



The feasibility of reintroducing White-tailed Eagles *Haliaeetus albicilla* to the Isle of Wight and the Solent



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March 2019

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Project team

The project is a partnership between the Roy Dennis Wildlife Foundation and Forestry England.

Roy Dennis MBE

Roy Dennis was born in Lyndhurst and spent his teenage years birding in Hampshire and the Isle of Wight. He is a field ornithologist and wildlife consultant, living in Moray; he has worked in the Highlands and Islands of Scotland since 1959, most notably at Fair Isle Bird Observatory and also as the RSPB's North Scotland officer 1970 -1990 working on the conservation of rare birds, especially Osprey and Golden Eagle and the reintroduction of lost species, including Red Kite and White-tailed Eagle. His Roy Dennis Wildlife Foundation, established in 1993, is active on raptor conservation and reintroductions, and satellite tracking in UK and mainland Europe. He has served as a Main Board member of Scottish Natural Heritage and has served on the UK White-tailed Eagle steering group since its inception. In Scotland he has successfully restored five populations of Red Squirrels and pioneered the techniques. He is a writer, lecturer and broadcaster.

Jay Doyle MCIEEM

Jay Doyle has worked as a District Ecologist with Forestry England since 2002 advising on the conservation and enhancement of habitats and species occurring on the public forest estate across Southern and South east England. Prior to this he was employed with Scottish Natural Heritage as an Area Conservation Officer and The Wildlife Trusts as a Biodiversity Policy Officer. Jay grew up in rural West Dorset and studied Geography as an undergraduate at The University of Sussex in The School of Biological Sciences. In addition to UK based experience Jay has developed a sound knowledge and understanding of species recovery projects further afield by volunteering on large carnivore research projects/studies in North America and Eastern Europe. Jay is an elected committee member of the South east England section of the Chartered Institute for Ecology and Environmental Management (CIEEM) and volunteers for The Hampshire & Isle of Wight Wildlife Trust as a committee member of The Hampshire Mammal Group.

Dr Tim Mackrill

Dr Tim Mackrill's work with the Roy Dennis Wildlife Foundation includes various species recovery projects, including the second English Osprey translocation at Poole Harbour in Dorset. He managed the Rutland Osprey Project for the Leicestershire and Rutland Wildlife Trust for more than ten years and a key element of this role was to build and manage relationships with a range of different stakeholders in the local community. He recently

completed a PhD on Osprey migration at the University of Leicester and also has a BSc in Ecology from the University of East Anglia.

Leanne Sargeant MCIEEM

Leanne works with Forestry England as Senior Ecologist in the South Forest District. Leanne has been in the role since 2017, prior to which she worked with the Wessex Chalk Stream Rivers Trust as Hampshire Avon Catchment Officer. Leanne has over 18 years of conservation and ecological experience, with a range of organisations from conservation charities to local government. Leanne worked on large scale conservation projects, such as woodland restoration and lowland heathland recovery. Leanne has a Masters in Ecology and Environmental Management from York University.

Please note on the 1 April 2019 the Forestry Commission changed its name to Forestry England.

Executive Summary

The White-tailed Eagle *Haliaeetus albicilla* formerly bred throughout the British Isles and through western and southern Europe, as well as in northern Europe. But widespread and persistent persecution by humans drove the species to extinction in England by the early nineteenth century, with the last southern English pair nesting on the Isle of Wight in 1780. We propose to restore White-tailed Eagles to the Isle of Wight, and surrounding districts, through a five-year reintroduction project.

The project meets all the International and European criteria governing such programmes. It will fulfil part of UK's obligation to increase its biodiversity, where appropriate. Furthermore, the Government's 25 year Environment Plan launched on 11th January 2018 by the Prime Minister and the Rt Hon Michael Gove MP, Secretary of State for Environment, Food and Rural Affairs, identified the White-tailed Eagle as a species of interest for recovery. This project aims to carry out that Government target. The release methods involved have been tried and tested in numerous successful bird of prey reintroductions worldwide, and the project team have extensive experience of this.

After intensive fieldwork and research we chose the Isle of Wight as the optimum White-tailed Eagle release site in southern England. Historically the species' last nesting site in southern England was at Culver Cliff on the Island. We aim to collect White-tailed Eagle chicks from nests in Scotland under special licence from Scottish Natural Heritage, and transport them to the Isle of Wight. They will be reared in specially designed avian cages before being released as soon as they can fly. Human contact throughout this period will be kept to an absolute minimum.

We consider the critical biological requirements of White-tailed Eagles are available on the Isle of Wight and in the greater Solent area with extensive areas of suitable breeding and wintering habitat with excellent and diverse food availability throughout the year. Like many European raptor reintroduction programmes, it is essential that we actively generate widespread local and national public support for restoring this magnificent bird to our skies and limit all forms of human disturbance to the released birds. We believe the sight of a White-tailed Eagle soaring again over the chalk cliffs of the Isle of Wight, or passing over ferries crossing the Solent, will catch the public imagination and help generate support for the project and the natural environment. There is an international aspect to our proposal because it will help address the recovery of the species in the southern half of Europe, with future breeding White-tailed Eagles in the Isle of Wight potentially linking up with the new populations in the Netherlands and France.

1. Project goals and justification

1.1. Aims and objectives

The principal aim is to re-establish a viable breeding population of White-tailed Eagles *Haliaeetus albicilla* on the Isle of Wight and in nearby areas of southern England, through the translocation and release of young White-tailed Eagles at a release site on the Isle of Wight.

We believe the reintroduction programme will enhance the long-term survival of the species by extending the range of the White-tailed Eagle population in southern and western Europe. It will provide connectivity between the Scottish (130+ pairs) and Irish populations (10 pairs) and new expanding populations in the Netherlands (18 pairs) and France (4 pairs).

White-tailed Eagles are a missing part of England's native biodiversity and were lost entirely through human activities. As a result we believe we have a moral duty to restore them. The Government's 25 year Environment Plan launched on 11th January 2018 by the Prime Minister and the Rt Hon Michael Gove MP, Secretary of State for Environment, Food and Rural Affairs identified the White-tailed Eagle as a species of interest for recovery. This project aims to carry out that Government target.

White-tailed Eagles are an important flagship species in coastal ecosystems and if the project was to go ahead there is great potential to use them to highlight the conservation of these special places and to attract support for the wider conservation movement. They were once an iconic breeding species on coastal cliffs, estuaries and inland wetlands in England and we believe that we have a unique opportunity to restore them to southern England through a reintroduction project. Furthermore evidence from Scotland indicates that re-establishing White-tailed Eagles would provide long-term benefits to the Isle of Wight economy through increased tourism revenue.

All responsible reintroduction and recovery projects should meet the Guidelines for Reintroductions and other Conservation Translocations developed by the International Union for the Conservation of Nature (IUCN) (<https://portals.iucn.org/library/efiles/documents/2013-009.pdf>) and we believe that this project meets all of the criteria required of a conservation translocation aiming to reintroduce a species within its indigenous range. This feasibility report has been compiled according to the criteria laid out in the guidelines.

1.2. The White-tailed Eagle

The White-tailed Eagle, often known as the Sea Eagle, is the fourth largest eagle in the world. It is usually associated with seacoasts, rivers and larger freshwater lakes. They are

iconic birds with a rather vulturine appearance; the broad wings are up to 2.5 metres in span. The females are larger and can weigh up to 5.5 kg while the males range up 4.5 kg. The adult plumage is unmistakeable; the brown body contrasting with a pure white tail and a pale grey head with a bright yellow bill. The young are brown all over including the tail and by annual moults they slowly attain the adult plumage over four to five years.



Figure 1. Adult White-tailed Eagle in flight.

White-tailed Eagles are generalist raptors, often eating carrion such as dead mammals and birds as well as fish dead in the water and along tidelines. They are adept at stealing food from Otters *Lutra lutra* and from birds such as large gulls and Cormorants *Phalacrocorax carbo*. During the seasons they also hunt different live prey such as water birds, especially goslings, Coot *Fulica atra* and ducks; when fish are near the water surface they catch them in their talons but are not adapted to plunge fishing like Ospreys *Pandion haliaetus*. Shoaling mullet are a likely prey in southern Europe while inland on large lakes in Eastern Europe a range of freshwater fish are taken. They build big stick nests, which can be constructed in trees, on rocky cliffs and even on the ground on small islands. The clutch is one to three pale eggs; both sexes incubate but mostly the female. The incubation period is about 38 days and young fly for the first time at 10 to 11 weeks. The young stay with their parents for several months before becoming independent.

The White-tailed Eagle is distributed as a breeding bird over the northern Palearctic from Japan, Kamchatka and the Bering Strait in the east, to Germany, Scotland and Iceland in the west, extending to Greenland in the Nearctic zone. In the north, its range extends from the Barents Sea coasts roughly along 70° N through Siberia. In the south, it occurs from Croatia to the Caspian Sea and between 30° and 40° eastwards to the Pacific (Helander and Stjernberg 2002). Originally the European distribution extended south to the North African coast but was exterminated principally by human persecution, with the last individuals on the island of Corsica in the 1950s. Except for some northern populations, territorial pairs are mainly sedentary whereas juveniles may move south or wander extensively. Migration and wintering areas include all countries in Europe, but the most significant areas concur within the breeding range. In Asia, small numbers winter south to North Korea, Taiwan, Pakistan and India (Helander and Stjernberg 2002).

1.3. History of the White-tailed Eagle in the UK

It is clear that the White-tailed Eagle was formerly widespread across southern England before suffering intense persecution during the Middle Ages, which led to its eventual extinction as a breeding species by the early nineteenth century (Love 2006).

The population in the United Kingdom was estimated to be as high as 1000-1400 pairs in 500 CE, with breeding pairs located throughout southern England (Evans et al. 2012). An analysis of place names interpreted as indicating the presence of White-tailed Eagles indicates that the species likely bred across the whole of the south coast, from Cornwall to Kent (Evans et al. 2012) (Figure 2A). Evidence from the archaeological record is similarly conclusive and again indicates a widespread distribution throughout southern England. Comprehensive research by Yalden (2007) shows that the earliest records date back to the Pleistocene but most come from Roman sites, indicating that they were widespread during this period (Figure 2B).

Like many birds of prey White-tailed Eagles were relentlessly persecuted, particularly during the latter part of the Middle Ages and the population declined sharply as a result. By the late eighteenth century only a few isolated breeding pairs persisted in England, with the last known pair in southern England breeding on Culver Cliff on the Isle of Wight in 1780 (Love 2006). By the beginning of the eighteenth century the species was extinct in England, although a pair bred on the Isle of Man in 1815 (Love 2006).

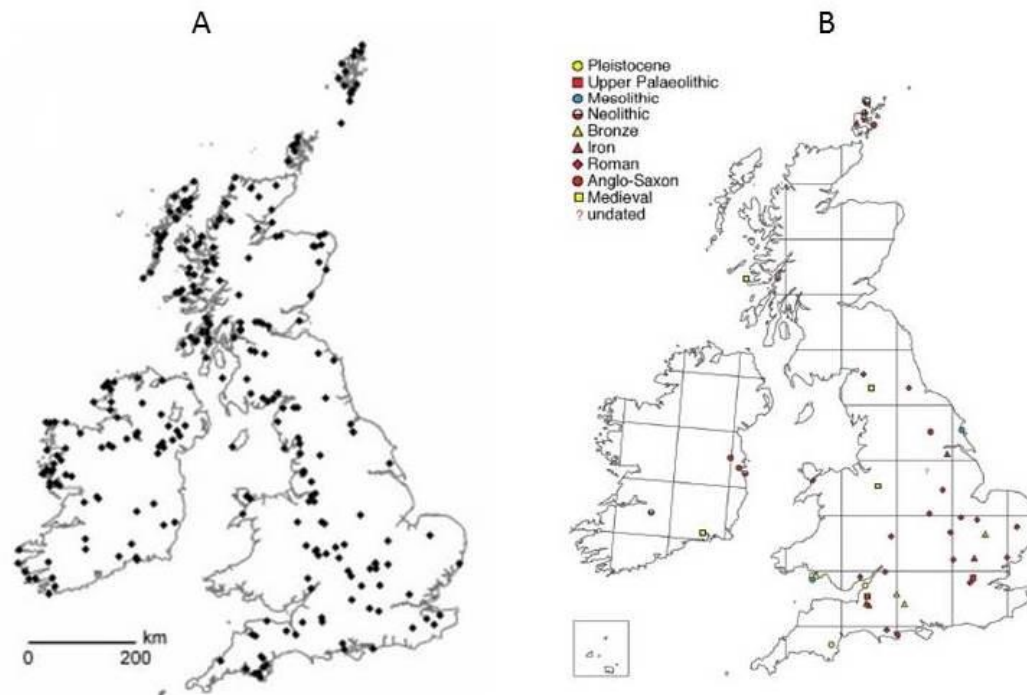


Figure 2. A) Geographical location of place names interpreted as indicating the presence of White-tailed Eagles (Evans et al. 2012); B) Map showing the archaeological records of White-tailed Eagles in the UK (Yalden 2007).

1.4. Why should White-tailed Eagles be re-introduced to England?

This project provides an opportunity to restore a population of White-tailed Eagles to parts of its former range in southern England from which it was eradicated entirely due to the influence of man. The methods for the collection, care, translocation and release of juvenile White-tailed Eagles are thoroughly understood following the successful reintroduction projects that have been undertaken in Scotland and Ireland and we believe that a reintroduction project is the best way to re-establish the species in southern England. The project would also complement wider European efforts to restore the White-tailed Eagle to its former range. Reintroduction projects have been proposed for both northern and southern Spain, with the latter project likely to begin in Andalusia in 2019 (see Appendix 3). This would offer a welcome opportunity to share experiences and best practice.

Although the general trend for White-tailed Eagle in Europe is for populations to be increasing, the current European range remains extremely restricted compared to historical times. Range recovery is very slow because dispersal is limited by low natal dispersal distances of males in particular. Like many long-lived monogamous birds with delayed

sexual maturity, White-tailed Eagles have a breeding system where males compete for resources in order to attract females, and hence there is a greater selective advantage for males to stay closer to their natal sites, whereas without the constraint of establishing a territory, females choose between the available resources of different males and consequently often disperse further (Whitfield et al 2009). In an extensive study of the natal dispersal of the reintroduced population of White-tailed Eagles in Scotland, Whitefield et al (2009) found that the mean dispersal distance for males was less than the females. Median age of recruitment to the breeding population was 4 years for males and 5 year for females, and median values for natal dispersal were 21–45 km in males and 47–58 km in females. This, however, varied according to the stage of the reintroduction project. Natal dispersal distances were identical among the males and females that bred following the first phase of releases; but as the population expanded, sex differences became more apparent with females dispersing further than males. This was exemplified by the fact that the mean terrestrial natal dispersal (i.e. straight-line distance between the release site and first breeding location minus any distance over sea) of breeding birds from the first Scottish release was 11 km for males and 11 km for females (full direct line distances (i.e. including areas of sea) 45 km / 47 km). The corresponding figures for wild-bred birds remained 11 km for males but rose to 26 km for females (full direct line distances 21km / 58 km).

Given the constraining nature of strong natal philopatry among males in particular and its significance in terms of where new territories are established, it is reasonable to suggest that it may take many more decades for White-tailed Eagles to spread from Scotland or Ireland to southern England naturally despite the fact that extensive areas of suitable breeding habitat exist, particularly in coastal areas. In recent years, including winter 2018/19, wandering eagles from breeding populations in mainland Europe have been seen in Hampshire and surrounding counties during winter, but none have stayed. These wandering sub-adults, particularly females, would likely join a breeding population once established, especially if unpaired territorial males were present. The current lack of any breeding White-tailed Eagles, however, means that there is no clear incentive to settle. Nevertheless the sightings of these birds is a clear indication that, if established, a South Coast population would act as an important link between the newly established and expanding populations in France and the Netherlands with those in Scotland and Ireland. This would facilitate gene flow between these different meta-populations.

The reintroduction of the White-tailed Eagle to southern England would restore a key apex predator to the area after an absence of several centuries. In recent years the positive ecological impact of such species has become increasingly apparent through the principle of trophic cascades (Estes et al 2011), and also as key indicator species (Helander et al 2008).

The White-tailed Eagle is also regarded as an important flagship species for wetland conservation across Europe (Sandor et al 2015); thereby corroborating the notion that the conservation of charismatic top predators brings wider biodiversity conservation benefits (Sergio et al 2006). The restoration of such an iconic species would help to raise the profile of the conservation and protection of coastal and estuarine habitats which in turn may lead to knock on benefits for a much broader suite of threatened or declining species which share the same habitats. In this regard the White-tailed Eagle could also be deemed an umbrella species, i.e. one whose habitat and area requirements are such that protecting it will aid a range of other species at the same time (Simberloff 1998).

In addition to the conservation and ecological case for the reintroduction of the White-tailed Eagle to southern England, evidence suggests that it will also have economic benefits. In Scotland eagle tourism is extremely popular and recent RSPB commissioned reports have shown that the presence of White-tailed Eagles generate up to £5 million to the economy of the Isle of Mull each year, and £2.4 to the Isle of Skye through visitor spend in the area (Molloy 2011).

1.5. Why the Isle of Wight?

Many parts of southern England are capable of supporting breeding White-tailed Eagles, but the Isle of Wight was considered the most suitable location for a release. It is the last known breeding site of the species in southern England, is located close to highly suitable foraging areas in the Solent and surrounding estuaries, has potential nesting sites in woods and cliffs, and good loafing areas for immature birds. In particular there are significant stretches of coastal slippage habitat on the Isle of Wight classified as Maritime Cliffs and Slopes. These areas provide sizeable stretches of coastline where public access is hindered/restricted, thereby providing areas where the eagles may nest, forage or roost in relative seclusion. A more detailed analysis of food and nest site availability is included later (Section 2). Suitable release sites have been identified on Forestry Commission land.

Although the landscape has changed since White-tailed Eagles last bred on the Isle of Wight in 1780, and there is increasing human pressure, much of the area enjoys the highest levels of environmental protection, including RAMSAR and SPA designations. This is reflected in very large concentrations of wintering wildfowl and waders, as well as breeding terns and Mediterranean Gulls *Ichthyaetus melanocephalus*. In addition the Isle of Wight is currently applying for Biosphere Reserve status that would assure further long-term protection.

A large part of the Isle of Wight is managed with nature conservation in mind either as a primary or important secondary consideration. The National Trust protects and manages an

extensive estate comprised of downland, woodland, wetland and coastal habitats positioned across the length and breadth of the Island. Forestry England manages public forest estate on the Island which extends to in excess of 1150 hectares (ha). Much of its woodland resource has been undergoing a gradual restoration to a site native composition during the past two decades under the direction of the Keepers of Time Policy and Action Plan for Ancient Woodlands (DEFRA 2005). A variety of non-governmental organisations manage a network of nature reserves including the Hampshire and Isle of Wight Wildlife Trust, RSPB, Woodland Trust and Peoples Trust for Endangered Species (amongst others).

