

Mayhew, Michael ORCID: <https://orcid.org/0000-0002-2934-5489> (2013)
Stakeholder consultation report, white-tailed eagle project. (Unpublished)

Downloaded from: <http://insight.cumbria.ac.uk/id/eprint/3832/>

Usage of any items from the University of Cumbria's institutional repository 'Insight' must conform to the following fair usage guidelines.

Any item and its associated metadata held in the University of Cumbria's institutional repository Insight (unless stated otherwise on the metadata record) may be copied, displayed or performed, and stored in line with the JISC fair dealing guidelines (available [here](#)) for educational and not-for-profit activities

provided that

- the authors, title and full bibliographic details of the item are cited clearly when any part of the work is referred to verbally or in the written form
 - a hyperlink/URL to the original Insight record of that item is included in any citations of the work
- the content is not changed in any way
- all files required for usage of the item are kept together with the main item file.

You may not

- sell any part of an item
- refer to any part of an item without citation
- amend any item or contextualise it in a way that will impugn the creator's reputation
- remove or alter the copyright statement on an item.

The full policy can be found [here](#).

Alternatively contact the University of Cumbria Repository Editor by emailing insight@cumbria.ac.uk.

Stakeholder Consultation Report
White-Tailed Eagle Project

Mic Mayhew
University of Cumbria
Centre for Wildlife Conservation
Newton Rigg College, Penrith
CA11 0AH
mic1mayhew@hotmail.com
Tel: 07909 920384

Document Notes

To: Wildlife Management and Licensing Service, Natural England
From: Mic Mayhew MSc BVM&S MRCVS
Date: 28th November 2013

Document Summary:

This is the final report describing stakeholder opinion regarding the ecological, economic and social impacts of a proposed white-tailed eagle (WTE) (*Haliaeetus albicilla* L.) re-introduction in Cumbria.

Contents

	Page
List of Abbreviations	3
A) Aims and Objectives	4
B) Outputs	4
C) Background Information	4
<i>Geography and population</i>	4
<i>Economy</i>	5
<i>Table 1. Names and contact details of stakeholder group representatives categorized into sectors</i>	6
Part 1 Introduction	9
Part 2 Methods	10
Part 3 Results: Ecological Impacts	11
3.1 <i>Habitat Suitability</i>	11
3.2 <i>Ecosystem Impacts</i>	11
Part 4 Results: Economic Impacts	14
4.1 <i>Tourism</i>	14
4.2 <i>Livestock Farming</i>	16
4.3 <i>Field Sports</i>	17
4.4 <i>Renewable Energy Development</i>	17
Part 5 Results: Social/Cultural Impacts	18
Part 6 Discussion	20
6.1 <i>Summary</i>	20
6.2 <i>Limitations</i>	21
6.3 <i>Recommendations</i>	22
Appendix 1 Case Study: WTEs on Mull	23
Appendix 2 Case Study: The Lake District Osprey Project	25
Appendix 3 Stakeholder Information Letter	27
References	29

List of Abbreviations

- BASC: British Association of Shooting and Conservation
- CCC: Cumbria County Council
- CFN: Cumbria Farmer Network
- Cumbria NFU: Cumbria National Farmers Union
- CLA: Country Land and Business Association
- CWT: Cumbria Wildlife Trust
- IUCN: International Union for Conservation of Nature
- LDNP: Lake District National Park Authority
- NE: Natural England
- SNH: Scottish Natural Heritage
- Solway AONB: Solway Area of Outstanding Natural Beauty
- RSPB: Royal Society for the Protection of Birds
- WTE: White-tailed eagle
- WWT: Wildfowl and Wetlands Trust

A) Aims and Objectives

This consultation aims to meet the socio-economic requirements documented in the International Union for Conservation of Nature (IUCN) guidelines for re-introductions (2013), by comprehensively evaluating stakeholder opinion to a WTE re-introduction in Cumbria. The report will contribute to a wider feasibility study to support a licence application to Natural England.

The objective is to conduct semi-structured interviews with representatives of all the key stakeholder groups, to examine opinion regarding the ecological, economic and social impacts of the proposed re-introduction.

B) Outputs

The consultation will be summarised within a report with the following research outputs:

- Relevant background quantitative data relating to the geography, demography and economy of Cumbria.
- Identification of key stakeholder groups and their respective forms of land use.
- Comparative qualitative analysis and discussion of stakeholder views.
- Recommendations for conflict resolution and progress.
- Retrospective case studies of the Lake District Osprey Project and WTEs on the island of Mull.

C) Background Information

Geography and population

Cumbria is the second largest county in England with an area of almost 7000 square kilometres characterised by upland, coastal and rural landscapes (Cumbria Vision, 2009). As the largest National Park in England, the Lake District National Park protects the mountainous terrain at the heart of Cumbria which gives way to the fertile coastal lowlands of the Solway Firth in the north and Morecambe Bay in the south (Cumbria County Council, 2012). Cumbria is bound to the west by the extensive coastline of the Irish Sea, and to the east by the hills of the Pennine escarpment (Cumbria County Council, 2012; Cumbria Vision, 2009).

With a total population of just under 500000, Cumbria is one of the most sparsely populated counties in England (Cumbria population density: 0.73 per hectare; UK: 2.49 per hectare) (Cumbria Vision, 2009). The main population centres are the City of Carlisle (73270) in the north and the two county towns of Kendal (28586) and Barrow in Furness (56745) in the south (Cumbria Intelligence Observatory, 2011). Demographic forecasts suggest that in the

short to medium term (to 2029), the number of citizens over the age of 45 migrating into Cumbria will outpace the emigration of younger citizens and result in a small net increase in the total population (Cumbria Vision, 2009).

Economy

The economic structure of Cumbria is distinct from the North West region and the UK as a whole, due to an over representation of employment in agriculture, hospitality and manufacturing and an under representation in the business and finance sectors (Cumbria Intelligence Observatory, 2013; Cumbria County Council, 2012; Cumbria Vision, 2009). Gross Value Added (GVA) (The difference between the value of goods/services produced and the cost of raw materials/other inputs used in production), growth exceeded the national average in Cumbria between 2001 and 2011 (Cumbria Intelligence Observatory, 2013). Due to the influence of the Sellafield nuclear plant, manufacturing output in the county is 2.5 times greater than the UK average and accounts for 26.7% of the total GVA (8950 million pounds). The distribution, food and accommodation sectors support 26.4% of the GVA in East Cumbria (Eden, Carlisle and South Lakeland) (Cumbria Intelligence Observatory, 2013).

Agricultural production contributes little to the total GVA of Cumbria and only employs a small percentage of the working population (Cumbria Intelligence Observatory, 2013). However the tourism sector is dependent on the provision of agricultural services to maintain the landscapes that tourists travel to enjoy and to support supply chain businesses such as food and drink (Cumbria Vision, 2009). In 2012 over 40 million tourists visited Cumbria supporting 32500 full time equivalent jobs and generating 2.1 billion pounds for the regional economy (Cumbria Tourism, 2013). Between 2000 and 2012, visitor numbers and employment in the tourism sector have increased by 6% and 5% respectively (Cumbria Tourism, 2013).

In 2009 Cumbria Vision published a document outlining a proposed economic strategy for the county over the following 10 years (Cumbria Vision, 2009). The strategy was endorsed by the county and district councils as well as the Lake District National Park authorities. The aim was to generate sustainable economic growth by supporting and developing the skills base in the advanced manufacturing sector, and raising the profile of Cumbria as a place to visit, live and invest (Cumbria Vision, 2009). To achieve those economic objectives the statutory authorities identified the following 6 priority sectors;

1. Tourism
2. Energy and Environmental Technology and Services
3. Specialist Manufacturing
4. Outdoor
5. Food and Drink
6. Digital, Creative and Culture

Table 1. Names and contact details of stakeholder group representatives categorized into sectors.

Sector	Organisation	Representatives	Contact Details
Conservation	RSPB	Amanda Miller: Regional Conservation Manager, North of England Richard Evans: Senior Policy Officer, Scotland David Morris: Area Conservation Manager, North West	Amanda Miller 1 Sirius House Amethyst Road Newcastle Business Park Newcastle-upon-Tyne NE4 7YL
	CWT	David Harpley: Conservation Manager	Plumgarths Crook Road Kendal Cumbria LA8 8LX
	WWT	Dr Baz Hughes: Head of Species Conservation Department	Bowditch Slimbridge Gloucestershire GL2 7BT
Field Sports	BASC	Alasdair Mitchell: Director, North Region	1 Shawwell Business Centre, Stagshaw Road Corbridge Northumberland NE45 5PE

Statutory	CCC	Dr Richard Newman: Historic and Natural Environment Manager	The Lonsdale Building The Courts English St. Carlisle Cumbria CA3 8NA
	NE	Bart Donato: Lead Advisor, Landscape-scale Delivery North	Kendal branch Juniper House Murley Moss Oxenholme Rd Kendal, Cumbria, LA9 7RL
	LDNP	Andrew Herbert: Head of Environment and Heritage Judy Clavey: Senior Ecologist	Murley Moss Oxenholme Road Kendal Cumbria LA9 7RL
	SNH	Chris Miles: Area Manager, Southern Scotland	Scottish Natural Heritage Carmont House Bankend Road Dumfries DG14ZF
	Solway AONB	Brian Irving: Manager	Solway Coast Discovery Centre Liddell Street Silloth-on-Solway Cumbria CA7 4DD

Farming and Land Management	Cumbria NFU	Mike Sanderson: Cumbria NFU County Advisor	Agriculture House 1 Moss Lane View Skelmersdale Lancashire WN8 9TL
	CFN	Paul Harper: Director, Cumbria Farmer Network	The Grasmere Building Newton Rigg College Penrith Cumbria CA11 0AH
	CLA	Dorothy Fairburn: Director, North Region	Aske Stables Aske Richmond North Yorkshire DL10 5HG

Part 1 Introduction

The University of Cumbria is conducting a feasibility study to re-introduce WTEs to the County of Cumbria (Research and Scholarship Development Fund, 2012). This report contributes to the wider feasibility study and describes a stakeholder consultation that was administered to objectively evaluate opinion regarding the ecological, economic and social impacts of a proposed re-introduction. As the regulatory body appointed by the government, Natural England has a legal obligation to consider re-introduction proposals of native species listed under schedule 9 of the Wildlife and Countryside Act (1981). This consultation was designed to meet the requirements of the IUCN re-introduction guidelines (2013) and to support a re-introduction licence application from Natural England.

The consultation aims to answer the following research question:

- What are the opinions of key stakeholder groups regarding the ecological, economic and social impacts of a proposed WTE re-introduction in Cumbria?

Prior to the nineteenth century, WTEs were broadly distributed within suitable habitat in the United Kingdom (Green, Pienkowski and Love, 1996; Love, 1983). Widespread persecution during the nineteenth century, led to a significant population contraction within Great Britain and throughout their western Palaearctic range (Love, 1983) which culminated in the extinction of the species in the United Kingdom in 1918 (Love, 1983).

Between 1975 and 1998 a partnership between the Royal Society for the Protection of Birds (RSPB) and the Nature Conservancy Council succeeded in re-introducing WTEs in two stages to the North West Highlands of Scotland (Love, 1983). Between 2007 and 2012, effective collaboration between the RSPB, Scottish Natural Heritage (SNH) and the Forestry Commission resulted in the third Scottish re-introduction in the lowlands of Tayside and Fife (RSPB, 2012). Despite these successful conservation initiatives, the WTE is still an extremely rare bird with an estimated British population of no more than 60 pairs (Anon, 2012). To date there are no breeding pairs on territory in England despite a feasibility study undertaken on the Suffolk coast in 2009 (Natural England, 2010).

Cumbria provided the last refuge for WTEs on the English mainland until the species was rendered extinct at the end of the 18th century (Love, 1983). The slow breeding rate and restricted dispersal, makes it unlikely that the species will naturally recolonize the county in the near future (Whitfield et al., 2009). A successful re-introduction would help to secure the future of WTEs in Great Britain and would make an important contribution to the international conservation effort.

Part 2 Methods

The main objective of the consultation was to collate stakeholder opinions by administering semi-structured interviews. If practical difficulties precluded the organisation of an interview, stakeholder representatives were asked to present their views of the re-introduction proposal in a written position statement. To gather a diverse range of opinions, representatives from the conservation, field sports, farming and statutory sectors were selected through the use of purposeful sampling techniques. The selection was made on the basis that the chosen groups had a range of legitimate but often contradictory land use interests. In contrast to other stakeholder groups, NE and SNH did not volunteer their views on the initiative but provided a comprehensive check list of tasks to be undertaken in the wider feasibility study. As the statutory regulator and potential licensing authority NE considered it inappropriate to be interviewed as a stakeholder in this consultation. Where possible, interviews were conducted with individuals in senior positions, as it was assumed that they represented the views of a broad membership and had a greater understanding of the policies and key objectives of their organisation.

An introductory letter was sent to stakeholder groups providing background information on the re-introduction initiative and inviting them to take part in the consultation (Appendix 3). E-mail and phone reminders were used to encourage the participation of non-respondents and semi-structured interviews were conducted between October 2012 and September 2013. Representatives were encouraged to read and sign an interview consent form and were given a signed copy of the document to keep for their records. Interviewees were asked if they had been adequately informed about the study and were happy to take part in it. Furthermore permission was sought to take digital recordings of the interviews and the content was transcribed verbatim. Transcripts were returned to the interviewee for final checks and amendments prior to being incorporated into the consultation.

Qualitative analysis of interview transcripts and written statements was performed using the grounded theory-constant comparison method (Pope, Ziebland and Mays, 2000). This methodology identifies and compares research themes within and between transcripts and assigns similar themes to broad categories. The re-reading of transcripts and constant comparison of emergent themes increases the accuracy and refines the meaning of the chosen categories. The process of fragmenting the interview to identify themes and grouping similar themes into categories, helps to conceptualise the key message or messages within each interview.

Part 3 Results: Ecological Impacts

3.1 Habitat Suitability

There was broad agreement amongst the CWT, RSPB, AONB, LDNP and WWT that the present cultural landscapes of Cumbria could satisfy the ecological requirements of a re-introduced population of WTEs. This consensus was reached by considering the diverse range of landscape types occupied by WTEs across their European range. The CWT and RSPB remarked that as an adaptable generalist species extant populations currently thrive in areas with similar landscape characteristics to Cumbria such as the agricultural lowlands of northern Germany and Denmark. Based on the dispersal potential of WTEs, a number of stakeholder representatives advised that habitat suitability assessments should extend beyond the Cumbrian county border to adjacent areas that could be colonised by an expanding WTE population. These areas included Morecambe Bay in Lancashire and the coastal region of Dumfries and Galloway.

Despite an agreement in principle that Cumbria could support WTEs, the LDNP, RSPB and BASC articulated concerns regarding changes in the diversity and quality of habitat over time. The LDNP commented on the impacts of overgrazing by sheep on the Lakeland fells and the subsequent problems associated with soil erosion and eutrophication of water sources. They considered that habitat impoverishment could reduce the availability of wild prey species and increase the incidence of WTE predation on lambs. The RSPB discuss landscape suitability in the context of contemporary anthropogenic hazards such as power line networks and wind farms and argue that these risk factors should be quantified by conducting appropriate hazard assessments:.

‘How the landscape looks doesn’t particularly bother the birds, but there will be a range of hazards that you may want to build into any feasibility study. We see a lot of interest with wind energy generation on the English side of the Solway at the moment.’

3.2 Ecosystem Impacts

Further to the discussion on landscape suitability, stakeholder opinions were sought regarding the impacts of a WTE population on the wider ecosystems in Cumbria. Several stakeholder groups including the LDNP and then CWT considered the ecological benefits of a WTE re-introduction in terms of enhancing biodiversity and thereby restoring ecosystem function. The LDNP commented that the re-introduction of former native species was consistent with the statutory purposes of the organisation to conserve and promote the enjoyment and understanding of the environment.

Stakeholder representatives evaluated ecosystem impacts in terms of the implications for native and non-native species, and agreed in principle on the need for environmental impact assessments to quantify potential risks and benefits to existing species.

The CWT, AONB and WWT were least concerned about detrimental impacts on native species on the basis that WTEs coexist with a suite of other native wildlife in Scotland. Furthermore they were unaware of any published evidence that documented the decline of native populations as a consequence of competition or predation pressure from WTEs:

'We are not aware of any evidence to suggest that it would have a significant impact on any of the protected species that use our reserve at Caerlaverock. It would be an excellent contribution to the restoration of the native avifauna of the area.'

By contrast some groups including the RSPB, BASC, CCC and LDNP articulated genuine concerns regarding impacts on native species. The LDNP held the view that impacts were inherently unpredictable due to the large home range of WTEs and the diversity of prey species available to such a generalist predator. The RSPB and the CCC discussed predation pressures on the Barnacle Goose (*Branta leucopsis* L.) population in the Solway Firth. Their concerns were offset by the view of the AONB representative who remarked on the exponential population increase from 300 in 1969 to current estimates of 30000 birds. Furthermore the AONB recognised that the geese have adapted to coexist with dense populations of WTEs as they migrate down the western seaboard of Norway from Svalbard towards their wintering grounds in then Solway Firth. Several stakeholder comments alluded to potential pressures such as kleptoparasitism, intraguild predation and displacement on other native raptor species. The LDNP voiced concern for the safety of the Ospreys (*Pandion haliaetus* L.) at Bassenthwaite if the area was colonized by WTEs. The RSPB and the CCC emphasized the vulnerability of Hen Harrier (*Circus cyaneus* L.) roosts along the Solway and re-introduced populations of Red Kites (*Milvus milvus* L.) in Cumbria and Dumfries and Galloway. The BASC considered the expanding population of Buzzards (*Buteo buteo* L.) to be a greater threat to game species than WTEs and acknowledged that the sea eagles could displace other birds of prey of more immediate concern to game rearing interests.

The CWT and LDNP expanded the issue of ecosystem effects by discussing impacts on non-native species. They remarked specifically on the potential for WTEs to control growing populations of Canada Geese and reduce the associated degradation of lakeshore habitat and eutrophication of water sources in the Lake District.

Although the majority of conservation groups were convinced that a WTE population would not upset the balance of species in the wider ecosystem, representatives from the field sports and farming sector were concerned about the adverse impacts of a growing WTE population. They suggested that In the past, game keepers maintained raptor populations at a healthy equilibrium and that a combination of legal protection and fewer game keepers had resulted in unnaturally high populations of some species of birds of prey. With specific regard to WTEs, both the CFN and the BASC recognised that due to the dramatic changes in land use since the extinction of WTEs in the late eighteenth century, the growth rate of a re-introduced population was unpredictable and difficult to quantify. However if the re-introduction was successful, farmers and landowners would be powerless to effectively control an expanding population in the face of such robust legal protection:

'I think they need to be protected at certain points, but then perhaps the protection needs to be lifted when it's got to the stage where we have got a reasonable population.'

Part 4 Results: Economic Impacts

Analysis of interview transcripts and written position statements revealed the potential costs and benefits of the proposed WTE re-introduction. The costs were expressed by stakeholder groups in terms of the threats to livestock farming, game rearing and renewable energy developments, and the opportunities as the potential for sea eagles to stimulate the tourism industry and support the local and regional economy.

4.1 Tourism

Of the twelve stakeholder groups participating in the study, seven organisations acknowledged the capacity of iconic species such as WTEs to attract visitors to an area and increase tourism revenues. Of those organisations the WWT and the Solway AONB did not elaborate on the subject and described economic benefits only in a general sense whereas other stakeholders expanded the discussion by describing both the opportunities and certain caveats regarding the impact of WTEs on the tourist industry in rural communities.

