

# The potential socio-economic impacts and ecotourism influences for the reintroduction of the White-tailed Eagle on the Isle of Wight

Manminder Jagait (✉ [meenajagait@yahoo.ca](mailto:meenajagait@yahoo.ca))

Bournemouth University

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## Article

**Keywords:** Ecotourism, Socio-economic, Sustainable wildlife, White-tailed eagle, Reintroduction, Habitat, Conservation management, Impacts, Stakeholders, Tourism, Species preservation, Environmental science, Biodiversity, Ecology, Nature, Wildlife tourism

**Posted Date:** March 16th, 2022

**DOI:** <https://doi.org/10.21203/rs.3.rs-1328031/v1>

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**The potential socio-economic impacts and ecotourism influences for the reintroduction of the white-tailed eagle on the Isle of Wight**

**The Faculty of Science and Technology**

**MSc Biodiversity Conservation**

**Research Project**

**Dr Susanna Curtin**

**Dr Richard Stillman**

**Manminder Kaur Jagait**

**September 13<sup>th</sup>, 2019**

**7,000 words**

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**Manminder Kaur Jagait**

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**2018 to 2019**

**Word count 7,000**

**Number of figures and tables:**

**Figures: 14**

**Tables: 3**

## Contents Page

Abstract

Keywords

List of Abbreviations

Chapter One: Introduction to Research Project

- I. Introduction to study
- II. Rationale
- III. Aim
- IV. Objectives
- V. Specific research questions

Chapter Two: Area of Study Review

- I. Introduction
- II. Review of literature
- III. Birds of prey
- IV. Comparisons of the Isle of Wight and the Isle of Skye
- V. Role of socio-economic and ecotourism
- VI. Conclusion

Chapter Three: Methodology

- I. Introduction
- II. Approach to research
- III. Approach to data collection
- IV. Data analysis
- V. Qualitative interviews
- VI. Quantitative statements
- VII. Methodology: Thematic Analysis
- VIII. Summary of methodology

## Chapter Four: Results

- I. Results outcome
- II. Qualitative research
- III. Quantitative research

## Chapter Five: Discussion of Results

- I. Findings
- II. Wildlife tourism issues
- III. Provisions for support
- IV. Legislation
- V. Stakeholder groups
- VI. Threats to wildlife
- VII. Diet
- VIII. Livestock
- IX. Acclimatization
- X. Overbreeding
- XI. The possible future
- XII. Scotland
- XIII. Summary

## Chapter Six: Conclusions and Recommendations

- I. Aim with conclusions
- II. Objectives with conclusions
- III. Limitations
- IV. Recommendations

## Acknowledgements

## References

## **Abstract**

Reintroduction programs for wild animals into the natural environment have been researched and studied where the findings have illustrated main points of discussion. This research paper attempted to explore the reintroduction program currently underway within the Isle of Wight for the white-tailed eagle. By conducting open-ended qualitative interviews with stakeholders across a wide spectrum of industries the findings provide useful information into establishing three main views on the reintroduction program. From those participants totally opposed of this reintroduction project, because they feel this places an enormous amount of strain on the current wildlife to those honourably in favour of the reintroduction of this apex predator because this encourages more wildlife knowledge and to those that decided to remain neutral on the subject matter being investigated.

## **Keywords**

Ecotourism

Socio-economic

Sustainable wildlife

White-tailed eagle

Reintroduction

Habitat

Conservation management

Impacts

Stakeholders

Tourism

Species preservation

Environmental science

Biodiversity

Ecology

Nature

Wildlife tourism

## **List of Abbreviations**

Areas of Outstanding Natural Beauty (AONB)

Colorado Division of Wildlife (CDOW)

Colorado Species Conservation Partnership (CSCP)

Convention on Wetlands of International Importance Especially as Waterfowl Habitat  
(Ramsar)

Department for Environment, Food and Rural Affairs (Defra)

Deoxyribonucleic acid (DNA)

IUCN International Union for Conservation of Nature (IUCN)

Least Concern (LC)

Mitochondrial DNA (mtDNA)

New Ecological Paradigm (NEP)

Non-Governmental Organizations (NGO)

Royal Society for the Protection of Birds (RSPB)

Sites of Special Scientific Interest (SSSI)

Special Protection Area (SPA)

Strength, Weaknesses, Threats, Opportunities (SWOT)

United Nations Environment Programme (UNEP)

United Kingdom (UK)

## Chapter One: Introduction to Research Project

### i. Introduction to study

Reintroduction of a species into the environment is a process that involves thorough assessment of the many factors, including the ecosystem properties in their natural states in relation to risk effects and the direct killing of prey (Alston et al. 2019).

This paper will investigate the role wildlife tourism plays in conservation when reintroducing a bird of prey that is an apex predator. This paper will focus on the Isle of Wight reintroduction project of the white-tailed eagle as the chicks have been released in the summer of 2019 from a confidential location.

The white-tailed eagle is currently protected in the United Kingdom (UK) under the Wildlife and Countryside Act, 1981 and the Nature Conservation (Scotland) Act, 2004 as well as being classified in the UK on the red list under Birds of Conservation Concern 4. The white-tailed eagle (*Haliaeetus albicilla*) is a member of the Accipitridae family, which also includes raptors such as hawks, kits and harriers.

The Isle of Wight has been identified as the prime location to reintroduce the white-tailed eagle back into their habitat because this was their primarily home before they became extinct on the Isles in 1780. Considerable success has been established in Scotland, where there are now 130 breeding pairs.

Key stakeholders for this study include conservation management, Solent forum members and academics. It is hoped that the findings will create awareness of the key issues, inform new policies and management approaches related to wildlife tourism on the Isle of Wight. At the moment it is too early to ascertain the full extent of impacts that will occur following the reintroduction of the white-tailed eagle in the Isle of Wight.

The successful breeding of the white-tailed eagle in the west coast of Scotland will certainly provide insight and reveal how breeding increases due to close nesting of birds (Taylor et al. 2015). This reason for this is due to the rich and natural landscape in Scotland's islands in Skye, Rum and Mull. This current knowledge may enable this reintroduction project to use the findings, analysis and positive management intervention to implement a successful reintroduction project (Arts et al. 2012).

## ii. Rationale

The rationale for conducting this research is to explore how the release of the white-tailed eagle chicks will a) impact the current ecosystem within the Isle of Wight and b) how their reintroduction might influence socio-economic drivers such as tourism.

## iii. Aim

The aim of this research is to discover and to analyse how wildlife tourism might contribute to conservation of a wildlife species. Also how the environment, local stakeholders, and wildlife will be affected by the white-tailed eagle (Blaxter et al. 2006) in terms of prospective benefits and possible negative disadvantages.

## iv. Objectives

In order to achieve this aim, the following objectives are proposed:

- To review the literature on the white-tailed eagle species and its reintroduction which includes the following:
  - Identification of any potential impacts that could negatively affect the white-tailed eagle reintroduction project.
  - Research the biological aspects, scientific underpinning, flagships role, bird of prey, taxonomy and environmental space needed for the white-tailed eagle.
- To explore the stakeholders' perceptions of how this will impact wildlife tourism to the Isle of Wight as there will be factors impacting the way the wildlife tours might be managed around the island as well as the bigger impacts to the environment.
- To evaluate the process of reintroduction of a bird of prey by exploring their ecotourism potential and to investigate the challenges of reintroducing this species.
- To undertake qualitative interviews with key stakeholders, including conservation managers, forest managers, industry representatives that are knowledgeable or aware of white-tailed eagle reintroduction project (social science).

v. Specific research questions

The specific stakeholder qualitative questions to be researched.

1. What actions can be taken by conservation management to promote sustainable wildlife tourism?
2. What are the contributions from wildlife stakeholders to species preservation?
3. What policy measures can support wildlife tourism contribution to species preservation?
4. How can the wildlife tourism of the white-tailed eagle promote the conservation of wildlife in the Isle of Wight?
5. How much environmental space do the white-tailed eagles need to survive effectively for breeding, eating etc.?
6. What will be the potential financial benefits for the Isle of Wight economy?
7. Will overbreeding occur for the eagles? If yes, is there a mitigation plan in place should such a situation happen on the Isle of Wight?
8. What are the short-term and long-term impacts of the eagle's reintroduction towards the public of the Isle of Wight?
9. Will the success of the Scotland reintroduction program receive similar success in the Isle of Wight reintroduction program?
10. What are the potential socio-economic impacts and ecotourism influences for this reintroduction program?

Materials included the purchase of the NVivo Prod 12.5 recording equipment software to record and transcribe all interviews. The Isle of Wight was visited by the author during the months of September 2018 and July 2019.

## Chapter Two: Area of Study Review

### i. Introduction

In April 2019 the UK's largest bird of prey has been confirmed by Natural England's issuance of a licence to allow the reintroduction of the white-tailed eagles on the Isle of Wight. This means that the five-year reintroduction program through the Roy Dennis Wildlife Foundation will aim to bring back this bird of prey to its natural habitat that lived in the southern part of England over 200 years ago but which became extinct in the eighteenth century.

### ii. Review of literature

The intent of this chapter is to provide an in-depth review of the history of the white-tailed eagle along with studies that have contributed to the investigation of this bird of prey's lifespan and habitat. The overall analysis will be on critically evaluating the methodologies used to identify the approaches in investigating the research questions.

Numerous peer review literature studies have taken into account what the white-tailed eagles eat being such a significant predator. Their diet consists mainly of fish, mammals, carrion and otters. Recent studies on this bird of prey revealed that the preferred habitats are mostly wooded areas that are within close proximity to water (Treinys et al. 2016). They have been known to live at very high elevations of 4900 to 7900 feet. The measurements of the eagle range from 70 to 90cm in length with a wing span of 200 to 240cm. This apex predator's flying speed can reach up to 70km per hour. Weight measurements for males are between 3.5 to 5 kilograms and 4 to 7 kilograms for females. Their flight time of 2 to 4 hours non-stop is a considerable amount of distance, although this can vary depending on the weather conditions. The amount of land space this species needs for their territory can be summarized from the current habitats that include places such as the Isle of Skye on the West coast of Scotland which has great wildlife including the Atlantic puffin, golden eagle, kittiwake, wild cat, brown trout, grey seals, horse mussel and corncrake.

The Isle of Wight has been described as the perfect reintroduction site because of the abundant nesting sites within the woods and access to fish this island is said to be the ideal roosting ground for the white-tailed eagle (Lloyd and Pevsner 2006). Remarkable studies in

relation to the skeleton, microsatellite and mitochondrial DNA in white-tailed eagles show that this bird of prey has prominent historical patterns of diversifying selection acting on these genes (Minias et al. 2019). Therefore in terms of evolutionary mechanisms for this species there has been exceptional research by Arts et al. (2012) that studied 111 expert documents in the support of wildlife reintroductions to Scotland, including the white-tailed eagle, wild cat, lynx and the beaver. They discovered that ideal reintroductions of wild fauna indicate that by toning down the negatives of reintroductions and highlighting the positives of reintroduction it is possible to achieve long term environmental impacts to support the building block of the natural ecosystems.

