Title

Public Perceptions of a White-Tailed Sea Eagle (*Haliaeetus albicilla* L.) Restoration Programme

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MM, IC, BS & RA conceived and designed the research; MM carried out the fieldwork and initial data analysis; IC, BS & RA contributed to subsequent data analysis and data presentation; MM, IC, RA & BS wrote and edited the manuscript.

Abstract

The historic persecution and decline of European raptor populations precipitated the use of reintroduction as a species restoration tool in the late twentieth century. One of the key requirements of the IUCN Reintroduction guidelines concerns the need for social feasibility studies to explore the attitudes of local human populations towards restoration and reintroduction proposals. Ahead of any formal proposals to reintroduce White Tailed Sea Eagles to Cumbria, UK, We conducted a baseline public attitudinal survey (n=300). We identified broad public support for this reintroduction, which transcended differences in the demographic, geographic and

employment profiles of the study cohort. There was public recognition that White-Tailed Sea Eagles could deliver a broad range of socio-economic and environmental benefits with few detrimental impacts. Whilst the value of attitudinal surveys of this nature has been questioned, we would argue that they provide a useful baseline 'snapshot' ahead of a more structured and focused reintroduction consultation. These results reinforce the emergence of public interest in the restoration of European raptors in the late twentieth and early twenty first century.

Key words: Cumbria, England, public attitude, raptor, reintroduction, White-Tailed Sea Eagle.

Implications for Practice

- Whilst there is broad public support for a WTSE reintroduction in the study area, there were also public concerns regarding the proposed reintroduction. This understanding provides the platform to develop a more focused education and awareness campaign, including further consultation work to evaluate the attitudes of an 'informed public' prior to the development of a WTSE reintroduction project.
- Attitudinal surveys therefore provide a useful baseline 'snapshot' ahead of more structured and focused consultation programmes

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Introduction

Across Europe, the on-going persecution of raptors between the early seventeenth century and the middle of the twentieth century resulted in national extinctions and catastrophic declines of many species (Love 1983; Hatzofe 2003; Pohja-Mykra et al. 2011). From the 1960s onwards, the growing influence of conservation organisations and a renewed environmental awareness amongst the general public, provided the impetus for the modern conservation movement and altered the fortunes of many birds of prey (Love 1983; Pohja-Mykra et al. 2011). The traditional perception of raptors as pest species began to change, and this resulted in increasing public and political support for their protection (Pohja-Mykra et al. 2011). Nevertheless the restricted range and population size of many birds of prey prevented them from naturally recolonizing their former geographic range (Love 1983; Whitfield et al. 2009), and prompted conservation managers to use reintroduction as a tool to augment and restore populations (Griffith et al. 1989; Seddon et al. 2007).

Despite the growing popularity of reintroduction methods in the 1970s and 1980s, many early attempts to reintroduce raptors were ill-conceived, under resourced and destined to fail (Griffith et al. 1989; Seddon et al. 2007). The publication of the Reintroduction Guidelines by the International Union for Conservation of Nature (IUCN 1998; Seddon et al. 2007) improved project outcomes by advocating a rigorous scientific approach. These provided a comprehensive framework to assess the feasibility of a reintroduction proposal and to offer advice regarding project planning and implementation. In the last forty years reintroduction projects have assisted the recovery of several British raptor species including the Red Kite (*Milvus milvus* L.), Osprey (*Pandion haliaetus* L.) and White-Tailed Sea Eagle (WTSE) (Love 1983; Evans & Pienkowski 1991; Evans et al. 1997; Evans et al. 1999; Carter & Grice 2000).

Following the extinction of WTSEs in Great Britain in 1918, a reintroduction initiative was implemented in the north-west Highlands and the east coast of Scotland in three stages between 1975 and 2012 (Love 1983; RSPB 2012). Scotland now has a secure breeding population, but it remains fragmented and well below carrying capacity (Whitfield et al. 2009). In addition, the slow maturation rate and philopatric tendencies of juvenile birds, act to restrict the rate of range expansion in the breeding population (Whitfield et al. 2009). Consequently, it is widely acknowledged that further reintroductions are required to restore WTSEs to their historic range and density throughout the British Isles (Whitfield et al. 2009).

In recent years Cumbria, a relatively large (6,768 km²), sparsely populated county (population of 496,200, with a population density of 73 per km²) in Northern England, has been suggested as a potential reintroduction area on the basis that it was the last stronghold for WTSEs in England (Love 1983), and there is consensus amongst many stakeholder groups that the extensive freshwater and coastal habitats could still support the ecological requirements of the species (Mayhew 2013). To date the Suffolk Coast and Heaths Area of Outstanding Beauty is the only location in England that has been evaluated for a WTSE reintroduction (RSPB 2009). A feasibility study was launched in 2007 as a partnership between Natural England and the RSPB, but subsequently abandoned in 2010 (Natural England 2010).