Evidence from Europe, where the species occurs in many lowland areas, indicates there is ample habitat to support a viable population of White-tailed Eagles in southern England. The Isle of Wight is well positioned to facilitate the dispersal of eagles both west and east along the coast, with sites such as Poole Harbour in Dorset and Pagham Harbour in West Sussex expected to provide excellent foraging habitat throughout the year. Inland lakes such as Blashford, situated 20 km north of the western Solent, will provide additional foraging areas. In time there is potential for White-tailed Eagles to spread to other coastal regions of southern England as well as some inland water bodies.

The reintroduction of White-tailed Eagles is likely to bring further associated benefits to the area. As detailed above the White-tailed Eagle is regarded as an important flagship species for wetland conservation across Europe (Sandor et al 2015) and the reintroduction of such an iconic species will help to generate more support for the conservation movement locally and help to highlight the importance of protecting sensitive coastal and estuarine habitats. An ongoing challenge in the Solent is disturbance from human recreation, with dog walking accounting for 40% of disturbance to wintering birds in the Solent and Southampton Water SPA (Bird Aware Solent 2018). We believe that the reintroduction of the White-tailed Eagle would be of benefit to existing efforts to raise awareness of this and other threats to the conservation of coastal and estuarine habitats.

The project is also likely to have significant economic benefits for the area, particularly as tourism already makes a significant contribution to the Isle of Wight's economy. Evidence from Scotland indicates that eagle related tourism would give a considerably boost to tourism on the Isle of Wight and surrounding areas, including in winter when it is generally more difficult to attract visitors.

1.6. Have the causes of extirpation been removed?

White-tailed Eagles were lost due to widespread persecution, beginning with the protection of fishponds in the early Middle Ages, and later, when the population was small in England,

through the collection of specimens for taxidermy and theft of eggs for collections. Public attitudes have now completely changed and the return of iconic species such as the White-tailed Eagle, generates genuine excitement among the general public. The White-tailed Eagle is increasing across Europe and reintroduction projects in Scotland and, more recently, Ireland, have been successful.

The White-tailed Eagle is now fully protected as a Schedule 1 species under the Wildlife and Countryside Act 1981 meaning it is an offence to intentionally or recklessly disturb it at, on or near an active nest, or to shoot, poison or harm individuals at any time of the year. Nevertheless cases of ongoing and illegal persecution do still occur in Scotland and Ireland, and as such it will be essential to maintain a dialogue with those who may perceive eagles as an ongoing concern. A comprehensive risk analysis has been undertaken as part of this feasibility study in order to assess any potential threats that the released birds may face (Section 5.13) and the ways that these hazards can be mitigated.

1.7. Have White-tailed Eagles been reintroduced elsewhere?

White-tailed Eagles have been reintroduced to Scotland, Ireland and the Czech Republic. Although the project in the Czech Republic was a small scale release of only nine individuals (Belka and Horal, 2009), the projects in Scotland and Ireland provide valuable models.

Early releases in Scotland were undertaken on Fair Isle in 1959 and 1968, and although they failed, the 1968 release in particular – which was undertaken by Roy Dennis – was a valuable test of translocation, husbandry and release methods. A total of 75 Norwegian young were subsequently released on Rum National Nature Reserve between 1975 and 1985, and this led to the first successful breeding in 1985. The population was relatively slow to expand and so an additional 56 birds were released between 1993 and 1998 using improved techniques (Evans et al 2003). By 2000 there were 22 breeding pairs and the 100th chick fledged successfully. Since then the population in Scotland, predominantly in western parts, has expanded to more than 130 breeding pairs (D Sexton pers. comm. 2018).

Following the successes in the west, 85 juvenile White-tailed Eagles were released on the east coast between 2007 and 2012, with birds again imported from Norway. The first pair in eastern Scotland subsequently bred successfully in 2013.

In Ireland a total of 100 chicks were translocated to Killarney National Park in south-west Ireland between 2007 and 2012. There are now at least ten breeding pairs (Mee 2017).

The experiences gained in both Scotland and Ireland will be used to inform the Isle of Wight project. Key issues include:

- Minimising human contact prior to release
- The process of re-introduction can be quicker and cheaper by releasing many individuals in a short time into the best quality habitat available
- Siting release cages near a good year-round food supply is essential
- Reintroductions should involve wide consultation among potential stakeholders and rational fears should be incorporated into a risk assessment.

Illegal persecution has been recorded in both Scotland and Ireland, with poisoning of released eagles a particular issue in Ireland (Mee et al 2016). Although White-tailed Eagles take a diverse array of prey, there has been long standing debate in Scotland between conservationists and farmers as to the extent to which they predate lambs. This issue is assessed in detail in section 4.2.1. It is encouraging to note that despite initial concerns in Ireland, there have been no known cases of lamb predation, and the farming community is now either neutral or in favour of the reintroduction project (Mee 2017). There are also no conflicts with sheep farming interests in the Netherlands where there is an expanding population of White-tailed Eagles (see Appendix 2).

1.8. What is the most appropriate donor stock?

The English population of White-tailed Eagles was from the nominate race *Haliaeetus albicilla*, which is monotypic across Europe. This population would have once freely mixed with the White-tailed Eagles in other parts of the UK as well as mainland Europe. Restoring a population on the south coast of England would facilitate these links between meta-populations once again.

In Europe, the breeding population is estimated to number 9,000-12,300 breeding pairs (BirdLife International 2015). Europe forms 50-74% of the global range, with a global population size estimated to be between 24,200 and 49,000 mature individuals. The general trend across Europe is for the species to be increasing, as shown in Table 1. In recent years White-tailed Eagles have returned to both the Netherlands and France, with small but expanding populations in both countries.

An essential requirement of any reintroduction project is to ensure that there is no impact on the donor population. The most suitable donor stock is from Scotland, where the population has reached a minimum of 130 breeding pairs, with high densities in some areas, including Mull and Skye (D Sexton pers. comm. 2018). Research indicates that the Scottish White-tailed Eagle population, which itself was established through the translocation of Norwegian

birds, is the closest population, genetically, to the extinct English population (Hailer et al. 2007).

Table 1. Current European population of White-tailed Eagles (Birdlife International , 2015 and other sources).

Country	Number of breeding pairs	Trend
Austria	13-14	Increasing (I)
Azerbaijan	5-10	Unknown (U)
Belarus	85-105	Stable (S)
Bosnia & HG	5-10	
Bulgaria	33-37	I
Croatia	135-165	I
Czech Republic	25-35	S
Denmark	100	I
Estonia	220-250	I
Finland	450	I
France	4	I
Georgia	2-3	
Germany	628-643	I
Greece	8-10	S
Greenland	150-200	S
Hungary	226-271	I
Iceland	69	I
Ireland	10	I
Latvia	90-100	I
Lithuania	120-150	I
Moldova	0-2	
Netherlands	11	I
Norway	2,800-4,200	I
Poland	1,000-1,400	I
Romania	55-75	I
Russia	2,000-3,000	
Scotland	130+	I
Serbia	112-139	S
Slovakia	10-14	I
Slovenia	8-11	I

Sweden	550-700	I
Turkey	8-15	S
Ukraine	80-100	I

1.9. Impact on donor stock

At the most recent meeting of the UK White-Tailed Eagle Project Team on 25th January 2019 it was agreed that there are sufficient young for Scotland to act as the donor population for the proposed Isle of Wight project.

A comprehensive analysis of current and predicted White-tailed Eagle population growth in Scotland was undertaken by Sansom et al (2016). They report that the number of breeding White-tailed Eagle pairs is growing almost exponentially, and wild-bred eagles now greatly outnumber released eagles. There has been a continued increase in both the proportion of White-tailed Eagle nests fledging young (i.e. 'breeding success') and the number of chicks fledged per breeding attempt (i.e. 'productivity') since the first breeding attempt in 1983, although the number of chicks fledged per breeding attempt appears to have remained relatively constant at an average of 0.67 chicks fledged per territorial pair since 2006. Density-independent predictive models suggest that the White-tailed Eagle population in Scotland could continue to grow to over 200 pairs by 2025 (Figure 3) and almost 900 pairs by 2040. Even when the impact of additional mortality, potentially caused by illegal killing and collisions with wind farms, was incorporated into models, population growth was reduced, but not to the extent of causing a population decline (Sansom et al 2016).

The population growth predicted by Sansom et al (2016) based on values for the mean (\pm SD) number of fledglings produced per successful pair and survival gives a close fit to the observed population growth of White-tailed Eagles between 1975 and 2014, but like a previous model devised by Evan et al. (2009), it actually underestimates the most recent growth which has seen the population increase to a minimum of 130 breeding pairs in 2018 (Figure 3), one year earlier than predicted by Sansom et al (2016).

The removal of 12 young each summer from 2019-2023 would have a negligible effect on overall productivity, reducing it from the expected 0.67 to 0.60 (Table 2). A reduction of this order would pose no risk to the donor population given the current and expected rate of population increase. Indeed should the population continue to increase at a faster rate than expected, the overall impact of removing birds for translocation to the Isle of Wight would be even less.

It is also important to consider that the project would be redistributing individuals within the United Kingdom, rather than removing them entirely from the population. Furthermore the removal of 'excess' young may actually be beneficial to the Scottish population by reducing intraspecific competition in the most densely populated areas. In some localities, particularly the islands of Mull and Skye, there are many non-breeders, leading to an increase in intraspecific competition for nest sites and evidence of fighting and even deaths between adults seeking breeding sites (Mee 2017).

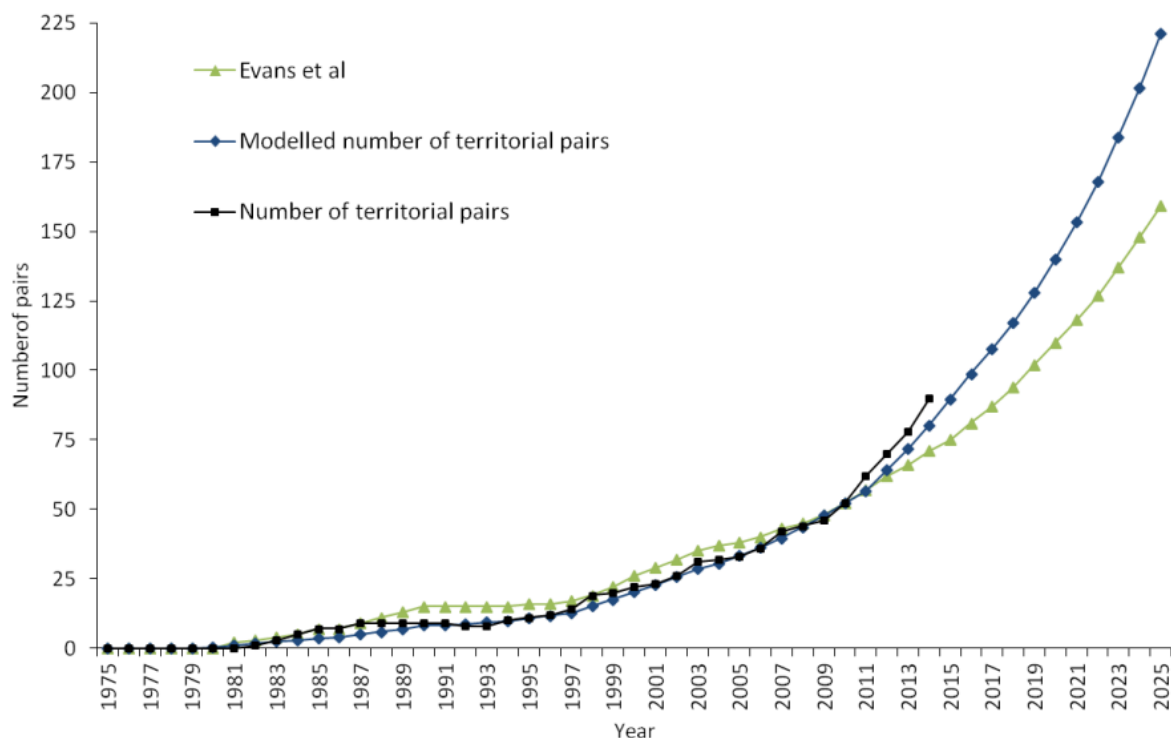


Figure 3 (from Sansom et al. 2016). Estimated population growth of White-tailed Eagles in Scotland until 2025 under two different modelled scenarios, as well as the observed number of territorial pairs (black line, squares). *The previously best predictive model of future population growth (Evans et al. (2009); green line, triangles) provided a good fit to the observed population growth until approximately year 2010. However, a model that used up-to-date demographic rates from released and wild-bred birds, the overall proportion of territorial pairs that bred (mean \pm SD from 1983-2014), the mean proportion of successful nests and the mean (\pm SD) number of chicks per successful attempt shows a better fit to the observed population trend (dark blue line, diamonds). The better fit of the updated model compared with the model by Evans et al. (2009) is due to an improved way of capturing the mortality of released first-year birds in the models devised by Sansom et al (2016).*

Table 2. The effect of removing up to 12 White-tailed Eagle fledglings from the Scottish population over a five year period between 2019 and 2023. *Population estimates are based on Sansom et al. (2016) with number of fledged young per pair based on the observed productivity figure of 0.67, which has remained relatively constant since 2006.*

Year	Expected pairs based on Sansom et al. (2016)	Productivity	Expected of fledged young (based on 0.67 fledged chicks per pair)	Number of fledged young after translocation	Productivity after translocation
2019	130	0.67	87	75	0.58
2020	141	0.67	95	83	0.59
2021	155	0.67	104	92	0.59
2022	174	0.67	117	105	0.60
2023	186	0.67	125	113	0.61
TOTAL	786	0.67	528	468	0.60



Figure 4. Juvenile White-tailed Eagle at ringing.

The collection of young will require a licence from Scottish Natural Heritage and if the licence is activated, following a successful outcome of our licence application to Natural England, we and Scottish members of the White-tailed Eagle steering group would identify suitable donor sites and we would seek landowner permissions.

Following the devolution of both nature conservation and forestry functions to Scotland and England during the past few decades the constructive collaboration that this project will bring about between the Scottish Government and DEFRA bodies can be used to inform and guide future trans-boundary species recovery projects going forward.

1.10. Legal requirements

The UK Government is required and encouraged to reintroduce extinct native species, as a signatory of the Rio de Janeiro Convention on Biological Diversity, the European Habitats Directive and the Berne Convention. The above proposal complies with the Recommendation No. R (85) 15 of the Council of Europe Committee of Ministers to Member States on the reintroduction of wildlife species, adopted in 1985.

At the International Conference Sea Eagle 2000 held in Sweden in September 2000, one of its eight resolutions was:

“Encouraged that White-tailed Eagle populations have recovered in major areas of the species’ European range, but

noting with concern that this species is still endangered in many countries;

the International Symposium Sea Eagle 2000

recommends that this keystone species, valuable as an environmental indicator, requires effective conservation action to restore this species throughout its present and former range.”

This project would concur with the above vision and would complement proposals to restore White-tailed Eagles through the southern half of Europe to the Mediterranean region.

The project would require a licence from Scottish Natural Heritage to collect and hold young White-tailed Eagles from the wild in Scotland and permissions from Natural England to release them as the bird is listed on Schedule 9 of the Wildlife and Countryside Act 1981. Members of the project team already have the relevant licences from the British Trust for Ornithology and SNH to fit rings, tail mounted VHF transmitters and satellite transmitters to the birds.

Under international conventions and directives, the White-tailed Eagle is classified as follows:

- EU Birds Directive: listed in Annex I - species to be subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.
- CITES Convention: listed in Appendix I – trade in specimens of these species is permitted only in exceptional circumstances.
- Bonn Convention listed in Appendix I – endangered migratory species and listed in
- Appendix II - migratory species to be subject of agreements.
- Bern Convention: listed in Appendix II – strictly protected species.
- The White-tailed Eagle is specially protected in the UK under Schedule 1 of the Wildlife & Countryside Act 1981, and is also listed on Schedule 9.

White-tailed Eagles is also on the Red List of Birds of Conservation Concern in the UK (www.bto.org/science/monitoring/psob).

2. The biological feasibility of a White-tailed Eagle reintroduction

2.1. Isle of Wight

2.1.1. Habitats on The Isle of Wight:

The National Character Area Profile for The Isle of Wight (<http://publications.naturalengland.org.uk/publication/6225459138265088?category=58713>) describes the Isle of Wight as supporting a number of rich and varied habitat types that are under a strong maritime influence. The main terrestrial habitats that are supported on the Island include chalk grassland, neutral meadows, ancient semi-natural broadleaved woodland and relict heathland and acid grassland (Natural England 2014).

Priority Habitats on the Island as defined by the UK Biodiversity Action Plan and now reinterpreted as Section 41 Habitats of Principal Importance for Conservation in England under the NERC Act (2006) are shown in Table 3.

Table 3. Habitats of Principal Importance for Conservation in England on the Isle of Wight.

Priority habitat	Area (ha)	% of the NCA
Broadleaved mixed and yew woodland	2960	8
Maritime cliff and slope	793	2
Lowland calcareous grassland	655	2
Coastal and floodplain grazing marsh	578	2
Lowland meadows	215	1
Reedbeds	149	<1
Lowland dry acid grassland	121	<1
Fens	87	<1
Lowland heathland	65	<1
Saline lagoons	28	<1
Mudflats	19	<1
Coastal sand dunes	13	<1
Coastal vegetated shingle	11	<1

Source: Natural England (2014 (from 2011 data))

2.1.2. Biodiversity conservation and appreciation on the Isle of Wight

Biodiversity conservation is an important focus of Island life with a long established Isle of Wight Natural History Society, Isle of Wight Ornithologists Group, Isle of Wight Biodiversity Steering Group (which oversaw the development of a series of local species and habitat action plans) and a well-supported annual Bioblitz event which seeks to boost public understanding and participation in biological recording. In addition to the aforementioned habitat and species action plans a series of spatially defined Biodiversity Opportunity Areas (BOAs) have been mapped in order to help prioritise the delivery of ecological restoration e.g. the North West Woodlands BOA.

Isle of Wight Biodiversity Action Plans (habitats and species):

<http://www.wildonwight.co.uk/haps.php>

<http://www.wildonwight.co.uk/saps.php>

Isle of Wight Biodiversity Opportunity Areas (BOAs):

<http://www.wildonwight.co.uk/boa.php>

At the time of writing a Biosphere Reserve application for the Isle of Wight is being pursued with UNESCO. The return of the White-tailed Eagle to the skies above the Island in tandem with a successful Biosphere Reserve designation would clearly indicate the Island to be a leading county nationally in respect of its focus on and progressive stance towards biodiversity conservation and ecological restoration. If sanctioned the White-tailed Eagle reintroduction would seek to integrate into and complement the existing conservation initiatives already underway on the Island.