According to the Roy Dennis Wildlife Foundation and Forestry England, this flagship species cannot migrate naturally because of the low breeding age of 5 to 6 years that relates to their low breeding attainment rate. Hence this species has been selected for this special project because it is a scarce bird species in England (Dennis 2003).

The British Isles have a long history with these charismatic birds evidenced by the number of place names interpreted as indicating the presence of white-tailed eagles particularly in the coasts of western parts of Scotland, the Isle of Mull and the small Isle of Rum (Evans et al. 2012).

Map A shows the wide geographical location of the white-tailed eagle and Map B shows show the archaeological records of white-tailed eagles in the UK.

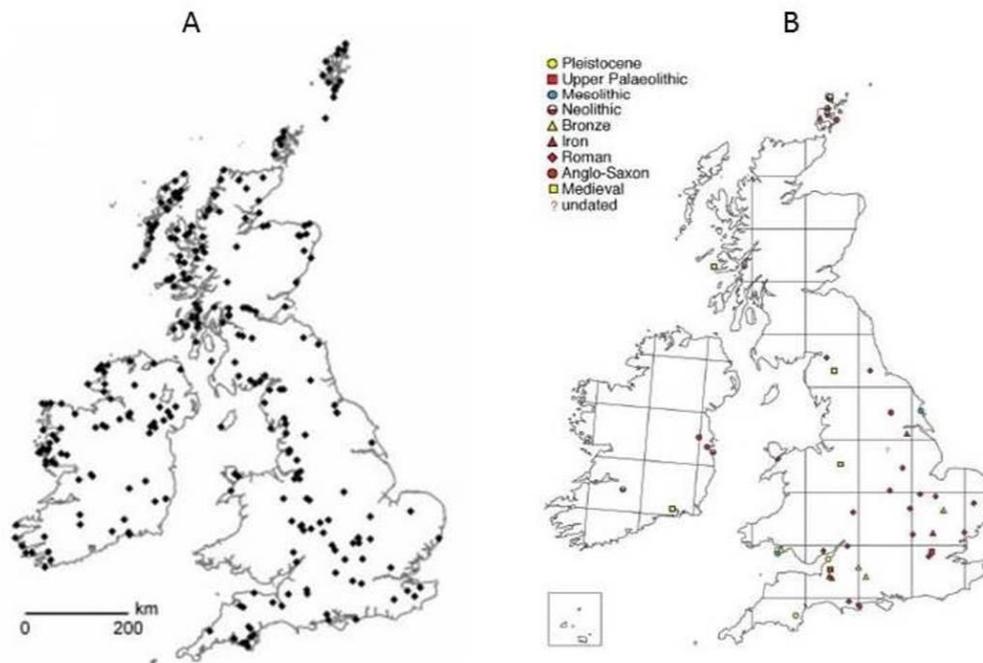


Figure 1: British Trust for Ornithology, Bird Study 2012 British Birds August 2007

### iii. Birds of Prey

With reference to the stakeholder's representatives, the main concern is the eagles accessibility to take lambs, however evidence confirms only dead lambs have been scavenged in Scotland by white-tailed eagles when these mammals have been left by farmers on the land. This is supported by the data collected for this bird of prey during breeding seasons during 2006 to 2015 in the Poleski State Radiation-Ecological Reserve. The data included 127 records of prey remains belonging to 27 species of vertebrates collected in and under the nests (Valeri 2016). They uncovered the diet of this bird of prey to be based upon vertebrates of three classes: fishes 48%, birds 41 % and mammals 10%. The research suggests that this flagship predator takes young carrion crows and magpies which pose a serious real threat to small birds. Further the main threats of the white-tailed eagle to the island may not be high in terms of prey hunting because they usually sit and wait for the attack and their main targets are those that are injured, sick or dying waterfowl (Nadjafzadeh et al. 2016 and Ekblad et al. 2016).

It is also important to note that this apex predator is listed under the International Union for Conservation of Nature (IUCN) as least concern (LC).



# White-tailed Sea-eagle

*Haliaeetus albicilla*

CITATION

BirdLife International 2016. *Haliaeetus albicilla*. *The IUCN Red List of Threatened Species* 2016: e.T22695137A93491570.

<http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22695137A93491570.en>. Downloaded on 12 July 2019.

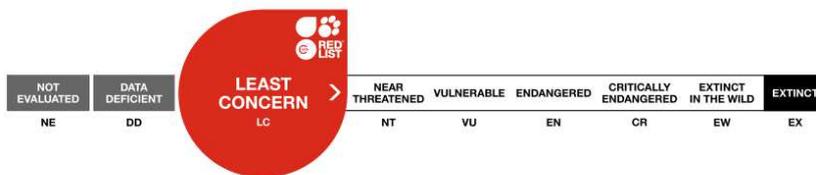
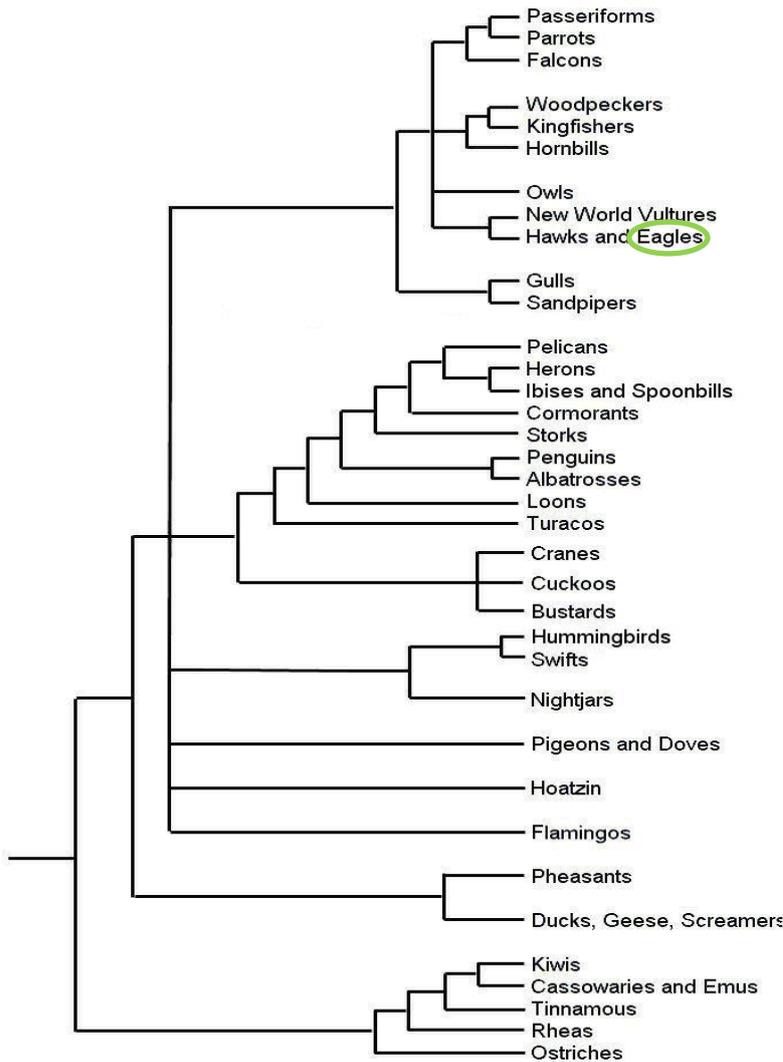


Figure 2: IUCN Red List Species The white-tailed eagles have been reintroduced into the Scottish coastline since 1975 where they have dominated the Isles. Therefore in accordance with the IUCN the white-tailed sea eagle or white-tailed eagle is categorized as least concern.



Source: Research gate of the phylogenetic tree showing the evolution of the white-tailed eagle

Figure 3: Phylogenetic tree for the white-tailed eagle lineage

The Mitochondrial DNA (mtDNA) lineage that is closely related to the white-tailed eagle according to the research findings by Treinys et al. (2016) demonstrate that the largest white-tailed eagle population is breeding in Norway, with the mtDNA being very similar to other European inhabitants. The focus of their study was to investigate the genetic structure of breeding white-tailed eagles in Lithuania. The discovery concluded that by using mtDNA control region markers as formerly applied within studies of phytogeography. The Lithuanian white-tailed eagle population is more related to the population of Sweden, Poland and Germany with some phylogenetically resemblance to Estonia (Treinys et al. 2016).

#### iv. Comparisons of Isle of Wight and the Isle of Skye

The white-tailed eagle chicks were reintroduced to the East of Scotland by taking 6 to 8 week old chicks from nests in Norway in 2007 that are bred upon the islands of Skye, Rum and Mull. The Isle of Wight has been selected as the prime location for the white-tailed eagles to be reintroduced because of the prospective nesting sites on this island as well as being a generally good habitat for the birds to breed, feed and survive. The location is ideal because the birds can quite easily move to surrounding areas of southern England. The Isles of Skye, Rum and Mull are remote Scottish islands and have many advantages being so far away from the mainland that the Isle of Wight doesn't have. However, the Isle of Wight does have a varied amount of rich habitats that are connected with marine ecology. This is an attractive landscape for the keystone predator. Most of the Isle of Wight is a nature reserve and geographically the area covers 150 square miles of land, it is also an Area of Outstanding Natural Beauty (AONB). The current environmental habitats comprise of saline lagoons, mudflats, fens, lowland heathland, broadleaved mixed, yew woodland, lowland calcareous grassland, reedbeds, coastal sand dunes, lowland dry acid grassland, coastal vegetated shingle, maritime cliff and slope. These are all key in providing a natural habitat for the breeding purposes for the bird of prey (Brouwers and Newton 2009).

The Isle of Wight has the RAMSAR and Special Protection Area (SPA) designations for environmental protection as well as being a Site of Special Scientific Interest (SSSI).

The Magic Defra Isle of Wight map to show the AONB, Ramsar Sites and SSSI.

