THE FEASIBILITY OF REWILDING IN THE ENGLISH LOWLANDS: SCENARIO MAPPING FOR THE COUNTY OF DORSET

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Abstract

1. Rewilding has become an increasingly prominent topic among conservationists, both in the UK and elsewhere. In areas with dense human populations and a strong cultural attachment to anthropogenic landscapes, it should not be solely equated with large-scale wilderness regeneration if it is to be established as a viable conservation strategy. However, little is known about the exact options that exist for rewilding in productive agricultural lowland landscapes, and how feasible they are in practice.

2. This study addresses this knowledge gap by consulting local stakeholders about seven rewilding scenarios in the county of Dorset, south-west England. A survey approach was used to determine attitudes to rewilding in general and individual scenarios in particular. In addition, criteria for mapping were identified and spatial multi-criteria evaluation (SMCE) was performed to produce maps indicating each scenario's suitability and a combined 'rewilding map' for Dorset.

3. Survey results indicated high levels of support for rewilding in Dorset. Approval varied between scenarios. The reintroduction of pine martens (*Martes martes*) and beavers (*Castor fiber*) scored highest for popularity among stakeholders, ahead of river restoration, naturalistic grazing, farmland abandonment, and the reintroduction of wild boars (*Sus scrofa*). Passive management and wildcat (*Felis silvestris silvestris*) reintroduction were the only scenarios without majority approval. SMCE produced raster maps with a suitability score assigned to each cell. Habitat-focused scenarios scored higher than reintroductions, with mean values for pine marten and wild boar being particularly low in comparison.

4. These results reveal a slight discrepancy between popularity and suitability and highlight the strong appeal of flagship species. Other factors, such as practical limitations and political momentum, will need to be taken into account when deciding what is implemented, and where. Maps produced as part of this study can help practitioners locate potential priority areas in the very early stages of planning and will need to be refined further.

5. Rewilding should form part of nature conservation in Dorset and other lowland agricultural areas. Initially, it should focus on scenarios with comparatively low potential for conflict and demonstrable benefits, such as river restoration. Stakeholders will need to be involved in all stages of planning, implementation, and monitoring.

Keywords: Rewilding, ecological restoration, lowland, prioritisation, stakeholder, GIS

1. Introduction

There has been a steady decline in 60% of UK plant and animal species for the last 50 years, including a 77% decrease in overall numbers of conservation priority species, causing some ecologists to question the effectiveness of established conservation practices (State of Nature Partnership 2013; Lorimer 2015; Lorimer *et al.* 2015). Increasingly, there has been a shift away from the notion of conserving select species in time and place towards the promotion of naturally functioning and self-regulating ecosystems on a larger scale (Sylvén & Widstrand 2013; Corlett 2016). In recent years, the latter approach has been termed 'rewilding' and has been the subject of debate both within and outside traditional conservation circles (Lorimer *et al.* 2015). Proponents claim that rewilding can re-establish conservation as a positive, future-oriented discipline and improve the public image of environmentalists as constant bearers of bad news (Donlan *et al.* 2005; Allen *et al.* 2016), while critics have argued that trying to recreate lost ecosystems in the age of the Anthropocene is scientifically unsound and may have undesired consequences (Rubenstein *et al.* 2006; Oliveira-Santos & Fernandez 2010; Lorimer *et al.* 2015; Nogues-Bravo *et al.* 2016).

In its original meaning, rewilding is a concept closely connected to notions of unspoilt wilderness areas inhabited by charismatic megafauna (Jørgensen 2015; Corlett 2016), but the term has since been applied to a wide variety of practices (Lorimer *et al.* 2015). Although still largely synonymous with wilderness in North America, advocates in Europe have argued that it should be a more flexible and plastic term given the strong cultural attachment to man-made agricultural landscapes and the long-term absence of apex predators from many areas on the continent (Ceausu *et al.* 2015; Lorimer *et al.* 2015; Allen *et al.* 2016; Jepson 2016; Johns 2016). They see rewilding as an approach applicable to almost any landscape, including urban and productive farmland, and see scope for experimental sites interwoven into densely populated areas (Moorhouse & Sandom 2015; Sandom & Macdonald 2015; Jepson 2016). Rewilding Europe, an NGO promoting on-the-ground rewilding projects throughout continental Europe, defines rewilding as "moving up a scale of wildness within the constraints of what is possible", stressing that it can take place in all terrestrial and marine environments (Allen *et al.* 2016).

In Britain, the publication of George Monbiot's *Feral* (Monbiot 2013) and the recent launch of the NGO Rewilding Britain have given the issue mainstream attention, though not without controversy. With calls to reintroduce large predators and an antagonistic stance towards sheep farming, *Feral* has divided opinions and antagonised interest groups. This has meant that public debate in Britain has been heavily steered towards rewilding's more headline-grabbing aspects, ignoring the variety of potential applications outlined by Rewilding Europe's approach. Some authors have also argued that habitat management practices such as coppicing and grazing are particularly ingrained in British conservation culture and that there is little room for open-ended, nonlinear processes (Hughes, Colston & Mountford 2005; Lorimer 2015).

However, there is palpable momentum for change. Moorhouse & Sandom (2015) see an increasing awareness of the need to go beyond traditional, reactive conservation measures among UK conservationists. In terms of policy, there has been a marked shift towards the promotion of landscape-scale conservation in the UK, and the IUCN has begun promoting natural solutions to climate change, giving institutional support to rewilding as a new conservation frame for the environmental challenges of the 21st century (Dudley *et al.* 2010; Hodder *et al.* 2014). Hence, it could be argued that the time is ripe to implement natural-process based projects at selected sites across the UK, as some authors have (Jepson 2016; Moorhouse & Sandom 2015). Jepson (2016) stresses that, in order to maximise rewilding's potential impact on conservation practice in the UK and on the imagination of the public at large, it is vital that such projects are not restricted to remote, sparsely populated areas but are rather applied to all landscapes and scales wherever possible.

There is currently a lack of understanding of what this might mean in practice in productive English lowland landscapes. In addition, public discourse has been heavily focused on rewilding as the reintroduction of charismatic species such as wolves (*Canis lupus*), lynx (*Lynx lynx*) and Eurasian beavers (*Castor fiber*), and on farmers' opposition to such experiments. As a result, there is a presumed lack of awareness among relevant stakeholders that other, less controversial rewilding approaches also exist in agricultural lowland areas.

This study aims to address this issue by scoping rewilding options for the ceremonial county of Dorset in south-west England, including the south-east Dorset conurbation around the

towns of Poole, Bournemouth and Christchurch. As the UK's most rural region, the South West is rich in nationally and internationally important wildlife species, and about 40% of its land area has been given official protection status (Natural England 2009). However, changes in post-war agricultural policy and associated intensification of production systems have meant that the region has suffered a heavy decline in overall biodiversity (Natural England 2009). Hence, a strong case can be made for rewilding as a potential means to restore ecosystem services and biodiversity in the region (Sandom & Macdonald 2015).

This requires a threefold approach. First, it needs to be established what rewilding in Dorset's lowland landscape would mean in practice, i.e. which management interventions, or lack thereof, it would encompass. Second, priority areas for trialling rewilding approaches need to be established. According to Orsi, Geneletti & Newton (2011), the prioritisation of areas for ecological restoration has been insufficiently addressed, including the development of mappable criteria and indicators. Finally, it is crucial to include stakeholders' opinions in the decision-making process, as the democratisation of decision-making procedures is known to improve success rates and a top-down rewilding approach is likely to create significant conflict (Hobbs *et al.* 2004; Mansourian, Vallauri & Dudley 2005; Lorimer *et al.* 2015). The following is an attempt to address all three points by consulting local stakeholders, including NGOs and governmental agency representatives, about rewilding in Dorset and its potential manifestations. Specifically, it seeks to answer the following questions:

1. Are local stakeholders generally supportive of rewilding as a conservation strategy in Dorset?
2. What do local stakeholders see as rewilding's primary focus?
3. Which areas are thought to be most appropriate for rewilding?
4. Which, if any, types of rewilding scenarios are seen as most applicable to Dorset?
5. Where in Dorset could these scenarios be trialled?

Given that there is no universally accepted definition for rewilding, this study adapts the definition put forth by Rewilding Europe, viewing rewilding as a series of incremental steps towards a wilder state, constrained by local ecologies and socio-political environments.

2. Materials and Methods

2.1. Data collection and analysis

A one-day stakeholder workshop organised by Bournemouth University academic staff took place in Dorchester, Dorset in May 2016. Here, participants were asked to complete a survey that included questions on rewilding as a general concept as well as a number of specific rewilding scenarios and where these might be implemented (Appendix 1, Supplementary Material). A five point Likert scale was used to gauge the extent to which respondents agreed or disagreed with a particular statement. All responses were analysed in Microsoft Excel 2016. No assumptions were made about unanswered questions and they were not included in any analyses.

The questionnaire proposed five rewilding scenarios: Species reintroductions, farmland abandonment (taking economically marginal, arable land out of production and leaving it to revegetate naturally), naturalistic grazing (using large grazing herbivores without specified targets or herbivore density), river restoration (restoring rivers to their natural flow patterns and reconnecting them to their floodplains), and passive management (allowing natural succession to proceed at selected lowland heath or grassland sites). In addition to species introductions as a general idea, four species were proposed for introduction: Eurasian beaver (*Castor fiber*), European wildcat (*Felis silvestris silvestris*), wild boar (*Sus scrofa*), and pine marten (*Martes martes*).

Non-species specific scenarios were defined as applicable to selected habitat types to aid future mapping. All scenarios and species were chosen after a thorough review of peer-reviewed literature and other published material detailing case studies of rewilding across the UK and other parts of Europe (see Greenaway 2011; Hughes *et al.* 2011; Lorimer *et al.* 2015; Moorhouse & Sandom 2015; Sandom & Macdonald 2015; Allen *et al.* 2016). The reintroduction of large carnivores, seen by many as the poster child of the rewilding movement, was not included as this was not deemed feasible in light of Dorset's ecological and socio-political landscape.

To get a sense of potential barriers to implementing the proposed scenarios, participants were asked to consider a total of eight factors that could limit their feasibility, and to indicate which of the five scenarios these might apply to: presence of priority habitats on site (as listed

under Annex I of the 1992 EC Habitats Directive), presence of priority species on site (as listed under Annex II of the 1992 EC Habitats Directive or Annex I of the 2009 EC Birds Directive), type of land use, type of land ownership, size of area to be rewilded, human population density, impact on ecosystem services, and eligibility for agri-environment schemes. Species reintroductions was included a general concept without focusing on particular species. The total number of limiting factors indicated for each scenario were added to produce an aggregate 'constraint score', quantifying their perceived feasibility. In addition, mean scores were calculated for each scenario to gauge levels of consensus among respondents.

2.2. Selection of mapping criteria and spatial data

Based on questionnaire results, the following variables were included in mapping: land cover type, protected area (PA) status (using Sites of Special Scientific Interest (SSSI) as PA variable), and biodiversity value. This was based on questionnaire results which indicated that the majority of stakeholders thought rewilding was more appropriate in non-protected areas and in areas with low biodiversity value (see Results). Property value was added as an additional variable not directly derived from questionnaire results, as ecological restoration has been shown to be more cost-effective on degraded land, for which low property value can be seen as a proxy (Benayas *et al.* 2009; Birch *et al.* 2010).

LCM 2007 land cover polygon, OS Open Rivers polyline and UK boundary line vector data were downloaded from Edina Digimap (digimap.edina.ac.uk), and SSSI shapefiles were obtained from the UK government's public database (data.gov.uk) under the Open Government License. All shapefiles were then clipped to the county of Dorset using the ceremonial county boundary line data in ESRI ArcMap v10.2.2 (ArcGIS, ESRI, Redlands, CA, USA). Raster data on biodiversity and property values for Dorset were collected as part of the Higher Education Innovation Funding (HEIF)-sponsored project 'Mapping Natural Capital across Dorset' and made available for use by those involved (A Gosal 2016, personal communication, 12 July). Property data was provided as raster data at a 100m resolution and showed a five year (2010 – 2015) average for all property sales in Dorset, with prices ranging from 90,208 GBP to 3,271,000 GBP. Normalised biodiversity data came at a 25m resolution and showed the density of UK Biodiversity Action Plan (BAP) species as initially calculated by Newton *et al.*

(2012). The authors corrected species density values, i.e. the numbers of species per unit area, for variation in the area of different land cover types to make the values comparable.