As Arts et al. (2012) indicate, the reintroductions of charismatic animals present ambitious conservation interventions, with the potential for inducing vehement controversy. Historically the reintroduction of predator species was managed by environmental scientists who prioritised comprehensive biological feasibility studies but failed to establish and address public concerns regarding translocations (Marshall et al. 2007; O'Rourke 2014). Wilson (2004) identified that attitudes to reintroductions (and particularly carnivores) tended to be favourable amongst the

general public, but negative amongst those likely to be adversely affected. The decision to reintroduce WTSEs to Killarney National Park (2007-2012) in Ireland without adequately consulting the farming community resulted in intractable conflict and the poisoning and destruction of almost a quarter of the birds by the spring of 2013 (O'Rourke 2014). The illegal persecution of Lynx in Switzerland is the legacy of a reintroduction programme in the 1970s that excluded and disenfranchised sheep farmers and hunters (Breitenmoser et al. 2004).

As a result of such experiences, it is now accepted that in addition to ecological research, reintroduction outcomes are determined by the attitudes and behaviour of the public and regional stakeholder groups (Marshall et al. 2007; Thirgood & Redpath 2008). Therefore a broad based public consultation is an essential tool to reveal contentious issues and identify those parties who will oppose the reintroduction due to perceived threats to their interests. These findings will enable conflict mediators to acknowledge concerns and seek solutions through an inclusive and transparent approach to public engagement. This paper aims to evaluate public opinion regarding the socio-economic and environmental impacts of a WTSE reintroduction in Cumbria and will compare the findings with a similar public consultation conducted in 2009 as part of the Suffolk feasibility study (Manly 2009).

Methodology

A questionnaire survey was employed to collect quantitative and qualitative data regarding public opinion and the possible reintroduction of WTSEs in Cumbria.

The Cumbrian questionnaire was based on the Suffolk feasibility study (Manly 2009) and consisted of a photograph of a WTSE, a short information sheet, and a series of attitudinal and classification

126 questions. The information sheet was designed to provide background information on the
127 reintroduction and introduce the key themes that would be explored via the attitudinal questions.
128 To maintain objectivity, the content of the information sheet was sourced from published peer-
129 reviewed literature (Love 1983; Marquiss et al. 2002; Helander & Stjernberg 2003; Whitfield et al.
130 2009; Simms et al. 2010; Birdlife International 2012) and subjective narrative styles such as the use
131 of superlatives were avoided.
132
133 Using a broadly similar approach to other species reintroduction – public attitude studies (for
134 example, Nilsen et al. 2007; Scott Porter Research & Marketing, 1998), an initial
135 knowledge/awareness question was followed by 10 attitudinal questions, constructed to explore
136 the perceived social, environmental and economic impacts of the reintroduction. The attitude
137 questionnaire consisted of a combination of closed and open questions, enabling rapid collection
138 of large amounts of quantitative data without compromising the freedom and spontaneity of
139 respondents to express their views. All responses have been anonymised and an interview coding
140 system is used for this paper (prefix R, suffix interview number, e.g. R051). The full list of
141 responses can be viewed in the online version of this paper.
142
143 Classification questions were constructed to establish the extent to which the demographic profile
144 of the study cohort was representative of the wider population within the study area. In addition
145 to age, gender and ethnicity, participants were asked to describe whether they lived in an urban or
146 rural location. The first part of the post code (outward code) was collected to verify the location,
147 whilst retaining the anonymity of the respondents. The postcode directory resources from the
148 Edina UK Borders website (UK Borders 2012) and the National Statistics Postcode Directory (Office
149 for National Statistics 2010) were used to categorize outward codes as rural or urban.
150

Six sites were chosen to represent a mixture of rural, urban, coastal and inland locations within north Cumbria; Maryport marina, Carlisle city centre and high street locations in Silloth, Kirkbride, Burgh by Sands and Wigton. The National Statistics Postcode Directory from the Office for National Statistics (2010) was used to define urban locations in England as settlements with a population ≥ 10000. Maryport and Carlisle were categorized as urban and Silloth, Kirkbride, Burgh by Sands and Wigton were classified as rural.

The lead author conducted 300 face-to-face questionnaires over the period of July to August 2012, using non-random quota sampling techniques. There are a number of advantages and disadvantages associated with this approach. The main advantage is speed; non-random quota sampling is much quicker and easier to carry out than alternative approaches, for example probability-sampling techniques, as it does not require a sampling frame and the use of random sampling techniques. It should also improve the representation of particular groups within the sample (whilst also ensuring that some groups are not over-represented).