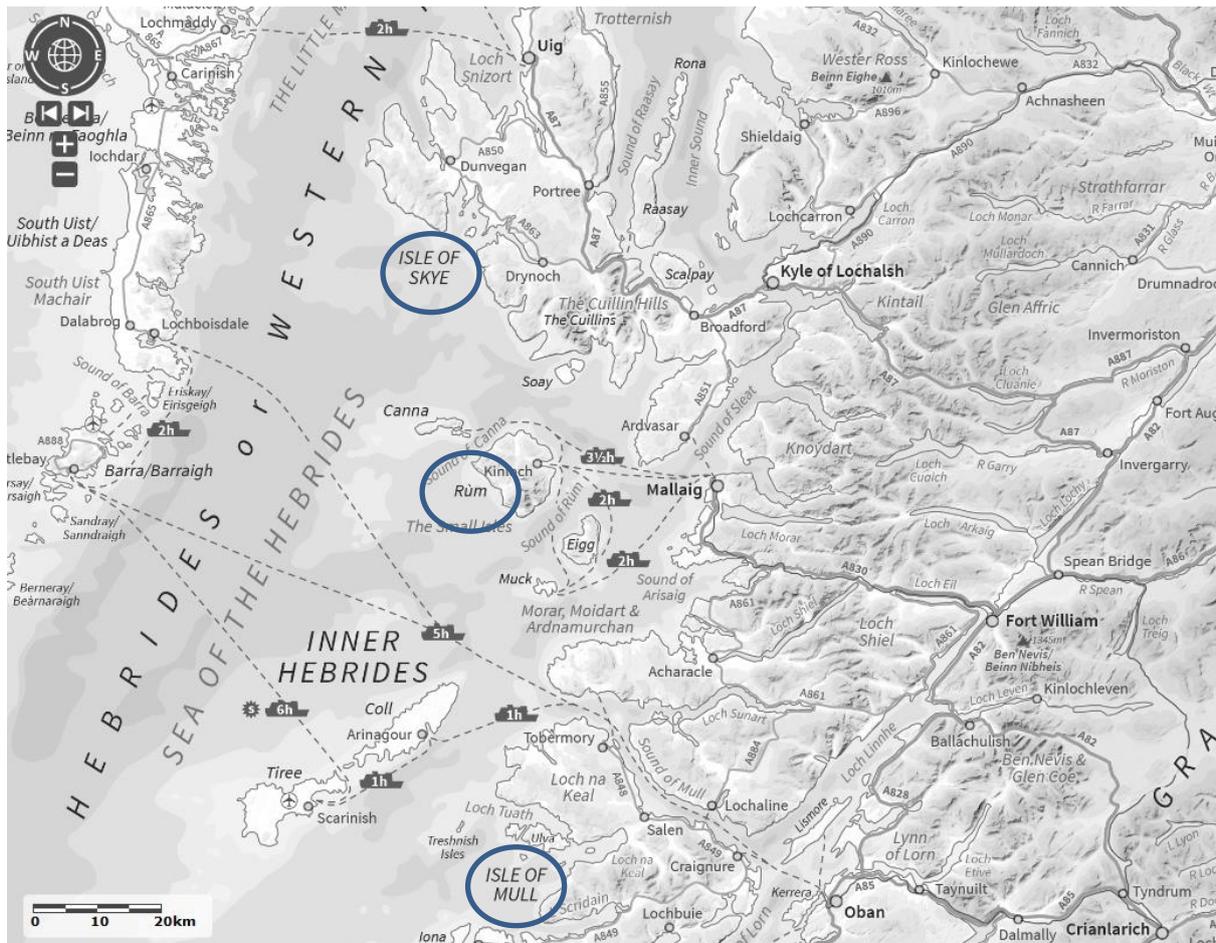


Source: Magic Defra Government map of Isle of Wight

Legend

- AONB
- Ramsar Site
- SSSI

Figure 4: The current ordnance map for the Isle of Wight



Source: Magic Defra Government map of Scotland to show the Isle of Skye, Isle of Rum and Isle of Mull

Figure 5: The current Ordnance map for the Isle of Skye, Isle of Rum and Isle of Mull

v. Role of socio-economic and ecotourism

This distinctive eagle will most probably increase the traffic flow of tourists to the Isle of Wight. However the ecotourism benefits may not start until a few years after the white-tailed eagles are established when they can be observed by wildlife tourists. There will also be spin-off economic impacts due to the fascination of such wilderness on the Isle of Wight.

Socio-economic factors are defined within the Oxford dictionary as *'the relation to or concern with the interaction of social and economic factors'*. The Cambridge dictionary defines this as *'related to the differences between groups of people caused mainly by their financial situation'*. According to the socio-economic impacts relate to the attraction of reintroducing the apex predator as a driving force for the financial benefit for the community and the societal awareness of living within a wide area that encompasses the interaction or adaptation of behaviour to the changing wildlife activities.

There are many potential socio-economic benefits to this bird reintroduction project, particularly because the Isle of Wight is a tourist attraction with reports of 2 million tourists visiting the island as stated by the Isle of Wight Visitor Monitor report 2018. Ecotourism is a rapidly growing industry (Brandt and Buckley 2018) mainly because of the potential to deliver both financial gain and environmental biodiversity conservation.

If we review Scotland's exposure with the impact of the wildlife tourism, we can observe four core activities: environmental management, primary production, extraction activities and reliant activities (Courtney et al. 2006). In order for the sustainability of wildlife to become significant for the visitors, the methodology framework as discussed here would need to be implemented to the Isle of Wight strategy. Ecotourism in Scotland is to provide the wildlife tourist visitor with an experience that encompasses a dramatic emphasis on biodiversity conservation that is of low-use consuming resources, wildlife viewing and hill walking (Zografos and Allcroft 2007). As stated in the Scotland Royal Society for the Protection of Birds (RSPB) economic impact of the white-tailed eagles on the Isle of Mull up to £5 million is spent on this isle because of the attraction of the eagle.

The New Ecological Paradigm (NEP) contributes elements that determine ecotourism from a sustainable aspect (Pienaar et al. 2013 and Klain et al. 2017). Some of these can be integrated into the planning for the future of the Isle of Wight reintroduction white-tailed eagles program including implementing the basic components of ecotourism:

- Contribution to conservation of biodiversity
- Sustaining the well-being of local people
- Inclusion of an interpretation/learning experience
- Promoting responsible action on the part of tourists and the tourism industry
- Delivered primarily to small groups by small-scale businesses
- Requiring the lowest possible consumption of non-renewable resources
- Emphasising local participation, ownership and business opportunities, particularly for rural people

Source: United Nations Environment Programme (UNEP, 2003)

## Conclusion

The success rate for the Scottish Isles can be viewed as leading pioneers because they provide an ecotourism industry standard benchmark for the Isle of Wight to follow. Also to utilize as a primary resource for expressive economic terms and sustainability strategy.

Socio-economic feasibility studies to date conclude findings to be based upon an interrelated method of combining political legislation, environmental transformation and cultural aspects of biodiversity as a driving force to strength the wildlife preservation and conservation. (Pemunta 2019).

The fascination with the white-tailed eagle demonstrates that from the public attitudinal survey, a comprehensive variety of socioeconomic and environmental advantages for the bird of prey reintroduction exists. (Mayhew et al. 2016). These being that support for the white-tailed eagle would introduce local benefits for the local communities however the overall insight from local farmers was still negative in some regards.

## Chapter Three: Methodology

### i. Introduction

The purpose of this chapter is to demonstrate what steps were taken to gather data from all the participating respondents from the biodiversity, conservation, environmental, academic, private, non-governmental organizations (NGO) and public sectors industries. The following eighteen (18) stakeholders were participants for this research project and split into three main groups to represent the private sector, public sector and non-governmental organizations.

Table 1 Three stakeholder groups

<b>Stakeholder Private Sector</b>	<b>Stakeholder Public Sector</b>	<b>Stakeholder NGO</b>
The private sector stakeholder group consisted of nine (9) representatives from local harbour boards, fishing clubs, local farms and bird groups.	The public sector stakeholder group consisted of five (5) representatives from established trusts, regional academic scholars and local councils.	The NGO sector stakeholder group consisted of four (4) representatives from independent consultants, societies and conservation companies.

## ii. Approach to research

Qualitative interviews are a challenge of information (Belotto 2018) because they involve such open ended questions. The role of the qualitative research interviewer involved uncovering factual and meaningful information by pursuing in-depth questions around the reintroduction, tourism and social topic. The list of 10 interview questions was enough to engage each respondent without the feeling of being overwhelmed and getting to the real story of the stakeholders opinions.

## iii. Approach to data collection

Due to the fact that the main data collection method used was the qualitative approach it involved transcript data to collect the information. Therefore it was not measurable and it also couldn't be used for statistical test. However by having a small sample size of 18 representatives, this allowed the interview to form open-ended questions which generated the data to be unique and specific to that stakeholder. Also by performing qualitative content analysis (Zingrebe 2016) this allowed an in-depth focus into the research area and endorsed the results section to include all causes and effects of the complex issue of biodiversity conservation programs for wildlife. Qualitative interviews are largely based on a much deeper understanding of complicated areas (Rust et al. 2017) because the conversation interview style can help to explain primary conservation issues. To further support qualitative methods we can highlight that descriptive research can determine the SWOT (strengths, weaknesses, threats, opportunities) strategy (Samel et al. 2018). Qualitative diagrams on the SWOT created a useful inventory of potential natural and human resources.

One main representative was interviewed from each stakeholder based on either their knowledge or awareness of the white-tailed eagle reintroduction project. For their opinions related to the socio-economic impact and awareness of ecotourism or sustainable wildlife. One key variable was that most of the participants provided their views based on their organization and some provided a personal view about the raptor reintroduction project.

#### iv. Data analysis

During this stage of the research paper all the data had been collected and was compiled into comprehensive information from the opinions received by the stakeholders. This data analysis process involved examining the collected data for clarification to detect pertinent information, discovering the relationships between the variables given within the answers, identifying any meaningful information, drawing conclusions that supported the decision – making to study this research topic (Blaxter et al. 2006). From here a thematic analysis was drawn up to provide the contextual themes that were consistency apparent with all the respondents.

#### v. Qualitative interviews

Each stakeholder representative was asked the following set of ten (10) questions:

1. What actions can be taken by conservation management to promote sustainable wildlife tourism?
2. What are the contributions from wildlife tourism stakeholders to species preservation?
3. What policy measures can support wildlife tourism contribution to species preservation?
4. How can the wildlife tourism of the white-tailed eagle promote the conservation of wildlife?
5. How much environmental space do you think the white-tailed eagles need in order to survive effectively for breeding, eating etc.?
6. What will be the overall financial benefits for the Isle of Wight economy?
7. Will overbreeding occur for the eagles? If yes, is there a mitigation plan in place should such a situation happen on the Isle of Wight?
8. What are the short-term and long-term impacts of the eagle's reintroduction towards the public of the Isle of Wight?
9. Do you see the success rate of the Isle of Skye for the eagle reintroduction program achieving a similar success in the Isle of Wight?
10. In your opinion what are the potential socio-economic impacts and ecotourism influences for the reintroduction of the white-tailed eagle on the Isle of Wight?

#### vi. Quantitative statements

It was essential to provide each stakeholder a series of quantitative statements in order to obtain numerical data but also to measure the results. The main discernment with this research methodology is the limitation of quantitative statements that were asked however the study was largely based on information retrieval questions. The rating scale was based on 0 to 5. With the scale description being:

- 5 Strongly Agree
- 4 Agree
- 3 Undecided
- 2 Disagree
- 1 Strongly Disagree
- 0 No Opinion

The eight (8) quantitative statements included:

1. Generally, would you be in favour of the white-tailed eagle reintroduction project?
2. The island population of the white-tailed eagle would benefit the local tourist industry and economy industry.
3. The white – tailed eagle may endanger livelihoods of Isle of Wight famers by taking farm stock.
4. Reintroducing the white-tailed eagle will be advantageous for the ecosystem.
5. The white-tailed eagles may threaten unique types of flora and fauna within the local area.
6. By reinstating the white-tailed eagle to the diamond Isle of Wight this will enhance my appreciation and my understanding of wildlife.
7. The white-tailed eagle may hurt dogs, cats and other small pets.
8. The white-tailed eagles are a threat to humans, specifically to the vulnerable and young children.

Although there are many benefits for using qualitative data, there are some disadvantages to using the qualitative data as a key collection method for this research paper because it lacked the strong scientific control which quantitative data enables. Overall the qualitative research approach did provide a broad – spectrum and subjective approach (Davies and

Hughes 2014) because this analysis method did allow the research to be coded into themes as shown in the results section. In order to compliment the qualitative the use of some quantitative methodology was used to provide additional support and extra numerical study.

#### vii. Methodology: Thematic Analysis

Thematic analysis involves the methodology of gathering information about how each stakeholder understands the subject matter. In a study by (Hu et al. 2019), the capability to fully comprehend the client complaint issues in order to enhance developments required the use of a transcript analysis method to analyse over 25,000 client reviews. The outcome being results illustrating a high amount of complaints issues related to service quality issues.

Thematic analysis contribution is largely based on the challenging task for researching and managing the vast amount of data collected by digital recording equipment. According to Watson (2007) on the review of the Rubins and Rubins 2005 the art of qualitative interviewing, this involved specific steps to report on the information that includes: inviting, accurate, thorough, convincing and rich findings.

There are five major steps for thematic analysis: (Scharp and Sanders 2019)

- gaining familiarity with the data
- creating coding categories or subcategories
- generating themes
- reviewing themes
- labelling themes
- identifying exemplars

### viii. Summary of methodology

Overall the importance of using both types of data was to use the qualitative data as primarily research and then use the quantitative data as secondary and supportive data to provide a backdrop to the more in-depth understanding of the stakeholder perceptions. All 18 stakeholders were contacted in order to take part in qualitative interviews in relation to their knowledge and awareness for the reintroduction of the white-tailed eagle project. These interviews were conducted either in person, by telephone or through email.

## Chapter Four: Results

### i. Results outcome

By obtaining the data from the stakeholders, they were split into three key stakeholders groups. These groupings consisted of commonality between the stakeholders and that allowed for the transcribing of the interviews in scientific format. Thus enabling the thematic analysis to show clear results of those stakeholder's in favour of the reintroduction program, those against the reintroduction and those stakeholder groups that were neutral to the white-tailed eagle reintroduction program.

Thematic analysis involves creation of themes concluded thorough analysis of qualitative dialogue. As mentioned by Kate et al. (2019) a well described qualitative methodology is contributed to thematic analysis of qualitative data. This analysis formed part of a mixed methods multiphase design research project, with both qualitative and quantitative inquiry and involving the convergence of data and analyses (Kate et al. 2019). The results of the thematic analysis methodology stood to mainly highlight two key areas. These being ecotourism and socioeconomic. This type of data involves searching for relationships between themes and grouping categories together (Newing et al. 2011).

ii. Qualitative research

The outline of this section will focus on all 10 qualitative questions with the emphasis on the themes for each question.

Theme 1: The core of this theme is sustainable wildlife tourism with the greater emphasis being placed on the way the white-tailed eagles are embedded within the Isle of Wight island community and communication.

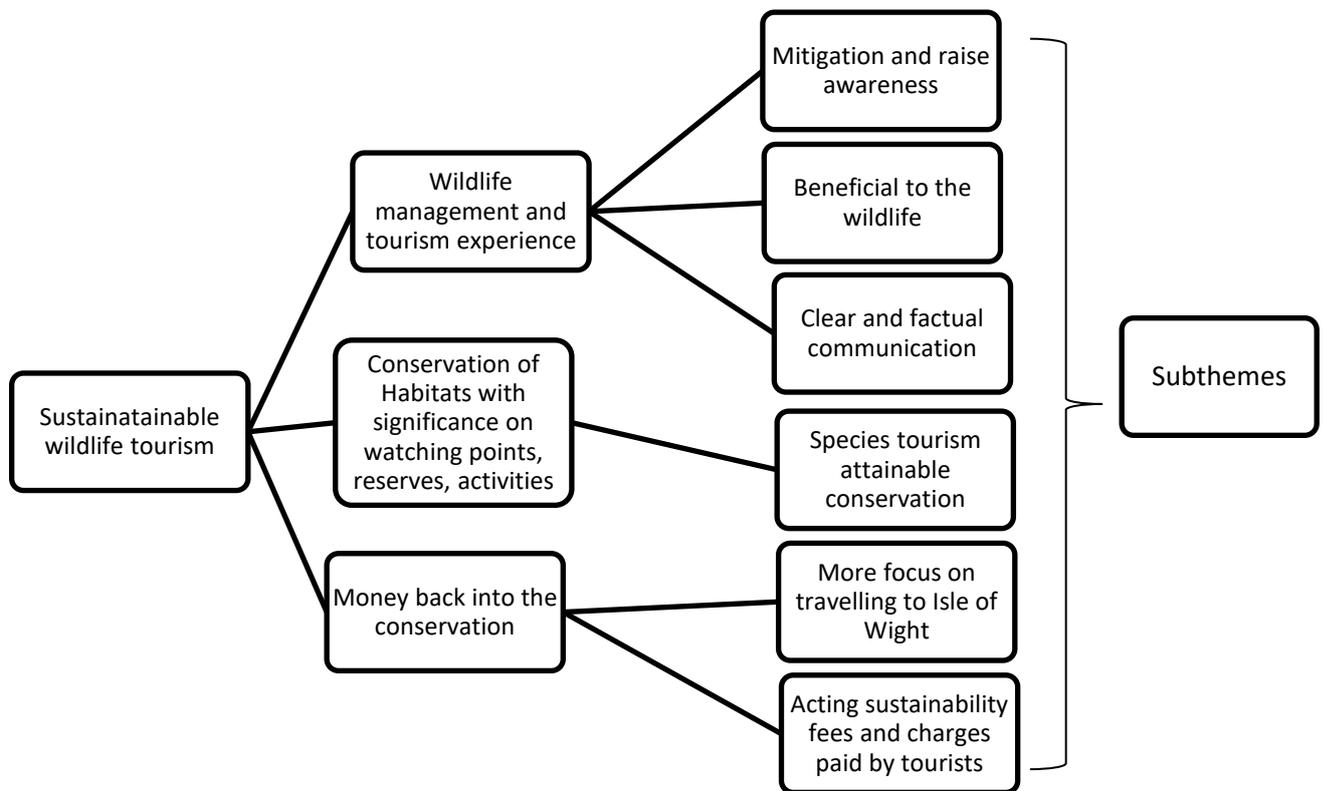


Figure 6: Findings for question 1: What actions can be taken by conservation management to promote sustainable wildlife tourism?

Theme 2: The main theme here was the passion and acknowledgement for the understanding that when a habitat changes or is changed by intervention more needs to be done to conserve special places on the island.

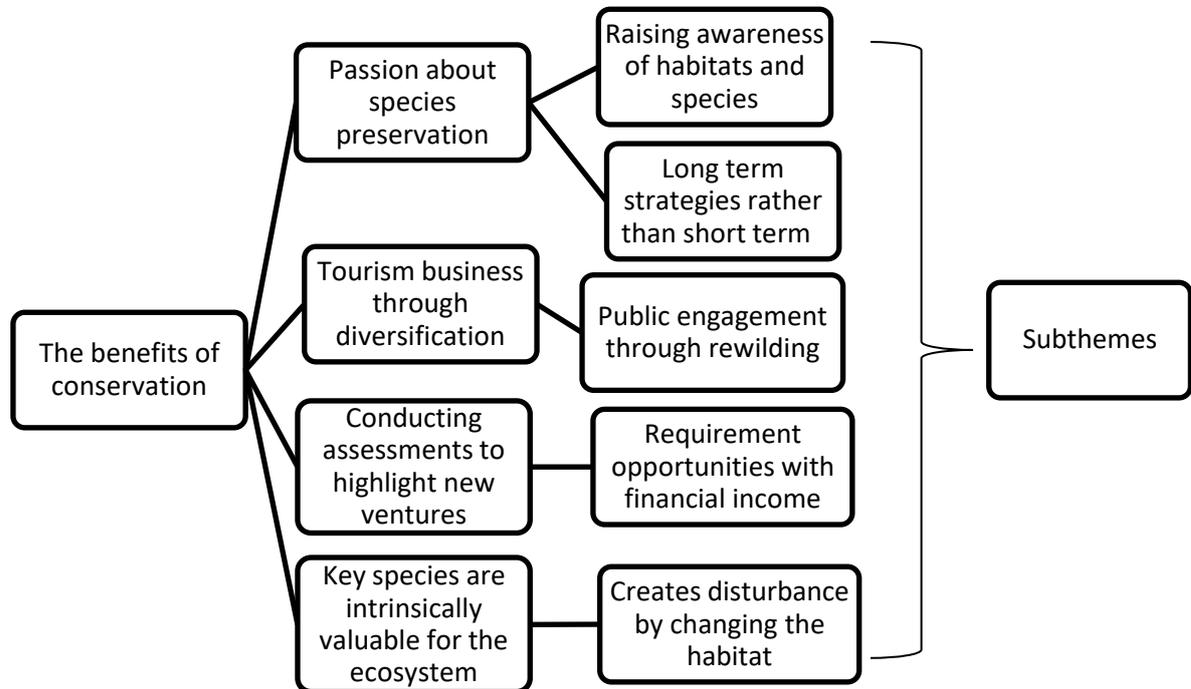


Figure 7 Findings for question 2: What are the contributions from wildlife tourism stakeholders to species preservation?

Theme 3: The focus of this theme is the general concept of making sure that the presence of tourists attracted to the iconic bird of prey are aware of the repercussions involved whilst being a visitor to the Isle of Wight.