2.1.3. Land management and conservation

A large part of the Isle of Wight is managed with nature conservation in mind either as a primary or important secondary consideration. The National Trust protects and manages an extensive estate comprised of downland, woodland, wetland and coastal habitats positioned across the length and breadth of the Island. The Forestry Commission England managed public forest estate on the Island extends to in excess of 1150 hectares (ha). Much of its woodland resource has been undergoing a gradual restoration to a site native composition during the past two decades under the direction of the Keepers of Time Policy and Action Plan for Ancient Woodlands (DEFRA 2005). A variety of non-governmental organisations manage a network of nature reserves including The Hampshire and Isle of Wight Wildlife Trust, RSPB, Woodland Trust and Peoples Trust for Endangered Species (amongst others).

Farmers and other private landowners make an important contribution to nature conservation in the wider, interconnecting landscape matrix often with advice and support being provided by Natural England and Forestry Commission England who work in tandem to oversee the effective targeting of Countryside Stewardship and other agri-environment schemes.

2.2. White-tailed Eagle diet

As a generalist predator, the White-tailed Eagle tends to exploit the most abundant prey (Ekbald et al. 2016). Fish, waterbirds, and small- to medium-sized mammals constitute the bulk of the diet (Cramp 1980), but the relative proportion of each varies both spatially within the landscape and also seasonally (Ekblad et al. 2016). For instance studies have shown that the composition of birds in the diet may vary from 6.7% in Greenland (Wille & Kampp 1983) to 88.4% at Lake Baikal in eastern Siberia (Mlíkovský 2009). In addition carrion is opportunistically taken and can constitute a significant proportion of the diet during certain parts of the year. For example carrion constitutes 29.5% of White-tailed Eagle diet during winter in Germany (Nadjafzadeh et al. 2015).

Overall diet is predominantly influenced by the relative abundance of potential foods, with eagles switching between species according to what are most readily available (Marquiss et al 2004). Fish usually dominate the diet in spring and early summer, with birds increasingly taken later in the breeding season and in autumn and winter (Cramp 1980). A recent study indicated that White-tailed Eagles prefer fish if available and use waterfowl as a secondary food source (Nadjafzadeh et al.2012). Fish are caught to a depth of 0.5 metres and hunting is usually confined to shallow waters (Ekblad et al. 2016). Birds are captured on the water and on the ground, but rarely on the wing. Piracy of food from Otters, large gulls and Cormorants is often practiced, and individuals become skilled at chasing birds to make them disgorge fish or stealing fish. They can also become skilled at picking up discards from fishing boats, after watching large gulls, as well as taking waste scraps of fish from crab and lobster fishermen when they are rebaiting their pots. In some Scottish waters creel fishermen throw fish to White-tailed Eagles and this has been taken up by tourist boats, which attract White-tailed Eagles so that people can view and photograph the eagles at close range.

Historical records from Britain suggest White-tailed Eagles mainly took birds and fish in the summer and mammalian food during the winter (Love 1983). Marquiss et al (2004) studied the diet of 15 Scottish pairs between 1998-2002, removing prey remains and pellets from nest. They found 15 species of mammal, 51 bird species and 23 fish species. They also found Common Toad *Bufo bufo*, squid, curled octopus and prawn nephrops. Fulmar *Fulmarus glacialis* was the predominant food species of seven pairs, and Rabbit *Oryctolagus*

cuniculus or Mountain Hare *Lepus timidus* the main food of two pairs. More recently Whitfield et al. (2012) found that seabirds constituted a mean 49.6% of the diet of White-tailed Eagles at 16 nests in western Scotland. They found that fish comprised just 6.1% of the diet but acknowledged that fish were probably underestimated by prey remains collections. Sheep made up 19.2% of diet, but evidence from earlier studies indicates that the majority of lambs are likely to have been scavenged carcasses (Marquiss et al 2004). In Ireland there have been no records of lamb killing (Mee 2017). There is also no evidence of any lambs being taken in the Netherlands, where sheep are frequently kept on the dykes to maintain short vegetation (van Rijn and Dekker 2016).

In the expanding population in the Netherlands – the closest geographically to the Isle of Wight and the Solent – White-tailed Eagle diet during the breeding season consists predominantly of waterbirds (58%) and fish (28%) (van Rijn and Dekker 2016). Greylag Goose *Anser anser* constitutes 38% of the waterbirds taken with Coot (34%) the next most frequently caught species. The eagles predominantly target Greylag Goose goslings, although sick or injured adult birds are also taken. The remaining species including dabbling ducks (15%) and smaller numbers of Great-crested Grebes *Podiceps cristatus*, Barnacle Geese *Branta leucopsis*, Egyptian Geese *Alopochen aegyptiaca* and diving ducks. Of the fish species carp and bream are most commonly caught (83%) with range of others also taken, including Pike *Esox lucius*, Zander *Sander lucioperca* and Perch *Perca fluviatilis*. It is important to consider, however, that Dutch White-tailed Eagle population inhabits freshwater habitats, and, as such, the fish assemblage is very different to coastal areas of southern England. Furthermore, carp and bream (generally ranging from 35-70 cm) are usually only taken when they are spawning and therefore close to the surface. Mammals only constitute a very small proportion of the diet (5%), but include Brown Rat *Rattus norvegicus*, Brown Hare *Lepus europaeus*, Mole *Talpa europaea*, Muskrat *Ondatra zibethicus* and mice.

2.3. Food availability

The release site has been chosen due to its proximity to rich foraging areas in the Solent and surrounding estuaries which will provide a diverse array of potential food throughout the year. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of four tides each day, and for the complexity of the marine and estuarine habitats present within the area which are designated a Special Area of Conservation under the EC Habitats Directive. The Solent encompasses four coastal plain estuaries (Yar, Medina, King's Quay Shore, Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour).

It is likely given evidence from elsewhere in their European range that a South Coast population of White-tailed Eagles centred on the Isle of Wight will feed predominantly on a mixture of fish, waterbirds and carrion with the relative proportions of each varying according to season. Fish are most likely to be taken in spring, summer and early autumn, while waterbirds and carrion will be particularly important during the winter.

A review of potential prey items has been undertaken by analysing the results of ongoing monitoring by different organisations.

2.3.1. Carrion

As a generalist forager, carrion often constitutes a key part of White-tailed Eagle diet (van Rijn 2010, Nadjafzadeh et al. 2015) and we expect that carrion will be opportunistically taken throughout the year. The high concentrations of wintering wildfowl and waders in the Solent and surrounding area mean that foraging eagles will regularly encounter bird carcasses, and they will also take any washed-up dead fish or marine mammals as they search shorelines for food. It is also likely that eagles will learn to take waste scraps from fishing boats, as is observed in Scotland, and in time tourist boats may also throw fish to White-tailed Eagles. There have already been indications from the fishing community on the Island that this is of interest (S Jones *pers. comm.* 2018). The eagles will also eat mammal carcasses, such as Fox *Vulpes vulpes*, left out in open areas. We also expect the White-tailed Eagles to parasitise food from large gulls, Cormorants and Otters. A wintering juvenile White-tailed Eagle that was present in the New Forest and western Hampshire for at least three months from early December 2018 was observed feeding on a deer carcass it found.

2.3.2. Fish

The Solent and surrounding estuaries support seasonally abundant fish populations. Of particular note from a White-tailed Eagle perspective are three species of Grey Mullet: Golden Grey Mullet *Chelon aurata*, Thick-lipped Grey Mullet *Chelon labrosus* and Thin-lipped Grey Mullet *Chelon ramada*. These species tend to congregate in large shoals in shallow water in estuarine and coastal habitat, and as such are easier to catch for White-tailed Eagles. Annual monitoring by the Inshore Fisheries and Conservation Authority as well as the Environment Agency demonstrates that a range of species, including all three species of Grey Mullet, are widespread in the region (IFCA 2017) including at sites such as Newtown Harbour and Yarmouth Harbour on the north shore of the Isle of Wight.

Sea Bass *Dicentrarchus labrax* is another potential prey species of White-tailed Eagles. Adult Sea Bass tend to spend time offshore but juveniles (up to 4-5 years old) often reside in shallow coastal lagoons and estuaries (Jennings and Pawson, 1992). Sea Bass were the second most numerous species caught during IFCA surveying (IFCA 2017) and, like Grey

Mullet, occur along the north shore of the Isle of Wight, close to areas of maritime cliffs and slopes that the eagles are likely to favour after release. They were also the most abundant species in Southampton Water during the Environment Agency's Solent and South Downs Fish Monitoring survey 2017. All three species of Mullet were also caught in this area. The populations of Grey Mullet and Sea Bass in this area will likely make it a favoured fishing locality for the eagles. These species were present during IFCA surveying in June and October, indicating that they will provide a valuable food source during spring, summer and into the autumn.

In addition to catching live prey, White-tailed Eagles also search the coastline for washed-up dead or discarded fish and are known to parasitize a range of other fish-eating species, including Cormorants. On the Isle of Wight and surrounding coasts fish taken in this way may include any of the following species:

- Black Bream *Spondyliosoma cantharus*
- Brill *Scophthalmus rhombus*
- Cod *Gadus morhua*
- Herring *Clupea harengus*
- Mackerel *Scomber scomburus*
- Sole *Solea solea*
- Plaice *Pleuronectes platessa*
- Dab *Limanda limanda*
- Flounder *Platichthys flesus*
- Red Mullet *Mullus surmuletus*
- Whiting *Merlangius merlangus*
- Pollack *Pollachius pollachius*
- Lemon Sole *Microstomus kitt*
- Conger Eel *Conger oceanicus*
- Haddock *Melanogrammus aeglefinus*
- Hake *Merluccius sp.*
- Ling *Molva molva*
- Megrim *Lepidorhombus whiffiagonis*
- Saithe *Pollachius virens*
- Scad – Horse Mackerel *Trachurus trachurus*
- Sea Trout *Salmo trutta*
- Shad *Alosa sp.*
- Turbot *Scophthalmus maximus*

- Witch Flounder *Glyptocephalus cynoglossus*

2.3.3. Waterbirds

In the Netherlands waterbirds are the principle prey item of both breeding and wintering White-tailed Eagles (van Rijn and Dekker 2016), and it is expected that they will be similarly important in southern England. Waterbirds are likely to be particularly important in winter when fish are more difficult to catch. During winter the Solent and surrounding estuaries regularly hold in excess of 170,000 wintering wildfowl, waders and gulls (Table 4). As such the area has the potential to provide rich foraging grounds for White-tailed Eagles. It should be noted that in many cases the eagles will take sick, injured, dying or dead birds and this is particularly the case with some of the larger species, such as geese. In Denmark where there are now over 100 pairs of breeding White-tailed Eagles (from none in the early 1990s) it is thought that most geese and ducks taken by eagles are likely injured or sick (A. Fox pers. comm. 2019; Appendix 12).

During the period 2011-16 eleven sites around the Solent supported an average non-breeding population in excess of 170,000 birds. Yearly means for the most numerous species (> 1000) are displayed in Table 4, and a full list of all regularly occurring species is included in Appendix 4. In excess of 30,000 Brent Geese *Branta bernicla* winter annually with large numbers of Wigeon *Mareca penelope* (5 year mean = 13615) and Teal *Anas crecca* (mean = 8929) also occurring. Evidence from the Netherlands indicates that Brent Geese are likely to be taken, although, as noted above, eagles are most likely to target naïve juveniles or sick, injured, dying or dead birds. Both Wigeon and Teal are species that are regularly taken in other parts of the species' range, including in the Netherlands (van Rijn and Dekker 2016). Dunlin *Calidris alpina* are the most numerous wader with a mean winter population in excess of 40,000 birds. Waders are sometimes taken by White-tailed Eagles, but evidence from other European populations indicates that they are more likely to favour waterfowl (Ekblad et al 2016; van Rijn and Dekker 2016). Over 13,000 Black-headed Gulls *Chroicocephalus ridibundus* winter annually. Like waders, some gulls may occasionally be taken.

Evidence from Europe (e.g. Sandor et al 2015; van Rijn and Dekker 2016) indicates that during the breeding season resident waterfowl such as Coot and Mallard *Anas platyrhynchos* are likely to be key prey items, along with both Greylag and Canada Goose *Branta Canadensis* goslings which are widespread and increasing in the region.

Table 4. Mean wintering populations of most numerous waterbirds at 11 sites in the Isle of Wight/Solent area 2011-16 (Frost et al 2018) (for complete list see Appendix 4).

	Christchurch Harbour	Yar Estuary	Newtown Estuary	NW Solent	Beaulieu Estuary	Southampton Water	Portsmouth Harbour	Brading Harbour	Ryde Pier to Puckpool Point	Langstone Harbour	Chichester Harbour	TOTAL
Canada Goose	63	37	344	657	223	837	144	691	0	312	146	3454
Brent Goose	284	328	1641	2370	1275	2322	3009	601	410	5437	12620	30297
Shelduck	23	13	227	204	106	107	200	16	0	505	507	1908
Wigeon	706	474	2386	1846	772	2365	654	603	0	1014	2795	13615
Teal	263	440	1548	2041	915	1055	261	475	0	362	1569	8929
Mallard	148	132	161	372	145	409	87	141	0	98	469	2162
Pintail	22	0	214	391	44	77	6	2	0	136	222	1114
Coot	294	28	2	100	81	76	26	161	0	80	258	1106
Oystercatcher	89	7	129	212	224	975	593	13	27	1391	1655	5315
Ringed Plover	60	3	80	270	52	141	63	23	46	221	567	1526
Golden Plover	1	110	774	193	237	247	147	0	0	35	860	2604
Grey Plover	22	6	118	321	98	158	26	18	0	729	1468	2964
Lapwing	500	303	1461	1067	676	1257	45	588	0	552	1858	8307
Knot	3	2	532	331	12	19	2	0	0	320	1805	3026
Dunlin	359	10	1438	3137	503	1860	5587	128	8	15986	12209	41225
Black-tailed Godwit	81	163	112	485	160	437	553	21	0	447	646	3105
Bar-tailed Godwit	18	0	3	29	11	11	0	3	1	201	754	1031
Curlew	30	15	216	319	268	434	484	32	19	1507	1578	4902
Redshank	184	27	77	327	130	342	701	34	0	880	2076	4778
Turnstone	29	12	18	199	73	281	271	1	1	333	218	1436
Black-headed Gull	1487	369	1095	445	633	2042	3234	235	268	1833	2194	13835
Herring Gull	222	54	2014	59	32	109	223	66	79	181	102	3141

2.3.4. Mammals

Although White-tailed Eagles will readily predate mammals, evidence from other parts of their European range indicates that in areas of high alternative prey availability, such as the Solent, they usually constitute only a small proportion of the diet (Mlíkovský 2009; Sandor et al 2015; Ekblad et al 2016; van Rijn and Dekker 2016). Of the species present on the Isle of Wight and in the wider South Coast landscape, it is probable that Brown Hare and Rabbit will be preyed in small numbers, most likely in coastal areas. Likewise smaller mammals such as Brown Rat may also be taken. The eagles will also eat mammal carcasses, such as Fox, left out in open areas as well as marine mammals washed up on tidelines.

2.4. Breeding

2.4.1. Nesting habitat

In Scotland White-tailed Eagles build nests in trees and on cliffs, but evidence suggests that tree nests are preferred, and are usually sited in wooded areas close to water (Evans et al. 2009). Large trees are usually favoured without a specific tree species preference, with coniferous and deciduous used (Cramp, 1980). A recent study of nest-site selection at the Danube Delta demonstrated that White-tailed Eagles favoured large willows (*Salix* spp., 70.8%), and native white poplar (*Populus alba*, 20.8%), with 50% of nests built at a height of 16-19 metres (Sandor et al. 2015).

The recent colonisation of the Netherlands and France by breeding White-tailed Eagles emphasises the ability of the species to breed in well-populated lowland areas such as the Isle of Wight and southern England. A recent field visit to the Netherlands by members of the project team showed the ability of the White-tailed Eagle, when it is not persecuted, to live in landscapes of farmland, villages, towns and even cities in the background, along with motorways, as long as there is sufficient wild food and suitable nesting places in quieter areas. The distances of nest sites from busy activity in the Netherlands can be as little as 500 metres. Similar behaviour is also observed in Germany and Poland. Further details from the visit to the Netherlands can be found in Appendix 2.

2.4.2. Nest site availability

An analysis of land cover on the Isle of Wight using the 2015 Centre for Ecology and Hydrology Land Cover map showed that deciduous and coniferous woodland constitute 9% and 1.5% of land cover respectively (Figure 6). Subsequent field visits have identified numerous suitable nesting trees within these areas, including in sites under Forestry Commission England ownership and management. Further additional nesting habitat exists on chalk cliffs on the eastern and western sides of the Island, including the site of the last English breeding pair of White-tailed Eagles at Culver Cliff.

The importance of the Islands woodland resource is set out by Cox in the 2003 publication “Priorities for woodland biodiversity on the Isle of Wight” (<http://www.wildonwight.co.uk/publications/haps/woodlandbiodiversitydoc.pdf>). That same year the Isle of Wight Council in association with the Isle of Wight Biodiversity Steering Group prepared a Woodland Habitat Action Plan for the Isle of Wight (IoW Council & IoW BSG 2003 - <https://www.iow.gov.uk/documentlibrary/view/woodland-habitat-action-plan>). The Island is home to a significant resource of larger broadleaf trees of between 100-150 years old and beyond spread across both the forests and woodlands and more open wider

landscape occurring within wood-pasture, grasslands and fields, public open spaces and within the extensive network of hedgerows.

Coastal sites which at many locations often exhibit a broad suite of habitat transitions from high forest down to the foreshore via eroding maritime cliffs and slopes often support larger broadleaves that could not only provide important nesting sites for White-tailed Eagles but perching points upon which birds can survey their scavenging and hunting grounds and feed. In many places larger trees which have slipped down to the foreshore persist positioned on their side for many years and would again offer valuable perch points (Figure 5).



Figure 5. Areas of coastal slippage foreshore, classified as maritime cliffs and slopes, will provide quiet perching, and, potentially, breeding locations for the White-tailed Eagles.

Deciduous woodland, which is likely to provide a key breeding habitat in southern England comprises 12.2% of land cover in a 50 km radius from the proposed release site on the Isle of Wight, with coniferous woodland constituting 3.8%. This area includes the New Forest which would provide numerous additional potential nest sites. It is notable that the juvenile White-tailed Eagle, likely a wandering bird from Continental Europe, spent a large part of

winter 2018/19 in and around the New Forest. Juvenile White-tailed Eagles may disperse and explore widely in their first two years in particular, but they tend to return to their natal areas as they near breeding age (Whitfield et al 2009). A study in Scotland revealed that median values for natal dispersal were 21–45 km in males and 47–58 km in females (Whitfield et al. 2009). This indicates the released birds that survive to breeding age will most likely settle on the Isle of Wight or in the New Forest initially.