2.3. Spatial analysis and mapping

Following Orsi, Geneletti & Newton's (2011) suggestion to use multi-criteria analyses in spatial prioritisation, spatial multi-criteria evaluation (SMCE), a tool available in ILWIS v3.08.05 (52° North Initiative for Geospatial Open Source Software GmbH, Münster, Germany), was used to map all but one of the scenarios mentioned in the survey according to a specific combination of the mapping criteria specified above. Wildcat reintroduction was seen as inappropriate for Dorset by a majority of stakeholders (see Results) and was not included in mapping. As ILWIS-based SMCE requires all files to be in ASCII format and contain the same cell sizes and numbers of rows and columns, all data needed editing in ArcMap prior to import into ILWIS.

All vector files were rasterised to a 25m resolution, using the biodiversity data set as a mask. SSSI vector data was converted using the 'Polygon to Raster' tool and the resulting layer reclassified with protected areas assigned a value of 0 and unprotected areas a value of 1. LCM 2007 vector data was rasterised twice, using Broad Habitat (BH) and Broad Habitat sub-class (BHSUB) as respective value fields, as some of the rewilding scenarios required the finer detail provided by the BHSUB classes. OS Open Rivers data was converted using the 'Polyline to Raster' tool. Both LCM 2007 raster files and the rasterised OS Open Rivers data set were then reclassified for the separate scenarios as shown in Table 1. Property data was exported as a new data set to change its resolution from 100m to 25m.

To map species introductions as accurately as possible, additional operations were performed for all three species. Beavers are reported to travel a maximum distance of 100m from water to feed on predominantly deciduous woody species (Lahti & Helminen 1974; Haarberg & Rosell 2006; Gurnell *et al.* 2009). Hence, areas of riverine woodland with deciduous woodland ≤100m away from the nearest river were deemed prime habitat for beaver introduction. To this end, a 100m buffer was applied to the OS Open Rivers data set for Dorset and LCM2007 polygons labelled 'Broadleaved, mixed and yew woodland' were exported into a new shapefile. The 'Intersect' tool was then used, resulting in a new vector file showing

appropriate areas of riverine woodland. As before, the data was rasterised and reclassified with all suitable areas being given a value of 1.

For pine martens, the literature indicates that patches of coniferous woodland ≥86 hectares (860,000 m²) in size are required (Balharry 1993; Caryl 2008). To calculate the area of coniferous woodlands in Dorset, LCM2007 polygons labelled 'Conifer' were exported and the 'Calculate geometry' function was used in the resulting shapefile's attribute table. With the largest patch only 158,736 m² in size, no area could be established as ideal habitat for pine marten introduction. However, Pereboom *et al.* (2008) report that monitored pine martens seemed not to be confined to large forests and were observed using small plots of woodland and hedgerows. Therefore, it was decided to include pine marten reintroduction in scenario mapping despite the relatively small sizes of coniferous woodlands in Dorset, assigning higher suitability to larger areas. For this, conifer polygons had to be converted to raster using patch size as value field.

In the case of wild boar, it is important to mention that there is already a population of roughly 50 wild living animals in Dorset (Sandom & Macdonald 2015). Hence, it is not technically correct to speak of a 'reintroduction', though the term is used here for the sake of consistency. Wild boars are mainly found in areas of deciduous woodland but are known to raid and damage crops, particularly during summer and autumn (Hahn & Eisfeld 1998; Wilson 2004). Studying wild boar activity in Germany, Hahn & Eisfeld (1998) observed that the distance from resting places to adjacent cropland affects crop damage, with animals resting ≥2km from the forest edge limiting their rooting activity to woodland, whereas animals resting <1km from the edge regularly raided fields. To include distance to fields as a factor in mapping, the 'Near' tool was used on the 'Broadleaved, mixed and yew woodland' vector file, calculating the distance to the nearest 'Arable and horticulture' polygons. Woodland polygons were then rasterised using the resulting column as value field.

Having concluded data preparation in ArcMap, all data sets were finally converted to ASCII and imported into ILWIS. SMCE was run for all seven scenarios using particular combinations and specifications of factors and constraints as shown in Table 2. The resulting files were multiplied by 100, giving each cell in the raster an integer value between 0 and 100. Each file was then exported for viewing and analysis in ArcMap, where the 'Con' tool was used to get

rid of all raster cells with a value of 0 as these did not meet the spatial constraint requirements specified in ILWIS. For each scenario, the raster attribute table was used to calculate mean raster cell values. A combined 'rewilding map' was produced by re-importing each raster file into ILWIS and running a final SMCE, weighting each scenario according to its popularity among stakeholders (see Table 3). As before, the resulting map was multiplied by 100 and added to ArcMap, and the 'Extract by Mask' tool was run to get rid of all raster cells outside the Dorset boundaries.

3. Results

3.1. Stakeholder survey

47 questionnaires were returned at varying completion rates. Respondents identified themselves as follows: 'Practitioner' (55%), 'Academic' (15%), 'Student' (9%), 'Landowner' (6%), 'Farmer' (2%), and 'Other' (28%).

A majority of respondents claimed to have a clear understanding of what rewilding means (Fig. 1, Appendix 2, Supplementary Material). Opinions on rewilding were largely positive, as 95.75% and 76.60% of respondents either agreed or strongly agreed that it could make a positive contribution towards conservation in the UK and in Dorset, respectively (Figs 2 & 3, Appendix 2). When asked about its primary focus, the notion of rewilding as a type of habitat management received strongest support, while the idea of rewilding as synonymous with either species reintroductions or a complete cessation of management was rejected by a majority (Figs 4 - 6, Appendix 2). A clear majority felt that rewilding should occur in areas with low biodiversity value, and most indicated that it would be more suitable outside protected areas (Figs 7 & 8, Appendix 2).

All but two rewilding scenarios were viewed favourably by a majority, with pine marten and beaver reintroductions proving particularly popular. In hierarchical order, respondents agreed or strongly agreed with each scenario as follows: Pine marten reintroduction (84.1%), beaver reintroduction (83.33%), river restoration (82%), naturalistic grazing (81.81%), farmland abandonment (77.42%), wild boar reintroduction (72.1%), passive management (42.42%) and wild cat reintroduction (37.21%) (Figs 9 – 16, Appendix 2).

The constraint scores, i.e. the total number of limiting factors marked for each scenario across all returned surveys, showed a different hierarchy. River restoration had the lowest score, followed by farmland abandonment, naturalistic grazing, passive management and, finally, species reintroductions, suggesting that the latter, while highly popular, are also viewed as particularly difficult to implement (Fig 17, Appendix 2). When looking at the average number of constraints indicated for each scenario, however, there is no longer a clear hierarchy, as all scenarios had an average score between 3.7 and 3.8 out of eight possible limiting factors (Fig 18, Appendix 2). This implies that stakeholders' views on the constraints associated with each scenario differ strongly, limiting the informative value of the aforementioned aggregate constraint scores.

3.2. Spatial analysis and mapping

Spatial multi-criteria evaluation resulted in seven 25m x 25m raster data sets with cell values between 0 (rewilding scenario not applicable due to unsuitable habitat, excluded from analyses) and 100 (very high suitability). Table 4 and Fig. 19 show mean raster cell values for all scenarios, their different sample sizes, i.e. the number of total raster cells per scenario, as well as standard deviation and standard error.

Farmland abandonment

The farmland abandonment raster data set contained the second highest number of cells corresponding to the relevant land cover types needed for this scenario (n = 1601153). It had the highest mean cell value at 95.33, making it the most suitable scenario when purely taking into account the spatial variables used here. Looking at their spatial distribution, clusters of high value areas exist particularly in central and north-eastern Dorset, between the towns of Dorchester and Blandford Forum and towards the north-eastern border between Dorset and the counties of Wiltshire and Hampshire (Fig. 20). Unsurprisingly, areas of very low or zero value are mostly centred around the Poole/Bournemouth/Christchurch conurbation, though there are also notable cold spots between the towns of Wareham and Swanage on the Isle of Purbeck.

Naturalistic grazing

This data set contained the highest number of relevant raster cells overall (n = 1971639). The mean raster cell value for this scenario was 91.30. Their spatial pattern showed notably more

cold spots than farmland abandonment with a more even distribution throughout the entire county (Fig. 21). Large areas of hot spots without any neighbouring cold spots exist in central Dorset between Blandford Forum and Sherborne, and along its south-western border between Bridport and Weymouth.

River restoration

Unsurprisingly, this had the second-lowest number of applicable raster cells (n = 72084) as the data set was limited to rivers. At 88.98, it had the third-highest mean raster value. Given its limited geographical applicability, these values are particularly meaningful and indicate high suitability for river restoration as a conservation strategy. The Poole/Bournemouth/Christchurch conurbation, the Isle of Purbeck and Dorset's east-central border emerge as areas of low suitability, while large stretches of freshwater in central and northern Dorset are much more suitable (Fig. 22).

Passive management

Relevant grassland and heathland sites tallied up to a total number of 283084 raster cells for this scenario. At 83.51, it had the lowest mean raster value of the four habitat-specific scenarios. Mapping the distribution of raster cell values reveals a larger presence of cold spots than for any other habitat-related rewilding scenario, with most of the east and south-east being largely unsuitable (Fig. 23). West Dorset appears far more suitable, particularly along the border between Dorset and Somerset to the north-west of Bridport.

Beaver reintroduction

Of all three species reintroduction scenarios included in spatial analysis, beaver reintroduction appeared the most suitable. While it had the lowest total number of applicable raster cells across all seven scenarios (n = 39713), its mean raster cell value was 83.47, making it only marginally less suitable than passive management while being far more popular among stakeholders. As with river restoration, clusters of cold spots mainly exist on the Isle of Purbeck and along Dorset's eastern border while the north-central and western parts of the county appear much more suitable (Fig. 24).

Pine marten reintroduction

Coniferous woodland amounted to a total of 109527 raster cells for this scenario. At 72.81, its mean raster value was notably lower than it was for beaver reintroduction, making it clearly less suitable. As before, the area stretching from the Isle of Purbeck to the east contained the highest number of cold spots (Fig. 25). The only notable hot spots exist to the north and north-east of Wareham and near the border between Dorset and Hampshire in the north-eastern part of the county.

Wild boar reintroduction

Deciduous woodland resulted in a total of 318509 raster cells with a mean value of 64.24, making wild boar less suitable for reintroduction than pine marten despite a wider geographical coverage of applicable habitats. As with all other scenarios, the Isle of Purbeck appears largely unsuitable (Fig. 26). Surprisingly, the only clear hot spots appear just outside Bournemouth, and along the very eastern tip of the county.

Finally, the combined raster data file obtained by using each scenario as a weighted spatial factor in multi-criteria evaluation contained raster cell values between 0 and 68, with a mean value of 13.58. It is important to mention that these numbers are based on all 25m x 25m raster cells across Dorset including cells with a value of 0, which were excluded from analysis for the individual scenarios. As the final aim was to produce a map showing the overall suitability of rewilding for the county of Dorset in its entirety, it was important to visually represent all areas, including those that do not correspond to any of the habitat types needed for the scenarios proposed here.

Fig. 27 shows that, on the whole, the urban areas around Poole, Bournemouth and Weymouth, the eastern part of the county and large parts of the Isle of Purbeck between Wareham and Swanage are largely unsuitable for rewilding. Interestingly, there are clusters of hot spots in close proximity to many of these cold spots, such as those north-east of Wareham and north-east of Wimborne Minster. Most parts in the rest of the county appear to have medium suitability for rewilding. As these values were computed by factoring in the suitability of seven separate scenarios for each raster cell, these values are not directly linked to any one approach. Rather, they can guide decision-makers in choosing priority areas, after which it will need to be decided which approach, or combination thereof, is most suitable.

4. Discussion

This study sought to gauge the potential for rewilding in Dorset and, by extension, in English agricultural lowland landscapes more generally by establishing priority areas using input from local stakeholders in a spatial multi-criteria evaluation. Such multi-criteria analyses have been used by other authors in spatial prioritisation efforts. Carver *et al.* (2012) examined four attributes of wilderness to map the distribution of wild land across Scotland in order to aid decision-making in protected landscapes. Just as rewilding is defined here as a series of incremental steps along a continuum, the authors of the wild land study discuss their findings in the context of the wilderness continuum concept put forth by Nash (1993). In another study, Carver, Tricker & Landres (2013) consulted staff in Death Valley National Park, USA, to identify criteria for mapping wilderness character in the park using a multi-criteria analysis. Although using similar techniques and dealing with related, albeit not identical, concepts, this study is unique as it is the first known attempt to spatially define areas for rewilding in the context of the English lowlands.