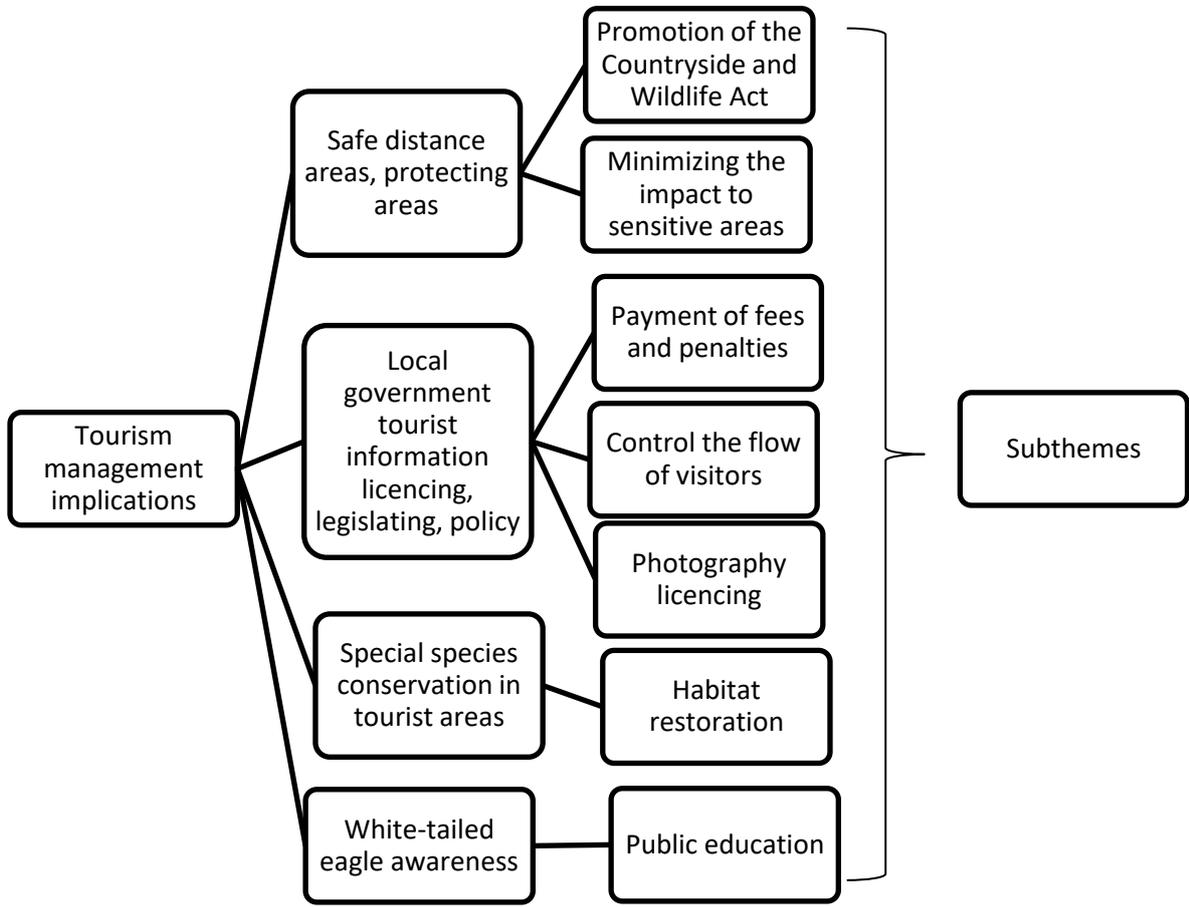


Figure 8 Findings for question 3: What policy measures can support wildlife tourism contribution to species preservation?

Theme 4: This theme mainly concentrated on developing an income stream because this bird of prey can grow the low impact tourism to a lucrative wildlife tourism stream, however at the same time encouraging the key messaging as to why the white-tailed eagle has been selected.

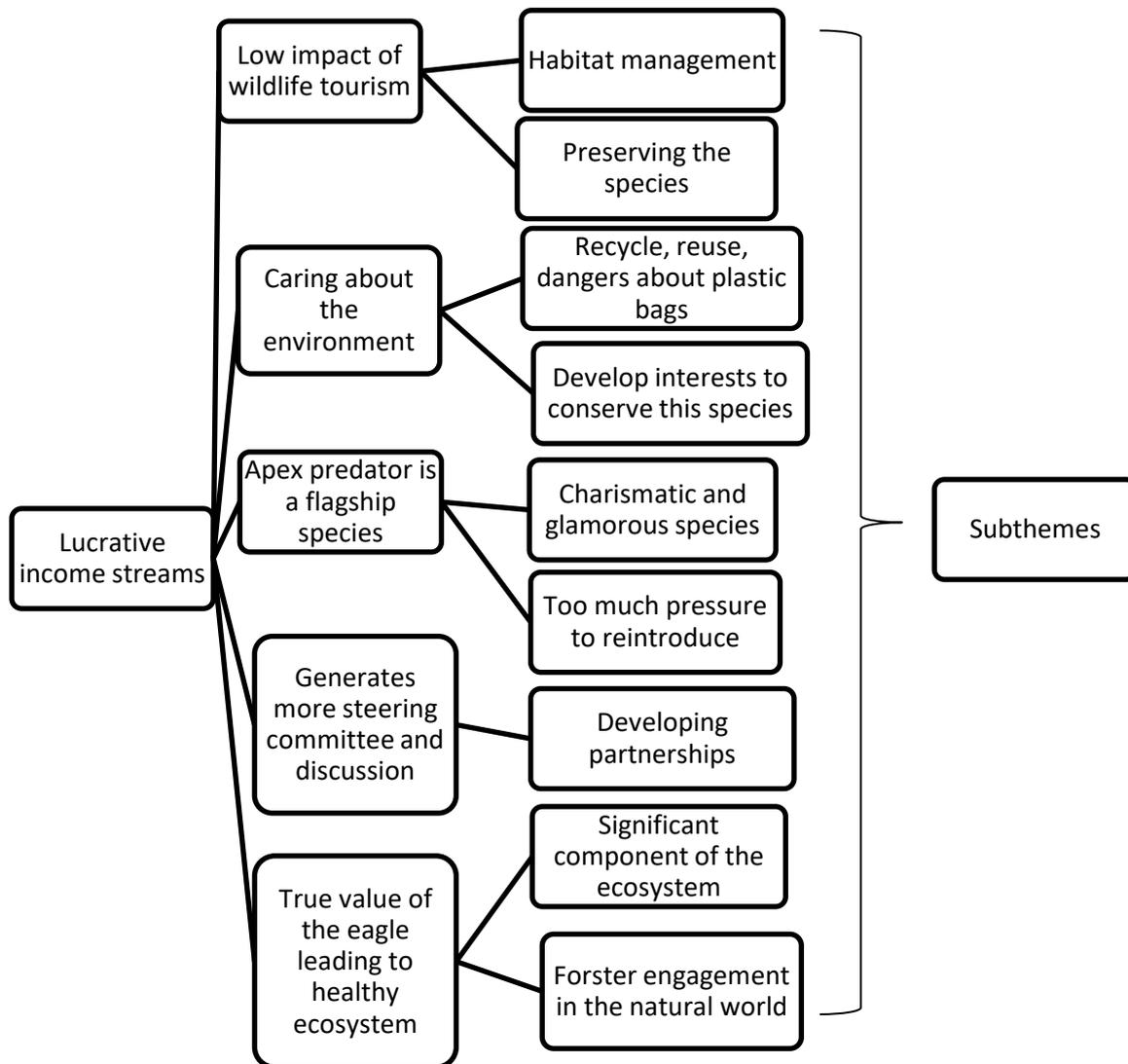


Figure 9 Findings for question 4: How can wildlife tourism for the white-tailed eagle promote the conservation of wildlife?

Theme 5: This theme evolved around the idea for the importance of this native bird being populated within habitats reaching as far as Devon and Cornwall. Even over to the mainland passing the Solent and to Poole Harbour.

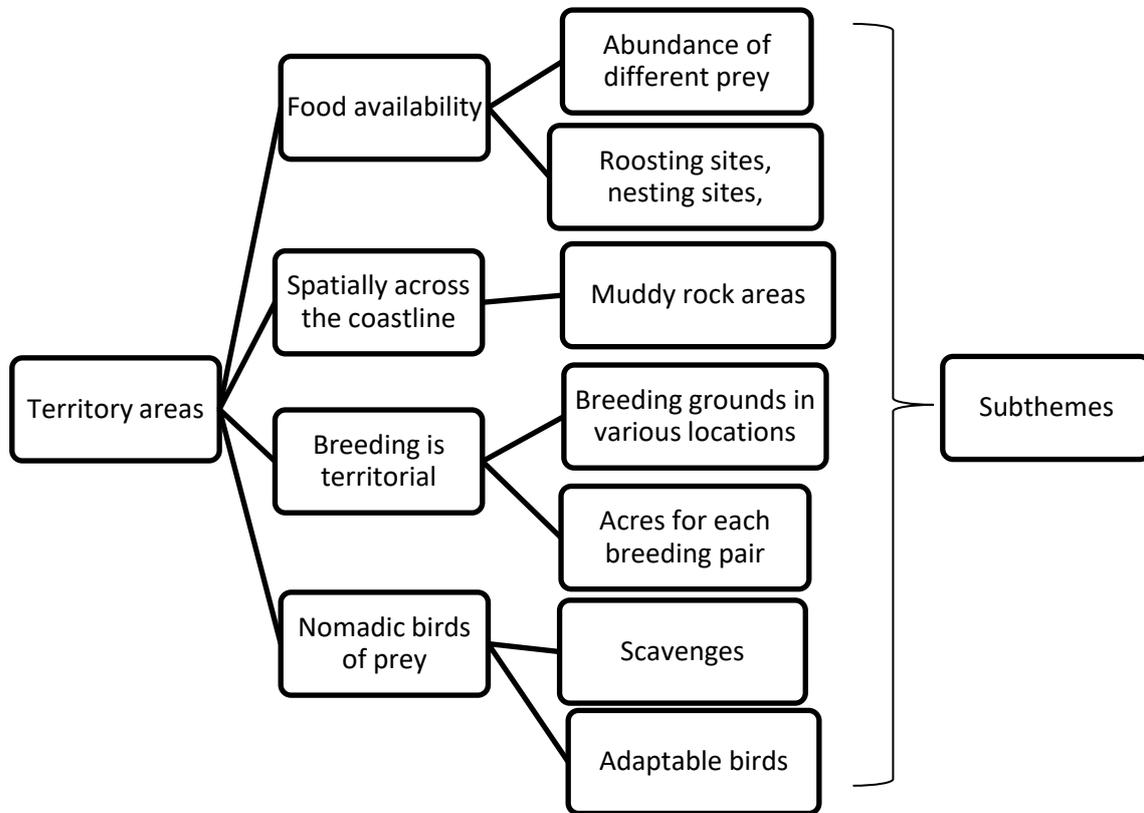


Figure 10 Findings for question 5: How much environmental space do you think the white-tailed eagles need in order to survive effectively for breeding, eating etc.?

Theme 6: This theme opened up the stakeholders to express themselves economically and it was discovered that previous released eagles within the Scottish islands of Rum, Mull and Skye benefited the economy enormously.

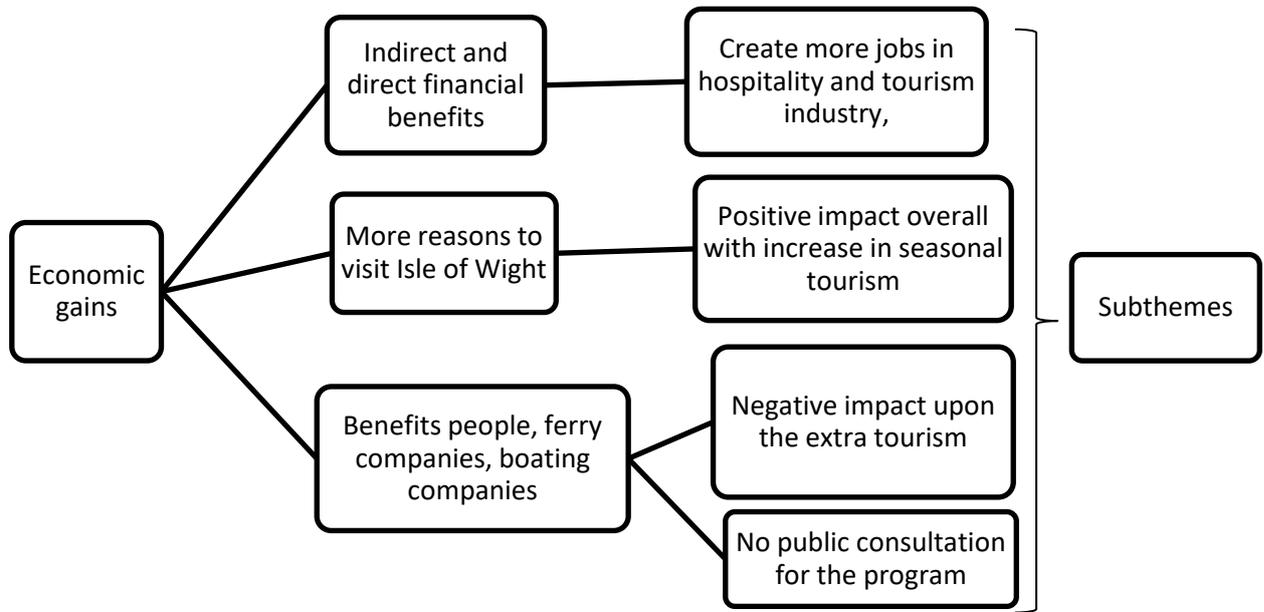


Figure 11 Findings for question 6: What will be the overall financial benefits for the Isle of Wight economy?

Theme 7: The theme here concluded that by having a plan to approach future issues with the white-tailed eagle it would eliminate any kind of over breeding problems.

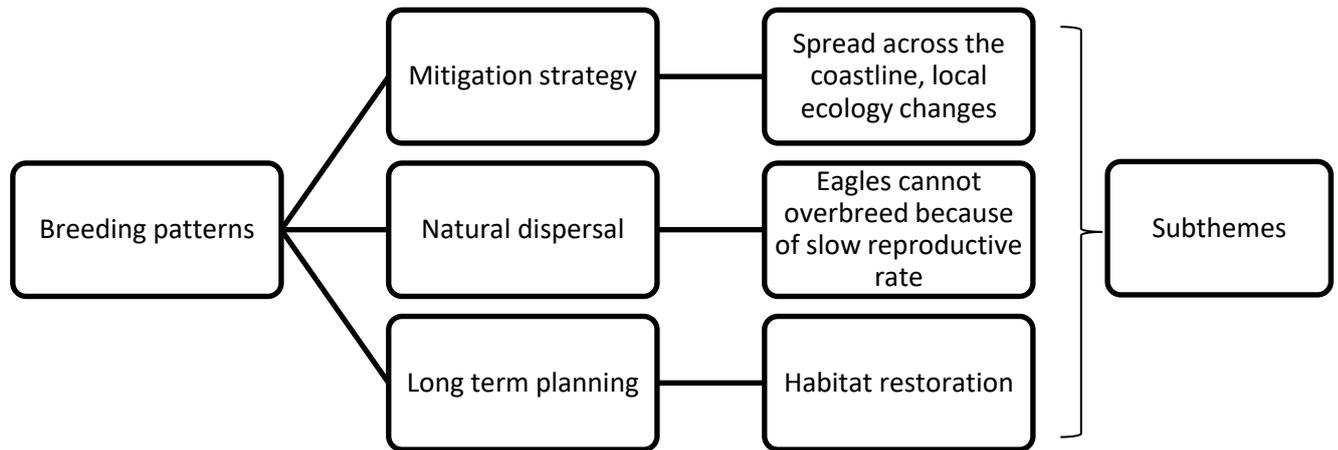


Figure 12 Findings for question 7: Will overbreeding occur for the eagles? If yes, is there a mitigation plan in place should such a situation happen on the Isle of Wight?

Theme 8: Overall this theme pin-points the concept that not everyone is informed thoroughly about the reintroduction program.

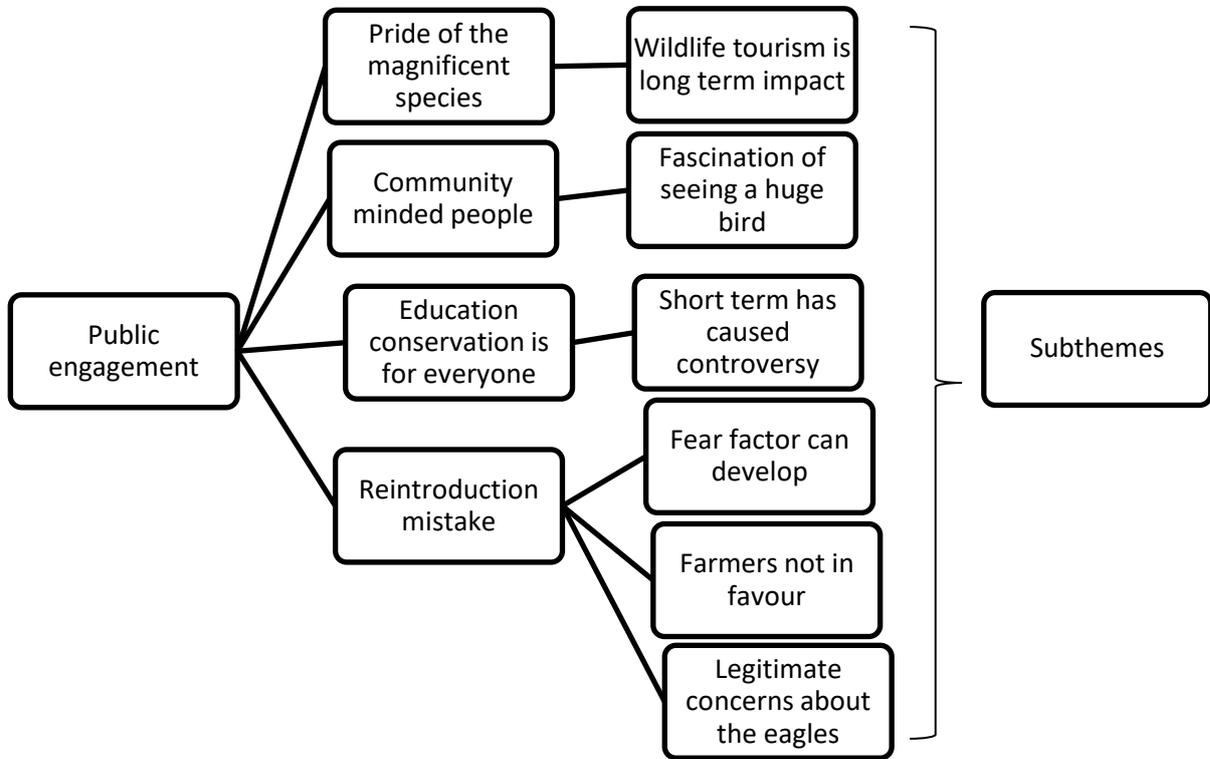


Figure 13 Findings for question 8: What are the short-term and long-term impacts of the eagle's reintroduction towards the public of the Isle of Wight?

Theme 9: Current theme centred on the main differences in landscape between the north of Scotland and the south coast of England. The Scotland white-tailed eagle reintroduction program was established on Isle of Rum and from here the eagles dispersed to the Isle of Skye and Isle of Mull.

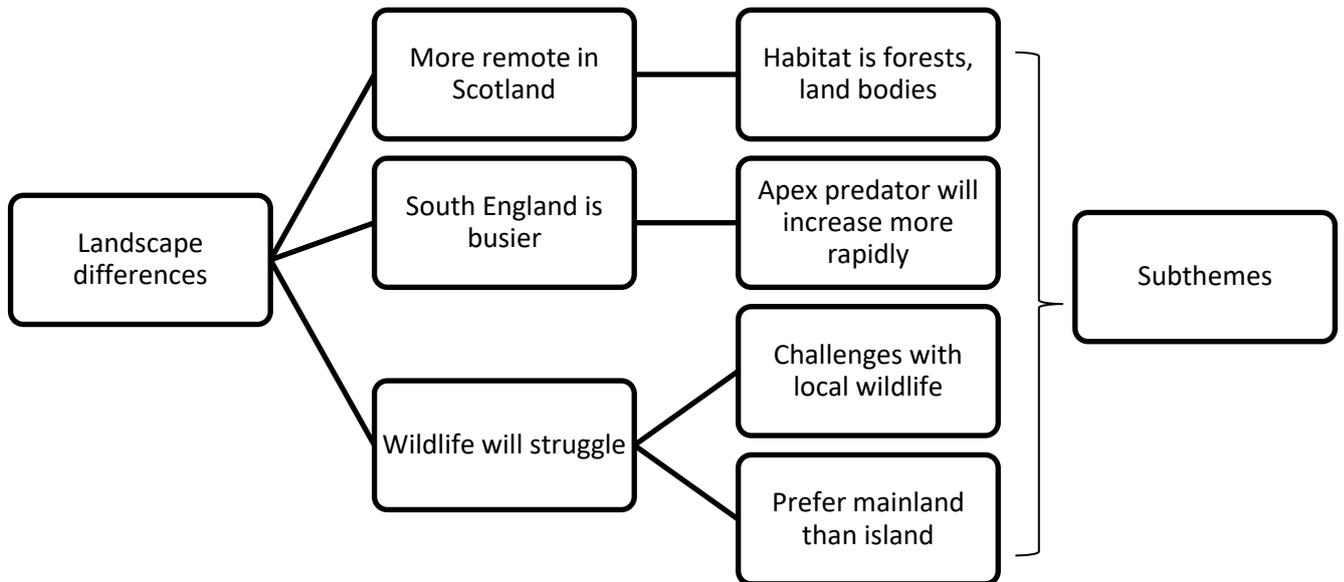


Figure 14 Findings for question 9: Do you see the success rate of Scotland’s eagle reintroduction programme achieving a similar success in the Isle of Wight?