The main drawback is that the sample has not been chosen using random selection, which makes it impossible to determine the possible sampling error. There is also the risk that the selection of participants is based on ease of access and cost considerations, resulting in sampling bias. Interviewers may also be tempted to interview those people in the street who look most helpful, again adding bias. In order to minimise such issues, all interviews were completed by 1 person, in accordance with a clear interview protocol based on three distinct stages of sample design; determining the stratification and dividing the population; determining a proportion for each stratum; recruiting the maximum number of participants to each stratum within the allotted time period (recruitment times were similar at each of the five locations).

176 Participants were selected to be representative of the wider population of north Cumbria on the
177 basis of their age, gender and ethnicity and with reference to demographic census data acquired
178 from Cumbria County Council (Cumbria Intelligence Observatory 2012). Whilst North Cumbria is
179 not officially designated, it is usually taken to mean the districts of Allerdale (population of 96,300)
180 and Carlisle (105,200). During periods of recruitment the demographic profile of each successive
181 participant was recorded to enable the author to recruit subsequent participants to each strata in
182 approximately the correct proportions. Informed consent of the respondents was obtained and
183 ethical approval was granted in accordance with university policy.
184
185 Quantitative data was displayed using descriptive statistics (SPSS Version 19) and analysed using
186 Pearson's chi-squared goodness of fit tests to establish the extent to which observed values within
187 the Cumbrian study cohort and between the Cumbrian and Suffolk cohorts, differed from the
188 expected values (Norman & Steiner 1993). Yates' correction for continuity was applied to
189 determine chi-squared values from two by two contingency tables (Norman & Steiner 1993).
190 Responses to closed attitudinal questions were categorized using the five point Likert scale to
191 enable quantitative comparisons with the results of the Suffolk study (Manly 2009). Qualitative
192 data from open questions were analysed using the grounded theory—constant comparison
193 method, which identifies and compares themes within and across respondent responses (Pope et
194 al. 2000).
195
196 **Results**
197 Overall 88.7% of respondents were in favour of the proposed reintroduction (Figure 1), 2.0% were
198 against and 8.3% were undecided. When asked if they had heard of WTSEs prior to reading the
199 information sheet, 50.7% of respondents answered "yes", 42.0% answered "no" and 7.3% left the

200 question unanswered. Of those who were in favour of a reintroduction, the majority were familiar
201 with the WTSE (55.8%) whereas of those who were opposed to the project, the greatest
202 proportion was not familiar (66.7%) with the species.
203
204 Of the 300 completed questionnaires there were marked differences between the number
205 administered at each of six chosen survey sites, with the highest number completed in Maryport
206 (n=98) and the lowest number in Kirkbride (n=16). Completion rates were influenced by a number
207 of factors including the available population size, variation in weather patterns and higher
208 response rates in rural locations (Wigton, Burgh by Sands, Silloth and Kirkbride) compared to
209 urban locations (Carlisle and Maryport).
210
211 No significant differences were established between the gender of the respondents (51.3% males,
212 48.7% females) and that of the wider Cumbrian population ($\chi 2 = 0.86$, $df = 1$, N.S.). There was a
213 significant difference between the age range of the respondents and the population data from the
214 Cumbrian census ($\chi 2 = 18.62$, $df = 5$, $P < 0.05$). The largest proportion of the participants were 56
215 to 65 years old (24.7%) the smallest proportion aged between 26 and 35 (6.9%). Although the
216 ethnic diversity was too limited to analyse with statistical methods, study findings were an
217 accurate representation of the Cumbrian population as a whole (97.0% white British, 3.0% black
218 and minority ethnic groups).
219
220 Geographic profiling revealed that 41.3% of respondents lived in urban areas and 58.3% lived in
221 rural areas; 0.4% of participants declined to reveal their location. 69.7% were local to the area,
222 27.3% were on holiday and 3.0% specified other reasons for their presence in the study area such
223 as working away from home. The employment rate of the respondents was 57.0% which contrasts
224 with a figure of 63.9% for the wider Cumbrian population (Cumbria Intelligence Observatory

225 2012). The majority of those not in works described themselves as either retired, as students, or as
226 housewives looking after young children. Amongst the working population, the largest sector were
227 categorized as “Skilled Trades” and “Office Based” whereas the least abundant work types
228 included “Fishing” and “Tourism” (Table 1).
229
230 Analysis was performed to establish significant relationships between the profiles of the
231 respondents and their response to the question: ‘*Overall would you say you are in favour of the*
232 *WTSE re-introduction project?*’ Chi-squared analysis revealed no significant differences between
233 the following categories: Farming/Other Work Type ($\chi 2 = 5.26$, *df* = 2, N.S.); Urban/rural ($\chi 2 = 4.45$,
234 *df* = 2, N.S.); Local/Tourist and other ($\chi 2 = 3.06$, *df* = 4, N.S.); Male/Female ($\chi 2 = 3.29$, *df* = 2, N.S.);
235 Ages less than 46/ages greater than or equal to 46 ($\chi 2 = 1.10$, *df* = 2, N.S.).
236
237 There was broad consensus of opinion (89.3%) that WTSEs would benefit the local tourist industry
238 (Table 2); however respondents expressed more uncertainty regarding impacts on local farming
239 interests and the cost of the project. Approximately the same number of respondents was
240 undecided (40.7%) as disagreed (45.6%) with the statement that WTSEs could harm domestic
241 livestock and therefore threaten livelihoods of Cumbrian farmers. 33.3% of participants were
242 undecided and 47.0% disagreed that the cost of the project would outweigh any future benefits to
243 the local economy.
244
245 A large majority of respondents (80.4%) agreed that WTSEs would be good for the environment,
246 whereas the potential impacts of the raptor on endangered species of fauna were more equivocal.
247 40.3% were undecided and 44.3% disagreed with the question “WTSEs could pose a threat to rare
248 species of wildlife in the local area”. This uncertainty could reflect the knowledge base of the

respondents (as discussed, 42% confirmed that they had never heard of WTSEs prior to their participation in the study).

Overall respondents expressed strong views of agreement or disagreement, towards the questions that explored the social impacts of a WTSE reintroduction. When asked if their experience of nature would be enriched by the return of WTSEs, nine out of 10 respondents agreed. A clear majority disagreed with the statements that WTSEs could be a threat to cats and dogs (68.7%), and young children (88.0%).

37 individuals or 12.3% of participants responded to the open question by providing further comments about the project. As indicated in Figure 2, these remarks were assigned to 11 distinct themes within three broad category areas; environmental, economic and social. The theme with the greatest number of comments (12 out of 37 comments) described a positive sentiment towards the reintroduction. One individual wrote '*Good thing all round*' (R17), while another wrote '*Let's make it happen*' (R26).

Six comments described economic themes relating to the proposed reintroduction. Two comments described benefits to local business, while one referred to the opportunities created in the Cumbrian ecotourism industry; R02 stated that *'Cumbria's tourism industry is centred around nature and wildlife therefore this would only benefit'*. Other remarks related to the detrimental economic impacts of the project; Two respondents highlighted concerns regarding the potential cost of the project, and one retired farmer alluded to the financial implications of a WTSE population on the livestock sector: '*I am only in favour of the reintroduction if a compensation scheme is in place for farmers*'(R11).

11 respondents commented on a range of ecological issues. Four described environmental benefits in a general sense, whereas three comments specifically described the advantages derived from the ability of an apex predator to control species perceived as pests at the local level. For example R25 stated that *'white-tailed eagles are needed to keep down the population of nuisance sea gulls in Dumfries'*. In contrast, respondents also expressed concerns regarding impacts on the wider ecosystem and the need for such a reintroduction to be contingent on an environmental impact assessment. One participant described the persecution of raptors through the use of illegal poisons, as an on-going threat to the reintroduction project: '*Some lads I know lay poison baits for the buzzards'* (R19).

Participants also addressed social issues associated with the reintroduction proposal. Five comments related to the (positive) experience of seeing a WTSE in the wild; '*I would like to see these birds free rather than in a zoo'* (R27). One comment related to the opportunities of the project to deliver WTSE based environmental education initiatives: '*White-tailed eagles would be great to watch and would benefit everyone and education'* (R6).

A comparison of the attitudinal questions used for the North Cumbrian and Suffolk studies shows that there were three common questions, as indicated in Table 3 (Manly 2009). Both questionnaires included an open question inviting participants to provide further comments about the respective projects. The Suffolk study administered 523 questionnaires and collected 160 written comments (Manly 2009), whereas the Cumbrian study consisted of 300 questionnaires but only yielded 37 comments.