The stakeholder survey and subsequent spatial analysis succeeded in answering all five questions posed at the beginning. A majority of local stakeholders expressed support for rewilding, both in the UK in general and Dorset in particular. Unexpectedly, most respondents thought rewilding was primarily about habitat management and not the reintroduction of charismatic species or a complete lack of human intervention. In terms of prioritising areas for rewilding, responses indicated that unprotected areas and areas of low biodiversity value are of higher suitability, suggesting that local stakeholders are wary of experiments that may put Dorset's existing biodiversity at risk.

Interestingly, although species reintroductions were not seen as rewilding's primary focus and only 63% of respondents supported them as a general concept applicable to Dorset, support for individual species proposed for reintroduction was very high. Despite being asked only to comment on particular species if supportive of species reintroductions in general, many respondents ignored these instructions and expressed high levels of enthusiasm for pine martens (84%), beavers (83%) and, to a lesser degree, wild boars (72%). The popularity of species introductions is further highlighted by the fact that between 42 and 44 respondents commented on these scenarios while all other scenarios only had a response rate between

31 and 33. This shows the appeal of flagship species even for an audience of professional conservationists.

In terms of habitat-focused rewilding scenarios, the relatively high level of support for farmland abandonment (77%) is noteworthy considering that farmland covers 77% of Dorset's Areas of Outstanding Natural Beauty (AONB) and is of very high cultural and economic significance for the county (Hooton 2015). As expected, passive management on highly valued grassland and heathland sites was viewed most critically, confirming previous assumptions that rewilding in Dorset would not receive the necessary support if seen as potentially threatening for current high-value areas.

Results from the spatial multi-criteria evaluations performed for each scenario show a hierarchy of suitability expressed by their respective mean raster cell values. The high mean value for farmland abandonment is both striking and indicative of limitations in the methods used here, as discussed below. The relatively low values for pine marten and wild boar reintroduction reveal a discrepancy between what is popular among stakeholders and what is suitable given the spatial criteria used here. This latter point is particularly interesting as it shows a clear desire for these species to be reintroduced despite current conditions not being suitable, which could initiate a debate about restoring suitable habitats on a larger spatial and temporal scale. It is at such scales that potential synergies between different scenarios become apparent, as farmland abandonment could conceivably lead to a significant increase in woodland habitat in the long run, which could in turn make areas of riverine woodland increasingly more suitable for the reintroduction of beavers.

It should be stressed that the mean raster cell values need to be assessed in the context of the total number of raster cells, which differed between each scenario as only cells that corresponded to relevant habitats were included in the data sets. For example, farmland abandonment had the highest mean value but also the second-largest sample size due to the sheer amount of arable land in Dorset. Similarly, naturalistic grazing emerged as the second-most suitable scenario but also covered the largest amount of land. In contrast, river restoration had a mean cell value of 88.98 despite having a substantially smaller sample size, making it arguably more suitable in the larger context. Similarly, a mean cell value of 83.47 for beaver reintroduction appears more noteworthy when taking into account its very low

sample size. Evaluating results in this way clearly establishes beavers as the number one priority species for reintroduction ahead of pine marten and wild boar, the latter of which being particularly unsuitable.

There are methodological limitations to be aware of when interpreting the results of this study. Firstly, and most importantly, the survey was only completed by a total of 47 respondents, only four of which identified themselves as either 'farmer' or 'landowner'. It can be assumed that support for scenarios like farmland abandonment, river restoration, and wild boar reintroduction would be drastically lower among a group comprising mainly of farmers or landowners with financial investments in agricultural land. Secondly, respondents were not given an in-depth explanation of each rewilding scenario and what it might entail beyond the definition included in the survey. While scenarios such as species reintroductions are self-explanatory, others may benefit from a more in-depth discussion prior to surveying to ensure all respondents are equally equipped to provide informed answers. Such an approach is not without its risks, however, as it could spark debates about minutiae such as the types of species that should be included in naturalistic grazing regimes, or the contingency plans that should be put in place before considering farmland abandonment, which would deflect from the task of scoping out options in this initial exploratory phase. Undoubtedly, however, such details will need to be addressed as a next step.

There are additional limitations associated with the spatial data used in this study. Only a small number of spatial constraints and factors were included in analyses, based on presumed habitat requirements and stakeholder responses, which some may wish to critique. Importantly, no models of projected land use or climate change were included, although such data would need to be factored into any final decisions, particularly when deliberating species reintroductions.

While the questionnaire used the term 'protected area' in a broad sense, only SSSIs were included in spatial analyses. Although they contain all sites covered by the European Union's Natura 2000 network and by the 1971 Ramsar Convention, they do not necessarily include National Parks, Areas of Outstanding Natural Beauty or other areas with a lower level of protection, which may have skewed results.

LCM2007 data is based on satellite imagery and, hence, maps land cover rather than land use (Morton *et al.* 2011). This is an important distinction, as grass used for recreation is very difficult to distinguish from grass that is grazed for agriculture using satellite imagery, meaning that arable land cover does not necessarily correspond to agricultural land use (NERC (CEH) 2011). Furthermore, more finely detailed land cover features like hedgerows, streams or small stands of woodland cannot be captured by it (Morton *et al.* 2011). This limits its utility for mapping potential reintroduction sites. Wild boars, for example, require water for wallowing and a thick understorey for shelter, none of which can be derived from LCM2007 (Howells & Edwards-Jones 1997). Similarly, OS Open Rivers is a two-dimensional watercourse network data set showing approximate alignment and water flow direction without hydrological information such as flow rates or water quality (Ordnance Survey 2015), which could affect the suitability of river restoration or beaver reintroduction.

The property value data set used here is exclusively based on property sales between 2010 and 2015. The value of properties not sold during this period is not included, which may be particularly applicable to properties in protected areas. Furthermore, it has not been corrected to account for inflation, which further limits its accuracy. The normalised biodiversity value data set also comes with limitations, as it was compiled in 2012 and does not include any subsequent species surveys. In addition, it only shows the density of UK BAP species, which is a subjective definition for biodiversity.

Beyond methodological limitations, each scenario also comes with its own practical barriers, some more prohibitive than others. An attempt to gauge stakeholders' opinions on their limitations using a survey approach was not successful. Nevertheless, there are indisputable external factors that will affect the likelihood of success, which will need to be assessed on a case-by-case basis, taking into account current political and socio-economical environments.

Without clear incentives in place, Dorset's farmers and landowners are unlikely to agree to abandoning their land for the sake of ecological restoration alone. Ultimately, it will be down to policy-makers to create an environment in which farmland abandonment will be a viable option. Merckx & Pereira (2015) advocate redesigning current EU farm subsidy payments to incentivise farmers for promoting biodiversity instead of purely focusing on agricultural yield. In light of the UK's recent vote to leave the European Union, the current system will likely

cease to apply to UK farmers in future, which could provide the opening for a more ecologically-oriented payment system and, thus, for rewilding.

The implementation of natural grazing regimes elsewhere in Europe has led to heated debates about the supposed dichotomy between 'wild' and 'domesticated' animals and about issues of animal welfare (Lorimer *et al.* 2015). It has also been pointed out that, if left unchecked, they could change the composition of habitats to an unfavourable status, and that there will need to be clearly defined limits to acceptable changes (Hodder *et al.* 2014; Lorimer *et al.* 2015). In a study by Hodder & Bullock (2009), land managers spoke about the difficulties of reconciling the hands-off mentality of naturalistic grazing with the day-to-day realities of site management, which highlights the challenge of implementing rewilding scenarios as part of current UK nature conservation management frames.

Obstacles to river restoration are comparatively manageable. While farmers would need to be consulted and, possibly, reimbursed for allowing the flooding of their land to avoid more severe floods downstream, there is a strong political case to be made for the overall financial benefits connected with river restoration and associated flood mitigation, particularly in light of recent events of serious flooding throughout the UK. Furthermore, numerous river restoration projects are already taking place across Europe, providing ample opportunities for cooperation and knowledge exchange (Allen *et al.* 2016).

There are obvious synergies with beaver reintroduction. Given their popularity among stakeholders, and considering that a beaver release is expected to generate at least five times as much revenue in local tourism as its predicted annual cost (Campbell, Dutton & Hughes 2007), they seem the most likely candidate for reintroduction in Dorset in the near future. Proponents could also point out that beaver habitat use and foraging activity has mainly been limited to their original release site four years after reintroduction at Knapdale Forest in Scotland (Sandom & Macdonald 2015), making controlled trial reintroductions appear a relatively risk-free endeavour.

The passive management of high-value grassland and heathland sites would be very difficult to implement from a stakeholder and policy perspective. Survey respondents were largely opposed to this despite being generally supportive of rewilding, and the prospect of losing

protected habitats is unlikely to appeal to policy-makers. However, research by Cordingley *et al.* (2016) indicates that Dorset's heathland would benefit from a more multifaceted management approach in terms of ecosystem service provision. They recommend that larger patches should continue to be managed to protect their current biodiversity, while smaller patches should be allowed to re-vegetate to improve their aesthetic, carbon storage and timber value. Such a site-specific approach could be developed in cooperation with site managers by asking them to identify criteria for prioritisation, a method previously used by Carver, Tricker & Landres (2013).

Both pine marten and wild boar reintroduction have high practical barriers. As discussed, no single patch of coniferous woodland is currently large enough for a self-sustaining population of pine martens according to conventional wisdom, though this has been challenged by Pereboom *et al.* (2008) who argue that the species is able to survive in fragmented landscapes. Even if this is true, however, the reintroduction of a medium-sized carnivore known to prey on domestic chickens and passerine bird species (Vrublevska *et al.* 2015) is likely to cause conflict and require investment in mitigation efforts. Due to the significant damage that wild boars can cause to agricultural crops and concerns about public health and safety (Goulding *et al.* 2003; Thurfjell *et al.* 2009), their reintroduction seems the least politically viable option under current conditions. Should farmland abandonment in agricultural lowland landscapes such as Dorset become a reality, however, this may have a cascade effect and render both more viable options in the long term.

5. Conclusions and Recommendations

This study has shown that there is support for rewilding to be trialled as a new conservation strategy in Dorset, and that some scenarios are both more appealing and more practically feasible than others. Although established UK conservation bodies and practitioners often have a reputation for being conservative and sceptical of new approaches, particularly when outcomes are not entirely predictable (Hughes *et al.* 2011; Corlett 2016; Jepson 2016), stakeholders consulted for this research expressed surprisingly positive opinions on rewilding.

For it to be a success, it is recommended that rewilding in Dorset be implemented as a series of incremental steps, starting at the point of least contention and in areas where the greatest

benefits can be expected. From the results of this research, river restoration and beaver reintroduction emerge as promising starting points for a new conservation frame that looks towards natural processes for solutions to environmental challenges such as flooding. It may also be possible to trial passive management on smaller, isolated patches of grassland and heathland in the name of ecosystem service provision. In the longer run, farmland abandonment may become an increasingly feasible option, although this very much depends on political developments that cannot be predicted at this point.

The maps shown here are intended to help decision-makers locate potential high value areas for different scenarios in the very early stages of planning. Next steps should include ground-truthing of habitat conditions on a finer scale as well as face-to-face consultations with local stakeholders, particularly those who fear a negative impact from the proposed intervention. Mapping should continue to be an integral part of this process and should be undertaken regularly to reflect changes and developments, whether ecological, socio-economic, or political in nature.

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689 # 8. Tables and Figures

Table 1: Reclassification of rasterised LCM 2007 and OS Open Rivers data sets for six different rewilding scenarios. Preparing rasterised habitat data for beaver reintroduction required additional steps and is not included in the table.

* All other cells were assigned a value of 0.

690

Scenario	Data set	Value field	Value = 1*	Reclassified data code
Beaver reintroduction	OS Open Rivers + 100m buffer/'Broadleaved, mixed and yew woodland' intersect	Reclassify (added by author)	Reclassify = 1 (all areas of deciduous woodland ≤100m from the nearest river)	BR01
Farmland abandonment	LCM 2007	Broad Habitat (BH)	BH = 'Arable and horticulture'	FA01
Naturalistic grazing	LCM 2007	Broad Habitat sub-class (BHSUB)	BHSUB = any of 'Improved grassland', 'Neutral grassland', 'Calcareous grassland', 'Conifer', 'Felled', 'Recent (<10 years)', 'Deciduous', 'Mixed' or 'Scrub'	NG01
Passive management	LCM 2007	BH	BH = any of 'Acid grassland', 'Rough low-productivity grassland' or 'Dwarf shrub heath'	PM01
Pine marten reintroduction	LCM 2007	BHSUB	BHSUB = 'Conifer'	PMR01
River restoration	OS Open Rivers	Reclassify (added by author)	Reclassify = 1 (all OS Open Rivers raster cells)	RR01
Wild boar reintroduction	LCM 2007	BHSUB	BHSUB = any of 'Deciduous', 'Mixed' or 'Scrub'	WBR01

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Table 2: Spatial multi-criteria evaluation (SMCE) as performed in ILWIS for each rewilding scenario. The rasterised and reclassified habitat (LCM2007 and OS Open River) data (see Table 1) were used as spatial constraints, meaning only areas of suitable habitat were included in the final ILWIS map outputs. All other data sets were used as weighted factors and considered as 'benefit' or 'cost' depending on their presumed positive or negative impact.

692

Scenario	Variable type	Raster data set	Standardisation	Weighting
Beaver reintroduction	Spatial constraint (SC)	BR01	Minimum value must be 1 (M = 1)	n/a
	Spatial factor (SF)	SSSI 01	Considered as 'Benefit', Method = 'Goal' (B/G)	0.33
	Spatial factor (SF)	Biodiversity	Considered as 'Cost', Method = 'Maximum' (C/M)	0.33
	Spatial factor (SF)	Property value	Considered as 'Cost', Method = 'Maximum' (C/M)	0.33
Farmland abandonment	SC	FA01	M = 1	n/a
	SF	SSSI 01	B/G	0.33
	SF	Biodiversity	C/M	0.33
	SF	Property value	C/M	0.33
Naturalistic grazing	SC	NG01	M = 1	n/a
	SF	SSSI RC	B/G	0.33
	SF	Biodiversity	C/M	0.33
	SF	Property value	C/M	0.33
Passive management	SC	PM01	M = 1	n/a
	SF	SSSI RC	B/G	0.33
	SF	Biodiversity	C/M	0.33
	SF	Property value	C/M	0.33
Pine marten reintroduction	SC	PMR01	M = 1	n/a
	SF	SSSI RC	B/G	0.25
	SF	Biodiversity	C/M	0.25
	SF	Property value	C/M	0.25
	SF	Conifer patch size	B/M	0.25
River restoration	SC	RR01	M = 1	n/a
	SF	SSSI RC	B/G	0.33
	SF	Biodiversity	C/M	0.33
	SF	Property value	C/M	0.33
Wild boar reintroduction	SC	WBR01	M = 1	n/a
	SF	SSSI RC	B/G	0.25
	SF	Biodiversity	C/M	0.25
	SF	Property value	C/M	0.25
	SF	Distance to fields	B/M	0.25

Table 3: Weights applied to each rewilding scenario in ILWIS for a combined 'rewilding map' reflecting popularity of scenarios among stakeholders. 'Positive responses' refers to the number of respondents who chose 'Agree' or 'Strongly agree' when asked whether a scenario was appropriate for Dorset. Percentages of positive responses were divided by the sum of all percentages for each scenario to calculate final weightings.

693

Scenario	Positive responses	Total responses	Percentage of positive responses	Weighting
Beaver reintroduction	35	42	83.33	0.16
Farmland abandonment	24	31	77.42	0.15
Naturalistic grazing	27	33	81.82	0.16
Passive management	14	33	42.42	0.08
Pine marten reintroduction	37	44	84.09	0.16
River restoration	27	33	81.81	0.16
Wild boar reintroduction	31	43	72.09	0.14

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Table 4: Mean raster cell values in relation to different sample sizes (i.e. total number of raster cells) between scenarios after spatial multi-criteria evaluation.

Scenario	Raster cell mean	Sample size	Standard deviation	Standard error
Farmland abandonment	95.33	1601153	4.05	0.003
Naturalistic grazing	91.30	1971639	10.45	0.007
River restoration	88.98	72084	13.67	0.051
Passive management	83.51	283084	18.92	0.036
Beaver reintroduction	83.47	39713	14.14	0.071
Pine marten reintroduction	71.81	109527	9.33	0.028
Wild boar reintroduction	64.24	318509	9.08	0.016

695

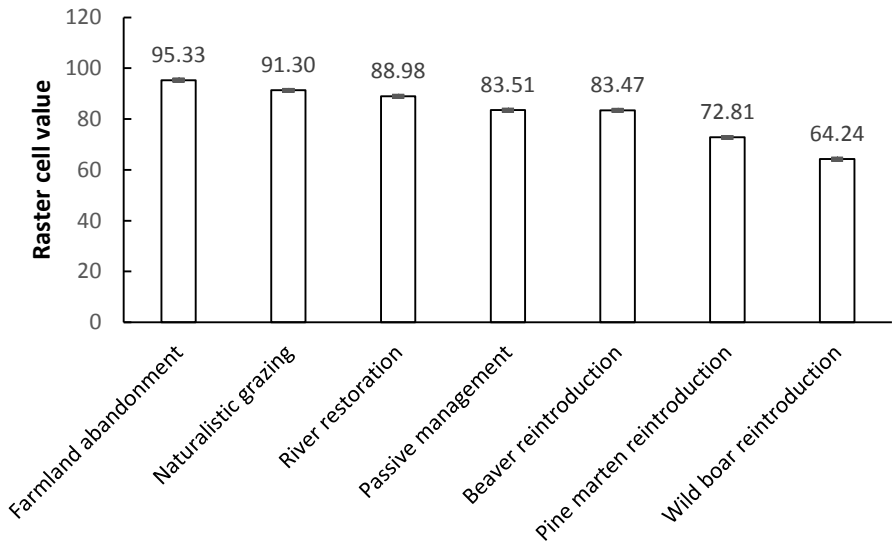

Fig. 19: Mean raster cell values (± SE) for seven rewilding scenarios following spatial multi-criteria evaluation, with higher values representing higher suitability. Raster cells with a value of 0 were excluded from analyses. As a result, the total number of raster cells differed between scenarios as final raster files only included areas with appropriate habitat for the scenario in question (see Table 4).

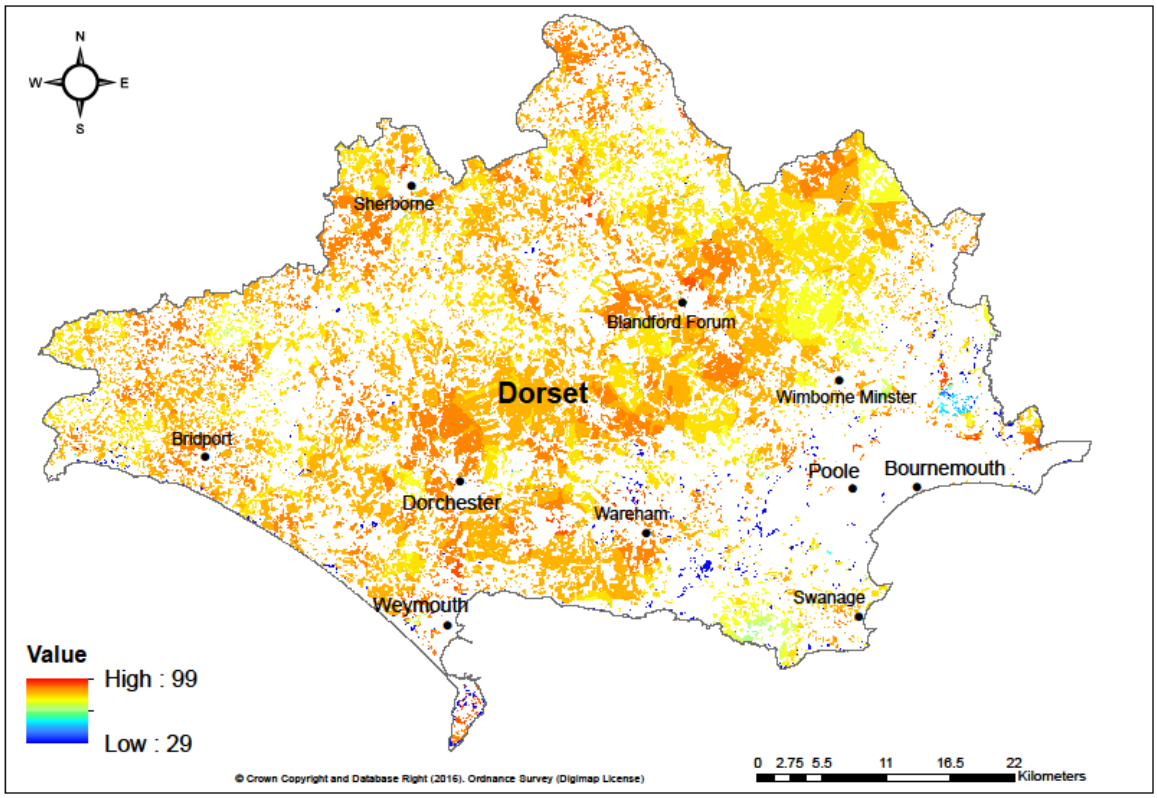

Fig. 20: Map reflecting the suitability for farmland abandonment across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

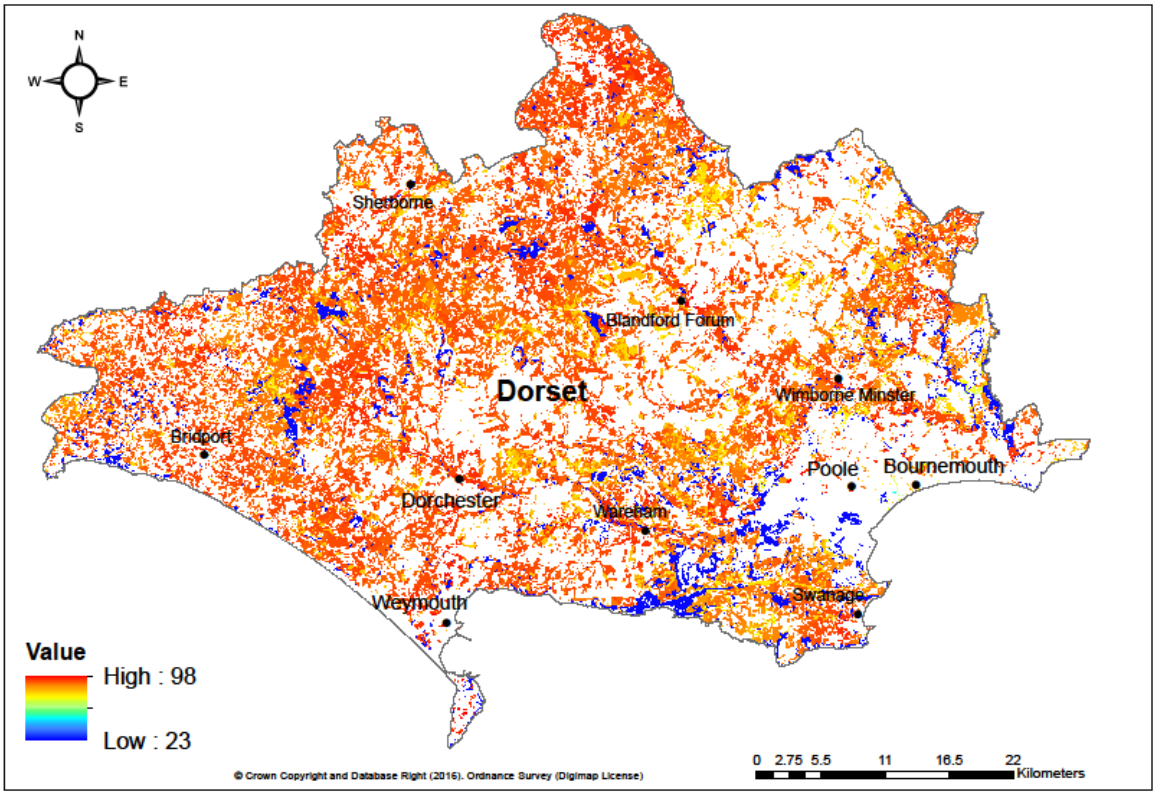

Fig. 21: Map reflecting the suitability for naturalistic grazing across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

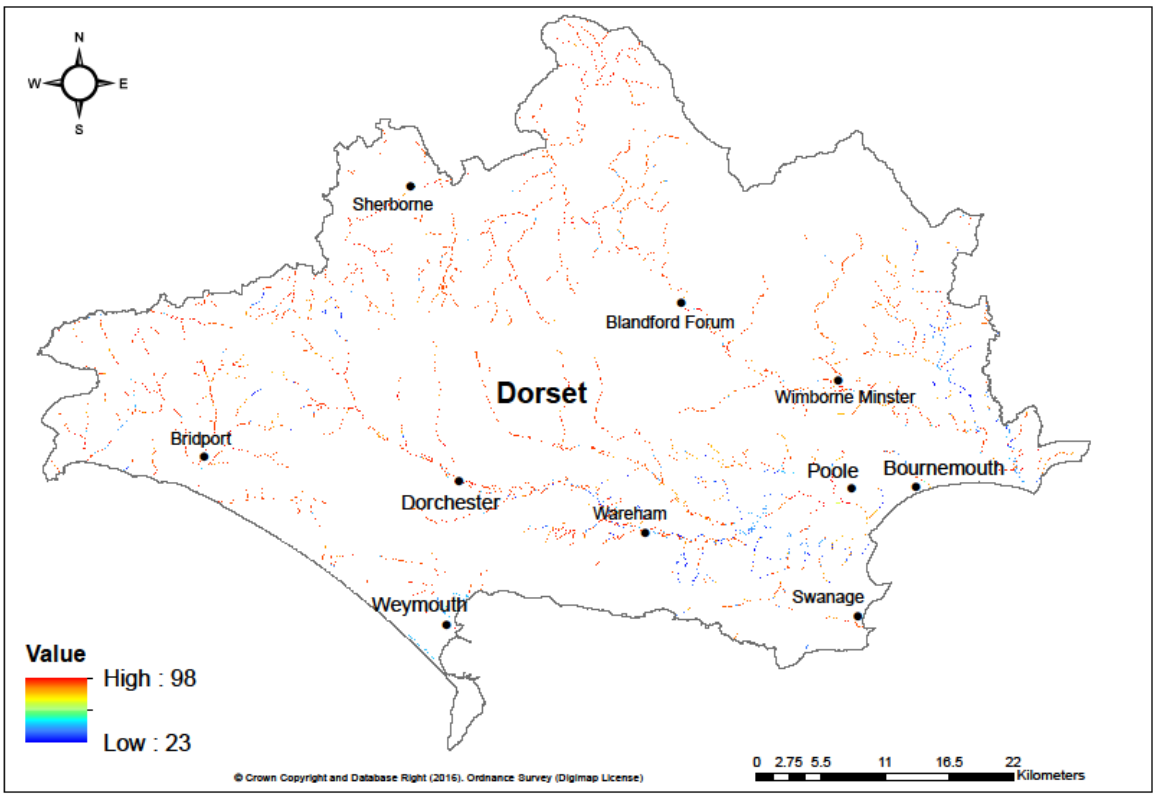

Fig. 22: Map reflecting the suitability for river restoration across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

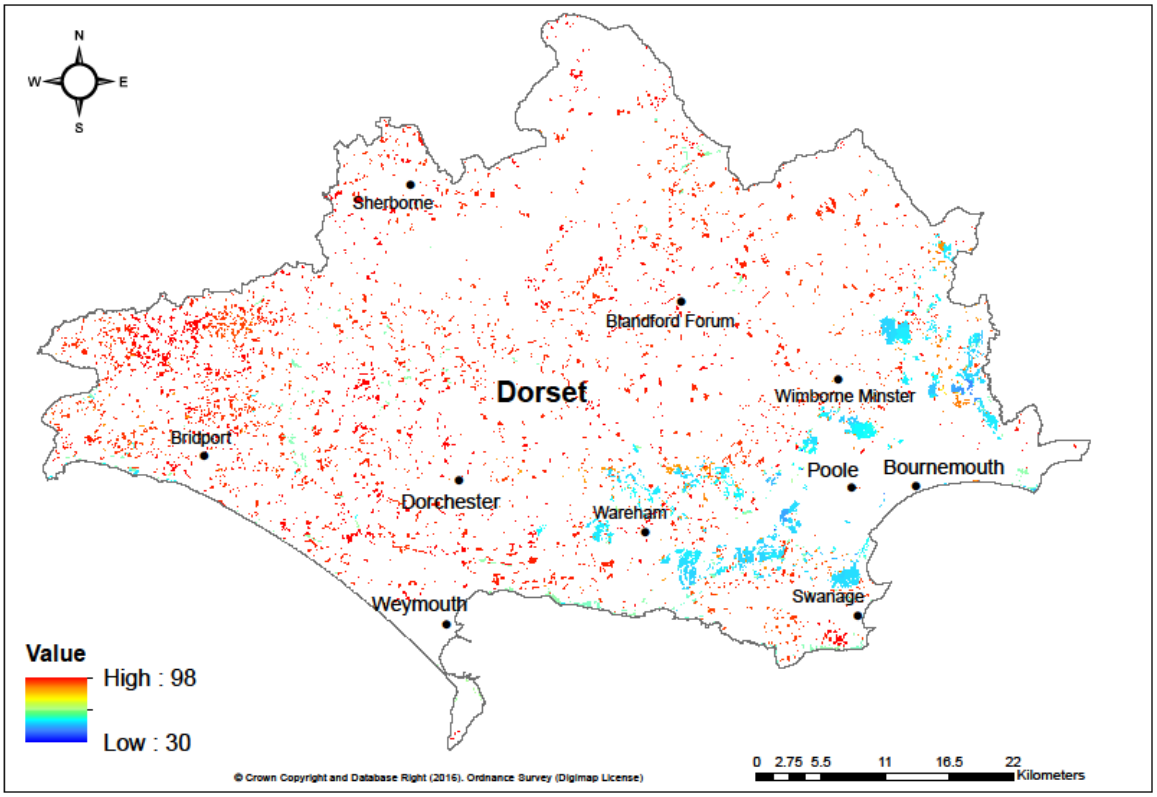

Fig. 23: Map reflecting the suitability for passive management across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

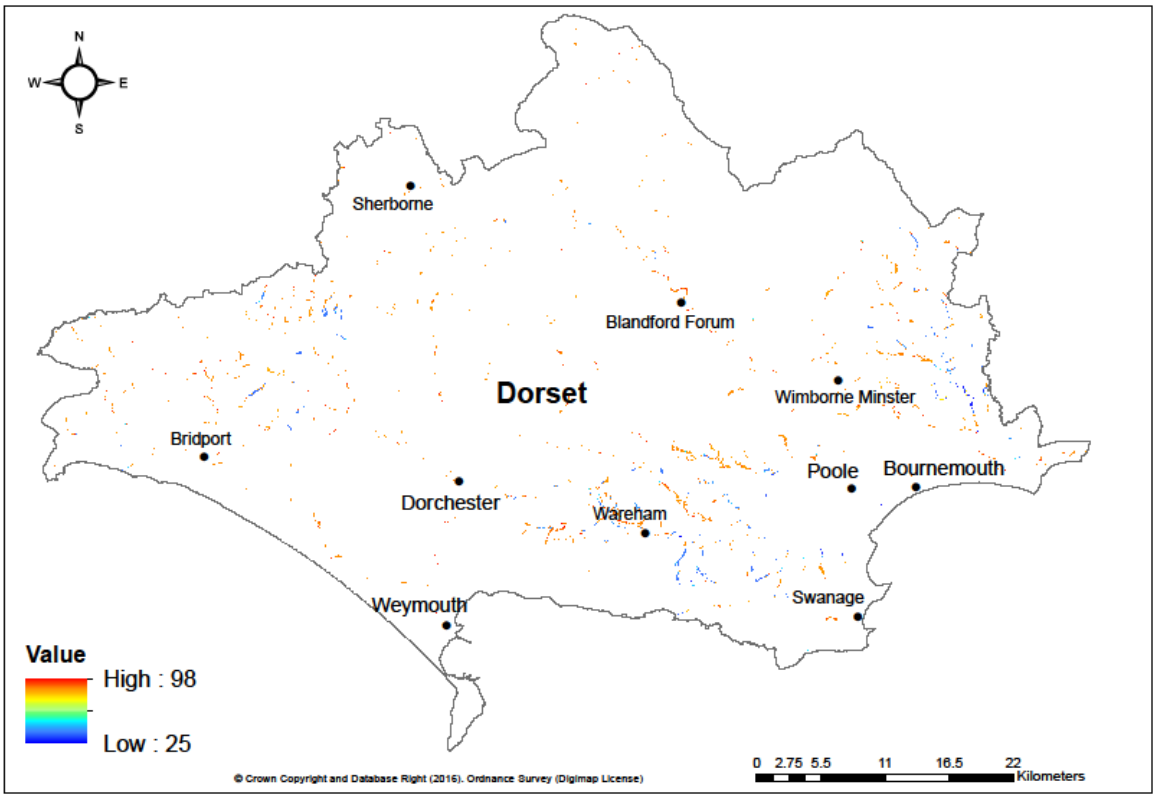

Fig. 24: Map reflecting the suitability for beaver reintroduction across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

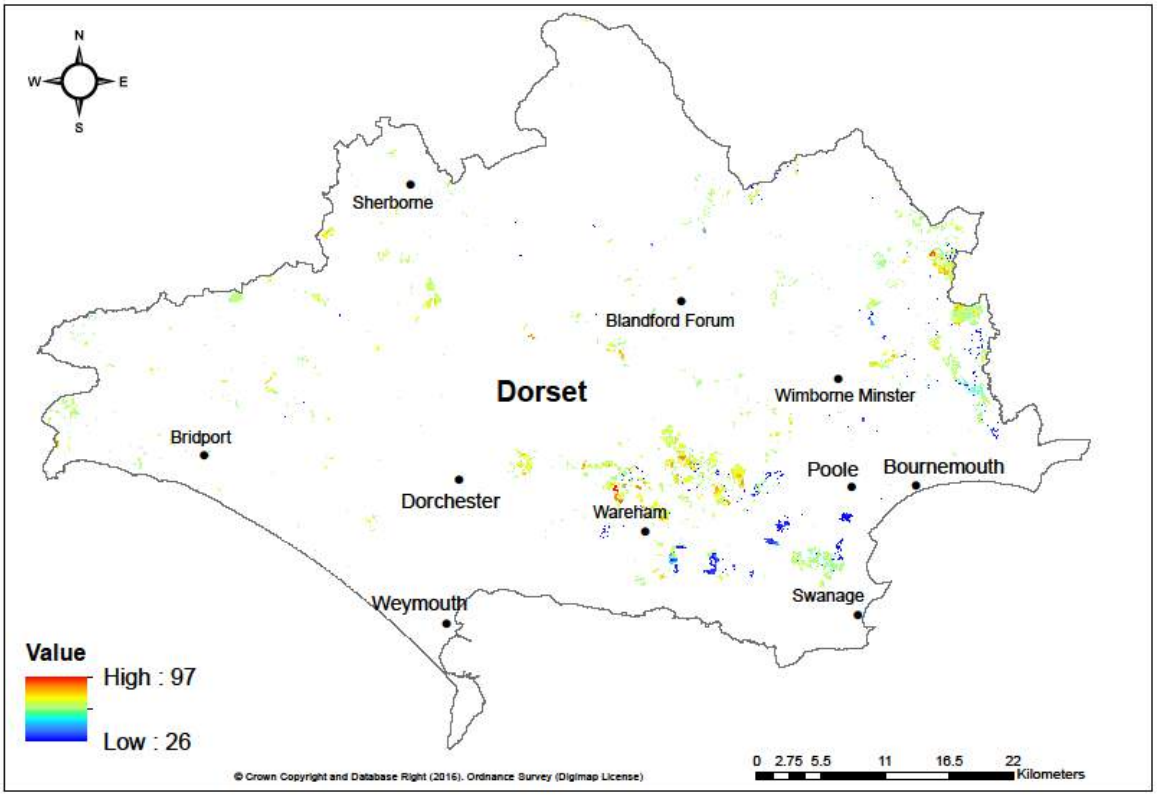

Fig. 25: Map reflecting the suitability for pine marten reintroduction across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

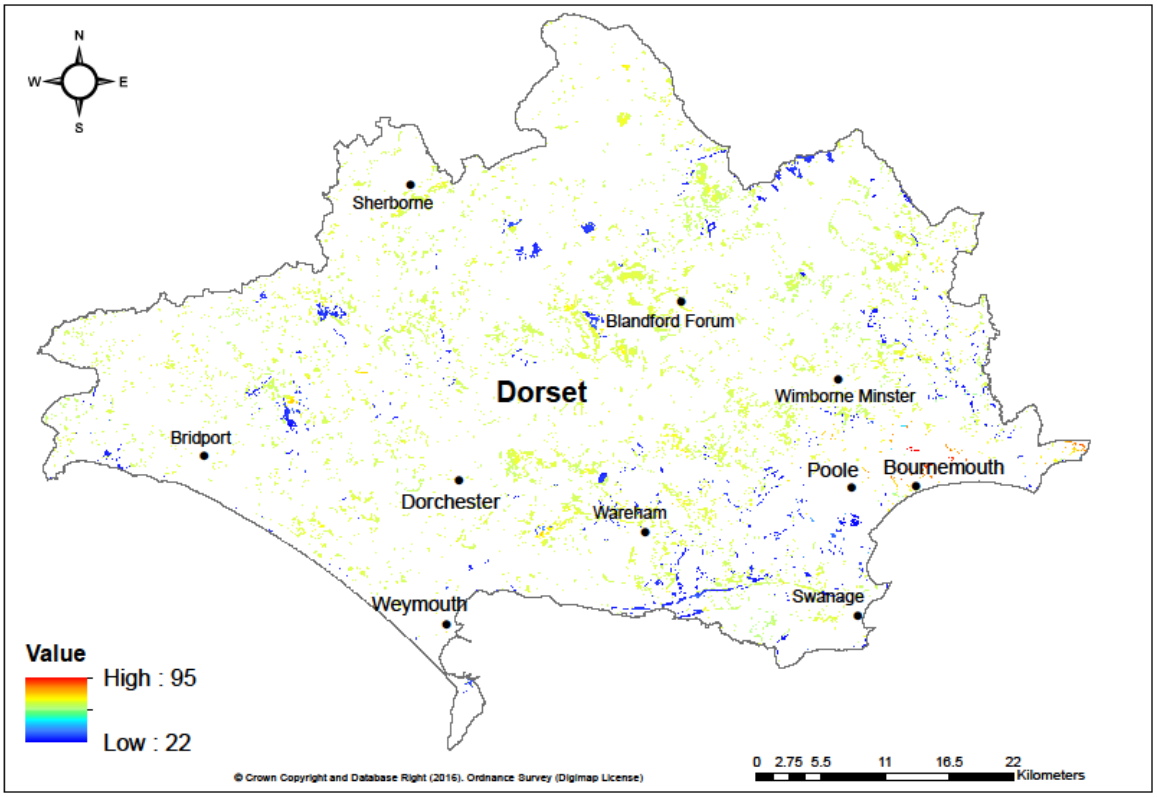

Fig. 26: Map reflecting the suitability for wild boar reintroduction across all 25m x 25m raster cells corresponding to the relevant habitat type for this scenario (see Table 1).

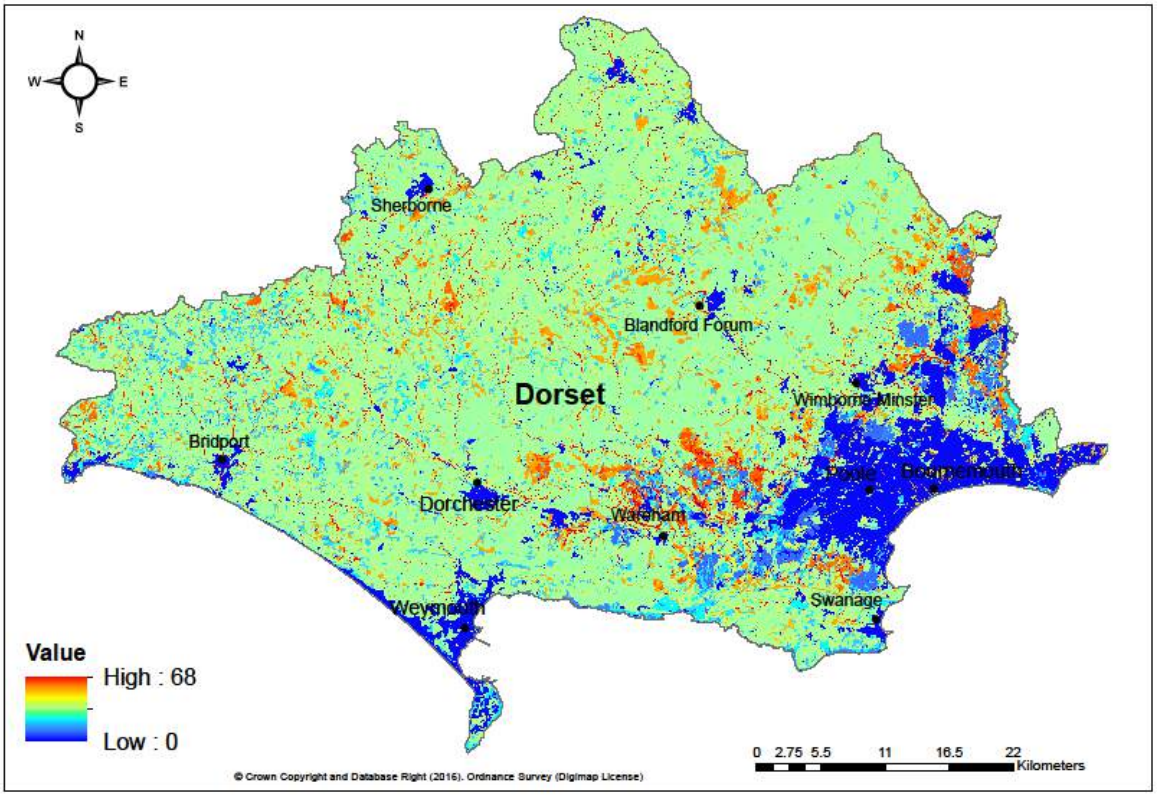

Fig. 27: Map reflecting the suitability for rewilding across all 25m x 25m raster cells throughout the county of Dorset, using each scenario as a weighted factor in spatial multi-criteria evaluation. Weights were assigned according to popularity among stakeholders (see Table 3).

9. Supplementary Material

9.1. Appendix 1: Stakeholder survey

Research project: The feasibility of rewilding in the English lowlands: Scenario mapping for the county of Dorset

Researcher: Arne Loth, MSc student, i7634433@bournemouth.ac.uk

Project supervision: Prof. Adrian Newton, Professor and Director Conservation Ecology, anewton@bournemouth.ac.uk

Project support: Arjan Gosal, PhD student, agosal@bournemouth.ac.uk

Survey background: My research project is concerned with exploring the applicability of rewilding as a conservation tool for lowland England in general and Dorset in particular. In order to assess the feasibility of such approaches, it is helpful to incorporate the opinions of conservation stakeholders and decision-makers. We would very much appreciate your help with this process.

In the following, you will be asked a set of questions to capture your opinion on rewilding as a general concept, as well as some concrete examples of rewilding practice that might potentially be relevant to the Dorset landscape. Your participation is entirely voluntary and your personal details, should you wish to provide them, will not be linked to this research in any way. You can choose not to answer particular questions, and can withdraw at any time up to the point of returning the survey sheet.

This project is linked to the Higher Education Innovation Funding (HEIF) project 'Modelling Natural Capital in Dorset', of which my MSc dissertation forms part, with anticipated completion this year. If you would like to receive a copy of the results, or the entire thesis, please indicate this below.

	Please tick here	**Signature**	**Date**
I confirm that I have read and understood the participant information sheet for the above research project and agree to take part in the research.			
I understand that my participation is voluntary and that I am free to withdraw up to the point of returning the survey sheet, without giving reason and without there being any negative consequences.			
I give permission for members of the research team to have access to my responses. I understand that providing contact details is entirely voluntary, that my name will not be linked with the research materials and that I will not be identified or identifiable in any reports that result from this research.			
I would like to receive a copy of the results that have come out of this survey.			
I would like to receive a copy of the final thesis containing the results that have come out of this survey.			

Thank you for agreeing to take part. Please begin by answering the following:

You are (please tick all that apply):

Conservation practitioner	
Landowner	
Farmer	
Academic	
Student	
Other	
Prefer not to say	

Please provide your contact details below (email address will suffice). This information is optional but necessary for me to be able to share results and/or my final thesis with you.

Do you give your consent to be contacted for further feedback? (Please tick)

Yes

No

Thank you. Please continue on the next page.

1. Rewilding as a concept (please tick one box per statement)

Statement		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	I have a clear understanding of what rewilding means					
2	Rewilding can make a positive contribution towards nature conservation in the UK					
3	Rewilding can make a positive contribution towards nature conservation in Dorset					
4	Rewilding is primarily concerned with species reintroductions					
5	Rewilding is primarily concerned with habitat management					
6	Rewilding means a complete cessation of human intervention to let nature manage itself					

2. Prioritising areas for rewilding (please tick one box per statement)

Statement		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
7	Areas with low biodiversity value should be prioritised for rewilding					
8	Areas with high biodiversity value should be prioritised for rewilding					
9	Rewilding should mainly occur in protected areas					
10	Rewilding should mainly occur outside protected areas					

3. Rewilding scenarios for Dorset (please tick one box per statement)

Statement		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
11	Species reintroductions are appropriate for the county of Dorset ("Species reintroduction")					
Continue below (11.1) if chosen 'Neither agree nor disagree', 'Agree' or 'Strongly agree' for statement 11, otherwise continue with statement 12						
11.1	Beavers should be considered for reintroduction in Dorset					

Statement		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
11.2	Wild cats should be considered for reintroduction in Dorset					
11.3	Wild boar should be considered for reintroduction in Dorset					
11.4	Pine marten should be considered for reintroduction in Dorset					
11.5	*Optional: Suggest other species for reintroduction (fill in suggestion)*					
Continue here if chosen 'Strongly disagree' or 'Disagree' for statement 11						
12	Where economically marginal, arable land should be taken out of production and left to revegetate naturally ("Farmland abandonment")					
13	Naturalistic grazing regimes using large herbivores without specified targets or herbivore density should be implemented at selected pasture or woodland sites ("Naturalistic grazing")					
14	Dorset rivers should be restored to their natural flow patterns and reconnected to their floodplains at selected sites ("River restoration")					
15	Natural succession should be allowed to proceed at selected lowland heath or grassland sites, even if this means a complete loss of habitat at those sites ("Passive management")					

4. Limiting factors

For each of the factors listed in the left-hand column below, please tick all rewilding scenarios to which they act as a potential constraint (i.e. they should play a significant part in the decision-making process).

Limiting factor	Species reintroduction	Farmland abandonment	Naturalistic grazing	River restoration	Passive management
Presence of priority habitats on site[1]					
Limiting factor	**Species reintroduction**	**Farmland abandonment**	**Naturalistic grazing**	**River restoration**	**Passive management**

[1] As listed under Annex I of the EC Habitats Directive (1992).

Presence of priority faunal species on site [2]					
Type of land use (e.g. agricultural, recreational, forestry)					
Type of land ownership (e.g. public, private, NGO)					
Size of area to be rewilded					
Human population density					
Impact on ecosystem services					
Eligibility for agri-environment schemes					
Other (please specify)					
Other (please specify)					

[2] As listed under Annex II of the EC Habitats Directive or Annex I of the EC Birds Directive (2009).