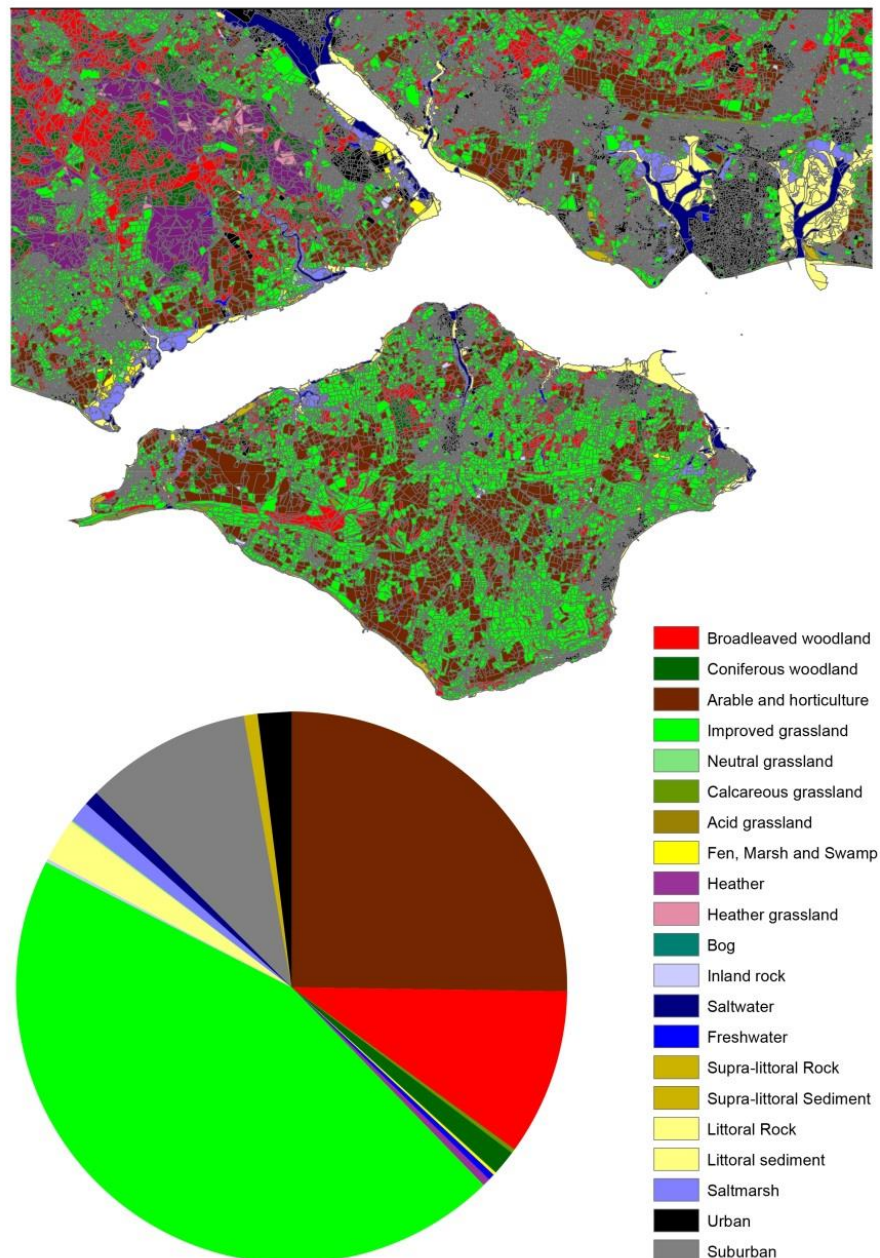


Figure 6. Land cover on the Isle of Wight from CEH 2015 Land Cover Map.

2.4.3. Disturbance to breeding sites

All released birds will be closely monitored in the field and by satellite tracking. It will be important to closely monitor any breeding activity and to liaise directly with all relevant stakeholders to ensure that any nests are not disturbed. This will be done on a case by case basis as the population develops. The project team has extensive experience of monitoring and protecting breeding raptors, and building relationships with landowners and other key local stakeholders in this way. It should also be noted that in some parts of Europe White-tailed Eagles have become increasingly tolerant of human activity (Helander and Sjornberg 2002), and White-tailed Eagles also nest close to well-used footpaths on the Isle of Mull in Scotland (D Sexton pers. comm. 2018). This is likely to be the case of the Isle of Wight and in neighbouring areas such as the New Forest.

The establishment of public viewing sites will be an important means by which to manage eagle visitors and ensure that other outlying nests are not disturbed. Such an approach has been undertaken with great success with nesting White-tailed Eagles on the Island of Mull, which diverts attention from other nests on the island.

3. The ecological impact of a White-tailed Eagle reintroduction

3.1. Potential ecological impact

The reintroduction of the White-tailed Eagle to the Isle of Wight, the Solent and wider South Coast region would restore a key apex predator to the area. In recent years the positive ecological impact of such species has become increasingly apparent through the principle of trophic cascades (Estes et al 2011), and also as key indicator species (Helander et al 2008). The White-tailed Eagle is also regarded as an important flagship species for wetland conservation across Europe (Sandor et al 2015); thereby corroborating the notion that the conservation of charismatic top predators brings wider biodiversity conservation benefits (Sergio et al 2006).

As described in Section 2.2 the White-tailed Eagle is a generalist predator with a broad diet that tends to favour the most seasonally abundant prey (Ekbald et al 2016). There have been numerous studies on its diet in northern Europe (e.g. Cramp 1980; Sulkava et al 1997; Horváth 2003; Marquiss et al 2004; van Rijn et al 2010; Ekbald et al 2016) and more recently in south-eastern Europe (Sandor et al 2015). No quantifiable negative effects have been demonstrated; almost certainly because the species targets the most abundant food source and also readily takes carrion. In some areas it may have a positive effect by limiting the population growth of species such as Greylag Goose, Canada Goose and Coot that may otherwise have a detrimental effect on the wider ecosystem through interspecific competition for food and nesting habitat with other less dominant species. However when considering any such reintroduction it is essential to consider all key local issues with regard to any potential impacts on the local ecosystem; and specifically to ensure that there will be no negative effects of the reintroduction. Natural England will have a duty to carry out the Habitat Regulations Assessment on all the local SPA's and SAC's that may be affected either positively or negatively from the reintroduction. Here we consider the key conservation issues and designations in the areas likely to be frequented by the White-tailed Eagles after release.

3.2. Ecological risk assessment

3.2.1. Impact on wintering species in the Solent and Southampton Water SPA and neighbouring sites

The Solent and Southampton Water SPA supports internationally important numbers of wintering wildfowl and waders, including Black-tailed Godwit *Limosa limosa*, Dark-bellied Brent Goose, Ringed Plover *Charadrius hiaticula* and Teal. Overall up to 53,948 waterfowl

may be present in the area, with similarly large numbers in neighbouring Portsmouth Harbour SPA and Chichester and Langstone Harbour SPAs.

It is likely that White-tailed Eagles will predate both Dark-bellied Brent Geese and Teal in the region but, as in other parts of Europe, we expect this to have a negligible impact on overall numbers. The Dark-bellied Brent Goose is amber listed in the UK because it is found in only a few locations around the British coast, and the Solent holds more than 10% of the global population (Wetlands International 2018). It is important to consider, however, that a small population of White-tailed Eagles will have limited food requirements during the winter, and will tend to target injured, sick or dying waterfowl when hunting, as observed in Denmark where there is a rapidly increasing population of White-tailed Eagles (A. Fox pers. comm. 2019; Appendix 12). Given the high overall numbers of Brent Geese in particular, these weaker individuals, that may die anyway, are likely to constitute a significant proportion of the eagle diet during winter. White-tailed Eagles and Dark-bellied Brent Geese coexist in the Netherlands and there is no evidence of any detrimental effects (D. van Straalen pers. comm. 2019; also see Appendix 2). Evidence from various studies of White-tailed Eagle diet (section 2.2) indicate that waders such as Black-tailed Godwits are less likely to be taken, and these species are far more likely to be predated by Peregrines *Falco peregrinus* instead.

A key issue in the Solent and Southampton Water SPA, as well as neighbouring Portsmouth Harbour SPA and Chichester and Langstone Harbour SPAs is ongoing disturbance from recreational activities, with potential for this to increase in future years due to extensive areas of new housing that will lead to more people visiting the coast for leisure. Various mitigation measures are in place under the auspices of Bird Aware Solent, an initiative run by the Solent Recreation Mitigation Partnership which is made up of 19 organisations, and funded by contributions from all new residential dwellings within 5.6km of the three SPAs. The key one is a team of rangers to help coastal visitors and communities understand the importance of the area for wintering birds and the impact of disturbance. Additional work is taking place to encourage responsible dog walking and visits to less sensitive parts of the coast. This work is particularly important as research shows that around 40% of bird disturbance occurs as a result of interactions with dogs (Bird Aware Solent 2018). Some concerns have been expressed that the presence of White-tailed Eagles will add additional pressure by adding another element of disturbance. However evidence from the Netherlands indicates that disturbance to wildfowl and waders by the White-tailed Eagles is similar to that caused by Peregrines and Greater Black-backed Gulls *Larus marinus*, and wintering birds become accustomed to their presence (D. van Straalen pers. comm. 2019; also see Appendix 2). Another important consideration is that White-tailed Eagles are often inactive for long periods. During a recent study in Germany Nadjafzadeh et al (2015) found that

White-tailed Eagles allocated most of their diurnal time to perching. They concluded that this “sit-and-wait” for prey strategy seems to be a low-cost, highly profitable foraging mode in eagles. This behaviour means that disturbance from White-tailed Eagles may actually be less regular than other avian predators such as Peregrines and Greater Black-backed Gulls that are already present in the Solent and surrounding area. Disturbance by White-tailed Eagles is not considered an issue by Dutch researchers at internationally important wetland sites such as Krammer-Volkerak (D. van Straalen pers. comm. 2019). This SPA and Nature 2000 site (<https://eunis.eea.europa.eu/sites/NL1000021>) has a very similar species assemblage to the Solent, with large numbers of Dark-bellied Brent Geese, Teal, Black-tailed Godwit and Ringed Plover all present along with resident White-tailed Eagles. It is also important to consider that migratory species such as Brent Geese encounter White-tailed Eagles across their migratory range. The breeding range of the two species overlaps in some parts of Arctic Russia and the migrating Brent Geese may encounter White-tailed Eagles at many sites on the flyway through the White Sea and Baltic Sea, and along the North Sea coast. There is no evidence that White-tailed Eagles have had a negative impact on flocks of staging Dark-bellied Brent Geese in the Danish Wadden Sea in autumn (A. Fox pers. comm. 2019; Appendix 12).

It is also important to state that it will be essential to establish designated eagle viewpoints once the birds have been released to ensure that eagle tourist do not exacerbate the existing problems caused by recreational disturbance in and around the Solent and other SPA sites (Section 5.3).

3.2.2. Impact on breeding species in the Solent and Southampton Water SPA and neighbouring sites

In addition to supporting large numbers of wintering birds, the Solent and neighbouring areas also hold important breeding colonies of gulls and terns. For example Langstone Harbour had a record 1736 breeding pairs of Mediterranean Gulls in 2018 (<https://www.birdguides.com/news/hampshire-mediterranean-gulls-experience-population-boom/>). The Solent and Southampton Water SPA designation makes specific reference to breeding Common Tern *Sterna hirundo*, Little Tern *Sternula albifrons*, Mediterranean Gull, Sandwich Tern *Thalasseus sandvicensis*, and Roseate Tern *Sterna dougallii*, although the latter species no longer breeds. The project team discussed potential risk of disturbance to breeding colonies of gulls and terns with biologists in the Netherlands (see Appendix 2) and also Denmark. In the Netherlands field studies have demonstrated that foraging White-tailed Eagles tend to avoid areas with large colonies of gulls and terns and that species such as Mediterranean Gull are effective at driving White-tailed Eagles away (D. van Straalen pers. comm. 2019). The same assemblage of gull and tern species coexists with breeding White-

tailed Eagles at sites such as Krammer-Volkerak (<https://eunis.eea.europa.eu/sites/NL1000021>). This evidence suggests that other predators, both mammalian and avian, already present in the Solent are more likely to have an impact on breeding gulls and terns in the region than White-tailed Eagles. In Denmark there has been a rapid increase in the population of breeding White-tailed Eagles in the last 30 years, and there are now more than 100 breeding pairs, and also a large pool of non-breeding sub-adults. The eagles favour offshore islands and islets for resting, where they potentially compete for space with breeding terns and gulls. However, there has been only one case on an island in Mariager Fjord in eastern Jutland where the increasing presence of eagles may have resulted in the eventual abandonment of a colony of Sandwich Terns. Biologists who monitor colonial nesting species in Denmark are not aware of any other examples of colony desertion by gull and tern species due to eagle presence. In fact there are several island sites, which eagles frequent throughout the summer, which retain their breeding gull and tern colonies (A. Fox pers. comm. 2019; Appendix 12).

3.2.3. Red Squirrels

It is thought that the Isle of Wight's woodlands can support up to 3500 Red Squirrels *Sciurus vulgaris*, and a survey undertaken in 2016 indicated that they are widespread, occurring in 95% of woodlands monitored for squirrel signs (Butler 2017). A study carried out in conjunction with the University of Reading (Gray 2016) found that the previous 15 years had seen a significant increase in squirrel presence and this was most likely due to habitat restoration and woodland management, which has meant a decrease in distance between potential habitat, thus improving the squirrels resilience on the Island. The Forestry Commission managed public forest estate spanning 1150 ha has zoned a Red Squirrel Reserve network within its strategic Forest Plan for the Island and a policy has been developed to inform conservation and management activities associated with the Red Squirrel bringing added surety for the species. Given the species' absence from the majority of southern England this makes the Isle of Wight population an exceedingly important one. It is understandable, therefore, that during the public consultation widespread concerns were raised about any potential impact on the species by White-tailed Eagles.

Evidence from Scotland demonstrates that White-tailed Eagles pose no threat to Red Squirrels. They are not agile enough to catch Red Squirrels in wooded areas, and instead favour wide open spaces for hunting. In Scotland where White-tailed Eagles nest in forests with healthy populations of Red Squirrels there has been no evidence of them being brought to nests as prey despite extensive monitoring by volunteers and using camera traps. For example at one site monitored by Forestry Commission Scotland many hundreds of hours of observations, over several years, were made by volunteers of a pair of White-tailed Eagles

nesting in an east coast pine wood with a large population of Red Squirrels. They did not observe Red Squirrel being brought to the nest as a prey item. Likewise Red Squirrel did not feature as a prey item at another site where over 7000 camera-trap photos were taken at a White-tailed Eagle nest located in a forest with Red Squirrels (K. Kortland pers. comm. 2018).

3.2.4. Brown Hare

A study carried out by the Isle of Wight Natural History and Archaeological Society in 2002 showed Brown Hare numbers to be approximately 500 on the Isle of Wight and current agri-environment schemes have been promoting habitat conservation measures to increase numbers on the Island. Like with Red Squirrels, some concerns were raised during the public consultation about potential impacts of White-tailed Eagles on Brown Hares.

There is potential for White-tailed Eagles to predate Brown Hares, most likely in the coastal areas we expect to be favoured by the birds, but evidence from studies on other lowland Europe populations of White-tailed Eagles indicates that in areas with alternative prey availability mammals tend not to be targeted (Mlíkovský 2009; Sandor et al 2015; van Rijn and Dekker 2016). As such we do not envisage White-tailed Eagles having a negative impact on overall Brown Hare numbers. Nevertheless careful monitoring of White-tailed Eagle diet will be a key element of the project at all stages (see section 5.9).

4. The socioeconomic feasibility of a White-tailed Eagle reintroduction

4.1. Potential socio-economic benefits

The Isle of Wight attracts over 2 million tourists each year, and visitor-spend contributes more than £275m annually to the Island's GDP. It is notable however that visitor numbers for 2017 were down on previous years. This was partly attributed to wet weather during the summer, and the loss of the music festival, Bestival, which attracted an additional 20,000 visitors each year (Visit Isle of Wight 2017). A reintroduction of White-tailed Eagles would undoubtedly create significant interest and is likely to increase visitor numbers to the Island throughout the year. Of particular significance, it is likely to increase visits to the Isle of Wight during the traditional low season; thereby providing a welcome boost to the local economy which is very much dependent on tourism derived income.

The establishment of a White-tailed Eagle public viewpoint/information point (see section 5.3) would enable eagle tourists to be directed to specific areas capable of accepting the additional footfall. In time it may also be possible to establish a viewing site at an active nest, as has been implemented successfully in places such as the Isle of Mull. This would enable visitors to enjoy watching breeding eagles in a carefully controlled location. This approach has also been used with Ospreys at Rutland Water where a publically viewable nest diverts attention away from other nests on private farmland. This nest is viewed by up to 30,000 people each year (Mackrill 2013).

The Scottish experience demonstrates that the White-tailed Eagles will be a major tourist attraction on the Isle of Wight and in the wider Solent and South Coast region. Eagle tourism on the Isle of Mull results in up to £5 million tourist spend each year (Table 5) and this in turn supports 110 local jobs, and £1.4 million of local income. In a study carried out by the RSPB in 2011, 23% of visitors to the Isle of Mull were influenced to go there by the presence of White-tailed Eagles. Tourists travel from all over the UK to visit Mull, with an average distance of 250 miles, but with some travelling more than 600 miles (Molloy 2011).

Overall wildlife tourism is worth £276 million of spend per year in the Scottish economy and supports 2,763 FTE jobs (Molloy 2011). It is clear that conservation of the local environment and the reintroduction of charismatic species can play a vital role in reinvigorating rural economies. In addition there are many other indirect benefits of restoring species such as White-tailed Eagles. Benefits to physical and mental health, as well as education and culture, although difficult to quantify, are extremely important to the people and communities

who receive them. The White-tailed Eagles on Mull, and the success of the reintroduction programme across Scotland, contribute to wellbeing across the UK in many more ways than can easily be expressed in economic terms.

Table 5. Spending by tourists visiting the Isle of Mull to see White-tailed Eagles (Molloy 2011).