Three organisations namely the CCC, the CLA and the NFU either declined to comment or disagreed with majority opinion on the issue. The only comment from the CLA revealed that although the proposed re-introduction had not been discussed with the membership in Cumbria it was likely that they would be opposed to the initiative. The NFU stated that any benefit to the agricultural community from increased tourism, would be far outweighed by the costs to the industry. The representative from CCC was not convinced by the economic case and requested objective quantitative data from previous raptor re-introductions:

‘Perhaps more investment should be made in deciding a better economic return from existing assets such as the geese rather than carrying out a new initiative with a perceived glamorous species. To be convinced we would have to see figures and comparable data.’

Benefits to Tourism in Cumbria

The RSPB, LDNP and the CWT shared the view that a WTE re-introduction would attract a substantial number of additional visitors to the county and enhance the visitor experience. Furthermore they suggested that a WTE population could be used by local authorities as a marketing vehicle to draw tourists to the county who could then be encouraged to visit a wider network of local attractions. The CWT made the point that even those visitors who failed to see WTEs would benefit from a richer experience through the knowledge that a spectacular species had been returned to the landscape. The representative of the CFN interpreted the benefits of increased visitor numbers in terms of the opportunities for diversification and the development of tourism initiatives to bolster total farm incomes. He commented that diversification schemes were the result of a historic shift in emphasis from production based agriculture after the Second World War to the integrated,

environmentally sensitive farming systems of the modern age. Despite acknowledging the economic opportunities of a WTE re-introduction, the representative from the CFN recognised that many traditional farming families are still unaware of the monetary value of their natural assets and are not realising the potential tourism revenues inherent in the landscape:

'About 50% of farmers have diversified and a high proportion of those will be tourism. There is still a high proportion who don't get involved and one of the things farmers have not been that good at, is valuing what they have as a farm to the tourists.'

Concerns Regarding WTE based Ecotourism

The substantial benefits to the tourist industry described by multiple stakeholder groups were tempered by concerns relating to the unequal distribution of tourist revenues in the community, the cost of the re-introduction and the impact of nest site location on the potential to develop tourist infrastructure.

The RSPB, BASC and LDNP were unequivocal in their view that the economic benefits derived from large raptors are often unequally shared amongst rural communities. They recognised that conflict could arise as some businesses such as wildlife tour operators attract a substantial and disproportionate share of revenues, whereas local farm enterprises might gain little from a population of WTEs. Further concerns were expressed by the LDNP, CWT and CCC regarding the location of WTEs in the county. They understood that nest site viewing facilities offered the greatest opportunity to develop ecotourism initiatives, but emphasised that many remote nest site locations such as the Solway coast could be impractical as a visitor attraction site. Finally several stakeholder groups had reservations about the cost of the re-introduction. The NFU stated simply that the initiative represented a waste of tax payer's money whereas the RSPB warned that a successful outcome would be conditional upon long term robust funding streams. The CWT acknowledged the expense of a WTE re-introduction and considered the merits of spending the money on other conservation projects.

To reduce the conjecture relating to the potential costs and benefits of the initiative the CCC and RSPB advised that economic impact assessments should be carried out to quantify the impacts of the re-introduction on the wider community.

4.2 Livestock farming

Although the landscapes of Cumbria support a broad range of livestock types and farming systems, the consensus of opinion amongst stakeholder groups identified lambs as most at risk from a WTE re-introduction. Although the NFU and CFN expressed additional concerns about the safety of free range poultry units, they acknowledged that poultry only constitute a small part of the livestock sector in the county.

With regard to impacts on extensive sheep farming enterprises the majority of stakeholder organisations agreed that WTEs can prey upon lambs. However opinion was divided with regard to the extent of the threat to lambs and the resulting financial impact on farm livelihoods. The RSPB and CWT maintained that the level of risk perceived by farmers was not supported by available published evidence. Studies evaluating lamb predation on extensive sheep farming systems had revealed that in most cases the number of lambs lost to WTEs was insignificant compared to overall lamb mortality and did not threaten the viability of the farm enterprise. In contrast several other stakeholder groups including the BASC, LDNP, NFU and CFN, were concerned that the magnitude of risk could have a detrimental economic impact by reducing on farm profitability. They highlighted the cumulative problems afflicting the sheep industry in Cumbria and considered WTEs to represent another unnecessary threat to a low income industry experiencing unprecedented financial pressures:

'If you went round at the moment, they would be tearing their hair out because of last summer which was terrible. There is a lot of stress in the community about financial pressure due to lack of silage, bad weather, animals killed by the snow so there are a lot of problems at the moment.'

The RSPB and LDNP considered the merits of compensatory mechanisms such as agri-environment and management schemes that were used as statutory vehicles in Scotland to offset financial losses incurred by farmers as a result of WTE activity. They agreed that the available schemes had been poorly funded and they had practical concerns regarding the complexity of designing and implementing such schemes. Furthermore they warned that in light of changes to common agricultural policy the future availability of statutory funding was uncertain.

4.3 Field Sports

The BASC were primarily concerned with the impact of a WTE population on the wildfowling community and pheasant and partridge shooting interests. With regard to all the common quarry species, detrimental economic impacts were attributed both to the direct effect of predation and the indirect impacts of disturbance:

‘One gamekeeper said to me if a huge raptor flew over that’s probably the end of the shooting for that day. If it happened to coincide with one of my let days for which we are making income for the estate that would be a disaster.’

4.4 Renewable energy development

Stakeholder representatives from the CCC, RSPB and LDNP collectively endorsed the development of onshore and off shore wind farms as a means to generate green energy and meet government renewables targets. However the stakeholder groups recognised a potential conflict of interest between the re-introduction of a large raptor and the development of wind energy plants.

The CCC were primarily concerned that a WTE population could delay or disrupt the installation of future wind turbines along the Solway basin and were questioning the impact on any future proposals for a Solway Barrage. The RSPB and LDNP explored the issue from a different perspective and considered the risks to WTEs from renewable energy installations. The RSPB described a rapid escalation in the development of wind farms in the north of Cumbria and considered it essential to conduct a hazards assessment to determine the associated level of risk. The LDNP confirmed that in accordance with the local development framework policy, only micro- scale wind plants were allowed within the national park with the larger commercial wind farms located out with the park boundary. They acknowledged the potential bird strike risk but described the impact of renewables on biodiversity as a developing understanding. Furthermore the LDNP made reference to studies that had found that in some circumstances large raptors and wind energy plants could coexist.

Part 5 Results: Social/Cultural impacts

In a historical context the representative of the Solway AONB highlighted the cultural significance of WTEs in Cumbria by referring to stone carvings of eagles located in ancient buildings on the Bowness peninsula. He remarked that the numerous carvings found in parish churches, fortified houses and in the Cistercian abbey of Holme Cultran provided evidence for the existence of WTEs in Cumbria prior to their extinction in the late eighteenth century.

In a contemporary context many stakeholder groups commented on recent changes in public attitudes and the emergence of a new sympathy towards birds of prey. The LDNP described the public appeal of the Lake District Osprey Project and the Red Kite re-introduction areas as evidence of a substantial public appetite for viewing birds of prey. Stakeholder groups representing the farming community and the shooting industry had also documented changes in the perception of their members towards raptors. The CFN made the point that in principle the vast majority of farmers are not against predators as long as populations are kept in balance. The BASC commented that the majority of their membership rejected Victorian attitudes to birds of prey and accepted that they should form part of the cultural landscapes of Cumbria:

'I think attitudes have certainly moved on from the Victorian era, and I think that all sensible shooting folk recognize that raptors have a place in the countryside and that gamekeepers and raptors are going to have to coexist.'

Despite a sea change in public perceptions to raptors, stakeholder representatives cautioned against complacency. They recognised that cultural barriers still existed between conservation groups and certain elements within rural communities with entrenched negative attitudes towards raptors. The RSPB suggested that evidence of those negative attitudes was manifest as the on-going illegal persecution of birds of prey in rural areas:

'The other aspect to consider as a serious but negative cultural issue is the very current threat of persecution in Cumbria. There isn't a friendly welcome for birds of prey in Cumbria as the third highest English county for confirmed incidents last year.'

Furthermore they expressed caution regarding the fickle nature of public values and opinions towards raptors and described as an example changing public attitudes on the isle of Mull towards a growing WTE population that is perceived as an increasing threat to native wildlife.

Overall the BASC and the CFN concluded that cultural barriers had been perpetuated by statutory agencies and conservation groups implementing initiatives in isolation, without adequately consulting other stakeholder groups such as farmers and landowners. They maintained that the resulting mistrust and division had prevented progress towards conservation goals that aimed to satisfy the needs of disparate stakeholder organisations. There was broad agreement amongst Stakeholder groups from the conservation, farming and field sports sectors that progress would require a bold new approach based on educational campaigns, effective communication and collaboration between stakeholder groups. Furthermore the application of these methods would eventually help to erode negative attitudes towards raptors and facilitate the re-introduction of WTEs.

The RSPB understood that iconic species of raptor could form the basis of environmental education initiatives and would help children and adults to reconnect with nature. They maintained that with time and through a process of education and exposure to WTEs, public perceptions to raptors would improve as people came to view the species as an important part of their cultural heritage. The CWT and LDNP echoed the views of the RSPB and added that WTEs could be used as ambassadors for the wider conservation movement.

Although both the CFN and the BASC recognized the role of educational campaigns in addressing the concerns of their membership, they expressed differences of opinion with regard to the method of delivery at public meetings. The representative of the field sports sector suggested meetings should be led by the WTE project team whereas the CFN stressed the importance of meetings chaired “by farmers for farmers”:

‘...If you were to say to farmers, if we were to introduce WTEs what system would you come up with? Rather than do it from the outside put the responsibility on them and say right this is what the scheme is like in Scotland, what you would do here and then it’s their scheme.’

As the managers of the countryside, it was acknowledged that the support of the farming community was vital to the success of the re-introduction initiative. To achieve that support and engender a sense of pride and ownership, the public meetings should be led by farming representatives and the farming community should have responsibility for and active participation in the design of a WTE management scheme.

Part 6 Discussion

The complex findings of this consultation reflect the involvement of multiple stakeholder groups with a range of land use mandates including food production, biodiversity conservation and game shooting. The strength and diversity of opinion expressed by many representatives is borne out of their understanding that the return of a large predator into an evolving cultural landscape will have a tangible impact on rural communities. Despite articulating a broad range of opportunities and risks associated with a population of WTEs, the majority of Stakeholder groups perceived the outcomes of a re-introduction to be inherently unpredictable. They agreed that to reduce the unpredictability of the project and protect their interests, the WTE project team had a responsibility to conduct a comprehensive range of impact assessments that would generate objective evidence regarding the economic social and ecological impacts of the proposed re-introduction.

6.1 Summary

Despite concerns regarding the impoverishment of habitats and the risks associated with contemporary landscape hazards such as wind farms, the majority of stakeholder groups from the conservation and statutory sectors were convinced that the Cumbrian landscapes could meet the ecological needs of a WTE population. However opinions remained divided with regard to the potential impact of such a large raptor on native species in existing ecosystems. Amongst the conservation, field sports and statutory sectors some embraced the re-introduction as an opportunity to rebuild functional ecosystems and enhance biodiversity. Based on the evidence of previous WTE re-introductions they inferred that a Cumbrian population could thrive without causing the decline of other native species. Other stakeholder representatives voiced genuine concerns regarding the potential for collateral harm to protected species of raptor and wildfowl.

Overall conservation representatives held the view that a WTE re-introduction in Cumbria would not upset the natural balance in the landscape. By contrast the field sports and farming sector highlighted the exponential increase in the population of other re-introduced raptors such as Red Kites and cautioned that the balance of nature could only be maintained if mechanisms were devised to control as well as protect Cumbrian WTEs.

Regarding the economic case for the proposed re-introduction there was consensus of opinion across Stakeholder sectors that a WTE population would deliver economic benefits on a regional scale, by creating a unique wildlife watching eco-tourism initiative and attracting increased visitor numbers to Cumbria. This consensus is likely to be related to an awareness of the importance of tourism as a driver of the Cumbrian economy and the valuable contribution that eco-tourism initiatives such as WTE viewing on Mull can make to the economic prosperity of a region (Dickie, Hughes and Esteban, 2006).

However stakeholder representatives from the conservation, statutory and field sports sectors cautioned that only certain types of rural business could expect to share the financial benefits of a re-introduction whereas others such as livestock farmers and commercial shooting interests could pay a cost. Despite a joint acknowledgement that lambs reared in extensive systems were at greatest risk from a population of WTEs stakeholder opinions differed with regard to the impact of predation on the viability of the farm enterprise. Representatives from the field sports, farming and statutory sector commented that lamb losses would contribute to a cumulative impact on farm profitability whereas participants from the conservation sector maintained that the predation of lambs would constitute an insignificant proportion of overall lamb mortality.

Stakeholder groups recognized that the financial returns from WTE based eco-tourism were testament to temporal changes in public perceptions towards birds of prey. It is noteworthy that even representatives of the farming and field sports sectors accepted the growing public sympathy for raptors and acknowledged a greater tolerance and understanding of birds of prey amongst their membership.

Nevertheless stakeholders from all sectors conceded that serious obstacles remained to prevent progress towards conservation goals. Farming and field sports representatives accused statutory and conservation groups of working in isolation and imposing initiatives on their members without due consultation. By contrast conservation and statutory groups blamed the lack of progress on the persistence of negative attitudes towards raptors amongst some farmers and landowners. Despite these differences in opinion, stakeholders from disparate groups were unanimous in their view that conflict resolution required a novel approach based on public education and greater transparency and collaboration between stakeholder organisations.

6.2 Limitations

It was the intention of the author to portray a balance of opinions in this report by describing the views of individual stakeholder groups in an equal and proportionate way in the narrative. However despite repeated attempts to encourage some stakeholders such as the CLA and NFU to participate, they declined to be interviewed and only contributed short written statements. Regrettably the views of these organisations are therefore underrepresented in this consultation.

6.3 Recommendations

- Scottish statutory and conservation agencies have almost four decades of accumulated experience regarding the management of stakeholder groups in WTE re-introduction projects. To gain valuable insights from these past re-introductions the team conducting the feasibility study at the University of Cumbria should collaborate closely with colleagues in Scotland. Specifically they should liaise with SNH, RSPB Scotland and the Forestry Commission regarding lessons learned from the most recent re-introduction in the lowlands of Tayside and Fife. To improve the effectiveness of the Cumbrian stakeholder consultation the University team should focus on the methodology of the equivalent consultation used in East of Scotland and should retrospectively evaluate any stakeholder related problems that have occurred since the inception of the project in 2007.
- To engender trust and promote collaboration between stakeholder groups, the University of Cumbria should establish a working group consisting of senior representatives drawn from the conservation, farming, field sports and statutory sectors. This would offer stakeholder representatives a platform to present and discuss the concerns of their membership and create an opportunity for the University team to disseminate the results of other assessments conducted within the framework of the wider feasibility study.
- Working group members could also facilitate public meetings between their membership and the University team. To encourage the participation at these events, they should be chaired by a trusted representative of the stakeholder organisation. Discussions should be held with local and regional wildfowling clubs, livestock farmers and conservation practitioners. Leaders and members of equivalent European Stakeholder organisations working within the current geographic range of WTEs could make a valuable contribution to public meetings by describing their personal experiences of the impacts of these raptors in their region.

Appendix 1 Case Study: WTEs on Mull

The island of Mull in the Inner Hebrides is currently the stronghold for WTEs in Great Britain (Molloy, 2011). The first sea eagles to colonize the island were seen in the early 1980s as immature birds from the re-introduction programme on Rum (White-tailed Eagles on the Isle of Mull, 2013). The first breeding attempt was documented in 1982, and during the following 30 years, as a result of on-going conservation efforts and the absence of persecution, the WTE population has increased steadily to 14 breeding pairs in 2012 (White-tailed Eagles on the Isle of Mull, 2013). Due to the density of WTEs on Mull and the importance of tourism and sheep farming as drivers of the local economy, several authors have sought to evaluate the economic, ecological and social impacts of these raptors (Molloy, 2011).

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 recreation (Dickie, Hughes and Esteban, 2006). More recently due to the ability of wildlife film makers and conservation groups to influence mainstream opinion, people are travelling substantial distances specifically to observe and photograph iconic species (Martinez-Abraín et al., 2008; Dickie, Hughes and Esteban, 2006). Inevitably this increase in ecotourism will deliver measurable economic benefits for local supply chain businesses such as those that provide accommodation, retail opportunities and food and drink.

The RSPB commissioned surveys in 2005 and 2010 to quantify the economic impact of WTE tourism on Mull (Molloy, 2011; Dickie, Hughes and Esteban, 2006). They employed a similar methodology to allow for valid statistical comparisons and establish temporal trends in economic activity. The 2005 study concluded that 1.5% of visitor parties had travelled mainly to see sea eagles (Dickie, Hughes and Esteban, 2006). Furthermore out of a total annual tourist spend of £38 million, an estimated 1.4 to 1.6 million was attributable to WTEs and was calculated to support 36-42 full-time equivalent jobs on the island (Dickie, Hughes and Esteban, 2006). Compared to the 2005 survey, the study conducted in 2010 followed a long recessionary period but revealed a substantial increase in the proportion of total annual tourist revenues associated with WTEs (Molloy, 2011). In 2010, 23% of parties were visiting Mull mainly because of WTEs, and sea eagle tourism was generating an annual spend of £5 million and supporting up to 110 local jobs (Molloy, 2011).

Despite the established economic benefits of a WTE re-introduction to the local and regional tourism industry, the additional revenues generated were not shared equally amongst all sectors of the rural economy (Marquiss, Madders and Carrs, 2003; Marquiss, Madders, Irvine and Carrs, 2002). Since the recovery of WTEs in North West Highlands, sheep farmers in particular have claimed that declines in lambing percentages were related to sea eagles

targeting live lambs (Simms et al., 2010; Marquiss, Madders and Carrs, 2003; Marquiss, Madders, Irvine and Carrs, 2002). To quantify the extent of the problem reports were commissioned in 2003 by the Scottish Executive Environment and Rural Affairs Department (SEERAD) and in 2010 by SNH to document the numbers of lambs predated, the proportion that were taken live and the impact on total farm incomes (Simms et al., 2010; Marquiss, Madders, Irvine and Carrs, 2002). The earlier report described the results of research carried out on Mull by Marquiss, Madders and Carrs (2003), and the later study presents the findings of a study conducted in the Gairloch area by the Food and Environment Research Agency (Simms et al., 2010). Although the two studies were geographically distinct and employed different survey methods and field protocols, there were broad similarities in the findings documented in the two reports. Results showed that breeding WTEs do kill small numbers of lambs and the majority were undersized for their age. Furthermore of the total number of lambs recovered from nest sites 75% of carcasses on Mull and 67% in Gairloch had been scavenged following death from natural causes such as malnutrition, and tick borne disease. The authors concluded that the proportion of lambs killed by sea eagles was insignificant compared to overall annual mortality and that although lambs on specific crofts could be targeted; WTEs would have no financial impact on sheep rearing interests at broad spatial scales.

Although WTEs have not benefitted from universal support amongst the rural communities on Mull, their re-introduction has had far reaching social and cultural impacts on the island (Molloy, 2011). Conservation organisations saw the potential to meet their aims and objectives by using sea eagles to educate the general public and inspire them to reconnect with nature (Molloy, 2011). Between the year 2000 and 2012, the Forestry Commission, RSPB and SNH collaborated to provide public nest viewing facilities for locals and tourists beside Loch Frisa in the north of Mull (White-tailed Eagles on the isle of Mull, 2013; MacLennan and Evans, 2003). By drawing public attention to a specific nest site and providing educational resources, the RSPB have reduced disturbance and provided protection for other nest sites on the island (Dickie, Hughes and Esteban, 2006; MacLennan and Evans, 2003). Furthermore, as part of their commitment to environmental education, the RSPB employs officers through their SEEVIEWS (Sea Eagle Education Viewing Interpretation and Engagement within Scotland) initiative to provide WTE based environmental education programmes in primary schools around Scotland (RSPB 2011).

Overall the work of conservation groups on Mull has demonstrated that public values and perceptions of the natural world can be powerfully influenced by a process of education and exposure to spectacular birds of prey. By inspiring school children to consider sea eagles as a valuable part of their natural heritage, the RSPB and others hope to ensure the protection of the species for generations to come.

The re-introduction of WTEs has always been a contentious issue on the island of Mull and opinions remain divided between those that reap the benefits and those that suffer the costs. Historically sheep farmers have been most vociferous in their opposition due to their perception that sea eagles killed lambs and threatened their livelihoods (Marquiss, Madders and Carrs, 2003; Marquiss, Madders, Irvine and Carrs, 2002). Management schemes administered through Scottish Natural Heritage have provided compensation to farmers impacted by WTEs; However funding was considered by many to be inadequate and the scheme was discontinued in the autumn of 2013 (R.Evans, 2012 pers. comm.). In spite of these problems WTEs continue to play a vital role in supporting the wider economy and provide a range of educational, cultural and spiritual benefits to the visitors and local communities on Mull.

Appendix 2 Case Study: The Lake District Osprey Project

The osprey shares a familiar history with the WTE. Once widespread it declined in the nineteenth century due to persecution and was declared extinct as a breeding bird in England in the 1840s and in Scotland in 1916 (Rutland Ospreys, 2012). In 1954 a pair naturally returned to Loch Garten in the eastern Highlands of Scotland and formed the nucleus for a more widespread re-colonization of Scotland (Dennis and McPhie, 2003). By the mid-1990s the Scottish osprey population had grown to approximately 100 pairs and although deemed a great conservation success, the frequent nest raiding by egg collectors, threatened the viability of the population (Dennis and McPhie, 2003).

To secure the recovery of the species in England a translocation project was undertaken between 1996 and 2001, from the Highlands of Scotland to Rutland Water in England (Dennis, 2003). Cumbria was re-colonized by ospreys when a pair returned to an artificial nest at Bassenthwaite Lake in 2001 following an initiative lead by the RSPB, the Forestry Commission and the LDNP (Natural Economy Northwest, 2008; Dickie, Hughes and Esteban, 2006). Since 2001 the ospreys have faithfully returned to breed every year and have created similar economic and social opportunities for the local and visiting population as were documented with WTEs on Mull (Natural Economy Northwest, 2008).

In 2003 the RSPB conducted a survey at the Dodd Wood viewing site and the Whinlatter visitor centre site around Bassenthwaite Lake, to quantify the attraction of breeding ospreys to the visiting public (Natural Economy Northwest, 2008; Dickie, Hughes and Esteban, 2006). Their findings revealed that of an estimated 100000 annual visitors, 25% suggested the ospreys were the main reason for their visit to the local area. Out of a total visitor spend of 1.68million, 420000 or the equivalent of 34 full time jobs was specifically attributed to the ospreys during their breeding season. The success of the Lake District Osprey Project relates to the strategic decisions taken by the project team to expose the public to ospreys through

the provision of viewing facilities and by maintaining the profile of the project through local and national media (Natural Economy Northwest, 2008). The Bassenthwaite Lake area is now firmly established as a premier British ecotourism destination. The incorporation of the osprey project into other community led programmes has yielded further environmental benefits for the local area such as the Osprey Bus, a green transport initiative servicing local tourist destinations around the lake (Natural Economy Northwest, 2008).

In 2006 it was estimated that almost 300000 people visited osprey viewing locations in the UK, generating an additional 3.5million pounds for the local economies of those areas (Natural Economy Northwest, 2008; Dickie, Hughes and Esteban, 2006). Breeding pairs can now be observed in areas as disparate as Porthmadog in Wales, Rutland Water in Leicestershire and Wigtown in Dumfries and Galloway (Dickie, Hughes and Esteban, 2006). Although the opportunities for viewing wild ospreys are increasing in the UK as the raptor re-colonizes parts of its former geographic range, the population at Bassenthwaite Lake in Cumbria continue to attract many visitors (Dickie, Hughes and Esteban, 2006). Data from the Lake District Osprey Project revealed that in 2013, 68000 visitors used the viewing facilities, and osprey based educational programmes were provided for 2500 school children at Whinlatter visitor centre (N Fox, 2013 pers. comm.).

Appendix 3 Stakeholder Information Letter



Dear

01 August 2013

I am writing to inform you of a feasibility study being conducted by the University of Cumbria to evaluate a proposed re-introduction of white-tailed Eagles (*Haliaeetus albicilla*) to Cumbria. One of the study aims is to objectively assess public and stakeholder opinions regarding the ecological, economic and social impacts of the re-introduction. I am researching the views of the key stakeholder groups regarding the project and invite you to contribute to the study.

The first objective of the study was completed in July 2012 and involved a large scale questionnaire based consultation with 300 members of the general public in north Cumbria. Participants, who were chosen to be representative of the demographic profile of North Cumbria, were asked to read a fact sheet describing the proposed re-introduction and to complete a self-administered questionnaire. A mixture of urban and rural locations was surveyed in the districts of Allerdale and Carlisle along the Solway coast. Overall 88% of respondents were in favour of the re-introduction initiative, 2% were against and 10% were undecided.

The second objective of the study is to conduct a stakeholder consultation, designed to satisfy the requirements of the IUCN re-introduction guidelines, with a wide range of organisations drawn from the conservation, agricultural, field sports and statutory sectors. The groups currently participating include the RSPB, Cumbria Wildlife Trust, WWT, Cumbria County Council, Natural England, Scottish Natural Heritage, Solway AONB, BASC, Country Land and Business Association, NFU and the Cumbria Farmer Network.

You may be aware that at the beginning of the 20th century, white-tailed Eagles were persecuted to extinction in Great Britain until they were successfully re-introduced to the North West Highlands of Scotland in two phases between 1975 and 1998. Between 2007 and 2012 an effective partnership between the RSPB, SNH and the Forestry Commission resulted in the third Scottish re-introduction in the lowlands of Tayside and Fife. Despite these successful conservation initiatives, the white-tailed Eagle is still an extremely rare bird with an estimated British population of no more than 60 pairs. To date there are no breeding pairs on territory in England despite a feasibility study undertaken on the Suffolk coast in 2009.

Cumbria provided the last refuge for white-tailed Eagles on the English mainland until it was rendered extinct at the end of the 18th century. The slow breeding rate and restricted dispersal, makes it unlikely that the species will naturally recolonize the county in the near future. A successful re-introduction would help to secure the future of the species in Great Britain and would make an important contribution to the international conservation effort.

Spectacular birds of prey have been used as ambassadors for the wider conservation movement and can inspire communities to reconnect with and enjoy the natural world. However the re-introduction of a large raptor is undoubtedly a contentious issue. We recognize that the potential benefits may not be shared equally amongst rural communities and that some stakeholder groups have expressed concern regarding perceived threats to wildlife, game species and livestock.