297 Despite the discrepancy in comment numbers collected, the majority of categories were shared by
298 both studies. The potential benefits to local tourism and the wider economy were described, as
299 were concerns regarding the cost of the project and the need to consult with the farming
300 community to evaluate risks to livestock. The potential for persecution post release was
301 documented and comments were made regarding the educational benefits of a WTSE
302 reintroduction.
303
304 A number of unique categories were documented in the Suffolk study (Manly 2009). Multiple
305 comments were made regarding the threat of an apex predator to local wildlife, pets and small
306 children. Respondents also voiced concern regarding the impact on marine fish stocks and
307 commercial freshwater fisheries. Several submissions described Suffolk as an inappropriate
308 landscape for such a reintroduction initiative: '*In Scotland they don't have the free range farms*
309 *that we do in this area (so against the project)*' and '*Completely inappropriate for this area'*.
310
311 A significant difference was established between the proportion of respondents in favour and
312 against the reintroduction at the two study sites ($\chi 2 = 20.84$, $df = 2$, $P < 0.05$). The Cumbrian study
313 documented more support and less opposition towards the reintroduction (88.7% in favour, 2.0%
314 against), compared to the Suffolk study (78.0% in favour, 9.0% against). Significant differences
315 were also established regarding the proportion of respondents who thought a reintroduction
316 would benefit the local tourist economy ($\chi 2 = 108.80$, $df = 2$, $P < 0.05$) with a larger majority in
317 Cumbria describing economic benefits (89.3% agreed, 0.7% disagreed, 10.0% undecided) than in
318 Suffolk (58.0% agreed, 14.0% disagreed, 28.0% undecided).
319
320 **Discussion**

Overall the study demonstrates support for a WTSE reintroduction in Cumbria, and reinforces the findings of several authors regarding the emergence of public interest in the conservation of raptors in the late twentieth and early twenty first century (MacLennan & Evans 2003; Cairns & Hamblin 2007; Martinez-Abrain et al.). Martinez-Abrain et al. (2008) evaluated attitudes to birds of prey in Spain in the latter part of the twentieth century and concluded that increasing public sympathy was attributed to the influence of mass media and an urbanising population who were no longer in conflict with raptors. In Great Britain, MacLennan and Evans, (2003) and Cairns and Hamblin, (2007), recognised that contemporary attitudes to raptors were shaped by ecotourism initiatives such as public viewing facilities at raptor nest sites, exposure to wildlife documentaries and environmental education campaigns. However, this finding does come with a number of caveats, not least that 42% of respondents had never heard of WTSEs. This highlights the need for an education and awareness campaign, combined with a further consultation survey to evaluate the attitudes of an 'informed public' prior to the development of a WTSE reintroduction project in Cumbria. There was also a sample bias towards older participants (56 to 65 years old cohort, 24.7% of the sample) and there is evidence from elsewhere that this group is less supportive of reintroductions compared to younger cohorts (Smith & Convery, 2015).

Considering the economic case for a reintroduction, a majority of respondents (89.3%) were convinced of the benefits to the local tourist industry. This is likely to be related to a growing awareness of the economic importance of tourism in rural areas. More specifically, it also reflects the valuable (and highly publicised) contribution that high profile ecotourism initiatives such as the Bassenthwaite Osprey Project (Ospreywatch, 2013) make to local and regional economies.

Since the middle of the twentieth century a growing environmental awareness and increased leisure time have resulted in increasing numbers of people visiting spectacular landscapes for

346 recreation (Dickie et al. 2006). More recently the marketing of flagship species by wildlife film
347 makers and conservation groups has driven the development of species specific ecotourism
348 initiatives and brought measurable economic benefits to some local communities (Martinez-
349 Abrain et al. 2008; Dickie et al. 2006). In 2010, a study commissioned by the RSPB revealed that
350 WTSE tourism on the island of Mull, in Scotland, generated an annual spend of £5 million and
351 supported up to 110 full time equivalent jobs (Molloy 2011).
352
353 Despite the majority acknowledging benefits to local tourist economy, 40.7% of respondents were
354 unsure about detrimental impacts on farming interests. This ambiguity could reflect a lack of
355 detailed subject specific knowledge, but in view of the high proportion of respondents who live in
356 rural locations, it is likely to be an affirmation of genuine concern for the livelihoods of livestock
357 farmers. Since the recovery of WTSEs in the North West Highlands, various authors have
358 documented a perception amongst sheep farmers that declines in lambing percentages were
359 related to eagles targeting live lambs (Madders et al. 2002; Marquiss et al. 2003; Simms et al.
360 2010). To quantify the extent of the problem in the Highlands of Scotland, research was conducted
361 at two separate locations (Mull: 1999-2002, Gairloch: 2009) to document the numbers of lambs
362 predated, the proportion that were taken live, and the impact on total farm incomes (Madders et
363 al. 2002; Marquiss et al. 2003; Simms et al. 2010). The studies concluded that the proportion of
364 lambs killed was insignificant compared to overall annual mortality, and that the financial impacts
365 of WTSEs on sheep farming interests would be negligible at broad spatial scales (Madders et al.
366 2002; Marquiss et al. 2003; Simms et al. 2010).
367
368 Although a substantial proportion of respondents were unsure of the risks to rare species of
369 wildlife in the locality, a large majority (80.4%) believed that WTSEs would be good for the
370 environment. This response alludes to both the suitability of the Cumbrian landscape as a habitat,