How important were White-tailed Eagles in visitors' decisions to visit Mull	Total % of visitor responses	% of spending attributed to White-tailed Eagles from these responses		Total expenditure attributed To White-tailed Eagles (£)	
		Low	High	Low	High
One of the reasons	21.08	20	35	428,545	571,393
Main reason	1.23	60	90	2,448,165	4,284,289
Total	22.31			2,876,710	4,855,683

In England the Osprey translocation project based at Rutland Water has had many direct and indirect benefits for the local community. Up to 30,000 people travel to Rutland to see the nesting ospreys each year, and local hotels, B & Bs, pubs and restaurants all directly benefit as a result (Mackrill 2013). Up to 1000 people go on special Osprey Cruises on the Rutland Belle each year, while an Osprey photography hide at a local trout farm has proved a great success. Prior to the construction of the hide, predation by Cormorants, Otters, Grey Herons, Little Egrets *Egretta garzetta* and Ospreys was having a significant impact on fish stocks, but the income now generated by photographers more than off-sets any such losses. In fact the hide has become an integral part of the business (<https://www.rivergwasht Trout farm.co.uk/horn-mill-osprey-hide/>).

4.2. Socioeconomic risks

4.2.1. Sheep farming

4.2.1.1. Sheep farming in Scotland

Although White-tailed Eagles take a diverse array of prey, there has been long standing debate in Scotland on the extent to which they predate lambs. Studies undertaken in western Scotland have demonstrated that lamb remains are found in White-tailed Eagle nests (see section 2.2), but concluded that the majority (up to 75%) had been scavenged rather than taken live (Marquiss et al 2004). Furthermore there was circumstantial evidence that many of the lambs killed were not viable because, compared with live lambs, they were small for their age and similar to lambs lying dead on the hill from other causes (Marquiss et al 2004).

Some crofters have suggested that levels of predation have increased markedly in recent years. In view of this further research was undertaken by Scottish Natural Heritage in the Gairloch area in 2009 (Simms et al 2010). In this study a total of 58 radio tags, each fitted with a mortality chip that was triggered after two hours inactivity, were attached to lambs from three flocks on two crofts to enable any dead lambs to be located within a short time of death. Within the radio tracked study flocks no lambs (including both tagged and untagged individuals) were taken by White-tailed Eagles during the study period. Furthermore, of six lambs found dead in the wider study area and sent for post-mortem only one (with poor body condition) had injuries indicating that it was likely killed by either a White-tailed Eagle or Golden Eagle (Simms et al 2010). There was no evidence to substantiate eagle predation for any other lamb carcasses or remains, although four of the examined carcasses did show signs of avian scavenger activity (White-tailed Eagles were recorded scavenging on two of these carcasses). In addition a total of 224 vantage point surveys were undertaken during the study, amounting to 599.1 hours of observation. During this period White-tailed Eagle activity was recorded for less than 2% of total observation time and no White-tailed Eagle predation was observed.

In recent years farmers and crofters in Scotland, have continued to raise concerns and in 2015 this led to the launch of the formation of the Sea Eagle Management Scheme, a joint initiative instigated by SNH and NFU Scotland (<https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/sea-eagle-management-scheme>). This extends support for livestock farmers and crofters who report impacts across the White-tailed Eagle breeding range. Local stakeholder groups have been set up in several key areas and scheme advisors visit farms in order to:

- investigate what White-tailed Eagle activity is occurring near to the farm
- help to gather evidence of White-tailed Eagle impacts and record any livestock losses due to White-tailed Eagles or other causes
- advise on measures to mitigate against White-tailed Eagle impacts
- arrange to lend equipment, where appropriate, to use to deter White-tailed Eagles or otherwise mitigate impacts
- recommend support for longer term management agreed with, and carried out by, the livestock manager.

Most recently SNH and partners have begun trialling new methods aimed at reducing the impact of White-tailed Eagles on sheep farming. This includes removing trees where White-tailed Eagles nest next to lambing areas and new audio and light based scaring methods (<https://www.snhpresscentre.com/news/snh-and-partners-testing-new-ways-to-protect-lambs-from-sea-eagles>).

4.2.1.2. Sheep farming in Ireland and Netherlands

With the ongoing controversy and conflict in Scotland, the Irish White-tailed Eagle reintroduction was met with considerable opposition by the farming community when it was first proposed. In view of this, significant efforts were made by the project team to address these fears by meeting with farming groups and working with farmers locally where eagles took up residence. It is now 11 years since the first release took place and there were nine active nests in 2017 (Mee 2017). Project Manager Dr Allan Mee reports that, “White-tailed Eagles are now seen as very much part of the landscape. In fact, in that time, we have had no proven case of an eagle taking a lamb, even where pairs are breeding in hill sheep areas. As has been seen in Norway, the eagles are well known to scavenge carrion including sheep and lamb carcasses. It has taken several years but I believe we can categorically state that there has not been the damage to farming interests that were feared initially and most sheep farmers are now either neutral or positive towards the eagles. Indeed, we are delighted that two sheep farmers are helping us to monitor eagle nests by watching nests in their area.” The full letter from Dr Mee is included in Appendix 5. The changing attitudes of farmers in Ireland has recently been covered in the Irish media. Two articles by Majella O’Sullivan in the Farming Independent in December 2017 were significant: “***From protests to partnerships: How farmers are supporting the reintroduction of the White-tailed Eagle***” (<https://www.independent.ie/business/farming/forestry-enviro/from-protests-to-partnerships-how-farmers-are-supporting-the-reintroduction-of-the-whitetailed-eagle-36378114.html>) (Figure 7) and “***They never touched a lamb: Lough Derg farmer on the reintroduction of the white-tailed eagle***”

(<https://www.independent.ie/business/farming/forestry-enviro/they-never-touched-a-lamb-lough-derg-farmer-on-the-reintroduction-of-the-white-tailed-eagle-36378101.html>). The latter focussed on the experience of one farmer on the Tipperary shore of Lough Derg, Joss Hogan, who has worked closely with the project team since the birds settled in the area in 2011/12. He has kept records of the birds and has had a positive influence on the wider farming community.

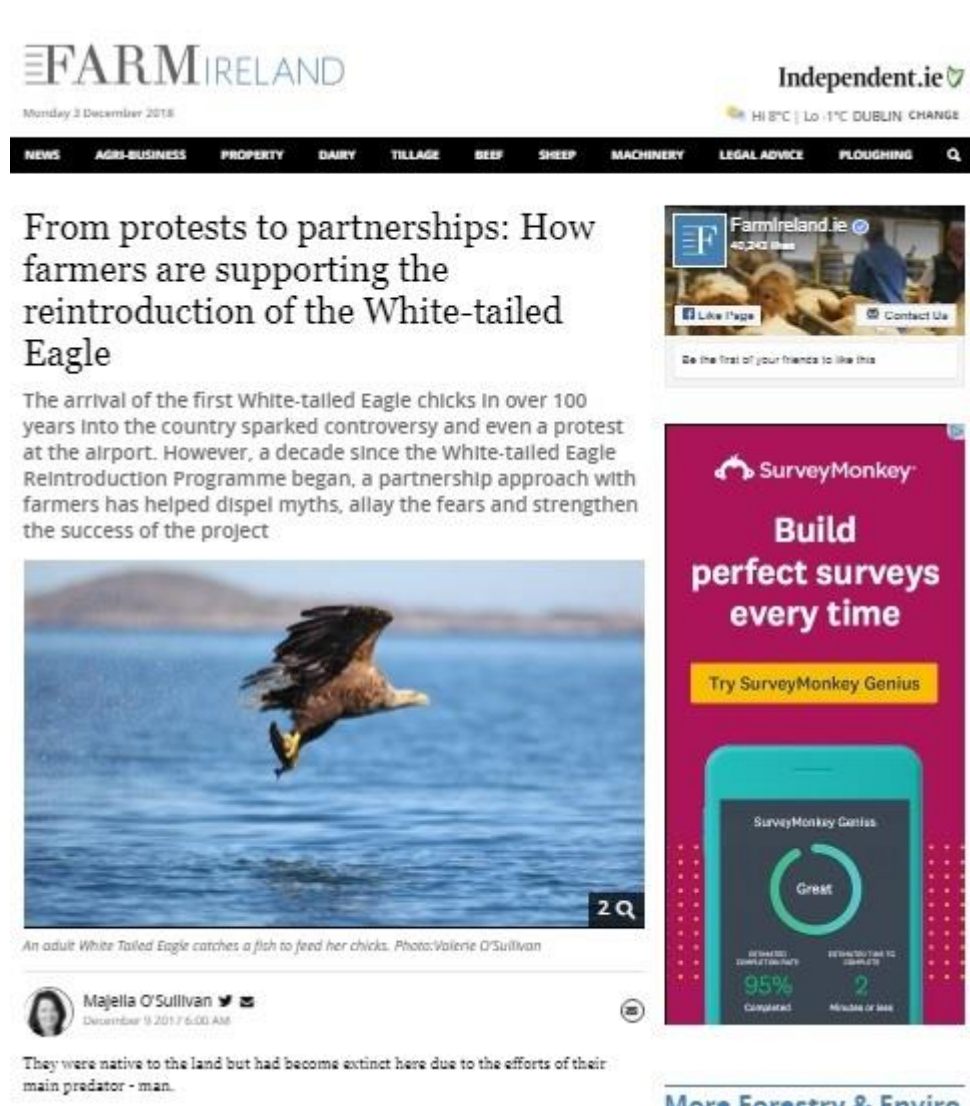


Figure 7. Article in Farming Independent in Ireland.

Like in Ireland, there have been no cases of lamb predation in the Netherlands, where there are now 18 pairs of White-tailed Eagles on territory. Sheep are frequently kept on the dykes to maintain short vegetation but there is no evidence of any lambs being taken even in areas where White-tailed Eagles are provisioning young (van Rijn and Dekker 2016).

4.2.1.3. Sheep farming on the Isle of Wight and Southern England

The last farm census shows that there are 354 farms on the Isle of Wight, and of these 181 are classified as lowland grazing (sheep or cattle). Sheep numbers have remained relatively stable in recent decades with approximately 17,000 breeding ewes, and 18,500 lambs up to one year of age (<https://www.iow.gov.uk/azservices/documents/2552-Census-Atlas-2011-Section-9-Agriculture-v1.pdf>).

Given the experiences to date in Ireland and the Netherlands we are confident that there will be little or no conflict with sheep farming on the Isle of Wight or in other parts of southern England as the birds begin to expand. In the less favoured areas of Scotland hill sheep often lamb on open exposed slopes, away from farm buildings where they may be more exposed to bad weather, including late snows, and to predation. Even those that lamb close to the farm and are put out to the hill with their mothers may subsequently suffer from late snows and bad weather. On the Isle of Wight and other parts of southern England, larger breeds of sheep either lamb indoors or outside in enclosed fields. In addition weather conditions are generally much more favourable in southern England and the sheep generally graze on grass pastures on richer soils. Although the timing of lambing does vary between farms, the availability of alternative and abundant prey sources on the Isle of Wight and in the wider Solent region is considerably greater than the west coast of Scotland, and this will further reduce any likelihood of White-tailed Eagles killing lambs.

It is important to state that we do recognise the apprehension of sheep farmers on the Isle of Wight, which were apparent during the public consultation. In view of the concerns that had been expressed to us we arranged to visit a sheep farm in the west of the Island and then to hold an evening meeting for local NFU members on 14th November. There are approximately 150 NFU members on the Isle of Wight and the meeting was attended by circa 65 people. This included arable and cattle farmers as well as gamekeepers in addition to sheep farmers. Roy Dennis gave an introductory talk, and a lengthy questions and answers session followed, chaired by the NFU Chairman on the Isle of Wight. The main concerns raised during the meeting were as follows:

- Impact on livestock, especially sheep and lambs
- Impact on general wildlife, rare birds and mammals such as hares
- Impact on game birds such as pheasants, partridge and duck
- Controls on the project long term – what happens if numbers get out of control?

Unfortunately it was not possible to allay all of the concerns, and those present subsequently voted unanimously against the project, despite the fact that some positive conversations took place after the formal part of the evening.

The NFU have subsequently issued a formal position statement (see Appendix 6). In this they state that:

“The principal concern remains around control of the birds once released, as the licencing process is very long winded, and the burden of proof lies heavily on the farmer. Our members do not feel like they have any mechanism or support to tackle birds which are causing damage and therefore they feel that they have no option but to object to the proposals. Therefore unless there are significant changes to the proposals, the NFU and its members on the Isle of Wight are formally objecting to the re-introduction of White-tailed Eagles to the Isle of Wight.”

The NFU have taken this position, but it is important to note that not all farmers the project team has spoken to are opposed to the proposals. Furthermore, the project team recognises that it is essential to work closely with the farming community should a licence for the project be granted and, as such, welcome the comment that, “NFU is committed to working with the Roy Dennis Foundation and Forestry Commission agencies to ensure that should the reintroductions go ahead, there are adequate measures in place to ensure the impacts on livestock businesses across the South coast are minimised and managed.”

As stated in Section 5.2, should a licence for the project be granted a project officer, who will be based on the Isle of Wight, will be appointed. A key aspect of this role will be to liaise closely with the farming community from the outset. As such it would be advantageous to recruit a local person with good contacts across the Island who is able to understand the concerns of farmers and other key stakeholders. This would very much follow the successful approach undertaken by the Irish project. The NFU will also be invited to become part of a wider project steering group (Section 5.1) who meet regularly to discuss and review the project.

Although we do not envisage there being any impacts from the White-tailed Eagles it will be essential to respond to any complaints about released eagles immediately should they occur. We note that the NFU’s principle concern lies around the lack of any future control measures, but it is important to consider that there are unlikely to be any breeding eagles for at least five years after the project begins. During this period we will keep abreast of developments in Scotland with regard to the measures being trialled by SNH and the NFU in

Scotland, should measures be relevant for any future problems that may occur in England, however unlikely we consider that to be.

4.2.2. Game shoots

The White-tailed Eagle is not an agile hunter, and therefore not predisposed to catch gamebirds, particularly in areas with extensive cover. Any gamebirds that might be eaten would be scavenged carcasses that are found dead out in the open or robbed from other scavengers.

There are approximately 40 game shoots on the Isle of Wight, with both partridge and pheasants reared and released. Evidence from elsewhere in Europe indicates that these species are likely to constitute only a very small proportion of the diet of White-tailed Eagles on the Isle of Wight and wider South Coast region. In western Scotland gamebirds were found to constitute just 0.4% of White-tailed Eagle diet (compared to 7.6% for Golden Eagles) (Whitfield et al. 2013). Meanwhile in more natural habitats for pheasants, in and near reed beds in the Danube Delta, Pheasants made up less than 5% of the diet of breeding White-tailed Eagles, and this was most likely to include birds killed on roads and taken as carrion. Overall Pheasants constituted just 0.42% of the total biomass consumed by White-tailed Eagles (Sándor et al 2015).

We do not envisage there being any conflict with game shoots, but nevertheless it will be important to maintain a close dialogue with all game shooting interests, particularly as a majority of Isle of Wight residents with an interest in shooting said they were not in favour of the project when responding to the online questionnaire (section 4.3.4). Like with sheep farming, any local issues that do arise will be responded to with the utmost urgency by the project officer.

4.2.3. Fishing interests

As explained in section 2.3.2 fish is likely to constitute a key part of White-tailed Eagle diet and as such it is essential to consider potential impacts on any fishing interests.

It is likely that the vast majority of fish taken will be saltwater species that are caught in shallow estuarine water. The three species of Grey Mullet that occur in the Solent and surrounding areas are likely to be the most important species for White-tailed Eagle, as described in section 2.3.2. Although mullet are edible they are not popular as a food fish in Britain and as a result commercial vessels do not generally target mullet in UK waters. The project team contacted the Southern branch of the Inshore Fisheries and Conservation Authority (IFCA) in the early stages of project planning and have since received further

correspondence stating that Southern IFCA foresee no objection to the reintroduction of White tailed Eagles with respect to fisheries and conservation duties of the IFCA.

White-tailed Eagles also take freshwater species, and often breed around large inland lakes in continental Europe. In the Netherlands, for example where fish constitutes 28% of the diet, carp and bream are most commonly caught (83%) with range of others also taken, including Pike, Zander and Perch (van Rijn and Dekker 2016). It is important to consider, however, that in these areas the estuarine species likely to be favoured on the south coast of England, are not present. Furthermore, Carp and Bream (generally ranging from 35-70 cm) are usually only taken when they are spawning and therefore close to the surface. Research has shown that fish are caught no deeper than 0.5 m below the water's surface (Ekblad et al 2016) indicating that in coastal areas of southern England, such as the Isle of Wight, estuarine fish are likely to be preferred because they are easier to catch at low tide.

There are no large areas of freshwater on the Isle of Wight, but there are a number of relatively small fisheries on farms, usually consisting of small lakes stocked with either trout or coarse fish including carp. Given the wide range of alternative food available in the area, particularly around the coast, it is highly unlikely that White-tailed Eagles will visit these small fishing lakes, particularly if they are close to farm buildings and/or there are anglers present. Nevertheless, should the project go ahead, a full-time Project Officer, based on the Isle of Wight, would be available to respond to local concerns. On the mainland there are a wider range of fishing lakes of varying sizes in both the Test and Avon valleys, with most stocked with coarse fish such as Pike, Perch, Roach and Carp. Several of the larger estates on the mainland shore also have fishing interests. A juvenile White-tailed Eagle that was present in the New Forest from December 2018 was seen at number of sites along the Avon valley, but, as expected, there have been no reported issues. It should be noted that in some parts of Europe White-tailed Eagles are known to predate Cormorants (Ekblad et al 2016; Appendix 12); a species far more likely to result in conflict with anglers. It is significant that there has been no conflict with freshwater fishing interests anywhere in Scotland, despite the fact here are now at least 130 breeding pairs of White-tailed Eagles (D. Sexton pers comm 2019).

The Angling Trust were contacted for their views during the public consultation and, like Southern IFCA, did not perceive any conflict with fishing interests in either the freshwater or marine angling sectors.

Although, like the Angling Trust, we do not expect any conflict with fisheries, it will be important to maintain a constant dialogue with all fishing interests through the duration of the project in order to address any local concerns and respond to any local issues should they

arise. A representative from the local angling community will be invited onto the project steering group to ensure that their views are considered at all times. It should also be noted that the project team has extensive experience of dealing with fishing stakeholders given our ongoing work with Ospreys in both Scotland and England. In Rutland Tim Mackrill worked with the owners of a trout farm who were losing significant numbers of fish to Ospreys, Cormorants, Grey Herons and Otters. Following extensive discussions the owner, with the help of the Rutland Osprey Project, built a photography hide on site and now charges photographers £75 per session to view the fishing Ospreys. With the hide able to accommodate up to six people concurrently, this has become a profitable venture and a key component of the business; off-setting all losses to predation and other factors, and reducing the number of fish that the trout farm needs to sell. This kind of partnership led approach will be essential to the long-term success of the White-tailed Eagle project. In Scotland White-tailed Eagles have learnt to take dead fish thrown from the back of fishing boats. There are now a number of places where fishing boats take wildlife photographers out to enjoy this unique wildlife experience (for example see <http://www.mullcharters.com/video.html>). Several members of the Isle of Wight fishing community have already expressed an interest in setting-up a similar initiative in the Solent if the project goes ahead (S. Jones pers. comm. 2018).

It is pleasing to note that there is considerable support for the project among those with an interest in fishing. As noted in section 4.3.4. people who listed fishing as an interest when they responded to the online questionnaire were strongly in favour of the project, and there was also a clear majority in support of the project on the Isle of Wight among people who listed fishing as an interest. A similar trend was evident in Hampshire, Dorset and Sussex.

4.2.4. Forestry and Woodland Management

The forests and woodlands of the Isle of Wight make an important contribution to the Islands rural economy and range in size from small farm woodlands under 2 hectares (ha) up to large public forests which extend to several hundred ha's, one example being Parkhurst Forest near Newport. The economic benefits provided by forestry and woodland management and the wider use of wooded habitats are diverse ranging from commercial timber harvesting to leisure based pursuits and social enterprise. The very presence of woodland in the landscape creates a desirable environment with corresponding impacts on property values. Ongoing efforts are being pursued by Government and stakeholders to promote the sustainable economic management of the Islands woodland resource. In future decades it is hoped that the Island's timber and forestry reserves will make an increasingly important contribution to the biofuel sector and local generation of sustainable heat and power alongside the established uses of woodland products.

The Roy Dennis Wildlife Foundation and Forestry England are confident that the return of the White-tailed Eagle to the Isle of Wight and in time the wider forest and woodland resource in England will have a negligible to insignificant negative effect on the forestry and woodland management sector. This relates to the relatively large size of the birds territories and its proven ability to cope with disturbance associated with mechanised forest management and recreational use as observed elsewhere across its current range. However, the return of this protected species to forests and woodlands where landowners and managers have no experience of managing in their presence will necessitate the development of guidance material to help inform forest management practice. The excellent material produced by ForestryScotland “Managing Forests for White-tailed Eagles” (Forestry Commission Scotland, 2011) will serve as a useful template for the development of England specific guidance as any licenced project develops which will also take note of recent experience in Scotland. In the interim the project field team will be on hand to provide advice and support to the forestry sector alongside that which is extended to the farming community and other key stakeholders.

4.3. Public consultation

4.3.1. Key local stakeholders

A key requirement of any project of this type is to undertake an extensive public consultation with a wide range of relevant stakeholders.

An initial meeting was held in Newport on 15th March 2018 with the Isle of Wight Biodiversity Partnership, a group consisting of the following organisations:

Isle of Wight Council (IWC), Isle of Wight Natural History and Archaeological Society (IWNHAS), Country Land and Business Association (CLA), Royal Society for the Protection of Birds (RSPB), Local Records Centre (LRC), Isle of Wight Area of Outstanding Natural Beauty (AONB), Hampshire and Isle of Wight Wildlife Trust (HIWWT), Environment Agency (EA), National Trust (NT), Marine Management Organisation (MMO).

During the meeting the project team gave a presentation on the proposed project and then invited questions from those in attendance. The meeting was broadly positive with no clear objections. Several key local issues were raised as follows:

- Concern over increased pressure on SPA birds
- Pressure from increased tourism in some sensitive parts of the Island
- Sheep farming

Following the initial meeting, subsequent discussions were held with organisations that had raised specific concerns and this included follow up meetings with Isle of Wight Council and the Isle of Wight Area of Outstanding Natural Beauty on 29th August 2018, and with the National Trust on 26th September 2018 and 12th March. The project team also provided supplementary material for discussions at the Hampshire and Isle of Wight Wildlife Trust conservation and science committee meeting on 23rd October. Efforts were also made to convene a meeting with the CLA who had been unable to attend the initial meeting in March at Newport. Unfortunately it was not possible but Tim Mackrill spoke with the local CLA representative by phone on 13th November who was able to outline the views of their local members. The project team have since offered to attend a future CLA meeting on the Island and liaison will be ongoing.

In view of concerns that had been raised about sheep farming on the Island, the project team met with key local representatives from the National Farmers Union on 26th September 2018 to begin discussions. It was agreed that a farm visit and meeting with local members would be helpful. This was subsequently arranged for 14th November. Further detail relating to this is included in section 4.2.1.

The project team contacted the Southern branch of the Associations of Inshore Fisheries and Conservation Authority (IFCA), Angling Trust (see section 4.2.3) and also the Marine Management Organisation (MMO). All organisations will be kept fully informed of all project activities should a licence be granted.

The project team also provided an article on the proposals for the Isle of Wight Ornithological Group (IWOOG) newsletter. Tim Mackrill also gave a talk on the project at the Isle of Wight Recorders' Conference on Saturday 2nd February 2019. This provided a valuable opportunity to discuss all elements of the project to an audience of approximately 70 people.

In addition to the organisations detailed here, the project team has also met with all local farmers and key stakeholders near the proposed release site in order to discuss the practicalities of the project. All initial discussions have been positive.

A concerted effort was made to consult with a range of stakeholders on the mainland. This included five key local estates in Hampshire, Hampshire County Council, New Forest National Park, and New Forest Association. The project also received letters of support from Birds of Poole Harbour, Hawk Conservancy, Rewilding Britain and Naturetrek Ltd.

Additional letters of support were also received from world renowned scientists and raptor experts Professor Miguel Ferrer (Appendix 3) and Professor Ian Newton (Appendix 7), Irish White-tailed Eagle project manager Dr Allan Mee (Appendix 5) and the RSPB (Appendix 8).

4.3.2. Media coverage

The initial interest from the media in the project has been positive, with the first coverage occurring in the newspapers on the Isle of Wight, following a press release issue by the project team on 31st October 2018 (Appendix 9). Information about the project and the public drop-in sessions was posted on the Roy Dennis Wildlife Foundation website on the same day, and subsequently promoted on social media. This included basic information about the project, and a frequently asked questions section:

www.roydennis.org/isleoofwight

www.roydennis.org/white-tailed-eagle-project-frequently-asked-questions/

The Isle of Wight County Press and the Island Echo both published online stories on 31st October 2018 with details of the public meetings. The online comments from these were mostly around the risk to Red Squirrels and whether a reintroduction was the correct approach given that the species was previously hunted to extinction in the past, plus very supportive comments from people wanting to see the birds restored to their former range:

- <https://www.islandecho.co.uk/proposed-project-to-restore-white-railed-eagle-to-the-isle-of-wight/>
- <https://www.iwcp.co.uk/news/17191270.plans-to-re-introduce-bird-of-prey-to-the-isle-of-wight/>
- <https://iwradio.co.uk/2018/10/31/plans-to-reintroduce-largest-uk-of-prey-to-the-isle-of-wight/>
- <https://www.bbc.co.uk/news/uk-england-hampshire-46263822>

Tim Mackrill was interviewed for Isle of Wight Radio on 31st October. The Isle of Wight Observer printed a full page story on the potential release on 9th November 2018. This advertised the public consultation drop in events and gave a very balanced background to White-tailed Eagles.

A concerted effort was made to promote the online questionnaire (which was made available using the website Survey Monkey) in order to widen the consultation process as broadly as possible. The survey was online from 2nd November until midnight on 30th November. As already stated there was considerable coverage in the Isle of Wight media and also on the mainland. Of particular note the BBC posted a report about the project with a link to the

online questionnaire on 20th November (<https://www.bbc.co.uk/news/uk-england-hampshire-46263822>) and next day Tim Mackrill was interviewed on the Sasha Twining show on BBC Radio Solent in a piece that also included interviews with two NFU representatives. Following the publication of the BBC story online the project was also featured on Wave 105 Radio, a commercial radio station broadcasting across East Dorset, South Hampshire, Isle of Wight and parts of West Sussex and Wiltshire. This coverage resulted in a considerable increase in responses to the online questionnaire with a 248 responses over a 48 hour period.

The story was picked up in the national media during the period when the public consultation was open, and this included the Daily Mail on 13th November (<https://www.dailymail.co.uk/news/article-6386483/White-tailed-eagles-introduced-time-nearly-250-years.html>) and Daily Telegraph on 24th November (<https://www.telegraph.co.uk/news/2018/11/24/farmers-fear-lambs-will-killed-white-tailed-eagles-reintroduced/>). It was also covered in several blogs:

- <https://raptorpersecutionscotland.wordpress.com/2018/11/01/proposal-to-reintroduce-white-tailed-eagles-to-isle-of-wight/>
- <https://markavery.info/2018/11/01/wight-white-tails/>
- <https://markavery.info/2018/11/27/go-back-in-time-on-the-iow-particularly-if-you-are-a-farmer/>
- <http://adventureactivitiesisleofwight.co.uk/blog/>

The widespread interest that the media coverage generated, particularly during the latter part of November, was reflected in a large increase in responses to the online questionnaire in the final two days that it was available. A total of 1345 people completed it on 29th and 30th November.

4.3.3. Public meetings

Three public drop-in sessions were organised during November in order to provide local people with the opportunity to come and learn more about the project and to raise any specific concerns. The meetings were advertised in the local press and media beforehand as well as on the Roy Dennis Wildlife Foundation website and Twitter and Facebook accounts. Five members of the project team were present at each session, along with David Sexton, the RSPB's Mull Officer who kindly joined the team to talk about experiences with breeding eagles in Scotland. The three drop-in sessions followed the same format, with various interpretative materials on display alongside a short film introducing the project. A leaflet was

also available for people to take away (Appendix 10). Members of the public were invited to arrive at any time during a two hour period and then to spend as long as they wished discussing the project with the members of the team. Those attending were given the opportunity to complete a paper questionnaire that replicated the questionnaire available online (section 4.3.3) (Appendix 13). All three meetings were well attended, with numbers shown below:

Monday 12th November: 6-8pm at YMCA Winchester House, Shanklin (35 people) (Figure 8)

Tuesday 13th November:

11am – 1pm at 5th Ryde Scout Group Hall, Ryde (36 people)

6-8pm at Cowes Yacht Haven, Cowes (60 people) (Figure 9)



Figure 8. Public drop-in session at Shanklin.



Figure 9. Public drop-in session at Cowes.

Overall there was considerable support for the project at these meetings. A total of 79 completed questionnaires were submitted, and of these 74 people were Isle of Wight residents. Overall there was very strong support for the project with 85% of people in favour, 7.5% against, and 7.5% not sure (Figure 10).

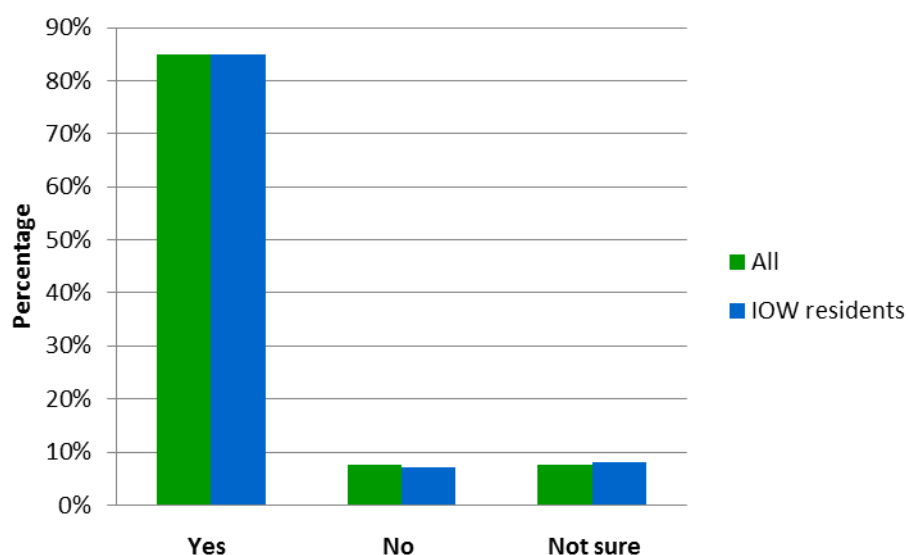


Figure 10. Responses to question: Are you in favour of a White-tailed Eagle reintroduction on the Isle of Wight? (public drop-in session attendees only)

The age groupings for those people completing the paper surveys were fairly evenly spread with a slight bias to the upper age groups. Those completing the paper survey form were mostly interested in birdwatching and walking, with percentages of people surveyed at 81% and 86% respectively.

The comments from those in favour of a re-introduction were mostly around the benefit to the ecosystem and the opportunity to see these magnificent birds on the Island, as well as the tourism benefit. Those against were concerned about the impact on other wildlife, particularly as they felt that Buzzards are predating Red Squirrels and Brown Hares, and the perceived impact on sheep farming. Those who were still not sure after meeting with us had concerns about food availability and potential impact on Red Squirrels.

The public drop-in had the benefit that people could speak with us one to one and ask any questions they had about the potential reintroduction. Many people came in with concerns, especially about potential impacts to the important Red Squirrel population on the Island, which they are justifiably proud of. We were able to address these concerns straight away and explain that this is not an agile bird, and would not be able to fly through woodlands and take Red Squirrels from trees. This meant that those people were reassured and the majority changed their opinion to positive about the re-introduction.

4.3.4. Online questionnaire

An online questionnaire was made available using the website Survey Monkey in order to widen the consultation process as broadly as possible (Appendix 13). The survey was online from 2nd November until midnight on 30th November. During this period a total of 1962 people responded, including 445 Isle of Wight residents. In addition there were 200 respondents from Hampshire, 93 from Sussex and 85 from Dorset. 66% of the respondents were men and 34% women, while of the Isle of Wight residents 60% were men and 40% women. There was a broad age range overall as shown in Figure 11 with the relative proportions of each age range similar between all responders and those resident on the Isle of Wight.

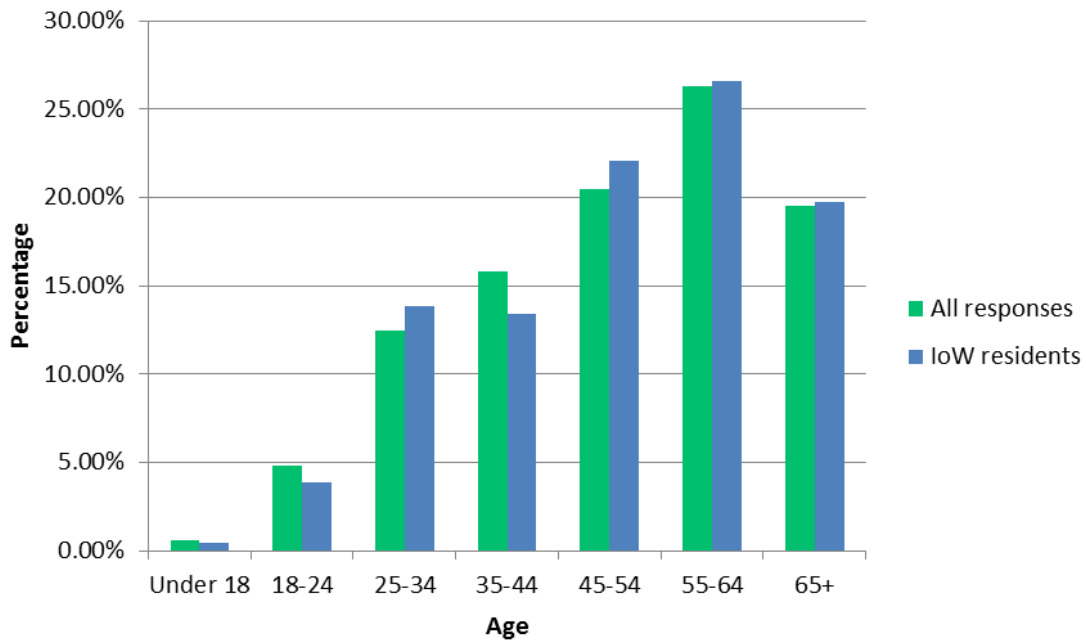


Figure 11. Age profiles of responders to the online questionnaire.

A large proportion of responders to the survey listed birdwatching and walking/hiking as an interest, with cycling the next most numerous pastime. Smaller numbers said they were interested in fishing and shooting (Figure 12).

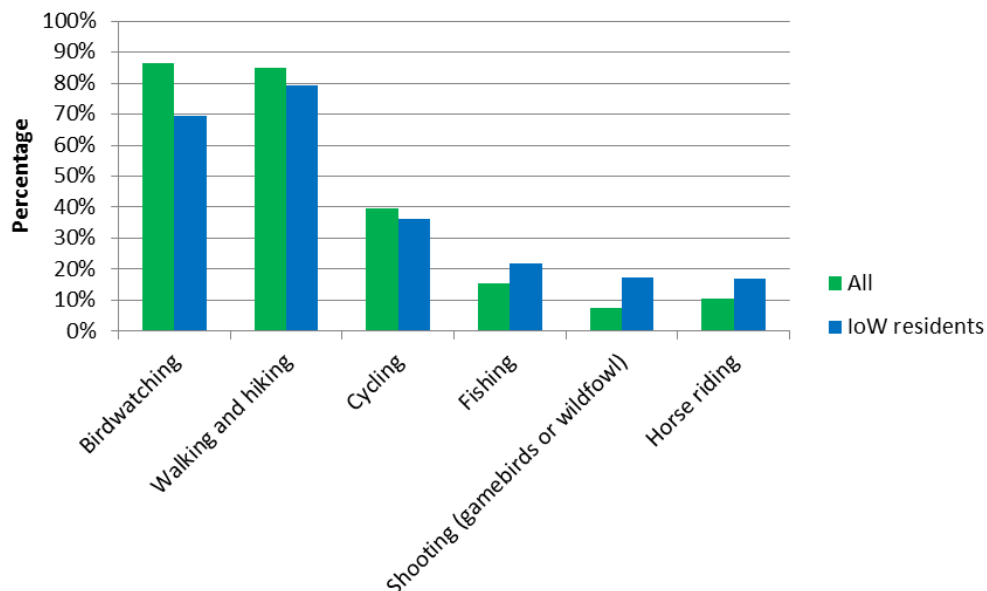


Figure 12. Interests of those who responded to the online questionnaire.

Overall there was very strong support for the project with 86% of respondents in favour of the proposals, 10% against and 4% not sure. When the results for Isle of Wight residents were analysed separately there was again clear majority support for the project, albeit to a lesser degree, with 62% in favour, 34% against and 5% not sure. There was significant support for the project from Hampshire, Sussex and Dorset (total 378 people) with 92% in favour, 6% against and 2% not sure. These data are shown in Figure 13. When responses from Isle of Wight residents are combined with those from Hampshire, Dorset and Sussex – the counties where the reintroduced birds are most likely to settle and breed in the future – 76% were in favour of the project and 21% against.

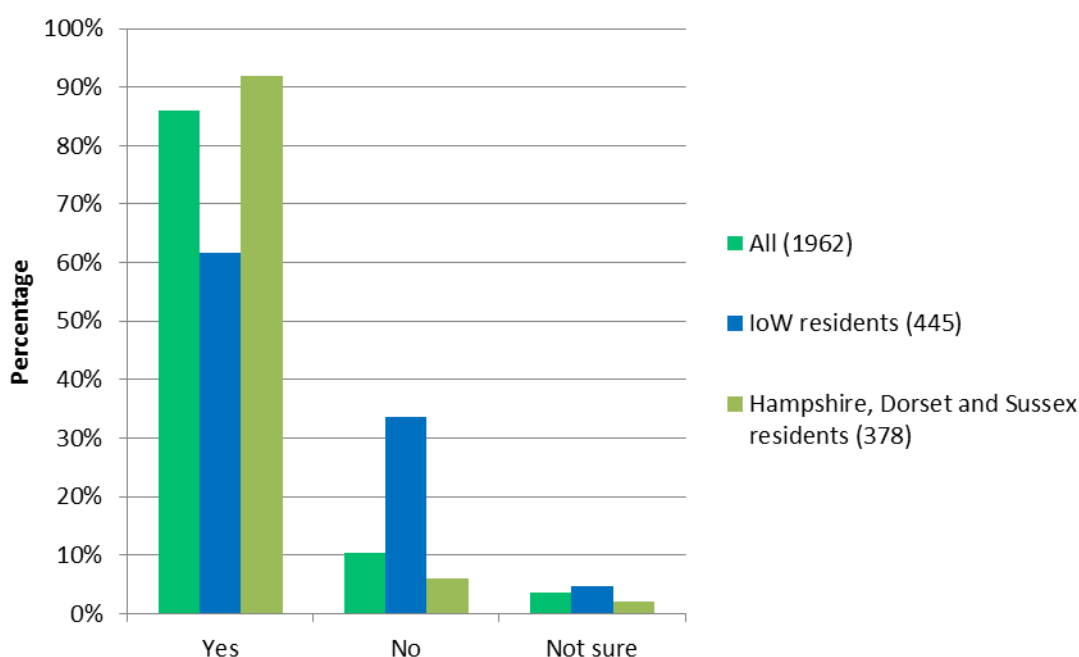


Figure 13. Responses to question: Are you in favour of a White-tailed Eagle reintroduction on the Isle of Wight?

In order to understand each respondent's reasoning behind their answer an optional comments box was included after this question. Many Isle of Wight residents who said they were in favour of the project were greatly excited about the proposal saying that it would enhance the overall biodiversity and ecosystems of the Island by restoring a species that formerly occurred there. Others commented that society has a duty to restore a species that was wiped out by man. Numerous people also commented on the potential benefits to tourism on the Island, and the value of White-tailed Eagles as a flagship species, as well as the pleasure that seeing this spectacular bird would bring. A chief concern among residents who voted no was the perceived threat to livestock, particularly lambs, and the lack of future

control measures. The other key concern related to possible negative effects on other wildlife on the Island, including Red Squirrels. Others were concerned that the habitat on the Isle of Wight is unsuitable and the Island too densely populated to support breeding White-tailed Eagles, while some felt the money would be better spent conserving species that already occur on the Island. Those that answered 'not sure' expressed similar concerns to those that answered no. All of these concerns have been incorporated into this feasibility report.

Given that shooting and fishing interests have been highlighted as possible conflict areas, the results of those who responded to the survey and listed shooting or fishing as an interest were analysed separately. When all responses from shooters were considered there was a small percentage in favour of the reintroduction (50% for, 47% against) whereas shooters on the Isle of Wight were generally against the project (14% for, 84% against). Residents from Hampshire, Dorset and Sussex were strongly in favour (82% for, 12% against), although the sample size was smaller (Figure 14).

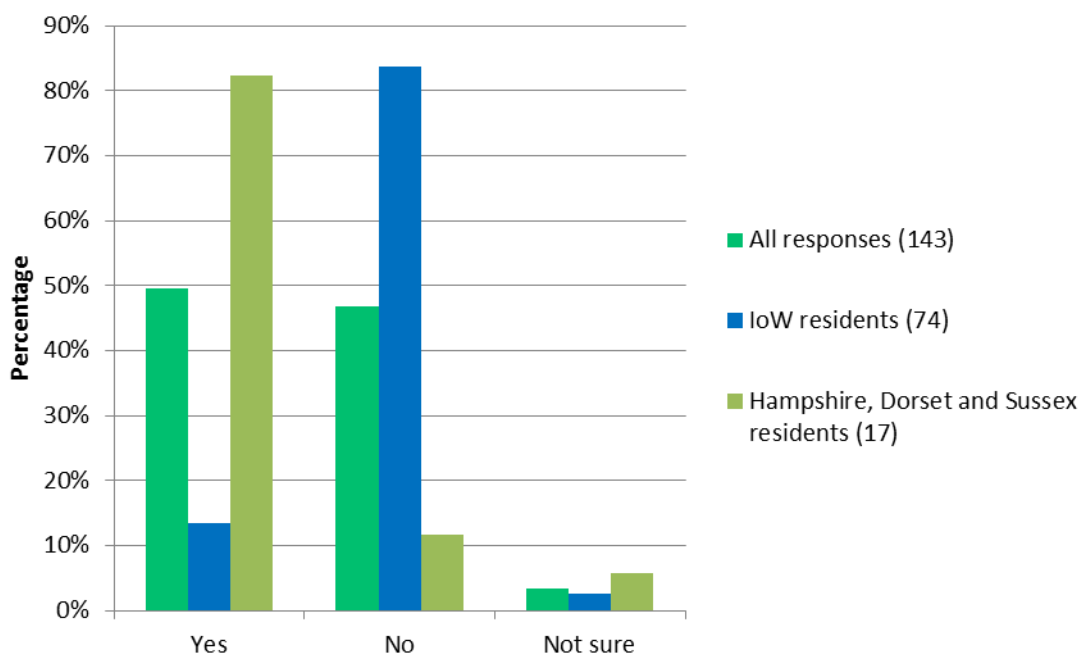


Figure 14. Responses to Q1 (Are you in favour of a White-tailed Eagle reintroduction on the Isle of Wight) by those who list shooting as an interest.

When all responses were considered those with an interest in fishing were strongly in favour of the project (85% in favour, 13% against), and there was also a clear majority in support of the project among residents of the Isle of Wight (62% in favour, 32 % against) as well as Hampshire, Dorset and Sussex (98% in favour, 2% against) (Figure 15).

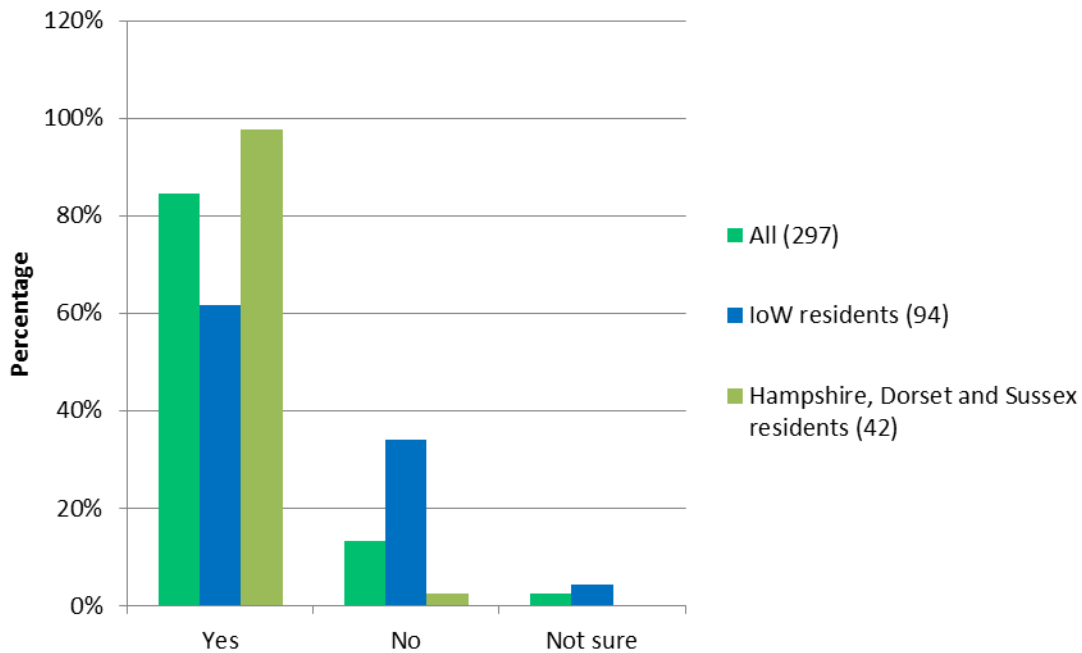


Figure 15. Responses to Q1 (Are you in favour of a White-tailed Eagle reintroduction on the Isle of Wight) by those who list fishing as an interest.

Question 7 revealed that 70% of people who completed the survey and who weren't resident on the Isle of Wight had visited as a tourist. The clear eco-tourism benefits that the project would bring to the Island were emphasised by the results of question 8. Of the 1508 people who responded to this question 92% said they would be more likely to visit the Isle of Wight if the project went ahead (Figure 16).

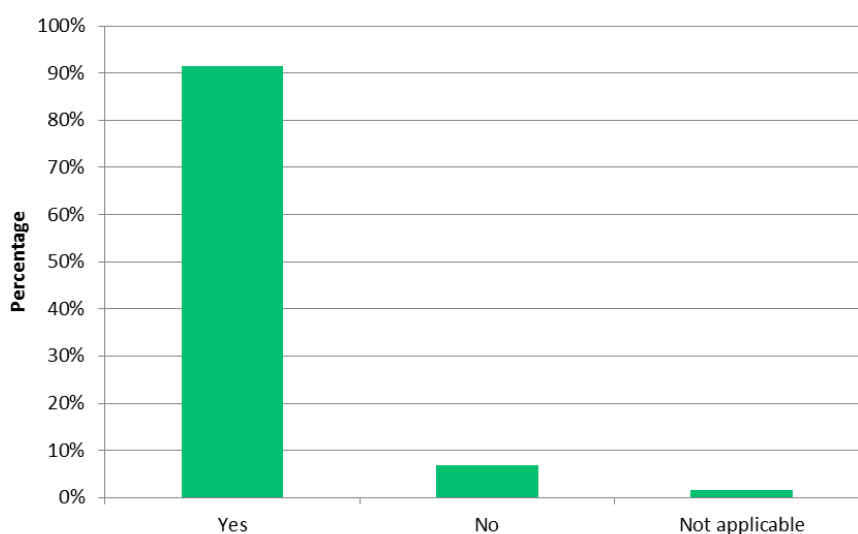


Figure 16. Responses to Q8: If the project was to go ahead would you be more likely to visit the Isle of Wight in order to see the White-tailed Eagles.

5. Project practicalities

5.1. Project steering group

If the licence application was successful a key first step would be to establish a steering group made up of a broad range of interests and stakeholders. This group would help to guide the project through all phases and ensure that all relevant concerns are considered.

5.2. Project Officer

The project is a joint venture between the Forestry England, Roy Dennis Wildlife Foundation and, potentially, other local partners. It will be essential to recruit a project officer who will be responsible for the day-to-day operations on the Isle of Wight. This person will have overall responsibility for monitoring of the translocated birds both pre and post release, and for daily feeding. They will also oversee all information dissemination via a project website, social media, and through a programme of talks and guided walks. The project officer would generate information about how to see the birds sustainably, including both online and site specific material. Ongoing liaison with local stakeholders will also form a key role of the post. The recruitment of a project officer based on the Isle of Wight will help create a point of contact for anyone wishing to raise any queries. Ideally we would wish to recruit a local person to fill this role, so that they already have contacts in the community and can build on these relationships to further the progress of the project. There is also scope for the project officer to support local enterprises to identify and develop wildlife tourism on the back of the White-tailed Eagle project, as a contribution to the rural development agenda for the Isle of Wight. The project officer will be supported by a team of volunteers and additional seasonal staff during key periods.

5.3. White-tailed Eagle Information/Watchpoints

Information points and White-tailed Eagle watchpoints will be set-up in suitable public locations with good access. These sites will include interpretation about the birds with information about their diet and habitat requirements. It will be essential to establish official White-tailed Eagle watchpoints to draw people away from any sensitive areas and habitats on the Island and in the wider Solent region. This will be a particularly important means by which to avoid disturbance to any SPA sites by eagle tourists, which is particularly important given the ongoing issues with recreational disturbance in and around the Solent.

There is also potential to establish additional White-tailed Eagle feeding areas (see also Section 5.8) in strategic places on the Island which could help draw the birds away from any potential conflicts/sensitive areas. These may or may not be publically accessible.

5.4. Number of birds to be released

The initial aim of the project is to establish a breeding population of 6-8 pairs of White-tailed Eagles on the Isle of Wight and surrounding area that, in time, will enable the birds to expand east and west along the South Coast and recolonise other parts of their former range in southern England. It is expected that this process of re-colonisation will be aided by immigration from the expanding populations in Netherlands, France and Ireland. Irish birds have recently been seen in Scotland (Mee et al 2017) and a wandering juvenile, presumed to be from continental Europe was seen at several sites on the east coast of England in November 2018 before spending at least three months in Hampshire, including on Forestry Commission land in the New Forest. We aim to release a total of 60 juvenile White-tailed Eagles, with an equal ratio of males and females, over a five year period. Given expected survival rates this would be sufficient for an initial population of 6-8 breeding pairs to become established.

A population model was devised in order to plot the predicted growth of the population in the early stages (Figure 17). This model assumes that 12 birds are released each year for a period of five years, although it may be advisable to release a smaller number of birds (i.e. 6-8) in the first year to ensure that all translocation, husbandry, release and monitoring techniques are effective. The parameters used in the model were conservative estimates based on known survival and breeding productivity of the newly-established White-tailed Eagle population in Ireland, as well as data from the early stages of the population expansion in Scotland (Mee et al 2017) (annual survival of juveniles in their first year = 75%, annual survival of all birds thereafter = 90%, breeding productivity = 0.75). This predicts that of the initial birds released, 24 will survive to breeding age (5 years), with the first pair likely to breed in the sixth year of the project. This corresponds with recruitment estimates for wild-bred birds in the Scottish population where modelling estimated the probability of reaching recruitment age at 53% and 37% for wild-bred and released birds respectively (Evans et al. 2009). In later years it may be possible to supplement the release of juvenile eagles with sub-adult birds. We are currently investigating this latter option.

Table 6 shows the population expansion that has occurred in Ireland following the release of 100 White-tailed Eagles between 2007 and 2011. Prior to 2018 a total of 21 chicks had fledged from a maximum of six successful nests. It should be noted that the decline in the number of territorial pairs observed between 2014 and 2016 was the result of the loss of several adult birds to illegal poisoning (Mee et al 2017). This serves to emphasise the importance of minimising any such losses, especially of adult and sub-adult White-tailed Eagles, in the early years of the project. Winter food provision for recently released juveniles

will be one key way to increase survival of first year birds (section 5.5), while other means to reduce risks to juvenile, sub-adult and adult White-tailed Eagles have been assessed in the disease/hazard risk section later in this report (section 5.9). It is pleasing to note that, despite the losses of the adult birds in Ireland and the subsequent break-up of some territorial pairs, the number of active nests and fledged young has continued to rise each year (Table 7).

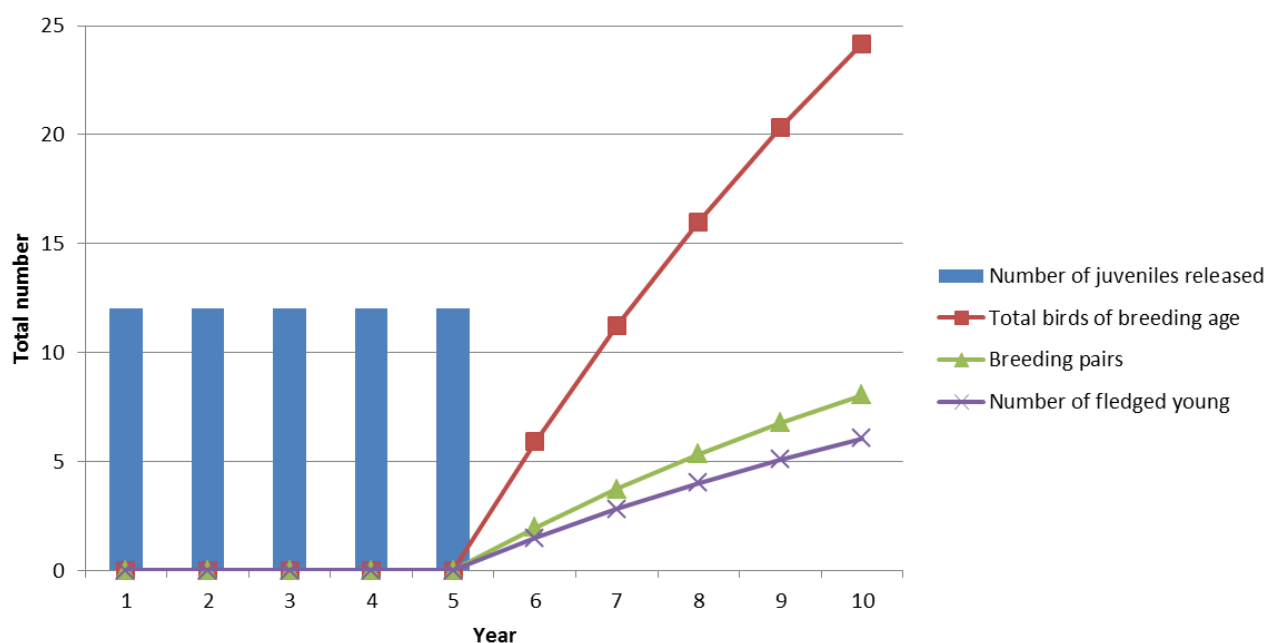


Figure 17. Expected growth of the White-tailed Eagle population in the first ten years.

Table 7. Breeding attempts of White-tailed Eagles in Ireland following the release of 100 birds between 2007 and 2011.

Year	Territorial pairs	No active nests	Successful pairs	No fledged young	No fledged per nesting pair	No fledged per successful nest
2010	1	0	-	-	-	-
2011	4	0	-	-	-	-
2012	6	1	0	0	-	-
2013	10	3	1	2	0.66	2.0
2014	14	7	1	1	0.14	1.0
2015	13	8	4	4	0.5	1.0
2016	10	9	6	7	0.78	1.2
2017	10	9	5	7	0.78	1.4

5.5. Collection and translocation of birds from Scotland

See Appendix 1 for greater detail on sections 5.5, 5.6, 5.7 and 5.8.

Young birds will be collected from nests with two chicks, with one chick taken at seven to eight weeks of age and kept at a suitable temporary holding site in Scotland. Only healthy young will be collected for translocation, biometrics will be taken and each will be ringed and colour ringed. Young will be taken from a maximum number of nests to ensure genetic diversity, and there are no symptoms in the Scottish population of genetic issues. Blood and saliva samples will be taken during the vet inspection for sex confirmation and maintaining a gene data base. As soon as we collect the final young we will transport the birds from Scotland to the Isle of Wight and place them in the release cages as soon as possible. We have extensive experience of transporting eagles by air and land, as well as recent experience of moving young ospreys from Scotland to Dorset. We are most likely to transport them by land, but will explore air transport opportunities. Both would be workable. We are used to feeding and resting young raptors in transit. We will abide by the current transportation guidelines for animals during the journey.



Figure 18. Young White-tailed Eagles in cages in Ireland prior to release.

5.6. Release site

The project team has located a suitable release location on Forestry Commission land. All key local stakeholders have been consulted and liaison is ongoing. Efforts will be made to

keep this site strictly confidential for the duration of the project and, as such, further details are not included here.

5.7. Release strategy

The release cages will be modelled on those used for the reintroduction projects in Scotland and Ireland (Figure 18). They measure 4m x 4m x 2m, with strand board walls to the back and sides. An artificial nest is located at the rear of each cage and plentiful food (fish, meat) can be placed through a sleeve and hatch in the back wall directly on to the nest, thereby keeping human contact to an absolute minimum. The young white-tailed eagles need to be kept in the cages, in groups of 2-3 until they are a week past flying age (Figure 18). CCTV in each cage will monitor the individual eagles and will be connected by cable to the caravan or temporary project hut. The CCTV recordings will be archived and used for playback to check progress of the young. Before release all individuals will be fitted with satellite transmitters in order to monitor post-release movements, and very small VHF tail mounted transmitters for local checking in the first few months.

The satellite transmitters will provide daily records of the activities of each bird and the project team will endeavour to make visual contact with each individual White-tailed Eagle on a regular basis, several times a week during the initial stages. Depending on the degree of dispersal that each individual undertakes, the intervals may vary but the aim is to maintain an accurate record of progress. We will also seek the help of local communities and birdwatchers with requests to report sightings to the project through a dedicated website and social media presence.

5.8. Post-release feeding

Young White tailed Eagles, in the wild, are dependent on their parents for food for several months after they leave the nest. We will establish regularly provided food dumps close to the release cages (see above and Appendix 1) to mimic this behaviour. Our aim is to maintain these feeding sites throughout the autumn and winter so that the young do not disperse too rapidly and can build up group dynamics. If some birds move and settle in new areas we will examine the potential of creating carrion feeding sites in those areas.

5.9. Ongoing monitoring

Ongoing monitoring will be an essential element of the project both in terms of the welfare of the birds and also their impacts on existing fauna and economic interests. The birds will all be fitted with tail mounted VHF radio transmitters and back-pack satellite transmitters prior to release to enable the project team to accurately monitor their subsequent movements. Studies have shown that juvenile White-tailed Eagles may disperse widely in their first two

years. Estimated maximum juvenile dispersal distance (JDD), as measured from natal (or release) sites, ranged from about 18 to 200 km in different individual White-tailed Eagles in Scotland, with a median JDD of 90.6km for females and 78.4 km for males (Whitfield et al 2009). As such we might realistically expect some individuals released on the Isle of Wight to range through Hampshire, Dorset and Sussex, particularly during the first two years after release. It is likely that the New Forest will be a particularly favoured area. In Scotland there was a tendency for males to disperse further than females in the first year of life, but for females to be further from natal sites in their second year (Whitfield et al. 2009). If individual birds disperse into new areas, efforts will be made by the project team to liaise with key local stakeholders and to monitor the bird visually on a regular basis. Satellite tracking data will be published on the Roy Dennis Wildlife Foundation website on a frequent basis. The project team are extremely experienced in monitoring raptors by satellite tracking and any unusual movements or loss of data will be investigated with the utmost urgency.

An annual report will be produced each year, with detailed accounts of the activity of each individual bird. In addition regular articles will be published in relevant magazines and, in the longer term, scientific papers detailing the project's progress and key findings will be produced. There will be an annual project meeting to assess progress and plan each year's activity.

A key element of the project will be to establish formal partnerships with universities, and exploratory meetings and discussions have already taken place with a view to incorporating PhD/MSc research in the following areas:

- Basic ecology, including ranging behaviour, habitat use and diet
- Interactions with other biodiversity, including SPA birds and Red Squirrels and other significant species
- Public perception
- Economic benefits and impacts upon, for example, the tourism industry.

5.10. Exit strategy

As described in section 5.1, a project steering group will be established to review the annual progress of the project. Given the success of other White-tailed Eagle reintroduction projects in Scotland and Ireland, the distribution of the species in other parts of lowland Europe, and the measures included in this feasibility report to minimise and mitigate any risk to the birds themselves, the local ecosystem, and any socio-economic interests, we are confident that the project will result in a self-sustaining population of White-tailed Eagles becoming established on the South Coast without causing any ecological or socio-economic problems.

Nevertheless there is potential to halt the project should any unforeseen issues arise. The project will be reviewed annually by the steering group and if there was clear evidence that it was causing ecological or socio-economic harm a decision could be made by the steering group, in consultation with Natural England, to halt it.

If it proved necessary to implement the exit strategy, efforts would be made to catch any free-living White-tailed Eagle released by the project. In recent years individual raptor workers have become expert at catching adult eagles for satellite-tracking studies using bow traps. The project team have consulted with these expert fieldworkers who have agreed to assist the project with trapping should it be required. The project team has the necessary skills to assist, and we would request the services of other experienced bird ringers to provide additional support. It is also important to consider that it is very likely that experience in catching live White-tailed Eagles in Scotland and in mainland Europe will progress over future years, and more people will be capable of carrying out this specialised work in a humane manner. Bow traps are not expensive to assemble (approximately £30 per trap). The captured eagles would be transported in a similar manner to their translocation south and released in their original localities. The necessary licences and agreements would be required at the time.

Clearly the logistics and costs of implementing the exit strategy would depend on how far the project had progressed, and as such, it will be essential to review any impacts of the project on an annual basis. Furthermore it may be advisable to release a smaller number of birds in year one of the project. Here we have estimated the costs of implementing the exit strategy in year 2 and year 5, based on expected survival of the birds after release (annual survival of juveniles in their first year = 75%, annual survival of all birds thereafter = 90% - see section 5.4).

5.10.1. Example exit strategy in year 2

The juvenile eagles will be supplementary fed close to the release site during their first winter, and it would be relatively straightforward to catch the birds during this period. However it is likely that some birds will begin to move away from the release site three-six months after release. As detailed in section 5.9, studies have shown that juvenile White-tailed Eagles may disperse up to 200 km in their first two years. Estimated maximum juvenile dispersal distance (JDD), as measured from natal (or release) sites, ranged from about 18 to 200 km in different individual White-tailed Eagles in Scotland, with a median JDD of 90.6km for females and 78.4 km for males (Whitfield et al 2009). If eight birds were released in the first year of the project we would expect 6 individuals to be alive one year after release, and the Scottish research indicates that these birds may have dispersed into Dorset, Hampshire,

Wiltshire and West Sussex. It will be possible to monitor these movements closely using satellite tracking and this will make it considerably easier to catch birds during this period. Favoured roost sites will be pinpointed using the satellite data and bow traps set-up at these locations. Once caught the birds would be kept temporarily at the release site on the Isle of Wight before transportation to Scotland. Estimated costs of this work are shown in Table 8.

Table 8. Estimated costs of exit strategy in year 2.

Activity	Cost
Expert assistance (£250 per day) - based on 3 days to catch each bird. Total 18 days.	£4500
Bow traps (x3)	£100
Fuel and transport for trapping fieldwork – based on 250 km per bird.	£500
Transport to Scotland	£500
Food and accommodation costs for expert assistance. Based on 18 days fieldwork (£150 per day).	£2700
Other miscellaneous costs	£200
TOTAL	£8500

5.10.2. Example exit strategy in year 5.

If it was necessary to implement the exit strategy in year five of the project then the associated logistics and costs would be significantly greater. However the same basic principles would be used, with favoured roost sites located by satellite tracking and bow traps subsequently set up nearby. Research in Scotland has shown that juvenile dispersal is greatest in the first two years of life, and after that period they tend to return closer to their natal site (Whitfield et al 2009). As such the catching area would likely be no larger than that described above; covering Dorset, Hampshire, West Sussex and Wiltshire.

Given the expected survival of birds we might expect a total of 28 birds to be alive by year 5 of the project, as shown in Table 9.

Catching a total of 28 birds would require a longer period of time, but we would ensure that members of the project team and other qualified bird ringers were trained in the use of bow traps to enable at least two catching teams to operate simultaneously, and thus reduce the overall time required to catch the birds by half. Estimated costs are shown in Table 10.

Table 9. Expected survival of juvenile White-tailed Eagles by year 5 of the project.

Year of release	Total released	Total alive in year 5
1	8	4
2	12	7
3	12	8
4	12	9
TOTAL	44	28

Table 10. Estimated costs of exit strategy in year 5.

Activity	Cost
Expert assistance (£250 per day). Total 42 days.	£10,500
Bow traps (x6)	£200
Fuel and transport for trapping fieldwork – based on 250 km per bird.	£2000
Transport to Scotland	£500
Food and accommodation costs for expert assistance. Based on 42 days fieldwork (£150 per day).	£6300
Other miscellaneous costs	£500
TOTAL	£20,000

5.10.3. Catching individual birds

In addition to implementing the full exit strategy, it would also be possible to catch individual birds if there was clear evidence of a particular individual causing socio-economic or ecological damage. Any such decision would be made by the steering group in conjunction with Natural England, and the methods described above would be used.

5.10.4. Funding

Roy Dennis Wildlife Foundation and Forestry England have the required contingency funds to carry out all aspects of the exit strategy as detailed here.

5.11. Media and communications strategy

Given the likely high-profile nature of the project, we will devise a thorough communications strategy should a licence be granted. This will be both local and national in its approach.

5.12. Funding

Estimated costings for the translocation phase of the project are detailed below. Funding for the first two years of the project has been secured from a private donor. This funding will cover the costs of employing a full-time project officer (i.e. salary, vehicle, office) who will be based on the Isle of Wight, and the costs of collection, translocation and monitoring of the juvenile White-tailed Eagles. This donor will consider further support for the project, subject to how the first two years progress. Funding for the satellite transmitters to be used in the first year is also in place and additional funds for tracking in subsequent years will be sought if a licence is granted. Forestry Commission will also make an annual contribution to the project, and will fund the construction of the release pens.

Monitoring, collection and translocation of birds: £10,000 per year

Multiplied by 5 years = £50,000

Project officer annual cost:

Salary - £32,811

Office costs, vehicle - £6500

Total = £39,311

Multiplied by 5 years = £196,555

Line management FC in kind contribution:

£3500 annual contribution

Multiplied by 5 years = £ 17,500

Satellite tags:

60 x £4000 (cost per bird tag)

Total = £240,000

Pen construction for translocation:

£10,000

Estimated total cost = £514,055

5.13. Disease and hazard risk assessment

5.13.1. Introduction

When considering the translocation of wild birds from one location to another it is important to consider the associated disease risk and its potential impact on biodiversity conservation in the destination environment (Sainsbury and Vaughan-Higgins 2012). Translocated birds may be exposed to parasites (infectious agents including viruses, bacteria, fungi, protozoa, helminths, and ectoparasites) during transit and at the reintroduction destination. This has implications for the success of the reintroduction project and also for the destination ecosystem if infectious agents are imported. This is particularly the case when translocations cross geographic or ecological boundaries because novel parasites may cause disease in immunologically naïve hosts (Anderson and May 1986). It is thus necessary to consider transport, destination and carrier hazards when assessing disease risk of any translocation project (Sainsbury and Vaughan-Higgins 2012).

5.13.2. Hazard identification

The disease risk associated with this project is considered low because it will involve translocating birds within the UK only. As a result there is little or no risk of exposing the birds to novel pathogens not present in their previous environment. Nevertheless there are other key risks associated with the translocation that must be considered, including:

- Translocated birds may be exposed to infectious agents while in transit;
- Non-infectious hazards, for example toxins and dangerous anthropogenic structures, may be present in the destination environment;
- The translocated birds may become immune-suppressed (due to stress), making them more susceptible to disease outbreaks, particularly as parasite dynamics can be affected by factors such as host density.

A list of key hazards was drawn up using the scientific literature and consisted of highly pathogenic avian influenza viruses (HPAI), *Salmonella* spp, *Aspergillus fumigatus*, lead poisoning, and poisoning due to the misuse or abuse of agricultural pesticides, anthropogenic trauma of various origin including collision with pylons and electrocution, and anthropogenic trauma due to wind turbines.

5.13.3. Risk assessment

For each of the hazards we identified we carried out a risk assessment and proposed methods by which the risk could be managed. Risk was classified as negligible, low, medium or high risk. Hazards considered of negligible risk were given no further consideration

regarding risk management. The individual risk assessments are included in Appendix 11 and key recommendations are as follows:

- Examine the health of all White-tailed Eagles on collection from nests and prior to translocation to the Isle of Wight. The health check prior to transportation to England should be undertaken by an experienced avian vet with previous experience of raptor translocations involving Golden Eagles and Ospreys. Any appropriate tests should be carried out at this stage on veterinary advice. Only fit and healthy birds should travel.
- Transport crates and vehicles must be cleaned and disinfected prior to use, or new crates used. A bactericidal and virucidal disinfectant should be used at the appropriate dilution rate (follow manufacturers' guidelines).
- Where possible transport should be undertaken at night in order to minimise stress which may result in individuals becoming immuno-suppressed and thus more susceptible to infection.
- Choose a reintroduction site 10km from the nearest wind turbines and away from overhead powerlines and pylons and active airports/airfields.
- Landowners local to the reintroduction site should be circulated with information about the disease threats to White-tailed Eagles with recommendations regarding realistic practical action that can be taken to protect the recently reintroduced, vulnerable population. This may include collecting and disposing of shot carcasses and careful use of poisons (for example anticoagulant rodenticides).
- Exclude free-living mammals and birds from the release aviaries.
- Strict hygiene practices should be implemented at all times, including:
- Maintenance of a clean environment throughout: soiled bedding and uneaten food removed regularly, and clean, dry bedding provided when required.
- Disposable gloves worn during food preparation and when placing or removing food from release pens.
- Food preparation utensils disinfected daily using appropriate aviary products.
- Any sick birds must be placed in quarantine, in an aviary isolated from the other release aviaries, and veterinary assistance sought immediately. Birds requiring regular assessment, treatment and possibly anaesthesia will need to be transferred to a hospital.
- An avian veterinary specialist should be available and on call for the duration of the project.
- Detailed post-mortem examination of all free-living birds found dead.
- All White-tailed Eagles should be closely monitored post-release and attempts made to catch sick birds, and house them in a dedicated quarantined enclosure 100m

distant from the other enclosures for captive birds (and the quarantine aviary mentioned under 10 above). The health of sick birds must be evaluated and the disease risks for other released birds assessed.

5.13.4. Conclusion

The fact that we propose moving birds within the UK greatly reduces the disease risks of the project. Furthermore there is extensive experience within the project team to enable collection, translocation, rearing, release and monitoring of the birds to be carried out to the highest possible standards. Nevertheless it will be essential to follow the protocols detailed here in order to minimise risk as much as possible.

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Appendix 1 - White-tailed Eagle reintroduction and translocation

Advice Note



Wester Ross Sea Eagles

Location and design of release cages

Collecting, rearing & release techniques

Roy Dennis

White-tailed eagle reintroduction and translocation; location and design of release cages; collecting, rearing & release techniques

This advice note has been compiled to help persons or groups contemplating raptor translocation and release. We have gained a great amount of expert knowledge and experience over the last five decades. Many people have been involved but I particularly value the ideas and experience of John Love, Colin Crooke, Allan Mee and Lorcan O'Toole.

Location

One of the most important features for the successful translocation of young white-tailed eagles is the selection of an optimum release area. Initially, there is the choice of a region or country for the re-establishment of a breeding population of the species, and then the local choice for the best release (hacking) site within that region. The latter is covered in this information note.

In my opinion, the design of the release cages and the location at Loch Maree, in Wester Ross, during the release of the young sea eagles in the early 1990s, was close to being ideal. The main aim is to release successfully all of the translocated young and to encourage ALL of them to remain close to the release cages for several months or more, so that they can forage on plentiful carrion at a feeding location, and become 'hefted' on the locality. The project staff provide plentiful supplies of food to emulate very efficient surrogate parents.



Loch Maree Cages

The cages should look out over good habitat. Ideally, they should have a good view of the sky and the horizon, the outline of hills and the location of woods, lakes, rivers, estuaries or open coast. This allows them to observe the local surroundings, the activities of local wildlife as well as the transit of the sun and the movement of stars in the night sky. The cages should be built on a piece of flat ground, but it is advantageous if the cages are located on an open wooded hillside to give the birds better views, and, later, better flying opportunities. In front of the cages, the birds should be able to look out at old trees, live or dead, with large branches suitable for perching. The trees can be solitary or in groups of very big trees with open branches ideal for the young to fly to and perch, when they make their first hesitant flights from the release cages, and easy for them to return to after making more sustained flights.

In the first week of flying the birds are very inexperienced and can make clumsy landings. It is important that the release cages are not situated near 'closed-in' woodland, especially thick young woodlands or plantations. Native trees with soft foliage, such as willows, birches, poplars, and young conifers such as spruces and firs, do not have strong top branches. Adults do not land in such places, but if inexperienced young birds try to land on them, they fall down through the foliage and then find it extremely difficult or even impossible to regain flight. Then their only way to find an open space to fly is to walk out of the wood and this may be difficult. In some cases, birds could die before getting to an open area to regain flight. Do not, therefore, site cages close to young plantations or woods, or for that matter dense reed beds, or growing crops such as cereals.

It is very important that the people in charge of the release project can view the cages and release site, especially at and after the release, from a long distance with a telescope or

binoculars. This distance must be sufficient to have no influence on the behaviour of the birds. Ideally, post-release viewing should take place from the opposite side of a valley from the cages or from hidden hides. In this way, it is possible to see how each individual carries out its first flights and its ability to return to the cages. It is very important that the actual release can take place under the birds own volition and that they are not scared out of or away from the cages.

The other important aspect of location is that there should be a really good open area, of at least a hectare, in front of the release cages or close to it, surrounded partly or wholly by large trees, which will become the main feeding place during the subsequent months. