
(Olive 2009)	Willingness to cooperate: Affirmative motivations among landowners	Motivations
(Olive & McCune, 2017)	Wonder, ignorance, and resistance: Landowners and the stewardship of endangered species	Barriers & Motivations
(Erickson <i>et al.</i> , 2002)	Woodlots in the rural landscape: Landowner motivations and management attitudes in a Michigan (USA) case study	Motivations

Supplementary Table 2.2: Descriptions of the six categories used to group the different types of private land conservation programmes and approaches in the studies included in the review.

Conservation programme/approach	Description
Agri-environment Scheme (AES)	Agri-environment schemes provide funding to farmers and land-managers to implement environmentally beneficial management or farm in a way that supports biodiversity, enhances the landscapes, or improves the wider environment (Kleijn & Sutherland, 2003; Hodge <i>et al.</i> , 2015).
Conservation Easement (CE)	Conservation easements are voluntary legal agreements between a landowner and an organisation (e.g., a land trust), where the landowner agrees to permanently restrict certain uses of the property to protect the landscape from harmful activities in exchange for economic benefits through direct payments or tax relief from the sale of development rights (Merenlender <i>et al.</i> , 2004; Rissman <i>et al.</i> , 2007; Davies <i>et al.</i> , 2010).
Conservation Farming (CF)	Conservation farming encompasses environmentally friendly management related to agricultural production and farming practices. Commonly used terms in the literature include “conservation agriculture”, “organic farming”, and “nature friendly farming” (Giller <i>et al.</i> 2015; Arslan <i>et al.</i> 2014; Sharifi <i>et al.</i> 2010).
Payment for Ecosystem Services (PES)	Payment for ecosystem service schemes offer incentives to landowners in exchange for managing the land to provide an ecological service (Redford & Adams, 2009). Various types of PES schemes exist and are reported in the literature e.g., conservation auctions are a type of PES (Hanley <i>et al.</i> , 2022).
Private Protected Area (PPA)	A PPA is a protected area, as defined by the IUCN, which is governed by private actors, has legal or other effective means of protection in place, and is primarily engaged in long-term biodiversity conservation activities (Stolton <i>et al.</i> , 2014; Palfrey <i>et al.</i> , 2022).
Voluntary Stewardship (VS)	Voluntary stewardship encompasses any type of conservation approach or environmentally friendly management carried out voluntarily on land that is not farmland (e.g., the Forest Biodiversity Program in Finland; Paloniemi & Tikka, 2008).

Supplementary Table 2.3: The 26 codes and seven parent themes that the 1,135 motivation factors were grouped into, a description of the code, and an example factor from a study included in the review.

Motivation theme	Motivation code	Code description	Example factor
Economic	Business	Give the business an advantage by improving profitability, marketing, sales	Economic viability (Del Corso <i>et al.</i> , 2017)
	Productivity	Improve farm productivity	Increased productivity (Leite <i>et al.</i> 2014)
Environment	Nature	Benefits for nature, wildlife, ecosystems, landscapes	Conservation (Horton <i>et al.</i> 2017)
Land	Aesthetics	Aesthetic benefits, improving scenic beauty	Visual amenity (Raymond & Brown 2011)
	Benefits	Benefits for the land e.g., soil fertility, land management	Reduce pests (Holden <i>et al.</i> 2018)
	Compatibility	Scheme has good applicability to the land	Efficient land use (Gabel <i>et al.</i> 2018)
	Image	Improve the image of the land/farm	Public image (de Krom 2017)
	Legacy	Retain land legacy, ensure permanent protection for the land	Property future (Comerford 2013)
	Management	Actions fit/align with existing management plans	Fits management (Defra, 2007)

	Place	Attachment to the land, place attachment	Land connection (Selinske <i>et al.</i> 2019)
Personal	Attitude	Attitudes towards the environment, government, their role as a farmer	Environmental attitude (Yeboah <i>et al.</i> , 2015)
	Family	Desire to bequest the land to their children, retain family legacy, family succession, benefits family	Succession (Ingram <i>et al.</i> 2013)
	Knowledge	Knowledge and understanding of the scheme and benefits of conservation	Previous experience (Home <i>et al.</i> 2014)
	Self	Personal benefits, enhance their own health, life, lifestyle, preferences	Improved lifestyle (Łuczka & Kalinowski, 2020)
	Values	Stewardship, ethics, personal philosophy, morals	Conservation ethic (Cross <i>et al.</i> 2011)
Scheme	Design	Design / attributes of the scheme, how it operates	Program attractiveness (Torabi <i>et al.</i> 2016)
	Extension officer	Extension officer, scheme leader, organisation influence	Extension services (Polman & Slangen, 2008)
	Financial incentives	Financial incentives / tax break on offer	Financial incentives (Ruseva <i>et al.</i> , 2015)
	Regulations	Comply with rules and regulations, avoid penalties	Environmental regulations (Vollmer-Sanders <i>et al.</i> , 2011)
	Support	To receive technical assistance, training, information	Technical assistance (Ruseva <i>et al.</i> , 2015)

Social	Norms	The rest of the community participate	Social norm (Kuhfuss <i>et al.</i> 2015)
	Peers	Influence of friends, family, peers, neighbours	Peer pressure (Lute <i>et al.</i> 2018)
	Recognition	Public recognition and appreciation for participation and benefitting conservation, also presentation of awards or media coverage	Recognition (Nebel <i>et al.</i> 2017)
	Social capital	Improve social networking opportunities and engage with new people	Social contact (Triste <i>et al.</i> 2018)
Society	Future	Concern for future generations	Future generations (Messick <i>et al.</i> , 2020)
	Public good	Benefit society, the public and community as a whole	Society (Rodriguez <i>et al.</i> 2018)

Supplementary Table 2.4: The 28 codes and six parent themes that the 913 barrier factors were grouped into, a description of the code, and an example factor from a study included in the review.

Barrier theme	Barrier code	Code description	Example factor
Attitude	Environmental	Environmental attitudes and beliefs	Not necessary (Greiner & Gregg, 2011)
	Government	Attitude toward government and government regulation	Government involvement (Messick <i>et al.</i> , 2020)
	Interest	Not interested, unwilling or reluctant to participate	Apathy (Meadows <i>et al.</i> , 2014)
	Property rights	Attitude regarding property rights	Property rights (Messick <i>et al.</i> , 2020)
Economic	Costs	Costs associated with participation	Machinery costs (Mills <i>et al.</i> 2020)
	Business	Financial risk to the business	Financial viability (Gutwein & Goldstein, 2013)
	Productivity	Loss of farm/land productivity	Yield concerns (Roesch-Mcnally <i>et al.</i> 2017)
Land	Environment	The (perceived) environmental consequences, e.g., weeds/pests	Weeds (Mills <i>et al.</i> 2020)
	Incompatibility	Land incompatibility with scheme, poor applicability	Lack of land (King <i>et al.</i> , 2017)

	Management	Doesn't fit, conflicts, or interferes with current management or future goals	Fit (Rolfe & Gregg, 2015)
	Tenant	Land tenancy prevents/constrains participation	Land tenure issues (Johnson <i>et al.</i> 2018)
Personal	Awareness	Lack of awareness of the scheme or programme	Unfamiliarity (Warren <i>et al.</i> 2016)
	Characteristics	Personal characteristics (e.g., retirement age)	Producer age (Foley 2013)
	Knowledge	Lack of knowledge of environmental problems and sustainable practices	Lack knowledge (Mould <i>et al.</i> , 2020)
	Labour	Lack of labour availability to participate	Labour availability (Page & Bellotti, 2015)
	Time	Lack of time to spend on the scheme	Time constraints (Simmons <i>et al.</i> 2020)
Scheme	Bureaucracy	Bureaucracy involved in participation, hassle, complicated, effort	Complexity (Keenan <i>et al.</i> , 2019)
	Contract length	Length of the scheme/programme, commitment	Long contract length (Page & Bellotti, 2015)
	Design	Scheme set up/design	Program design (Addison & Pavey, 2017)
	Eligibility	Not eligible	Eligibility perception (Moon 2013)

	Financial incentives	Low or lack of financial incentives	Low payments (Page & Bellotti, 2015)
	Paperwork	Too much paperwork	Administration (Mould <i>et al.</i> , 2020)
	Obligations	Scheme obligations, requirements	Increasing requirements (Coyne <i>et al.</i> 2021)
	Restrictions	Restrictions, lack of control and autonomy, inflexibility	Strict restrictions (Coyne <i>et al.</i> 2021)
	Support	Lack of support, training, or information to implement programme	Insufficient information (Veisi <i>et al.</i> 2009)
	Trust	Distrust or lack of confidence in scheme administrators	Distrust (Rouleau <i>et al.</i> 2016)
Social	Community	Neighbour and peer perception of the programme	Negative pressure (Veisi <i>et al.</i> , 2017)
	Norms	Preference for traditional/conventional land management	Socio-cultural (Mills <i>et al.</i> 2020)

Supplementary Table 2.5: The 27 codes and two parent themes that the 2,744 characteristic factors were grouped into, a description of the code, and an example factor from a study included in the review.

Characteristic theme	Characteristic code	Code description	Example factor
Landowner	Age	Landowner age	Age (Alarima <i>et al.</i> 2018)
	Education	Landowner education level	Higher education (Lambert <i>et al.</i> 2014)
	Family size	Number of people in household	Household size (Khanal <i>et al.</i> 2019)
	Farming experience	Number of years farming	Years farming (Bossange <i>et al.</i> 2016)
	Gender	Landowner gender or sex	Female household head (Holden <i>et al.</i> 2018)
	Income level	Landowner income level	Income (Alarima <i>et al.</i> 2018)
	Income source: Farm	Main income is from the farm / land	Farming income (Yeboah <i>et al.</i> , 2015)
	Income source: Off-farm	Main source of income is from off-farm employment	Off-farm income (Yuan <i>et al.</i> 2017)
	Membership: Agricultural	Member of a farmer's union or group	Farmers union member (Mitani & Lindhjem, 2015)

	Membership: Environment	Member of a community or environmental organisation	Environmental org member (Ramsey <i>et al.</i> 2019)
	Occupation: Farmer	Full time farmer	Full time farmer (Gatto <i>et al.</i> , 2019)
	Occupation: Off-farm	Off-farm employment, part-time or hobby farmer	Off-farm activity (Tambo & Mockshell, 2018)
	Ownership length	Length of time landowner has owned the farm/land	Property owned (Raymond, 2015)
	Previous participation	Previous participated in a private land conservation programme	Previous adopter (Gailhard <i>et al.</i> , 2015)
	Relationship	Has a spouse	Spouse (D'Souza & Mishra, 2018)
	Succession	Plan to bequest farm to children	Successor (Lynch & Lovell, 2015)
Land	Farm size	Size of the farm	Land size (D'Souza & Mishra, 2018)
	Farm type: Arable	Arable farm	Arable farm (Zhong 2016)
	Farm type: Dairy	Dairy farm	Dairy farm (Bertoni <i>et al.</i> 2008)
	Farm type: Horticulture	Horticulture farm	Fruit farm (Genghini <i>et al.</i> , 2002)

Farm type: Livestock	Livestock farm	Livestock farm (Murphy <i>et al.</i> 2011)
Farm type: Diversified	Diversified farm activities	Diversification (Zanella <i>et al.</i> , 2014)
No. livestock	Number of livestock	No. livestock (Toorminaee <i>et al.</i> 2017)
Ownership: Owned	Owns the land/farm	Land ownership (Kagoya <i>et al.</i> , 2018)
Ownership: Rented	Rents the land/farm	Land tenure (Manda <i>et al.</i> 2016)
Slope	Land slope	Slope (Manda <i>et al.</i> 2016)
Soil quality	Quality of the soil	Soil fertility (Mohebalian & Aguilar, 2016)

Supplementary Table 2.6: *The total number of factors investigated and/or identified for each study category, the number (and percent) of factors identified by open-ended questions for each study category, and the number (and percent) of factors investigated by closed-ended questions in each study category.*

Study category	Total no. factors	Factors identified by open-ended questions	Factors investigated by closed-ended questions
Motivations	1,135	564 (50%)	571 (50%)
Barriers	913	548 (60%)	365 (40%)
Characteristics	2,744	0 (0%)	2,744 (100%)

Supplementary Table 2.7: *The total number of factors investigated by closed-ended questions in each study category, the number (and percent) of factors investigated and identified as influencing participation by studies using closed-ended questions for each study category, and the number (and percent) of factors investigated but not identified as influencing participation by studies that use closed-ended questions for each study category.*

Study category	Factors investigated by closed-ended questions	Factors investigated & identified by closed-ended questions	Factors investigated & not identified by closed-ended questions
Motivations	571	509 (89%)	62 (11%)
Barriers	365	365 (100%)	0 (0%)
Characteristics	2,744	1,424 (52%)	1,320 (48%)

Supplementary Table 2.8: The proportion of motivation studies (N=222) that identified factors in each code using open- and closed-ended questions.

Motivation theme	Motivation code	Closed-ended question proportion	Open-ended question proportion
Economic	Business	0.41	0.32
	Productivity	0.13	0.08
Environment	Nature	0.48	0.47
Land	Aesthetics	0.08	0.04
	Benefits	0.22	0.17
	Compatibility	0.05	0.06
	Image	0.06	0.11
	Legacy	0.04	0.08
	Management	0.25	0.20
	Place	0.05	0.13
Personal	Attitude	0.07	0.03
	Family	0.06	0.07
	Knowledge	0.11	0.08
	Self	0.28	0.18
	Values	0.23	0.34
Scheme	Design	0.11	0.15
	Extension officer	0.11	0.16
	Financial incentives	0.46	0.64
	Regulations	0.05	0.09
	Support	0.10	0.15
Social	Norms	0.11	0.15
	Peers	0.11	0.16
	Recognition	0.46	0.64
	Social capital	0.05	0.09
Society	Future	0.07	0.08
	Public good	0.15	0.08
Mean		0.15	0.16

Supplementary Table 2.9: The proportion of barrier studies (N=168) that identified factors in each code using open- and closed-ended questions.

Barrier theme	Barrier code	Closed-ended question proportion	Open-ended question proportion
Attitude	Environmental	0.27	0.21
	Government	0.13	0.19
	Interest	0.12	0.16
	Property rights	0.03	0.01
Economic	Costs	0.32	0.36
	Business	0.40	0.43
	Productivity	0.14	0.09
Land	Environment	0.10	0.07
	Incompatibility	0.24	0.14
	Management	0.12	0.19
	Tenant	0.13	0.07
Personal	Awareness	0.11	0.16
	Characteristics	0.12	0.04
	Knowledge	0.17	0.23
	Labour	0.09	0.14
	Time	0.14	0.19
Scheme	Bureaucracy	0.26	0.20
	Contract length	0.16	0.17
	Design	0.31	0.21
	Eligibility	0.09	0.17
	Financial incentives	0.17	0.31
	Paperwork	0.10	0.13
	Obligations	0.17	0.13
	Restrictions	0.36	0.20
	Support	0.21	0.27
	Trust	0.13	0.04
Social	Community	0.15	0.16
	Norms	0.09	0.00
Mean		0.17	0.17

Supplementary Table 2.10: Wilcoxon Rank Sum Test comparing the number of codes investigated by motivation studies that used closed-ended questions (N=103) and identified by motivation studies that used open-ended questions (N=119).

Study approach	Mean	Wilcoxon Rank Sum Test
Closed-ended questions	4.37	W = 6218
Open-ended questions	4.23	p-value = 0.8506

Supplementary Table 2.11: Wilcoxon Rank Sum Test comparing the number of codes investigated by barrier studies that used closed-ended questions (N=70) and identified by barrier studies that used open-ended questions (N=98).

Study approach	Mean	Wilcoxon Rank Sum Test
Closed-ended questions	4.67	W = 3302.5,
Open-ended questions	4.85	p-value = 0.6021

Supplementary Table 2.12: The number of times factors in each motivation code ranked 1st, 2nd, 3rd in motivation studies that ranked three or more factors (N=93).

Motivation theme	Motivation code	Rank 1 st	Rank 2 nd	Rank 3 rd
Economic	Business	8 (9%)	10 (11%)	12 (13%)
	Productivity	3 (3%)	3 (3%)	4 (4%)
Environment	Nature	15 (16%)	23 (25%)	15 (16%)
Land	Aesthetics	2 (2%)	1 (1%)	0 (0%)
	Benefits	7 (8%)	10 (11%)	9 (10%)
	Compatibility	1 (1%)	2 (2%)	6 (6%)
	Image	2 (2%)	0 (0%)	0 (0%)
	Legacy	4 (4%)	0 (0%)	0 (0%)
	Management	0 (0%)	4 (4%)	2 (2%)
	Place	3 (3%)	1 (1%)	2 (2%)
Personal	Attitudes	0 (0%)	1 (1%)	1 (1%)
	Family	0 (0%)	1 (1%)	2 (2%)
	Knowledge	0 (0%)	1 (1%)	0 (0%)
	Self	6 (6%)	7 (8%)	5 (5%)
	Values	9 (10%)	1 (1%)	4 (4%)
Scheme	Design	0 (0%)	3 (3%)	0 (0%)
	Extension	2 (2%)	1 (1%)	3 (3%)
	Financial incentives	18 (19%)	11 (12%)	7 (8%)
	Regulations	1 (1%)	1 (1%)	2 (2%)
	Support	2 (2%)	4 (4%)	3 (3%)
Social	Norms	1 (1%)	0 (0%)	3 (3%)
	Peers	2 (2%)	1 (1%)	3 (3%)
	Recognition	1 (1%)	1 (1%)	1 (1%)
	Social capital	2 (2%)	3 (3%)	2 (2%)
Society	Future	3 (3%)	2 (2%)	0 (0%)
	Public good	1 (1%)	1 (1%)	7 (8%)

Supplementary Table 2.13: The number of times factors in each barrier code ranked 1st, 2nd, 3rd in barrier studies that ranked three or more factors (N=71).

Barrier theme	Barrier code	Rank 1 st	Rank 2 nd	Rank 3 rd
Attitude	Environmental	1 (1%)	2 (3%)	6 (8%)
	Government	4 (6%)	1 (1%)	2 (3%)
	Interest	3 (4%)	3 (4%)	2 (3%)
	Property rights	0 (0%)	0 (0%)	0 (0%)
Economic	Business	5 (7%)	10 (14%)	5 (7%)
	Costs	10 (14%)	8 (11%)	6 (8%)
	Productivity	3 (4%)	3 (4%)	0 (0%)
Land	Environment	0 (0%)	0 (0%)	3 (4%)
	Incompatibility	4 (6%)	5 (7%)	3 (4%)
	Management	3 (4%)	4 (6%)	3 (4%)
	Tenant	0 (0%)	0 (0%)	3 (4%)
Personal	Awareness	6 (8%)	0 (0%)	2 (3%)
	Characteristics	0 (0%)	0 (0%)	2 (3%)
	Knowledge	2 (3%)	2 (3%)	6 (8%)
	Labour	2 (3%)	1 (1%)	1 (1%)
	Time	3 (4%)	5 (7%)	2 (3%)
Scheme	Bureaucracy	5 (7%)	3 (4%)	4 (6%)
	Contract length	1 (1%)	1 (1%)	3 (4%)
	Design	2 (3%)	4 (6%)	1 (1%)
	Eligibility	0 (0%)	0 (0%)	2 (3%)
	Financial incentives	4 (6%)	9 (13%)	5 (7%)
	Paperwork	2 (3%)	1 (1%)	3 (4%)
	Obligations	0 (0%)	1 (1%)	2 (3%)
	Restrictions	3 (4%)	3 (4%)	0 (0%)
	Support	6 (8%)	3 (4%)	3 (4%)
	Trust	1 (1%)	1 (1%)	1 (1%)
Social	Community	1 (1%)	1 (1%)	1 (1%)
	Norms	0 (0%)	0 (0%)	0 (0%)

Chapter 3 Understanding land-manager perceptions of rewilding

3.1. Abstract

Rewilding is growing in popularity as an approach for restoring self-regulating ecosystems through species (re)introductions and minimising human influences. Indeed, there has been a proliferation of rewilding initiatives led by environmental NGOs and private landowners, as well as policy ambitions expressed by governments. Although there are many purported ecological and social benefits associated with rewilding, it has the potential to significantly impact land-managers and their livelihoods. It is therefore important to understand their perceptions as key stakeholders. Here, we examine how English and Scottish land-managers perceive rewilding to better understand the challenges and opportunities associated with making current rewilding ambitions a reality. Specifically, we use both qualitative and quantitative methods to investigate: (i) levels of land-manager support for activities related to rewilding; (ii) which socio-demographic and land characteristic variables influence whether land-managers would consider rewilding on their land; (iii) perceptions of the term ‘rewilding’; and (iv) positive and negative perceptions of rewilding. We find most land-managers perceive rewilding as cessation of management and are concerned about how this will alter their livelihoods and identity, as well as food security in Britain. Land-managers are most supportive of rewilding activities they can actively engage with and are familiar to them, particularly where the benefits are clearly evident. Generally, land-managers only support rewilding on marginally productive agricultural land. However, we also show that land-managers with predominantly high-quality agricultural land are most likely to consider rewilding, as taking marginal sections out of production will have a negligible effect on food production or their profitability. This means there may be opportunities to target rewilding policies towards land-managers with high-quality agricultural land, focusing on activities they can actively engage with in less productive areas. Overall, our findings improve our understanding of the benefits, concerns, opportunities and risks that land-managers associate with rewilding.

3.2. Introduction

There is a growing consensus that traditional area-based approaches to conservation must be accompanied by large-scale ecological restoration to prevent further biodiversity losses (Perino *et al.*, 2019; UN, 2019). Rewilding is one such restoration approach that emerged in North America to re-establish and protect biodiversity through vast, connected wilderness areas, with an emphasis on the trophic role of large predators (Soulé & Noss, 1998). Since its original conception, rewilding has evolved to include a variety of activities including the (re)introduction of missing keystone species or taxon replacements for extinct species (Seddon *et al.* 2014), the (re)introduction of megafauna to restore top-down ecological processes (Donlan, 2005; Falcón & Hansen, 2018), and the removal or reduction of human control to encourage ecological succession in abandoned landscapes (Navarro & Pereira, 2015). It is now applied across areas characterised by different spatial scales, levels of connectivity and degrees of human influence, with the aim of restoring self-functioning ecosystems (Perino *et al.* 2019; Carver *et al.* 2021).

While rewilding has been presented as an ambitious and optimistic approach to conservation (Lorimer *et al.* 2015; Pettoirelli *et al.* 2018), there are extensive debates in the scientific literature regarding the associated benefits, drawbacks, opportunities and risks (Bühne *et al.*, 2022). Proponents have hailed rewilding as a cost-effective strategy for improving ecosystem services (Cerqueira *et al.* 2015), reinstating natural vegetation succession (Navarro & Pereira 2015), restoring top-down trophic processes (Svenning *et al.*, 2016), enhancing ecosystem resilience (Svenning, 2020) and mitigating climate change (Sandom *et al.* 2020). It has also been promoted as an opportunity to reconnect people with nature (Perino *et al.* 2019) and for local communities to gain socio-economic benefits through nature-based tourism (Hall, 2019; Svenning, 2020). However, the evidence base to support these assertions is still limited (Nogués-Bravo *et al.*, 2016; Hayward *et al.*, 2019), and some authors caution that the reintroduction of novel species, or withdrawal of human activities, could have unexpected or negative consequences for extant biodiversity and ecosystem functioning (Nogués-Bravo *et al.* 2016; Delibes-Mateos *et al.* 2019). Moreover, rewilding approaches that centre on the restoration of large wilderness areas with minimal human intervention could exclude people

from natural spaces and constrain cultural activities (Jørgensen, 2015; Deary & Warren, 2019), while strategies that involve the reintroduction of large carnivores could threaten human safety and negatively impact the local economy, peoples' livelihood and property (Bautista *et al.* 2019; Bruskotter *et al.* 2017; Duckett *et al.* 2022).

Despite criticisms and potential risks, rewilding has attracted the interest of policymakers and conservation practitioners (Pettorelli & Durant, 2019). For instance, in Europe, there are proposals to reshape agri-environment schemes to subsidise rewilding on marginal farmland (Merckx & Pereira, 2015). Likewise, in the UK, rewilding has become prominent in policy discussions regarding the future of nature conservation and land management (Alison & Wentworth, 2016; Sandom *et al.*, 2019; UK Government, 2019), and there has been a proliferation of rewilding initiatives by environmental NGOs and private landowners (Sandom & Wynne-Jones, 2019; Rewilding Britain, 2022a). It is therefore important to understand how land-managers perceive rewilding, as policies are more likely to garner support and projects be established when key stakeholder perceptions are accounted for (Bennett 2016; Pettorelli *et al.* 2018; Carver *et al.* 2021). This is particularly true in the UK, where farmers and land-managers have stewardship of 71% of the land area (Defra, 2021a).

Previous studies have investigated stakeholder attitudes and perceptions towards the (re)introduction of specific species including beaver and lynx (Auster *et al.*, 2020a; Hawkins *et al.* 2020), specific projects (Wynne-Jones *et al.*, 2018) and certain hypothetical scenarios (Mikołajczak *et al.* 2022), whereas others have explored the perspectives of practitioners and policymakers (Sandom *et al.* 2019) and rewilding discourse (Deary & Warren, 2017; Martin *et al.*, 2021; Wynne-Jones, 2022). Despite this expanding body of research, there is a paucity of work examining land-managers perceptions of the rewilding concept and its implications. Here, we seek to understand how English and Scottish land-managers perceive rewilding to better understand the challenges and opportunities associated with making rewilding policy ambitions a reality. Specifically, we investigate: (i) levels of land-manager support for activities related to rewilding, including habitat restoration and the reintroduction of specific taxa; (ii) which socio-demographic and land characteristic variables influence whether

participants would be likely to consider rewilding on their land; (iii) perceptions of the term ‘rewilding’; and (iv) positive and negative perceptions of rewilding.

3.3. Methods

3.3.1. Study regions and participant recruitment

We selected three broad study regions to represent both lowland and upland areas and ranges of agricultural land quality (Natural England 2020): southern England, northern England, and northern Scotland. To recruit participants, we contacted organisations that represent farmers, land-managers and landowners (e.g., National Farmers Union of Scotland, Country Land and Business Association), local farmer groups (e.g., The Crofting Federation, Upper Beult Farmers Network), government agencies (e.g., Natural England, NatureScot), and conservation NGOs (e.g., The Wildlife Trusts), and asked them to promote the study through newsletters, emails to their members and on their social media feeds. This led to responses from participants in seventeen English counties and six Scottish council areas (Figure 3.1).

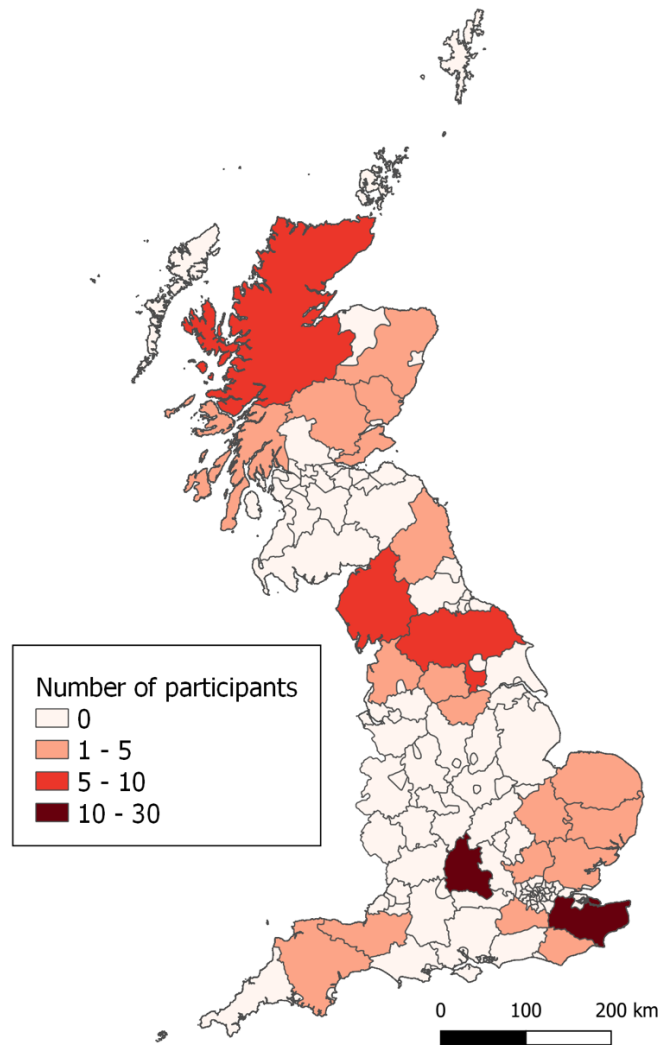


Figure 3.1: The number of participants in each county across southern and northern England and council areas in northern Scotland.

When seeking participants, we deliberately did not use the term ‘rewilding’ to avoid priming and to prevent self-selection bias (e.g., inadvertently putting off potential participants who knew little or nothing about rewilding, only recruiting participants who held extreme views). We also incentivised participation with the chance to win a £300 Amazon voucher.

3.3.2. Interview development and delivery

We developed a structured interview schedule comprising four sections (Table S3.1). In the first section, we used open- and closed-ended questions to capture information about the

socio-demographic background of the participants (e.g., age, gender) and characteristics of their land characteristic (e.g., area of land they manage and for what land-uses). These were asked at the start of the interview as ice-breaker questions, serving to establish rapport between the interviewer and participant (Salmons 2016).

Due to the potentially polarising nature of the term ‘rewilding’ (Pettorelli & Durant, 2019), the second section of the interview asked participants about land management activities associated with rewilding (e.g., restoring habitats). We began by asking participants to indicate to what extent they support or oppose land-managers engaging these activities using a standard five-point Likert scale (1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support). We also asked participants whether or not they support (a closed response of no, unsure or yes) the (re)introduction of specific taxa in Scotland and England that are often considered as part of rewilding projects (Rewilding Britain 2020g; YouGov 2019).

We used open-ended questions to understand perceptions of rewilding in the third section of the interview, prompting participants to discuss whether they had heard of rewilding and to describe their understanding of the concept. In the fourth section, we then provided participants with definitions of ‘rewilding’, ‘passive rewilding’ and ‘active rewilding’ used by policy advocates, advisors and decision-makers in England and Scotland (Rewilding Britain 2020c). Participants were asked to indicate to what extent they support or oppose these different types of rewilding using a standard five-point Likert scale. The final question used a standard five-point Likert scale (1=extremely unlikely, 2=unlikely, 3=neutral, 4=likely, 5=extremely likely) to probe whether participants would consider rewilding on their land.

The closed-ended Likert scale questions acted as provocations for qualitative elaboration. The interviewers also used standardised stimuli to prompt the participants to provide more detailed responses. For example, using phrases such as: *‘Can you explain why you selected that response?’*, *‘Can you tell me a bit more about why you think that?’*, and *‘Is there anything else you*

would like to add?'. The interview schedule and questions were piloted with three land-managers with distinctly different socio-demographic and socio-economic backgrounds. No substantive changes were made to the wording of the questions or response options after the pilots.

Ethics approval was granted by the University of Kent Faculty of Social Sciences Research Ethics Advisory Group for Human Participants (Ref. No. 9-PGR-19/20). Prior to each interview, we sought informed consent from participants, and informed them that they had the right to not answer any of our questions, could terminate the interview at any point without explanation, could request to have their responses removed from the study at any point, and that their data would be anonymised and treated as confidential.

Four individuals (CLS, ED, IR & MR) carried out interviews, having been trained by the lead researcher (CLS) to ensure consistency in interview delivery, based on the pre-prepared interview schedule (Table S3.1). Participants were interviewed via online video calls, apart from two occasions when participants were unable to use video call technology, so the interview was conducted by telephone instead. Interviews were conducted between April and August 2020 at all times of the day, and during weekdays and weekends, working around the availability of the land-managers. We interviewed participants over a five-month period to avoid biasing the results towards a specific type of land-manager who might have been too busy to participate at certain times of the year due to farming schedules. All interviews were audio recorded and lasted between 50 minutes to 1.5 hours.

3.3.3. Data analysis

The interview audio files were transcribed verbatim by each interviewer, with all transcripts undergoing extensive quality check by CLS. CLS carried out an inductive thematic content analysis (Watts 2014), taking an exploratory, bottom-up approach to identify the main thematic codes emerging from the data that describe the ways in which rewilding was discussed and interpreted by participants. All transcripts were coded using NVivo (Version

12, QSR International Pty Ltd.). Related codes were grouped together into parent themes that were checked for consistency by ZGD. We grouped the codes and themes into three broad categories: perceptions of term rewilding (Table S3.2) positive perceptions of the activities associated with rewilding (Table S3.3), and negative perceptions of the activities associated with rewilding (Table S3.4). The former of these reflected responses to one specific question: *In a few sentences, can you describe what rewilding means to you?*, whereas the latter two are from across the entire interview. Throughout the results and discussion, we use representative quotations to illustrate the codes. As no qualitative distinctions emerged in the responses from participants based in the different regions, we present the results across all participants combined.

The quantitative data were visualised and analysed using R version 4.2.1 (R Core Team 2022). We used ordinal regression (a generalized linear model that predicts ordinal variables) to investigate whether socio-demographic and land characteristic variables predict whether participants would consider rewilding on their own land. The socio-demographic and land characteristic variables included in the model were selected a priori based on supporting literature (Table 3.1). Participants who responded “prefer not to answer” to any of these questions were excluded from the analysis. Shapiro-Wilk tests were used to check if the continuous dependent variables followed a normal distribution. Age was normally distributed so remained untransformed, whereas the land area owned or managed (ha) was logged. We grouped the agricultural land classification responses into three categories (‘Good’, ‘Average’ and ‘Poor’) to summarise the overall land quality, categorising land that was mostly Grade 1 or Grade 2 as ‘Good’, mostly Grade 3a or Grade 3b as ‘Average’, and mostly Grade 4 or Grade 5 as ‘Poor’ (Table S3.5). We chose ‘Average’ as the reference category as it had the largest sample size. We ran a correlation matrix between variables to check for intercorrelation before running the model; none was apparent. Model coefficients and corresponding 95% confidence intervals (CI) were used to calculate odds ratios.

Table 3.1: The socio-demographic and land characteristic variables explored as potential predictors of whether, or not, participants would consider rewilding on their land.

Variable	Hypothesis	Literature supporting choice of variable
Age	(-) Younger individuals will be more likely to consider rewilding on their land	Younger land-managers are more likely to participate in private land conservation because they are more environmentally aware and more knowledgeable about conservation practices, as well as being more willing to invest and endure risk due to longer planning horizons (Giannakis 2014; Giovanopoulou <i>et al.</i> , 2011; Wilson & Hart 2000).
Land area owned or managed (ha)	(+) Land-managers with a larger area of land will be more likely to consider rewilding on their land	Large land area is correlated with income and wealth, so land-managers of larger sized properties are better able to afford the costs of participation (Prokopy <i>et al.</i> 2019; Xavier <i>et al.</i> 2015). Additionally, they are likely to have sections of land that are less agriculturally productive, and therefore more willing to remove these areas from production (Hammes <i>et al.</i> 2016; Pavlis <i>et al.</i> 2016; Berger <i>et al.</i> 2003) .
Main agricultural land classification	(-) Land-managers with “good” quality land will be less likely to consider rewilding on their land	High land productivity is related to lower participation in private land conservation programmes as farmers prefer to maximise food production (Unay-Gailhard & Bojnec, 2016).
Number of land-uses	(+) Land-managers engaged in more land-uses will be more likely to consider rewilding on their land	A greater number of land-uses is likely to indicate land-managers who have already diversified their income streams are more likely to participate in private land conservation programmes (Prokopy <i>et al.</i> 2019; Wąs <i>et al.</i> 2021).
Agri-environment scheme (AES) participation	(+) Land-managers engaged in AES will be more likely to consider rewilding on their land	Land-managers who currently, or have previously, participated in AES are more likely to participate as they are familiar with completing applications to support financial assistance, delivering scheme requirements, and already demonstrate an interest in environmental activities (Vanslebrouck & van Huylenbroeck, 2005; Schroeder <i>et al.</i> , 2013).

3.4. Results & Discussion

3.4.1. Description of participants

We interviewed 95 land-managers, the majority of whom were male (n=80; 84%), with a median age of 53 (min=24, max=81). This is broadly representative of the age and gender demographics of the agricultural sector across England and Scotland (Defra, 2016). Most participants identified themselves as the owner and manager of the land (n=79, 83%), with fewer employed as managers (n=10, 11%) and tenant farmers (n=6, 6%). The median area of land managed was 227 ha (min=2 ha, max=38,535 ha). Farming was the principal occupation of most participants (n=68; 72%), and 71 (75%) either currently participate or have previously participated in an agri-environment scheme. All participants carried out agriculture on their land, mostly mixed production (n=45; 46%) or livestock (n=29; 32%), but many engaged in other land-uses, for instance, 13 (13%) carried out conservation activities on their land such as tree planting and/or managing sections as a publicly accessible nature reserve (Table 3.2). Forty-nine participants (52%) said most of their land was of ‘Average’ quality (Grade 3 & 4), while 20 (21%) said their land was predominately ‘Good’ quality, and 26 (27%) said it was mainly ‘Poor’ quality (Table 3.2).

Table 3.2: The land-use, farming type and main agricultural land classification of each participant’s land (N=95).

*The land-use percentage adds up to more than 100% as many land-managers participated in more than one land-use. **‘Other’ represents land-uses reported by fewer than three participants including education centres, wedding venues, telecom masts, historical monuments and unused land.

Variable	n	%	Variable	N	%
Land-use*			Farming type		
Agriculture	95	100	Arable	18	19
Woodland (inc. forestry)	53	56	Horticulture	3	3
Tourism	33	35	Livestock	29	32
Sporting	18	19	Mixed	45	46
Commercial	17	18			
Conservation	13	13	Main agricultural		
Renewable energy	8	8	land classification		
Equestrian	3	3	Good (mostly Grade 1 & 2)	20	21
Mining	3	3	Average (mostly Grade 3 & 4)	49	52
Other**	16	17	Poor (mostly Grade 4 & 5)	26	27

3.4.2. Levels of support for activities associated with rewilding

Before any specific mention of rewilding was made by the interviewer, only 32% (n=30) of participants supported land-managers halting land management, but 94% (n=89) supported land-managers restoring habitats (Figure 3.2). This might have been because participants were concerned that halting management could negatively impact farming and the role of land-managers (Wynne-Jones 2022), whereas previous experience of agri-environment schemes meant they knew how they might contribute to habitat restoration (Marr & Howley, 2019). Interestingly, after we specifically mentioned rewilding, 56% (n=53) of participants were supportive of passive rewilding, which is nearly double the support for halting management given by participants at the beginning of the interview, even though these activities can be considered directly comparable (Carver 2019). This is probably because the definition of passive rewilding we used in the interview specified it was “*often associated with farmers abandoning marginal land*” (Rewilding Britain 2020c), which may have reassured them that the impact on farming would be relatively low since the focus is on less productive land (Merckx & Pereira, 2015). In contrast, participants were less supportive of active rewilding (n=60; 63%) than habitat restoration. Once again, this is likely attributable to the definition of active rewilding that states it is “*typically achieved by reintroducing extinct species or actively restoring habitats*” (Rewilding Britain 2020c), so would potentially involve more extreme activities than those associated with typical agri-environment schemes (Wheeler *et al.* 2018). Nonetheless, participants were more positive towards activities that would involve their participation, whether framed around habitat restoration or active rewilding, compared with withdrawing management.

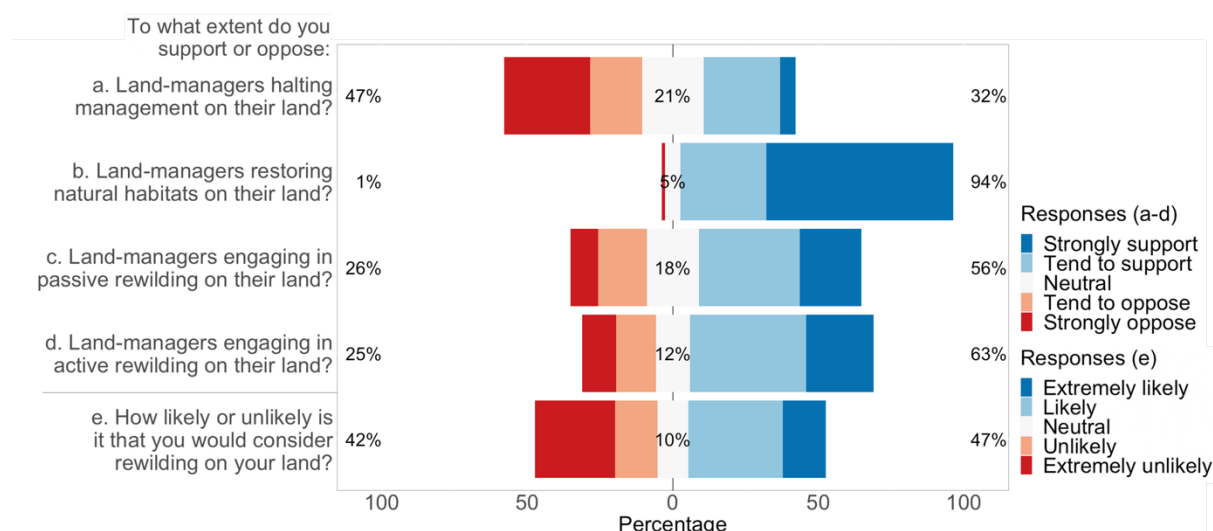


Figure 3.2: Percentage of participant (N=95) responses to Likert-scale questions about land management activities associated with rewilding.

3.4.3. Likelihood of land-managers rewilding their land

Land-managers were fairly evenly split over whether they would consider rewilding on their land, with 42% (n=40) responding “Extremely unlikely” or “Unlikely” and 47% (n=45) responding “Likely or “Extremely likely” (Figure 3.2). The odds of a land-manager being likely to consider rewilding their land was significantly greater for younger participants (Table 3.3). This mirrors results from other studies on participation in conservation programmes that find younger land-managers are often more environmentally aware and more likely to take part in new practices (Giovanopoulou *et al.*, 2011; Giannakis, 2014). Land-managers who reported a greater number of land-uses associated with the property were also significantly more likely to respond positively. Again, this reflects previous work showing land-managers with diversified income streams are more likely to participate in conservation programmes (Prokopy *et al.* 2019; Wąs *et al.* 2021).

Table 3.3: The odd ratios (OR) and 95% confidence intervals for socio-demographic and land characteristic variables that may predict Likert scale responses to a question regarding whether participants (N=94) would consider rewilding their land. The odd ratio is significant if the confidence intervals do not cross 1 (bold), with those above one positively related and those below one negatively related. Reference category = ‘Average’ land quality.

Variable	Rewilding own land		
	OR	2.5%	97.5%
Age	0.97	0.94	0.99
Land area (log)	0.84	0.65	1.08
AES participation (Y)	0.75	0.27	2.02
Number of land-uses	1.93	1.31	2.91
Main agricultural land classification (Good)	3.55	1.31	9.87
Main agricultural land classification (Poor)	1.50	0.60	3.83

Previous agri-environment scheme participation was not an important predictor, which was unexpected. However, this is probably because land-managers see rewilding as an extreme form of conservation activity as reflected on above (Section 3.4.2). Similarly, land area was not an important predictor, which was also surprising because previous research has found land-managers of larger-sized properties are more likely to participate in conservation programmes, as they often have sections of marginal land they are willing to take out of production (Hammes *et al.*, 2016; Pavlis *et al.*, 2016). Additionally, they are generally wealthier and better able to afford the direct and opportunity costs associated with participation (Prokopy *et al.* 2019; Xavier *et al.* 2015). This second explanation might be why land-managers with mostly ‘Good’ quality land were more likely to consider rewilding on their land, as they tend to have more profitable farms and can better afford to take areas out of production. Indeed, 80% of the participants with mostly ‘Good’ quality land also had some lower quality land on their property (Table S3.5).

3.4.4. Support for species (re)introductions

We found most participants supported the (re)introduction of red squirrels (n=82; 86%) and wading birds (n=78; 82%; Figure 3.3), with the aim of boosting species populations currently present in the UK. Almost two-third of participants supported the (re)introduction of birds of

prey (n=61; 64%), beavers (n=59; 62%) and pine martens (n=58; 61%), and just over half (n=51; 54%) for wildcats. This is commensurate with other work that suggests stakeholders are happy for species to be (re)introduced if they already exist in parts of the country (Auster *et al.*, 2022), but that those individuals less in favour are concerned about the negative impact (re)introduced species could have on other species (Nogués-Bravo *et al.* 2016). We found less support for the (re)introduction of moose (n=38; 40%) and wild boars (n=36; 38%), with concerns related to property damage. Lynxes (n=33; 35%), wolves (n=27; 28%) and brown bears (n=18; 21%) received the least support because participants feared they would pose a danger to people and predate on livestock, mirroring the findings of previous studies (Bautista *et al.* 2019; Bruskotter *et al.* 2017).

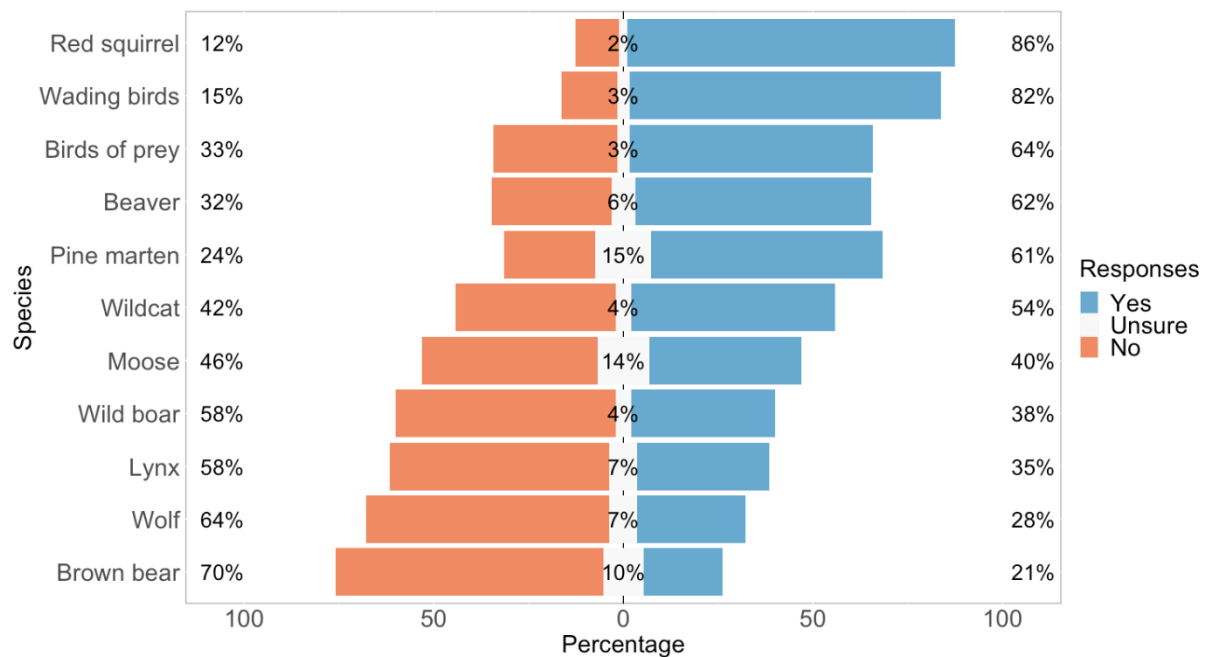


Figure 3.3: Land-manager support for the (re)introduction of different taxa (N=95).

3.4.5. Perceptions of the term 'rewilding'

We identified twelve codes and three parent themes relating to land-manager perceptions of the term 'rewilding' (Table S3.2). Most participants (n=69, 73%) perceived the term as referring to a process where there is 'no management' of the land: "It [rewilding] means just doing nothing and letting nature take over". Moreover, 38% (n=36) of participants associated rewilding with

the land being allowed to ‘*return*’ to the state or condition it would have been before modern agriculture: “*It is basically letting land revert to what it would’ve been before intensive agriculture*”. This partially aligns with how rewilding practitioners in Britain describe rewilding, as an ambition to step back from management and allow nature more autonomy, although there is less of a focus on returning to past states (Wynne-Jones *et al.* 2020)

In the media, rewilding is often associated with the introduction of large, charismatic species (e.g., Carrell, 2021; Shute, 2022). In contrast, only 22% (n=21) of participants referred to ‘*species*’ (re)introductions when defining the term. This echoes previous research that found stakeholders do not see species (re)introductions as a primary focus of rewilding (Loth & Newton, 2018). In addition, only three of our participants (3%) mentioned the (re)introduction of predator species, which may be because no rewilding projects in Britain currently involve large carnivores (Sandom & Wynne-Jones, 2019).

Recent media attention has also focused on the rewilding efforts of wealthy landowners and celebrities (e.g., Wade, 2018; Chappell & O’Mahony, 2021), leading critics to dismiss the approach as a fad for the rich (Hetherington 2021). This may explain why a small proportion of participants defined the term in relation to the type of individuals who participate in rewilding, with 13% (n=12) using words like ‘*wealthy*’ and 5% (n=5) using words like ‘*non-rural*’. However, it is worth emphasising that this is a minority view and, possibly, an outcome of the media failing to accurately represent stakeholder voices by focusing on the most outspoken rewilding critics (Ladle *et al.*, 2005; Dyer, 2017).

3.4.6. Positive perceptions and support for rewilding

We extracted thirty codes, grouped in five parent themes, related to positive perceptions of activities associated with rewilding (Table S3.3). We found land-mangers voiced many reasons for supporting rewilding, but often only in specific contexts.

Familiar

Participants tended to voice support for rewilding practices they were familiar with, particularly activities they are ‘*already doing*’, such as restoring habitats and introducing non-predator species: “*We do a bit of that ourselves [...] restoring old ancient woodlands and old wildflower meadows is a particular passion of all of us really at this farm*”, and: “*I have done some of it [introducing species] myself already, we actually rear red squirrels in captivity, that’s a little bit of rewilding I suppose we contribute to*”. Similarly, participants expressed support for rewilding practices they did not perceive as a threat to themselves or their livelihoods. For example, the introduction of species that they believe will cause ‘*no harm*’ or are ‘*already present*’ in Britain: “*Wading birds, well they’re not going to do anybody any harm [...] Birds of prey I haven’t got a problem with, we see a lot of buzzards round here, we saw some red kites a few weeks ago, so not got a problem with them*”. Our findings are in line with previous research that found farmers who already carry out environmental activities are more likely to embrace formal management plans, as they were already familiar with the activities and did not need to make changes to their farming practices (Wheeler *et al.* 2018). The flip side to this is that land-manager opposition to rewilding (e.g., Farming UK, 2019; Wynne-Jones, 2022) may partly stem from unfamiliarity with the proposed practices.

Enthusiasm

There was enthusiasm for rewilding activities among participants who were keen to ‘*witness*’ species being (re)introduced: “*I’d love to see the beaver back*”, and: “*Red squirrels would be lovely to see*”. This was especially evident for participants, across all three broad study regions, when considering the reintroduction of large carnivore species currently extinct in Britain (Figure 3.2): “*The one for me is wolves, I’d love to see wolves back*”. Although the desire to witness large charismatic species has been well documented in studies on public attitudes towards species (re)introductions (Nilsen *et al.* 2007; Smith *et al.* 2016; Niemiec *et al.* 2022; Auster *et al.*, 2020a), it has been largely overlooked as a factor that could influence support positively for rewilding among land-managers. To date the focus has been on the potential financial benefits land-managers may receive through paid participation, ecotourism, and compensation for the loss of livestock (Duckett *et al.* 2022). Nevertheless, studies on farmer participation in agri-

environment schemes have demonstrated that witnessing environmental benefits first-hand is an important motivation (Yeboah *et al.*, 2015; Wheeler *et al.*, 2018).

Benefits

There were many benefits and opportunities land-managers associated with rewilding. For instance, participants spoke of the ‘*ecosystem services*’ species like beavers could deliver in terms of natural flood management, the carbon storage potential of restored habitats and the ‘*trophic pressure*’ that introduced species could exert on species that lack a natural predator: “*Beavers will help to control the flow of water down some of the water ways. I’m not sure about wolves, although they might control the red deer population which is out of control [...] and pine marten, they’d probably help to control things like grey squirrels*”. Other studies have also found support for habitat restoration and species introductions is linked to the ecosystem services they can deliver (Matzek & Wilson, 2021), with a strong overlap between popularity and ecological benefits in the case of beaver reintroductions specifically (Loth & Newton, 2018). This suggests there may be an opportunity to increase support for rewilding by demonstrating and communicating more clearly the environmental benefits.

Opportunities

Support for rewilding practices among some land-managers was linked to potential opportunities they could see for themselves, such as the opportunity to generate additional income through ‘*ecotourism*’: “*If I can create safari tours or opportunities to get out into the wildlife within this area, then that’s something I can monetise and I can leverage some ecotourism on it*”. The economic benefits associated with increased tourism are often promoted as a positive for people living in rewilded areas, or as an incentive for land-managers to rewild their land (Hall 2019; Auster *et al.*, 2020a). An increasing number of private landowners in the UK have adopted rewilding to diversify their revenue streams (Wynne-Jones *et al.* 2020), signifying that rewilding is increasingly seen as a financially viable land-use. Still, the success of nature-based tourism depends on people having the necessary skill sets to support the industry, sufficient public demand, and having right infrastructure in place (Sandom *et al.* 2019; Curtin 2013). In

fact, some participants recognised that not all land-managers would be able to capitalise on these opportunities: *"I would love to do something like that [rewilding], I really would, but not everyone in this country is able to do a Knepp [a large flagship rewilding project on a private estate in England]"*.

Context

Although we found wide support for rewilding activities, participants often made it explicit this was only related to specific contexts. For example, most participants only consider it relevant in areas characterised by *'low productivity'*, emphasising that highly productive land should be used to grow food: *"It [rewilding] has got to be on marginal land and not Grade 1, potato and cash crop producing land"*, and: *"You don't want to take out the best farmland and put it all into wilding, you want to use the best farmland for farming, we've got loads of other land we can rewild"*. Regarding their own land, many participants specified that they would consider rewilding on *'parts'* of the farm that are marginally productive or difficult to farm, but would be less keen on the whole farm being rewilded: *"Small scale, I would probably be quite tempted [to rewild] in places, but not the whole [expletive] thing"*. This mirrors a study that found members of the English farming community tend to favour rewilding at smaller-scales or on unproductive land (Mikołajczak *et al.* 2022). However, restoring small areas of less productive land does not correspond well with the core aim of rewilding, which is to restore ecosystems on a large-scale (Soulé and Noss 1998; Lorimer *et al.* 2015). While a scaled back version of rewilding may be more palatable to land-managers, it is unlikely to deliver the large-scale nature recovery ambitions set out by advocates of the approach and policymakers (Rewilding Britain 2022b; Defra, 2022b).

Some participants said that rewilding should only happen in the *'right'* place, or that (re)introductions should be of the *'right'* species: *"As a concept, I would support it [rewilding] in the right places on the right habitat and for the right species"*. Interestingly, this exact phrasing was used by farmers who spoke of the *'right'* place and the *'right'* habitat regarding suitable locations for beaver reintroductions in Scotland (Coz & Young, 2020). Although what

participants defined as *'right'* was often left undefined, some specified that they meant somewhere where it would not interfere with human activities, not on productive agricultural land and not near where they live. This *'not in my backyard'* (NIMBY) attitude (Heiman 1990) was particularly evident when considering species (re)introductions: *"I'm a strong supporter of releasing animals into the wild that used to live here, where appropriate obviously, it might not be quite appropriate putting the wolf back into Kent [...] Wolf would possibly be ok in places like Scotland"* (this participant was from southern England). NIMBY attitudes are widely reported in the conservation literature, with less support for wolf reintroductions (von Essen & Allen, 2020), less acceptance of nature protection projects (Byrka *et al.*, 2017), and negative attitudes towards bear encounters (Sauka 2022), all related to proximity. Similarly, a recent review study also highlighted that attitudes towards local, site-specific rewilding projects are less positive compared with more general attitudes to nature (Bauer & Atzigen, 2019).

When considering other land-managers engaging in rewilding activities, we found support for land-managers having *'autonomy'* over how to best manage their land, regardless of whether participants personally supported rewilding. Nonetheless, many were less accepting of rewilding that could infringe on other people's land, and tempered their support with the caveat that it should not negatively *'impact others'*: *"People can do what they like with their own land, as long as they don't expect everyone else to join in if they're an adjoining farm"*, and: *"If people want to do that [rewilding] on their land, that's fine, as long as that doesn't have an impact, a detrimental impact, to my land"*. This echoes another study that found farmers were concerned about rewilding not being *'socially just'* if it negatively affects others (Mikołajczak *et al.* 2022). Rewilding NGO trustees have also recognised that species (re)introductions and land management changes could cause problems for neighbouring farmers (Wynne-Jones *et al.*, 2018), especially since a core objective of rewilding is to reinstate a more *'self-willed'* nature (Fisher & Parfitt, 2016; Prior & Ward, 2016).

3.4.7. Negative perceptions and concerns with rewilding

We extracted seventy codes, grouped in five parent themes, related to negative perceptions of the activities associated with rewilding (Table S3.3). They centred on; rewilding as a conservation approach, food security, economics, species (re)introductions and issues with the term ‘rewilding’ itself.

Approach

Most participants had concerns about rewilding as a potential land-management option, with many advocating that ‘*other conservation*’ approaches are more appropriate in a British context: “*I don’t think we could do large-scale rewilding; it just wouldn’t work due to humans around here. So, what we can do is have a bit more woodlands, have more hedges, more field margins and scruffier field margins in the conventional sense*”. This mirrors previous research that found farmers tend to favour conservation approaches they perceive can integrate with existing farming practices over rewilding (Mikołajczak *et al.* 2022).

One of the main drawbacks participants raised regarding rewilding was the belief that land requires ‘*management*’, with many stressing that the removal of management would result in the land being of ‘*low value*’ to conservation: “*I think rewilding needs a bit of management. I think if I was to go and leave a block of land, it would just be a whole pile of weeds*”, and: “*If you do nothing with it [the land], it will just be covered in bramble and thistles and nettles, and it will become a very low interest for conservation*”. This belief is not new as opposition to rewilding often stems from a perceived lack of control (Dempsey 2021). Hands-off rewilding approaches have also been criticised by farming representatives as a “misguided idea about returning Britain to some sort of medieval wasteland” (Yeo, 2021). This likely explains why rewilding projects in Britain tend to be more “domesticated” than those elsewhere in Europe, i.e., they operate on smaller scales, have higher levels of human intervention, and have scaled back nature restoration ambitions (Thomas 2021).

There was also concern that Britain is too densely populated in terms of ‘people’ for rewilding to be considered appropriate, and that there is a lack of ‘space’ for rewilding to succeed on a large scale: *“I don’t think that there are big enough areas of land without urban developments in or near them to allow rewilding to be a success”*. Relatedly, some were concerned that there would be too much human pressure on rewilded areas due to countryside “right to roam” rules (UK Government, 2022): *“There are too many people in this country, there would be too much conflict”*. This may relate partly to a lack of familiarity with rewilding. Although Britain is notable for intense land-use pressure and high population density (Environment Agency 2021), urban areas account for only 8% of the total land area (ONS, 2019) and there are successful rewilding projects in countries in continental Europe with similar population densities (Pereira & Navarro, 2015).

Some land-managers took issue with rewilding proposals that focus on agricultural land, leading many to question ‘why farmers’ are expected to rewild over other people or organisations responsible for land-management: *“Well, if it [rewilding] is really important, why aren’t some of the people shouting about it raising the funds and then just buying all the land?”*. Many emphasised that producing food is an important part of their ‘identity’ and do not want to give up farming: *“Why is a farmer who’s been trained to grow crops and done it his whole life, why is he suddenly going to listen to an environmentalist that says, ‘I want you to rewild your farm’, why would I change what we’ve been doing here successfully since the 1960s?”*. Certainly, farmers identity as a food producer can act as a barrier to participation in agri-environment schemes (Chapman *et al.*, 2019), and prompt a sense of anger and vulnerability in response to rewilding plans (Wynne-Jones 2022).

Food security

The majority of participants were concerned that rewilding could diminish Britain’s ability to be ‘self-sufficient’ in terms of food production, leading many to emphasise that ‘productive’ agricultural land should not be rewilded: *“I wouldn’t want to rewild the fens [productive agricultural land in eastern England] because that’s where we’ve got to produce the food for the*

country". There was also a worry that removing agricultural land from production for rewilding would increase the need to 'import' food from countries with lower environmental standards and cause an overall net loss for conservation: *"It [rewilding] forces the UK to import food from elsewhere, and where the UK is importing food from probably has lower environmental standards and is doing more damage than if you carry on farming as you were doing before"*. This is in agreement with other studies that found members of the English and European farming communities are concerned about the impact of rewilding on food security (Duckett *et al.*, 2022; Mikołajczak *et al.*, 2022). Thus, while rewilding proponents advocate for rewilding on marginal land to avoid conflicts with food production (Merckx & Pereira, 2015; Goldsmith, 2022), the tension surrounding rewilding has likely arisen from those who frame rewilding as a trade-off with farming (e.g., Monbiot, 2013) and the media reporting UK Government habitat restoration plans (Defra, 2022b) as farmers being paid to rewild their farms (e.g., Harvey, 2022; Tidman, 2022).

Economics

There was a clear feeling from participants that there would need to be a 'profitable' business opportunity, or a 'financial mechanism' in place to make removing land from production for rewilding an attractive option: *"In the context of rewilding in my scenario, the economics are such that it's just, it's not even a starting position"*, and: *"Unless my farm is profitable, I cannot afford to do things that incidentally I would be keen to do. It [rewilding] is a luxury. And I'm not saying is a bad luxury, but it is a luxury"*. There was also a worry that taking land out of agricultural use for rewilding could reduce the 'land value' and prevent land-managers from exploring 'future opportunities' that may arise: *"Agricultural land, let's say, is worth £8,500 an acre, what would rewilded land be worth? Half that? Could a landowner be reducing the value of their asset by rewilding?"*, and: *"I'm looking and having some testing done on the land to look at the value of the land in terms of growing vines. So, if I say it would be really nice to just rewild those fields down there, what opportunities am I actually stopping later?"* It is widely recognised that for land-managers to carry out environmentally beneficial activities they must be able to afford to do so, with the mantra *"you cannot go green if you are in the red"* often repeated by farming representatives

(Tasker 2019). This aligns with farmers in Europe indicating that they would only be willing to participate in rewilding schemes at high payment levels (Granado-Díaz *et al.*, 2022).

Species (re)introductions

When considering species (re)introductions specifically, the apprehension most frequently cited was the potential ‘damage’ they could cause: “*I think wild boars can be really damaging on woodland [...] Beavers, they can be fairly destructive around waterways and things [...] and moose, they’d rip all my hop vines down with their big horns*”. For large predator species currently extinct in Britain, the impact they could have on ‘livestock’ and the risk they could pose to human ‘safety’ were the concerns raised most often: “*I’m a sheep farmer so why on earth would I want wolves?*”, and: “*So, wolves, brown bears, these are not things you really want. I mean, if you introduce some of these heavy predators in, you will have human death in the end*”. These worries have been widely reported in the literature, for example, safety and livestock concerns related to lynx reintroductions (Hawkins *et al.* 2020), damage to crops and property by wild boar and beavers (Coz & Young, 2020; Duckett *et al.*, 2022), and conflicts between sheep farmers and reintroduced white-tailed sea eagles (O’Rourke, 2019; Duckett *et al.*, 2022). Although rewilding in its original inception aims to “restore big wilderness based on the regulatory role of large predators” (Soulé & Noss, 1998), rewilding projects do not always include the (re)introduction of large herbivores or carnivores (Carver 2016). Indeed, there are divided opinions over whether people could co-exist with large species in the UK, with farming representatives describing proposals to reintroduce predator species described as “wholly unacceptable” (Farming UK 2020).

We found some participants were less troubled by the potential negative impacts that could result from species (re)introductions, but instead expressed a fundamental issue with the concept or idea of (re)introducing species in areas where they no longer exist. For example, some questioned the ‘rationale’ behind (re)introducing species, arguing that it is ‘expensive’ and there are better things to spend conservation money on such as protecting ‘existing wildlife’: “*Why are we trying to reintroduce them? If we had the right type of habitat, they’d be here now. So, we*

end up just causing a problem for ourselves, just wasting money to introduce something that doesn't want to be here anyway", and: "It [reintroducing species], is incredibly expensive to do, we would be better just spending money looking after the red squirrels where they are now". Others were concerned that (re)introducing extinct species is like trying to go 'back in time', and questioned the justification behind it: "Picking one iconic species because its big and its recognisable well its sort of, why that one? [...] something that used to live here 500, 1,000 or 2,000 years ago, how far back do you go?". The impression that the choice of species being considered for (re)introduction is arbitrary highlights that there is a disconnect between the conservation rationale and land-manager perceptions behind the motivation for species (re)introductions, or that they are unaware or unconvinced of arguments based on the need to restore the ecological function of missing species (Jørgensen 2015).

A more practical concern many participants had regarding (re)introductions was related to the 'survivability' of (re)introduced species, since many of the anthropogenic pressures that led to their extinction are still present: *"Animals that became extinct in 18th-19th century, let's say, became extinct in a very different environment with a much lower population of human beings. It may well be they can't live in the modern environment that we have created".* Although fears over 'survivability' were often related to species that have been extinct in Britain for centuries, participants who were less in favour of (re)introducing species like wading birds and red squirrels also cited concerns over their 'survivability'. They argued that there are too many predators in the landscape, invasive species will outcompete them, or that the food and habitat necessary for them to survive is insufficient: *"Until you control the grey squirrels there's no point in talking about the red squirrels... you won't have wading birds while you've got corvids and foxes picking up chicks and eggs, they are just doomed".* These concerns have also been raised among conservationists due to the limited success of various species (re)introductions (Nogués-Bravo *et al.*, 2016; Drouilly & O'Riain, 2021; Stepkovitch *et al.*, 2022), particularly as the reason for failure is often linked to the initial reason for decline (Bubaca *et al.* 2019).

Rewilding term

The term rewilding being ‘unclear’ was a cause for frustration among participants who were unsure what rewilding entails or whether certain activities could be described as rewilding: *“Rewilding is a term that is thrown around and used particularly badly, it seems to cover many, many different forms of conservation”* and: *“Planting things like flower meadows and hedgerows and stuff, does that count as rewilding?”*. There was also a belief that the term is ‘divisive’ since it means different things to different people and this had caused disagreement and conflict: *“I think the whole rewilding concept needs to have a different wording, because it’s just got so many people angry”*. The lack of a single clear definition means rewilding is perceived by some as a “toxic” term (Sandom *et al.* 2019), and is often accompanied with the words “debate” and “controversy” in the media (e.g., Barkham, 2017; Weatherall *et al.*, 2019). As a consequence, there have been suggestions in the academic literature that the term rewilding should be replaced with “restoration” (Hayward *et al.*, 2019) or “nature-led ecosystems” (Carver 2016). However, this has been met with rebuttals stating that rewilding is different from restoration (Anderson *et al.*, 2019) and that attempts to clarify the meaning of the concept have been fruitful (Carver *et al.*, 2021). Despite this, UK policymakers have suggested rebranding rewilding as “nature recovery” due to the polarised debates that have hindered implementation (Spencer 2022).

3.5. Conclusion

Rewilding is growing in popularity as an approach for restoring self-regulating ecosystems through species (re)introductions and minimising human interventions (Johns 2019; Carver *et al.* 2021). As rewilding has the potential to significantly impact land-managers and their livelihoods, it is important to understand their perceptions as key stakeholders. Without adequately accounting for land-manager perceptions, policy development and collaborative partnerships to deliver rewilding are likely to be unsuccessful and cause unnecessary conflict (Madden & McQuinn, 2014; Bennett, 2016). While some of our findings are specific to rewilding in a British context (e.g., support for the (re)introduction of particular taxa), many of our findings are highly relevant to broader debates regarding rewilding, ecological restoration and conservation. Fundamentally, land-managers are most concerned about how

rewilding will change their role and influence over land management. This was evident both from their perception that rewilding involves stopping management, and concerns over how it would alter their livelihoods and identity, as well as wider issues centred on food security. Land-managers were most supportive of rewilding activities that involve their active participation and/or conservation activities with which they are familiar, such as habitat restoration or expanding the range of species currently present in the country. In general, participants only supported rewilding on low-quality agricultural land. However, land-managers with predominantly high-quality agricultural land were most likely to consider rewilding, as they felt rewilding the marginal sections of their land would have a negligible impact on food production and their profitability. Conversely, land-managers with uniformly average- or low-quality land could not afford to remove it from production. This means there may be an opportunity to target rewilding policies towards land-managers with high-quality agricultural land, focusing on activities they can actively engage with in less productive areas, and potentially encouraging collaboration between neighbours to achieve larger-scale nature recovery targets (HAC 2022; Defra, 2019a).

3.6. Supplementary Information

Supplementary Table 3.1: Interview schedule, showing the order questions were posed to participants and the question response type. The closed-ended Likert scale questions acted as provocations for qualitative elaboration.

Question number	Question	Question response type
1	Postcode of property	Open
2	Age	Open
3	Gender identity (Answer options: Man, Woman, Other (please specify), Rather not say)	Closed
4	What is the "Total Area of Land" that you own or manage (in hectares)?	Open
5	What activities do you use your land for? (Please select all that apply) (Answer options: Agriculture, Forestry, Tourism, Mining/quarrying, Unused Land, Other (please specify))	Closed
6	What are your three main motivations for using your land in this way?	Open
7	What type of farm do you own or manage? (Please select all that apply) (Answer options: Cereals, General cropping, Horticulture, Specialist pigs, Specialist poultry, Dairy, Grazing livestock (LFA), Grazing livestock (lowland), Mixed, Unclassified, Other (please specify))	Closed
8	What is the "Total Farmed Area" of your land (in hectares)?	Open
9	According to the UK's Agricultural Land Classification, how much of your land makes up each grade (in hectares)? (Grade 1: __, Grade 2: __, Subgrade 3a: __, Subgrade 3b __, Grade 4: __, Grade 5: __)	Closed
10	Is farming your principal occupation?	Closed & Open

	(Answer options: 0=no, 1=yes) If you answered No, please specify your principal occupation	
11	Is your land within an agri-environment scheme? (Answer options: 0=no, 1=yes) If yes, please specify which agri-environment scheme(s)	Closed & Open
12	In a few sentences, what is your view on the role of land-managers in conservation?	Open
13	To what extent do you support or oppose land-managers halting management on their land? For example, stepping back from farming to allow the land to return to nature. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
14	To what extent do you support or oppose land-managers restoring natural habitats on their land? For example, restoring or establishing wildflower meadows, grasslands, woodlands, saltmarshes, ponds, peat bogs, heathlands, or other habitats appropriate for the area. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
15	To what extent do you support or oppose (re)introducing absent animal species to Britain? For example, releasing animals into the wild that used to exist in Britain. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
16	Which, if any, of the following animal species would you support being (re)introduced in Britain? For example, reintroducing species that used to exist in Britain or introducing species in parts of Britain where they are currently absent. (Please select all that apply). (Answer options: birds of prey, wading birds, red squirrel, beaver, wildcat, wild boar, lynx, wolf, brown bear)	Closed
17	To what extent do you support or oppose land-managers (re)introducing large grazing species on their land, to re-establish a naturalistic grazing system? For example, grazing mammals such as moose. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed

18	To what extent do you support or oppose land-managers (re)introducing non-predator species on their land? For example, wading birds, red squirrels, or beavers. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
19	To what extent do you support or oppose land-managers (re)introducing predator species that exist in some parts of Britain on their land? For example, birds of prey, wildcats, wild boars. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
20	To what extent do you support or oppose land-managers reintroducing predator species currently extinct in Britain on their land? For example, lynxes, wolves, brown bears, or other species appropriate for the area. (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
21	Have you heard of rewilding?	Open
22	In a few sentences can you describe what rewilding means to you?	Open
23	Is there a species that you most associate with rewilding?	Open
24	If you were to seek information about rewilding, which (if any) of these sources would you trust for information? (Answer options: Friends/family, other landowners/farmers/land-managers, Government bodies (e.g. Natural England, NatureScot, Defra), Wildlife charities (e.g. Wildlife Trusts, RSPB, WWF), Rewilding specific charities (e.g. Rewilding Britain), Environmental activists (e.g. George Monbiot, Chris Packham), National Farmers Union (NFU), Country Land and Business Association (CLA), Game and Wildlife Conservation Trust (GWCT), BBC News (online, TV, radio), Newspapers (e.g. Daily Mail, The Sun, The Guardian, The Times) (online and print), Social media (e.g. Facebook, Twitter, Instagram), Online blogs (e.g. regularly updated websites written in an informal style), Books, Scientific journals or publications, TV programmes (e.g. Countryfile), Other (please specify))	Closed
25	Are there sources you would not trust for information about rewilding?	Closed

	(Answer options: Friends/family, other landowners/farmers/land-managers, Government bodies (e.g. Natural England, NatureScot, Defra), Wildlife charities (e.g. Wildlife Trusts, RSPB, WWF), Rewilding specific charities (e.g. Rewilding Britain), Environmental activists (e.g. George Monbiot, Chris Packham), National Farmers Union (NFU), Country Land and Business Association (CLA), Game and Wildlife Conservation Trust (GWCT), BBC News (online, TV, radio), Newspapers (e.g. Daily Mail, The Sun, The Guardian, The Times) (online and print), Social media (e.g. Facebook, Twitter, Instagram), Online blogs (e.g. regularly updated websites written in an informal style), Books, Scientific journals or publications, TV programmes (e.g. Countryfile), Other (please specify)).	
26	There are numerous definitions of rewilding. One such definition is: "The large-scale restoration of ecosystems where nature can take care of itself. Rewilding seeks to reinstate natural processes and, where appropriate, missing species – allowing them to shape the landscape and the habitats within." Considering this definition, to what extent would you support or oppose rewilding in Britain? (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
27	Considering this definition, to what extent do you support or oppose rewilding in [insert the county the participants land is in]? (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
28	Passive rewilding definition: "The return of natural processes as a result of landowners leaving sections of their land to nature. Often associated with farmers abandoning marginal land". Considering this definition, to what extent do you support or oppose land-managers engaging in passive rewilding on their land? (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
29	General rewilding definition: "To return the land to a wilder and more natural state". Considering this definition, to what extent do you support or oppose land-managers engaging in general rewilding on their land? (Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)	Closed
30	Active rewilding definition: "The re-establishment of natural processes, typically achieved by reintroducing extinct species or actively restoring habitats". Considering this definition, to what extent do you support or oppose land-managers engaging in active rewilding on their land?	Closed

(Answer options: 1=strongly oppose, 2=tend to oppose, 3=neutral, 4=tend to support, 5=strongly support)		
31	How likely or unlikely is it that you would consider rewilding on your land? (1 = extremely unlikely, 2 = unlikely, 3 = neutral, 4 = likely, 5 = extremely likely)	Closed

Supplementary Table 3.2: Thematic codes associated with responses to the specific question: ‘In a few sentences, can you describe what rewilding means to you?’, arising from interviews from land-managers (N = 95) in England and Scotland. Responses were coded by one author and checked for consistency by a second. The 11 codes are grouped into three parent themes. The number and percentage of participants that referenced each code are provided. Different participants are indicated by a letter combined with a digit (e.g., K23).

Theme	Code	Description	Illustrative quote	Number (%)
Approach	No management	Rewilding means no management of the land	<i>“It means stepping back from the land.”</i> E15	69 (73%)
	Return	Rewilding means returning the land to the condition it would have been before modern agriculture	<i>“It means turning an area of land back into the state it would have been at some previous point in history.”</i> N1	36 (38%)
	Species (re)introductions	Rewilding involves (re)introducing missing species	<i>“Yeah, it’s the introduction of species that too many humans have pushed to the brink of extinction.”</i> O6	21 (22%)
	Stopping farming	Rewilding means stopping agricultural practices	<i>“Rewilding is basically envisaging what this land was five centuries ago and withdrawing all operations on the farm to do with growing crops and things.”</i> E11	16 (17%)
	Grazing	Rewilding involves grazing	<i>“Standing back and letting nature get on with it, with possibly some assistance from appropriate grazing regimes.”</i> K31	9 (9%)
	Some limited management	Rewilding involves some limited management of the land	<i>“It is withdrawing to a large degree from making the decisions but at the same time containing some measure of control so the nature can be assisted or facilitated.”</i> N16	5 (5%)

	Fenced	Rewilding involves fenced areas	<i>"It's basically putting a fence round an estate and seeing what actually turns up and nature creates for you."</i> O8	4 (4%)
Land	Mess	The land is a mess	<i>I think you'd generally call it a [expletive] mess!"</i> K33	6 (6%)
	Poor quality	The land is poor quality	<i>"You've got a large block of very poor agricultural land which you don't really know what to do with."</i> K9	4 (4%)
People	Wealthy	Something only wealthy people can realistically do	<i>"I'm not quite sure what it [rewilding] means to me... it means to me that you have loads of money."</i> K9	12 (13%)
	Non-rural	Rewilding is for people who do not live in rural areas	<i>"It means people who have read a lot of books who want this, who don't know what they are talking about. It's not the people living in nature who want this sort of thing, its people living in suburbia, universities, who want it."</i> N9	5 (5%)

Supplementary Table 3.3: Thematic codes associated with positive perceptions of the activities associated with rewilding, arising from interview responses from land-managers (N = 95) in England and Scotland. Responses were coded by one author and checked for consistency by a second. The 30 codes are grouped into five parent themes. The number and percentage of participants that referenced each code are provided. Different participants are indicated by a letter combined with a digit (e.g., N15).

Theme	Code	Description	Illustrative quote	Number (%)
Familiar	Already doing it	Already leaving land out of production, restoring habitats and (re)introducing species	<i>"That's kind of what we are doing, again the idea of saying that this is quite marginal land and it's not productive so why not allow nature to come back to it."</i> N15	49 (52%)
	No harm	Can see no problem, won't cause harm, why not?	<i>"Wading birds, well they're not going to do anybody any harm."</i> E13	41 (43%)
	Already present	Taxa is already in Britain, so support species remaining or its range expanding	<i>"Birds of prey, yeah, I mean we have birds of prey here and it's lovely seeing them. I'm all for that."</i> K19	31 (33%)
	Acceptable	Rewilding being more common means it is acceptable to have untidy land	<i>"Twenty years ago, if you had a marginal field and it looked a mess, most farmers would have been very embarrassed about it. They wouldn't have wanted their contemporaries to see it, but now you can say 'oh yes, we're rewilding it'. There's no humiliation in that."</i> K31	3 (3%)
Enthusiasm	Witness	Would like to witness nature recovery and see missing species returned to Britain	<i>"We've lost a lot of natural species that were here, and part of the food chain and I think that's a real shame. And I think it would be really nice to see some of the native things".</i> K13	32 (34%)
	Nice idea	Believe rewilding is a nice idea	<i>"I mean, it's a lovely idea to have these wild animals back".</i> K12	31 (33%)
	Inspiring	Find examples of other rewilding projects inspiring	<i>"We first began to wonder about having longhorns when we went to Knepp and saw the job that they do".</i> K4	30 (32%)
	Nature connection	Improve connection with nature	<i>"I think farmers need to be reconnected to nature again."</i> K8	9 (9%)

	Responsibility	Responsibility to restore nature	<i>"Wildlife, nature, is under pressure from lots of other people, so I could do what I can to help nature in a way."</i> N17	8 (8%)
	Exciting	Find rewilding exciting	<i>"It will protect landscapes, and it will create new ones, which would be quite exciting"</i> . K6	5 (5%)
Benefits	Ecosystem service	Rewilding can restore ecosystem services	<i>"If it's taking marginal land out and there's a potential bigger benefit of improving those ecosystem services... actually it would improve the flood defenses."</i> K24	31 (33%)
	Nature	Benefit to species and ecosystems	<i>"Wolves and beaver have been shown to have a beneficial impact on the ecosystems of the areas in which they're active... so yeah, I would support them being reintroduced."</i> S11	27 (28%)
	Trophic pressure	(Re)introduced species can exert trophic pressure to restore balance in ecosystems	<i>"I'd like to see pine martens introduced in Kent for example, I think it'd be a great thing for the grey squirrels."</i> S9	26 (27%)
Opportunities	Ecotourism	Opportunity to generate income through ecotourism	<i>"I can effectively create safari tours or opportunities to get out into the wildlife within this area, then that's something I can monetise and I can leverage some ecotourism on it"</i> . O2	19 (20%)
	Collaborate	Opportunity to join up rewilded areas and collaborate with neighbouring land-managers	<i>"I'd love to be part of a group of farmers that are actively rewilding. I've heard someone somewhere had a plan to link up a rewilding corridor through England."</i> O9	18 (19%)
	Meat market	Opportunity to generate income through meat sales	<i>"I mean, you could use your bison or moose or whatever and you could sell meat"</i> . K2	8 (8%)
Context	Low productivity	Support rewilding on less productive land	<i>"Where it's actually quite difficult to farm in the conventional sense, it would actually be quite beneficial to have rewilding on those areas."</i> O3	61 (64%)
	Parts	Support rewilding on parts of a property, not the whole area	<i>"To my mind, rewilding is just another management technique that we might use in parts, but not in the whole."</i> N18	43 (45%)

NIMBY	Support but not in my backyard	<i>"I think some of the uplands maybe you could do a bit of rewilding. I would think it's more appropriate in places like Scotland."</i> E13 (this participant has land in Norfolk)	41 (43%)
Right species, right place	Support rewilding if it is the right species in the right place	<i>"As a concept, I would support it [rewilding] in the right places on the right habitat and for the right species."</i> E9	40 (42%)
Autonomy	Support rewilding if it is the land-managers decision and it is not forced on them	<i>"I support landowners restoring natural habitats if they want to. I think landowners should, if they wish, restore natural habitats on their land as they want to."</i> N8	33 (35%)
Financial incentive	Would support or be interested in a financial incentive for rewilding	<i>"If there was long term funding for [rewilding] projects, it would probably be something we would look at."</i> E9	24 (25%)
Active management	Support rewilding if it involves active management	<i>"You need to actively restore them, it's not a thing that just happens, it needs management."</i> S10	21 (22%)
Impact others	Support rewilding so long as it does not impact other land-managers	<i>"If they [(re)introduced species] are on their land, then that's fine. I think it's when they start to escape to everyone else's. Obviously, if they start to escape and start eating everyone else's crops, then it becomes an issue."</i> K19	18 (19%)
Local support	If local land-managers and local people are consulted and they support rewilding	<i>"As long as it was done in a manner where they would actually have a chance of surviving and also in consultation with the people who are farming and living there".</i> E8	13 (14%)
Public demand	If there is public demand for rewilding	<i>"We're farmers, we'll produce whatever crop the public wants. If the public wants wilding, we'll do wilding".</i> K10	12 (13%)
Big area	Support rewilding in areas that are big enough	<i>"It only works on big areas; you can't do it in small pockets around the farm. To really rewild you need huge areas."</i> E7	11 (12%)

Purpose	Support rewilding activities if there is a clear purpose or goal in mind	<i>"If it's for so-called rewilding and they've got a purpose to it, so they want it to go back to nature and they want to reintroduce certain species then fine." S12</i>	9 (9%)
Nature approach	Support for passive rewilding approaches	<i>"This for me is much more nature deciding what happens, if we just leave land alone. So, I would support this more than I would proactive rewilding, where we are creating an ecosystem as opposed to this being the ecosystem that mother nature would like it to be." K1</i>	8 (8%)
Inevitable	Rewilding is acceptable if it is inevitable as the land is not economical to farm	<i>"I think in areas that are difficult or uneconomic to farm, then maybe have it [rewilding] happen by default anyway." K27</i>	6 (6%)

Supplementary Table 3.4: Thematic codes associated with negative perceptions of the activities associated with rewilding, arising from interview responses from land-managers (N = 95) in England and Scotland. Responses were coded by one author and checked for consistency by a second. The 70 codes are grouped into five parent themes. The number and percentage of participants that referenced each code are provided. Different participants are indicated by a letter combined with a digit (e.g., K32).

Theme	Code	Description	Illustrative quote	Number (%)
Species (re)introductions	Damage	Damage to crops, fences, land, and rivers	<i>"Trampling through crops and destroying other habitat that we have put there for beneficial purposes."</i> K32	48 (51%)
	Livestock	Threat to livestock and livelihoods	<i>"Things like wolves, yeah, not a good idea, not while we're all trying to do some sheep farming and livestock farming... it's never going to work with livestock, is it?"</i> O12	43 (45%)
	Safety	Threat to human safety as the taxa are dangerous	<i>"If you bring back apex predators, you run the risk that those apex predators are going to maul people."</i> N18	41 (43%)
	Survivability	If the taxa went extinct previously, will they be able to survive now?	<i>"I don't think there's any point in introducing red squirrels in most of England, because it would require killing all the grey squirrels."</i> O9	38 (40%)
	Not realistic	(Re)introducing species is not feasible or realistic	<i>"Wildcats are just not realistic, so I'd be against that. Moose again here in Essex, not a sensible option."</i> E3	35 (37%)
	Predation impact	Concerned about an (re)introduced species predation impact on threatened wildlife	<i>"You don't want to introduce one bird and kill another species that is just about surviving."</i> K11	34 (36%)
	Rationale	What is the reason for (re)introducing the species?	<i>"I guess my question would be what are they reintroducing them for, what is the primary reason for them?"</i> E10	33 (35%)
	Non-native	Taxa that are not native should not be introduced	<i>"If they were originally part of Britain's heritage, then I think there is every reason that they should be allowed."</i> K20	33 (35%)

Control	Population control of (re)introduced species would need to be in place, which could be controversial	<i>"They will need some sort of population control in the end, so that needs to be set out to start with. But of course, people don't like the idea that controlling populations means killing animals."</i> K11	29 (31%)
Enough predators	Enough problems with existing taxa without (re)introducing more	<i>"It's enough trouble with foxes and badgers without having wolves and bears."</i> K9	29 (31%)
Disrupt the ecosystem	Disrupt the ecosystem and balance of nature	<i>"I think they have to do something about the red kites in this area because it has upset the balance of nature up here."</i> O10	29 (31%)
Already here	Species is already in Britain, so it does not need to be (re)introduce	<i>"Wild boar, well they're here anyway, there's heaps of them up here anyway, and they do a lot of damage in the woods".</i> S1	28 (29%)
Contained	(Re)introduced species would need to be contained	<i>"Jo Blogs down the road just getting himself a brown bear and throwing it out in a field doesn't seem such a good idea, but if he'd done lots of research and was going to make sure that they were contained then it would be ok."</i> K23	27 (28%)
Back in time	(Re)introducing extinct species is going back in time	<i>"Something that used to live here 500, 1000 or 2000 years ago, how far back do you go? [...] to try and wind the clock back, no I don't like it."</i> E7	24 (25%)
Enough herbivores	There are already enough large herbivores, so we do not need to (re)introduce more	<i>"Moose, [...] but we've got one hell of a lot of fallow deer already."</i> E17	20 (21%)
Crazy	(Re)introducing species is a crazy idea	<i>"If you said to me you want to release some wolves around here, I would say you are bloody nuts."</i> K21	16 (17%)
Public	The public would oppose (re)introductions	<i>"There was a proposed lynx introduction to Keilder and there were loads of people going "oh, you know, what's going to happen to my chihuahua" ... I think it would be amazing, but the fact is I don't think public support would be there."</i> N13	16 (17%)

Existing wildlife	Should look after the species we have got before (re)introducing species	<i>"It would be better to protect what we've got [rather than] reintroduce things that are gone."</i> K27	15 (16%)
Escape	Problem if the (re)introduced species escapes from enclosed area	<i>"If they start to escape and start eating everyone else's crops then it becomes an issue."</i> K19	12 (13%)
Wildlife-park	(Re)introducing species is akin to creating a wildlife park	<i>"It would just be like a big safari park, and I'm not sure that that is very helpful."</i> N16	12 (13%)
Expensive	(Re)introducing species is expensive, money could be better spent on other conservation	<i>"The investments required could be spent on saving a thousand times more of the Amazon rainforest or whatever, you know?"</i> O4	11 (12%)
Bad example	Example of a species (re)introduction being badly executed	<i>"The beaver saga, it was quite controversial in this area, in fact, beavers have really only got a foothold due to a, um, I'm going to call it an illegal release".</i> S8	10 (11%)
Conflict	Conflict with fishermen, farmers, land-manager interests	<i>"I'd love to see beavers on the River Stour, but I don't think the fishermen would like it."</i> K25	10 (11%)
Natural return	If the habitat is there, the species will return of its own accord, so do not need to (re)introduce them	<i>"If you actively restore the habitats then all the species will turn up, and the ones that turn up on their own might not necessarily be the ones you would have introduced, it might be more natural."</i> E7	10 (11%)
Shoot	(Re)introduced species would be hunted	<i>"If somebody tried to introduce brown bears to this area, the real threat wouldn't be from the brown bears, it'd be from the 500 people who'd try to shoot them every night."</i> K31	10 (11%)
Reason	There's a reason the species is extinct in Britain	<i>"These animals aren't here for a reason, rightly or wrongly, they're not here."</i> E10	9 (9%)

Consequences of tourism	Will increase tourism, which will be detrimental to the (re)introduced species	<i>"What you are doing is creating an area that actually is then going to attract tourists, and those tourists then will damage the rewilding itself."</i> K1	8 (8%)
All or nothing	Need to (re)introduce all missing species, a variety of prey and predator species for the food chain	<i>"You almost have to go full burst at it, or not at all. Because they do need the predators to keep them under control."</i> K23	7 (7%)
Biosecurity	Risk of disease from (re)introduced species	<i>"The more we bring into this country, the more health risk and disease risk, I know they have to go into quarantine and things like that, but we always risk bringing them in."</i> O7	7 (7%)
Hazard	Hazard on roads	<i>"They would all need to be in a fenced area otherwise they will cause hazards on roads."</i> K21	7 (7%)
Market demand	Only sustainable if there is a demand for the (re)introduced species meat	<i>"If you introduce moose, that's only sustainable if there's an endpoint for them, are they going to be eaten? I struggle to see how that works beyond what we've got already, why can't we just use the livestock we've got already?"</i> N11	6 (6%)
Welfare	Welfare issues for (re)introduced species if there is no human management	<i>"In Holland, rewilding is really proper rewilding where the animals are allowed to die and rot in the fields, and I'm not sure that I can go that far."</i> K10	5 (5%)
Irreversible	Difficult to reverse if (re)introduced species has negative consequences	<i>"Once you've opened the bottle, you might not be able to get the genie back in there."</i> K23	3 (3%)
Global population	If the global population is sufficient, no need to (re)introduce the species in Britain	<i>"There's no shortage of moose in the world. Canada is knee deep in them. There's no reason to do it."</i> K14	2 (2%)
Regret	People will regret species (re)introductions when the consequences are fully realised	<i>"I think everyone is jumping on the bandwagon, but I think they are all going to come back and say it wasn't such a brilliant idea".</i> N3	2 (2%)

Approach	Management	Land requires management; you cannot just walk away	<i>"Rewilding would involve more than just shutting the gates, it would still involve management."</i> E2	55 (58%)
	Other conservation	Other conservation actions help wildlife	<i>"I think there are better ways you can achieve what we are trying to achieve without having to go down specifically a rewilding route."</i> O5	55 (58%)
	Low value	Land left with no management will have low conservation/biodiversity value	<i>"I think it would just be a big mess, you'd end up with fields of ragwort everywhere."</i> K17	54 (57%)
	Space	Not enough space in Britain to (re)introduce species or for large scale rewilding to be feasible	<i>"I don't think we have a big enough uninhabited land area to make it viable."</i> E9	32 (34%)
	People	Too many people in Britain for rewilding	<i>"There are too many people in this country, there would be too much conflict."</i> K26	30 (32%)
	Time	It would take a long time to see biodiversity benefits, so management would be needed to speed up process	<i>"It could take hundreds of years to achieve what you want to achieve, as opposed to if we give it a helping hand, we could probably get there in five or six years."</i> O1	19 (20%)
	Why farmers?	Why are farmers being asked to rewild their land, why not others?	<i>"I don't think this is something that can be done on a landowner basis of actually introducing species. I think that is way above our academic pay grade... I'm not sure it's the landowners' job."</i> S14	19 (20%)
	Evidence	What is the evidence for rewilding? Need research to show rewilding is effective	<i>"Until I see evidence that a moose or whatever else had a different grazing benefit, I don't see that there is any real need for that."</i> S3	18 (19%)
	Neighbours	Rewilding can affect neighbours negatively	<i>"I would never advocate for the introduction of extinct species, unless they didn't affect your neighbours."</i> N7	18 (19%)
	Herbivores	Need big herbivores to graze else land will become overgrown	<i>"I don't necessarily think that leaving the land without any grazing... it is just going to end up as woodland... if you wanted to achieve a more diverse landscape then it would have to be grazed."</i> K30	17 (18%)

Identity	Farming as an identity	<i>"I'm a farmer, you know, we're focused on food production here, that's our primary role and our secondary role is to manage the farm sympathetically around that." K3</i>	15 (16%)
Connectivity	No point in rewilding one isolated farm, need connectivity across a large area for it to work	<i>"It's alright to say you're rewilding here and rewilding there, someone or another you need to link up those areas that you're rewilding or its pointless." E16</i>	13 (14%)
Bad examples	Examples of rewilding gone wrong	<i>"The problem is this type of rewilding hasn't been handled very well in a couple of situations." K12</i>	12 (13%)
Trade-offs at large scales	Doesn't support rewilding on a large scale at the expense of other land-uses	<i>"We couldn't just allow nature to run away with itself on a large, large scale... I don't think we can just let large scale rewilding take place at the cost of food production." O4</i>	12 (13%)
Elitist	Rewilding is elitist	<i>"I think it can be irresponsible. I don't know if there is a need for it... Rewilding is an aggregation of the very wealthy or very selfish." K27</i>	10 (11%)
Personal	Rewilding is not an appropriate approach for personal reasons	<i>"Unlikely [to rewild] because I don't have the space to do it, or the time, or the money." K18</i>	10 (11%)
Unpredictable	Outcomes are unpredictable and could lead to negative consequences	<i>"They have no idea what the consequences of this stuff [rewilding] will actually be." K14</i>	9 (9%)
Lazy conservation	Rewilding is a lazy approach to conservation	<i>"It's what I call idle conservation, let everything get on with itself, sit back and do sod all and claim that we are wonderful and marvellous because we're idle and done nothing." N3</i>	8 (8%)
Unfair	Reluctant to try rewilding as farmers are often treated unfairly	<i>"They treat farmers as if we're the enemy. We're really not, we just want to do the right thing". K14</i>	8 (8%)
Misbehaviour	Land left to rewild will attract fly-tippers, quadbikes, and other misbehaviour	<i>"What will happen is that land values will go down, land will be sold off and then it will become a vast tipping site, illegal dumpsite." E12</i>	7 (7%)

	Poor land-managers	People who rewild are not good land-managers	<i>"That was very much the Trees [Knepp owners] justification as well, wasn't it? They said their land was impossible to farm economically. I don't think they tried very hard but..."</i> K31	5 (5%)
	Public opposition	Public opposition to farmers leaving land to revert to nature	<i>"I think public opinion would be quite against someone having twenty acres of scrubland."</i> K16	5 (5%)
Food security	Self sufficient	Britain should be self-sufficient in producing enough food for the population	<i>"I guess it depends if they decide to rewild half of England, then what are we going to eat? You wouldn't want to do the whole country, or half of it even [...] you wouldn't be self-sufficient."</i> K17	58 (61%)
	Productive	Productive agricultural land should be used to grow food	<i>"You don't want to take out the best farmland and put it all into rewilding."</i> E7	38 (40%)
	Standard of imports	Rewilding will lead to importing more food from other countries with lower production standards	<i>"If we go and rewild our land and some other country produces our food, you can guarantee that nine times out of ten those countries are going to have lower safeguards and standards than British agriculture."</i> N14	9 (9%)
Economics	Financial mechanism	There needs to be funding or a financial incentive to enable farmers to rewild land	<i>"If you're going to get people to take land out of management, that's fine, but what incentive do you have for them to do that?"</i> N12	37 (32%)
	Profitability	Rewilding would need to be more profitable than farming to be viable	<i>"I'm looking at Grade 1, well-drained soil, where I'm making a margin on the crop, so I don't understand why we would give up a gross margin of £250/acre and sign up for something that gives £150/acre."</i> E5	34 (36%)
	Wealth	Only already wealthy landowners can afford to rewild their land	<i>"What little I know of rewilding; you have to be fabulously rich to do it."</i> E12	20 (21%)
	Livelihoods	Rewilding could lead to loss of livelihood for farmers and rural communities	<i>"If you were to rewild everywhere, then what does that do for rural communities? You know, if we weren't here, then that's another family</i>	16 (17%)

			<i>gone, fewer children in the schools, fewer people using the shops...</i>	
			N11	
	Public money	Questioning whether rewilding a good use of public money	<i>"Public money for public good is the war cry, isn't it now? I don't think it is necessarily public money going to a public good."</i> K27	10 (11%)
	Land value	Rewilding will reduce the value of the land	<i>"You know let's say my land here is worth £7000 an acre and I wilded it over the next 5 years, and it became worth £3000 an acre as a scrubby old mess, then you know, I haven't done a lot of good for myself"</i> K4	7 (7%)
	Future opportunities	Rewilding could prevent future land-use opportunities	<i>"So, if I say it would be really nice to just rewild those fields down there, what opportunities am I actually stopping later? Because it will be even harder to undo the rewilding."</i> K1	5 (5%)
Rewilding term	Unclear	Rewilding means different things to different people	<i>"To me, rewilding is a term that is thrown around and used particularly badly, it seems to cover many, many different forms of conservation."</i> E9	19 (20%)
	Divisive	The rewilding term can be divisive	<i>"It is a fairly politically sensitive word and some people, you know, don't like the idea of the very word rewilding, it immediately puts them off it."</i> S6	7 (7%)

Supplementary Table 3.5: The agricultural land classification responses for each participant (N=95). The responses were grouped into three categories ('Good', 'Average' and 'Poor') to summarise the overall quality of the land, with land that was mostly Grade 1 or Grade 2 categorised as 'Good', mostly Grade 3a or Grade 3b as 'Average', and mostly Grade 4 or Grade 5 as 'Poor'.