Theme 10 this final theme emphasised the overall importance of ownership for establishing the core population of the flagship species within developing new ecotourism activities of bird of prey sightseeing excursions.

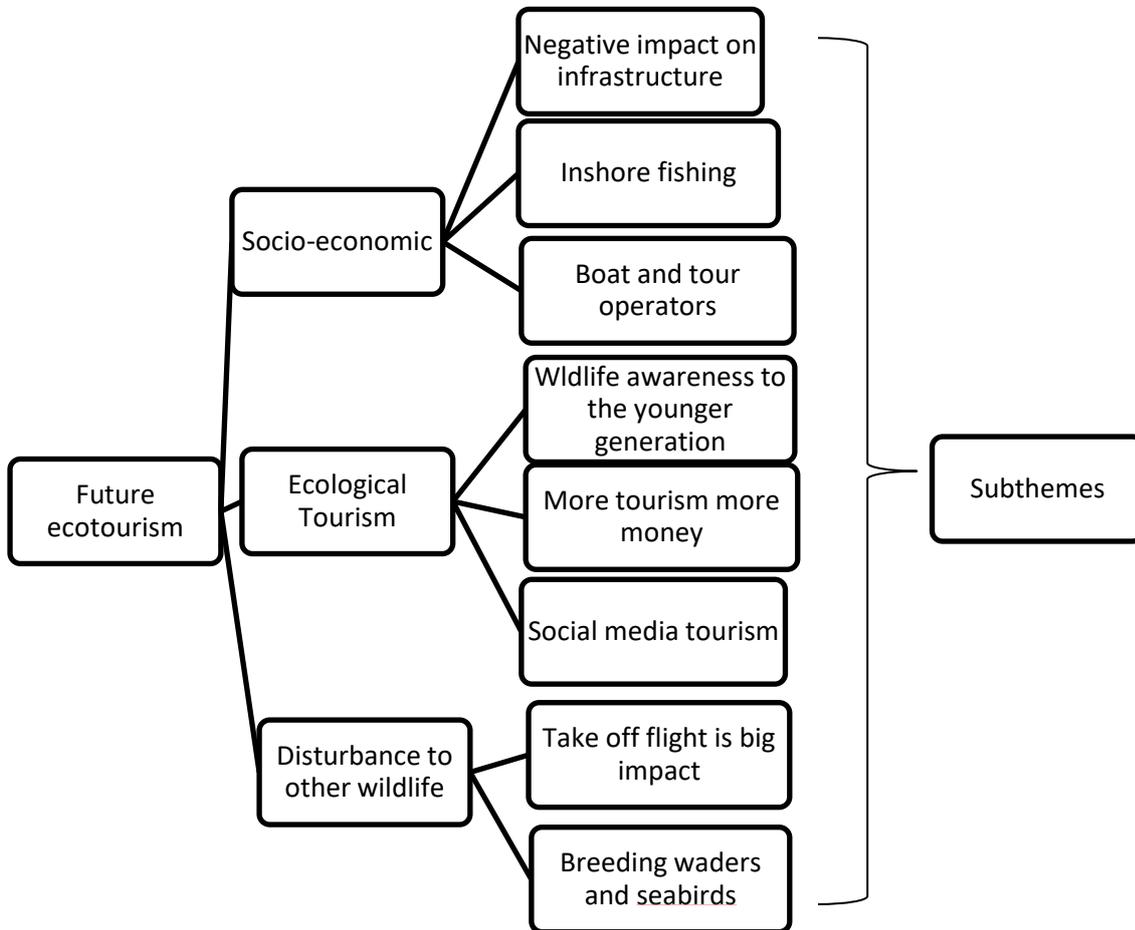


Figure 15 Findings for question 10: In your opinion what are the potential socio-economic impacts and ecotourism influences for the reintroduction of the white-tailed eagle on the Isle of Wight?

i. Quantitative research

This section refers to the results from the quantitative statements.

The scores in the **dark green** show the 5 rating of Strongly Agree

The scores in the **light green** show the 4 rating of Agree

The scores in the **yellow** show the 3 rating of Undecided

The scores in the **orange** show the 2 rating of Disagree

The scores in the **red** show the 1 rating of Strongly Disagree

The empty white box shows 0 No Opinion

Table 2: Quantitative Results for the eight (8) Statement Scores

Quantitative Results - Statement Scores																				
	Stakeholders																	Total	Average	
1. Generally, would you be in favour of the white-tailed eagle reintroduction project?	5	5	4	5		5	1	5	5	5	4	5	5	1	4	4	5	2	70	4.1
2.The island population of the white-tailed eagle would benefit the local tourist industry and economy industry	3	3	3	4	4	5	2	4	4	4	4	5	5	1	4	4	4		63	3.7
3.The white – tailed eagle may endanger livelihoods of Isle of Wight famers by taking farm stock	1	2	2		3	1	5	1	5		2	1	1	3	2	3	2	5	39	2.4
4.Reintroducing the white-tailed eagle will be advantageous for the ecosystem	4	4	2	4	3	4	1	4	5		1	4	4	2	4	3	4	2	55	3.2
5.The white-tailed eagles may threaten unique types of flora and fauna within the local area	1	3	2	1	3	1	5	1	1		1	2	1	3	2	2	2	4	35	2.1
6.By reinstating the white-tailed eagle to the diamond Isle of Wight this will enhance my appreciation and my understanding of wildlife	4	5	2	5	2	4	2		4	4	3	5	5	2	4	2	2	1	56	3.3
7.The white-tailed eagle may hurt dogs, cats and other small pets	2	1	2		3	1	5	1	5		2	2	1	3	1	3	2		34	2.3
8.The white-tailed eagles are a threat to humans, specifically to the vulnerable and young children	1	1			1	1	3	1	1		2	1	1	2	1	1	1	1	19	1.3
Totals	21	24	17	19	19	22	24	17	30	13	19	25	23	17	22	22	22	15	371	22.4

Out of the 18 stakeholders representatives 8 of them scored 5 to strongly agree be in favour of the white-tailed eagle reintroduction project. On average the total score was 4.1. This represents that most were in support of the reintroduction program.

Only 3 participants gave the high score of 5 to strongly agree that the island population of the white-tailed eagle would benefit the local tourist industry and economy industry, the average score being 3.7. This demonstrates that most of the stakeholders felt that the presence of this apex predator would not extremely make a huge difference on the current economy.

There were mixed statements ratings for the statement of the white – tailed eagle may endanger livelihoods of Isle of Wight famers by taking farm stock the participant average was 2.4 with 3 stakeholder rank 5 for almost certain.

For the reintroducing the white-tailed eagle will be advantageous for the ecosystem statement the average score was 3.2. With the majority of the score ranking 4 that they were in agreement with this statement.

The white-tailed eagles may threaten unique types of flora and fauna within the local area statement scored an average of 2.1. Overall those that were opposed to the reintroduction program gave the almost certain score of 5 with the majority of the participants selecting 3 of being undecided, or 2 in a disagreement.

Statement 6 of reinstating the white-tailed eagle to the diamond Isle of Wight this will enhance my appreciation and my understanding of wildlife averaged to be 3.3. There were mixed perceptions how respondents felt about this statement because some of them were very aware of the reintroduction program and had a keen interest whilst others were confident with their knowledge of this raptor.

The white-tailed eagle may hurt dogs, cats and other small pets, was a research question for this paper and answered clearly by this quantitative data research method. The average score total was 2.3 most participants felt that there were either in strongly in disagreement or in a disagreement with this statement.

The lowest scoring average was 1.3 for the white-tailed eagles are a threat to humans, specifically to the vulnerable and young children. Some stakeholders gave no opinion on this statement whilst others felt that this would not happen.

## Chapter 5: Discussion of results

### i. Findings

All the research questions have been successfully addressed by qualitative interviewing and thorough examination of the results showed that the research questions were answered throughout the interview stages. Conservation management is the process of sustaining a particular species or habitat. The return of the apex predator to the Isle of Wight has caused some conflicts and challenges. Some stakeholders were definitely concerned with the white-tailed eagle (*Haliaeetus albicilla*) being an opportunistic hunter (Ekblad et al. 2016). By preying on the most available prey and switching to other prey when the availability changes. Other stakeholders commented that this raptor plays a particular part in the food web along with the Osprey, Red Kite and Goshawk throughout Britain's coastline and forest areas. In order for sustainable wildlife to occur the stakeholders groups that were for the project highlighted the use of social media as a useful tool to promote sustainable tourism linking the theme of community and communication. Environmentally and socially sustainable tourism can be one such solution, mechanisms to implement conservation in these areas include e.g. conservation and ecotourism concessions, private conservation areas, and conservation easements (Puhakka et al. 2011).

### ii. Wildlife Tourism Issues

Although there was some criticism from the participants in the way wildlife tourism operates, particularly in relation to preserving the current wildlife based on the Isle of Wight such as the red squirrel. The majority of stakeholders felt that very little would come from wildlife tourism without sufficient infrastructure development. Mainly because of funding, that should grants be received then people or volunteers, or a visitor centre would be needed to accurately portray the islands greatest species conservation. One particular stakeholder group mentioned that there is a *“new venture starting this year leading wildlife tours around the Island run by a local naturalist with good understanding of site sensitivity.”* To further support we can discuss here that a significant challenge to wildlife in tourism settings is to provide visitors with opportunities to observe rare and endangered wildlife

while simultaneously protecting the target species from deleterious impacts (Sorice et al. 2006).

iii. Provisions for support

Species preservation includes, as one stakeholder suggested, *“asking for a contribution from commercial operators in order to use the land to help with the conservation management of sites”*, however there is limited income stream from this. Other helpful supports measures for tourists and visitors are to encourage National Trust memberships to conserve the habitats. To summarize this theme (Bergies 2006) reviewed the endangered species policy implemented by the Colorado Division of Wildlife (CDOW). A qualitative case study design was used to determine if the implementation process for Colorado Species Conservation Partnership (CSCP) has been successful in achieving wise habitat preservation and species management agreements between landowners, CDOW and, in certain cases, a third party, non-governmental organization; for critical, threatened, and endangered species. Literature-based concepts of successful implementation, value-added through discretion, mutual adaptation, policy learning and incentives, were all part of successful implementation (Bergies 2006).

iv. Legislation

Although this apex predictor would promote the conservation on the Isle of Wight, the legislation that protects the white-tailed eagles in Scotland is heavily enforced. This may also be implemented in southern England including adhering to codes of ethical conduct. (Pitches 2012) reported on the breeding season for the white-tailed eagles in Scotland in 2011 were very successful. The results of a survey show that 57 territorial pairs exist in the country for the breeding season, marking a 10% increase from the previous year. It notes that 43 young birds were able to fledge from their nests. Overall in Scotland the political decisions on environmental issues are increasingly required to be ‘knowledge based’, which has led to a wealth of (scientific) expert documents that aim to inform decision-making (Arts et al. 2012).

v. Stakeholder Groups

It was noted that during the qualitative interview process, a development for those in favour of the reintroduction program, those against the program and those that remained neutral were discovered. As shown in table 3, a breakdown of each stakeholder group is shown.

Table 3 Three stakeholder groups formed with three types of views

Stakeholder Group A	Stakeholder Group B	Stakeholder Group C
Eight (8) stakeholders are in favour for the reintroduction program	Three (3) stakeholders are against the reintroduction program	Seven (7) stakeholders remained neutral regarding the reintroduction program

vi. Threats to wildlife

It was believed by some stakeholders that white-tailed eagle didn't pose threats to lambs, smaller birds, small mammals, pets and small children, however with some stakeholders directly opposed by this reintroduction program, they felt that this totemic type of species would create so much more pressure on the current wildlife species already inhabiting the island. That would lead to the white-tailed eagle thriving and overpopulating the island.

vii. Diet

During the study by (Nadjafzadeh et al. 2016) the white-tailed eagle's diet varies significantly between different territories and increased with habitat quality. The adults foraged more efficiently than juveniles, presumably because of their superior spatial knowledge and hunting skills, eagles make choices within both their primary prey fish and alternative prey waterfowl, consistent with predictions of optimality models. When prey was abundant, eagles preferred large over small fish and slow over agile waterfowl species.

Thus, prey choice by eagles reflected a complex function of absolute availability, size and anti-predator behaviour of their prey. Large raptors such as white-tailed eagles are generally energy maximisers and pursue a 'sit-and-wait' hunting mode to capture profitable prey, and can modify their foraging strategy to cope with variations in weather conditions and food availability (Feasibility Study March 2019).

viii. Livestock

In terms of this reintroduction program impact upon the farmer's livestock, smaller bird inhabitants and fisherman. There was a decline for a research interview from key stakeholders to address this further. We can only speculate that more communication needs to be conducted to openly highlight areas of concern by these key investors. As quoted from a participant of one of the private stakeholder groups *"....people have a fear factor. It's up to people like me to teach them that things will be perfectly fine or safe..."*

ix. Acclimatization

This symbolic species territorial range can be 25 square miles wide and most certainly depends on food availability. If we take the Scotland reintroduction program which placed the white-tailed eagle chicks on the Isle of Rum, these iconic birds then migrated to the Isle of Skye and Isle of Mull by acclimatizing to the habitat. The influence of climate change on eagle habitat has been subsumed by the effects of habitat destruction and persecution as primary causes of absence from much of their former range (Evans et al. 2012) and (Nemesházi et al. 2016).

x. Overbreeding

It was noted repeatedly during the research study that overbreeding or overpopulation will presumably not occur because of the density of the harbour and the Solent that will allow the birds to migrate the other coastal areas, high trees for roosting and foraging areas where there will be waterfowl and fish for hunting grounds. It was discovered that white-tailed eagle nests with breeding attempts in eagle territories were observed and data

including nest tree species and nest height were recorded. Results showed the eagle nests were dispersed in super canopy trees with nest population density at 0.9 nesting pairs per 100 square kilometres (Rajchard et al. 2010).

xi. The possible future

In terms of short term and long term benefits, the serious issue of exactly whom this reintroduction project is benefiting is the main emphasis for the process of wildlife tourism. It is important to show those living on the island the advantages of the white-tailed eagle in relation to the Isle of Wight being an ecotourism destination because there is nothing like this on the south coast of England. Furthermore all wildlife can play an important part to the general public, locals, tourists and visitors in terms of seasonal tourism. Although prolonged human disturbance to observe fish eating birds can become an issue if not closely monitored or policed by local or national authority (DuBay et al. 2017). This findings from these results pinpointed that, human interactions within an ecotourism context as identified by stakeholders could involve issues such as harassment, crowding, lack of knowledge or education about this type of prey species and not adhering to the regulations. Further investigation into the organization of tour operators to establish best practice could be a measure to enhance visitor experiences (Sorice et al. 2006).

xii. Scotland

Scotland has a landscape that is vast and remote in some areas along the west into the Scottish Highlands, therefore this became the main interpretation of comparing the similarity between the islands of Scotland and that of the diamond shaped island of the Isle of Wight. The white-tailed eagle success in the Scottish islands has been largely based on several factors, including the habitat, the huge area, and the lack of the general public at these inaccessible islands. Whereas the Isle of Wight is populated with people and to see a white-tailed eagle flying above may eventually become an indication of a flagship species within an island that has population pressure.

xiii. Summary

To complete this section, the socio-economic impacts include a magnitude of ecological impacts, as one stakeholder believed ‘.....*The eagles disturb the wildlife when they take flight to feeding on the young waders, young gulls and young terns...*’ The socio-economic impacts of this wildlife conservation reintroduction project includes the assessment on the impact of rewilding upon the local community, focussing on the wealth created and the jobs supported directly and indirectly the reintroduction project (Benedicto Royuela et al. 2019). However the repercussions of this program may not be noticed until later within the next decade. From the ecotourism perspective the creation of more wealth for the island will be through the boat tour operators but in this regard, it is too early to tell. This apex predictor will definitely have an economic value because the Isle of Wight may even become a hotspot for tourism (Loh et al. 2016). On the negative side concerns from the stakeholders stated that there would also be a drain on the infrastructure with more visitors to the Isle of Wight.

## Chapter 6: Conclusion and recommendations

### i. Aim with conclusions

Earlier in this paper the aim stated the discovery and analysis of how wildlife tourism may contribute to conserving wildlife species as well as the interaction with the local people and the effects upon the current wildlife habitat of the Isle of Wight. It is fair to provide an overall conclusion that this aim has been met through the interviews conducted that provide rich answers in relation to how the stakeholders perceived the benefits and disadvantages for this reintroduction project. Further the responses received throughout the discussion section illustrate a very lively perception and honest opinion on the overall reintroduction.

### ii. Objectives with conclusions

The overall objectives of this study have been met by conducting a thorough review of the literature available on the white-tailed eagle species as answered throughout this paper. Questions relating to the monitoring of the white-tailed eagles were provided by reviewing the Roy Dennis foundation feasibility report. This report was conclusive in providing key information about the identification of the potential impacts for the white-tailed eagle reintroduction project. Fundamentally stakeholder opinions outlined the biological aspects, scientific underpinning, flagships role, taxonomy and environmental space needed for the white-tailed eagle.

A large part of this paper involved the exploration of stakeholder perceptions on how this will impact wildlife tourism to the Isle of Wight as tour operators will need to be prepared as when the birds are set free there will be factors impacting the way the wildlife tours and groups might be managed around the island as well as the bigger impacts to the environment. The reception received from a member of the Stakeholder Group A was that *'.....wildlife tourism is in its infancy on the island and there are occasional boat trips looking at cliffs, seals and occasional dolphins from 2 to 3 locations...'* Therefore although each stakeholder had their own vision of how this reintroduction may evolve there may be

further ways to promote the island by going forth with the sustainable wildlife and sustainable tourism to manage the landscapes and to benefit local people.

The third objective to complete a comprehensive evaluation of the process of reintroduction of a bird of prey and to explore their ecotourism potential as well as to investigate the challenges of reintroducing this species. Has clearly been defined within this paper because the qualitative questions set out helped to establish this by enabling the stakeholders to provide overall responses, this included representatives from Stakeholder Group C demonstrating that *the '...overall benefits for the Isle of Wight economy may be slightly affected by the white-tailed eagle program because the ecotourism impact will be minimal...'*

Having undertaken qualitative interviews with key stakeholders, including conservation managers, forest managers, representatives that are fully knowledgeable about the Isle of Wight white-tailed eagle reintroduction project (social science) this objective outlines that interviewing is a necessary aspect of this study. By bringing a vast amount of specialists to the interview forum, it enabled a huge amount of data to be collected and analysed. Two site visits were made to the Isle of Wight during the early part of this year and the later part in order to undertake observations from an ecological and biodiversity perspective. This helped the research perspective create more of an understanding of the sustainable tourism readily available on the island such as the current bird population, the red squirrel and the local tourist attractions available. The wider importance of this study represents that there is still more to do in terms of gathering information as noted by a member from the Stakeholder Group B *'...in terms of adding a new species you need to make sure that the habitat has food source available....'* Therefore from a conservationist standpoint sustainable wildlife tourism this paper didn't focus on the current food chain supply for the bird of prey, only in terms of general discussion was utilized for this paper. A stakeholder representative from Group A mentioned that *'....often it isn't until people experience wildlife for themselves that they can value it, develop an interest in it and help to conserve it...'* To conclude it is through promoting an awareness of the value and significance of the eagle as a significant component of the ecosystem which, in itself needs protecting and managing for the long term sustainability of wildlife populations.

iii. Limitations

There were limitations with this study particularly with the quantitative data obtained which could have been better arranged in terms of keeping the low scores consistent with those against the wild tailed reintroduction program and keeping the high scores with those in favour of the reintroduction program. Another limitation is that no actual financial data was collected on the incoming revenue in order to compare and contrast economic statistics. A representative from the Stakeholder Group C stated that '*.....conservation comes at a cost and that cost is met by the charities and agencies that manage the land...*' This is an area that could definitely be researched in the future.

iv. Recommendations

One major recommendation is the endorsement of further research for this paper because this study stops at the investigation of the success rate of the reintroduction program to the Isle of Wight. It is highly recommendation as a suggestion to carry out further secondary interviews within a few years after the white-tailed eagles have started to reproduce off spring and settled down within the island. Also future directions for research could involve the monitoring how the apex predator chooses to stay on the Isle of Wight or migrate to the Solent Estuarine areas of Southampton, Portsmouth, Langstone, Chichester and Poole.

## **Acknowledgements**

Thank you to Professor Roger Herbert for providing me with this fantastic idea for my research project.

Massive thank you to Professor Richard Stillman and Professor Susanna Curtin for taking the roles to be my research project supervisors. Their support, guidance and positive feedback throughout this journey has been remarkable and I will always treasure.

Many thanks to all the stakeholders that actively provided their time and opinions to all the research questions.

Finally thank you so much to my dear friends and family, especially Mr. Roman Zabensky for his love, encouragement and support.

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