I would be grateful if you could find time to for a short meeting/interview to outline the views of your organisation regarding this re-introduction initiative. I am happy to answer any questions and provide further information as required.

Yours sincerely

Mic Mayhew BVM&S MRCVS

White-Tailed Eagle Project
Centre for Wildlife Conservation
University of Cumbria
Dr Roy Armstrong
Dr Ian Convery
Dr Billy Sinclair
Mic Mayhew

References

Anon. (2012) 'Scotland's White-Tailed Eagles soar to new heights', *British Birds*, 105, p51.

Cumbria County Council (2012) *Cumbria's Economic Ambition-Cumbria County Council's Role in Delivering a Thriving Economy*. Available at:

<http://www.cumbria.gov.uk/elibrary/Content/Internet/538/755/1929/6478/4133311542.pdf> (Accessed: 12 October 2013).

Cumbria Intelligence Observatory (2011) *Cumbria's Urban Areas - Population Estimates 2011 Census*. Available at:

<http://www.cumbriaobservatory.org.uk/Population/populationestimates.asp> (Accessed: 20 September 2013).

Cumbria Intelligence Observatory (2013) *Statistical Briefing July 2013 – Sub Regional Gross Value Added – 2011*. Available at:

<http://www.cumbriaobservatory.org.uk/elibrary/Content/Internet/536/675/4356/41480183235.pdf> (Accessed: 02 October 2013).

Cumbria Tourism (2013) *Economic Impact of Tourism – Visitor Volume and Value 2012*.

Available at: <http://www.cumbriatourism.org/research/surveys-data.aspx> (Accessed: 05 October 2013).

Cumbria Vision (2009) *Cumbria Economic Strategy 2009-2019*. Available at:

<http://www.cumbria.gov.uk/elibrary/Content/Internet/534/576/6304/407851554.pdf> (Accessed: 10 October 2013).

Dennis, R.H. and Mc Phie, F.A. (2003) 'Growth of the Scottish osprey population'. In Thompson, D.B.A., Redpath, S.M., Fielding, A.H., Marquiss, M. and Galbraith, C.A. (eds.) *Birds of Prey in a Changing environment*. Edinburgh: The Stationery Office, pp. 163-171.

Dennis, R. (2003) 'Re-introduction of birds and mammals to the British Isles'. *Biologist*, 50 (1), pp.20-24.

Dickie, I., Hughes, J. & Esteban, A. (2006) *Watched Like Never Before. The local economic benefits of spectacular bird species*. The RSPB, Sandy.

Great Britain. *Wildlife and Countryside Act: Elizabeth II*. (1981) Available at:

<http://www.legislation.gov.uk/ukpga/1981/69/contents> (Accessed: 27 May 2013).

Green, R.E., Pienkowski, M.W. & Love, J.A. (1996) 'Long-Term Viability of the Re-Introduced Population of the White-Tailed Eagle *Haliaeetus albicilla* in Scotland'. *Journal of Applied Ecology*, 33 (2), pp.357-368.

IUCN/SSC (2013) *Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0*. Gland, Switzerland: IUCN Species Survival Commission, viiii + 57 pp. Available at: http://www.issg.org/pdf/publications/RSG_ISSG-Reintroduction-Guidelines-2013.pdf (Accessed: 10 September 2013).

Love, J. A. (1983) *The return of the sea eagle*. Cambridge: Cambridge University Press.

MacLennan, A. M., and Evans, R.J. (2003) 'Public viewing of White-tailed Sea Eagles - take the birds to the people or the people to the birds?'. In Helander, B., Marquiss, M. & Bowerman, W. (eds) *Sea Eagle 2000*. Stockholm: Swedish Society for Nature Conservation, pp.417-422.

Martinez-Abrain, A., Crespo, J., Jimenez, J., Pullin, A.S., Stewart, G.B. & Oro. D. (2008) 'Friend or foe: societal shifts from intense persecution to active conservation of top predators'. *Ardeola* 55(1), pp. 111-119.

Marquiss, M., Madders, M., Irvine, J. and Carrs, D. (2002) *The Impact of White-tailed Eagles on Sheep Farming on Mull*, SEERAD Report No ITE/004/99. Edinburgh, UK: Scottish Executive Environment and Rural Affairs Department.

Marquiss, M., Madders, M. and Carrs, D. (2003) White-tailed eagles and lambs. In: *Birds of Prey in a Changing Landscape*, ed. D.B.A. Thompson, S.M. Redpath, A. Fielding, M. Marquiss and C. Galbraith. Edinburg, UK:HMSO, pp. 471-480.

Molloy, D. (2011) *Wildlife at work. The economic impact of white-tailed eagles on the Isle of Mull*. [Report] The RSPB, Sandy.

Natural Economy Northwest (2008) Case study 1: Lake District Osprey Project. Available at: <http://www.ospreywatch.co.uk/wordpress/wp-content/uploads/2013/01/nenwldopcasestudy.pdf> (Accessed: 15 October 2013).

Natural England (2010) *Natural England withdraws as lead partner from white-tailed eagle reintroduction project*. Available at: http://www.naturalengland.org.uk/about_us/news/2010/140610.aspx (Accessed: 10 October 2013).

Pope, C., Ziebland, S. and Mays, N. (2000) 'Qualitative research in health care: Analysing qualitative data'. *British Medical Journal*, 320, pp. 114-116.

RSPB (2012) *East Scotland Sea Eagles*. Available at: <http://www.rspb.org.uk/ourwork/projects/details/274707-east-scotland-sea-eagles-esse> (Accessed: 10 September 2013).

RSPB (2011) *Project to save Scotland's sea eagles soars to new heights*. Available at: <http://www.rspb.org.uk/news/284791-project-to-save-scotlands-sea-eagles-soars-to-new-heights> (Accessed: 14 October 2013).

Rutland Ospreys (2012) *The Translocation Project*. Available at: <http://www.ospreys.org.uk/osprey-facts/the-translocation-project/> (Accessed: 10 September 2012).

Simms, I. C., Ormston, C.M., Somerwill, K. E., Cairns C.L., Tobin, F.R., Judge. J. & Tomlinson, A. (2010). *A pilot study into sea eagle predation on lambs in the Gairloch area*. Final Report. Scottish Natural Heritage Commissioned Report No.370.

White-tailed Eagles on the Isle of Mull (2013) Available at: <http://www.white-tailed-sea-eagle.co.uk/> (Accessed: 15 September 2013).

Whitfield, D.P., Douse, A., Evans, R.J., Grant, J., Love, J., McLeod, D.R.A., Reid, R. & Wilson, J.D. (2009) 'Natal and breeding dispersal in a reintroduced population of White-tailed Eagles *Haliaeetus albicilla*'. *Bird Study*, 56 (2), pp.177-186.