Participant	Grade 1 or 2 (%)	Grade 3a or 3b (%)	Grade 4 or 5 (%)	Main agricultural land classification
1	0	0	100	Poor
2	0	0	100	Poor
3	2	33	65	Poor
4	0	0	100	Poor
5	0	0	100	Poor
6	30	40	30	Average
7	0	0	100	Poor
8	0	100	0	Average
9	0	0	100	Poor
10	45	50	5	Average
11	0	75	25	Average
12	0	74	26	Average
13	0	5	95	Poor
14	10	60	20	Average
15	0	50	50	Poor
16	0	0	100	Poor
17	0	0	100	Poor
18	0	70	30	Average
19	0	50	50	Poor
20	33	34	33	Average
21	45	55	0	Average
22	20	80	0	Average
23	90	0	10	Good
24	86	9	5	Good
25	0	100	0	Average
26	0	100	0	Average
27	50	45	5	Good
28	95	0	5	Good
29	50	50	0	Good
30	0	100	0	Average

31	0	100	0	Average
32	0	5	95	Poor
33	0	100	0	Average
34	0	100	0	Average
35	0	55	45	Average
36	100	0	0	Good
37	0	0	100	Poor
38	33	67	0	Average
39	0	10	90	Poor
40	0	100	0	Average
41	5	95	0	Average
42	0	5	95	Poor
43	0	0	100	Poor
44	5	40	55	Poor
45	5	5	90	Poor
46	0	5	95	Poor
47	25	45	30	Average
48	0	0	100	Poor
49	5	35	60	Poor
50	0	30	70	Poor
51	33	67	0	Average
52	15	85	0	Average
53	55	45	0	Good
54	0	100	0	Average
55	70	30	0	Good
56	95	5	0	Good
57	100	0	0	Good
58	0	100	0	Average
59	35	50	15	Average
60	33	34	33	Average
61	95	0	5	Good
62	0	60	40	Average
63	95	0	5	Good
64	0	100	0	Average
65	20	60	20	Average
66	100	0	0	Good
67	30	40	30	Average

68	95	0	5	Good
69	100	0	0	Good
70	0	100	0	Average
71	0	45	55	Poor
72	5	95	0	Average
73	0	60	40	Average
74	0	100	0	Average
75	95	0	5	Good
76	0	100	0	Average
77	0	100	0	Average
78	35	45	20	Average
79	10	90	0	Average
80	0	100	0	Average
81	0	100	0	Average
82	95	5	0	Good
83	20	45	35	Average
84	0	0	100	Poor
85	0	100	0	Average
86	0	100	0	Average
87	10	90	0	Average
88	0	100	0	Average
89	100	0	0	Good
90	0	100	0	Average
91	0	100	0	Average
92	90	0	10	Good
93	0	100	0	Average
94	60	40	0	Good
95	0	0	100	Poor

Chapter 4 Using Q-methodology to explore land-manager perspectives towards rewilding

4.1. Abstract

There is growing interest in rewilding as an approach to nature restoration, which has led to a proliferation of rewilding projects around the world and attention from national and international policymakers. If rewilding is to be successful as a conservation approach, it is important to understand stakeholder perspectives so they can be considered and accounted for in future conservation policies and frameworks. We used Q-methodology to examine the views of 81 English and Scottish land-managers towards rewilding. We identified three distinct perspectives. ‘Concerned Disbelievers’ (Factor 1) do not believe the benefits associated with rewilding are certain and are worried about rewilding having negative consequences, which aligns with the widely reported concerns of farmers, land-managers, and their representatives. ‘Keen Pragmatists’ (Factor 2) are enthusiastic about the potential biodiversity and socio-economic benefits rewilding can deliver, and support rewilding being subsidised on less productive land, indicating there is an appetite among some land-managers to integrate rewilding within farming landscapes. ‘Cautious Sceptics’ (Factor 3) generally believe rewilding can deliver biodiversity benefits, although they tend to prefer conservation approaches that involve their active participation and argue there are many alternative conservation approaches that can benefit nature. Overall, this study provides a richer understanding of British land-manager viewpoints towards rewilding, which contrasts with the binary “for or against” arguments that typically characterise rewilding debates.

4.2. Introduction

Rewilding is a conservation approach that was first introduced in North America to restore self-functioning ecosystems through the reintroduction of large predator species (Donlan, 2005; Soulé & Noss, 1998). However, since its original conception, rewilding has evolved to encapsulate a diversity of approaches, with significant regional variation existing between projects termed as rewilding initiated in many countries (Pettorelli *et al.* 2018). For example, rewilding projects in Europe tend to involve the introduction of large herbivores and the re-establishment of natural processes on abandoned farmland (Navarro & Pereira, 2015; Jones & Comfort, 2020; Rewilding Europe, 2022), while in North America the focus has been on reintroducing large carnivores to restore top-down trophic processes in vast, connected wilderness areas (Donlan *et al.*, 2006; Ripple & Beschta, 2012; Wildlands Network, 2022). Today, rewilding is recognised as a conservation approach that can be applied across a range of spatial scales, levels of connectivity, and varying degrees of human management, with the ultimate aim of regenerating self-regulating ecosystems (Carver *et al.* 2021; Lorimer *et al.* 2015). However, the lack of a single agreed upon approach or definition, and the fact rewilding can profoundly alter landscapes and impact human-nature relations, has prompted heated debates about whether and how rewilding should be done (Carver *et al.* 2021; Svenning *et al.* 2016a; Weatherall *et al.* 2019).

In spite of these debates, rewilding has captured the attention of policymakers and the conservation community as an optimistic and ambitious approach for tackling the biodiversity and climate crises (Lorimer *et al.*, 2015; Sandom *et al.*, 2020; Svenning, 2020; Schulte to Bühne *et al.*, 2022). For instance, there are proposals to reform European agri-environment payments to incentivise rewilding on marginal farmland (Merckx & Pereira, 2015; Granado-Díaz *et al.*, 2022) and, in Britain, policy discussions about conservation and land-management are increasingly focused on rewilding (Alison & Wentworth, 2016; Sandom *et al.*, 2019; UK Government, 2019). If rewilding is to succeed as a conservation approach, it is important to understand stakeholder perspectives to evaluate its feasibility and desirability, as well as anticipate and manage potential conflicts, so they can be considered when designing policies and initiatives (Mazur and Asah 2013; Redpath *et al.* 2013; Bennett 2016; Bennett *et al.*

2019; Bavin *et al.* 2020). However, at present, most of the literature has focused on stakeholder attitudes and perceptions towards either specific rewilding projects (Wynne-Jones *et al.*, 2018), or the reintroduction of specific species (Zahl-Thanem *et al.* 2020; Duckett *et al.* 2022; Hawkins *et al.* 2020). Thus, there is a need to develop a better understanding of stakeholder perspectives towards rewilding as a concept more broadly.

Land-managers are one of the main stakeholders in the debate about rewilding as they stand to be affected by the growing number of rewilding initiatives and policy proposals, regardless of whether they personally engage with them (Pettorelli *et al.* 2018; Mikołajczak *et al.* 2022). For instance, they could be affected by the rewilding activities of a neighbour (Tree, 2018; DeSilvey & Bartolini, 2019), reintroduced species could impact their property and livelihoods (Duckett *et al.* 2022; Bautista *et al.* 2019), or they could live near a large rewilding project that has wide-reaching environmental and social impacts (Wynne-Jones *et al.*, 2018). Land-managers are generally considered to be opposed to rewilding, especially in portrayals by the media (e.g., Farming UK, 2020; Martnoga, 2022; Shute, 2022). It is indeed the case that rewilding has faced hostility, particularly from members of the farming community, where it involves the reintroduction of large predator species such as lynx and wolves (Thomas 2021; Hawkins *et al.* 2020). Likewise, large rewilding projects have faced significant resistance from land-managers over concerns about the impacts they could have on their way of life (Wynne-Jones *et al.*, 2018). However, an increasing number of land-managers have adopted rewilding, and environmental NGOs have reported a growing number of enquiries from land-managers interested in engaging with rewilding (Rewilding Britain 2020e; Wynne-Jones *et al.* 2020). This indicates that land-manager views towards rewilding are not homogenous. Therefore, a better understanding of the different land-manager perspectives towards rewilding could be used to inform the development of rewilding policies and initiatives to achieve greater acceptability and likelihood of success.

Here, we use Q-methodology to investigate the viewpoints of English and Scottish land-managers towards rewilding. They are key stakeholders in the rewilding debate, having stewardship of 71% of the land area in the UK (Defra, 2021c). Q-methodology is a robust

approach to investigate human perspectives, that uses a combination of quantitative and qualitative techniques to elicit participant views on a particular topic (McKeown & Thomas, 2013; Zabala and Pascual, 2016). Instead of testing specific hypotheses, it supports exploratory research, whereby the different shared viewpoints can be derived at a community level from across a cohort of individual participants (Watts & Stenner, 2012). Q-methodology is therefore ideal for understanding the range of stakeholder opinions that exist towards rewilding, so they can be considered when designing future conservation policies and frameworks (Perino *et al.* 2019; Pettoirelli *et al.* 2018).

4.3. Methods

4.3.1. Q-methodology

In Q-methodology, participants are provided with a set of stimulus items, known as the Q-set, which they are asked to rank and discuss from their own perspective (Watts & Stenner, 2012). The Q-set must comprise assorted heterogeneous items that reflect variety in the subject matter and can be easily communicated (Watts & Stenner, 2005). Q-sets therefore typically consist of a series of statements about a topic (Watts & Stenner, 2012), but they can comprise any items that participants are able to rank and discuss (e.g., a set of images; Austen *et al.*, 2021). In this study, we used statements as our Q-set stimuli to represent the variety of opinions and standpoints about rewilding. When using statements as the Q-set, participants express their views by sorting the statements (e.g., from most agree to least agree), then discussing how the statements do, or do not, align with their personal viewpoint (Watts & Stenner, 2005; McKeown & Thomas, 2013).

4.3.2. Q-set creation

To develop our Q-set, we extracted a broad range of statements from peer-reviewed academic literature, newspaper articles, non-fiction books, parliamentary debates, government reports, NGO websites, farming and landowner organisation websites, blog posts, and social media. In total, we extracted 204 statements that embody the potential issues related to rewilding in

Britain, covering species reintroductions, food production and security, as well as broad environmental, economic, political and social considerations (Lorimer *et al.*, 2015; Alison & Wentworth, 2016; Pettoirelli & Durant, 2019; Sandom & Wynne-Jones, 2019). These statements were refined by first grouping those that represent the same or a similar viewpoint, then omitting those that were deemed potentially ambiguous, had contrasting interpretations, or were duplications (Webler *et al.*, 2009; Watts & Stenner, 2012). The remaining statements were then edited for clarity and brevity, resulting in a final Q-set of 30 statements that characterise the range of narratives around rewilding in Britain (Table S4.1). Other studies have also used Q-sets consisting of 30 statements, after pilots showed participants found the process was too long with 40 statements (Bavin *et al.* 2020). We therefore opted for a Q-set of 30 statements to avoid “cognitively overloading” participants (Zabala *et al.*, 2018).

4.3.3. Study regions and participant recruitment

We selected three broad study regions, representing both lowland and upland areas and ranges of agricultural land quality (Natural England 2020): southern England, northern England and northern Scotland. To recruit land-manager participants, we contacted organisations that represent farmers and landowners (e.g., National Farmers Union of Scotland and Country Land and Business Association), local farmer groups (e.g., The Crofting Federation and Upper Beult Farmers Network), government agencies (e.g., Natural England and NatureScot), and conservation NGOs (e.g., The Wildlife Trusts), and asked them to promote the study through newsletters, emails to their members and on their social media feeds. When seeking participants, we deliberately avoided using the term “rewilding” to avoid priming and to prevent self-selection bias (e.g., inadvertently putting off potential participants who knew little or nothing about rewilding, or only recruiting participants who held extreme views). We also incentivised participation with the chance to win a £300 Amazon voucher. This led to responses from participants in sixteen English counties and four Scottish council areas (Figure 4.1).

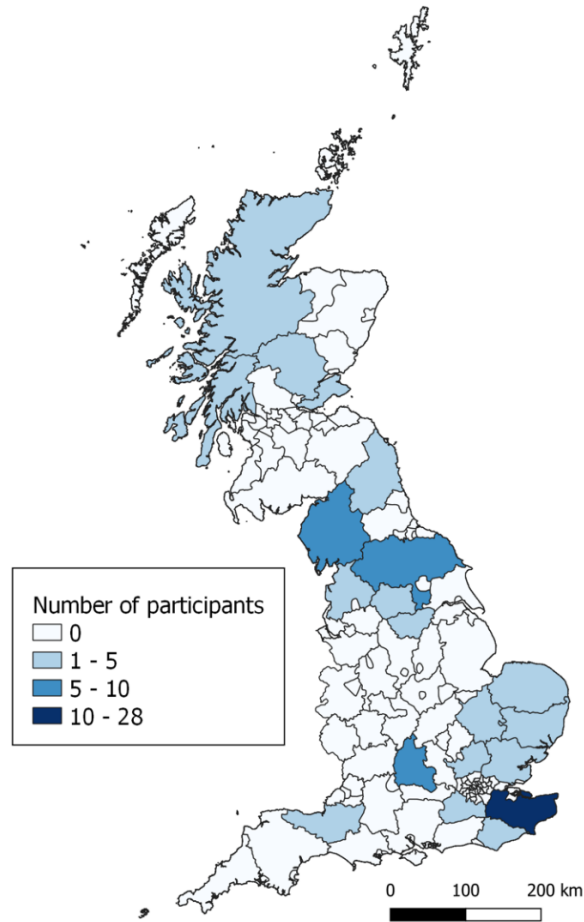


Figure 4.1: The number of participants enlisted to carry out Q-sort interviews in each county across southern and northern England and in each council area in northern Scotland.

4.3.4. Data collection

Data collection, which is called the Q-sort in Q-methodology, is carried out in two stages: a sorting task, followed by a post-sort interview. To aid the sorting task, participants were presented with the Q-set statements and asked to do a first classification by dividing them into three groups “most agree”, “neutral” or “least agree” (Figure S4.1). For the sorting task, participants were asked to order the statements from most agree to least agree on a grid representing a quasi-normal distribution (Figure 4.2) using the following instructions: “Please place the statement that you most agree with in the box on the farthest right side of the grid, through to the statement you least agree with in the box on farthest left side of the grid. Take your time to read the statements carefully and consider them. Please keep in mind that there are no right or wrong answers,

and where you place the statements is entirely based on your personal views, thoughts and reactions. You can move the statements on the grid until you are satisfied with the final order". The sorting task results in a completed "Q-sort" for each participant.

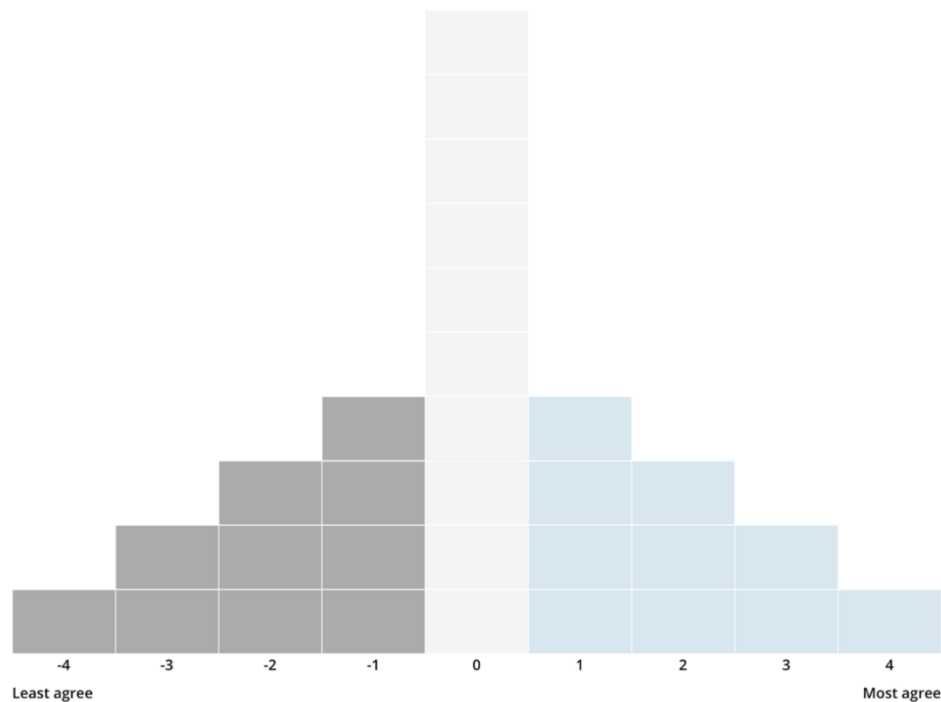


Figure 4.2: The grid used by participants conducting a Q-sort. The grid represents a normal distribution, from most agree through to least agree. Participants were informed that a single statement was to be placed in each of the boxes on the grid.

Following the sorting task, participants were asked to discuss the order they ranked the statements and the rationale that underpinned their decisions in a post-sort interview. We used the following instructions to guide the interview: *"I'm now going to ask you to explain why you placed the statements in the order you chose, and why you most agree with the statements on the right side of your sort, and least agree with the statements on the left side of your sort. There are no right or wrong answers, we are interested in your personal views towards the statements and why you sorted them in this order"*. To help guide the discussion, we supplemented the discussion with the following questions: *"Why do you most agree with the statements above position 4 and 3 on the*

grid?”, “Why do you least agree with the statements above position -4 and -3 on the grid?”, and “Can you explain the order you sorted the statements on the grid?”.

We piloted the Q-sort interviews with three land-managers from different socio-demographic and socio-economic backgrounds, and no changes were made to the Q-set statements or the post-sort interview after the pilots. We used the online platform “Q Method Software” (Lutfallah & Buchanan, 2019) to conduct the interviews, which were carried out via video calls led by a single interviewer on an individual basis with participants. The lead researcher (CLS) created an interview guide and trained the other researchers (ED, IR, and MR) to ensure consistency in the interview approach. Interviews were conducted between April and August 2020 during weekdays and weekends at all times of the day, working around the availability of the land-managers. We interviewed participants over a five-month period to avoid biasing the results towards a specific type of land-manager who might have been too busy to participate at certain times of the year due to their work schedules. Participants gave verbal informed consent prior to undertaking interviews, and we explained that they had the right to not answer any of our questions, could terminate the interview at any point without explanation, could request to have their responses removed from the study at any point, and that their data would be anonymised and treated as confidential. All interviews were audio recorded and lasted between 30 minutes to 1 hour. The discussions that occurred during the sorting activity and post-sort interviews were transcribed verbatim by each interviewer, and all transcripts underwent extensive quality checks by CLS. Ethics approval for the study was granted by the University of Kent Faculty of Social Sciences Research Ethics Advisory Group for Human Participants (Ref. No. 9-PGR-19/20).

4.3.5. Data analysis and interpretation

Data were analysed using the package *qmethod* (Zabala 2014) in R version 4.2.1 (R Core Team 2022). Q-sorts were intercorrelated and structured in a correlation matrix to reflect the relationship of each Q-sort with every other Q-sort (Zabala & Pascual, 2016). Principal Components Analysis (PCA) was applied as a multivariate data-reduction technique to

extract “factors” from the correlation matrix, which represent shared perspectives across participants (Watts & Stenner, 2005). Factors were rotated using varimax rotation (Ramlo 2016) to ensure each Q-sort had a high “loading” (i.e., high similarity) in relation to a single factor (Watts & Stenner, 2012). Participants that “load” significantly onto a factor share a similar Q-sort pattern, which signifies that they share a similar perspective. The selection criteria we applied for factor extraction was based on: (i) a visual interpretation of the scree plot, with the number of factors being indicated by a plateauing of the curve (Figure S4.2); (ii) two or more participants loading onto each potential factor; (iii) the cumulative explanatory variance of the number of factors being greater than 35%; and, (iv) the eigenvalue for each potential factor being greater than 1 (Watts & Stenner, 2012).

Factors are interpreted by studying “factor arrays” in conjunction with the qualitative transcripts of participants who load onto each factor. Factor arrays are hypothetical Q-sorts, created by calculating “factor scores” for each statement that indicates their ranking (e.g., +4) for each factor (Zabala 2014). We extracted factors through an iterative process of factor reduction, where the qualitative data were evaluated alongside the scores for each statement in the hypothetical factor arrays, until the factors could be considered qualitatively different from one another (Zabala *et al.*, 2018). Statement z-scores were also calculated to identify “distinguishing” statements that are statistically representative of each factor, and “consensus” statements that are not significant in distinguishing any of the factors (Zabala & Pascual, 2016). We interpreted the factors by examining statements in the extremes of each hypothetical factor array (factor scores +4, +3, -4, and -3), as well as the distinguishing and consensus statements, then relating them to the qualitative data to understand the shared perspectives of participants that significantly loaded onto each factor (Zabala *et al.*, 2018). Factors were then named by summarising the most distinguishing characteristics of participants with each perspective (Zabala *et al.*, 2018).

4.4. Results

Eighty-one participants conducted the Q-sort interviews and these participants were mostly men (n=69, 85%) and varied in age from 24 to 81, with a median age of 53. This is broadly representative of the age and gender demographics of the agricultural sector across England and Scotland (Defra, 2016).

Three factors corresponding to distinct shared perspectives about rewilding were extracted and named, using the selection criteria and by studying the factor arrays in conjunction with the qualitative data (Table 4.1). Factor 1 is named 'Concerned Disbeliever' to reflect that these participants are concerned that rewilding will have negative consequences and do not believe the benefits associated with rewilding are certain. Factor 2 is called 'Keen Pragmatist' to signify that these participants believe rewilding should be a subsidised management option on less productive land to deliver biodiversity benefits and public goods. Factor 3 is referred to as 'Cautious Sceptic' to indicate that these participants generally agree rewilding could deliver biodiversity benefits, but prefer conservation approaches that involve more active management.

Table 4.1: Factor arrays representing each of the three extracted factors, created using factor scores that show where each statement was ranked for each factor (+4 for most agree to -4 for least agree) and z-scores that indicate the relationship between statements and factors (i.e., how much each factor agrees with each statement). Factor names represent the most distinguishing characteristics of participants with each perspective. *denotes distinguishing statements for each factor and † indicates consensus statements across the three factors.

Statement	Factor scores			z-scores		
	F1	F2	F3	F1	F2	F3
	Concerned	Keen	Cautious	Concerned	Keen	Cautious
	Disbeliever	Pragmatist	Sceptic	Disbeliever	Pragmatist	Sceptic
1. Rewilding will connect more people with nature, improving human health and wellbeing	-1*	2*	0*	-0.81	0.79	0.19
2. Rewilding is too risky for farmers and landowners as the outcomes are unknown and unpredictable	0	-1*	0	0.27	-0.44	0.21
3. Half of Britain's farmland should be given over to rewilding to allow more space for nature	-4	-2*	-4	-2.20	-1.20	-2.15
4. Rewilding will lead to the loss of farming culture and heritage in Britain	0*	-1	-2	0.32	-0.64	-0.93
5. Rewilding has the potential to restore nature, protect landscapes from flooding, improve water quality and prevent climate change	0*	3*	2*	-0.34	2.07	1.45
6. Rewilding farmland in Britain will shift food production to countries with lower environmental standards	3*	0	0	1.44	-0.09	-0.01
7. Farmers would welcome an opportunity to give up farming and receive subsidies to rewild their land	-1*	0	0	-0.58	0.06	-0.17
8. Rewilding large swathes of Britain will threaten domestic food security	4*	0*	1*	1.69	-0.26	0.64

9. Subsidies to rewild farmland would be a misuse of taxpayer money	0*	-4*	-1*	0.29	-1.98	-0.43
10. Unprofitable farms that rely on subsidies should be given over to rewilding	-1*	1*	-3*	-0.82	0.42	-1.83
11. Rewilding large animals will put the safety of rural communities at risk	1*	-1	0	0.46	-0.47	-0.27
12. Rewilding should be a key land management option in Britain, particularly on marginal land	0	4*	0	-0.37	2.26	-0.16
13. Reintroducing species to Britain will increase the risk of livestock predation and diseases being transmitted to livestock	2*	0*	-1*	1.31	-0.17	-0.73
14. Absent species, like lynx and bison, should be brought back to Britain as it is where they belong	-3*	0	-1	-1.52	-0.29	-0.58
15. Reintroducing beavers will cause farms in lowland areas to flood	0*	-2	-1	0.25	-0.71	-0.57
16. Potential ecotourism revenue is a powerful incentive for farmers and landowners to rewild their land	0*	1	1	-0.51	0.78	0.49
17. Rewilding is controversial as it means different things to different people	1	1	3*	0.61	0.61	1.45
18. There are a lot of things farmers can do to benefit nature without rewilding their land	3	2	4*	1.54	1.54	2.39
19. It is possible for people in Britain to live alongside predators, as people in Europe live alongside species like bears and wolves	-2*	1	2	-0.83	0.49	0.73
20. Allowing farmland to revert to nature will result in an unproductive wasteland of scrub	2*	0*	-2*	1.38	-0.33	-0.86
21. We should not seek to re-establish absent species through rewilding until we've protected existing wildlife	2*	0	0	1.05	-0.12	-0.24

22. Rewilding predators is a cost-effective way of controlling deer populations	-3*	0	0	-1.41	-0.14	0.02
23. Most farmers don't have the time or energy to consider transitioning from farming to rewilding	0 [†]	0 [†]	0 [†]	-0.20	-0.41	-0.12
24. Rewilding the countryside will have a negative impact on farmer's livelihoods	0*	-2*	0*	0.37	-0.71	-0.05
25. Rewilding is an example of privileged middle-class romanticism about the countryside	1*	-3*	1*	0.60	-1.38	0.24
26. Rewilding beavers will help to lessen flooding and improve water quality	-1*	2	1	-0.71	0.81	0.72
27. Rewilding is another word for managing country estates for wealthy elites who want beavers on their land as a status symbol	0*	-3*	-3*	-0.27	-1.51	-1.17
28. There is overwhelming public support for rewilding in Britain	-2	-1*	-2	-0.88	-0.49	-0.96
29. Unless rewilding is profitable and makes financial sense for landowners, it will never happen	1*	3	3	0.99	1.56	1.61
30. Reintroducing grazing animals, like bison, to the countryside will restore a more natural grazing system	-2*	0*	2*	-1.10	-0.06	1.09

Seventy-three participants (90%) significantly loaded onto the three factors, explaining 53% of the total variance (Table 4.2). Eight participants (10%) did not load on any factor, and no participants loaded on more than one factor, indicating that each factor captured a distinct perspective (Watts & Stenner, 2012).

Table 4.2: The number of participants (*n*) that load onto each factor, the eigenvalue, and the explanatory variance (%) of each factor, which indicates the explanatory power of the factor (*N*=81).

Factor	<i>n</i>	Eigenvalue	Explanatory variance (%)
F1: Concerned Disbeliever	31	19.0	23%
F2: Keen Pragmatist	30	15.4	19%
F3: Cautious Sceptic	12	8.7	11%

4.4.1. Factor 1: ‘Concerned Disbeliever’

Thirty-one participants loaded onto Factor 1 (Table 4.2), consisting of three women and 28 men, with a median age of 57 years old (range: 28 to 81). Perspectives underpinning this factor were related to shared concerns about the negative consequences of rewilding and uncertainty about the ecosystem services and socio-economic benefits that rewilding is purported to deliver.

These participants were concerned that large-scale rewilding would negatively impact food production in Britain: “*It [rewilding] can’t happen can it, cause we need that land to produce food*”, and: “*How are we going to feed ourselves?*”. Many emphasised that food security should take precedent over other issues: “*Food security is perhaps the most important thing we need to worry about*”, and worried that rewilding would make Britain reliant on other countries to fulfil its food requirements: “*If we import food, we are at the behest of those that are supplying it, and if they don’t want to supply us anymore for whatever reason, or are unable to do so, well we’ve had it*”. Some related these concerns to the supermarket shortages experienced during the Covid-19 lockdowns (Ranta & Mulrooney, 2021), saying this had highlighted the need to prioritise Britain being self-sufficient in case of a future crisis that could affect supply chains: “*When we have something like coronavirus, you’ve got no food security here [...] we just don’t have the food*

making capacity now let alone in the future". They agreed that rewilding would mean relying on other countries with lower environmental standards than Britain to produce food, and worried about the negative impact this would have on biodiversity in those countries: "It [rewilding] will end up leading to food coming in from other parts of the world where they are doing a lot more damage to the environment than we are".

There was disagreement that species which previously existed in Britain should be reintroduced, with participants arguing that there is no reason to bring them back: *"They haven't belonged here for such a long time; I think it's no longer relevant",* and: *"We killed them for a reason, and I don't think they need to be brought back".* This links with agreement that species reintroductions should not occur while extant wildlife in Britain is threatened: *"Existing wildlife isn't well protected enough [...] we shouldn't be bringing in other species before we get everything else right".* However, some felt species should not be reintroduced over concerns about potential negative or unexpected consequences: *"If they're going to put things like brown bears out, then it goes without saying that is going to be a danger to the people that live in the rural communities".* This relates to disagreement that people in Britain should be able to live alongside predator species that can be found in Europe, with participants arguing there is not enough space and that the human population density is too high: *"I just don't think it's feasible, we just don't have the wild lands and huge forests that they have in places like France or Germany".* Concerns related to species reintroductions were further demonstrated with agreement regarding the increased risk of disease and livestock predation: *"We only have to look at what's happening in the world today to know that there are risks in disease transmission, so why introduce something that you have no control over? We can't even control TB in badgers",* and: *"We've already seen with the likes of the sea eagles being reintroduced, it's been devastating to hill lamb flocks".*

These participants generally do not believe in the potential benefits of species reintroductions, specifically that predator species would be a cost-effective solution for controlling deer populations, with some explaining *"it is very cheap to go shoot things".* Others expressed doubts that reintroduced carnivore species would only predate on deer, and worried that the reintroduction of predator species would create additional financial difficulties: *"It won't be*

[cost-effective] because it will cause more problems with everything else, the big predators like wolves and bears are going to take our livestock and create all sorts of problems”, and: “They [predator species] will just eat everyone’s livestock, that’s what they always do, like the sea eagle”. In a similar vein, they disputed the proposed benefits of large herbivore reintroductions: “That’s absolute rubbish, it wouldn’t restore a natural grazing system”, with some arguing that existing livestock could fulfil that role: “We can restore a more natural grazing system with our existing cattle, they don’t even have to be traditional to reinvigorate a natural grazing system”. They also expressed doubts that beavers would reduce flooding or bring about water quality improvements: “Anyone with an ounce of common sense can see that damming rivers is not the answer to lessening flooding”, and: “What I’ve seen is that they [beavers] make a muddy pool with sort of like rotting vegetation in it, is that really good quality water?”.

More generally, these participants were unconvinced that rewilding could improve people’s health and wellbeing, or that it could bring about biodiversity benefits and help mitigate climate change: *“How is it going to do that!? I don’t have a clue and I don’t think anyone else does either. There is absolutely no evidence for that”, and: “I’m not sure it’s been scientifically proven that rewilding protects all of those things”. Their reservations regarding the associated biodiversity benefits were also reflected by their agreement that rewilding would result in the land being of low biodiversity value: “If you’re just going to abandon it, chances are it will end up being dominated by a few particularly undesirable species, things like thistles, docks and ragwort”.*

4.4.2. Factor 2: ‘Keen Pragmatist’

Thirty participants loaded onto Factor 2 (Table 4.2), consisting of six women and 24 men with a median age of 47 (range: 24 to 72). Perspectives underpinning this factor were related to support for rewilding as a subsidised management option on less productive land to provide biodiversity benefits and public goods.

There was agreement among these participants that rewilding should be a management option on marginal land, with many putting emphases on the words “marginal” and

“option”: “The key point there is option, you have to have buy-in to do it [rewilding], and if the land is marginal and not the breadbasket of the country, it’s a sensible logical option. Again, if it’s not forced, so option is the key bit there”. Most participants stressed that it is inefficient to farm less productive land, so managing it to deliver biodiversity benefits would be a better alternative: “Why throw money, machinery, metal, diesel at trying to grab something out of poor land when it could be given back to rewilding and actually provide an opportunity for beneficial species to have greater impact”, and: “Farms that are unprofitable are undercapitalized. They’re probably the ones that are pushing the hardest for productivity but aren’t thinking as much about the wider public goods they could be providing”. This reflects the fact these participants do not perceive rewilding as a competing land-use with food production: “It’s a waste of time farming it [marginal land] because we produce food on the good land”, and stress that less productive land should be the focus for rewilding: “I’m not saying that 50% of the land should be put over to rewilding, but a sensible proportion of truly marginal land could go into rewilding”.

There was also agreement that rewilding needs to be a financially viable alternative to farming for it to be considered an option for land-managers: *“It [rewilding] has to make financial sense, otherwise they’ll just choose to farm it as they’re doing, they’re not going to give up chunks of their livelihood for a loss of income”, and: “I think unless you subsidise rewilding, no farmer is going to give up their land, so unless you incentivise them to do something different, they are going to plough away”.* These participants disagreed with the notion of subsidies for rewilding being a misuse of taxpayer’s money: *“If the money is spent on producing something as valuable as rewilding for the public, then that would be a much better outcome than all of the money that is currently being invested to produce huge quantities of substandard food”.* Indeed, it was argued that rewilding is *“almost becoming an essential use of taxpayer’s money”,* considering the net-zero and environmental targets that have been set out by governments: *“Climate change is going to be the biggest problem for our generation and potentially beyond. Since rewilding is a natural climate solution, it’s one of the most important things we can do. It’s a great use of public money”.* Many also emphasised that Brexit offers the UK Government an opportunity to reform agricultural subsidies to deliver societal benefits: *“Do we want to support farmers to go on producing something that society doesn’t want? Why not take this opportunity to say right let’s do something else with this land, and that might*

be rewilding to get natural systems going again”, and that the public would support such subsidy payments: “I think a lot of taxpayers would be quite happy to see some sort of rewilding”.

Participants described rewilding as a practical land-use and management option to generate potential ecological and socio-economic benefits. Many explained they consider the suggested benefits to be an accurate assessment and that there is evidence rewilding will deliver ecological benefits: *“There’s some good science behind that [...] The science is there, that rewilding can have a very beneficial effect”,* and: *“I mean, it’s true. I’m agreeing with a factual statement [Statement 5, Table 4.1]. Rewilding has the potential to do all those things. It has been proven to have huge potential to restore nature and protect landscapes”.* Similarly, these participants were in agreement that rewilding will improve human health and wellbeing by increasing the amount of wilder areas, improving access to nature and attracting people to the countryside: *“More people will be drawn to the countryside”,* and: *“I think recreation and access to rewilding areas will provide people the ability to go out to the countryside and it will be nothing but positive for health and wellbeing”.*

These participants did not agree that rewilding is associated with wealthy landowners, or that rewilding is a privileged approach to conservation: *“Rewilding is nothing to do with wealth or class. It is to do with what happens to the land”.* Many also argued that these connotations are not a fair representation of the people and organisations who support and engage with rewilding: *“There’s a lot of very clever academics, and amateurs, and everyone in between, who support rewilding that aren’t in that bracket”,* and: *“It [rewilding] is being done for the benefit of the public by Kent Wildlife Trust [an environmental NGO in southern England]. It’s not a toff’s vanity project, it’s a serious wildlife charity going down this route”.*

4.4.3. Factor 3: ‘Cautious Sceptic’

Twelve participants loaded onto Factor 3 (Table 4.2), consisting of 2 women and 10 men with a median age of 51 (range: 32 to 69). Perspectives underpinning this factor were related to support for conservation approaches involving active management over rewilding.

Although these participants generally agreed that rewilding could deliver biodiversity benefits, they also felt there are many other actions land-managers could do to benefit nature. Some emphasised that farmers already carry out environmental activities and made a case for other conservation approaches they believe are more compatible with existing farming practices: *“I think it gets forgotten that farmers already do a lot for wildlife, and rewilding’s not the be-all and end-all, you know, there’s a lot we can do alongside profitable farming”*, and: *“Farmers can achieve ecosystems services that you can get from rewilding land by managing it [...] and can continue to produce food on a stretch of land without rewilding”*. Others explained that they prefer conservation approaches that involve active management: *“Rewilding sounds a bit like shutting the gate and walking away, and I’d rather be more proactive in encouraging wildlife”*, and: *“We can improve the ecosystems so much more with active management”*.

These participants disagreed that farms that are unprofitable or rely on subsidies should be given over to rewilding, arguing that profitability is not the right criteria to determine whether land should be rewilded: *“There are many reasons why farms are unprofitable, and there’s plenty of unprofitable farms that aren’t in situations where you can rewild. It might work in some situations but there would be plenty where it would be a complete waste of time”*. They emphasised that land-managers should have autonomy over their land and that an unprofitable farm should not be rewilded unless it is the land-managers’ decision: *“Just because a farm’s not profitable doesn’t mean it [rewilding] is a good idea for the landowner or farmer because they’ve got to buy into it”*. Many also expressed the view that rewilding would need to be subsidised or more profitable than farming for land-managers to consider it: *“Land-managers are financially motivated, so to encourage people to do it [rewilding], it needs to be profitable and competitive against farming”*.

Rewilding meaning different things to different people, and the confusion and controversy the term engenders, was a key concern for these participants: *“The word is dangerous in policy terms because it doesn’t mean anything”*. They explained the lack of consensus over what rewilding entails makes it difficult to assess the evidence supporting rewilding and understand what the objectives or potential outcomes could be: *“There’s no single definition for it, which means that some people can get carried away with ideas such as reintroducing bears”*, and:

“There are different definitions of rewilding so that causes problems right from the outset because people aren’t really sure what you’re meaning. Are you just letting it go or are you actively doing something to put it back to what it was before?”.

These participants disagreed that rewilding is associated with wealth and argued that this is not a fair representation of the people interested and engaged in rewilding: *“That statement [Statement 27, Table 4.1] is really unhelpful to the core principle of rewilding, because it’s actually got nothing to do with wealth.”* They also argued that associations with wealth represent sensationalist depictions by the media and are not reflective of the real rewilding landscape: *“It just shows a lack of understanding. It’s like a headline from the Daily Mail, there to garner people’s attention”.*

4.4.4. Shared perspectives across factors

The only consensus statement identified, indicating common ground across the three factors (Zabala *et al.*, 2018), was Statement 23: *“Most farmers don’t have the time or energy to consider transitioning from farming to rewilding”* (Table 4.1). For ‘Keen Pragmatists’ (Factor 2) and ‘Cautious Sceptics’ (Factor 3) this statement produced a neutral response as participants felt neither time or energy would have a strong influence on land-managers’ decision-making about rewilding: *“I think most farmers have got a very open page generally”*, while ‘Concerned Disbelievers’ (Factor 1) were neutral as they felt there were more important issues that would prevent land-managers from considering rewilding: *“That wouldn’t be the main reason”*.

4.5. Discussion

There is growing recognition that if rewilding policies and initiatives are to be widely accepted and adopted by land-managers, we need to better understand the perceptions that different groups of land-managers have towards rewilding (Bennett 2016; Mikołajczak *et al.* 2022). Using Q-methodology, we identified three distinct viewpoints that English and Scottish land-managers have towards rewilding, contrasting with the binary “for or against” arguments

that typically characterise rewilding debates (e.g., Pullman, 2020; Weatherall *et al.*, 2019; Yorke, 2016). ‘Concerned Disbelievers’ (Factor 1) was the most explanatory factor, and these participants were largely concerned with the potential negative consequences of rewilding. The other two factors ‘Keen Pragmatists’ (Factor 2) and ‘Cautious Sceptics’ (Factor 3) were broadly supportive of rewilding, with ‘Keen Pragmatists’ demonstrating enthusiasm for the potential benefits associated with rewilding, while ‘Cautious Sceptics’ showed more contingent support and a clear preference for other conservation approaches.

The negative impact rewilding could have on food production and food security, either through the removal of land from agricultural production or the reduced productivity of a rewilded landscape, is one of the most prominent debates surrounding rewilding and has been widely reported as a key concern of farmers, land-managers and their representatives (Duckett *et al.* 2022; Mikołajczak *et al.* 2022; Wynne-Jones 2022). This reflects the perspectives of ‘Concerned Disbelievers’ and ‘Cautious Sceptics’, who generally consider rewilding to be incompatible with farming. It also aligns with wider debates regarding food production and conservation, where “land-sparing” strategies have been put forward to meet increasing global food requirements (FAO, 2018; Phalan *et al.*, 2011). However, this view was not shared among ‘Keen Pragmatists’ who believe rewilding is a compatible land-use within production landscapes, where rewilding marginal land prevents trade-offs with food production. The perspective of ‘Keen Pragmatists’ supports policy proposals that advocate for rewilding on less productive land (Merckx & Pereira, 2015), and with conservation NGOs and rewilding proponents who reject the dichotomy that land must either be used to support nature or grow food (Tree 2018; National Trust 2022).

The greatest contrast between land-manager perspectives relates to the potential benefits associated with rewilding. ‘Cautious Sceptics’ demonstrated muted support for rewilding as they are less convinced by the proposed benefits and tend to advocate for other conservation approaches, while ‘Keen Pragmatists’ voiced the most confidence in the anticipated biodiversity and socio-economic benefits advocated by rewilding proponents and reported in the scientific literature (Cerqueira *et al.*, 2015; Perino *et al.*, 2019). Economic and environmental

benefits have been found to drive support among stakeholders for the reintroduction of pine marten (Bavin *et al.* 2020), beaver (Loth & Newton, 2018), lynx (Hawkins *et al.* 2020), and for habitat restoration (Matzek & Wilson, 2021), and the perspective of ‘Keen Pragmatists’ shows that support for rewilding as an overall management approach is also related to potential benefits. This contrasts sharply with the perspective of ‘Concerned Disbelievers’ who are unconvinced rewilding will deliver benefits, and aligns with those who caution there is limited evidence to support the purported benefits (Nogués-Bravo *et al.* 2016; Hayward, Scanlon, *et al.* 2019).

Considering species reintroductions specifically, the perspective of ‘Concerned Disbelievers’ reflects the widely reported views of farmers and land-managers that reintroduced species will pose a risk to people and livestock (Bruskotter *et al.* 2017; Hawkins *et al.* 2020), cause property damage (Bautista *et al.*, 2019; Coz & Young, 2020), and negatively affect land-managers’ livelihoods (Wynne-Jones 2022; Duckett *et al.* 2022). This perspective also supports those scientists who caution that reintroductions could have unexpected negative consequences for extant wildlife, ecosystem functioning, and people (Nogués-Bravo *et al.*, 2016; Rubenstein & Rubenstein, 2016; Delibes-Mateos *et al.*, 2019). Overall, ‘Keen Pragmatists’ and ‘Cautious Sceptics’ had a largely neutral response to statements about species reintroductions, indicating their views about rewilding are not necessarily related to species reintroductions. This reflects other UK studies that find stakeholders do not perceive species reintroductions as the primary focus of rewilding (Loth & Newton, 2018; Martin *et al.*, 2021). Thus, this indicates species reintroductions is one of the main sources of tension since the land-managers who were most critical of rewilding (‘Concerned Disbelievers’) had the strongest negative reaction to species reintroductions. This has also been seen in existing rewilding initiatives that come up against strong opposition from land-managers because of concerns over reintroducing beavers, sea eagles, and large predators (e.g., Coz & Young, 2020; O’Rourke, 2019; Wynne-Jones *et al.*, 2018).

The pressure for farmers and land-managers to meet increasing global demands for food, sustain their livelihoods and conserve biodiversity, is one of the main challenges of the 21st

century (FAO, 2018; Giller *et al.*, 2021; UN, 2015). In Britain specifically, many land-managers are concerned about their financial security, partly because of uncertainty over changes to the subsidy system following the UK's departure from the European Union (Defra, 2022c), and partly because of the impacts of the coronavirus pandemic, rising inflation costs, and the narrow financial margins on which many land-managers operate (Defra, 2022a; AHDB, 2022). This likely explains why there was overall agreement across the three factors that rewilding would need to be subsidised or more profitable than farming for land-managers to consider it as a management option. Interestingly, although the economic opportunities associated with increased tourism have been identified as an incentive for rewilding (Hall 2019; Svenning 2020), 'Keen Pragmatists' and 'Cautious Sceptics' only weakly agreed that ecotourism could act as a financial motivation, while 'Concerned Disbelievers' were neutral, indicating it was not seen as more attractive than other land-uses. This supports a UK study that found stakeholders have mixed feelings towards the potential tourism-related economic benefits of rewilding (Hawkins *et al.* 2020). Overall agreement that rewilding would need to be more financially attractive than farming aligns with a study from Spain that found farmers would only be willing to rewild their land at high payment levels to account for the financial risks and potential loss in value of land assets (Granado-Díaz *et al.*, 2022). Our results suggest that a similar increase in subsidy levels would be needed to ensure widespread uptake of rewilding by British land-managers.

Across the three perspectives, there was agreement that there are many interpretations of rewilding and the lack of a single agreed upon definition is the root of much controversy, with this being a central concern for 'Cautious Sceptics'. Despite recent efforts to help clarify the terminology (Anderson *et al.* 2019; Carver *et al.* 2021), some UK policymakers have suggested replacing the term with phrases related to "nature recovery" (Spencer 2022) while conservation NGOs often opt for the term "wilding" or "wilder" (e.g., KWT, 2020; Tree, 2018) to avoid potential negative connotations of rewilding with the (re)introduction of predator species or returning the land to a pre-agricultural state (Thomas 2021). Although some of the negative associations with rewilding in the media are related to wealthy landowners (e.g., Marshall, 2022; Wade, 2018), 'Keen Pragmatists' and 'Cautious Sceptics' were in strong

disagreement while 'Concerned Disbelievers' were neutral, indicating that controversies related to the term are not with the type of people often associated with rewilding, but due to concerns over potential negative impacts.

4.6. Conclusion

In the media, the debate around rewilding is often framed as heated arguments between conservationists and farmers (e.g., Pullman, 2020; Martnoga, 2022). However, this study shows that land-manager views towards rewilding are not uniform and identifies three different perspectives. We found many land-managers are largely against rewilding, as they are particularly worried about food security and species reintroductions and do not believe in the purported benefits associated with rewilding, hence are grouped in the factor 'Concerned Disbelievers'. However, when combined, more participants are part of the 'Keen Pragmatists' and 'Cautious Sceptics' factors, who are generally favourable towards rewilding and believe it can deliver biodiversity and socio-economic benefits. Moreover, the 'Keen Pragmatists' think that rewilding should be a subsidised management option on less productive land. This suggests that there may be more support for rewilding amongst British land-managers than one would expect from public discourse, especially if concerns about food security are explicitly addressed by focusing rewilding policies on marginal land. Having said that, rewilding projects in Britain often involve species reintroductions (e.g., beavers and large herbivores; Alladale, 2022; Knepp, 2022), and this was a key source of opposition for 'Concerned Disbelievers'. This opposition could likely be reduced by working with land-managers and choosing less controversial species, which likely explains why no existing rewilding project has reintroduced large terrestrial predators (Sandom & Wynne-Jones, 2019). Failing to engage with land-managers with this perspective towards species reintroductions will likely lead to human-wildlife conflict (e.g., O'Rourke, 2014) or the collapse of rewilding projects (Defra, 2018; BBC News, 2019). Overall, this study shows there is an appetite to integrate rewilding within farming landscapes among land-managers who are optimistic about the ecological and socio-economic benefits it could provide.

4.7. Supplementary Information

Supplementary Table 4.1: Statements extracted from peer-reviewed academic literature, newspaper articles, non-fiction books, parliamentary debates, government reports, NGO websites, farm and landowner organisation websites, blog posts, and social media, that embody the key issues related to rewilding in Britain (N=204). Statements that represent the same or similar viewpoint were grouped, then edited for clarity and brevity to produce a Q-set of 30 statements.

Q set statements (N=30)	Original statements (N=204)
1. Rewilding will connect more people with nature, improving human health and wellbeing	1. Half of the nation's farmland needs to be transformed into woodlands and natural habitat to fight the climate crisis and restore wildlife, according to a former chief scientific adviser to the UK government. Prof Sir Ian Boyd said such a change could mean the amount of cattle and sheep would fall by 90%, with farmers instead being paid for storing carbon dioxide, helping prevent floods and providing beautiful landscapes where people could boost their health and wellbeing (Carrington 2019a). 2. At the heart of the rewilding approach is the restoration of natural processes, moving back to less intensive ways of managing our landscapes and emphasising the importance of nature to the health, well-being, and prosperity of people (KWT 2020a). 3. Wildlife is in crisis. Together we can create a Wilder Kent. If we act now, we can restore nature by creating: We can create a wilder Kent, but we can't do it alone. We'll create a greater abundance of wildlife by restoring natural processes. We'll bring back species that have been lost and use their stories to connect more people to nature. People are part of nature. But we're losing touch with it, and this is causing us great harm. Children are suffering from nature deficit disorder. Adults and children need to reconnect with nature (KWT 2020b). 4. Rewilding is something different, instead of trying to take care of nature rewilding is stepping back and letting nature take care of itself – and us (Levy 2020). 5. When we talk about rewilding and climate change, we often talk about the challenges. Would not it sometimes be better to talk about the opportunities, for jobs, the economy and the social fabric? (UK Government 2019). 6. Knepp and many other places show that reduced intensity of farming means not only better outcomes for the environment, but also a better business and a better work/life balance (Schofield 2019).

2. Rewilding is too risky for farmers and landowners as the outcomes are unknown and unpredictable	7. Rewilding is likely to lead to an increase in biodiversity, but outcomes are often unpredictable and unique to each site. Many species will benefit from rewilding, but others may decline – especially those that depend on features currently maintained by human intervention (Alison & Wentworth, 2016). 8. Rewilding can have unpredictable outcomes, but it may also represent a cost-effective way to provide ecosystem services (benefits provided by natural processes) such as flood prevention (Alison & Wentworth, 2016). 9. Landowners would be wary about changing the use of land and deciding the types of species to introduce. “You don’t want species that can attack people, or break through hedges and cause disruption,” he added (Tree 2018). 10. [...] practical concerns (e.g., more than 70% of reintroductions fail), ethical concerns (e.g., what happens to the organisms involved in failed introductions?), or socio-economic concerns. (Tree 2018). 11. We are not the first to point out that rewilding faces significant challenges. In fact, several proponents readily acknowledge some of the challenges, including the theoretical and ecological underpinnings of rewilding and the lack of cost-benefit analyses of rewilding plans. Moreover, the management outputs that rewilding aims to achieve lack quantitative evidence and the focus of rewilding on functions rather than on biological diversity is questionable (Tree 2018). 12. Three typical criticisms of #rewilding are: 1) Rewilding means different things to different people 2) We don’t know what will happen if we let nature lead so it is too risky [...] (Sandom 2019).
3. Half of Britain’s farmland should be given over to rewilding to allow more space for nature	13. Half of the nation’s farmland needs to be transformed into woodlands and natural habitat to fight the climate crisis and restore wildlife, according to a former chief scientific adviser to the UK government. Prof Sir Ian Boyd said such a change could mean the amount of cattle and sheep would fall by 90%, with farmers instead being paid for storing carbon dioxide, helping prevent floods and providing beautiful landscapes where people could boost their health and wellbeing (Carrington 2019a). 14. Environmental campaigner George Monbiot thinks that instead of spending money on agricultural subsidies, the land should be allowed to return to what he says is its natural state (BBC News 2016). 15. By 2030 Rewilding Europe estimates there will be 30 million hectares of abandoned farmland in Europe. What happens to this land is an issue concerning most European governments, including Britain. It is an opportunity for nature unprecedented in modern history – if only we can overcome our deepest prejudices about what our land should look like (Tree 2018).

	16. Wouter Helmer, rewilding director of Rewilding Europe, sees no conflict between food production and rewilding: Europe is heading for a future of food produced more intensively in fewer areas, releasing less productive arable land for rewilding, he says. "Farming is being done by fewer and fewer farmers on a larger scale on the best soils" (Barkham 2017). 17. From the 2nd world war subsidies encouraged us to think that all land should be farmed – Perhaps we are just beginning to think that this is not the case and that there should be more space for nature...? (Tree 2019). 18. It is well documented that the intensification of farming since the second world war has left less and less space for nature in the UK. To turn that around, the Government ought to commit to a transition to sustainable agroecological farming by 2030. The Government must also commit to net zero emissions from agriculture by 2040 and reverting parcels of arable land, particularly the third that is used for animal feed, to permanent grassland, which has high levels of soil, carbon and biodiversity value (UK Government 2019). 19. We already have large areas of land that produce little food, which could be used to store vast amount of carbon. We need to reassess our priorities and take a more strategic approach to the use of that land (UK Government 2019). 20. There was consensus that traditional land uses in remote and upland areas are unprofitable without subsidy, which some took as a rationale for doing rewilding and a reason why rewilding was perhaps inevitable in some low-value agricultural land due to changes in subsidy regimes. There was consensus in agreeing that rewilded landscapes and traditional land uses can coexist (Holmes <i>et al.</i> 2020). 21. "I believe that there ARE significant areas of the UK where agricultural productivity is at best, marginal and that #rewilding these areas could offer wider environmental benefits (Driver 2019).
4. Rewilding will lead to the loss of farming culture and heritage in Britain	22. However, in the case of the Wild Ennerdale project, some upland farmers criticised the changed appearance of the landscape and voiced concerns about the loss of the farming heritage of the region (Alison & Wentworth, 2016). 23. Rewilding a section of SE England which has been prime agricultural land made up of ancient field patterns and homesteads dating back to the Anglo-Saxon period is to me a misuse of taxpayer money (Tree 2018). 24. Over the past few years as rewilding has gained recognition it has drawn opposition from the champions of cultural landscapes who see untrammelled nature as a force that might obliterate our cultural past (Tree 2018). 25. Farmers' Union of Wales (FUW) said the project would make it impossible for farmers to continue to live in their communities. [...] Nick Fenwick, FUW's head of policy, said: "It shouldn't exist - it shouldn't be here. "It's not good for the economy, for the communities and for the species that live here." (Tree 2018).

	26. The delights and fears of rewilding Wicken Fen: - Counter-cultural to farming and drainage history - Counter cultural to conservation traditions (Hughes 2019). 27. The collapse of the flagship ‘rewilding’ project Summit to Sea in West Wales, has been welcomed by the Farming Union of Wales which saw the scheme as a direct threat to the culture and sustainability of the farming community of upland Wales (Bonner 2019). 28. For some, Summit to Sea’s associations with rewilding and Rewilding Britain were felt to be incompatible with their own hopes for mid-Wales. It’s not for us to speak for those people – but it is important that we listen to and respect their views, and that we learn lessons. Rewilding is a challenging idea for many people, and it’s up to us to work alongside communities to demonstrate that rewilding can bring multiple benefits and is not a threat. People – and their cultural and economic connections to the land – are central to that (Summit to Sea 2020). 29. Farmers protesting a rewilding project chanting “real men farm”. (Personal Communication: Phone call with Natural England Farm Advisor, March 2020). 30. Three typical criticisms of #rewilding are: 1) Rewilding means different things to different people 2) We don’t know what will happen if we let nature lead so it is too risky 3) Rewilding excludes people from the landscape (Sandom 2019).
5. Rewilding has the potential to restore nature, protect landscapes from flooding, improve water quality and prevent climate change	31. In Europe, where beaver reintroduction programmes across 24 European countries have restored beaver numbers to more than 1.2 million from only 1,200 in eight relict populations in 1900, the benefits for flood mitigation, water storage and water quality have been nothing short of astonishing. As well as attenuating flow, the University of Exeter has proved that beaver dams are effective at capturing soil eroding from intensively managed fields during heavy rain, and neutralising artificial nitrogen and phosphorous and other pollutants. Carbon is also locked up in the sediment. This extraordinary mammal could be one of the most powerful tools available to us for mitigating climate change (Tree 2020). 32. “There are three main benefits to re-introducing lynx into the wild. They are restoring ecosystems, control of deer numbers, and providing economic benefits with the increase of tourism.” The trust claims that reintroducing an apex predator like the lynx would help to restore ecosystem balance with increased deer control which would lead to woodland regeneration and greater biodiversity (Halliday & Parveen, 2017). 33. Increasing yields and rewilding ‘spared’ land could slash GHG emissions by 80 per cent (Tree 2018).

	34. Improving the structure of our soils and returning unproductive agricultural land to permanent pasture could be a crucial weapon in the battle against rising levels of CO₂ (Tree 2018). 35. The potential for rewilding projects like Knepp to provide carbon sequestration is of increasing interest to our own government, under pressure to meet its ambitious target of reducing carbon emissions by 57% of 1990 levels by 2030 (Tree 2018). 36. This extraordinary mammal [beaver] could be one of the most powerful tools available to us for mitigating climate change (Tree 2020). 37. It is clear that nature is struggling against climate change, habitat loss, pollution and intensive farming, but we can turn that around radically by changing the way we manage land. Rewilding is the only solution that offers the opportunity to tackle the climate and ecological emergencies together. The benefits of rewilding our peatlands, heathlands, grasslands, woodlands, saltmarshes, wetlands and coastal waters are diverse. That would lock away carbon, clean air and water, reconnect us with nature, protect communities at risk of flooding, revitalise wildlife, restore our soil and support new economic opportunities (UK Government 2019). 38. The petition, which calls for natural climate solutions, such as rewilding, to be enacted to tackle the climate emergency, has been signed by around 110,000 people. I am very pleased that we are now talking about rewilding as a natural climate solution. It can draw millions of tonnes of carbon from the atmosphere (UK Government 2019). 39. Rewilding is already happening across the UK in lots of projects, many of which deliver huge benefits. The hon. Member for Bristol East mentioned the Knepp estate in West Sussex, where agri-environment funding has helped to create extensive grassland and scrub habitats, with huge benefits for declining bird species such as the nightingale and turtle dove (UK Government 2019). 40. There is now clear, compelling evidence supporting a new approach in conservation, one which focuses on nature and society in equal measure, to restore the natural processes vital to our wildlife and people. This has a number of names of which rewilding is the most well-known. At the heart of the rewilding approach is the restoration of natural processes, moving back to less intensive ways of managing our landscapes and emphasising the importance of nature to the health, well-being and prosperity of people (KWT 2020a). 41. Rewilding can have unpredictable outcomes, but it may also represent a cost-effective way to provide ecosystem services (benefits provided by natural processes) such as flood prevention. Rewilding might help to reduce or offset negative impacts of intensive agriculture including: soil degradation greenhouse gas emissions, water pollution, insect pollinator declines, and a reduction in biodiversity (the variety of living things). Rewilding may represent a cost-effective way to restore large areas of degraded habitat and reintroduce native species (Alison & Wentworth, 2016).
--	--

	42. Reducing intensive management of farmland through rewilding would be likely to reduce local GHG emissions. Habitats resulting from rewilding may also have the potential for storage of carbon and nitrogen (Alison & Wentworth, 2016). 43. Rewilding and other natural climate solutions can draw millions of tonnes of carbon from the atmosphere by restoring and protecting our living systems. The rewilding of peatlands, heathland, native woodlands, saltmarshes, wetlands, and coastal waters in the UK can all make a significant contribution to carbon sequestration. And of course, there are so many other good reasons to restore nature, such as reversing the losses of biodiversity, protecting ourselves from flooding, improving water quality and increasing human health and wellbeing through reconnection with a wilder world (Rewilding Britain 2020h).
6. Rewilding farmland in Britain will shift food production to countries with lower environmental standards	44. Rewilding 50% of GB farmland will just offshore our food production to countries with [lower] environmental standards.” (Stanley 2020). 45. Sir Ian Boyd told the Guardian that restoring 50 per cent of farmland into woodlands and natural habitat could mean the amount of cattle and sheep would fall by 90 per cent. He estimated this would result in 20 per cent less food being produced, which could be replaced by developing vertical farms, he said (Pullman 2020). 46. “Food production should be a priority in the busy south east of England and in general I feel “feed the world” should be our guideline”. “It is taking reasonable agricultural land out of production thereby increasing the need for imported products” (Tree 2018). 47. “Taxpayers money being used to encourage landowners not to farm their land... does not seem sensible when we are told we need to produce more food with a rising population.” (Tree 2018). 48. Other farmers may have a moral attitude towards it too – why are you stopping food production?” Burrell produces 75 tonnes of organic free-range meat each year but many farmers criticise rewilding for abandoning productive farmland when the world’s population is growing (Tree 2018).
7. Farmers would welcome an opportunity to give up farming and receive subsidies to rewild their land	49. Who wouldn’t throw in the towel on farming, pocket the subsidies for arable reversion and seize the chance to restore their soils and recover some of our countryside’s mission wildlife? (Tree 2018). 50. We’re constantly surprised how few landowners in a similar position to ours, on marginal land and with mounting debts, fail to make that leap. Partly, to be sure, it is lack of ‘head space’ – that valuable, creative thinking time one simply doesn’t have in an embattled situation (Tree 2018). 51. NFU Scotland said local farmers seemed keen to help with the concept of rewilding, in terms of protecting native species, carbon capture and the delivery of biodiversity (Tree 2018).

	52. A new subsidy system based on rewilding could financially support farmers to increase carbon sequestration on their land and restore ‘damaged and degraded’ ecosystems (Tree 2018). 53. One of the aims of EU reform was to give marginal farmers the chance to consider alternatives, whether in terms of other crops more suited to their land or entirely different forms of land management (Tree 2018). 54. Many of us are interested in ideas about carbon pricing and how we can further incentivise rewilding as part of tackling climate change. Frankly, it is not enough to leave it to local communities and local authorities, which do individually brilliant things; in this time of climate emergency, we should ask national Government to incentivise rewilding (UK Government 2019). 55. Those who manage our land and sea play a pivotal role and should be supported to come together to deliver carbon reductions / biodiversity benefits (UK Government 2019). 56. The new Environmental Land Management (ELM) system will aim to offer land based businesses the opportunity of a meaningful income stream from delivering environmental benefits (Department for Environment, Food and Rural Affairs (Defra) 2019b). 57. “With the publication of the [Agriculture] bill we are taking a huge stride in the right direction towards tackling the climate emergency and the biodiversity crisis in this country. The devil will now be in the detail, as the bill is converted into policy and we at Rewilding Britain will be doing everything we can to ensure that rewilding is recognised as an important part of the future picture for land management.” (Rewilding Britain 2020b). 58. [Knepp] Simply couldn’t compete with Grade 1, 2 land in the global market place. Had to do something radically different. Selling wasn’t an option for us – decided to work with the land, rather than battling against it all the time. The is to allow natural processes to function – to stand back and stop managing, to let the animals do the work for you. We saw an opportunity – instead of losing money farming, we could create a nature project – work with the land, rather than against it. (Tree 2019).
8. Rewilding large swathes of Britain will threaten domestic food security	59. The plan, published by Rewilding Britain, calls for billions of pounds in farm subsidies to be redirected towards creating native woodlands and meadows and protecting peat bogs and salt marshes. [...] Wrigley said rewilding such a large proportion of the UK did not have to involve an overall reduction in food production. She pointed to examples such as the Knepp estate in Sussex and to millions of hectares of low-grade agricultural land, much of it in the uplands (Carrington 2019b). 60. The delights and fears of rewilding Wicken Fen: Loss of arable production and lower food security (Hughes 2019).

	61. But farming organisations, including the NFU, have warned that rewilding large swathes of the UK could have a damaging effect on domestic food security (Tree 2018). 62. Some critics of the rewilding agenda say that there is a choice between feeding ourselves and nature, and that turning more land over to rewilding, rather than using it for agriculture, will mean that we lose out in food security. However, the least productive marginal land often provides the best options for carbon sequestration, rewilding and other ecosystems services. We already have large areas of land that produce little food, which could be used to store vast amount of carbon. We need to reassess our priorities and take a more strategic approach to the use of that land (UK Government 2019).
9. Subsidies to rewild farmland would be a misuse of taxpayer money	63. "The money would have been better used training Knepp Castle staff in traditional farming methods so that they understood how to use the land profitably making a contribution to the world shortage of food." "Food production should be a priority in the busy southeast of England and in general I feel "feed the world" should be our guideline". "It is taking reasonable agricultural land out of production thereby increasing the need for imported products". Rewilding a section of SE England which has been prime agricultural land made up of ancient field patterns and homesteads dating back to the Anglo-Saxon period is to me a misuse of taxpayer money (Tree 2018). 64. "Taxpayers money being used to encourage landowners not to farm their land... does not seem sensible when we are told we need to produce more food with a rising population." (Tree 2018).
10. Unprofitable farms that rely on subsidies should be given over to rewilding	65. Most of the livestock production in the UK is unprofitable without public subsidy," said Boyd. "The public are subsidising the production of livestock to produce huge environmental damages, all the way from greenhouse gas emissions to water pollution. Why should we continue to do that? It's not sensible (Drury 2020). 66. Tim Birch, who works for the Derbyshire Wildlife Trust and is a prominent supporter of rewilding, says that in some upland areas it is best to let nature "take control." He argues that hill sheep farming - subsidised in part by the taxpayer - is uneconomic, and ultimately taxes are being spent on something which negatively impacts the environment. "In areas like the uplands and the Peak District there are opportunities to do something quite big on a landscape scale. That would involve significantly reducing, for example, sheep numbers. Because grazing in these areas I think has had a massive impact on the landscape" (Fletcher 2018). 67. Environmental campaigner George Monbiot thinks that instead of spending money on agricultural subsidies, the land should be allowed to return to what he says is its natural state (BBC News 2016).

	68. He [George Monbiot] identified upland sheep farming as a particular problem: an environmentally destructive yet economically marginal practice which is only sustained by EU subsidies. And he raised one of the greatest cheers of the evening with his attack on the EU farm subsidy regimen: a hugely regressive tax that rewards landowners the more that they own land. In the uplands, he argued, the subsidy incentivises ecological destruction, while in the more productive lowlands farmers don't need it (Smaje 2015). 69. Annie Meanwell, owner of Low Borrowbridge Farm in the Yorkshire Dales National Park, takes a different stance: "It absolutely infuriates me when people say that my farm should be given over to rewilding (Fletcher 2018).
11. Rewilding large animals will put the safety of rural communities at risk	70. If bears and wolves were to be re-introduced, the government would first need to agree to pay compensation to farmers for every animal lost and also have a massive education program for the public to be made aware of the danger these animals would represent and how to best avoid it. It would make roaming much more dangerous (The Telegraph 2019). 71. When carnivorous mammalian species are reintroduced (particularly wolves, bears, and big cats), this will also introduce the possibility of encounters that are exciting but also dangerous (Prior & Brady, 2017). 72. To some the idea of rewilding is a license to behave wildly. Dog-walkers, exhilarated by the unbridled landscape often allow their pets to rampage off the footpaths, chasing the free-roaming herds and putting up the ground nesting and water birds (Tree 2018). 73. Bison are unfortunately out of the running for Knepp... As ever the concern is dog walkers (Tree 2018). 74. And landowners would be wary about changing the use of land and deciding the types of species to introduce. "You don't want species that can attack people, or break through hedges and cause disruption," he added (Tree 2018). 75. In Wales, one ecologist says the concept is alienating landowners and can't be mentioned to farmers. In Northumberland, attempts by the Lynx UK Trust to release the wild cats have been mired in controversy. Even the harmless, herbivorous beaver is the subject of fierce debate: while it was recognised as a native animal in Scotland last year, beavers unofficially released into the river Otter in Devon roam free only on a government trial (Barkham 2017). 76. Plenty of people here in the Peak District are not entirely enamoured by the thought of sharing their neighbourhoods with nearby wildcat. For the same reason, the idea of introducing wolves and bears back to these isles is hugely controversial. "It pisses people off," says Prof Driver succinctly. "As a charity, we tend to stay away from it." (Drury 2020)

	77. “We don’t want any damage to farming because farmers are struggling, and we don’t know where they’re going to stand when we come out of Europe.” Gregg said he was “originally really for it” but that his enthusiasm had cooled after attending local meetings and researching about the possible implications of the lynx (Halliday & Parveen, 2017). 78. Species reintroduction in particular requires a responsible long-term view as well as widespread support and consent from local communities and landowners (Countryside 2020).
12. Rewilding should be a key land management option in Britain, particularly on marginal land	79. Wrigley said rewilding such a large proportion of the UK did not have to involve an overall reduction in food production. She pointed to examples such as the Knepp estate in Sussex and to millions of hectares of low-grade agricultural land, much of it in the uplands (Carrington 2019b). 80. "In areas like the uplands and the Peak District there are opportunities to do something quite big on a landscape scale. That would involve significantly reducing, for example, sheep numbers. Because grazing in these areas I think has had a massive impact on the landscape" (Fletcher 2018). 81. The least productive marginal land often provides the best options for carbon sequestration, rewilding and other ecosystems services. We already have large areas of land that produce little food, which could be used to store vast amount of carbon. We need to reassess our priorities and take a more strategic approach to the use of that land (UK Government 2019). 82. Rewilding needs to be reconciled with other forms of land use that benefit people, such as agriculture. Some argue that rewilding of less productive farmland could more than compensate for biodiversity losses on intensively managed crop fields. Some point to upland areas, where farmers are highly dependent on income support, as candidates for rewilding (Alison & Wentworth, 2016). 83. “I believe that there are significant areas of the UK where agricultural productivity is at best, marginal and that #rewilding these areas could offer wider environmental benefits (Driver 2019). 84. Bumper crops inevitably lead to lower prices, driving farmers on marginal land – where the costs are higher and the efficiencies harder to come by – out of business. The simple reality is we need less land for food. Knepp is a casualty of a global process of extraordinary rises in agricultural productivity and the resulting abandonment of marginal land. By 2030 Rewilding Europe estimates there will be 30 million hectares of abandoned farmland in Europe. What happens to this land is an issue concerning most European governments, including Britain (Tree 2018).

	85. One of the aims of EU reform was to give marginal farmers the chance to consider alternatives, whether in terms of other crops more suited to their land or entirely different forms of land management (Tree 2018). 86. Giving over areas that are not on prime agricultural land to nature – ‘land sparing’ in the jargon – is farming’s greatest ally. By halting and reversing land degradation, securing water resources and providing insects for crop pollination, rewilding provides services vital to the long-term sustainability of agriculture and food production (Tree 2018). 87. There was consensus that traditional land uses in remote and upland areas are unprofitable without subsidy, which some took as a rationale for doing rewilding and a reason why rewilding was perhaps inevitable in some low-value agricultural land due to changes in subsidy regimes. There was consensus in agreeing that rewilded landscapes and traditional land uses can coexist (Holmes <i>et al.</i> 2020). 88. Woulter Helmer, rewilding director of Rewilding Europe, sees no conflict between food production and rewilding: Europe is heading for a future of food produced more intensively in fewer areas, releasing less productive arable land for rewilding, he says. “Farming is being done by fewer and fewer farmers on a larger scale on the best soils. They leave the less profitable lands – the Scottish Highlands or continental marshlands and river deltas become adventure land for an increasingly urban population.” (Barkham 2017).
13. Reintroducing species to Britain will increase the risk of livestock predation and diseases being transmitted to livestock	89. Farmers are worried about the damage beavers will do to farmland and the diseases they can spread to livestock. The National Trust is going ahead anyway (Case 2019). 90. The National Pig Association is concerned about wild boar breaking into commercial pig units. Pigs are notorious for picking up and transferring diseases. A wild boar population increases the risk of significant disease outbreaks and would make an outbreak difficult to control (Countryside 2020). 91. “Initially Defra was concerned about potential of disease and disruption to the surrounding agriculture.” Beavers can carry a tapeworm known as non-native <i>echinococcus multilocularis</i>, particularly nasty if you pick up the eggs (Fox-Leonard <i>et al.</i>, 2019). 92. The idea has, however, caused a deep split in the rural community. There are fears among farmers that the six lynxes, which will be imported from Sweden, will kill their sheep and attack deer (Halliday & Parveen, 2017). 93. However, Natural England recently advised the government not to approve an application from the Lynx UK Trust for a trial reintroduction of Eurasian lynx in the Kielder Forest, Northumberland, on the basis that the application had not been able to demonstrate enough local support. The application had been a concern for local farmers because lynx are a large predator, and would naturally hunt and kill smaller animals, such as sheep and lambs. Claire Robinson, wildlife expert at the National Farmers’ Union, said: “Our biggest

	concern would be the impact on animal welfare and the safety of livestock. There is no evidence that lynx will stay within woodland or forest areas.” (Countryside 2020). 94. Species reintroduction in particular requires a responsible long-term view as well as widespread support and consent from local communities and landowners. For example, wolves have re-established across many European countries, but would require a wholesale change to the way we manage livestock in the UK due to their nature as a top predator (Countryside 2020). 95. The release of lynx into the countryside would result in sheep being killed, maimed, and stressed. He said: “It would have a major effect on not only commercial farming, but also the wider environment. “Lynx are opportunistic predators and if they need a meal, they will find the nearest and easiest prey and usually that will be sheep. “Attacks by a dog cause a sheep to miscarry their unborn lambs, to be separated from baby lambs once they are born, and to fail to thrive due to high levels of stress. It would be the same with the lynx.” (Halliday & Parveen, 2017). 96. The application [from the Lynx UK Trust for a trial reintroduction of Eurasian lynx in the Kielder Forest] had been a concern for local farmers because lynx are a large predator, and would naturally hunt and kill smaller animals, such as sheep and lambs. Claire Robinson, wildlife expert at the National Farmers’ Union, said: “Our biggest concern would be the impact on animal welfare and the safety of livestock. There is no evidence that lynx will stay within woodland or forest areas.” The lynx’s favourite lunch is roe deer, but sheep farmers point out a lazy predator could develop a taste for easier catches (Tree 2018).
14. Absent species, like lynx and bison, should be brought back to Britain as it is where they belong	97. European brown bears have been extinct in Britain since at least the early Middle Ages—and possibly even earlier. British lynx disappeared around 700 A.D., due to hunting and habitat destruction. Wolf populations began to dwindle around 1000 A.D., eventually vanishing from the region. “The U.K. has lost ... more large mammals—including wolves, lynx, bears, beavers, boars, moose, bison, and wolverines—than any other European country except Ireland (Katz 2019). 98. “Wildcats were once widespread across Britain but were extinguished from England and Wales by gamekeepers during the nineteenth century. A tiny remnant population managed to cling on in Scotland, somehow. I couldn’t be more excited about this project to breed wildcats in captivity for the purpose of reintroducing them back into the English and Welsh landscape, where they belong” (Horton 2019b). 99. A Defra spokesperson said: “We are committed to reintroducing formerly native species, such as beavers, where there are clear environmental and socio-economic benefits. (Barkham 2020).

	100. Campaigners say the wild mammal, which was last seen across Britain in 700AD, would reinvigorate the biggest forested area in Britain and control its sizeable herbivore population. “There are three main benefits to re-introducing lynx into the wild. They are restoring ecosystems, control of deer numbers, and providing economic benefits with the increase of tourism.” The trust claims that reintroducing an apex predator like the lynx would help to restore ecosystem balance with increased deer control which would lead to woodland regeneration and greater biodiversity (Halliday & Parveen, 2017). 101. The British Isles used to be busy with beavers; place names resound with their ghosts: Beverley in Yorkshire, Beverston in Gloucestershire (Tree 2020). 102. As native omnivores, pine martens play a vital role in the delicate balance of woodland ecosystems. Living at low densities in the landscape, they forage on fruit, fungi and a range of prey including the grey squirrel, a non-native species which is having a detrimental impact on broadleaf woodland throughout England (The Wildlife Trusts 2019). 103. Dr Gareth Parry, director of conservation at Gloucestershire Wildlife Trust, said bringing back the pine marten "plays a vital role in ecosystem functioning" and was an important part of work to tackle a "biodiversity emergency" (BBC News 2019a). 104. Our ambition is to also look at bringing back species that were once present where appropriate conditions allow, these can include species of cultural significance to Kent. Chough can be seen on the Canterbury coat-of-arms and are synonymous with Shakespeare and the white cliffs. It is our intention to see this evocative species return to the county (KWT 2020a). 105. We’ve forgotten about the free-roaming herds that would have wandered temperate zone Europe – just like in Africa or great plains of US. They create habitats, complexity, the margins life thrives in. They are our missing link with the biodiversity of the past. The key is to allow natural processes to function – to stand back and stop managing, to let the animals do the work for you (Tree 2019). 106. Rewilding is a term with the potential to excite and engage the masses with its links to wolves, mammoths and mastodons; and because the call for re-establishing “wild” places fits to a perception of nature that many modern-day humans can relate to (Hayward, Scanlon, <i>et al.</i> 2019).
15. Reintroducing beavers will cause farms in lowland areas to flood	107. But not everyone loves the beaver. While beavers will not dam large rivers because the waters are already deep enough for them to feel secure, their dam-building can cause flooding on flood-plains in lowland areas. In Scotland, farmers have shot beavers blamed for flooding farmland (Barkham 2020).

	108. In some cases, the reintroduction of beavers has led to problems for farmers, with localised flooding, as well as the animals targeting orchard trees near the river. Claire Robinson, the National Farmers' Union senior countryside adviser, said the results from trials would need to be examined before wider moves to reintroduce beavers are taken. She said: "We do have concerns about the potential damage to farmland and the landscape. It is crucial that farmers have the tools to manage any impacts a beaver reintroduction could have." (Sawer 2020). 109. But opposition to the return of beavers mostly arises from misunderstanding. There are worries that migratory fish such as salmon and trout might be unable to make it past beaver dams, which ignores the fact that they co-evolved over millions of years with beavers. And some people object to the 'mess' created by beavers along the water's edge (Goldsmith 2019). 110. There is increasing interest in the beneficial role beavers could bring to habitats. The natural activities of beavers could help to regulate flooding and improve water quality, if managed properly. On the other hand, beaver burrows near watercourses can weaken river embankments and flood defences. Material felled and gathered by beavers for dams and lodges can create flood risk downstream and block drains upstream. The potential consequences of this for farmland and the rural economy is a cause for concern (Countryside 2020). 111. It is currently illegal to release beavers into the wild, because of the changes they can make to the environment. The issue has been hotly contested by some farmers because of the possibility of the animals causing floods to potato and carrot farms near streams. NFU senior countryside adviser Claire Robinson said: "Any species introduction, particularly if it has not been in this country for hundreds of years, can have a massive impact on the many benefits that the countryside and farming delivers. "Beavers in the wild could have potentially serious implications on farmland such as land drains being blocked in lowland arable areas." (Horton 2019a). 112. Farmers have warned that beavers are causing considerable damage on productive farmland after researchers suggested the large rodents could help restore wetlands and boost biodiversity. "However, any benefits seen in localised areas must be viewed against the considerable damage from beaver activity on productive farmland, drainage systems, long standing flood banks and established woodland on large parts of Tayside." (Cramb 2017).
16. Potential ecotourism revenue is a powerful incentive for farmers and landowners to rewild their land	113. Some landowners are won over by potential economic benefits such as ecotourism. Beavers can be secretive and nocturnal but they are also placid, slow-moving animals, which can be watched swimming with their kits in summertime (Barkham 2020). 114. "There are three main benefits to re-introducing lynx into the wild. They are restoring ecosystems, control of deer numbers, and providing economic benefits with the increase of tourism." (Halliday & Parveen, 2017).

	115. White-tailed eagles are appreciated by tourists and conservationists in Ireland and Scotland, but they take some sheep farmers' lambs (although some argue that livestock losses are economically negligible) (Alison & Wentworth, 2016). 116. Tourism is undoubtedly one of the big potential winners of rewilding (Tree 2018). 117. Subsidised farming would be replaced by a more lucrative tourist economy (Tree 2018). 118. But not all rewilding land will produce charismatic headline species that tourists will flock to see and it is in the nature of rewilding for habitats to shift and species to move. Incentivising farmers and landowners to give land over to nature has to rely on ways that value that transition and acknowledge the public services that dynamic, self-willed natural processes provide (Tree 2018). 119. Rewilding has the potential to increase revenue from tourism, attracting people firstly as a label that is rapidly increasing in popularity, and secondly through opportunities to see charismatic species (Alison & Wentworth, 2016). 120. I don't think ecotourism is the silver bullet it's sometimes held up to be, but there's no doubt that people are increasingly seeking out wildlife experiences and are willing to pay for them. I've heard it said that lynx are so secretive that they'd be nigh-on impossible to see. This misses the point. Experience on the Continent has shown that the presence of a wild charismatic mammal is in itself enough to enhance the impression of a nature-rich tourism destination. Besides, if we're worried that business can't be generated on the back of an elusive creature, we should look no further than Loch Ness! (Rewilding Britain 2020d). 121. There are some areas near our farm that have "rewilded" themselves where people did not have the heart to restock their sheep after the foot and mouth outbreak. These are now wildernesses of bracken and brambles, and I have never seen a single "eco tourist" up there among the impenetrable vegetation. The views over Coniston Water have been obscured; although it is common land, it is now largely inaccessible (Meanwell 2015). 122. Campaigners such as Tim Birch have pointed to ecotourism, such as that generated by the white-tailed eagle reintroduction in Scotland, as a potential source of income for rewilded areas, but Rebecca said: "Not all the places that rewild are going to get the ecotourists in to see it. A big glitch in rewilding is how are you going to make that work financially. And they [pro-rewilders] never have the answers." (Fletcher 2018). 123. "If rewilding happens there will be more jobs here in land management and showing people what's here, in tourism, and in sustainably using what the land's providing. It's about repeopling as well as rewilding – the two are very compatible." (Baynes 2019).
--	---

17. Rewilding is controversial as it means different things to different people	124. To bring rural communities to schemes which will restore nature it is crucial to start by using language which describes a future for them rather than threatening them with extinction. Call it extensive farming, nature friendly farming, conservation farming, in fact call it nearly anything other than rewilding and you will have a chance of getting the farming community to buy in (Bonner 2019). 125. There is an uneasy response to the ‘R’ word in the conservation world, too. Many scientists consider it provocative and nebulous, leading to confusion and contradictory views (Tree 2018). 126. But as rewilding blossoms, so do controversies... Privately, senior National Trust staff say they can’t mention the R-word even though they recently launched ambitious plans to “restore” 25,000 hectares of Natural Trust land. In Northumberland, attempts by the Lynx UK Trust to release the wild cats have been mired in controversy. Even the harmless, herbivorous beaver is the subject of fierce debate (Tree 2018). 127. [...] we show that there is a worrying lack of consensus about what rewilding is and what it isn’t, which jeopardizes a clearer account of rewilding’s aims, benefits and potential consequences (Tree 2018). 128. There is no single definition of rewilding, but it generally refers to reinstating natural processes that would have occurred in the absence of human activity (Alison & Wentworth, 2016). 129. Some charities and campaign groups are nervous of talking about rewilding: the word has become toxic. “From a UK perspective it has become synonymous with the return of large carnivores and farmers being evicted off their land,” he said. “Reintroduction is an element but only one element.” Landowners’ organisation Scottish Land & Estates (SLE) was represented at the conference. Sarah-Jane Laing, its executive director, said: “Using the term ‘rewilding’ can cause problems because it means many different things to different people.” (Baynes 2019). 130. Three typical criticisms of #rewilding are: 1) Rewilding means different things to different people [...] (Sandom 2019). 131. “Lots of people don’t want to go against friends and family who are in farming and therefore don’t want to say the truth,” he said. “There’s a lot of misinformation out there and therefore it’s difficult for anyone to make an informed decision.” (Halliday & Parveen, 2017). 132. Rewilding has been hailed as ‘radical’ and ‘agenda-setting’ in the challenge it poses to mainstream conservation (Wynne-Jones <i>et al.</i> 2020).
--	--

	133. In barely a decade, nature has reconquered a West Sussex estate – but conservationists, farmers and even broadcasters are divided over the R word (Barkham 2017). 134. Rewilding as a method of restoring ecosystems has been the subject of some debate and controversy in recent years (Countryside 2020).
18. There are a lot of things farmers can do to benefit nature without rewilding their land	135. "The main issue that I have with these rewilding people is that I don't think they understand at all how much farmers do for the environment," she added. [...] The pair try to make the farm operate sustainably in other ways as well, avoiding the use of herbicides, pesticides and synthetic fertilisers, and only operating small tractors to reduce their carbon footprint. "I'd defy anyone in this country to find a food production system that is better for the environment," says Natalie. She feels that the techniques used at Rosewood [farm] make it a kind of halfway-house between two extremes: intensive farming at one end and "purist, humans may have no input" rewilding at the other. Favouring environmentally-friendly methods instead of squeezing every last drop they can from the land, however, has had knock-on effects for Rob and Natalie financially. However, despite the hard-work it took to keep Village Farm afloat, Rebecca thinks that, for financial reasons, agriwilding is still a more practical answer to environmental degradation than rewilding in its 'purest' form (Fletcher 2018). 136. According to Emma Olliff (Village Farm), Monbiot's arguments are counter-productive. She said: "I dislike his attitude towards sheep-farming, and meat as well. His attitude that it's either nature vs. farmer is incorrect in my mind. There's actually a lot that farmers can do to benefit nature (Fletcher 2018). 137. 70% of the UK is farmland. That means as farmers we have an opportunity to do more than anyone else to improve the environment and wildlife in the countryside (Robinson 2019). 138. Rewilding must be accompanied by a wider transition to nature and climate-friendly farming. The Knepp estate is a good example of how that works (UK Government 2019). 139. The National Farmers Union recently published its plan to end the climate-heating emissions from agriculture by 2040. It said this could be done without cutting beef production or converting large areas of farmland into forest. Instead, the NFU said 75% of the UK's agricultural emissions could be offset by growing plant fuel for power stations and then capturing and burying the carbon dioxide (Carrington 2019a). 140. The recent "State of Nature" report that a number of hon. Members have mentioned, paints a very gloomy picture of nature loss in the UK, with 41% of our species having declined since the 1970s. That report does point to some success stories, and it would be wrong to

	overlook them. Many of those happened as a consequence of Government, conservation groups, farmers and land managers all working together (UK Government 2019).
19. It is possible for people in Britain to live alongside predators, as people in Europe live alongside species like bears and wolves	141. Species reintroduction in particular requires a responsible long-term view as well as widespread support and consent from local communities and landowners. For example, wolves have re-established across many European countries, but would require a wholesale change to the way we manage livestock in the UK due to their nature as a top predator Claire Robinson, a wildlife expert at the National Farmers' Union, said: "Any species reintroduction, particularly if it hasn't been in this country for hundreds of years, can have a massive impact on the many benefits that the countryside delivers." (Countryside 2020). 142. The Eurasian lynx, which were hunted for their highly prized pelts, have been successfully reintroduced in northern Germany, where 14 of the cats introduced in 2000 have grown to a population of up to 100. Their preferred diet of roe deer makes them popular with the rewilding movement, which argues for the reintroduction of apex predators in order to control herbivore populations, promote forest growth and reinvigorate ecosystems (Halliday & Parveen, 2017). 143. "Beavers in the wild could have potentially serious implications on farmland such as land drains being blocked in lowland arable areas." Environmentalists argue that this can be mitigated; in Bavaria where they have reintroduced beavers, the government relocates creatures which are causing issues for farmers (Horton 2019a). 144. Stable or rising populations of lynx, wolves and bears in Europe show that human-predator coexistence is possible (Alison & Wentworth, 2016). 145. Compared to Bulgaria, Estonia, Latvia, Poland, Romania, Slovenia and Slovakia, the UK has a very limited area that could be described as wilderness and rewilding could improve this (Alison & Wentworth, 2016). 146. Many people might perceive a risk to humans, but the reality is that lynx avoid people and attacks are extremely rare, so rare they're virtually unheard of (Rewilding Britain 2020d).
20. Allowing farmland to revert to nature will result in an unproductive wasteland of scrub	147. If we let scrub takeover the uplands, they'll be lifeless... (Cooper 2019). 148. What it doesn't mean, he is clear, is "extreme rewilding" where large tracts of land are completely unmanaged. That's because of invasive alien species, which would take over, and the lack of large predators (Baynes 2019).

	149. Abandoning the land to nature – letting it go – smacked of laziness, irresponsibility, even immorality. It was uncivilized, a ‘backwards step’. Time and again, locals expressed dismay at the ‘ruination’ of farmland. The messy look of the place betrayed lost productivity (Tree 2018). 150. The tidy Sussex fields and manicured hedges devolving into rampant scrub and untrammelled wetland, the room erupted into dissident murmuring and shaking of heads... it was an affront to the efforts of every self-respecting farmer, an immoral waste of land, an assault on Britishness itself (Tree 2018). 151. “In this day and age when we are asked to grow all the food we can, to save importing and help feed starving countries, he has turned a fine working estate into a wasteland... someone needs to stop him” (Tree 2018). 152. There is also a fear of change and fear of the unknown: the perceived dangers associated with the idea of ‘wildness’: the desire to preserve what is considered as traditional, rural countryside with an aesthetically pleasing tightly ordered landscape; the notion of rewilding as ‘land abandonment’ (Tree 2018). 153. Modern farmers and landowners however are prejudiced against scrub because it is considered unproductive. Scrubland is almost ubiquitously described as wasteland. In modern times even conservationists have struggled to promote the value of scrub (Tree 2018). 154. It’s turning into quite a mess.... A fair old mess really. It looks totally abandoned, like nobody cares for it anymore (Tree 2018). 155. “It takes a new eye to look at this and say, ‘that’s beautiful’, rather than go, ‘that’s just a real mess’,” says Burrell (Tree 2018). 156. “...unsightly scrub”. What seemed to exercise our neighbours most about the new regime of management – or lack of it- at Knepp was more nebulous, though was a question of aesthetics, of what people wanted or were prepared to live with. We were, it seemed to many of our detractors, destroying the native character of our countryside – something they considered to be beautiful, balanced and harmonious (Tree 2018).
21. We should not seek to re-establish absent species through rewilding until we’ve protected existing wildlife	157. Any attempt at rewilding will likely introduce a novel species, where the extent of novelty can dramatically alter the impact on the rest of the community or ecosystem... We suggest that focusing on protecting biological diversity instead of protecting or enhancing functions is a safer approach given the current state of ecological knowledge (Nogués-Bravo <i>et al.</i> 2016). 158. We should not seek to re-establish missing species until we’ve protected existing wildlife (Tree 2018).

	159. NFU Scotland said local farmers seemed keen to help with the concept of rewilding, in terms of protecting native species, carbon capture and the delivery of biodiversity, but species reintroduction – such as the illegal release of the beaver – was an example of ‘how not to do it’ (Tree 2018). 160. In Northumberland, attempts by the Lynx UK Trust to release the wild cats have been mired in controversy. Even the harmless, herbivorous beaver is the subject of fierce debate: while it was recognised as a native animal in Scotland last year, beavers unofficially released into the river Otter in Devon roam free only on a government trial (Barkham 2017). 161. The focus must be on rebuilding the environment from the ground up – “baby steps” – and in convincing landowners and managers, and people living in areas where rewilding is proposed, that it can bring positive benefits to their economy and lives. “Apex predators are a long, long way down the road. Just by doing preparation for the land to be wilder doesn’t mean we will ever bring back predators because there may never be the will to do that.” (Baynes 2019).
22. Rewilding predators is a cost-effective way of controlling deer populations	162. I’m not sure we should confine ourselves to the benefits for local people. The return of an apex predator for the first time in British history is something for the nation as a whole... at a pragmatic level, lynx would help with the very costly task of controlling woodland deer and would perform that task all year round, night and day. The process of predation itself drives a whole suite of other beneficial ecological processes (Rewilding Britain 2020d). 163. The principle of trophic cascades is now well established in ecological circles. Predation itself is a natural process that drives many benefits for other species – avian and mammalian scavengers, burying beetles, insect larvae etc. Carcass decomposition returns nutrients to the soil, encouraging vegetation growth, which in turn fuels herbivore populations. Over much of Scotland, where lynx reintroduction is actively being discussed, we’ve arrested these natural processes of birth, death, decay and regeneration. So it could be argued that the biggest benefit doesn’t come from the lynx itself but the impact of its predation on other animals (Rewilding Britain 2020d). 164. Their preferred diet of roe deer makes them popular with the rewilding movement, which argues for the reintroduction of apex predators in order to control herbivore populations, promote forest growth and reinvigorate ecosystems. “There are three main benefits to re-introducing lynx into the wild. They are restoring ecosystems, control of deer numbers, and providing economic benefits with the increase of tourism.” The trust claims that reintroducing an apex predator like the lynx would help to restore ecosystem balance with increased deer control which would lead to woodland regeneration and greater biodiversity (Halliday & Parveen, 2017).

	165. Reintroduced animals can have the same effects on habitats as management measures formerly carried out by people; for instance, wolves can control numbers and behaviour of deer and reduce the need for culling (Alison & Wentworth, 2016).
23. Most farmers don't have the time or energy to consider transitioning from farming to rewilding	166. We're constantly surprised how few landowners in a similar position to ours, on marginal land and with mounting debts, fail to make that leap. Partly, to be sure, it is lack of 'head space' – that valuable, creative thinking time one simply doesn't have in an embattled situation (Tree 2018). 167. And while God knows there are farmers (and farm organisations still more) who deserve the opprobrium of anyone who cares about the land, let's pause a moment to reflect on what we're asking of our farmers – to be financially successful self-employed entrepreneurs, to produce healthy food at high volume and unprecedentedly low price, and to safeguard the environment, the landscape and its wildlife within those parameters. Is it any wonder that so many of them fail at some or all of those onerous demands? (Smaje 2015). 168. This fear of the intrusion of bureaucrats into private land-management decisions is hugely underestimated by policymakers and conservationists and often outweighs any sympathies for nature that a landowner or farmer might have (Tree 2018).
24. Rewilding the countryside will have a negative impact on farmer's livelihoods	169. My main myth-busting message is that it's not about wolves and bears and kicking farmers off the land (Driver 2020). 170. And there are fears about loss of control, particularly in regard to public access, sporting rights and the ability to control populations of certain species – like the beaver – that might conflict with a landowner's interests and income (Tree 2018). 171. [...] the problems that reintroductions as part of a rewilding agenda will have on livelihoods (Tree 2018). 172. But Phil Stocker, chief executive of the National Sheep Association (NSA), argues that the consequences of reintroducing lynx would be catastrophic for farmers [...]. "Farmers are already struggling. Conditions are tough in the sheep sector, returns are low and for some farmers the release of the lynx would be the final straw. We would lose much, much more than just sheep if these businesses cease to operate," added Stocker (Halliday & Parveen, 2017).
25. Rewilding is an example of privileged middle-class romanticism about the countryside	173. Privileged middle-class romanticism" is how a senior Plaid Cymru councillor previously described Rewilding Britain's proposals to reduce sheep grazing – and, therefore, farmers' livelihoods – across 10,000 hectares of mid-Wales (Drury 2020). 174. We are used to oppression... [the proposals are] privileged middle-class romanticism (Farming UK 2019).

	175. In one system the human is part of the solution, and in the other the solution is to remove the human. Aren't we at risk of fetishizing the 'wild' over the agricultural just because it suits the urbanised narrative we're telling ourselves? The aspects of rewilding that don't look so much like post-romantic gardening but do look suspiciously like farming under another name (Morris-Jones 2019). 176. Rewilding: the left's latest crazy, dangerous idea (Tree 2018).
26. Rewilding beavers will help to lessen flooding and improve water quality	177. The return of beavers to Britain, along with all that they do to bring life into our landscapes, is truly a marvel (Goldsmith 2019). 178. Beavers can regenerate landscapes, encourage wildlife and prevent flooding. A Defra spokesperson said: "We are committed to reintroducing formerly native species, such as beavers, where there are clear environmental and socio-economic benefits. "Beavers have a special place in English heritage and can play a role in creating new havens for wildlife and boosting our natural biodiversity. We welcome applications for trial reintroductions of beavers, where these benefits are clear." (Barkham 2020). 179. "Our aim is that the beavers become an important part of the ecology at Holnicote, developing natural processes and contributing to the health and richness of wildlife in the area. "Their presence in our river catchments is a sustainable way to help make our landscape more resilient to climate change and the extremes of weather it will bring." Eardley said: "The beavers will help us achieve a more natural flow pattern, slowing, cleaning and storing water and developing complex river habitats. The dams the beavers create will hold water in dry periods, help to lessen flash flooding downstream and reduce erosion and improve water quality by holding silt." (Morris 2019). 180. A pair of Eurasian beavers have been released on Exmoor in a National Trust effort to curb flooding and improve biodiversity. Project manager Ben Eardley said: "As ecosystem engineers the beavers will develop wetland habitat, increasing the variety and richness of wildlife." Mr Eardley added: "Their presence in our river catchments is a sustainable way to help make our landscape more resilient to climate change and the extremes of weather it will bring. "The dams the beavers create will slow the flow, holding water in dry periods which will reduce the impact of drought. "They will help to lessen flash-flooding downstream." (BBC News 2020). 181. "The beavers will shake this place up, they're a real driver of change." In time, Eardley said, the beavers will thin out the trees in their 2.7-hectare home, bringing in more light and with it more flora and fauna – birds, invertebrates, other mammals. Another big hope is that the dams they build will slow the flow of water, easing the risk of flooding downstream (Morris 2020). 182. Beavers are also habitat creators. They have an exponential effect on the biodiversity and abundance of other species which thrive in the watery kingdoms it creates. Ponds, wet woodlands and networks of channels provide a complex variety of conditions that support a whole of host of species from mosses to amphibians, bats to aquatic beetles. Their coppicing of trees along the riverbanks – for food and

	to build dams and lodges – lets in sunlight which encourages green, oxygen-producing aquatic plants, while the woody debris they drag into the water provides a jungle of substrate for micro-organisms to grow on – fuel for populations of invertebrates which, in turn, provide food for fish and aquatic birds (Morris 2020). 183. Beavers are the ultimate keystone species. They build small dams along river tributaries and streams, which play a big role in holding back water following rainfall and help to mitigate flooding and drought, while at the same time breathing life back into the landscape in an extraordinary way. Science is only beginning to understand how that simple species has such a magnificent and transformative impact on the natural world (UK Government 2019).
27. Rewilding is another word for managing country estates for wealthy elites who want beavers on their land as a status symbol	184. Beavers can regenerate landscapes, encourage wildlife and prevent flooding. The must-have accessory for every English country estate was once a gothic folly, a ha-ha or a croquet lawn. Now it is a pair of beavers. Landowners and large estates are racing to acquire licences to reintroduce the water-loving rodents, which were hunted to extinction in Britain 400 years ago (Barkham 2020). 185. The rich usually splurge on yachts. Not this lot. Committed environmentalists, they buy up spectacular land and turn it into national parks (Wade 2018). 186. Five hundred years after they were hunted to extinction, beavers are returning to England as a growing number of landowners introduce them on their estates (Shukman 2020).
28. There is overwhelming public support for rewilding in Britain	187. A YouGov poll this week found overwhelming public support for reintroducing beavers into Britain, with 76% of people supporting the idea, by far the most popular mammal for reintroductions ahead of the wild cat, wolf and lynx (Barkham 2020). 188. Over the past two years there has been a surge of enthusiasm for change. A poll in Scotland found that 60% support the reintroduction of beavers, with only 5% opposed. Over 90% of respondents to a survey by the Lynx UK Trust supported a trial reintroduction (Tree 2018). 189. Amazing to see just how much support there really is for reintroducing missing species to Britain! #rewilding. 82% of Brits want extinct species to be returned to the UK (Rewilding Britain 2020a). 190. Earlier this year more than 100,000 people signed our parliamentary petition asking the UK Government to support the restoration of nature on a massive scale - the huge potential that nature restoration has for helping us meet the challenges of the climate crisis (UK Government 2019).

29. Unless rewilding is profitable and makes financial sense for landowners, it will never happen	191. But no matter how important the public benefits, no farmer or landowner can be expected to turn their land over to nature out of altruism. It has to make financial sense. As one landowner put it to us, you can't be green if you are in the red (Tree 2018). 192. For Burrell at Knepp, rewilding has been a pragmatic way to revive the struggling family farm. Ecotourism makes as much profit as his conventional farming business once did. And with Brexit looming, Burrell's diversified business is no longer dependent on the disappearing EU subsidy regime (Barkham 2017). 193. The plan, published by Rewilding Britain, calls for billions of pounds in farm subsidies to be redirected towards creating native woodlands and meadows and protecting peat bogs and salt marshes. The group says wildlife would benefit, farmers would not lose money and food production need not fall. She said being paid to plant woodlands and meadows or protect peat bogs could be important fresh sources of income for farmers. "Farmers will certainly not be worse off – it is about diversifying and providing alternatives," (Carrington 2019b). 194. Mr Price told delegates that the starting point for any landowner is always "the need to drive income from the land and to retain its capital value". But financial and legal constraints could deter landowners from introducing rewilding projects. "Most landowners, particularly traditional ones, will justify their success in life by the extent to which they pass on something that is as good as that which they inherited," he added. "I'm talking about succession. You want to be able to leave your children and grandchildren something." (Tree 2018). 195. But landowners will be wary about entering into rewilding projects, Mr Price suggested, as planting lots of trees or letting scrub grow back on land would likely see its value decrease (Tree 2018). 196. As well as fears of conservation interference and increased bureaucracy, there are other powerful disincentives for farmers to let go. Reverting arable land to scrub or woodland halves its value. What rewilding has done, in effect, is halve the value of the land (Tree 2018). 197. There are also tax advantages at stake: farmland is exempt from capital taxation through Agricultural Property Relief, farm diesel is exempt from fuel duty and farmers receive 100% relief on business rates. No other industry receives this kind of preferential treatment (Tree 2018). 198. A new subsidy system based on rewilding could financially support farmers to increase carbon sequestration on their land and restore 'damaged and degraded' ecosystems (Tree 2018).
--	--

30. Reintroducing grazing animals, like bison, to the countryside will restore a more natural grazing system	199. Bison reintroduction programmes were declared successful after several years of conservation efforts. The Dutch project began back in 2007; the wild cattle had been extinct in that region for two centuries. Now, though, both national parks in question are reaping great environmental benefits from the bison's grazing, with a consequent flourishing of flora and fauna (Lewis 2018). 200. Three bison were first introduced [...] and a further three in 2008, at the start of a 10-year attempt to fight back against encroaching grasses and shrubbery stamping out the area's biodiversity [...] there was a pressing need for grazers to eat back the vegetation (Boffey 2018). 201. Reintroducing grazing animals – proxies of missing megafauna – and other keystone species like the beaver have been shown to recover biodiversity (Tree 2018). 202. The right number of the right species of grazing animals introduced into even a relatively small, isolated area can have an exponential impact on biodiversity (Tree 2018). 203. In practice, this large-scale restoration of wildlife is returning more modest herbivores to the countryside. Since 2001 at Knepp, Burrell has set free wild herbivores – konik ponies, longhorn cattle, red deer and Tamworth pigs – to mimic the grazing of extinct aurochs, wild boar and wild horses. A few rewilding purists scoff at reintroducing herbivorous free-roaming livestock but ecologists say that rewilding's key principle is to replace conservation “mollycoddling” with “restoring natural processes” – allowing a landscape and its plants and animals to run wild (Barkham 2017). 204. Who would have thought that Indian water buffalo provided so much good to the Hampshire countryside? They are farmed completely sustainably, fed only on grass and moved on to different pasture every day. The hay that they eat in winter is grown on the farm, where more than 15,000 trees have been planted in the past few years. That is an example of how local farmers can play a fantastic role in ensuring that the environment is at the forefront and climate change is uppermost in their thinking when they decide how to get a return from their land and protect it at the same time (UK Government 2019).
---	--

1

Consent

2

Instructions

3

Pre-Sort

4

Final-Sort

5

Survey

6

Finish

Pre-Sort Your Responses

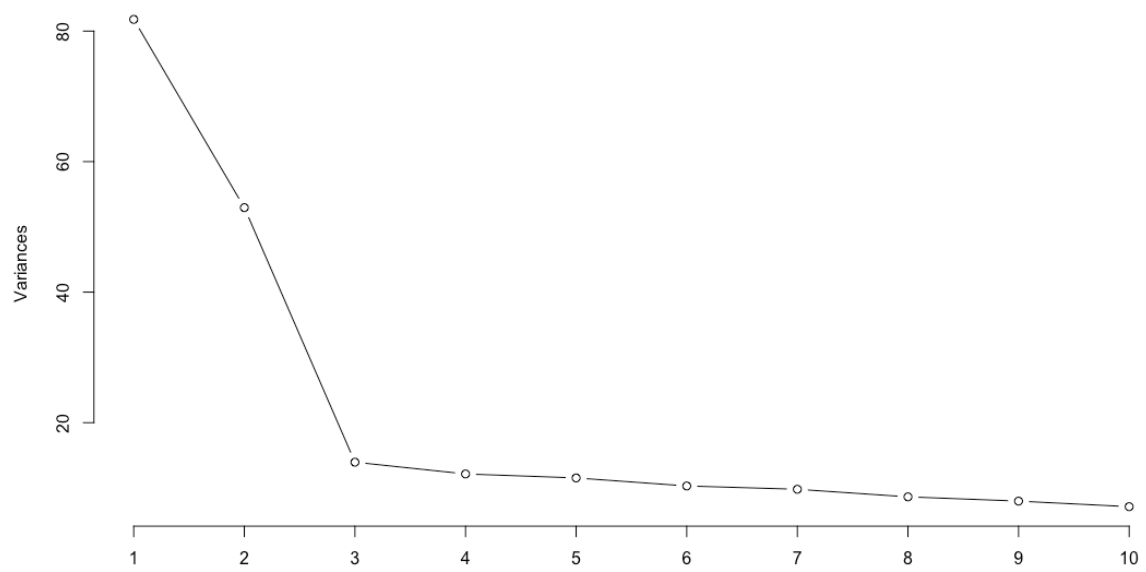
For each statement, click the icon that aligns most with your view.

BEGIN Q-SORT

Rewilding predators is a cost-effective way of controlling deer populations 👎 ? 👍	Most farmers don't have the time or energy to consider transitioning from farming to rewilding 👎 ? 👍	Farmers would welcome an opportunity to give up farming and receive subsidies to rewild their land 👎 ? 👍	Allowing farmland to revert to nature will result in an unproductive wasteland of scrub 👎 ? 👍
Unless rewilding is profitable and makes financial sense for landowners, it will never happen 👎 ? 👍	Absent species, like lynx and bison, should be brought back to Britain as it is where they belong 👎 ? 👍	Rewilding should be a key land management option in Britain, particularly on marginal land 👎 ? 👍	Rewilding farmland in Britain will shift food production to countries with lower environmental standards 👎 ? 👍
Rewilding is another word for managing country estates for wealthy elites who want beavers on their land as a status symbol 👎 ? 👍	Rewilding has the potential to restore nature, protect landscapes from flooding, improve water quality and prevent climate change 👎 ? 👍	Rewilding is an example of privileged middle-class romanticism about the countryside 👎 ? 👍	Reintroducing grazing animals, like bison, to the countryside will restore a more natural grazing system 👎 ? 👍

0 / 30

Supplementary Figure 4.1: Screenshot of the Q-method Software used to carry out Q-sort interviews, where participants were asked to do a first classification prior to the sorting task by dividing the 30 Q-set statements into three categories; “most agree” (thumbs up), “neutral” (question mark), or “least agree” (thumbs down).



Supplementary Figure 4.2: Scree plot of unrotated factors. The point that the slope becomes flat indicates that no additional variation in the data is explained by subsequent factor.

Chapter 5 Discussion

5.1 Overview

Although protected areas (PAs) have long been, and will remain, central to conservation efforts, they are not adequate to conserve biodiversity in isolation (Woodley *et al.* 2019; Watson *et al.* 2014). Hence, global responses to the CBD's new Kunming-Montreal Global Biodiversity Framework are focused on other area-based and ecosystem-based conservation approaches as key strategies to complement the PA network, to protect and restore nature (Woodley *et al.*, 2019; Bhola *et al.*, 2021; Carver *et al.*, 2021; CBD, 2022). With growing interest in how these approaches could be implemented on private land (Kamal *et al.*, 2015; Dudley *et al.*, 2018; Capano *et al.*, 2019), it is important to understand what influences participation in private land conservation programmes and approaches, as well as the perceptions of key stakeholder towards new ecosystem-based approaches such as rewilding. In this thesis, I address these issues by reviewing the factors that influence landowner participation in private land conservation programmes and approaches globally, then I use a combination of qualitative and quantitative methods to explore land-manager perceptions towards rewilding. An improved understanding of these issues can be used by policymakers and practitioners when designing conservation policies and initiatives to improve acceptability and participation, and ultimately improve conservation outcomes. In this final chapter, I explain how this research has contributed to the literature, discuss limitations and suggestions for further work, and provide recommendations for policymakers and practitioners.

5.2. Contributions to the literature

5.2.1. Chapter 2

There are a number of existing review studies on the factors that influence participation in specific conservation programmes (e.g., Prokopy *et al.*, 2019; Kemink *et al.*, 2020), but Chapter 2 is the first study to synthesise the factors that influence participation in the various private land conservation programmes and approaches that exist globally, and also compare the

different approaches used to investigate participation. Overall, I found there are no consistent landowner or land characteristics that determine participation, corroborating previous programme specific reviews (Knowler & Bradshaw, 2007; Prokopy *et al.*, 2008, 2019; Baumgart-Getz, *et al.*, 2012; Burton, 2014). However, for the three landowner and land characteristic factors that are most frequently investigated, age has a negative effect on participation more often than a positive effect, while both education and farm size have a positive effect more often than a negative effect. In terms of the motivations and barriers that influence participation, I found financial incentives are the most frequently identified motivation, as they can reduce economic barriers and encourage individuals who lack the interest or financial means to participate (Race & Curtis, 2013; Selinske *et al.*, 2017). This aligns with my finding that high costs and negative economic impacts of participation are the most frequently identified barriers. However, I found that wanting to support conservation outcomes is the second most frequently cited motivation, indicating that decision-making around participation is not solely about financial considerations. I also found that, overall, there was no difference between study approaches that used open-ended questions or closed-ended question for investigating and identifying motivation and barrier factors, however some factors were only identified by studies that used open-ended questions. Overall, this study shows that to maximise participation in conservation programmes and approaches on private land, policymakers should emphasise the conservation benefits associated with participation to attract nature-motivated landowners and ensure the financial incentives or economic benefits are sufficient to offset participation costs, while also reducing the economic burden of participation.

5.2.2. Chapter 3

Many studies have investigated stakeholder attitudes and perceptions towards specific activities and projects associated with rewilding, for instance, towards the (re)introduction of specific species (Auster *et al.*, 2020; Hawkins *et al.* 2020), and specific rewilding projects (Wynne-Jones *et al.*, 2018). This study is the first to apply both qualitative and quantitative methods to investigate land-manager perceptions towards the overall concept of rewilding, as well as perceptions and levels of support for different activities related to rewilding.

I found most land-managers perceive rewilding to mean the cessation of management. This underpins their concerns about how rewilding will affect their livelihoods and identity, as well as wider issues centred around food production and security in Britain. Land-managers are most supportive of rewilding activities they can actively engage with and are familiar with, such as habitat restoration, particularly when the environmental and personal benefits associated with the activity are clearly evident. In general, land-managers only support rewilding on low-quality agricultural land, however, somewhat conversely, land-managers with predominantly high-quality agricultural land are most likely to consider rewilding. This is because taking sections of marginal land out of production for rewilding will have a negligible impact on food production and their profitability, while land-managers with uniformly average- or low-quality land are less able to afford removing land from production. Hence, this study shows there may be opportunities to target rewilding policies towards land-managers with high-quality agricultural land, focusing on activities they are familiar with and can actively engage with in less productive areas. Overall, this study provides valuable insights regarding the benefits, concerns, opportunities, and risks that land-managers associate with rewilding, which policymakers can take into account when designing rewilding policies and initiatives (Bennett 2016).

5.2.3. Chapter 4

Q-methodology is a robust approach for exploring human perspectives that has been used in numerous studies to understand stakeholder views towards a range of environmental issues and topics (Kamal & Grodzinska-Jurczak, 2014; Guenat *et al.*, 2019; Bavin *et al.*, 2020; Austen *et al.*, 2021). Land-managers are key stakeholders in discussions and debates about rewilding, as they stand to be affected by the growing number of rewilding initiatives and policy proposals. Therefore, it is important to understand their perspectives so they can be considered and accounted for in future policies and frameworks (Pettorelli *et al.* 2018; Mikołajczak *et al.* 2022). This study is the first to use Q-methodology to investigate land-manager perspectives towards the overall concept of rewilding.

I found that land-manager views towards rewilding are not uniform and identified three distinct shared perspectives. The first perspective characterises some land-managers as

‘Concerned Disbelievers’, as they do not believe in the purported benefits associated with rewilding and are concerned about rewilding having negative consequences, particularly regarding food security and species reintroductions (Duckett *et al.* 2022; Mikołajczak *et al.* 2022; Wynne-Jones 2022). The second perspective identifies some land-managers as ‘Keen Pragmatists’, since they are enthusiastic about the environmental and socio-economic benefits that rewilding is purported to deliver and are generally supportive of rewilding being a subsidised management option on less productive land. The third perspective identifies some land-managers as ‘Cautious Sceptics’, because although they generally believe rewilding can deliver biodiversity benefits, they tend to prefer conservation approaches that involve their active participation and argue there are many alternative conservation approaches that can benefit nature. Overall, this study provides a richer understanding of British land-manager viewpoints towards rewilding and indicates there may be more support for rewilding amongst these stakeholders than one would expect from public discourse (e.g., Pullman, 2020; Martnoga, 2022). This study is important, as rewilding policies and projects are more likely to garner support and have a greater chance of success when the views of these key stakeholders have been taken into account (Bennett *et al.*, 2019; Bennett, 2016).

5.3. Synthesis

5.3.1. Need to get the economics right

One of the main findings that came through clearly in all three data chapters is the importance of getting the financial aspects of conservation right. In Chapter 2, I found that financial incentives are the most frequently identified motivation for participation, while high costs and negative economic impacts of participation are the most frequently identified barriers. This highlights that without financial assistance, those individuals who lack the financial means will not be able to participate (Selinske *et al.*, 2017, 2022; Yasué & Kirkpatrick, 2018). In Chapter 3, land-managers emphasised that rewilding would either need to be more profitable than farming or there would need to be a financial mechanism to incentivise them to rewild, otherwise, it would not make economic sense for them to take land out of production. Similarly in Chapter 4, I found overall agreement across the three distinct shared perspectives

that rewilding would need to be a financially viable alternative to farming for land-managers to consider it. Although most land-managers said financial subsidies would be necessary to make rewilding an attractive management option, in Chapter 3, some mentioned ecotourism as a potential means of making rewilding financially viable. However, many also recognised that ecotourism would not be feasible for all land-managers, as it requires specific skills and infrastructure, as well as sufficient public demand (Sandom *et al.* 2019; Curtin 2013). This was also reflected in Chapter 4, where I found that even land-managers who believe rewilding should be a subsidised management option on less productive land, characterised as ‘Keen Pragmatists’, only weakly agree that ecotourism could act as a financial motivation. These findings suggest that subsidies will be needed to encourage widespread uptake of rewilding policies by British land-managers, which aligns with a study in Spain that found farmers would only be willing to rewild their land at high payment levels to account for the perceived financial risks (Granado-Díaz *et al.*, 2022).

Overall, this research emphasises that if policymakers want landowners and land-managers to support and participate in a conservation programme or activity, they need to ensure that it makes financial sense for them to do so. This supports previous work that shows landowners and land-managers have a strong economic interest in their land, and the key priority for most is to generate income through agriculture, forestry, tourism, or other development activities (Haufler & Kernohan, 2009; Grebner *et al.*, 2014). However, this is often downplayed or overlooked in the literature on private land conservation. This may in part be due to many in the conservation community perceiving “conservation through capitalism” as contentious and therefore underestimating the importance of market-based approaches in conservation (Sandbrook *et al.* 2019), especially when trying to understand the behaviour, attitudes, and perceptions of key stakeholders (Redford 2011).

5.3.2. Promote environmental benefits

Although the financial aspects of conservation programmes is important, financial incentives and other economic benefits are not the only reasons why landowners and land-managers

engage in conservation on privately owned land (Selinske *et al.* 2017). While the media often portrays landowners and land-managers as being opposed to conservation, especially rewilding (e.g., Pullman, 2020; Martnoga, 2022; Shute, 2022), this misrepresents the fact that many have pro-environmental attitudes and engage in conservation as they want to improve biodiversity outcomes (Yasué *et al.* 2019; Wheeler *et al.* 2018). In Chapter 2, I found that a desire to support nature conservation is the second most frequently cited motivation, demonstrating that participation in conservation programmes is not solely a financial decision. In Chapter 3, I found positive perceptions associated with rewilding are related to enthusiasm for witnessing environmental restoration and the return of wildlife, and support for rewilding activities is often linked to the ecosystem services they can deliver. Similarly in Chapter 4, I found land-managers with a 'Keen Pragmatist' perspective voice the most confidence in the anticipated biodiversity benefits associated with rewilding, indicating that their support for rewilding as a management approach is related to the potential environmental benefits. This perhaps explains why land-managers who do not believe in the purported environmental benefits associated with rewilding, characterised as 'Concerned Disbelievers', are generally opposed to rewilding. Overall, this research suggests there may be an opportunity to increase support for rewilding and other conservation approaches, as well as participation in conservation programmes on private land, by demonstrating and communicating more clearly the potential environmental benefits.

5.3.3. Context is important

Even if landowners and land-managers generally support a conservation policy or programme that offers financial incentives, this does not guarantee their participation. Their decision to engage will depend on a host of contextual factors. In Chapter 2, some of the most frequently identified motivations were related to the benefits that the conservation programme or activity can deliver for the landowners' business, the land, and themselves (Veisi *et al.*, 2017; Whitby, 2018; Barnes *et al.*, 2019). In the same way, many of the factors that act as a barrier to participation are related to the conservation programme, such as excessive restrictions and bureaucracy, or complex programme design (Coyne *et al.*, 2021; Schroeder *et al.*, 2013). Thus, this indicates that participation is dependent on the conservation programme

and how it appeals or does not appeal to certain types of landowners, which probably explains why I found few overall patterns or trends with how landowner and land characteristics influence participation in Chapter 2.

I also found context is important regarding perceptions towards rewilding. For instance, while many land-managers held positive perceptions and voiced support for rewilding activities in Chapter 3, they often made it explicit this was only related to specific contexts. Some said they only support rewilding in areas characterised by low productivity, while others said they only support rewilding in the 'right' place, often described as somewhere that would not interfere with human activities and not near where they live. This was further evidenced when some participants said they would be unlikely to rewild their land that was predominantly Grade 1 or Grade 2, since high-quality land should be used for food production, while others said they would only consider rewilding the marginal sections. This was also reflected in Chapter 4, where even the land-managers identified as 'Keen Pragmatists' specified that rewilding should only occur on marginal land. Overall, these research findings indicate that even if conservation policies and programmes get the finances and conservation objectives right, they will only achieve high participation if they account for the local context of the stakeholders that they hope to engage.

5.4 Limitations and future research

5.4.1. Covid-19

One of the key things to note about this research is that the qualitative data collection for Chapters 3 and 4 took place between April and August 2020, during the first Covid-19 lockdown in the UK (IfG 2021). This is a relevant point to highlight for a couple of reasons. First, for many of our participants, it was their first-time using video call technology and this may have impacted their responses (Archibald *et al.*, 2019; Keen *et al.*, 2022). Second, and more importantly, the first Covid-19 lockdown was a highly uncertain and worrying time for most people. For instance, the uncertainty induced by the pandemic had an impact on peoples'

decision-making in regards to careers (Hite & McDonald, 2020), fertility intentions (Guetto *et al.*, 2022), and spending and saving habits (Brodeur *et al.* 2021). Therefore, on top of the uncertainty around the potential outcomes of rewilding endeavours (Caro, 2007; Caro & Sherman, 2009; Oliveira-Santos & Fernandez, 2010; Lorimer *et al.*, 2015; Rubenstein & Rubenstein, 2016), it is likely that the added uncertainty of Covid-19 influenced participant responses. This is evident by the many participants who specifically referred to the supermarket food shortages caused by Covid-19 lockdowns (Ranta & Mulrooney, 2021) and emphasised that Britain should prioritise food security ahead of other issues in case of a future emergency. They also expressed hesitancy about taking land out of production for rewilding. Although other studies have identified food production and security as a key concern regarding rewilding (Duckett *et al.* 2022; Mikołajczak *et al.* 2022; Wynne-Jones 2022), it is likely that the uncertainty caused by the Covid-19 lockdowns made concerns about food security more prominent during interviews. Thus, it would be interesting to repeat this study to examine whether food production and security would feature as prominently.

5.4.2. Studies on participation

In Chapter 2, I found that the most frequently investigated landowner and land characteristic factors (age, education, and farm size) are not consistent predictors of participation for private land conservation programmes and approaches, and that most characteristic factors are not investigated by enough studies to draw conclusions about how they influence participation. Therefore, future studies would benefit from investigating under-studied factors to better understand how they affect participation. In addition, future research should also address gaps in the literature by focusing on understudied conservation programmes and activities, as well as the countries and regions that have few studies on participation.

Although I found that, overall, there was no difference between study approaches that used open-ended questions or closed-ended questions for investigating and identifying motivation and barrier factors, some factors were only identified by studies that used open-ended questions. Therefore, future research on participation in private land conservation should

include open-ended questions to allow respondents to fully explain their reasons for participation or non-participation, to ensure important factors are not overlooked.

5.4.3. Comparisons

For Chapters 3 and 4, we interviewed land-manager participants across three broad regions of Britain: southern England, northern England, and northern Scotland, however we did not interview any participants in Wales or Northern Ireland. For future research it would be interesting to investigate land-manager perceptions of rewilding in these other regions of Britain to assess whether their perceptions are similar. This is particularly relevant given that agricultural and environmental policies are devolved to the four nations that make up the UK, so understanding how perceptions differ between these four countries is important for policymakers (Defra, 2022c). Future research could also examine the perceptions of land-managers in other countries where rewilding policy proposals and initiatives are gaining traction (e.g., in Spain, Regos *et al.*, 2016; García-Ruiz *et al.*, 2020) to understand the similarities and differences with land-managers in Britain.

5.4.4. Relating perceptions to behaviour

In Chapter 3, we asked land-managers whether they would consider rewilding their land. This question was used to understand their potential willingness to rewild their own land and what factors would influence their decision-making. However, since willingness and intentions are not necessarily good predictors of behaviour (Wossink 2003), for future research it would be interesting to investigate how land-manager perceptions of rewilding translate into environmental behaviour. For instance, if the UK Government's new Environmental Land Management (ELM) schemes include a rewilding option as part of the "Landscape Recovery" scheme, future research could investigate whether land-managers who voiced support for rewilding in this study go on to participate in the ELM Landscape Recovery scheme (Defra, 2021b). Similarly, it would be interesting to do a follow up study with the same participants to investigate how their perceptions of rewilding change over time and how this influences their participation in the new ELM schemes.

5.5 Recommendations for policymakers and practitioners

One of the findings of this thesis is that ideas that are common in the public discourse, such as land-managers being opposed to rewilding (e.g., Barkham, 2017; Pullman, 2020; Martnoga, 2022) are not necessarily representative of the majority. Since there are many land-managers who already support rewilding, policymakers and practitioners should focus their efforts on those land-managers by using strategic messaging to outline the environmental and socio-economic benefits of a rewilding policy or programme, instead of trying to convince those who are sceptical (Kidd *et al.* 2019). However, there are also some issues that are widely discussed in the media that do reflect the broad opinion of landowners and land-managers. The most obvious being that conservation programmes and approaches need to be sufficiently incentivised and supported so landowners and land-managers will not be financially worse-off if they participate.

In addition, following from Chapter 2, policymakers should ensure that conservation programmes are not overly bureaucratic or complicated, otherwise even the keenest land-managers are unlikely to participate. These findings are particularly relevant for the development of the UK Government's new ELM schemes, as key stakeholders have indicated that financial incentives will need to go beyond covering the expense of participation, and the schemes being too complex and bureaucratic are key barriers to adoption (Defra, 2021a). To maximise participation, policymakers should ensure the financial incentives are sufficiently attractive, and that additional support is provided to help land-managers complete the relevant paperwork and implement the new management practices.

5.6. Conclusion

Increased efforts to preserve and protect nature are needed in the coming decades if we are to stem the biodiversity crisis and avoid the collapse of the planetary support systems that sustain life on Earth (Leclère *et al.* 2020; Williams *et al.* 2020; Díaz *et al.* 2020). At the international level, the CBD's new Kunming-Montreal Global Biodiversity Framework has set 23 ambitious targets and outlined a "Vision for Biodiversity" for the world to live in harmony with nature by 2050 (CBD, 2022), with global responses focusing on area-based and ecosystem-based conservation approaches to achieve this vision (Woodley *et al.* 2019; Bhola *et al.* 2021; Carver *et al.* 2021). With Governments pledging additional funding to achieve international conservation targets (Defra, 2022a; Gilbert 2022), this research demonstrates that policymakers should ensure some of this money is used to incentivise and support landowners and land-managers, to maximise participation in private land conservation programmes. This research also indicates that there is an opportunity to incorporate rewilding in future environmental policies following the UK's departure from the EU and the Common Agricultural Policy (Alison & Wentworth, 2016; Downing & Coe, 2018; Sandom & Wynne-Jones, 2019), as it is already well-known that there is wide public support for rewilding (YouGov 2019) and this research shows a significant number of land-managers are similarly supportive. Overall, this thesis provides an improved understanding of participation in conservation programmes on privately owned land, as well as the perceptions of key stakeholders towards rewilding, which can be used as evidence to inform conservation policies and practices, and ultimately improve global conservation outcomes.

References

- Abdollahzadeh, G., Sharifzadeh, M.S. and Damalas, C.A. (2016). Motivations for adopting biological control among Iranian rice farmers. *Crop Protection* **80**:42–50.
- Aburto, J.A. *et al.* (2015). Management of marine resources through a local governance perspective: Re-implementation of traditions for marine resource recovery on Easter Island. *Ocean and Coastal Management* **116**:108–115.
- Addison, J. and Pavey, C.R. (2017). Alignment between values of dryland pastoralists and conservation needs for small mammals. *Conservation Biology* **31**:331–342.
- Agriculture and Horticulture Development Board (AHDB) (2022). *Continuing Price Inflation Means Tight Margins for Farmers* [Online]. Available at: <https://ahdb.org.uk/news/continuing-price-inflation-means-tight-margins-for-farmers> [Accessed: 8 April 2022].
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In: *Action Control*. Berlin, Heidelberg: Springer, pp. 11–39.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes* **50**:179–211.
- Akers, J.F. and Yasué, M. (2019). Motivational crowding in payments for ecosystem service schemes: a global systematic review. *Conservation and Society* **17**:377–389.
- Alarima, C.I. *et al.* (2018). Adoption of sawah eco-technology in rice production by farm households in Kebbi State, Nigeria. *Journal of Water and Land Development* **37**:11–17.
- Alarima, C.I. *et al.* (2011). Factors affecting the adoption of sawah technology system of rice production in Nigeria. *Journal of Food, Agriculture and Environment* **9**:177–182.
- Alison, J. and Wentworth, J. (2016). *Rewilding and ecosystem services*. [Online]. Available at: <http://researchbriefings.files.parliament.uk/documents/POST-PN-0537/POST-PN-0537.pdf>. [Accessed: 10 April 2022].
- Alladale (2022). *Rewilding: Restoring the Highlands' Ecosystem*. [Online] Available at: <https://alladale.com/conservation-projects/> [Accessed 8 April 2022].
- Allan, J.R. *et al.* (2022). The minimum land area requiring conservation attention to safeguard biodiversity. *Science* **376**:1094–1101.
- Alló, M., Loureiro, M.L. and Iglesias, E. (2015). Farmers' preferences and social capital regarding agri-environmental schemes to protect birds. *Journal of Agricultural Economics* **66**:672–689.
- Alves-Pinto, H. *et al.* (2021). Opportunities and challenges of other effective area-based conservation measures (OECMs) for biodiversity conservation. *Perspectives in Ecology and Conservation* **19**:115–120.
- Amano, T. *et al.* (2018). Successful conservation of global waterbird populations depends on effective governance. *Nature* **553**:199–202.
- Amsalu, A. and de Graaff, J. (2007). Determinants of adoption and continued use of stone terraces for soil and water conservation in an Ethiopian highland watershed. *Ecological Economics* **61**:294–302.
- Andam, K.S. *et al.* (2008). Measuring the effectiveness of protected area networks in reducing deforestation. *Proceedings of the National Academy of Sciences* **105**:16089–16094.

- Anderson, R.M. *et al.* (2019). Introducing rewilding to restoration to expand the conservation effort: a response to Hayward *et al.* *Biodiversity and Conservation* **28**:3691–3693.
- Andersson, J.A. and D’Souza, S. (2014). From adoption claims to understanding farmers and contexts: A literature review of Conservation Agriculture (CA) adoption among smallholder farmers in southern Africa. *Agriculture, Ecosystems and Environment* **187**:116–132.
- Arbuckle, J.G. and Roesch-McNally, G. (2015). Cover crop adoption in Iowa: The role of perceived practice characteristics. *Journal of Soil and Water Conservation* **70**:418–429.
- Archibald, M.M. *et al.* (2019). Using zoom videoconferencing for qualitative data collection: perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods* **18**:1–8.
- Armsworth, P.R. *et al.* (2011). Management costs for small protected areas and economies of scale in habitat conservation. *Biological Conservation* **144**:423–429.
- Arslan, A. *et al.* (2014). Adoption and intensity of adoption of conservation farming practices in Zambia. *Agriculture, Ecosystems and Environment* **187**:72–86.
- Asbjorsen, H. *et al.* (2017). Interactions between payments for hydrologic services, landowner decisions, and ecohydrological consequences: Synergies and disconnection in the cloud forest zone of central Veracruz, Mexico. *Ecology and Society* **22**.
- Ashoori, D., Allahyari, M.S. and Damalas, C.A. (2017). Adoption of conservation farming practices for sustainable rice production among small-scale paddy farmers in northern Iran. *Paddy and Water Environment* **15**:237–248.
- Atari, D.O.A. *et al.* (2009). What motivates farmers to participate in the Nova Scotia environmental farm plan program? Evidence and environmental policy implications. *Journal of Environmental Management* **90**:1269–1279.
- Austen, G.E. *et al.* (2021). Exploring shared public perspectives on biodiversity attributes. *People and Nature* **3**:901–913.
- Auster, R.E., Barr, S.W. and Brazier, R.E. (2022). Renewed coexistence: learning from steering group stakeholders on a beaver reintroduction project in England. *European Journal of Wildlife Research* **68**.
- Auster, R.E., Puttock, A. and Brazier, R. (2020). Unravelling perceptions of Eurasian beaver reintroduction in Great Britain. *Area* **52**:364–375.
- Avis, W.R. (2016). *Methods and Approaches to Understanding Behaviour Change*. [Online]. Available at: <http://gsdrc.org/wp-content/uploads/2016/08/HDQ1389.pdf>. [Accessed 15 August 2022].
- Banack, S.A. and Hvenegaard, G.T. (2010). Motivations of landowners to engage in biodiversity-friendly farming practices in Alberta’s Central Parkland region. *Human Dimensions of Wildlife* **15**:67–69.
- Barber, C.P. *et al.* (2014). Roads, deforestation, and the mitigating effect of protected areas in the Amazon. *Biological Conservation* **177**:203–209.
- Barkham, P. (2020). Dam fine: estate owners across UK queue up to reintroduce beavers. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2020/feb/01/beavers-uk-estate-owners-reintroduction-conservation-flooding>. [Accessed 14 April 2020].
- Barkham, P. (2017). ‘It is strange to see the British struggling with the beaver’: why is rewilding so controversial? *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2017/jul/01/rewilding-conservation-ecology->

- national-trust. [Accessed 14 April 2020].
- Barnes, J. *et al.* (2019). *Landowners and the Conservation Reserve Program: Understanding Motivations and Needs to Cultivate Participation, Retention, and Ongoing Stewardship Behavior*. [Online]. Available at: [https://vtechworks.lib.vt.edu/bitstream/handle/10919/88444/CRP Report - Final 5.pdf?sequence=2&isAllowed=y](https://vtechworks.lib.vt.edu/bitstream/handle/10919/88444/CRP_Report_Final_5.pdf?sequence=2&isAllowed=y). [Accessed 23 February 2020].
- Barreiro-Hurlé, J., Espinosa-Goded, M. and Dupraz, P. (2010). Does intensity of change matter? Factors affecting adoption of agri-environmental schemes in Spain. *Journal of Environmental Planning and Management* **53**:891–905.
- Batáry, P. *et al.* (2015). The role of agri-environment schemes in conservation and environmental management. *Conservation Biology* **29**:1006–1016.
- Bateman, I.J. *et al.* (2015). Conserving tropical biodiversity via market forces and spatial targeting. *Proceedings of the National Academy of Sciences of the United States of America* **112**:7408–7413.
- Battershill, M.R.J. and Gilg, A.W. (1997). Socio-economic constraints and environmentally friendly farming in the Southwest of England. *Journal of Rural Studies* **13**:213–228.
- Baudron, F. and Giller, K.E. (2014). Agriculture and nature: trouble and strife? *Biological Conservation* **170**:232–245.
- Bauer, N. and Atzigen, A. Von (2019). Understanding the factors shaping the attitudes towards wilderness and rewilding. In: Pettorelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 142–164.
- Baumgart-Getz, A., Prokopy, L.S. and Floress, K. (2012). Why farmers adopt best management practice in the United States: A meta-analysis of the adoption literature. *Journal of Environmental Management* **96**:17–25.
- Bautista, C. *et al.* (2019). Large carnivore damage in Europe: Analysis of compensation and prevention programs. *Biological Conservation* **235**:308–316.
- Bavin, D. *et al.* (2020). Using Q-methodology to understand stakeholder perspectives on a carnivore translocation. *People and Nature* **2**:1117–1130.
- Bayard, B., Jolly, C.M. and Shannon, D.A. (2007). The economics of adoption and management of alley cropping in Haiti. *Journal of Environmental Management* **84**:62–70.
- Baynes, R. (2019). Rewilding Scotland: why it's about 'baby steps', not bringing back the wolf. *The Herald* [Online]. Available at: <https://www.heraldsotland.com/news/17918947.rewilding-scotland-baby-steps-not-bringing-back-wolf/>. [Accessed 21 February 2020].
- BBC News (2020). Beavers released on Exmoor by National Trust to 'reduce flooding'. *BBC News* [Online]. Available at: <https://www.bbc.co.uk/news/uk-england-somerset-51300345>. [Accessed 21 February 2020].
- BBC News (2016). George Monbiot on rewilding countryside and rural areas. *BBC News* [Online]. Available at: <https://www.bbc.co.uk/news/av/uk-politics-37611307>. [Accessed 21 February 2020].
- BBC News (2019a). Pine martens returned to Forest of Dean after facing extinction. *BBC News* [Online]. Available at: <https://www.bbc.co.uk/news/uk-england-gloucestershire-49881227>. [Accessed 21 February 2020].
- BBC News (2019b). Wildlife scheme: Farmers' worries cause charity exit. *BBC News* [Online]. Available at: <https://www.bbc.co.uk/news/uk-wales-50117566>. [Accessed 21 February 2020].

- Bekele, W. and Drake, L. (2003). Soil and water conservation decision behavior of subsistence farmers in the Eastern Highlands of Ethiopia: A case study of the Hunde-Lafto area. *Ecological Economics* **46**:437–451.
- Bell, A.R. *et al.* (2018). Do as they did: Peer effects explain adoption of conservation agriculture in Malawi. *Water* **10**:51.
- Bell, K.P. *et al.* (2019). Family-forest owner decisions, landscape context, and landscape change. *Landscape and Urban Planning* **188**:118–131.
- Benayas, J.M.R. *et al.* (2007). Abandonment of agricultural land: An overview of drivers and consequences. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources* **2**:1–14.
- Bennett, N.J. *et al.* (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation* **205**:93–108.
- Bennett, N.J. *et al.* (2019). Local support for conservation is associated with perceptions of good governance, social impacts, and ecological effectiveness. *Conservation Letters* **12**:e12640.
- Bennett, N.J. (2016). Using perceptions as evidence to improve conservation and environmental management. *Conservation Biology* **30**:582–592.
- Bennett, N.J. and Dearden, P. (2014). Why local people do not support conservation: Community perceptions of marine protected area livelihood impacts, governance and management in Thailand. *Marine Policy* **44**:107–116.
- Berger, G. *et al.* (2003). Nature protection in agricultural landscapes by setting aside unproductive areas and ecotones within arable fields ('Infield Nature Protection Spots'). *Journal for Nature Conservation* **11**:221–233.
- Bergtold, J.S. and Molnar, J.J. (2010). Limited access to conservation: limited-resource farmer participation in the conservation security program in the southeast. *Journal of Agricultural and Applied Economics* **42**:211–227.
- Berlanga, M. and Faust, B.B. (2007). We thought we wanted a reserve: One community's disillusionment with government conservation management. *Conservation and Society* **5**:450–477.
- Bertoni, D. *et al.* (2008). Agri-environmental measures adoption: new evidence from Lombardy region. The Common Agricultural Policy after the Fischler reform: national implementations, impact assessment and the agenda for future reforms, 275–294.
- Bhola, N. *et al.* (2021). Perspectives on area-based conservation and its meaning for future biodiversity policy. *Conservation Biology* **35**:168–178.
- Bhullar, L. (2008). The Indian Forest Rights Act 2006: A critical appraisal. *Law Environment and Development Journal* **4**:20.
- Bingham, H. *et al.* (2017). Privately protected areas: Advances and challenges in guidance, policy and documentation. *Parks* **23**:13–28.
- Bingham, H.C. *et al.* (2021). Privately protected areas: missing pieces of the global conservation puzzle. *Frontiers in Conservation Science* **2**:1–5.
- Birge, T. (2017). *The nature of farmers: Farm-level decision making for farmland conservation targets*. University of Helsinki. [Accessed 18 January 2020].
- Birge, T. and Fred, M. (2011). New ideas for old landscapes: using a social-ecological approach for

- conservation of traditional rural biotopes - a case study from Finland. *European Countryside* **3**:51–67.
- Birge, T. and Herzon, I. (2014). Motivations and experiences in managing rare semi-natural biotopes: A case from Finland. *Land Use Policy* **41**:128–137.
- Blackmore, L. and Doole, G.J. (2013). Drivers of landholder participation in tender programs for Australian biodiversity conservation. *Environmental Science and Policy* **33**:143–153.
- Blicharska, M. and Rönnbäck, P. (2018). What factors enable or hinder engagement of civil society in ecosystem management? The case of ‘pike factories’ and wetland restoration in Sweden. *Journal of Environmental Planning and Management* **61**:950–969.
- Boardman, J., Bateman, S. and Seymour, S. (2017). Understanding the influence of farmer motivations on changes to soil erosion risk on sites of former serious erosion in the South Downs National Park, UK. *Land Use Policy* **60**:298–312.
- Boffey, D. (2018). Return of the bison: herd makes surprising comeback on Dutch coast. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2018/may/28/return-of-the-bison-herd-makes-surprising-comeback-on-dutch-coast#:~:text=Return of the bison%3A herd makes surprising comeback on Dutch coast,-This article is&text=Eighty years after they were,their ret.> [Accessed 22 February 2020].
- Boncinelli, F. *et al.* (2016). Spatial analysis of the participation in agri-environment measures for organic farming. *Renewable Agriculture and Food Systems* **31**:375–386.
- Bond, A.J., O’Connor, P.J. and Cavagnaro, T.R. (2018). Who participates in conservation incentive programs? Absentee and group landholders are in the mix. *Land Use Policy* **72**:410–419.
- Bonner, T. (2019). *Why rewilding is toxic in the countryside* [Online]. Available at: <https://www.countryside-alliance.org/news/2019/10/why-rewilding-is-toxic-in-the-countryside> [Accessed: 2 May 2020].
- Bonnieux, F., Rainelli, P. and Vermersch, D. (1998). Estimating the supply of environmental benefits by agriculture: A French case study. *Environmental and Resource Economics* **11**:135–153.
- van den Born, R.J.G. *et al.* (2018). The missing pillar: Eudemonic values in the justification of nature conservation. *Journal of Environmental Planning and Management* **61**:841–856.
- Borsotto, P. *et al.* (2008). Participation in rural landscape conservation schemes in Italy. *Landscape Research* **33**:347–363.
- Bossange, A. V. *et al.* (2016). The potential for conservation tillage adoption in the San Joaquin Valley, California: A qualitative study of farmer perspectives and opportunities for extension. *PLoS ONE* **11**:1–21.
- Bottazzi, P. *et al.* (2018). Payment for environmental “self-service”: exploring the links between farmers’ motivation and additionality in a conservation incentive programme in the Bolivian Andes. *Ecological Economics* **150**:11–23.
- Brain, R.G., Hostetler, M.E. and Irani, T.A. (2014). Why do cattle ranchers participate in conservation easement agreements? Key motivators in decision making. *Agroecology and Sustainable Food Systems* **38**:299–316.
- Bravo-Monroy, L., Potts, S.G. and Tzanopoulos, J. (2016). Drivers influencing farmer decisions for adopting organic or conventional coffee management practices. *Food Policy* **58**:49–61.
- Bremer, L.L., Farley, K.A. and Lopez-Carr, D. (2014). What factors influence participation in payment

- for ecosystem services programs? An evaluation of Ecuador's SocioPáramo program. *Land Use Policy* **36**:122–133.
- Brockington, D. (2004). Community conservation, inequality and injustice: Myths of power in protected area management. *Conservation and Society* **2**:411–428.
- Brodeur, A. *et al.* (2021). A literature review of the economics of COVID-19. *Journal of Economic Surveys* **35**:1007–1044.
- Brodth, S. *et al.* (2009). Factors affecting adoption of hedgerows and other biodiversity-enhancing features on farms in California, USA. *Agroforestry Systems* **76**:195–206.
- Brook, A., Zint, M. and De Young, R. (2003). Landowners' responses to an Endangered Species Act listing and implications for encouraging conservation. *Conservation Biology* **17**:1638–1649.
- Brotherton, I. (1991). What limits participation in ESAs? *Journal of Environmental Management* **32**:241–249.
- Broughton, R.K. *et al.* (2021). Long-term woodland restoration on lowland farmland through passive rewilding. *PLoS ONE* **16**:1–24.
- Bruskotter, J.T. *et al.* (2017). Modernization, risk, and conservation of the world's largest carnivores. *BioScience* **67**:646–655.
- Bubaca, C.M. *et al.* (2019). Conservation translocations and post-release monitoring: Identifying trends in failures, biases, and challenges from around the world. *Biological Conservation* **238**:108239.
- Buckley, C., Hynes, S. and Mechan, S. (2012). Supply of an ecosystem service - Farmers' willingness to adopt riparian buffer zones in agricultural catchments. *Environmental Science and Policy* **24**:101–109.
- Buckley, R.C. and de Vasconcellos Pegas, F. (2015). Four hurdles for conservation on private land: the case of the golden lion tamarin in Brazil's Atlantic Forest. *Frontiers in Ecology and Evolution* **3**:88.
- Burns, A.C.E. (2017). *Trust and Conservation Opportunity: The Importance of Trust in Landholders' Decisions to Participate in Conservation Programs*. Western Washington University.
- Burton, R.J.F. (2014). The influence of farmer demographic characteristics on environmental behaviour: A review. *Journal of Environmental Management* **135**:19–26.
- Burton, R.J.F., Kuczera, C. and Schwarz, G. (2008). Exploring farmers' cultural resistance to voluntary agri-environmental schemes. *Sociologia Ruralis* **48**:16–37.
- Butchart, S.H.M. *et al.* (2012). Protecting important sites for biodiversity contributes to meeting global conservation targets. *PLoS ONE* **7**.
- Butchart, S.H.M. *et al.* (2015). Shortfalls and solutions for meeting national and global conservation area targets. *Conservation Letters* **8**:329–337.
- Byrka, K., Kaiser, F.G. and Olko, J. (2017). Understanding the acceptance of nature-preservation-related restrictions as the result of the compensatory effects of environmental attitude and behavioral costs. *Environment and Behavior* **49**:487–508.
- Camboni, S.M. and Napier, T.L. (1993). Factors affecting use of conservation farming practices in East Central Ohio. *Agriculture Ecosystems & Environment* **45**:79–94.
- Campbell, J.T., Koontz, T.M. and Bonnell, J.E. (2011). Does collaboration promote grass-roots behavior change? Farmer adoption of best management practices in two watersheds. *Society and Natural*

Resources **24**:1127–1141.

- Campera, M. *et al.* (2021). Fostering a wildlife-friendly program for sustainable coffee farming: The case of small-holder farmers in Indonesia. *Land* **10**:121.
- Capano, G.C. *et al.* (2019). The emergence of private land conservation in scientific literature: A review. *Biological Conservation* **237**:191–199.
- Capitanio, F., Adinolfi, F. and Malorgio, G. (2011). What explains farmers' participation in Rural Development Policy in Italian southern region? An empirical analysis. *New Medit: Mediterranean Journal of Economics, Agriculture and Environment* **10**:19–24.
- Caro, T. (2007). The Pleistocene re-wilding gambit. *Trends in Ecology and Evolution* **22**:281–283.
- Caro, T. and Sherman, P. (2009). Rewilding can cause rather than solve ecological problems. *Nature* **462**:985–985.
- Carolan, M.S. (2005). Barriers to the adoption of sustainable agriculture on rented land: An examination of contesting social fields. *Rural Sociology* **70**:387–413.
- Carrell, S. (2021). Reintroducing wolves to UK could hit rewilding support, expert says. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2021/sep/24/reintroducing-wolves-to-uk-could-hit-rewilding-support-expert-says#:~:text=Reintroducing wolves to UK could hit rewilding support%2C expert says,-This article is&text=Demands to reintroduce predators suc.> [Accessed 23 October 2021].
- Carrington, D. (2019a). Convert half of UK farmland to nature, urges top scientist. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2019/dec/31/convert-farmland-to-nature-climate-crisis#:~:text=Half of the nation%27s farmland,adviser to the UK government.> [Accessed 20 February 2020].
- Carrington, D. (2019b). Rewild a quarter of UK to fight climate crisis, campaigners urge. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2019/may/21/rewild-quarter-uk-fight-climate-crisis-campaigners-urge.> [Accessed 20 February 2020].
- Carver, S. *et al.* (2021). Guiding principles for rewilding. *Conservation Biology* **35**:1882–1893.
- Carver, S. (2016). Rewilding... conservation and conflict. *Ecos* **37**:2–10.
- Carver, S. (2019). Rewilding through land abandonment. In: Pettorelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 99–122.
- Cary, J.W. and Wilkinson, R.L. (1997). Perceived profitability and farmers' conservation behaviour. *Journal of Agricultural Economics* **48**:13–21.
- Case, P. (2019). *National Trust to reintroduce beavers despite farmer concerns*. Available at: <https://www.fwi.co.uk/news/environment/environmental-issues-wildlife/national-trust-to-reintroduce-beavers-despite-farmer-concerns.> [Accessed 21 February 2020].
- Ceballos, G., Ehrlich, P.R. and Dirzo, R. (2017). Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. *Proceedings of the National Academy of Sciences* **114**:E6089–E6096.
- Cernea, M.M. (2005). 'Restriction of access' is displacement: a broader concept and policy. *Forced Migration Review* **23**:48–49.
- Cerqueira, Y. *et al.* (2015). Ecosystem services: the opportunities of rewilding in Europe. In: Pereira, H. M. and Navarro, L. M. eds. *Rewilding European Landscapes*. Springer Open, pp. 47–64.

- Cetas, E.R. and Yasué, M. (2017). A systematic review of motivational values and conservation success in and around protected areas. *Conservation Biology* **31**:203–212.
- Chape, S. *et al.* (2005). Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets. *Philosophical Transactions of the Royal Society B: Biological Sciences* **360**:443–455.
- Chaplin-Kramer, R. *et al.* (2019). Global modeling of nature’s contributions to people. *Science* **366**:255–258.
- Chapman, M., Satterfield, T. and Chan, K.M.A. (2019). When value conflicts are barriers: Can relational values help explain farmer participation in conservation incentive programs? *Land Use Policy* **82**:464–475.
- Chappell, P. and O’Mahony, D. (2021). Ed Sheeran faces discord over his plan to rewild Britain. *The Times* [Online]. Available at: <https://www.thetimes.co.uk/article/ed-sheeran-faces-discord-over-his-plan-to-rewild-britain-pkcp2qf2d>.
- Chase, J.M. *et al.* (2020). Ecosystem decay exacerbates biodiversity loss with habitat loss. *Nature* **584**:238–243.
- Chatterton, T. (2017). What should be the focus of ‘behaviour change’: Individuals or society? *Social Business* **7**:229–240.
- Cheatum, M. *et al.* (2011). *Payments for ecosystem services: A California rancher perspective*. Washington, DC, USA.
- Chouinard, H.H., Wandschneider, P.R. and Paterson, T. (2016). Inferences from sparse data: An integrated, meta-utility approach to conservation research. *Ecological Economics* **122**:71–78.
- Christie, P. (2005). Observed and perceived environmental impacts of marine protected areas in two Southeast Asia sites. *Ocean and Coastal Management* **48**:252–270.
- Clayton, S. and Myers, G. (2015). *Conservation psychology: Understanding and promoting human care for nature*. John Wiley & Sons.
- Clements, H.S., Cumming, G.S. and Kerley, G.I.H. (2016). Predators on private land: Broad-scale socioeconomic interactions influence large predator management. *Ecology and Society* **21**.
- Coent, P. Le, Preget, R. and Thoyer, S.S. (2018). *Do farmers follow the herd? The influence of social norms in the participation to agri-environmental schemes*. Centre for Environmental Economics.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and psychological measurement* **20**:37–46.
- Comerford, E. (2013). The impact of permanent protection on cost and participation in a conservation programme: A case study from Queensland. *Land Use Policy* **34**:176–182.
- Comerford, E. (2014). Understanding why landholders choose to participate or withdraw from conservation programs: A case study from a Queensland conservation auction. *Journal of Environmental Management* **141**:169–176.
- Conner, M. *et al.* (2013). Some feelings are more important: Cognitive attitudes, Affective attitudes, Anticipated affect, And blood donation. *Health Psychology* **32**:264–272.
- Conner, M. and Armitage, C.J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology* **28**:1429–1464.

- Conradie, B. *et al.* (2013). Conservation begins after breakfast: The relative importance of opportunity cost and identity in shaping private landholder participation in conservation. *Biological Conservation* **158**:334–341.
- Convention on Biological Diversity (CBD) (2010). *Conference of the Parties decision X/2: Strategic plan for biodiversity 2011-2020*. [Online]. Nagoya, Japan. Available at: <https://www.cbd.int/decision/cop/?id=12268>. [Accessed 16 August 2022].
- Convention on Biological Diversity (CBD) (2018). *Decision adopted by the Conference of the Parties to the Convention on Biological Diversity: Protected Areas and Other Effective Area-Based Measures*. [Online]. Sharm El-Sheikh, Egypt. Available at: <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-08-en.pdf>. [Accessed 28 August 2020].
- Convention on Biological Diversity (CBD) (2020). *Global biodiversity outlook 5*. [Online]. Montreal, Canada. Available at: <https://www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf>. [Accessed 10 July 2022].
- Convention on Biological Diversity (CBD) (2022). *Kunming-Montreal global biodiversity framework*. [Online]. Montreal, Canada. Available at: <https://www.cbd.int/article/cop15-final-text-kunming-montreal-gbf-221222>. [Accessed 10 January 2023].
- Cooke, B. *et al.* (2012). Social context and the role of collaborative policy making for private land conservation. *Journal of Environmental Planning and Management* **55**:469–485.
- Cooke, B. and Corbo-Perkins, G. (2018). Co-opting and resisting market based instruments for private land conservation. *Land Use Policy* **70**:172–181.
- Cooper, P. (2019). @PeteMRCooper [Online]. Available at: <https://twitter.com/PeteMRCooper/status/1205897242051256326>. [Accessed 13 February 2020].
- Corbeels, M. *et al.* (2014). Understanding the impact and adoption of conservation agriculture in Africa: A multi-scale analysis. *Agriculture, Ecosystems and Environment* **187**:155–170.
- Corbett, J.B. (2002). Motivations to participate in riparian improvement programs. *Science Communication* **23**:243–263.
- Cordeau, S., Reboud, X. and Chauvel, B. (2011). Farmers' fears and agro-economic evaluation of sown grass strips in France. *Agronomy for Sustainable Development* **31**:463–473.
- Cornelissen, P. *et al.* (2014). Effects of large herbivores on wood pasture dynamics in a European wetland system. *Basic and Applied Ecology* **15**:396–406.
- Del Corso, J.P., Nguyen, T.D.P.G. and Kephaliacos, C. (2017). Acceptance of a payment for ecosystem services scheme: The decisive influence of collective action. *Environmental Values* **26**:177–202.
- Cortés-Capano, G. *et al.* (2020). Exploring landowners' perceptions, motivations and needs for voluntary conservation in a cultural landscape. *People and Nature* **2**:840–855.
- Countryside (2020). Rewilding - lynx, beavers and wild boar. *Countryside* [Online]. Available at: <https://www.countrysideonline.co.uk/food-and-farming/protecting-the-environment/rewilding-lynx-beavers-and-wild-boar/>.
- Coyne, L. *et al.* (2021). Identifying economic and societal drivers of engagement in agri-environmental schemes for English dairy producers. *Land Use Policy* **101**:105174.
- Coz, D.M. and Young, J.C. (2020). Conflicts over wildlife conservation: Learning from the reintroduction of beavers in Scotland. *People and Nature* **2**:406–419.

- Crabtree, B., Chalmers, N. and Barron, N.-J. (1998). Information for policy design: Modelling participation in a farm woodland incentive scheme. *Journal of Agricultural Economics* **49**:306–320.
- Craigie, I.D. *et al.* (2010). Large mammal population declines in Africa's protected areas. *Biological Conservation* **143**:2221–2228.
- Cramb, A. (2017). Farmers' warning over beaver damage as new report praises the 'water engineers'. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/news/2017/07/18/farmers-warning-beaver-damage-new-report-praises-water-engineers/>. [Accessed 28 January 2020].
- Cranfield, J., Henson, S. and Holliday, J. (2010). The motives, benefits, and problems of conversion to organic production. *Agriculture and Human Values* **27**:291–306.
- Cretois, B. *et al.* (2019). What form of human-wildlife coexistence is mandated by legislation? A comparative analysis of international and national instruments. *Biodiversity and Conservation* **27**:1729–1741.
- Cromsigt, J.P.G.M. *et al.* (2018). Trophic rewilding as a climate change mitigation strategy? *Philosophical Transactions of the Royal Society B: Biological Sciences* **373**.
- Cross, B.P. (2009). *Landowner participation in the Wetlands Reserve Program: Evidence from nine Oklahoma counties*. Oklahoma State University.
- Cross, J.E. *et al.* (2011). Adoption of conservation easements among agricultural landowners in Colorado and Wyoming: The role of economic dependence and sense of place. *Landscape and Urban Planning* **101**:75–83.
- Cross, M. and Franks, J.R. (2007). Farmer's and advisor's attitudes towards the environmental stewardship scheme. *Journal of Farm Management* **13**:47–68.
- Cumming, T.L. (2007). *Conservation incentives for private commercial farmers in the thicket biome, Eastern Cape, South Africa*. Rhodes University.
- Curtin, S. (2013). Lessons from Scotland: British wildlife tourism demand, product development and destination management. *Journal of Destination Marketing & Management* **2**:196–211.
- Curtis, A. and De Lacy, T. (1996). Landcare in Australia: Does it make a difference? *Journal of Environmental Management* **46**:119–137.
- Curtis, A. and Van Nouhuys, M. (1999). Landcare participation in Australia: The volunteer perspective. *Sustainable Development* **7**:98–111.
- Curtis, A. and Robertson, A. (2003). Understanding landholder management of river frontages: The Goulburn Broken. *Ecological Management and Restoration* **4**:45–54.
- D'Souza, A. and Mishra, A.K. (2018). Adoption and abandonment of partial conservation technologies in developing economies: The case of South Asia. *Land Use Policy* **70**:212–223.
- Damianos, D. and Giannakopoulos, N. (2002). Farmers' participation in agri-environmental schemes in Greece. *British Food Journal* **104**:261–273.
- Darnhofer, I., Schneeberger, W. and Freyer, B. (2005). Converting or not converting to organic farming in Austria: Farmer types and their rationale. *Agriculture and Human Values* **22**:39–52.
- Darnton, A. (2008). *An Overview of Behaviour Change Models and Their Uses*. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/498065/Behaviour_change_reference_report_tcm6-9697.pdf. [Accessed 16 December 2022].

- Darragh, H.S. and Emery, S.B. (2018). What can and can't crowding theories tell us about farmers' 'environmental' intentions in post-agri-environment scheme contexts? *Sociologia Ruralis* **58**:370–391.
- Davies, Z.G., Kareiva, P. and Armsworth, P.R. (2010). Temporal patterns in the size of conservation land transactions. *Conservation Letters* **3**:29–37.
- Deary, H. and Warren, C. (2017). Divergent visions of wildness and naturalness in a storied landscape. *Journal of Rural Studies* **54**:211–222.
- Deary, H. and Warren, C.R. (2019). Trajectories of rewilding: A taxonomy of wildland management. *Journal of Environmental Planning and Management* **62**:466–491.
- Defrancesco, E. *et al.* (2008). Factors affecting farmers' participation in agri-environmental measures: A northern Italian perspective. *Journal of Agricultural Economics* **59**:114–131.
- Delibes-Mateos, M. *et al.* (2019). Rewilding and the risk of creating new, unwanted ecological interactions. In: Pettorelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press.
- Dempsey, B. (2021). Everything under control? Comparing Knepp Estate rewilding project with 'traditional' nature conservation. *PLoS ONE* **16**:1–24.
- Department for Environment, Food and Rural Affairs (Defra) (2019a). *A Green Future: Our 25 Year Plan to Improve the Environment*. [Online]. Available at: <https://www.gov.uk/government/publications/25-year-environment-plan>. [Accessed 8 November 2020].
- Department for Environment, Food and Rural Affairs (Defra) (2016). *Agricultural Labour in England and the UK: Farm Structure Survey*. [Online]. Available at: <http://foodresearch.org.uk/wp-content/uploads/2016/07/Agricultural-labour-briefing-FINAL-4-July-2016.pdf>. [Accessed 15 November 2020].
- Department for Environment, Food and Rural Affairs (Defra) (2019b). *Calls for Public Money to Be Spent on Public Goods* [Online]. Available at: <https://deframedia.blog.gov.uk/2019/09/19/calls-for-public-money-to-be-spent-on-public-goods/> [Accessed: 2 May 2020].
- Department for Environment, Food and Rural Affairs (Defra) (2022a). *Efforts to Protect Habitat and Wildlife around the World Boosted by £34 Million of UK Government Funding* [Online]. Available at: <https://www.gov.uk/government/news/efforts-to-protect-habitat-and-wildlife-around-the-world-boosted-by-34-million-of-uk-government-funding> [Accessed: 21 December 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2021a). *Environmental Land Management Policy Discussion Document. Analysis of Responses*. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/959727/elm-policy-discussion-document-analysis-responses.pdf. [Accessed 18 November 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2021b). *Environmental Land Management Schemes: Overview* [Online]. Available at: <https://www.gov.uk/government/publications/environmental-land-management-schemes-overview>. [Accessed: 21 December 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2007). *Evaluation of the Introduction and Operation of Environmental Stewardship - MA01028*. [Online]. Available at: <http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&>

Completed=0&ProjectID=13825. [Accessed 14 June 2020].

- Department for Environment, Food and Rural Affairs (Defra) (2021c). *Farming and Environment Evidence Packs* [Online]. Available at: <https://www.gov.uk/government/publications/farming-and-environment-evidence-packs-latest-editions> [Accessed: 8 August 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2022b). *Government Food Strategy*. [Online]. Available at: <https://www.gov.uk/government/publications/government-food-strategy/government-food-strategy>. [Accessed: 21 December 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2022c). *Government Unveils Plans to Restore 300,000 Hectares of Habitat across England* [Online]. Available at: <https://www.gov.uk/government/news/government-unveils-plans-to-restore-300000-hectares-of-habitat-across-england> [Accessed: 10 March 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2022d). *Introducing the UK Agriculture Partnership* [Online]. Available at: <https://defrafarming.blog.gov.uk/2022/01/27/introducing-the-uk-agriculture-partnership/> [Accessed: 21 December 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2018). *Lynx Reintroduction in Kielder Forest* [Online]. Available at: <https://www.gov.uk/government/publications/lynx-reintroduction-in-kielder-forest> [Accessed: 5 June 2022].
- Department for Environment, Food and Rural Affairs (Defra) (2022e). *New Farming Policies and Payments in England*. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1096744/payments-for-farmers.pdf. [Accessed: 21 December 2022].
- DeSilvey, C. and Bartolini, N. (2019). Where horses run free? Autonomy, temporality and rewilding in the Côa Valley, Portugal. *Transactions of the Institute of British Geographers* **44**:94–109.
- Diamond, J.M. (1975). The island dilemma: Lessons of modern biogeographic studies for the design of natural reserves. *Biological Conservation* **7**:129–146.
- Díaz, S. *et al.* (2019). Pervasive human-driven decline of life on Earth points to the need for transformative change. *Science* **366**:eaax3100.
- Díaz, S. *et al.* (2020). Set ambitious goals for biodiversity and sustainability. *Science* **370**:411–413.
- Dinerstein, E. *et al.* (2019). A Global Deal for Nature: Guiding principles, milestones, and targets. *Science Advances* **5**:1–18.
- Dobson, A.P. (2014). Yellowstone wolves and the forces that structure natural systems. *PLoS Biology* **12**:e1002025.
- Donlan, C.J. *et al.* (2006). Pleistocene rewilding: An optimistic agenda for twenty-first century conservation. *American Naturalist* **168**:660–681.
- Donlan, J. (2005). Re-wilding North America. *Nature* **436**:913–914.
- Dorji, S., Rajaratnam, R. and Vernes, K. (2019). Mammal richness and diversity in a Himalayan hotspot: the role of protected areas in conserving Bhutan’s mammals. *Biodiversity and Conservation* **28**:3277–3297.
- Downing, E. and Coe, S. (2018). *Brexit: Future UK Agriculture Policy*. [Online]. Available at: www.parliament.uk/commons-library%7Cintranet.parliament.uk/commons-library%7Cpapers@parliament.uk%7C@commonslibrary. [Accessed 26 February 2020].

- Drescher, M. *et al.* (2017). Private landowners and environmental conservation : a case study of social-psychological determinants of conservation program participation in. *Ecology and Society* **22**:44.
- Drescher, M. (2014). What is it like to take care of the land? Toward an understanding of private land conservation. *Rural Society* **23**:117–132.
- Drescher, M. and Brenner, J.C. (2018). The practice and promise of private land conservation. *Ecology and Society* **23**.
- Driver, A. (2019). @AliDriverUK [Online]. Available at: https://twitter.com/AliDriverUK?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor. [Accessed 22 February 2020].
- Driver, A. (2020). *On a Mission to Mainstream Rewilding* [Online]. Available at: <https://www.rewildingbritain.org.uk/blog/on-a-mission-to-mainstream-rewilding>. [Accessed 22 February 2020].
- Drost, D. *et al.* (1996). Barriers to Adopting Sustainable Agricultural Practices. *Journal of Extension* **34**.
- Drouilly, M. and O’Riain, M.J. (2021). Rewilding the world’s large carnivores without neglecting the human dimension: A response to reintroducing the Eurasian lynx to southern Scotland, England and Wales. *Biodiversity and Conservation* **30**:917–923.
- Drury, C. (2020). Rewilding the UK: movement aims to tackle climate change – by reintroducing wildcats and eagles into Britain. *The Independent* [Online]. Available at: <https://www.independent.co.uk/climate-change/news/rewilding-britain-restoring-nature-climate-emergency-bears-wolves-eagles-beavers-in-uk-global-warming-a9263906.html>. [Accessed 22 February 2020].
- Duckett, D. *et al.* (2022). New ‘old’ risks on the small farm: Iconic species rewilding in Europe. *Land Use Policy* **118**:106115.
- Dudley, N. (2008). *Guidelines to the IUCN Protected Area Management Categories*. [Online]. Gland, Switzerland. Available at: <https://portals.iucn.org/library/sites/library/files/documents/pag-021.pdf>. [Accessed 14 March 2022].
- Dudley, N. *et al.* (2018). The essential role of other effective area-based conservation measures in achieving big bold conservation targets. *Global Ecology and Conservation* **15**:e00424.
- Dudley, N. and Stolton, S. (2022). *Best Practice in Delivering the 30x30 Target*. [Online]. The Nature Conservancy and Equilibrium Research. Available at: https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_UKDEFRA_30x30_BestPractices_Report.pdf. [Accessed 14 December 2022].
- Dupraz, P., Vanslebrouck, I. and Bonnieux, F. (2002). *Farmers’ participation in European agri-environmental policies*. European Association of Agricultural Economists International Congress.
- Dyer, H. (2017). Research should not allow the loud voice of online content production to drown out the quiet majority of internet users. *London School of Economics and Political Science: Impact Blog* [Online]. Available at: <https://research-portal.uea.ac.uk/en/publications/research-should-not-allow-the-loud-voice-of-online-content-produce>.
- Eagles, P.F.J. *et al.* (2013). Good governance in protected areas: An evaluation of stakeholders’ perceptions in British Columbia and Ontario Provincial Parks. *Journal of Sustainable Tourism* **21**:60–79.
- Ellis, E.C. *et al.* (2010). Anthropogenic transformation of the biomes, 1700 to 2000. *Global Ecology and*

- Emery, S.B. and Franks, J.R. (2012). The potential for collaborative agri-environment schemes in England: Can a well-designed collaborative approach address farmers' concerns with current schemes? *Journal of Rural Studies* **28**:218–231.
- Environment Agency (2021). *The state of the environment: The urban environment*. [Online]. Available at: <https://www.gov.uk/government/publications/state-of-the-environment/the-state-of-the-environment-the-urban-environment>. [Accessed 12 March 2022].
- Erickson, D.L., Ryan, R.L. and De Young, R. (2002). Woodlots in the rural landscape: Landowner motivations and management attitudes in a Michigan (USA) case study. *Landscape and Urban Planning* **58**:101–112.
- Ernst, T. and Wallace, G.N. (2008). Characteristics, motivations, and management actions of landowners engaged in private land conservation in Larimer County Colorado. *Natural Areas Journal* **28**:109–120.
- von Essen, E. and Allen, M. (2020). 'Not the wolf itself': Distinguishing hunters' criticisms of wolves from procedures for making wolf management decisions. *Ethics, Policy and Environment* **23**:97–113.
- Ezebilo, E.E. and Mattsson, L. (2010). Socio-economic benefits of protected areas as perceived by local people around Cross River National Park, Nigeria. *Forest Policy and Economics* **12**:189–193.
- Di Falco, S. and Veronesi, M. (2013). How can African agriculture adapt to climate change? A counterfactual analysis from Ethiopia. *Land Economics* **89**:743–766.
- Falcón, W. and Hansen, D.M. (2018). Island rewilding with giant tortoises in an era of climate change. *Philosophical Transactions of the Royal Society B: Biological Sciences* **373**:20170442.
- Falconer, K. (2000). Farm-level constraints on agri-environmental scheme participation: A transactional perspective. *Journal of Rural Studies* **16**:379–394.
- Farley, K.A., Walsh, K.C. and Levine, A.S. (2017). Opportunities and obstacles for rangeland conservation in San Diego county, California, USA. *Ecology and Society* **22**.
- Farmer-Bowers, Q. and Lane, R. (2009). Understanding farmers' strategic decision-making processes and the implications for biodiversity conservation policy. *Journal of Environmental Management* **90**:1135–1144.
- Farmer, J.R. (2009). *Motivations for the adoption of a conservation easement: A midwestern perspective*. Indiana University.
- Farmer, J.R. *et al.* (2011). Motivations influencing the adoption of conservation easements. *Conservation Biology* **25**:827–834.
- Farmer, J.R. *et al.* (2016). Perpetual private land conservation: The case for outdoor recreation and functional leisure. *Ecology and Society* **21**.
- Farmer, J.R. *et al.* (2017). Private landowners, voluntary conservation programs, and implementation of conservation friendly land management practices. *Conservation Letters* **10**:58–66.
- Farmer, J.R. *et al.* (2015). Why agree to a conservation easement? Understanding the decision of conservation easement granting. *Landscape and Urban Planning* **138**:11–19.
- Farmer, J.R., Chancellor, C. and Fischer, B.C. (2011). Motivations for using conservation easements as a land protection mechanism: A mixed methods analysis. *Natural Areas Journal* **31**:80–87.

- Farming UK (2019). *Rewilding Britain backs out of £3.4m project after farmer anger* [Online]. Available at: https://www.farminguk.com/news/rewilding-britain-backs-out-of-3-4m-project-after-farmer-anger_54196.html [Accessed: 10 August 2022].
- Farming UK (2020). 'Wholly unacceptable': Farmers dismiss new plan to reintroduce Lynx. *Farming UK* [Online]. Available at: https://www.farminguk.com/news/-wholly-unacceptable-farmers-dismiss-new-plan-to-reintroduce-lynx_56346.html. [Accessed 20 February 2020].
- Featherstone, A.M. and Goodwin, B.K. (1982). Factors Influencing a Farmer's Decision to Invest in Long-Term Conservation Improvements. *Land Economics* **58**:277–292.
- Feng, Y. *et al.* (2021). Assessing the effectiveness of global protected areas based on the difference in differences model. *Ecological Indicators* **130**:108078.
- Ferraro, P.J. *et al.* (2021). Conservation outreach that acknowledges human contributions to climate change does not inhibit action by U.S. farmers: Evidence from a large randomized controlled trial embedded in a federal program on soil health. *PLoS ONE* [Online] **16**:e0253872. Available at: <http://dx.doi.org/10.1371/journal.pone.0253872>.
- Figgis, P. (2004). *Conservation on Private Lands: The Australian Experience*.
- Figgis, P., Humann, D. and Looker, M. (2005). Conservation on private land in Australia. *Parks* **15**:19–29.
- Filson, G.C. *et al.* (2009). Beneficial management practice adoption in five Southern Ontario watersheds. *Journal of Sustainable Agriculture* **33**:229–252.
- Finger, R. and El Benni, N. (2013). Farmers' adoption of extensive wheat production - Determinants and implications. *Land Use Policy* **30**:206–213.
- Finger, R. and Lehmann, B. (2012). Adoption of agri-environmental programmes in Swiss crop production. *EuroChoices* **11**:28–33.
- Fischer, A.P. and Bliss, J.C. (2008). Behavioral assumptions of conservation policy: Conserving oak habitat on family-forest land in the Willamette Valley, Oregon. *Conservation Biology* **22**:275–283.
- Fishbein, M. and Ajzen, I. (1977). Belief, attitude, intention, and behavior: An introduction to theory and research. *Philosophy and Rhetoric* **10**.
- Fishburn, I.S. *et al.* (2009). The growth of easements as a conservation tool. *PLoS ONE* **4**.
- Fisher, J. (2012). No pay, no care? A case study exploring motivations for participation in payments for ecosystem services in Uganda. *Oryx* **46**:45–54.
- Fisher, M. *et al.* (2018). Awareness and adoption of conservation agriculture in Malawi: what difference can farmer-to-farmer extension make? *International Journal of Agricultural Sustainability* **16**:310–325.
- Fisher, M. and Parfitt, A. (2016). The challenge of wild nature conserving itself. *Ecos* **37**:27–34.
- Fisher, P. (1989). *Barriers to the adoption of organic farming in Canterbury*. University of Canterbury.
- Fletcher, J. (2018). *Rewilding and farming - a paradox?* [Online]. Available at: <https://social.shorthand.com/joefletcher216/32YxqpKlNWi/rewilding-and-farming-a-paradox> [Accessed: 5 February 2020].
- Fleury, P. *et al.* (2015). 'Flowering Meadows', a result-oriented agri-environmental measure: Technical and value changes in favour of biodiversity. *Land Use Policy* **46**:103–114.
- Foley, K.M. (2013). *Examining the voluntary adoption of agricultural conservation practices in Northern*

Malheur Country, Oregon. Oregon State University.

- Food and Agriculture Organisation of the United Nations (FAO) (2018). *Sustainable agriculture for biodiversity - biodiversity for sustainable agriculture*. Available at: <https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1136968/>. [Accessed 17 September 2022].
- Forshay, K.J. *et al.* (2005). Landowner satisfaction with the wetlands reserve program in Wisconsin. *Environmental Management* **36**:248–257.
- Fox-Leonard, B., Rear, J. and Sloan, P. (2019). The rewilding guide to Britain: how and where our most characterful species are being reintroduced. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/family/life/rewilding-guide-britain-characterful-species-reintroduced/>. [Accessed 17 February 2020].
- Fraanje, W. and Garnett, T. (2022). *Rewilding and its implications for agriculture*. [Online]. Available at: https://tabledebates.org/sites/default/files/2022-09/TABLE_report_rewilding_final.pdf. [Accessed 20 September 2022].
- Franks, J.R. and Emery, S.B. (2013). Incentivising collaborative conservation: Lessons from existing environmental Stewardship Scheme options. *Land Use Policy* **30**:847–862.
- Fuller, C. *et al.* (2019). First, do no harm: A systematic review of deforestation spillovers from protected areas. *Global Ecology and Conservation* **18**:e00591.
- Gabel, V.M. *et al.* (2018). Motivations for swiss lowland farmers to conserve biodiversity: Identifying factors to predict proportions of implemented ecological compensation areas. *Journal of Rural Studies* **62**:68–76.
- Gachango, F.G., Andersen, L.M. and Pedersen, S.M. (2015). Adoption of voluntary water-pollution reduction technologies and water quality perception among Danish farmers. *Agricultural Water Management* **158**:235–244.
- Gailhard, Ī.U., Bavorová, M. and Pirscher, F. (2015). Adoption of agri-environmental measures by organic farmers: The role of interpersonal communication. *Journal of Agricultural Education and Extension* **21**:127–148.
- Gailhard, I.U. and Bojnec, S. (2015). Farm size and participation in agri-environmental measures: Farm-level evidence from Slovenia. *Land Use Policy* **46**:273–282.
- Gaines-Day, H.R. and Gratton, C. (2017). Understanding barriers to participation in cost-share programs for pollinator conservation by wisconsin (USA) cranberry growers. *Insects* **8**.
- Gallagher, A. (2018). *Small-scale farmers' intentions to carry out conservation-oriented agriculture through participation in the entry-level stewardship agri-environment scheme - the role of attitudes and values in farming behaviour*. Swedish University of Agricultural Science.
- Garbach, K., Lubell, M. and DeClerck, F.A.J. (2012). Payment for ecosystem services: The roles of positive incentives and information sharing in stimulating adoption of silvopastoral conservation practices. *Agriculture, Ecosystems and Environment* **156**:27–36.
- García-Amado, L.R., Pérez, M.R. and García, S.B. (2013). Motivation for conservation: Assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere Reserve, Mexico, Chiapas. *Ecological Economics* **89**:92–100.
- García-Ruiz, J.M. *et al.* (2020). Rewilding and restoring cultural landscapes in Mediterranean mountains: Opportunities and challenges. *Land Use Policy* **99**:104850.
- Garini, C.S. *et al.* (2017). Drivers of adoption of agroecological practices for winegrowers and influence

- from policies in the province of Trento, Italy. *Land Use Policy* **68**:200–211.
- Gaston, K.J. *et al.* (2008). The ecological performance of protected areas. *Annual Review of Ecology, Evolution, and Systematics* **39**:93–113.
- Gatto, P., Mozzato, D. and Defrancesco, E. (2019). Analysing the role of factors affecting farmers' decisions to continue with agri-environmental schemes from a temporal perspective. *Environmental Science and Policy* **92**:237–244.
- Gattuso, D.J. (2008). *Conservation easements: the good, the bad, and the ugly*. Washington, DC, USA.
- Gebremedhin, B. and Swinton, S.M. (2003). Investment in soil conservation in northern Ethiopia: The role of land tenure security and public programs. *Agricultural Economics* **29**:69–84.
- Geldmann, J. *et al.* (2019). A global-level assessment of the effectiveness of protected areas at resisting anthropogenic pressures. *Proceedings of the National Academy of Sciences* **116**:23209–23215.
- Geldmann, J. *et al.* (2018). A global analysis of management capacity and ecological outcomes in terrestrial protected areas. *Conservation Letters* **11**:1–10.
- Geldmann, J. *et al.* (2015). Changes in protected area management effectiveness over time: A global analysis. *Biological Conservation* **191**:692–699.
- Geldmann, J. *et al.* (2013). Effectiveness of terrestrial protected areas in reducing habitat loss and population declines. *Biological Conservation* **161**:230–238.
- Geldmann, J. *et al.* (2021). Essential indicators for measuring site-based conservation effectiveness in the post-2020 global biodiversity framework. *Conservation Letters* **14**:1–9.
- Geldmann, J., Joppa, L.N. and Burgess, N.D. (2014). Mapping change in human pressure globally on land and within protected areas. *Conservation Biology* **28**:1604–1616.
- Genghini, M., Spalatro, F. and Gellini, S. (2002). Farmers' attitudes toward the carrying out of wildlife habitat improvement actions (WHIA) in intensive agricultural areas of Northern Italy. *Zeitschrift für Jagdwissenschaft* **48**:309–319.
- Giannakis, E. (2014). Modelling farmers' participation in agri-environmental schemes in Greece. *International Journal of Agricultural Resources, Governance and Ecology* **10**:227–238.
- Gilbert, B.N. (2022). Troubled global biodiversity plan gets billion-dollar boost. *Nature* **610**:19.
- Gill, D.A. *et al.* (2017). Capacity shortfalls hinder the performance of marine protected areas globally. *Nature* **543**:665–669.
- Giller, K.E. *et al.* (2015). Beyond conservation agriculture. *Frontiers in Plant Science* **6**.
- Giller, K.E. *et al.* (2021). The future of farming: Who will produce our food? *Food Security* **13**:1073–1099.
- Giomi, T., Runhaar, P. and Runhaar, H. (2018). Reducing agrochemical use for nature conservation by Italian olive farmers: an evaluation of public and private governance strategies. *International Journal of Agricultural Sustainability* **16**:94–105.
- Giovanopoulou, E., Nastis, S.A. and Papanagiotou, E. (2011). Modeling farmer participation in agri-environmental nitrate pollution reducing schemes. *Ecological Economics* **70**:2175–2180.
- Goldsmith, B. (2019). The triumphant return of the British beaver. *The Spectator* [Online]. Available at: http://unexpectedwildliferefuge.org/uwr_public/literature/Goldsmith_2019_The_triumphant_return.pdf. [Accessed 14 February 2020].

- Goldstein, A. *et al.* (2020). Protecting irrecoverable carbon in Earth's ecosystems. *Nature Climate Change* **10**:287–295.
- Gooden, J. and Grenyer, R. (2018). The psychological appeal of owning private land for conservation. *Conservation Biology* **33**:339–350.
- Gordon, I.J., Javier Pérez-Barbería, F. and Manning, A.D. (2021). Rewilding lite: Using traditional domestic livestock to achieve rewilding outcomes. *Sustainability* **13**:3347.
- Gormley, A.M. *et al.* (2012). First evidence that marine protected areas can work for marine mammals. *Journal of Applied Ecology* **49**:474–480.
- Gosling, E. and Williams, K.J.H. (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology* **30**:298–304.
- Gould, B.W., Saupe, W.E. and Klemme, R.M. (1989). Conservation tillage: the role of farm and operator characteristics and the perception of soil erosion. *Land Economics* **65**:167–182.
- Grabowski, P.P. *et al.* (2016). Determinants of adoption and disadoption of minimum tillage by cotton farmers in eastern Zambia. *Agriculture, Ecosystems and Environment* **231**:54–67.
- Grammatikopoulou, I., Iho, A. and Pouta, E. (2012). Willingness of farmers to participate in agri-environmental auctions in Finland. *Food Economics* **9**:215–230.
- Grammatikopoulou, I., Pouta, E. and Myyrä, S. (2016). Exploring the determinants for adopting water conservation measures. What is the tendency of landowners when the resource is already at risk? *Journal of Environmental Planning and Management* **59**:993–1014.
- Granado-Díaz, R., Villanueva, A.J. and Gómez-Limón, J.A. (2022). Willingness to accept for rewilding farmland in environmentally sensitive areas. *Land Use Policy* **116**:106052.
- Gray, C.L. *et al.* (2016). Local biodiversity is higher inside than outside terrestrial protected areas worldwide. *Nature Communications* **7**:1–7.
- Grebner, D.L. *et al.* (2014). Forest landowner goals, objectives, and constraints. In: *Introduction to Forestry and Natural Resources*. Academic Press.
- Greene, J.L., Straka, T.J. and Dee, R.J. (2004). Nonindustrial private forest owner use of federal income tax provisions. *Forest Products Journal and Index* **54**:59–66.
- Greiner, R. (2016). Contract preferences and psychological determinants of participation in agri-environment schemes. In: *Learning from Agri-Environment Schemes in Australia*. p. 163.
- Greiner, R. (2015). Motivations and attitudes influence farmers' willingness to participate in biodiversity conservation contracts. *Agricultural Systems* **137**:154–165.
- Greiner, R. and Gregg, D. (2011). Farmers' intrinsic motivations, barriers to the adoption of conservation practices and effectiveness of policy instruments: Empirical evidence from northern Australia. *Land Use Policy* **28**:257–265.
- Greiner, R., Gregg, D. and Miller, O. (2008). *Conservation covenants and conservation management agreements in the NT: A pastoralists' perspective*. Townsville, Australia: River Consulting.
- Greiner, R., Patterson, L. and Miller, O. (2009). Motivations, risk perceptions and adoption of conservation practices by farmers. *Agricultural Systems* **99**:86–104.
- Griffiths, C.J. *et al.* (2010). The use of extant non-indigenous tortoises as a restoration tool to replace

- extinct ecosystem engineers. *Restoration Ecology* **18**:1–7.
- Grillos, T. (2017). Economic vs non-material incentives for participation in an in-kind payments for ecosystem services program in Bolivia. *Ecological Economics* **131**:178–190.
- Grover, S. and Gruver, J. (2017). ‘Slow to change’: Farmers’ perceptions of place-based barriers to sustainable agriculture. *Renewable Agriculture and Food Systems* **32**:511–523.
- Gruver, J.B. *et al.* (2017). Making decisions about forestland succession: perspectives from Pennsylvania’s private forest landowners. *Society and Natural Resources* **30**:47–62.
- Guenat, S. *et al.* (2019). Untangling the motivations of different stakeholders for urban greenspace conservation in sub-Saharan Africa. *Ecosystem Services* **36**:100904.
- Guetto, R., Bazzani, G. and Vignoli, D. (2022). Narratives of the future and fertility decision-making in uncertain times. An application to the COVID-19 pandemic. *Vienna Yearbook of Population Research* **20**:1–38.
- Guillem, E.E. and Barnes, A. (2013). Farmer perceptions of bird conservation and farming management at a catchment level. *Land Use Policy* **31**:565–575.
- Gurney, G.G. *et al.* (2021). Biodiversity needs every tool in the box: use OECMs. *Nature* **595**:646–649.
- Gutwein, M. and Goldstein, J.H. (2013). Integrating conservation and financial objectives on private rangelands in northern Colorado: Rancher and practitioner perceptions. *Rangeland Ecology and Management* **66**:330–338.
- HAC. (2022). *Near 100 countries agree to collaborate to ensure at least 30% of the planet is protected by 2030 and to establish a future role for the coalition to support implementation* [Online]. Available at: <https://www.hacfornatureandpeople.org/near-100-countries-agree-to-collaborate-to-ensure-at-least-30-of-the-planet-is-protected-by-2030> [Accessed: 4 May 2022].
- Hall, C.M. (2019). Tourism and rewilding: an introduction–definition, issues and review. *Journal of Ecotourism* **18**:297–308.
- Halliday, J. and Parveen, N. (2017). Plan to return the lynx splits friends and families in Kielder Forest community. *The Guardian* [Online]. Available at: <https://www.theguardian.com/uk-news/2017/feb/03/plan-to-introduce-lynx-to-kielder-forest-angers-farmers>. [Accessed 4 February 2020].
- Hallmann, C.A. *et al.* (2017). More than 75 percent decline over 27 years in total flying insect biomass in protected areas. *PLoS ONE* **12**:e0185809.
- Hammes, V. *et al.* (2016). The attitude of grassland farmers towards nature conservation and agri-environment measures - A survey-based analysis. *Land Use Policy* **59**:528–535.
- Hanley, N., Banerjee, S. and Simpson, K. (2022). *Auctions for biodiversity conservation: what works best? And would a biodiversity offset market work better?* [Online]. Available at: https://www.gla.ac.uk/media/Media_836285_smxx.pdf. [Accessed 22 November 2022].
- Hansen, D.M. *et al.* (2010). Ecological history and latent conservation potential: Large and giant tortoises as a model for taxon substitutions. *Ecography* **33**:272–284.
- Hansen, K. *et al.* (2018). Rancher preferences for a payment for ecosystem services program in Southwestern Wyoming. *Ecological Economics* **146**:240–249.
- Hansson, A., Pedersen, E. and Weisner, S.E.B. (2012). Landowners’ incentives for constructing wetlands in an agricultural area in south Sweden. *Journal of Environmental Management* **113**:271–278.

- Hardy, M.J. *et al.* (2017). Exploring the permanence of conservation covenants. *Conservation Letters* **10**:221–230.
- Harrington, C., Lane, R. and Mercer, D. (2006). Learning conservation: The role of conservation covenants in landscape redesign at Project Hindmarsh, Victoria. *Australian Geographer* **37**:187–209.
- Harvey, F. (2022). England's farmers to be paid to rewild land. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2022/jan/06/englands-farmers-to-be-paid-to-rewild-land#:~:text=Farmers in England will be,health to rivers and streams.> [Accessed 4 August 2022].
- Haufler, J. and Kernohan, B.J. (2009). Landscape considerations for conservation planning on private lands. In: *Models for Planning Wildlife Conservation in Large Landscapes*. Amsterdam, Netherlands: Elsevier/Academic Press, pp. 153–176.
- Hawkins, S.A. *et al.* (2020). Community perspectives on the reintroduction of Eurasian lynx (*Lynx lynx*) to the UK. *Restoration Ecology* **28**:1408–1418.
- Hayward, M.W., Scanlon, R.J., *et al.* (2019). Reintroducing rewilding to restoration – Rejecting the search for novelty. *Biological Conservation* **233**:255–259.
- Hayward, M.W., Edwards, S., *et al.* (2019). Top-down control of ecosystems and the case for rewilding: does it all add up? In: Pettoirelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 325–354.
- Heath, S.K. *et al.* (2017). A bustle in the hedgerow: Woody field margins boost on farm avian diversity and abundance in an intensive agricultural landscape. *Biological Conservation* **212**:153–161.
- Van Hecken, G. and Bastiaensen, J. (2010). Payments for ecosystem services in Nicaragua: Do market-based approaches work? *Development and Change* **41**:421–444.
- Heiman, M. (1990). From 'not in my backyard!' to 'not in anybody's backyard!' *Journal of the American Planning Association* **56**:359–362.
- Helden, A.J. *et al.* (2015). Field-based grassland management for ciril buntings (*Emberiza cirilus* L.) and its effect on plant- and leafhoppers (Hemiptera: Auchenorrhyncha). *Insect Conservation and Diversity* **8**:272–281.
- Van Herzele, A. *et al.* (2013). Effort for money? Farmers' rationale for participation in agri-environment measures with different implementation complexity. *Journal of Environmental Management* **131**:110–120.
- Hetherington, P. (2021). Rewilding: rich persons' plaything or real hope for people? In: *Land Renewed*. Bristol University Press, pp. 98–121.
- Hillis, V., Lubell, M. and Hoffman, M. (2018). Sustainability partnership and viticulture management in California. *Journal of Environmental Management* **217**:214–225.
- Hite, L.M. and McDonald, K.S. (2020). Careers after COVID-19: challenges and changes. *Human Resource Development International* **23**:427–437.
- Hodge, I., Hauck, J. and Bonn, A. (2015). The alignment of agricultural and nature conservation policies in the European Union. *Conservation Biology* **29**:996–1005.
- Holden, S.T. *et al.* (2018). Can lead farmers reveal the adoption potential of conservation agriculture? The case of Malawi. *Land Use Policy* **76**:113–123.
- Holmes, G. *et al.* (2020). What is rewilding, how should it be done, and why? A Q-method study of the views held by European rewilding advocates. *Conservation & Society* **18**:77–88.

- Holstead, K.L. *et al.* (2017). Natural flood management from the farmer's perspective: criteria that affect uptake. *Journal of Flood Risk Management* **10**:205–218.
- Home, R. *et al.* (2014). Motivations for implementation of ecological compensation areas on swiss lowland farms. *Journal of Rural Studies* **34**:26–36.
- Honig, M. *et al.* (2015). The conditions under which farmers are likely to adapt their behaviour : A case study of private land conservation in the Cape Winelands , South Africa. *Land Use Policy* **48**:389–400.
- Hordowick, J. (2001). *Involving landowners in wetland conservation: barriers and motivations for action and implications for stewardship program planning*. University of Guelph.
- Horton, H. (2019a). Beavers could be reintroduced into the wild by government for first time in 500 years, environment minister Zac Goldsmith suggests. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/news/2019/10/29/beavers-could-reintroduced-wild-government-first-time-500-years/>. [Accessed 12 February 2020].
- Horton, H. (2019b). First wildcat kittens in new reintroduction project to be released in England for first time in 150 years. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/news/2019/10/27/first-wildcat-kittens-new-reintroduction-project-released-england/>. [Accessed 12 February 2020].
- Horton, K. *et al.* (2017). An evaluation of landowners' conservation easements on their livelihoods and well-being. *Biological Conservation* **209**:62–67.
- Hounsome, B., Edwards, R.T. and Edwards-Jones, G. (2006). A note on the effect of farmer mental health on adoption: The case of agri-environment schemes. *Agricultural Systems* **91**:229–241.
- Hua, W., Zulauf, C. and Sohngen, B. (2004). *To adopt or not to adopt: conservation decisions and participation in watershed groups*.
- Huenchuleo, C., Barkmann, J. and Villalobos, P. (2012). Social psychology predictors for the adoption of soil conservation measures in Central Chile. *Land Degradation and Development* **23**:483–495.
- Hughes, F. (2019). *Rewilding former arable land at Wicken Fen in Cambridgeshire* [Online]. Available at: <https://www.citizenzoo.org/rewilding-2019-conference-powerpoints/>. [Accessed 22 February 2022].
- Hunter, E.A. *et al.* (2013). Equivalency of galápagos giant tortoises used as ecological replacement species to restore ecosystem functions. *Conservation Biology* **27**:701–709.
- Hynes, S. and Garvey, E. (2009). Modelling farmers' participation in an agri-environmental scheme using panel data: An application to the rural environment protection scheme in Ireland. *Journal of Agricultural Economics* **60**:546–562.
- IfG (2021). *Timeline of UK Coronavirus Lockdowns, March 2020 to March 2021*. Available at: <https://www.instituteforgovernment.org.uk/sites/default/files/timeline-lockdown-web.pdf>. [Accessed 23 November 2022].
- Ingram, J. *et al.* (2013). Incorporating agri-environment schemes into farm development pathways: A temporal analysis of farmer motivations. *Land Use Policy* **31**:267–279.
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Editors: Brondizio, Eduardo; Diaz, Sandra; Settele, Josef; Ngo, Hien T. (2019). *Global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem services*. [Online]. Bonn, Germany. Available at: <https://ipbes.net/global-assessment>.

[Accessed 12 August 2022].

- International Union for Conservation of Nature (IUCN) (2010). *50 Years of Working for Protected Areas A Brief History of IUCN World Commission on Protected Areas*. [Online]. Available at: www.iucn.org/publications. [Accessed 10 August 2022].
- International Union for Conservation of Nature (IUCN) (2020). *Commission on Ecosystem Management - Our Structure*. [Online]. Available at: <https://www.iucn.org/our-union/commissions/commissions-ecosystem-management#overview> [Accessed: 8 August 2022].
- Ito, J. *et al.* (2018). A policy evaluation of the direct payment scheme for collective stewardship of common property resources in Japan. *Ecological Economics* **152**:141–151.
- Jacobsen, R.M. *et al.* (1991). *Selected characteristics of North Dakota farm families engaged in sustainable agricultural practices*. Agricultural Economics Report No. 271. Available at: https://www.researchgate.net/publication/23514550_Selected_Characteristics_of_North_Dakota_Farm_Families_Engaged_in_Sustainable_Agricultural_Practices. [Accessed 14 March 2020].
- Jacobson, S. (2003). Assessment of farmer attitudes and behavioral intentions toward bird conservation on organic and conventional Florida farms. *Conservation Biology* **17**:595–606.
- Januchowski-Hartley, S.R. *et al.* (2012). Social factors and private benefits influence landholders' riverine restoration priorities in tropical Australia. *Journal of Environmental Management* **110**:20–26.
- Jellinek, S. *et al.* (2013). Are incentive programs working? Landowner attitudes to ecological restoration of agricultural landscapes. *Journal of Environmental Management* **127**:69–76.
- Jenkins, S. (1997). *Native vegetation on farms survey 1996: A survey of farmers attitudes to native vegetation and Landcare in the wheatbelt of Western Australia*. Department of Primary Industries and Regional Development, Western Australia. Perth. Report 164.
- Johns, D. (2019). History of rewilding: Ideas and practice. In: Pettorelli, N., Durant, S. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 12–33.
- Johnson, M.K. *et al.* (2018). Barriers to PES programs in Indigenous communities: A lesson in land tenure insecurity from the Hopi Indian reservation. *Ecosystem Services* **32**:62–69.
- Jones, K.R. *et al.* (2018). One-third of global protected land is under intense human pressure. *Science* **360**:788–791.
- Jones, P. and Comfort, D. (2020). A commentary on rewilding in Europe. *Journal of Public Affairs* **20**:1–6.
- Joppa, L.N., Loarie, S.R. and Pimm, S.L. (2008). On the protection of 'protected areas'. *Proceedings of the National Academy of Sciences* **105**:6673–6678.
- Joppa, L.N. and Pfaff, A. (2011). Global protected area impacts. *Proceedings of the Royal Society B: Biological Sciences* **278**:1633–1638.
- Joppa, L.N. and Pfaff, A. (2009). High and far: Biases in the location of protected areas. *PLoS ONE* **4**:1–6.
- Jørgensen, D. (2015). Rethinking rewilding. *Geoforum* **65**:482–488.
- Juffe-Bignoli, D. *et al.* (2014). *Protected planet report 2014*. [Online]. Cambridge, UK. Available at: https://livereport.protectedplanet.net/pdf/Protected_Planet_Report_2014.pdf.
- Juhasz, M. (2014). *Agri-environmental management in Southern Ontario: Enhanced program participation through better understanding of dairy farmers' social dynamics*. University of Guelph.

- Kabii, T. (2004). *Influences on the uptake of covenant mechanisms for nature conservation on private lands in Australia*. Edith Cowan University.
- Kabii, T. and Horwitz, P. (2006). A review of landholder motivations and determinants for participation in conservation covenanting programmes. *Environmental Conservation* **33**:11–20.
- Kaetzel, B.R. (2008). *Landowner decisions and motivations on the Tennessee Northern Cumberland Plateau: Willingness to participate in government assistance programs and reasons for owning woodland*. University of Tennessee.
- Kagoya, S., Paudel, K.P. and Daniel, N.L. (2018). Awareness and adoption of soil and water conservation technologies in a developing country: a case of Nabajuzi watershed in Central Uganda. *Environmental Management* **61**:188–196.
- Kamal, S. and Grodzinska-Jurczak, M. (2014). Should conservation of biodiversity involve private land? A Q methodological study in Poland to assess stakeholders' attitude. *Biodiversity and Conservation* **23**:2689–2704.
- Kamal, S., Grodzińska-Jurczak, M. and Brown, G. (2015). Conservation on private land: a review of global strategies with a proposed classification system. *Journal of Environmental Planning and Management* **58**:576–597.
- Karali, E. *et al.* (2014). Identifying the factors that influence farmer participation in environmental management practices in Switzerland. *Human Ecology* **42**:951–963.
- Karali, E. *et al.* (2013). The effect of farmer attitudes and objectives on the heterogeneity of farm attributes and management in Switzerland. *Human Ecology* **41**:915–926.
- Karanth, K.K. *et al.* (2009). Patterns and determinants of mammal species occurrence in India. *Journal of Applied Ecology* **46**:1189–1200.
- Kareiva, P. and Marvier, M. (2012). What Is conservation science? *BioScience* **62**:962–969.
- Katz, B. (2019). Wolves and bears are being returned to a rare patch of ancient woodland in Britain. *Smithsonian Magazine* [Online]. Available at: <https://www.smithsonianmag.com/smart-news/wolves-and-bears-are-being-returned-rare-patch-ancient-woodland-britain-180972670/>. [Accessed 27 February 2020].
- Kaufmann, P. *et al.* (2011). The Diffusion of Organic Farming in Lithuania. *Journal of Sustainable Agriculture* **35**:522–549.
- Kauneckis, D. and York, A.M. (2009). An empirical evaluation of private landowner participation in voluntary forest conservation programs. *Environmental Management* **44**:468–484.
- Keen, S., Lomeli-Rodriguez, M. and Joffe, H. (2022). From challenge to opportunity: virtual qualitative research during COVID-19 and beyond. *International Journal of Qualitative Methods* **21**:1–11.
- Keenan, R.J., Pozza, G. and Fitzsimons, J.A. (2019). Ecosystem services in environmental policy: Barriers and opportunities for increased adoption. *Ecosystem Services* **38**:100943.
- Kemink, K.M. *et al.* (2020). A synthesis of knowledge about motives for participation in perpetual conservation easements. *Conservation Science and Practice* **3**:e323.
- Kennedy, S.M., Burbach, M.E. and Sliwinski, M.S. (2016). Sustainable grassland management: An exploratory study of progressive ranchers in Nebraska. *Sustainable Agriculture Research* **5**:103.
- Khanal, A.R. *et al.* (2019). Examining organic, agritourism, and agri-environmental diversification decisions of American farms: are these decisions interlinked? *Review of Agricultural, Food and*

- Kidd, L.R. *et al.* (2019). Messaging matters: A systematic review of the conservation messaging literature. *Biological Conservation* **236**:92–99.
- Kim, S., Gillespie, J.M. and Paudel, K.P. (2004). *The effect of economic factors on the adoption of best management practices in beef cattle production*. SAEA Annual Meeting, Tulsa, Oklahoma (Vol. 18).
- King, A.E.H., Baker, L.M. and Tomlinson, P.J. (2017). Community-based grazing marketing: barriers and benefits related to the adoption of best management practices in grazing systems. *Journal of Applied Communications* **101**.
- Kisaka, L. and Obi, A. (2015). Farmers' preferences for management options as payment for environmental services scheme. *International Food and Agribusiness Management Review* **18**:171–192.
- Klapproth, J.C. and Johnson, J.E. (2009). *Understanding the science behind riparian forest buffers: Factors influencing adoption*. Virginia Cooperative Extension.
- Kleijn, D. *et al.* (2014). Waterbirds increase more rapidly in Ramsar-designated wetlands than in unprotected wetlands. *Journal of Applied Ecology* **51**:289–298.
- Kleijn, D. and Sutherland, W.J. (2003). How effective are European agri-environment schemes in conserving and promoting biodiversity? *Journal of Applied Ecology* **40**:947–969.
- Knepp (2022). *Knepp Wildland Reintroductions* [Online]. Available at: <https://knepp.co.uk/reintroductions> [Accessed: 6 July 2022].
- Knowler, D. and Bradshaw, B. (2007). Farmers' adoption of conservation agriculture: A review and synthesis of recent research. *Food Policy* **32**:25–48.
- Konno, K. *et al.* (2020). Ignoring non-English-language studies may bias ecological meta-analyses. *Ecology and Evolution* **10**:6373–6384.
- Kooistra, C.M. *et al.* (2018). Western Oregon forest landowner beliefs about the outcomes of mandatory riparian buffer regulations. *Journal of Sustainable Forestry* **37**:56–76.
- Korhonen, K., Hujala, T. and Kurttila, M. (2013). Diffusion of voluntary protection among family forest owners: Decision process and success factors. *Forest Policy and Economics* **26**:82–90.
- Kosoy, N., Corbera, E. and Brown, K. (2008). Participation in payments for ecosystem services: Case studies from the Lacandon rainforest, Mexico. *Geoforum* **39**:2073–2083.
- Kragt, M.E., Dumbrell, N.P. and Blackmore, L. (2017). Motivations and barriers for Western Australian broad-acre farmers to adopt carbon farming. *Environmental Science and Policy* **73**:115–123.
- Kramer, R. and Jenkins, A. (2009). *Ecosystem services, markets, and red wolf habitat: results from a farm operator survey*. Washington, DC, USA.
- Kreutzweiser, R. *et al.* (2011). Understanding stewardship behaviour: Factors facilitating and constraining private water well stewardship. *Journal of Environmental Management* **92**:1104–1114.
- Kreye, M.M., Adams, D.C. and Ober, H.K. (2018). Protecting imperiled wildlife species on private lands: forest owner values and response to government interventions. *Ecological Economics* **149**:254–264.
- de Krom, M.P.M.M. (2017). Farmer participation in agri-environmental schemes: Regionalisation and the role of bridging social capital. *Land Use Policy* **60**:352–361.
- Kuhfuss, L. *et al.* (2015). Nudges, social norms, and permanence in agri-environmental schemes. *European Review of Agricultural Economics* **43**:609–636.

- Kunzekweguta, M., Rich, K.M. and Lyne, M.C. (2017). Factors affecting adoption and intensity of conservation agriculture techniques applied by smallholders in Masvingo district, Zimbabwe. *Agrekon* **56**:330–346.
- Kusmanoff, A.M. *et al.* (2016). Framing the private land conservation conversation: Strategic framing of the benefits of conservation participation could increase landholder engagement. *Environmental Science and Policy* **61**:124–128.
- KWT (2020a). *A Wilder Future for Kent* [Online]. Available at: <https://www.kentwildlifetrust.org.uk/blog/kent-wildlife-trust/wilder-future-kent> [Accessed: 5 February 2020].
- KWT (2020b). Wilder Kent: Our plan to restore nature. A call to arms. *Kent Wildlife Trust* [Online]. Available at: [https://www.kentwildlifetrust.org.uk/sites/default/files/2019-07/Kent Wildlife Trust - Wilder Kent Brochure.pdf](https://www.kentwildlifetrust.org.uk/sites/default/files/2019-07/Kent%20Wildlife%20Trust%20-%20Wilder%20Kent%20Brochure.pdf). [Accessed: 5 February 2020].
- Ladle, R.J., Jepson, P. and Whittaker, R.J. (2005). Scientists and the media: The struggle for legitimacy in climate change and conservation science. *Interdisciplinary Science Reviews* **30**:231–240.
- Laffoley, D. *et al.* (2017). An introduction to ‘other effective area-based conservation measures’ under Aichi Target 11 of the Convention on Biological Diversity: Origin, interpretation and emerging ocean issues. *Aquatic Conservation: Marine and Freshwater Ecosystems* **27**:130–137.
- Lambert, D.M. *et al.* (2014). A study of cattle producer preferences for best management practices in an East Tennessee watershed. *Journal of Soil and Water Conservation* **69**:41–53.
- Lambert, D.M. *et al.* (2007). Profiles of US farm households adopting conservation-compatible practices. *Land Use Policy* **24**:72–88.
- Laney, R. and Moses, R. (2021). The adoption of wildlife practices through a payments-for-environmental-services (PES) agri-environment scheme. *Human Dimensions of Wildlife* **26**:356–374.
- Langholz, J. (1996). Economics, objectives, and success of private nature reserves in Sub-Saharan Africa and Latin America. **10**:271–280.
- Langholz, J.A. *et al.* (2000). Economic considerations of privately owned parks. *Ecological Economics* **33**:173–183.
- Lant, C.L., Kraft, S.E. and Gillman, K.R. (1995). Enrollment of filter strips and recharge areas in the CRP and USDA easement programs. *Journal of Soil and Water Conservation* **50**:193–200.
- Laurance, W.F. *et al.* (2012). Averting biodiversity collapse in tropical forest protected areas. *Nature* **489**:290–293.
- Lawrence, J.H. *et al.* (1992). Agroforestry practices of non-industrial private forest landowners in Washington State. *Agroforestry Systems* **19**:37–55.
- Leclère, D. *et al.* (2020). Bending the curve of terrestrial biodiversity needs an integrated strategy. *Nature* **585**:551–556.
- Leite, A.E. *et al.* (2014). Agricultural production and sustainable development in a Brazilian region (Southwest, São Paulo State): Motivations and barriers to adopting sustainable and ecologically friendly practices. *International Journal of Sustainable Development and World Ecology* **21**:422–429.
- Leleu, K. *et al.* (2012). Fishers’ perceptions as indicators of the performance of Marine Protected Areas (MPAs). *Marine Policy* **36**:414–422.
- Lester, S.E. *et al.* (2009). Biological effects within no-take marine reserves: A global synthesis. *Marine*

- Leverington, F. *et al.* (2010). A global analysis of protected area management effectiveness. *Environmental Management* **46**:685–698.
- Levers, C. *et al.* (2018). Spatial variation in determinants of agricultural land abandonment in Europe. *Science of the Total Environment* **644**:95–111.
- Levy, G. (2020). “Let’s Allow Nature to Take Care of Itself” [Online]. Available at: <https://www.rewildingbritain.org.uk/blog/lets-allow-nature-to-take-care-of-itself-introducing-our-new-chair-george-levy>. [Accessed 27 February 2020].
- Lewis, S. (2018). Rewilding success stories. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2018/jun/03/rewilding-conservation-bison-wolves-beaver-giant-tortoise-tigers>. [Accessed 24 February 2020].
- Lindsey, P.A. *et al.* (2006). Potential of trophy hunting to create incentives for wildlife conservation in Africa where alternative wildlife-based land uses may not be viable. *Animal Conservation* **9**:283–291.
- Lockwood, C. and Oh, E.G., (2017). Systematic reviews: Guidelines, tools and checklists for authors. *Nursing & Health Sciences*. **19**(3): 273–277.
- Lokhorst, A.M. *et al.* (2014). There is an I in nature: The crucial role of the self in nature conservation. *Land Use Policy* **39**:121–126.
- Lokocz, E., Ryan, R.L. and Sadler, A.J. (2011). Motivations for land protection and stewardship: Exploring place attachment and rural landscape character in Massachussettes. *Landscape and Urban Planning* **99**:65–76.
- Lorimer, J. *et al.* (2015). Rewilding: science, practice, and politics. *Annual Review of Environment and Resources* **40**:39–62.
- Loth, A.F. and Newton, A.C. (2018). Rewilding as a restoration strategy for lowland agricultural landscapes: Stakeholder-assisted multi-criteria analysis in Dorset, UK. *Journal for Nature Conservation* [Online] **46**:110–120. Available at: <https://doi.org/10.1016/j.jnc.2018.10.003>.
- Lubell, M.N. *et al.* (2013). Conservation program participation and adaptive rangeland decision-making. *Rangeland Ecology and Management* **66**:609–620.
- Łuczka, W. and Kalinowski, S. (2020). Barriers to the development of organic farming: A polish case study. *Agriculture* **10**:536.
- Luo, L. *et al.* (2016). Environmentally-friendly agricultural practices and their acceptance by smallholder farmers in China—A case study in Xinxiang County, Henan Province. *Science of the Total Environment* **571**:737–743.
- Lute, M.L. *et al.* (2018). Landowner and practitioner perspectives on private land conservation programs. *Society and Natural Resources* **31**:218–231.
- Lutfallah, S. and Buchanan, L. (2019). Quantifying subjective data using online Q-methodology software. *The Mental Lexicon* **14**:415–423.
- Luther, Z.R., Swinton, S.M. and Van Deynze, B. (2020). What drives voluntary adoption of farming practices that can abate nutrient pollution? *Journal of Soil and Water Conservation* **75**:640–650.
- Lynch, L. and Lovell, S.J. (2003). Combining spatial and survey data to explain participation in agricultural land preservation programs. *Land Economics* **73**:259–276.

- Ma, Y. *et al.* (2009). What motivates farmers to participate in sustainable agriculture? Evidence and policy implications. *International Journal of Sustainable Development and World Ecology* **16**:374–380.
- Ma, Z. *et al.* (2012). Factors associated with landowner involvement in forest conservation programs in the U.S.: Implications for policy design and outreach. *Land Use Policy* **29**:53–61.
- Mace, G.M. *et al.* (2018). Aiming higher – bending the curve of biodiversity loss. *Nature Sustainability* **1**:448–451.
- Macgregor, C.J. and Warren, C.R. (2006). Adopting sustainable farm management practices within a Nitrate Vulnerable Zone in Scotland: The view from the farm. *Agriculture, Ecosystems and Environment* **113**:108–119.
- Madden, F. and McQuinn, B. (2014). Conservation’s blind spot: The case for conflict transformation in wildlife conservation. *Biological Conservation* **178**:97–106.
- Manda, J. *et al.* (2016). Adoption and impacts of sustainable agricultural practices on maize yields and incomes: evidence from rural Zambia. *Journal of Agricultural Economics* **67**:130–153.
- Manley, J. and Mathias, J. (2017). CREP : cattle receiving enhanced pastures ? Investigating landowner response to federal incentives. *Land Economics* **93**:59–73.
- Manley, J. and Mathias, J. (2012). *Getting the most for federal dollars: landowner response to the conservation reserve enhancement program getting the most for federal dollars: landowner responsiveness to conservation incentives*. Towson University, Department of Economics.
- Mann, S. (2018). Conservation by innovation: what are the triggers for participation among Swiss farmers? *Ecological Economics* **146**:10–16.
- Mante, J. and Gerowitt, B. (2009). Learning from farmers’ needs: Identifying obstacles to the successful implementation of field margin measures in intensive arable regions. *Landscape and Urban Planning* **93**:229–237.
- Markowski-Lindsay, M. *et al.* (2011). Barriers to Massachusetts forest landowner participation in carbon markets. *Ecological Economics* **71**:180–190.
- Markwell, K.A. and Fellows, C.S. (2008). Habitat and biodiversity of on-farm water storages: A case study in Southeast Queensland, Australia. *Environmental Management* **41**:234–249.
- Maron, M., Simmonds, J.S. and Watson, J.E.M. (2018). Bold nature retention targets are essential for the global environment agenda. *Nature Ecology and Evolution* **2**:1194–1195.
- Marr, E.J. and Howley, P. (2019). The accidental environmentalists: Factors affecting farmers’ adoption of pro-environmental activities in England and Ontario. *Journal of Rural Studies* **68**:100–111.
- Marshall, A.R.C. (2022). Who Owns Scotland? The Rise of the Green Lairds. *Reuters* [Online]. Available at: <https://www.reuters.com/investigates/special-report/scotland-environment-green-lairds/>.
- Marshall, G.R. (2009). Polycentricity, reciprocity, and farmer adoption of conservation practices under community-based governance. *Ecological Economics* **68**:1507–1520.
- Martin, A. *et al.* (2021). Taming rewilding - from the ecological to the social: How rewilding discourse in Scotland has come to include people. *Land Use Policy* **111**:105677.
- De Martino, S. *et al.* (2016). *Do they do as they say? Stated versus revealed preferences and take up in an incentives for conservation program*. [Online]. Available at: <https://openknowledge.worldbank.org/handle/10986/25177>. [Accessed 3 March 2020].

- Martnoga, B. (2022). Farming v rewilding: the battle for Borrowdale in the Lake District. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2022/sep/09/farming-v-rewilding-the-battle-for-borrowdale-in-the-lake-district>. [Accessed 14 February 2020].
- Mary, F. *et al.* (1998). Incorporating agroforestry practices in the management of walnut plantations in Dauphine, France: an analysis of farmers' motivations. *Agroforestry Systems* **43**:243–256.
- Mathews, S. *et al.* (1993). Landowner perceptions and the adoption of agroforestry practices in southern Ontario, Canada. *Agroforestry Systems* **21**:159–168.
- Mathijs, E. (2003). Social capital and farmers' willingness to adopt countryside stewardship schemes. *Outlook on Agriculture* **32**:13–16.
- Matzdorf, B. and Lorenz, J. (2010). How cost-effective are result-oriented agri-environmental measures? An empirical analysis in Germany. *Land Use Policy* **27**:535–544.
- Matzek, V. and Wilson, K.A. (2021). Public support for restoration: Does including ecosystem services as a goal engage a different set of values and attitudes than biodiversity protection alone? *PLoS ONE* **16**:e0245074.
- Maxwell, S.L. *et al.* (2020). Area-based conservation in the twenty-first century. *Nature* **586**:217–227.
- Maxwell, S.L. *et al.* (2016). The ravages of guns, nets and bulldozers. *Nature* **536**:143–145.
- Mazor, T. *et al.* (2018). Global mismatch of policy and research on drivers of biodiversity loss. *Nature Ecology and Evolution* **2**:1071–1074.
- Mazur, K.E. and Asah, S.T. (2013). Clarifying standpoints in the gray wolf recovery conflict: Procuring management and policy forethought. *Biological Conservation* **167**:79–89.
- McCallum, J. (2015). *Why do landowners restore wetlands? A case study from East Central Ontario*. Trent University.
- Mccann, E. *et al.* (1997). Environmental awareness, economic orientation, and farming practices: A comparison of organic and conventional farmers. *Environmental Management* **21**:747–758.
- McCann, L. and Claassen, R. (2016). Farmer transaction costs of participating in federal conservation programs: Magnitudes and determinants. *Land Economics* **92**:256–272.
- McCracken, M.E. *et al.* (2015). Social and ecological drivers of success in agri-environment schemes: The roles of farmers and environmental context. *Journal of Applied Ecology* **52**:696–705.
- McDowell, C.R. (1988). *Factors affecting the conservation of renosterveld by private landholders*. University of Cape Town.
- McGinlay, J., Gowing, D.J.G. and Budds, J. (2017). The threat of abandonment in socio-ecological landscapes: Farmers' motivations and perspectives on high nature value grassland conservation. *Environmental Science and Policy* **69**:39–49.
- McKeown, B. and Thomas, D.B. (2013). *Q-Methodology*. 2nd ed. London: Sage.
- McLean-Meyinsse, P.E., Hui, J. and Joseph, R. (1994). An empirical analysis of Louisiana small farmers' involvement in the conservation reserve program. *Journal of Agricultural and Applied Economics* **26**:379–385.
- Meadows, J., Emtage, N. and Herbohn, J. (2014). Engaging Australian small-scale lifestyle landowners in natural resource management programmes - perceptions, past experiences and policy implications. *Land Use Policy* **36**:618–627.

- Meanwell, A. (2015). As a shepherd, I know we have not ‘sheepwrecked’ Britain’s landscape. *The Guardian* [Online]. Available at: <https://www.theguardian.com/commentisfree/2015/jul/21/farmers-sheep-lake-district-preserve-environmentalists>. [Accessed: 2 February 2020].
- Meijaard, E. and Nijman, V. (2000). The local extinction of the proboscis monkey *Nasalis larvatus* in Pulau Kaget Nature Reserve, Indonesia. *Oryx* **34**:66–70.
- Mellin, C. *et al.* (2016). Marine protected areas increase resilience among coral reef communities. *Ecology Letters* **19**:629–637.
- Méndez-López, M.E. *et al.* (2019). Who participates in conservation initiatives? Case studies in six rural communities of Mexico. *Journal of Environmental Planning and Management* **62**:1045–1064.
- Mendham, E., Millar, J. and Curtis, A. (2007). Landholder participation in native vegetation management in irrigation areas. *Ecological Management and Restoration* **8**:42–48.
- Merckx, T. and Pereira, H.M. (2015). Reshaping agri-environmental subsidies: From marginal farming to large-scale rewilding. *Basic and Applied Ecology* **16**:95–103.
- Merenlender, A.M. *et al.* (2004). Land trusts and conservation easements: who is conserving what for whom? *Conservation Biology* **18**:65–75.
- Messick, J. (2020). *Endangered species conservation and private landowners: Investigating landowner participation in a safe harbor agreement*. Texas State University.
- Messick, J.A., Serenari, C. and Rubino, E.C. (2020). Determinants of private landowner participation in endangered species conservation: a comprehensive review and analytical framework. *Society and Natural Resources* **34**:980–998.
- Mettepenningen, E. *et al.* (2013). Investigating the influence of the institutional organisation of agri-environmental schemes on scheme adoption. *Land Use Policy* **33**:20–30.
- Van der Meulen, H.A.B., De Snoo, G.R. and Wossink, G.A.A. (1996). Farmers’ perception of unsprayed crop edges in the Netherlands. *Journal of Environmental Management* **47**:241–255.
- Michie, S., Stralen, M.M. van and West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science* **6**:1–12.
- Mikołajczak, K.M. *et al.* (2022). Rewilding - The farmers’ perspective. Perceptions and attitudinal support for rewilding among the English farming community. *People and Nature* **4**:1–15.
- Miller, A.D. *et al.* (2011). Factors impacting agricultural landowners’ willingness to enter into conservation easements: A case study. *Society and Natural Resources* **24**:65–74.
- Mills, J. *et al.* (2020). Barriers to and opportunities for the uptake of soil carbon management practices in European sustainable agricultural production. *Agroecology and Sustainable Food Systems* **44**:1185–1211.
- Mills, J. *et al.* (2017). Engaging farmers in environmental management through a better understanding of behaviour. *Agriculture and Human Values* **34**:283–299.
- Mills, J. *et al.* (2013). Farmer attitudes and evaluation of outcomes to on-farm environmental management. *Aspects of Applied Biology* **118**:209–216.
- Mills, J. *et al.* (2018). Understanding farmers’ motivations for providing unsubsidised environmental benefits. *Land Use Policy* **76**:697–707.

- Mishra, A.K. and Khanal, A.R. (2013). Is participation in agri-environmental programs affected by liquidity and solvency? *Land Use Policy* **35**:163–170.
- Mitani, Y. and Lindhjem, H. (2015). Forest owners' participation in voluntary biodiversity conservation: what does it take to forgo forestry for eternity? *Land Economics* **91**:235–251.
- Mitchell, B.A. *et al.* (2018). PPA or OECM? Differentiating between privately protected areas and other effective area-based conservation measures on private land. *Parks* **24**:49–60.
- Mitchell, J.P. *et al.* (2007). Adoption of conservation tillage in California: Current status and future perspectives. *Australian Journal of Experimental Agriculture* **47**:1383–1388.
- Mitchell, M.D. and Kimmel, R.O. (2009). Landowner attitudes and perceptions regarding wildlife benefits of the conservation reserve program. *Rural Minnesota Journal* **4**:93–106.
- Mohebalian, P.M. and Aguilar, F.X. (2016). Additionality and design of forest conservation programs: Insights from Ecuador's Socio Bosque Program. *Forest Policy and Economics* **71**:103–114.
- Moher, D. *et al.* (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine* **151**:264–269.
- Molnar, J.J., Bitto, A. and Brant, G. (2001). *Core conservation practices: adoption barriers perceived by small and limited resource farmers*. Auburn University.
- Monbiot, G. (2013). *Feral*. Penguin Books.
- Moon, K. (2013). Conditional and resistant non-participation in market-based land management programs in Queensland, Australia. *Land Use Policy* **31**:17–25.
- Moon, K. and Blackman, D. (2014). A guide to understanding social science research for natural scientists. *Conservation Biology* **28**:1167–1177.
- Moon, K. and Cocklin, C. (2011a). A landowner-based approach to the design of private-land conservation programs. *Conservation Biology* **25**:493–503.
- Moon, K. and Cocklin, C. (2011b). Participation in biodiversity conservation: Motivations and barriers of Australian landholders. *Journal of Rural Studies* **27**:331–342.
- Moon, K., Marsh, D. and Cvitanovic, C. (2021). Coupling property rights with responsibilities to improve conservation outcomes across land and seascapes. *Conservation Letters* **14**:e12767.
- Moon, K., Marshall, N. and Cocklin, C. (2012). Personal circumstances and social characteristics as determinants of landholder participation in biodiversity conservation programs. *Journal of Environmental Management* **113**:292–300.
- Morel, L. *et al.* (2020). Passive rewilding may (also) restore phylogenetically rich and functionally resilient forest plant communities. *Ecological Applications* **30**:e02007.
- Morgan, M.I. *et al.* (2015). Landholder adoption of low emission agricultural practices: A profiling approach. *Journal of Environmental Psychology* **41**:35–44.
- Morris-Jones, D. (2019). "O'r Mynydd" searching for a future on rewilding's doorstep [Online]. Available at: <https://www.citizenzoo.org/rewilding-2019-conference-powerpoints/> [Accessed: 5 February 2020].
- Morris, C. (1993). *Recruiting farmers in conservation: an analysis of participation in agri-environmental schemes in lowland England*. University of London.
- Morris, C. and Potter, C. (1995). Recruiting the new conservationists: Farmers' adoption of agri-

- environmental schemes in the U.K. *Journal of Rural Studies* **11**:51–63.
- Morris, S. (2019). Beavers to be released in plan to ease flooding and aid biodiversity. *The Guardian* [Online]. Available at: <https://www.theguardian.com/environment/2019/nov/20/beavers-to-be-released-in-plan-to-ease-flooding-and-aid-biodiversity>. [Accessed: 18 February 2020].
- Morris, S. (2020). ‘Drivers of change’: beavers released on National Trust land to ease flooding risk. *The Guardian* [Online]. Available at: <https://www.theguardian.com/uk-news/2020/jan/30/drivers-of-change-beavers-released-on-national-trust-land-to-ease-flooding-risk>. [Accessed: 24 February 2020].
- Morrison, M. and Lockwood, M. (2014). Informing program design for connectivity conservation in the New South Wales southern highlands, Australia. *Society and Natural Resources* **27**:70–87.
- Morrison, M., Oczkowski, E. and Greig, J. (2011). The primacy of human capital and social capital in influencing landholders’ participation in programmes designed to improve environmental outcomes. *Australian Journal of Agricultural and Resource Economics* **55**:560–578.
- Mould, S.A., Fryirs, K.A. and Howitt, R. (2020). The importance of relational values in river management: Understanding enablers and barriers for effective participation. *Ecology and Society* **25**:1–16.
- Mudaca, J.D. *et al.* (2015). Household participation in payments for ecosystem services: A case study from Mozambique. *Forest Policy and Economics* **55**:21–27.
- Mugonola, B. *et al.* (2013). Adoption of soil and water conservation technologies in the Rwizi catchment of south western Uganda. *International Journal of Agricultural Sustainability* **11**:264–281.
- Mullendore, N.D., Ulrich-Schad, J.D. and Prokopy, L.S. (2015). US farmers’ sense of place and its relation to conservation behavior. *Landscape and Urban Planning* **140**:67–75.
- Mumaw, L. (2017). Transforming urban gardeners into land stewards. *Journal of Environmental Psychology* **52**:92–103.
- Mumaw, L. and Bekessy, S. (2017). Wildlife gardening for collaborative public–private biodiversity conservation. *Australasian Journal of Environmental Management* **24**:242–260.
- Murphy, G. *et al.* (2014). An investigation into the type of farmer who chose to participate in Rural Environment Protection Scheme (REPS) and the role of institutional change in influencing scheme effectiveness. *Land Use Policy* **39**:199–210.
- Murphy, G. *et al.* (2011). *Do farmers in agri-environmental schemes make appropriate ecological choices for the habitats on their farms? Modelling the biodiversity undertakings chosen within the Irish rural environment protection scheme.*
- Murphy, G. (2013). *The impact of farmers’ implementation decisions on environmental effectiveness in the rural environment protection scheme (REPS).* National University of Ireland.
- Mzoughi, N. (2011). Farmers adoption of integrated crop protection and organic farming: Do moral and social concerns matter? *Ecological Economics* **70**:1536–1545.
- Nagubadi, V. *et al.* (1996). Program participation behavior of nonindustrial forest landowners: a probit analysis. *Journal of Agricultural and Applied Economics* **28**:323–336.
- Naidoo, R. *et al.* (2019). Evaluating the impacts of protected areas on human well-being across the developing world. *Science Advances* **5**:1–8.
- Nandi, R. *et al.* (2015). Smallholder organic farmer’s attitudes, objectives and barriers towards

- production of organic fruits and vegetables in India: A multivariate analysis. *Emirates Journal of Food and Agriculture* **27**:396–406.
- Napier, T.L. and Camboni, S.M. (1993). Use of conventional and conservation practices among farmers in the Scioto River Basin of Ohio. *Journal of Soil and Water Conservation* **48**:231–237.
- National Conservation Easement Database (NCED) (2022). *What Is a conservation easement?* [Online]. Available at: <https://www.conservationeasement.us/what-is-a-conservation-easement/> [Accessed: 9 September 2022].
- National Trust (2022). *Members' Annual General Meeting: Members' Resolution about Re-Wilding of National Trust Land - Board of Trustees' Position*. [Online]. Available at: <https://documents.nationaltrust.org.uk/story/agm-booklet-2022/page/7/2>. [Accessed 16 November 2022].
- Natural England (2012). *Attitudes to Uplands Entry Level Stewardship*. [Online]. Natural England Commissioned Report NECR091. Available at: https://eprints.glos.ac.uk/3984/1/Mills_2012_NECR091_edition_1.pdf. [Accessed 3 March 2020].
- Natural England (2020). *Provisional Agricultural Land Classification (ALC)* [Online]. Available at: <https://www.data.gov.uk/dataset/952421ec-da63-4569-817d-4d6399df40a1/provisional-agricultural-land-classification-alc> [Accessed: 5 February 2020].
- Natural England (2022). *Sites of Special Scientific Interest: Managing Your Land*. Available at: <https://www.gov.uk/guidance/protected-areas-sites-of-special-scientific-interest>. [Accessed: 14 November 2022].
- Natural Resources Conservation Service (NRCS) (2022). *Programs & Initiatives* [Online]. Available at: <https://www.nrcs.usda.gov/programs-initiatives> [Accessed: 9 September 2022].
- Naughton-Treves, L., Holland, M.B. and Brandon, K. (2005). The role of protected areas in conserving biodiversity and sustaining local livelihoods. *Annual Review of Environment and Resources* **30**:219–252.
- Navarro, L.M. and Pereira, H.M. (2015). Rewilding abandoned landscapes in Europe. In: *Rewilding European Landscapes*. Springer, Cham, pp. 3–23.
- Nebel, S. *et al.* (2017). Which factors contribute to environmental behaviour of landowners in southwestern Ontario, Canada? *Environmental Management* **60**:454–463.
- Nelson, A. and Chomitz, K.M. (2011). Effectiveness of strict vs. multiple use protected areas in reducing tropical forest fires: A global analysis using matching methods. *PLoS ONE* **6**:e22722.
- Nettier, B. *et al.* (2010). Practices and motivation of farmers who sign contracts to preserve grassland biodiversity. *Grassland Science in Europe* **15**:714–715.
- Neuert, C.E. *et al.* (2021). Editorial: The use of open-ended questions in surveys. *Methods, data, analyses: a journal for quantitative methods and survey methodology (mda)* **15**:3–6.
- Newing, H. (2010). *Introduction: social science research in conservation*. In *Conducting Research in Conservation*. Routledge.
- Newton, A.C. (2011). Social-ecological resilience and biodiversity conservation in a 900-year old protected area. *Ecology and Society* **16**.
- Ng'ombe, J.N., Kalinda, T.H. and Tembo, G. (2017). Does adoption of conservation farming practices result in increased crop revenue? Evidence from Zambia. *Agrekon* **56**:205–221.

- Nielsen, A.S.E., Jacobsen, J.B. and Strange, N. (2018). Landowner participation in forest conservation programs: A revealed approach using register, spatial and contract data. *Journal of Forest Economics* **30**:1–12.
- Niemiec, R. *et al.* (2022). Rapid changes in public perception toward a conservation initiative. *Conservation Science and Practice* **4**:e12632.
- Niemiec, R.M. *et al.* (2016). Motivating residents to combat invasive species on private lands: Social norms and community reciprocity. *Ecology and Society* **21**.
- Nilsen, E.B. *et al.* (2007). Wolf reintroduction to Scotland: Public attitudes and consequences for red deer management. *Proceedings of the Royal Society B: Biological Sciences* **274**:995–1002.
- Noble, H. and Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-Based Nursing* **18**:34–35.
- Nogués-Bravo, D. *et al.* (2016). Rewilding is the new pandora's box in conservation. *Current Biology* **26**:R87–R91.
- Nolte, C. *et al.* (2013). Governance regime and location influence avoided deforestation success of protected areas in the Brazilian Amazon. *Proceedings of the National Academy of Sciences of the United States of America* **110**:4956–4961.
- Nowak, P.. (1987). The adoption of agricultural conservation technologies: Economic and diffusion explanations. *Rural Sociology* **52**:208.
- Ntshangase, N.L., Muroyiwa, B. and Sibanda, M. (2018). Farmers' perceptions and factors influencing the adoption of no-till conservation agriculture by small-scale farmers in Zashuke, KwaZulu-Natal province. *Sustainability* **10**:555.
- Nuñez, M.A. and Amano, T. (2021). Monolingual searches can limit and bias results in global literature reviews. *Nature Ecology and Evolution* **5**:264.
- O'Rourke, E. (2019). The raptor and the lamb. In: Olsson, E. G. A. and Gooch, P. eds. *Natural Resource Conflicts and Sustainable Development*. Routledge.
- O'Rourke, E. (2014). The reintroduction of the white-tailed sea eagle to Ireland: People and wildlife. *Land Use Policy* **38**:129–137.
- Office for National Statistics (ONS) (2019). *UK natural capital: urban accounts* [Online]. Available at: <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapital/urbanaccounts> [Accessed: 8 August 2022].
- Olive, A. (2009). *Willingness to cooperate: affirmative motivations among landowners*. Purdue University.
- Olive, A. and McCune, J.L. (2017). Wonder, ignorance, and resistance: Landowners and the stewardship of endangered species. *Journal of Rural Studies* **49**:13–22.
- Oliveira-Santos, L.G.R. and Fernandez, F.A.S. (2010). Pleistocene rewilding, frankenstein ecosystems, and an alternative conservation agenda. *Conservation Biology* **24**:4–5.
- Onwuegbuzie, A.J. and Leech, N.L. (2007). Validity and qualitative research: An oxymoron? *Quality and Quantity* **41**:233–249.
- Ormsby, A.A. and Bhagwat, S.A. (2010). Sacred forests of India: A strong tradition of community-based natural resource management. *Environmental Conservation* **37**:320–326.
- Owens, J.K., (2021). Systematic reviews: Brief overview of methods, limitations, and resources. *Nurse*

- Padilla-Bernal, L.E. *et al.* (2018). Views on sustainability and the willingness to adopt an environmental management system in the Mexican vegetable sector. *International Food and Agribusiness Management Review* **21**:423–436.
- Page, G. and Bellotti, B. (2015). Farmers value on-farm ecosystem services as important, but what are the impediments to participation in PES schemes? *Science of the Total Environment* **515–516**:12–19.
- Paine, R.T. (1966). Food web complexity and species diversity. *The American Naturalist* **100**:65–75.
- Palfrey, R., Oldekop, J.A. and Holmes, G. (2022). Privately protected areas increase global protected area coverage and connectivity. *Nature Ecology and Evolution* **6**:730–737.
- Paloniemi, R. and Tikka, P.M. (2008). Ecological and social aspects of biodiversity conservation on private lands. *Environmental Science and Policy* **11**:336–346.
- Pannell, D.J. *et al.* (2006). Understanding and promoting adoption of conservation practices by rural landholders. *Australian Journal of Experimental Agriculture* **46**:1407–1424.
- Parker, J.S. (2013). Integrating culture and community into environmental policy: Community tradition and farm size in conservation decision making. *Agriculture and Human Values* **30**:159–178.
- Parker, S.R. (2006). *Incentives and disincentives for conserving renosterveld remnants and the potential impacts of property rate rebates*. University of Cape Town.
- Parks, M.H., Christie, M.E. and Bagares, I. (2014). Gender and conservation agriculture: constraints and opportunities in the Philippines. *GeoJournal* **80**:61–77.
- Pascucci, S. *et al.* (2013). Participation of Italian farmers in rural development policy. *European Review of Agricultural Economics* **40**:605–631.
- Pasquini, L. *et al.* (2010). Devising appropriate policies and instruments in support of private conservation areas: Lessons learned from the Klein Karoo, South Africa. *Conservation Biology* **24**:470–478.
- Pasquini, L. (2007). *Privately-owned lands and biodiversity conservation: analysing the role of private conservation areas in the Little Karoo, South Africa*. University of Sheffield.
- Pavlis, E.S. *et al.* (2016). Patterns of agri-environmental scheme participation in Europe: Indicative trends from selected case studies. *Land Use Policy* **57**:800–812.
- Pedzisa, T. *et al.* (2015). The intensity of adoption of conservation agriculture by smallholder farmers in Zimbabwe. *Agrekon* **54**:1–22.
- Peerlings, J. and Polman, N. (2009). Farm choice between agri-environmental contracts in the European Union. *Journal of Environmental Planning and Management* **52**:593–612.
- Penot, E. *et al.* (2018). Conservation agriculture to buffer and alleviate the impact of climatic variations in Madagascar: farmers' perception. *Cahiers Agricultures* **27**:25003.
- Pereira, H.M. and Navarro, L.M. (2015). *Rewilding European Landscapes*. Springer Nature.
- Perez-Espejo, R., Ibarra, A.A. and Escobedo-Sagaz, J.L. (2011). Agriculture and water pollution: Farmers' perceptions in Central Mexico. *International Journal of Water Resources Development* **27**:263–273.
- Perino, A. *et al.* (2019). Rewilding complex ecosystems. *Science* **364**:eaav5570.

- Perry-Hill, R. and Prokopy, L.S. (2014). Comparing different types of rural landowners: Implications for conservation practice adoption. *Journal of Soil and Water Conservation* **69**:266–278.
- Perugini, M. and Bagozzi, R.P. (2001). The role of desires and anticipated emotions in goal-directed behaviours: Broadening and deepening the theory of planned behaviour. *British Journal of Social Psychology* **40**:79–98.
- Petersen, S.A., Petersen, I. and Ahcin, P. (2020). Smiling Earth — raising awareness among citizens. *Energies* **13**:5932.
- Peterson, H.H. *et al.* (2012). The motivation for organic grain farming in the United States: profits, lifestyle, or the environment? *Journal of Agricultural and Applied Economics* **44**:137–155.
- Petrzelka, P., Malin, S. and Gentry, B. (2012). Absentee landowners and conservation programs: Mind the gap. *Land Use Policy* **29**:220–223.
- Pettorelli, N. *et al.* (2018). Making rewilding fit for policy. *Journal of Applied Ecology* **55**:1114–1125.
- Pettorelli, N. and Durant, S.M. (2019). Rewilding: a captivating, controversial, twenty-first-century concept to address ecological degradation in a changing world. In: Pettorelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 1–11.
- Pfaff, A. *et al.* (2014). Governance, location and avoided deforestation from protected areas: greater restrictions can have lower impact, due to differences in location. *World Development* **55**:7–20.
- Pfrimmer, J. *et al.* (2017). Motivations for enrollment into the conservation reserve enhancement program in the James River Basin of South Dakota. *Human Dimensions of Wildlife* **22**:382–389.
- Phalan, B. *et al.* (2011). Reconciling food production and biodiversity conservation: Land sharing and land sparing compared. *Science* **333**:1289–1291.
- Phillips, A. (2004). The history of the international system of protected area management categories. *PARKS* **14**:2–14.
- Pimm, S.L. *et al.* (2014). The biodiversity of species and their rates of extinction, distribution, and protection. *Science* **344**:1246752.
- Polman, N.B.P. and Slangen, L.H.G. (2008). Institutional design of agri-environmental contracts in the European Union: The role of trust and social capital. *NJAS: Wageningen Journal of Life Sciences* **55**:413–430.
- Poore, J.A.C. (2015). Call for conservation: Abandoned pasture. *Science* **351**:132.
- Posthumus, H., Gardebroek, C. and Ruben, R. (2010). From participation to adoption: Comparing the effectiveness of soil conservation programs in the Peruvian Andes. *Land Economics* **86**:645–667.
- Pötsch, E.M. and Groier, M. (2005). *Attitude of Austrian farmers towards agro-environmental programs and aspects of nature conservation*. Vol. 10.
- Potter, C. and Gasson, R. (1988). Farmer participation in voluntary land diversion schemes: some predictions from a survey. *Journal of Rural Studies* **4**:365–375.
- Potter, C. and Lobley, M. (1992). The conservation status and potential of elderly farmers: Results from a survey in England and Wales. *Journal of Rural Studies* **8**:133–143.
- Pradhananga, A.K., Davenport, M. and Olson, B. (2015). Landowner motivations for civic engagement in water resource protection. *Journal of the American Water Resources Association* **51**:1600–1612.
- Primmer, E. and Karppinen, H. (2010). Professional judgment in non-industrial private forestry:

- Forester attitudes and social norms influencing biodiversity conservation. *Forest Policy and Economics journal* **12**:136–146.
- Prior, J. and Brady, E. (2017). Environmental aesthetics and rewilding. *Environmental Values* **26**:31–51.
- Prior, J. and Ward, K.J. (2016). Rethinking rewilding: A response to Jørgensen. *Geoforum* **69**:132–135.
- Prokopy, L. *et al.* (2019). Adoption of agricultural conservation practices in the United States: evidence from 35 years of quantitative literature. *Journal of Soil and Water Conservation* **74**:520–534.
- Prokopy, L.S. *et al.* (2008). Determinants of agricultural best management practice adoption: Evidence from the literature. *Journal of Soil and Water Conservation* **63**:300–311.
- Pullman, N. (2020). Farming versus rewilding debate reignited. *Wicked Leeks* [Online]. Available at: <https://wickedleeks.riverford.co.uk/news/farming-versus-rewilding-debate-reignited/>.
- Quillérou, E., Fraser, R. and Fraser, I. (2011). Farmer compensation and its consequences for environmental benefit provision in the higher level stewardship scheme. *Journal of Agricultural Economics* **62**:330–339.
- R Core Team (2022). A language and environment for statistical computing.
- Race, D. and Curtis, A. (2013). Reflections on the effectiveness of market-based instruments to secure long-term environmental gains in Southeast Australia: understanding landholders' experiences. *Society and Natural Resources* **26**:1050–1065.
- Raedeke, A.H., Rikoon, J.S. and Nilon, C.H. (2001). Ecosystem management and landowner concern about regulations: A case study in the Missouri Ozarks. *Society and Natural Resources* **14**:741–759.
- Ramlo, S. (2016). Centroid and theoretical rotation: justification for their use in Q methodology research the purpose of factor analysis in Q. *Mid-Western Educational Researcher* **28**:73–92.
- Ramsdell, C.P., Sorice, M.G. and Dwyer, A.M. (2016). Using financial incentives to motivate conservation of an at-risk species on private lands. *Environmental Conservation* **43**:34–44.
- Ramsey, S.M. *et al.* (2019). Effects of farmers' yield-risk perceptions on conservation practice adoption in Kansas. *Journal of Agricultural and Resource Economics* **44**:380–403.
- Rangarajan, M. and Shahabuddin, G. (2006). Displacement and relocation from protected areas: towards a biological and historical synthesis. *Conservation and Society* **4**:359–378.
- Ranjan, P., Church, S.P., *et al.* (2019). Synthesizing conservation motivations and barriers: what have we learned from qualitative studies of farmers' behaviors in the United States? *Society & Natural Resources* **32**:1171–1199.
- Ranjan, P., Wardropper, C.B., *et al.* (2019). Understanding barriers and opportunities for adoption of conservation practices on rented farmland in the US. *Land Use Policy* **80**:214–223.
- Ranta, R. and Mulrooney, H. (2021). Pandemics, food (in)security, and leaving the EU: What does the Covid-19 pandemic tell us about food insecurity and Brexit. *Social Sciences & Humanities Open* **3**:100125.
- Ratajczak, Z. *et al.* (2022). Reintroducing bison results in long-running and resilient increases in grassland diversity. *Proceedings of the National Academy of Sciences* **119**:e2210433119.
- Raymond, C.M. *et al.* (2016). Integrating different understandings of landscape stewardship into the design of agri-environmental schemes. *Environmental Conservation* **43**:350–358.
- Raymond, C.M. *et al.* (2015). Private land manager capacity to conserve threatened communities under

- climate change. *Journal of Environmental Management* **159**:235–244.
- Raymond, C.M. and Brown, G. (2011). Assessing conservation opportunity on private land: Socio-economic, behavioral, and spatial dimensions. *Journal of Environmental Management* **92**:2513–2523.
- Reddy, S.M.W. *et al.* (2017). Advancing conservation by understanding and influencing human behavior. *Conservation Letters* **10**:248–256.
- Redford, K.H. (2011). Misreading the conservation landscape. *Oryx* **45**:324–330.
- Redford, K.H. and Adams, W.M. (2009). Payment for ecosystem services and the challenge of saving nature. *Conservation Biology* **23**:785–787.
- Redpath, S.M. *et al.* (2013). Understanding and managing conservation conflicts. *Trends in Ecology and Evolution* **28**:100–109.
- Regos, A. *et al.* (2016). Rural abandoned landscapes and bird assemblages: winners and losers in the rewilding of a marginal mountain area (NW Spain). *Regional Environmental Change* **16**:199–211.
- Reimer, A.P. and Prokopy, L.S. (2014). Farmer participation in U.S. Farm bill conservation programs. *Environmental Management* **53**:318–332.
- Reimer, A.P., Thompson, A.W. and Prokopy, L.S. (2012). The multi-dimensional nature of environmental attitudes among farmers in Indiana: Implications for conservation adoption. *Agriculture and Human Values* **29**:29–40.
- Reimer, A.P., Weinkauff, D.K. and Prokopy, L.S. (2012). The influence of perceptions of practice characteristics: An examination of agricultural best management practice adoption in two Indiana watersheds. *Journal of Rural Studies* **28**:118–128.
- Van Rensburg, T.M., Murphy, E. and Rocks, P. (2009). Commonage land and farmer uptake of the rural environment protection scheme in Ireland. *Land Use Policy* **26**:345–355.
- Rewilding Britain (2020a). @RewildingB [Online]. Available at: <https://twitter.com/RewildingB/status/1222161411716968449>. [Accessed 25 February 2020].
- Rewilding Britain (2020b). *Agriculture Bill Promises Welcome Reform* [Online]. Available at: https://www.rewildingbritain.org.uk/blog/agriculture-bill-promises-welcome-reform?gclid=CjwKCAjw9suYBhBIEiwA7iMhNNNoCQ3wqAEjuRTYOWxljMg_pMLHD82pZ4tS1TV1mNmCNhxmuYOMOroChLsQAvD_BwE [Accessed: 5 February 2020].
- Rewilding Britain (2020c). *Defining Rewilding* [Online]. Available at: <https://www.rewildingbritain.org.uk/explore-rewilding/what-is-rewilding/defining-rewilding> [Accessed: 15 January 2020].
- Rewilding Britain (2020d). *Learning to Live with Lynx* [Online]. Available at: <https://www.rewildingbritain.org.uk/blog/learning-to-live-with-lynx> [Accessed: 5 February 2020].
- Rewilding Britain (2020e). *New Network to Spearhead Rapid Rewilding in Britain* [Online]. Available at: https://www.rewildingbritain.org.uk/news-and-views/press-releases-and-media-statements/new-network-to-spearhead-rapid-rewilding-across-britain?gclid=CjwKCAiA8OmdBhAgEiwAShr402rVBQYkvH_Y0Ss-JHITM5sHwsxwpxiqj2yC9DanLXqKHdfwYmkrKxoCE44QAvD_BwE [Accessed: 9 September 2022].
- Rewilding Britain (2020f). *Public Consultation on UK Government's Environmental Land Management Scheme* [Online]. Available at: <https://www.rewildingbritain.org.uk/blog/public-consultation-on->

- uk-governments-environmental-land-management-scheme [Accessed: 9 September 2022].
- Rewilding Britain (2020g). *Recovery through Reintroductions* [Online]. Available at: <https://www.rewildingbritain.org.uk/explore-rewilding/reintroductions-key-species/reintroductions-and-bringing-back-species> [Accessed: 16 February 2020].
- Rewilding Britain (2020h). *Rewilding and Climate Breakdown: How Restoring Nature Can Help Decarbonise the UK* [Online]. Available at: <https://www.rewildingbritain.org.uk/news-and-views/research-and-reports/rewilding-and-climate-breakdown> [Accessed: 5 February 2020].
- Rewilding Britain (2022a). *The Rewilding Network* [Online]. Available at: <https://www.rewildingbritain.org.uk/rewilding-network> [Accessed: 8 August 2022].
- Rewilding Britain (2022b). *The World We Want to See* [Online]. Available at: <https://www.rewildingbritain.org.uk/about-us/the-world-we-want-to-see#:~:text=We want to see opportunities,the benefit of future generations.> [Accessed: 8 August 2022].
- Rewilding Europe (2022). *Making Europe a Wilder Place* [Online]. Available at: <https://rewildingeurope.com/> [Accessed: 8 August 2022].
- Reyes-Arriagada, R. *et al.* (2013). Population trends of a mixed-species colony of humboldt and magellanic penguins in southern Chile after establishing a protected area. *Avian Conservation and Ecology* **8**:1–13.
- Rilla, E. (2002). Landowners, while pleased with agricultural easements, suggest improvements. *California Agriculture* **56**:21–25.
- Ripple, W.J. *et al.* (2014). Status and ecological effects of the world's largest carnivores. *Science* **343**:1241484.
- Ripple, W.J. and Beschta, R.L. (2012). Trophic cascades in Yellowstone: The first 15 years after wolf reintroduction. *Biological Conservation* **145**:205–213.
- Risgaard, M.L., Frederiksen, P. and Kaltoft, P. (2007). Socio-cultural processes behind the differential distribution of organic farming in Denmark: A case study. *Agriculture and Human Values* **24**:445–459.
- Rissman, A.R. *et al.* (2007). Conservation easements: Biodiversity protection and private use. *Conservation Biology* **21**:709–718.
- Rissman, A.R. (2013). Rethinking property rights: Comparative analysis of conservation easements for wildlife conservation. *Environmental Conservation* **40**:222–230.
- Ritchie, H. and Roser, M. (2019). *Land use* [Online]. Available at: <https://ourworldindata.org/global-land-for-agriculture> [Accessed: 8 August 2022].
- Rivis, A. and Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology* **22**:218–233.
- Roberts, C.M. *et al.* (2001). Effects of marine reserves on adjacent fisheries. *Science* **294**:1920–1923.
- Robinson, J. (2019). @JRfromStrickley [Online]. Available at: <https://twitter.com/JRfromStrickley/status/1175354489261494272>. [Accessed 24 February 2020].
- Rocheouste, J.F. *et al.* (2015). An analysis of the socio-economic factors influencing the adoption of conservation agriculture as a climate change mitigation activity in Australian dryland grain production. *Agricultural Systems* **135**:20–30.

- Rodrigues, A.S.L. and Cazalis, V. (2020). The multifaceted challenge of evaluating protected area effectiveness. *Nature Communications* **11**:1–4.
- Rodríguez-Entrena, M., Arriaza, M. and Gómez-Limón, J.A. (2014). Determining economic and social factors in the adoption of cover crops under mower control in olive groves. *Agroecology and Sustainable Food Systems* **38**:69–91.
- Rodriguez, J.M. *et al.* (2009). Barriers to adoption of sustainable agriculture practices: Change agent perspectives. *Renewable Agriculture and Food Systems* **24**:60–71.
- Rodriguez, S.L. *et al.* (2012). Private landowner interest in market-based incentive programs for endangered species habitat conservation. *Wildlife Society Bulletin* **36**:469–476.
- Rodriguez, S.L. *et al.* (2018). What is private land stewardship? Lessons from agricultural opinion leaders in North Carolina. *Sustainability* **10**:297.
- Roellig, M. *et al.* (2016). Reviving wood-pastures for biodiversity and people: A case study from western Estonia. *Ambio* **45**:185–195.
- Roesch-Mcnally, G.E. *et al.* (2017). The trouble with cover crops: Farmers' experiences with overcoming barriers to adoption. *Renewable Agriculture and Food Systems* **33**:322–333.
- Rois-Díaz, M. *et al.* (2018). Farmers' reasoning behind the uptake of agroforestry practices: evidence from multiple case-studies across Europe. *Agroforestry Systems* **92**:811–828.
- Rolfe, J. and Gregg, D. (2015). Factors affecting adoption of improved management practices in the pastoral industry in Great Barrier Reef catchments. *Journal of Environmental Management* **157**:182–193.
- Rosenberg, S. and Margerum, R.D. (2008). Landowner motivations for watershed restoration: Lessons from five watersheds. *Journal of Environmental Planning and Management* **51**:477–496.
- Rouleau, M.D. *et al.* (2016). Failure to communicate: Inefficiencies in voluntary incentive programs for private forest owners in Michigan. *Forests* **7**:1–14.
- Rubenstein, D.R. *et al.* (2006). Pleistocene Park: Does re-wilding North America represent sound conservation for the 21st century? *Biological Conservation* **132**:232–238.
- Rubenstein, D.R. and Rubenstein, D.I. (2016). From Pleistocene to trophic rewilding: A wolf in sheep's clothing. *Proceedings of the National Academy of Sciences* **113**:E1–E1.
- Rubino, E.C. and Pienaar, E.F. (2018). Understanding South African private landowner decisions to manage rhinoceroses. *Human Dimensions of Wildlife* **23**:160–175.
- Ruseva, T.B., Evans, T.P. and Fischer, B.C. (2015). Can incentives make a difference? Assessing the effects of policy tools for encouraging tree-planting on private lands. *Journal of Environmental Management* **155**:162–170.
- Russi, D. *et al.* (2016). Result-based agri-environment measures: Market-based instruments, incentives or rewards? The case of Baden-Württemberg. *Land Use Policy* **54**:69–77.
- Ruto, E. and Garrod, G. (2009). Investigating farmers' preferences for the design of agri-environment schemes: A choice experiment approach. *Journal of Environmental Planning and Management* **52**:631–647.
- Ryan, R.L., Erickson, D.L. and De Young, R. (2003). Farmers' motivations for adopting conservation practices along riparian zones in a Mid-western agricultural watershed. *Journal of Environmental Planning and Management* **46**:19–37.

- Saha, S.K. *et al.* (2011). The socioeconomic context of carbon sequestration in agroforestry: a case study from homegardens of Kerala, India. *Carbon Sequestration Potential of Agroforestry Systems: Opportunities and Challenges*,:281–298.
- Salmons, J.E. (2016). *Doing qualitative research online*. 1st ed. SAGE.
- Sandbrook, C. *et al.* (2019). The global conservation movement is diverse but not divided. *Nature Sustainability* **2**:316–323.
- Sandom, C. (2019). @Nature_Based [Online]. Available at: https://twitter.com/Nature_Based/status/1196464480856760320 [Accessed: 5 February 2020].
- Sandom, C. *et al.* (2014). Global late Quaternary megafauna extinctions linked to humans, not climate change. *Proceedings of the Royal Society B: Biological Sciences* **281**:20133254.
- Sandom, C. (2016). Rewilding - implications for nature conservation. *ECOS* **37**:24–28.
- Sandom, C. and Bull, J. (2016). *Rewilding Knowledge Hub*. [Online]. Available at: https://www.rewildingbritain.org.uk/assets/uploads/files/knowledge-hub/Rewilding_Knowledge_Hub_Summary_v1.0LowRes.pdf. [Accessed 5 February 2020].
- Sandom, C.J. *et al.* (2019). Rewilding in the English uplands: Policy and practice. *Journal of Applied Ecology* **56**:266–273.
- Sandom, C.J. *et al.* (2020). Trophic rewilding presents regionally specific opportunities for mitigating climate change. *Philosophical Transactions of the Royal Society B* **375**:20190125.
- Sandom, C.J. and Wynne-Jones, S. (2019). Rewilding a country: Britain as a study case. In: Pettorelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 222–247.
- Satterfield, J.M. *et al.* (2009). Toward a transdisciplinary model of evidence-based practice. *Milbank Quarterly* **87**:368–390.
- Sattler, C. and Nagel, U.J. (2010). Factors affecting farmers' acceptance of conservation measures-A case study from north-eastern Germany. *Land Use Policy* **27**:70–77.
- Sauka, A. (2022). Selfhood in question: the ontogenealogies of bear encounters. *Open Philosophy* **5**:532–550.
- Saunders, C.D., Brook, A.T. and Eugene Myers, O. (2006). Using psychology to save biodiversity and human well-being. *Conservation Biology* **20**:702–705.
- Sawer, P. (2020). Reintroduction of beavers could protect land against floods and climate change. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/news/2020/01/01/reintroduction-beavers-could-protect-land-against-floods-climate/>. [Accessed 5 February 2020].
- Saxby, H., Gkartzios, M. and Scott, K. (2018). Farming on the edge: wellbeing and participation in agri-environmental schemes. *Sociologia Ruralis* **58**:392–411.
- Schenk, A., Hunziker, M. and Kienast, F. (2007). Factors influencing the acceptance of nature conservation measures - A qualitative study in Switzerland. *Journal of Environmental Management* **83**:66–79.
- Schirmer, J., Dovers, S. and Clayton, H. (2012). Informing conservation policy design through an examination of landholder preferences: A case study of scattered tree conservation in Australia. *Biological Conservation* **153**:51–63.
- Schlicht, D., Swengel, A. and Swengel, S. (2009). Meta-analysis of survey data to assess trends of prairie

- butterflies in Minnesota, USA during 1979-2005. *Journal of Insect Conservation* **13**:429–447.
- Schmidt-Soltan, K. and Brockington, D. (2007). Protected areas and resettlement: what scope for voluntary relocation? *World Development* **35**:2182–2202.
- Schofield, L. (2019). *Swindale valley restoration – rewilding in a managed landscape* [Online]. Available at: <https://www.citizenzoo.org/rewilding-2019-conference-powerpoints/> [Accessed: 5 February 2020].
- Schroeder, L. (2012). *Assessing farmers' acceptance and perception of agri-environment schemes by ex-post application of the 'Theory of Planned Behaviour' - a case study in England*. [Online]. Available at: <http://ageconsearch.umn.edu/bitstream/126115/2/Schroeder.pdf>. [Accessed 5 March 2020].
- Schroeder, L.A. *et al.* (2013). Agri-environment schemes: farmers' acceptance and perception of potential 'Payment by Results' in grassland - A case study in England. *Land Use Policy* **32**:134–144.
- Schroeder, L.A., Chaplin, S. and Isselstein, J. (2015). What influences farmers' acceptance of agri-environment schemes? An ex-post application of the 'Theory of Planned Behaviour'. *Applied Agricultural Forestry Research* **1**:15–28.
- Schulte to Bühne, H. *et al.* (2022). Monitoring rewilding from space: The Knepp estate as a case study. *Journal of Environmental Management* **312**:114867.
- Schulte to Bühne, H., Pettorelli, N. and Hoffmann, M. (2022). The policy consequences of defining rewilding. *Ambio* **51**:93–102.
- Schultz, P.W. (2011). Conservation means behavior. *Conservation Biology* **25**:1080–1083.
- Schultz, P.W. (2014). Strategies for promoting proenvironmental behavior. *European Psychologist*.
- Schuman, H. (1966). The random probe: a technique for evaluating the validity of closed questions. *American Sociological Association* **31**:218–222.
- Schuman, H. and Presser, S. (1979). The open and closed question. *American Sociological Review* **44**:692–712.
- Schwarz, N. (1999). How the questions shape the answers. *American Psychologist* **54**:93–105.
- Sciberras, M. *et al.* (2013). Evaluating the biological effectiveness of fully and partially protected marine areas. *Environmental Evidence* **2**:1–31.
- Scown, M.W., Brady, M. V. and Nicholas, K.A. (2020). Billions in misspent EU agricultural subsidies could support the sustainable development goals. *One Earth* **3**:237–250.
- Seabrook, L., McAlpine, C. and Fensham, R. (2008). What influences farmers to keep trees?. A case study from the Brigalow Belt, Queensland, Australia. *Landscape and Urban Planning* **84**:266–281.
- Seddon, P.J. *et al.* (2014). Reversing defaunation: Restoring species in a changing world. *Science* **345**:406–412.
- Selinske, M.J. *et al.* (2017). Locating financial incentives among diverse motivations for long-term private land conservation. *Ecology and Society* **22**.
- Selinske, M.J. *et al.* (2019). Monitoring and evaluating the social and psychological dimensions that contribute to privately protected area program effectiveness. *Biological Conservation* **229**:170–178.
- Selinske, M.J. *et al.* (2018). Revisiting the promise of conservation psychology. *Conservation Biology* **32**:1464–1468.

- Selinske, M.J. *et al.* (2022). "Splitting the bill" for conservation: Perceptions and uptake of financial incentives by landholders managing privately protected areas. *Conservation Science and Practice* **4**:1–14.
- Selinske, M.J. *et al.* (2015). Understanding the motivations, satisfaction, and retention of landowners in private land conservation programs. *Conservation Letters* **8**:282–289.
- Semyonov-Tal, K. and Lewin-Epstein, N. (2021). The importance of combining open-ended and closed-ended questions when conducting patient satisfaction surveys in hospitals. *Health Policy OPEN* **2**:100033.
- Sen, A.K. (1977). Rational fools: a critique of the behavioral foundations of economic theory amartya. *Philosophy and Public Affairs* **6**:317–344.
- Sereke, F. *et al.* (2016). Swiss farmers don't adopt agroforestry because they fear for their reputation. *Agroforestry Systems* **90**:385–394.
- Sergio, F. *et al.* (2005). Preservation of wide-ranging top predators by site-protection: Black and red kites in Doñana National Park. *Biological Conservation* **125**:11–21.
- Sharifi, O. *et al.* (2010). Barriers to conversion to organic farming: A case study in Babol County in Iran. *African Journal of Agricultural Research* **5**:2260–2267.
- Sheeder, R. and Lynne, G.D. (2011). Empathy conditioned conservation: "Walking in the shoes of others" as a conservation farmer. *Land Economics* **87**:433–452.
- Sheeran, P. (2002). Intention—behavior relations: a conceptual and empirical review. *European Review of Social Psychology* **12**:1–36.
- Sheeran, P., Gollwitzer, P.M. and Bargh, J.A. (2013). Nonconscious processes and health. *Health Psychology* **32**:460–473.
- Sheeran, P., Trafimow, D. and Armitage, C.J. (2003). Predicting behaviour from perceived behavioural control: Tests of the accuracy assumption of the theory of planned behaviour. *British Journal of Social Psychology* **42**:393–410.
- Shrestha, N. *et al.* (2021). Vulnerabilities of protected lands in the face of climate and human footprint changes. *Nature Communications* **12**:1–9.
- Shukman, H. (2020). Busy beavers win over landowners. *The Times* [Online]. Available at: <https://www.thetimes.co.uk/article/busy-beavers-win-over-landowners-jv05qmnjj>. [Accessed: 16 February 2020].
- Shute, J. (2022). Brown bears vs farmers: the dark side of rewilding. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/news/2022/07/17/brown-bears-vs-farmers-dark-side-rewilding/>. [Accessed: 8 August 2022].
- Siebert, R. *et al.* (2010). Assessing German farmers' attitudes regarding nature conservation set-aside in regions dominated by arable farming. *Journal for Nature Conservation* **18**:327–337.
- Siebert, R., Toogood, M. and Knierim, A. (2006). Factors affecting European farmers' participation in biodiversity policies. *Sociologia Ruralis* **46**:318–340.
- Silva, J.A. and Mosimane, A. (2014). How could I live here and not be a member?": Economic versus social drivers of participation in Namibian conservation programs. *Human Ecology* **42**:183–197.
- Simmons, B.A. *et al.* (2020). Program awareness, social capital, and perceptions of trees influence participation in private land conservation programs in Queensland, Australia. *Environmental*

- Sims-Castley, R. *et al.* (2005). Socio-economic significance of ecotourism-based private game reserves in South Africa's Eastern Cape Province. *Parks* **15**:6–18.
- Singer, E. and Couper, M.P. (2017). Some methodological uses of responses to open questions and other verbatim comments in quantitative surveys. *Methods, Data, Analyses* **11**:115–133.
- Smaje, C. (2015). *Re-Wilding: joined-up thinking needed* [Online]. Available at: <https://smallfarmfuture.org.uk/?p=885>. [Accessed: 5 February 2020].
- Smit, C. *et al.* (2015). Rewilding with large herbivores: The importance of grazing refuges for sapling establishment and wood-pasture formation. *Biological Conservation* **182**:134–142.
- Smith, D. *et al.* (2016). *Reintroduction of the Eurasian lynx to the United Kingdom: results of a public survey*. [Online]. Available at: <https://insight.cumbria.ac.uk/id/eprint/3188/1/lynxinterimsurvey.pdf>. [Accessed 15 February 2020].
- Smithers, J. and Furman, M. (2003). Environmental farm planning in Ontario: Exploring participation and the endurance of change. *Land Use Policy* **20**:343–356.
- Sniehotta, F.F., Presseau, J. and Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review* **8**:1–7.
- Soltani, L., Frija, A. and Matoussi, M.S. (2018). Factors affecting willingness to accept compensation for crops conversion programs: A farm level study in Tunisia. *Economics Bulletin* **38**:383–392.
- Song, X.P. *et al.* (2018). Global land change from 1982 to 2016. *Nature* **560**:639–643.
- Sorice, M.G. *et al.* (2013). Increasing participation in incentive programs for biodiversity conservation. *Ecological Applications* **23**:1146–1155.
- Sorice, M.G. (2012). Retooling the traditional approach to studying the belief-attitude relationship: explaining landowner buy-in to incentive programs. *Society and Natural Resources* **25**:499–512.
- Sorice, M.G. *et al.* (2018). Scaling participation in payments for ecosystem services programs. *PLoS ONE* **13**:1–16.
- Soulé, M. and Noss, R. (1998). Rewilding and biodiversity: Complementary goals for nature conservation. *Wild Earth* **8**:19–28.
- Spencer, B. (2022). Rewilding is bogging us down. Let's call it 'nature recovery'. *The Times* [Online]. Available at: <https://www.thetimes.co.uk/article/rewilding-is-bogging-us-down-lets-call-it-nature-recovery-0cx666bsv>. [Accessed: 15 February 2020].
- Spiteri, A. and Nepal, S.K. (2006). Incentive-based conservation programs in developing countries: A review of some key issues and suggestions for improvements. *Environmental Management* **37**:1–14.
- Springate-Baginski, O. *et al.* (2009). Redressing 'historical injustice' through the Indian Forest Rights Act 2006. *Institutions for Pro-Poor Growth (IPPG) Discussion Papers* **27**:30p.
- Špur, N., Šorgo, A. and Škornik, S. (2018). Predictive model for meadow owners' participation in agri-environmental climate schemes in Natura 2000 areas. *Land Use Policy* **73**:115–124.
- Stanley, J. (2020). @JoeWStanley [Online]. Available at: <https://twitter.com/JoeWStanley>. [Accessed 15 February 2020].
- Stobbelaar, D.J. *et al.* (2009). Internalization of agri-environmental policies and the role of institutions. *Journal of Environmental Management* **90**:S175–S184.

- Stokstad, E. (2010). Despite progress, biodiversity declines. *Science* 1272–1273.
- Stolton, S. *et al.* (2014). *The futures of privately protected areas*. Gland, Switzerland.
- Stroman, D. and Kreuter, U.P. (2016). Landowner satisfaction with the wetland reserve program in Texas: A mixed-methods analysis. *Environmental Management* 57:97–108.
- Stuart, D., Schewe, R.L. and McDermott, M. (2014). Reducing nitrogen fertilizer application as a climate change mitigation strategy: Understanding farmer decision-making and potential barriers to change in the US. *Land Use Policy* 36:210–218.
- Summit to Sea (2020). *A New Chapter for Summit to Sea* [Online]. Available at: <https://www.summit2sea.wales/a-new-chapter-for-summit-to-sea/> [Accessed: 5 February 2020].
- Sumner, D., Christie, M.E. and Boulakia, S. (2017). Conservation agriculture and gendered livelihoods in Northwestern Cambodia: decision-making, space and access. *Agriculture and Human Values* 34:347–362.
- Suter, J.F., Poe, G.L. and Bills, N.L. (2008). Do landowners respond to land retirement incentives? Evidence from the Conservation Reserve Enhancement Program. *Land Economics* 84:17–30.
- Svenning, J.C. *et al.* (2016a). Reply to Rubenstein and Rubenstein: Time to move on from ideological debates on rewilding. *Proceedings of the National Academy of Sciences of the United States of America* 113:E2–E3.
- Svenning, J.C. (2020). Rewilding should be central to global restoration efforts. *One Earth* 3:657–660.
- Svenning, J.C. *et al.* (2016b). Science for a wilder Anthropocene: Synthesis and future directions for trophic rewilding research. *Proceedings of the National Academy of Sciences* 113:898–906.
- Tambo, J.A. and Mockshell, J. (2018). Differential impacts of conservation agriculture technology options on household income in Sub-Saharan Africa. *Ecological Economics* 151:95–105.
- Tasker, J. (2019). Minette Batters: Fighting for a fair deal for farmers. *Farmers Weekly* [Online]. Available at: <https://www.fwi.co.uk/news/farm-policy/minette-batters-fighting-for-a-fair-deal-for-farmers>. [Accessed 5 February 2020].
- Taylor, B.M. and Van Grieken, M. (2015). Local institutions and farmer participation in agri-environmental schemes. *Journal of Rural Studies* 37:10–19.
- Taylor, M.F.J. *et al.* (2011). What works for threatened species recovery? An empirical evaluation for Australia. *Biodiversity and Conservation* 20:767–777.
- Terborgh, J. (1988). The big things that run the world - a sequel to EO Wilson. *Conservation Biology* 2:402–403.
- Terborgh, J., Estes, J.A. and eds. (2013). *Trophic cascades: predators, prey, and the changing dynamics of nature*. Washington, DC: Island Press.
- Thakur, M.P. *et al.* (2020). Climate extremes, rewilding, and the role of microhabitats. *One Earth* 2:506–509.
- The Telegraph (2019). Jurassic Park, without the happy ending? Telegraph readers' views on reintroducing bears to the UK. *The Telegraph* [Online]. Available at: <https://www.telegraph.co.uk/travel/travel-views-of-the-week/bears-uk-rewilding-reader-views/>. [Accessed: 15 February 2020].
- The Wildlife Trusts (2019). *Pine martens reintroduced to England* [Online]. Available at:

- <https://www.wildlifetrusts.org/news/pine-martens-reintroduced-england#:~:text=Pine martens have been reintroduced,population of fewer than 20.> [Accessed: 5 February 2020].
- Thomas, V. (2021). Domesticating rewilding: interpreting rewilding in England's green and pleasant land. *Environmental Values*.
- Tian, N. *et al.* (2015). Understanding the factors influencing nonindustrial private forest landowner interest in supplying ecosystem services in Cumberland Plateau, Tennessee. *Forests* **6**:3985–4000.
- Tidman, Z. (2022). Farmers and landowners to be paid to 'rewild' countryside. *The Independent* [Online]. Available at: <https://www.independent.co.uk/climate-change/news/habitat-restoration-farmers-government-plans-b1987333.html>. [Accessed 23 February 2020].
- Tilman, D. *et al.* (2017). Future threats to biodiversity and pathways to their prevention. *Nature* **546**:73–81.
- Tittensor, D.P. *et al.* (2014). A mid-term analysis of progress toward international biodiversity targets. *Science* **346**:241–244.
- du Toit, J.T. (2019). Pleistocene rewilding: an enlightening thought experiment. In: Pettorelli, N., Durant, S. M. and du Toit, J. T. eds. *Rewilding*. Cambridge University Press, pp. 55–72.
- Toma, L. and Mathijs, E. (2005). *Determinants of Romanian farmers' participation in agri-environmental programmes*.
- Toma, L. and Mathijs, E. (2007). Environmental risk perception, environmental concern and propensity to participate in organic farming programmes. *Journal of Environmental Management* **83**:145–157.
- Toorminaee, V. *et al.* (2017). Double cropping in paddy fields of northern Iran: Current trends and determinants of adoption. *Land Use Policy* **62**:59–67.
- Torabi, N. *et al.* (2016). The money or the trees: What drives landholders' participation in biodiverse carbon plantings? *Global Ecology and Conservation* **7**:1–11.
- Traore, N., Landry, R. and Amara, N. (1998). On-farm adoption of conservation practices: the role of farm and farmer characteristics, perceptions, and health hazards. *Land Economics* **74**:114–127.
- Tree, I. (2020). *Bringing beavers back to Sussex* [Online]. Available at: <https://knepp.co.uk/new-blog/2020/2/3/bringing-beavers-back-to-sussex> [Accessed: 5 February 2020].
- Tree, I. (2019). *Rewilding a Sussex farm* [Online]. Available at: <https://www.citizenzoo.org/rewilding-2019-conference-powerpoints/> [Accessed: 5 February 2020].
- Tree, I. (2018). *Wilding: The return of nature to a British farm*. Pan Macmillan.
- Triste, L. *et al.* (2018). Exploring participation in a sustainable farming initiative with self-determination theory. *International Journal of Agricultural Sustainability* **16**:106–123.
- Tulloch, A.I.T. *et al.* (2016). Understanding the importance of small patches of habitat for conservation. *Journal of Applied Ecology* **53**:418–429.
- Tversky, A. and Kahneman, D. (1989). *Rational Choice and the Framing of Decisions*. In *Multiple Criteria Decision Making and Risk Analysis Using Microcomputers*. Berlin, Heidelberg: Springer.
- UK Government (2019). Restoring nature and climate change. *House of Commons, Hansard* [Online] **667**. Available at: <https://hansard.parliament.uk/commons/2019-10-28/debates/B12362DC-0F6A-481B-A1E6-973776F0F9F9/RestoringNatureAndClimateChange>. [Accessed 26 February 2020].
- UK Government (2022). *Rights of way and accessing land* [Online]. Available at:

- <https://www.gov.uk/right-of-way-open-access-land/use-your-right-to-roam> [Accessed: 5 August 2022].
- UK Parliament (2017). Agriculture, fisheries and the rural environment. [Online]. Available at: <https://hansard.parliament.uk/lords/2017-11-02/debates/C331E748-35AA-4E2A-95A9-67E78A4C72DB/AgricultureFisheriesAndTheRuralEnvironment>.
- Uliczka, H. *et al.* (2004). Non-industrial private forest owners' knowledge of and attitudes towards nature conservation. *Scandinavian Journal of Forest Research* **19**:274–288.
- Ulrich-Schad, J.D. *et al.* (2016). Out-of-state, out of mind? Non-operating farmland owners and conservation decision making. *Land Use Policy* **54**:602–613.
- Unay-Gailhard, İ. and Bojnec, Š. (2016). Sustainable participation behaviour in agri-environmental measures. *Journal of Cleaner Production* **138**:47–58.
- Underwood, V.J. *et al.* (2011). Contributions of private landowners to the conservation of the gopher tortoise (*Gopherus polyphemus*). *Environmental Management* **49**:846–854.
- UNEP-WCMC & IUCN (2022a). *Discover the world's protected areas* [Online]. Available at: <https://www.protectedplanet.net/en> [Accessed: 21 October 2022].
- UNEP-WCMC & IUCN (2021). *Protected planet report 2020*. Cambridge, UK; Gland, Switzerland.
- UNEP-WCMC & IUCN (2022b). *World database on protected areas (WDPA)* [Online]. Available at: <https://www.protectedplanet.net/en/thematic-areas/wdpa?tab=WDPA> [Accessed: 6 June 2022].
- United Nations (UN) (2019). *Resolution 73/284: United Nations decade on ecosystem restoration (2021–2030)*. [Online]. Available at: <https://undocs.org/A/RES/73/284>. [Accessed 5 February 2022].
- United Nations (UN) (2015). *The 17 goals - sustainable development goals (SDGs)* [Online]. Available at: <https://sdgs.un.org/goals#goals> [Accessed: 5 February 2022].
- United Nations Conference on Environment and Development (UNCED) (1992). *Rio Declaration on Environment and Development*. [Online]. Rio De Janeiro. Available at: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf. [Accessed 12 April 2022].
- Vanslebrouck, I. (2005). Farmers' participation in several agri-environmental schemes: a European perspective. *Journal of Chemical Information and Modeling*:155–168.
- Vanslebrouck, I. and Huylenbroeck, G. Van (2005). Belgian farmers' willingness to participate in agri-environmental measures. *Landscape Amenities: Economic Assessment of Agricultural Landscapes*:137–154.
- Vanslebrouck, I., Van Huylenbroeck, G. and Verbeke, W. (2002). Determinants of the willingness of Belgian farmers to participate in agri-environmental measures. *Journal of Agricultural Economics* **53**:489–511.
- Vaus, D. De (2013). *Surveys In social research*. [Online]. 6th editio. Routledge. Available at: <https://doi.org/10.4324/9780203519196>. [Accessed 14 December 2020].
- Veisi, H. *et al.* (2009). Analyzing the causes of non-adoption of IPM technologies among rice farmers in Mazandaran and Guilan Provinces. *Environmental Sciences* **7**.
- Veisi, H. (2012). Exploring the determinants of adoption behaviour of clean technologies in agriculture: A case of integrated pest management. *Asian Journal of Technology Innovation* **20**:67–82.

- Veisi, H., Carolan, M.S. and Alipour, A. (2017). Exploring the motivations and problems of farmers for conversion to organic farming in Iran. *International Journal of Agricultural Sustainability* **15**:303–320.
- Venter, O. *et al.* (2018). Bias in protected-area location and its effects on long-term aspirations of biodiversity conventions. *Conservation Biology* **32**:127–134.
- Venter, O. *et al.* (2014). Targeting global protected area expansion for imperiled biodiversity. *PLoS Biology* **12**:e1001891.
- Vera, F.W.M. (2009). Large-scale nature development – the Oostvaardersplassen. *British Wildlife* **20**:28–36.
- Vesely, S. and Klöckner, C.A. (2020). Social desirability in environmental psychology research: three meta-analyses. *Frontiers in Psychology* **11**:1–9.
- Vitale, J.D. *et al.* (2011). The adoption of conservation tillage practices in Oklahoma: Findings from a producer survey. *Journal of Soil and Water Conservation* **66**:250–264.
- Vollmer-Sanders, C., Wolf, C. and Batie, S.S. (2011). Financial and environmental consequences of a voluntary farm environmental assurance program in Michigan. *Journal of Soil and Water Conservation* **66**:122–131.
- Wade, M. (2018). Meet the Knepp group: the billionaires dedicated to ‘rewilding’ the environment. *The Times* [Online]. Available at: <https://www.thetimes.co.uk/article/meet-the-knepp-group-the-billionaires-dedicated-to-rewilding-the-environment-dgqrmxl9w>. [Accessed: 14 February 2020].
- Walston, J. *et al.* (2010). Bringing the tiger back from the brink-the six percent solution. *PLoS Biology* **8**:6–9.
- Wandel, J. and Smithers, J. (2000). Factors affecting the adoption of conservation tillage on clay soils in southwestern Ontario, Canada. *American Journal of Alternative Agriculture* **15**:181.
- Wang, N. *et al.* (2016). Adoption of eco-friendly soil-management practices by smallholder farmers in Shandong Province of China. *Soil Science and Plant Nutrition* **62**:185–193.
- Ward, M. *et al.* (2020). Just ten percent of the global terrestrial protected area network is structurally connected via intact land. *Nature Communications* **11**:1–10.
- Warren, C.R. *et al.* (2016). Limited adoption of short rotation coppice: The role of farmers’ socio-cultural identity in influencing practice. *Journal of Rural Studies* **45**:175–183.
- Wąs, A. *et al.* (2021). In search of factors determining the participation of farmers in agri-environmental schemes – Does only money matter in Poland? *Land Use Policy* **101**.
- Watson, J.E.M. *et al.* (2016). Catastrophic declines in wilderness areas undermine global environment targets. *Current Biology* **26**:2929–2934.
- Watson, J.E.M. *et al.* (2018). The exceptional value of intact forest ecosystems. *Nature Ecology & Evolution* **2**:599–610.
- Watson, J.E.M. *et al.* (2014). The performance and potential of protected areas. *Nature*. **515**:67–73.
- Watts, S. (2014). User skills for qualitative analysis: perspective, interpretation and the delivery of impact. *Qualitative Research in Psychology* **11**:1–14.
- Watts, S. and Stenner, P. (2012). *Doing Q methodological research: theory, method & interpretation*.
- Watts, S. and Stenner, P. (2005). *Doing Q methodology: theory, method and interpretation. Qualitative Research in Psychology*.

- Wauchope, H.S. *et al.* (2022). Protected areas have a mixed impact on waterbirds, but management helps. *Nature* **605**:103–107.
- Wauters, E. *et al.* (2010). Adoption of soil conservation practices in Belgium: An examination of the theory of planned behaviour in the agri-environmental domain. *Land Use Policy* **27**:86–94.
- Weatherall, A. *et al.* (2019). *Rewilding: continuing the debate* [Online]. Available at: <https://theecologist.org/2019/aug/27/rewilding-continuing-debate> [Accessed: 8 August 2022].
- Webler, T., Danielson, S. and Tuler, S. (2009). Using Q method to reveal social perspectives in environmental research. *Social and Environmental Research* [Online] **54**:1–45.
- Webster, B. (2019). The sea eagles have landed... to fury of Isle of Wight farmers. *The Times* [Online]. Available at: <https://www.thetimes.co.uk/article/the-sea-eagles-have-landed-to-fury-of-isle-of-wight-farmers-jtprf2c3w>. [Accessed: 15 February 2020].
- Webster, S.C. *et al.* (2016). Where the wild things are: Influence of radiation on the distribution of four mammalian species within the Chernobyl Exclusion Zone. *Frontiers in Ecology and the Environment* **14**:185–190.
- Weigel, C. *et al.* (2021). Using a randomized controlled trial to develop conservation strategies on rented farmlands. *Conservation Letters* **14**:e12803.
- Welsh, R., Webb, M.E. and Langen, T.A. (2018). Factors affecting landowner enrollment in wetland restoration in northeastern New York State. *Land Use Policy* **76**:679–685.
- van Wenum, J. and Wossink, A. (2001). *Wildlife conservation by farmers: analysis of actual and contingent participation*. AAEA Annual Meeting: Wildlife conservation by farmers: analysis of actual and contingent participation, Chicago 2001.
- West, P., Igoe, J. and Brockington, D. (2006). Parks and peoples: The social impact of protected areas. *Annual Review of Anthropology* **35**:251–277.
- Wezel, A. *et al.* (2018). Farmers' perceptions, preferences, and propositions for result-oriented measures in mountain farming. *Land Use Policy* **70**:117–127.
- Wheeler, R. *et al.* (2018). "The good guys are doing it anyway": The accommodation of environmental concern among English and Welsh farmers. *Environment and Planning E: Nature and Space* **1**:664–687.
- Whitby, C. (2018). *The barriers to, and opportunities for, restoring wetland ecological function on privately-owned New Zealand farms*. University of Otago.
- Wi, A. and Chang, C.H. (2019). Promoting pro-environmental behaviour in a community in Singapore—from raising awareness to behavioural change. *Environmental Education Research* **25**:1019–1037.
- Wildlands Network (2022). *Protecting local ecosystems* [Online]. Available at: <https://wildlandsnetwork.org/protecting-local-ecosystems> [Accessed: 8 August 2022].
- Willcocks, A. (2016). *Factors affecting participation in group agri-environment schemes: a case study of the Dartmoor commons*. University of Plymouth.
- Williams, B.A. *et al.* (2020). Change in terrestrial human footprint drives continued loss of intact ecosystems. *One Earth* **3**:371–382.
- Willock, J. *et al.* (1999). The role of attitudes and objectives in farmer decision making: business and environmentally-oriented behaviour in Scotland. *Journal of Agricultural Economics* **50**:286–303.

- Wilson, E.O. and MacArthur, R.H. (1967). *The theory of island biogeography*. Princeton, NJ: Princeton University Press.
- Wilson, G.A. (1997). Factors influencing farmer participation in the environmentally sensitive areas scheme. *Journal of Environmental Management* **50**:67–93.
- Wilson, G.A. (1996). Farmer environmental attitudes and ESA participation. *Geoforum* **27**:115–131.
- Wilson, G.A. and Hart, K. (2001). Farmer participation in agri-environmental schemes: towards conservation-oriented thinking? *Sociologia Ruralis* **41**:195–212.
- Wilson, G.A. and Hart, K. (2000). Financial imperative or conservation concern? EU farmers' motivations for participation in voluntary agri-environmental schemes. *Environment and Planning* **32**:2161–2185.
- Wollstein, K.L. and Davis, E.J. (2017). A 'hammer held over their heads': Voluntary conservation spurred by the prospect of regulatory enforcement in Oregon. *Human-Wildlife Interactions* **11**:258–273.
- Womack, K. (2008). *Factors affecting landowner participation in the candidate conservation agreements with assurances program*. Utah State University.
- Woodley, S. *et al.* (2019). A review of evidence for area-based conservation targets for the post-2020 global biodiversity framework. *Parks* **25**:31–46.
- World Wildlife Fund (WWF) (2020). *Living planet report 2020 - bending the curve of biodiversity loss*. Available at: <https://livingplanet.panda.org/en-GB/>. [Accessed 24 August 2022].
- Wossink, G.A.A. (2003). Biodiversity conservation by farmers: analysis of actual and contingent participation. *European Review of Agriculture Economics* **30**:461–485.
- Wynn, G., Crabtree, B. and Potts, J. (2001). Modelling farmer entry into the environmentally sensitive area schemes in Scotland. *Journal of Agricultural Economics* **52**:65–82.
- Wynne-Jones, S. (2013). Ecosystem service delivery in Wales: evaluating farmers' engagement and willingness to participate. *Journal of Environmental Policy and Planning* **15**:493–511.
- Wynne-Jones, S. *et al.* (2020). Rewilding – departures in conservation policy and practice? An evaluation of developments in Britain. *Conservation and Society* **18**:89–102.
- Wynne-Jones, S., Strouts, G. and Holmes, G. (2018). Abandoning or reimagining a cultural heartland? Understanding and responding to rewilding conflicts in Wales – The case of the Cambrian Wildwood. *Environmental Values* **27**:377–403.
- Wynne-Jones, S. (2022). Rewilding: An emotional nature. *Area* **00**:1–9.
- Xavier, B.L.-B. *et al.* (2015). What drives farmers' participation in EU agri-environmental schemes?: Results from a qualitative meta-analysis. *Environmental Science and Policy* **54**:1–9.
- Xie, L. *et al.* (2018). Conservation payments, off-farm labor, and ethnic minorities: Participation and impact of the Grain for Green program in China. *Sustainability* **10**:13–17.
- Yang, W. and Sharp, B. (2017). Spatial dependence and determinants of dairy farmers' adoption of best management practices for water protection in New Zealand. *Environmental Management* **59**:594–603.
- Yasué, M. *et al.* (2019). Landowner perceptions of payments for nature conservation on private land. *Environmental Management* **64**:287–302.

- Yasué, M. and Kirkpatrick, J.B. (2018). Do financial incentives motivate conservation on private land? *Oryx* **54**:499–510.
- Yeboah, F.K., Lupi, F. and Kaplowitz, M.D. (2015). Agricultural landowners' willingness to participate in a filter strip program for watershed protection. *Land Use Policy* **49**:75–85.
- Yorke, R. (2016). Rewilding in the UK - Hidden meanings, real emotions. *Ecos* **37**:53–59.
- YouGov (2019). YouGov rewilding survey results. *YouGov* [Online]. Available at: <https://yougov.co.uk/topics/politics/articles-reports/2020/01/28/third-brits-would-reintroduce-wolves-and-lynxes-uk>. [Accessed 5 February 2020].
- Yuan, Y. *et al.* (2017). Identification of non-economic influencing factors affecting farmer's participation in the paddy land-to-dry land program in Chicheng County, China. *Sustainability* **9**:366.
- Zabala, A. (2014). qmethod: a package to explore human perspectives using Q methodology. *The R Journal* **6**:163.
- Zabala, A. and Pascual, U. (2016). Bootstrapping Q methodology to improve the understanding of human perspectives. *PLoS ONE* **11**:1–19.
- Zabala, A., Sandbrook, C. and Mukherjee, N. (2018). When and how to use Q methodology to understand perspectives in conservation research. *Conservation Biology* **32**:1185–1194.
- Zahl-Thanem, A. *et al.* (2020). The impact of wolves on psychological distress among farmers in Norway. *Journal of Rural Studies* **78**:1–11.
- Zanella, M.A., Schleyer, C. and Speelman, S. (2014). Why do farmers join payments for ecosystem services (PES) schemes? An assessment of PES water scheme participation in Brazil. *Ecological Economics* **105**:166–176.
- Zhang, Q. *et al.* (2015). Farmers' attitudes towards the introduction of agri-environmental measures in agricultural infrastructure projects in China: Evidence from Beijing and Changsha. *Land Use Policy* **49**:92–103.
- Zhong, H. (2016). *Essays on farmer willingness to participate in best management practices in the Kentucky river watershed*. University of Kentucky.