9.3. Appendix 2: Additional figures

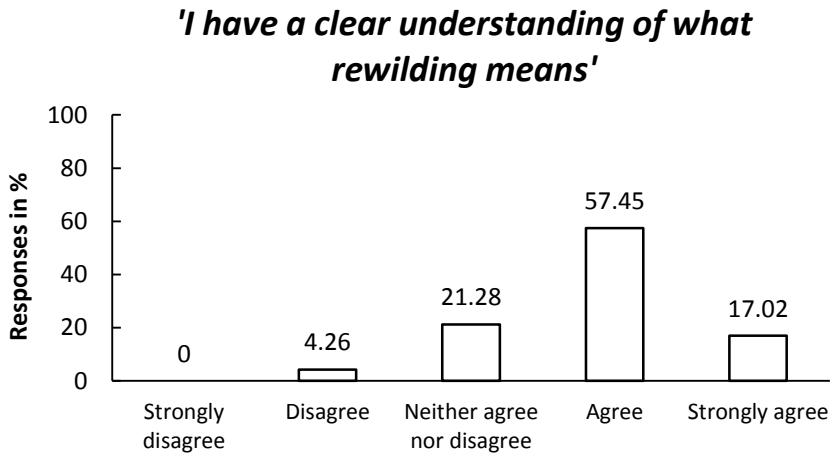

Fig. 1: Responses (in %) to statement 1 in the stakeholder survey (see Appendix 1). Number of total responses = 47.

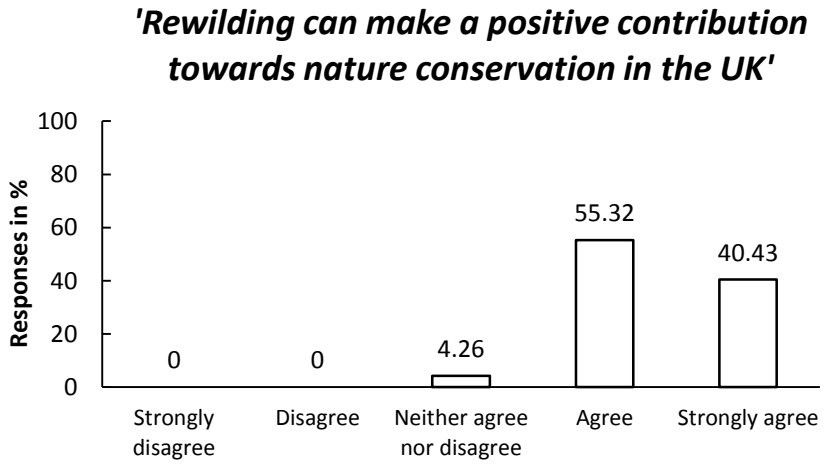

Fig. 2: Responses (in %) to statement 2 in the stakeholder survey (see Appendix 1). Number of total responses = 47.

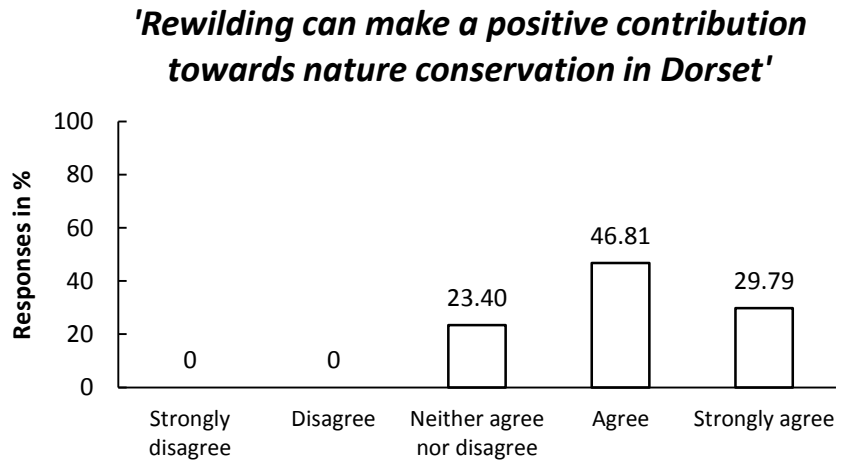

Fig. 3: Responses (in %) to statement 3 in the stakeholder survey (see Appendix 1). Number of total responses = 47.

760

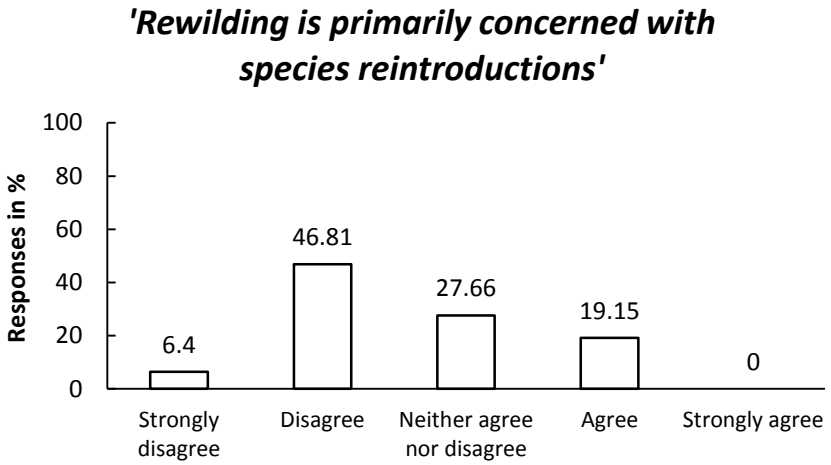

Fig. 4: Responses (in %) to statement 4 in the stakeholder survey (see Appendix 1). Number of total responses = 47.

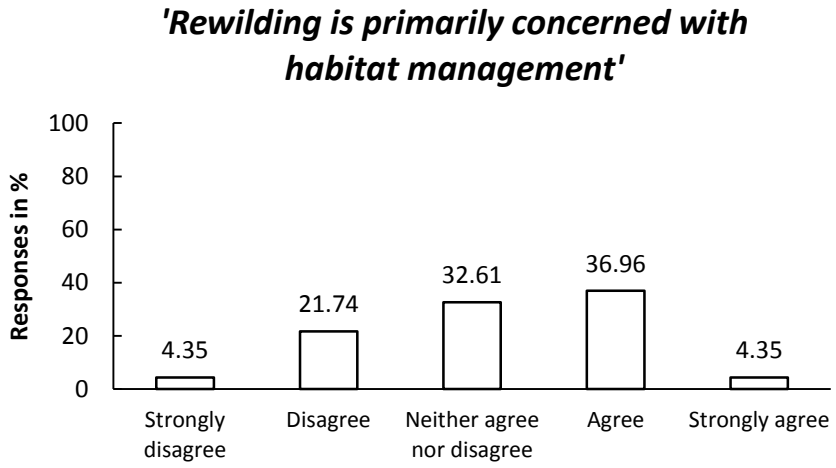

Fig. 5: Responses (in %) to statement 5 in the stakeholder survey (see Appendix 1). Number of total responses = 46.

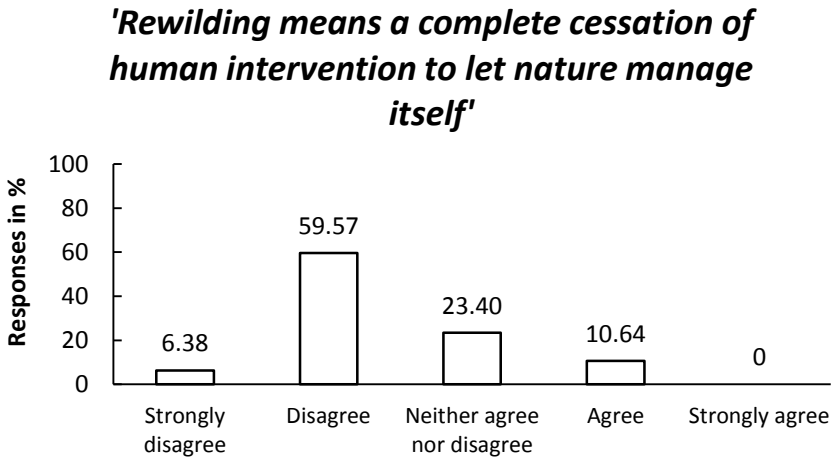

Fig. 6: Responses (in %) to statement 6 in the stakeholder survey (see Appendix 1). Number of total responses = 47.

761

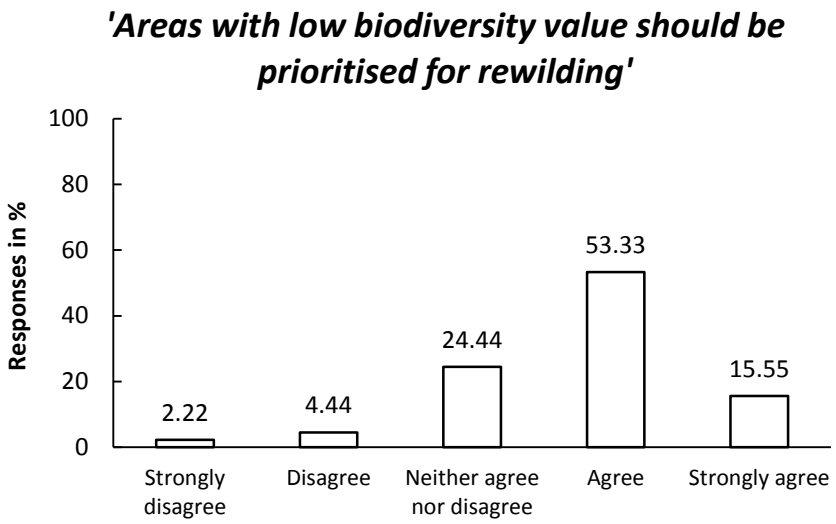

Fig. 7: Responses (in %) to statement 7 in the stakeholder survey (see Appendix 1). Number of total responses = 45.

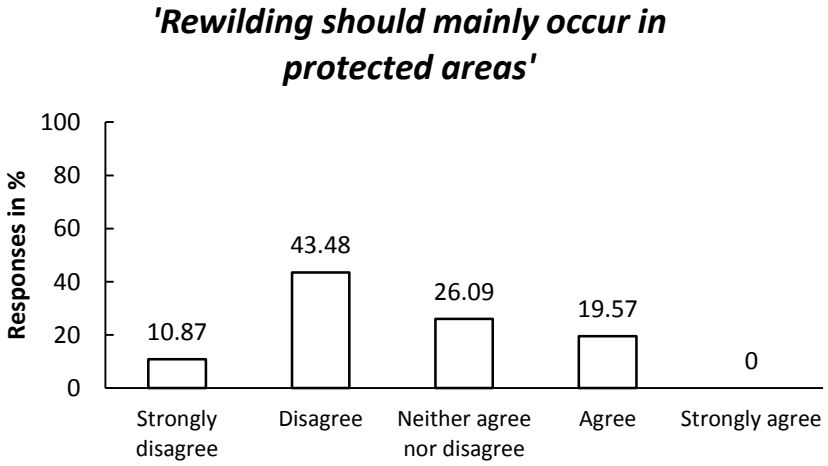

Fig. 8: Responses (in %) to statement 9 in the stakeholder survey (see Appendix 1). Number of total responses = 46.

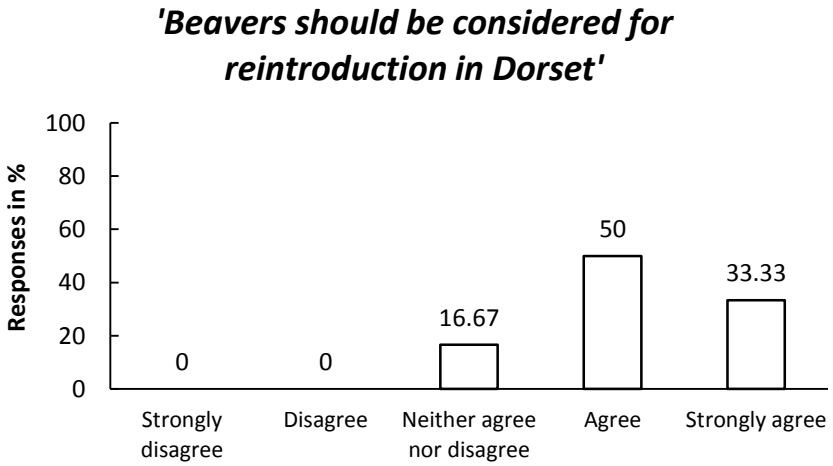

Fig. 9: Responses (in %) to statement 11.1 in the stakeholder survey (see Appendix 1). Number of total responses = 42.

762

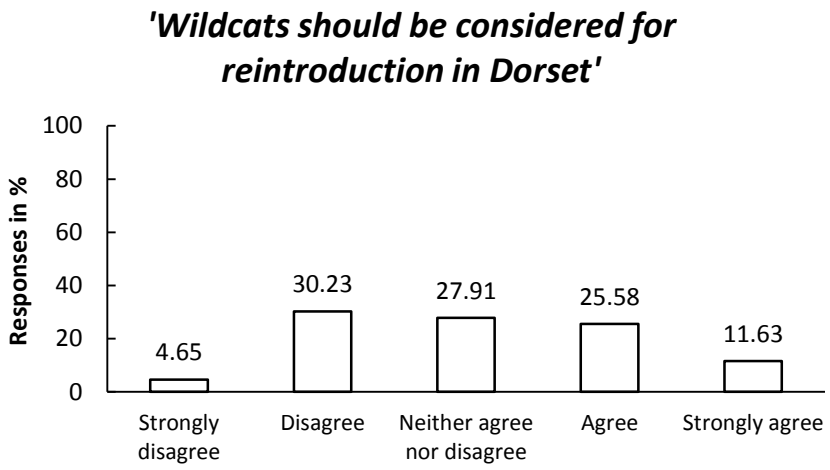

Fig. 10: Responses (in %) to statement 11.2 in the stakeholder survey (see Appendix 1). Number of total responses = 43.

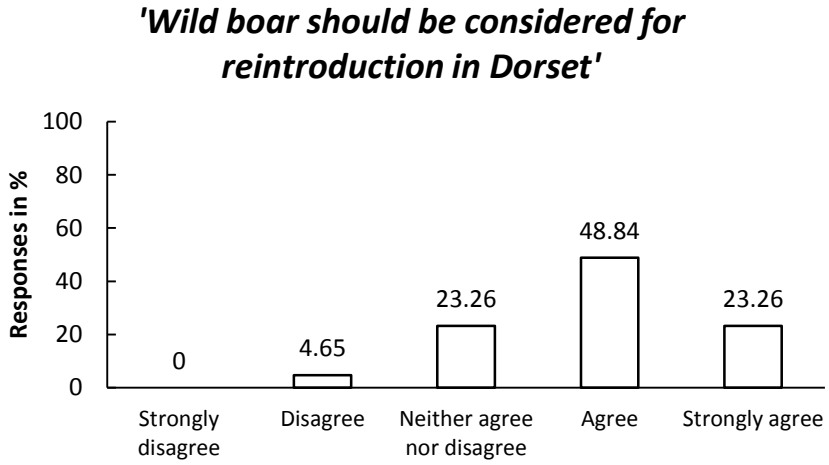

Fig. 11: Responses (in %) to statement 11.3 in the stakeholder survey (see Appendix 1). Number of total responses = 43.

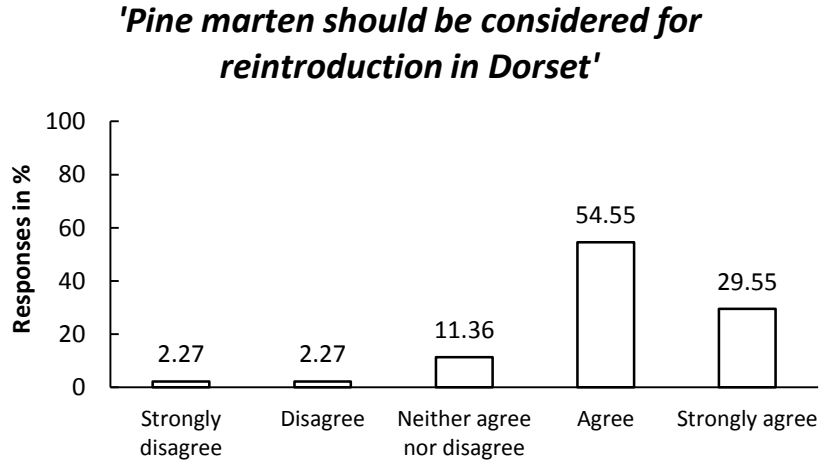

Fig. 12: Responses (in %) to statement 11.4 in the stakeholder survey (see Appendix 1). Number of total responses = 44.

763

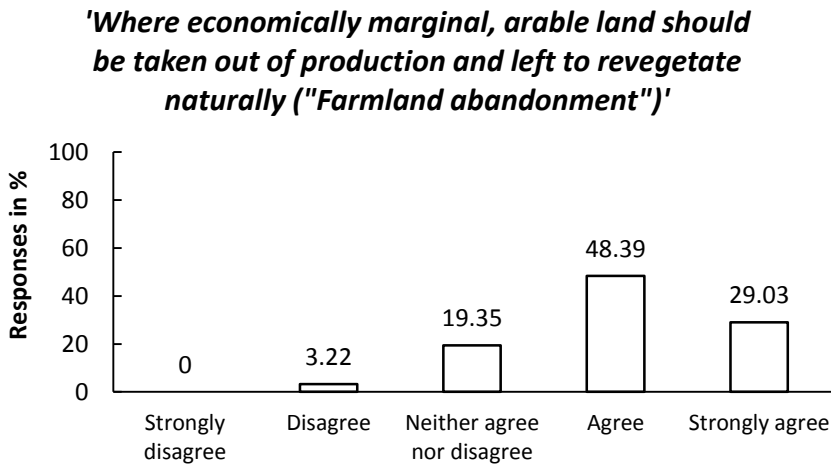

Fig. 13: Responses (in %) to statement 12 in the stakeholder survey (see Appendix 1). Number of total responses = 31.

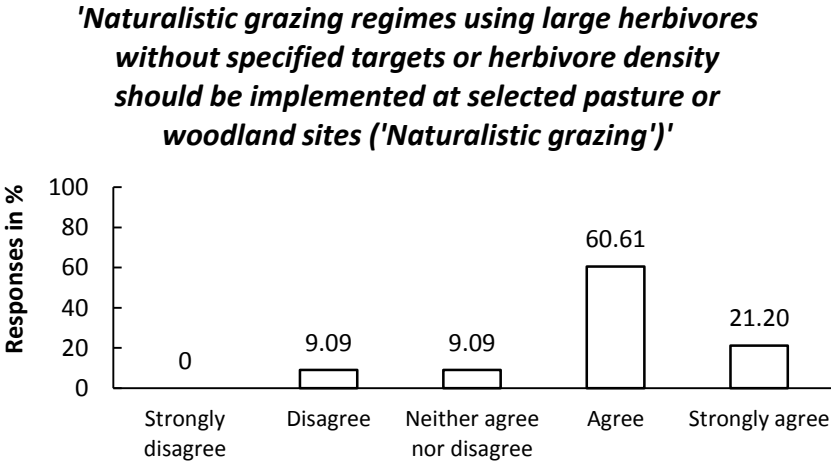

Fig. 14: Responses (in %) to statement 13 in the stakeholder survey (see Appendix 1). Number of total responses = 33.

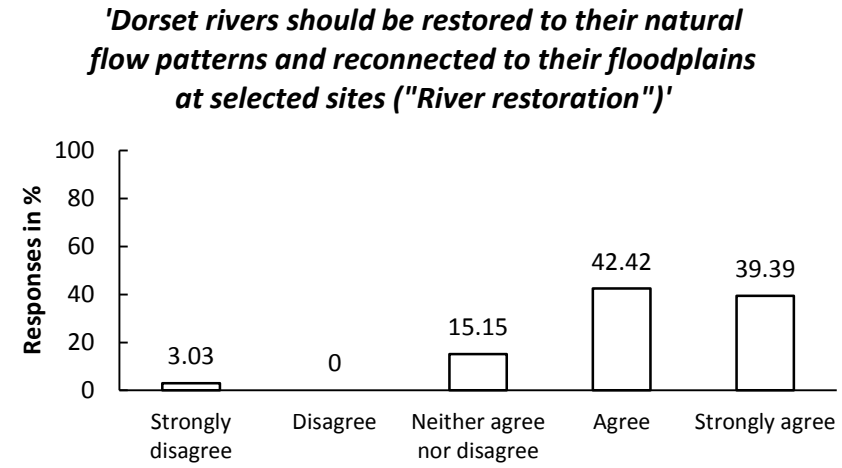

Fig. 15: Responses (in %) to statement 14 in the stakeholder survey (see Appendix 1). Number of total responses = 33.

764

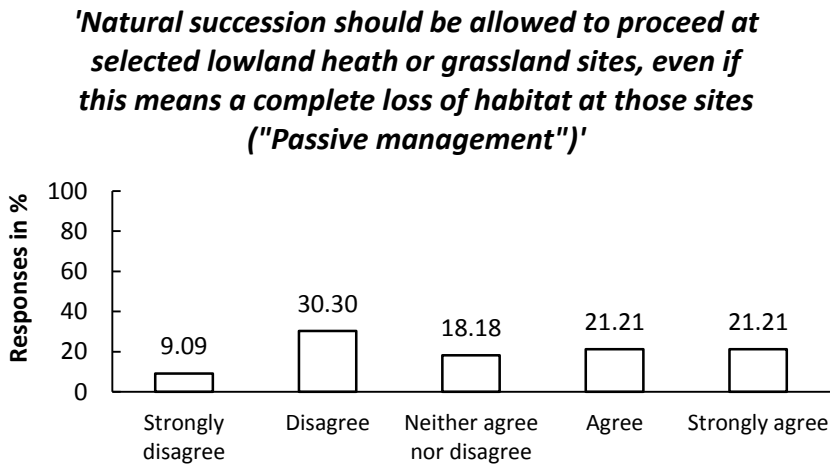

Fig. 16: Responses (in %) to statement 15 in the stakeholder survey (see Appendix 1). Number of total responses = 33.

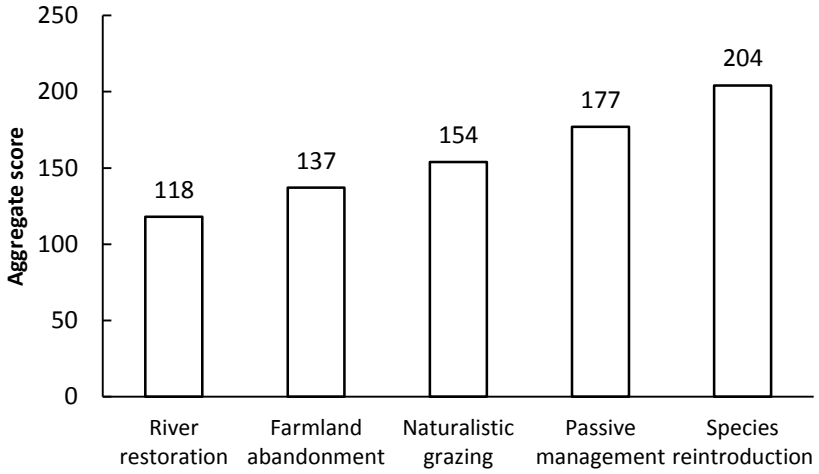

Fig. 17: Constraint scores assigned to each rewilding scenario based on responses to stakeholder survey section 4 (see Appendix 1). Scores were calculated by adding all limiting factors marked by each respondent for each scenario, with higher scores indicating higher barriers for implementation.

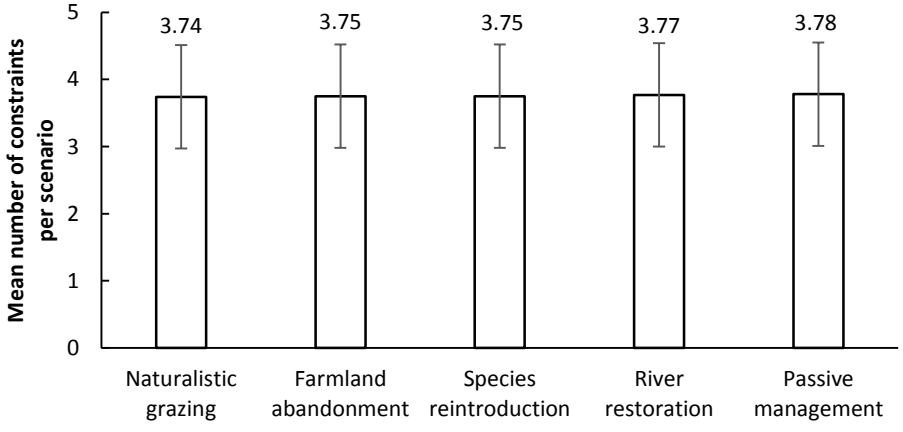

Fig. 18: Mean constraint score (± SE) per respondent for each scenario based on responses to stakeholder survey section 4 (see Appendix 1). Results indicate low levels of consensus among respondents regarding practical limitations.