but also to the beneficial regulatory role of apex predators in the wider ecosystems: *'I think the countryside would benefit from the return of these birds'* (R13). As Wilson (2004) indicates, attitudes toward reintroduction projects tends to be favourable amongst the general public but negative among those most likely to be negatively affected. Whilst our study indicates broad support for the environmental benefits of a WTSE reintroduction, stakeholder groups likely to be adversely affected (e.g. farmers, fishermen and game estates) are underrepresented in our sample, and there is a need for more focused consultation. Research from Ireland, where WTSEs were reintroduced in 2007, indicates the importance of engaging with such groups. For instance, O'Rourke (2014) highlights the conflict between the 'raptor and the lamb', and emphasises the need for the early involvement of all key stakeholders. Similarly, Burke et al. (2015) state that given the sensitivity of the white-tailed eagle population, efforts to engage and inform farmers and other stakeholders is crucially important.

An exploration of the perceived social and cultural impacts of the reintroduction in Cumbria revealed that nine out of 10 participants felt that White-tailed Eagles would enrich their experience of nature and the majority agreed that the raptor posed no threat to children or domestic pets. This apparent groundswell of public support was tempered by comments of other respondents describing the historic and contemporary persecution of raptors in Cumbria. In April 2014, the largest mass poisoning of raptors in modern times occurred near Inverness in Scotland (Carrell 2014). The death of 12 Red Kites and four Common Buzzards (*Buteo buteo* L.) in a single incident demonstrates that persecution remains a serious threat to raptor populations throughout the UK (Carrell 2014). Cairns and Hamblin (2007) and, MacMillan et al. (2010) concede that entrenched negative attitudes towards birds of prey still exist amongst a minority of individuals in rural parts of the UK, who view raptors as pest species that require to be controlled.

Although the Suffolk study also documented majority support for the proposed reintroduction (Manly 2009), there was almost a five-fold increase in the number of respondents opposed to the project in Suffolk compared to the one in Cumbria. This apparent discrepancy may be explained by the concerns described by respondents when invited to add further comments regarding the project. A substantial proportion of the comments collected in the Suffolk study identified concerns relating to two distinct themes. Firstly the perceived threat of a WTSE population to pets, small children and wildlife, and secondly the unsuitable nature of East Anglia in the south east of England as a reintroduction site for a large raptor (Manly 2009). Although there is an absence of similar comments in the Cumbrian study, comparisons between the two studies must be interpreted with caution in light of the discrepancy in the number of comments collected at the study sites (Cumbria: n=37, Suffolk: n=160). It is likely that the higher percentage of respondents objecting to the initiative in Suffolk accurately reflects the perception that East Anglia is a heavily populated and highly developed landscape that is unsuitable for a large bird of prey.

The expression of public support documented in this study mirrors the findings of other authors evaluating human attitudes to contemporary predator reintroductions. Bright et al. (2000) administered a questionnaire to evaluate public opinion of a pine marten (Martes martes) reintroduction in England. They established that almost 90% of the general public and two thirds of farmers and gamekeepers supported the proposal. Nilsen et al. (2007) explored public perceptions of a wolf (Canis lupus) reintroduction in the Highlands of Scotland and revealed that the general public were broadly in favour of the proposal. However more positive attitude scores were recorded for the urban sample due to negative perceptions amongst some farmers in the rural sample.

420 The restoration of Golden Eagles to Donegal in Ireland was preceded by a widespread consultation
421 that assured the public as well as tourism and sheep farming interests that the reintroduction
422 would deliver a range of economic, cultural and ecological benefits (O'Toole et al. 2002). However
423 since the inception of the project in 2001 many Golden Eagles have been destroyed by ingesting
424 poisoned bates and the existing population remains vulnerable (The Golden Eagle Trust 2013). The
425 persecution of large avian and mammalian predators does not diminish the importance of social
426 feasibility studies in reintroduction projects but serves to emphasize the on-going conflict that
427 exists between predators and humans competing over common resources (Marshall et al. 2007).
428 Restoration projects also develop storylines as they progress, which inevitably reflect much of the
429 above. Arts et al. (20120 provide an overview of the various 'restoration narratives' linked to the
430 reintroduction of WTSEs to the Scottish island of Mull in 2007. In particular they highlight how
431 scientists' perceptions of the species as 'a bird of wild coasts' changed over time as a result of
432 ecological research on the eagle's high productivity in inland habitats and predation on lambs, and
433 how the 'restoration storyline' was subsequently modified to reflect this change.
434
435 This study set out to explore public opinion in North Cumbria towards a proposed WTSE
436 reintroduction and draw comparisons with a similar public consultation conducted in Suffolk in
437 2009 (Manly 2009). Study findings demonstrate that public support for a WTSE reintroduction in
438 Cumbria was widespread and transcended differences in the demographic, geographic and
439 employment profiles of the respondents. This expression of support towards a large raptor was
440 attributed to the consensus that a reintroduction programme would deliver a broad range of
441 economic, environmental and social benefits to local communities, with few detrimental impacts.
442 Public sympathy was manifest in both the Cumbrian survey and the equivalent survey conducted
443 in Suffolk in 2009, however participants in East Anglia were more 'risk averse' with regard to a

444 range of perceived threats posed by WTSEs and expressed concern regarding the suitability of
445 Suffolk as a re-introduction location.
446
447
448 Whilst the usefulness of attitudinal surveys has been questioned, we would argue that they
449 provide a useful baseline 'snapshot' ahead of a more structured and focused WTSE reintroduction
450 consultation. Indeed, considering the paucity of public consultations relating to raptor
451 reintroductions in the UK and the increasing importance of reintroductions as a conservation tool,
452 this study provides a useful case study, both in terms of IUCN requirements for social feasibility
453 studies (IUCN 2013), and the evaluation of public opinion regarding future raptor reintroduction
454 initiatives.
455
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461
462

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Figure 1: Response percentages in each Likert category to the question; “Overall would you say you are in favour of the White-tailed sea eagle reintroduction project?”

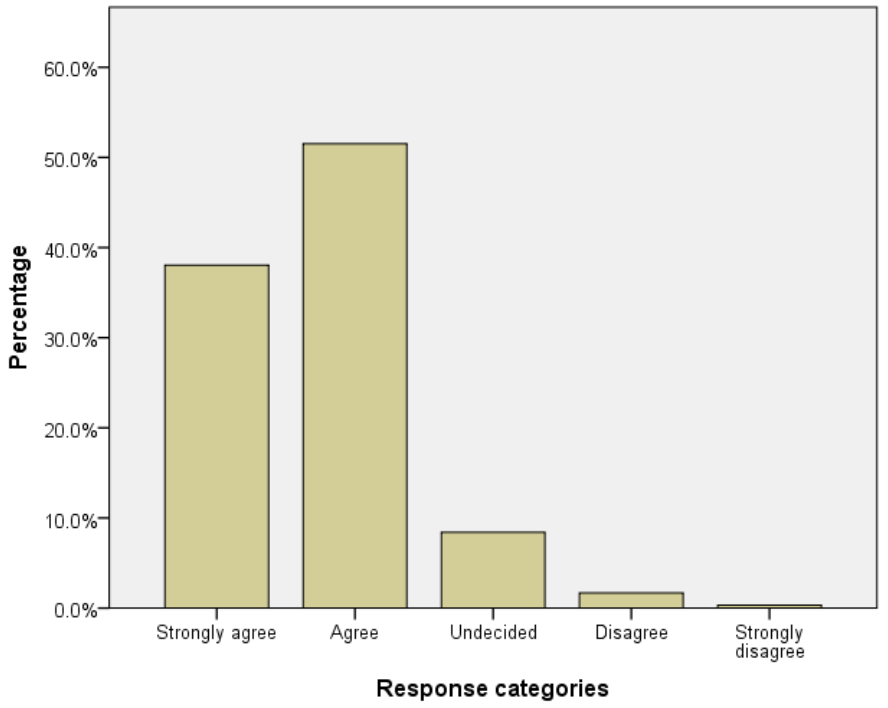
Figure 2: Further comments to the proposed White-tailed sea eagle reintroduction in Cumbria, showing relationship between 11 themes within three broad categories (social, economic and environmental). Numbers denote total responses in each theme.

Table 1: The employment profile of the respondents, showing the frequency and percentage of eight distinct work types.

Table 2: Response percentages in each Likert category to the attitudinal questions in the Cumbrian questionnaire.

Table 3: Three attitudinal questions drawn from the studies in Cumbria and Suffolk that explore similar themes.

Figure 1.


60.0%
50.0%
40.0%
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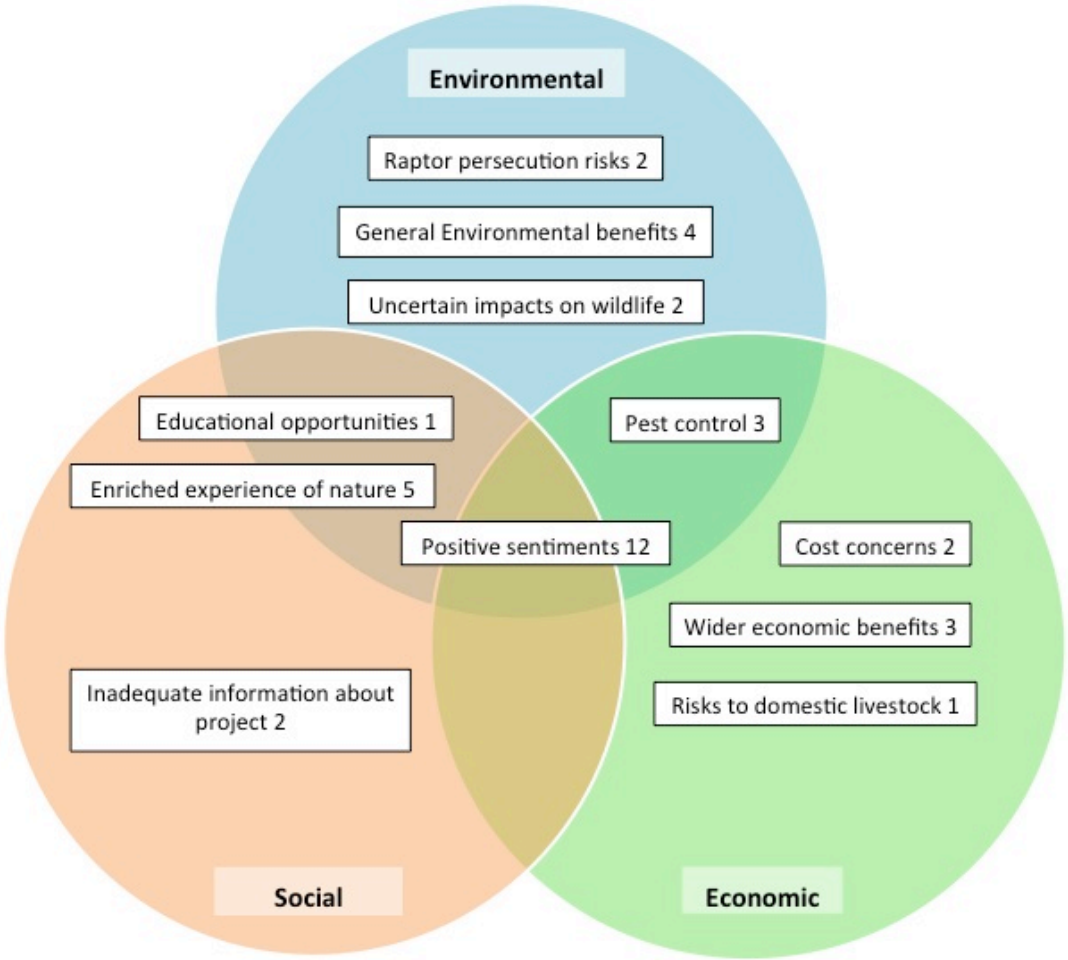
Percentage
Strongly agree
Agree
Undecided
Disagree
Strongly disagree
Response categories

614 Figure 2.



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628 Table 1.

Work Type	Frequency	Percentage
Farming (livestock)	10	5.8
Fishing	3	1.8
Tourism	8	4.7
Healthcare	25	14.6
Skilled Trades	39	22.8
Retail	13	7.6
Office Based	35	20.5
Other Working	25	14.6
Missing	13	7.6
Total	171	100

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630 Table 2.

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Question	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Unanswered
1. A Cumbrian population of White-tailed sea eagles would benefit the local tourist industry.	31.3	58.0	10.0	0.7	0.0	0.0
2. White-tailed sea eagles could threaten the livelihoods of Cumbrian farmers by taking livestock.	1.7	11.7	40.7	38.3	7.3	0.3
3. The cost of the project would outweigh any future benefits to the local economy.	5.0	12.0	33.3	39.0	8.0	2.7
4. Reintroducing White-tailed sea eagles would be good for the environment.	23.7	56.7	17.0	2.3	0.0	0.3
5. White-tailed sea eagles could pose a threat to rare species of wildlife in the local area.	2.1	13.0	40.3	40.0	4.3	0.3
6. Restoring White-tailed sea eagles to the skies of Cumbria would enrich my experience of nature.	37.0	53.0	7.3	1.7	1.0	0.0
7. White-tailed sea eagles could harm dogs, cats and other small pets.	0.7	8.7	22.0	56.0	12.6	0.0
8. White-tailed sea eagles are a danger to humans and pose a particular threat to young children.	1.3	1.7	8.7	54.7	33.3	0.3

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644 Table 3.

1.	**Cumbria study**	Overall would you say you are in favour of the White-tailed sea eagle reintroduction project?
	Suffolk study	From what you have read and heard, would you say you are for or against the White-tailed sea eagle project?
2.	**Cumbria study**	A Cumbrian population of White-tailed sea eagles would benefit the local tourist industry.
	Suffolk study	I think the project would be a benefit to the local economy.
3.	**Cumbria study**	Please use the space provided to add any further comments you wish to make about this project.
	Suffolk study	Do you have any further comments about the project?

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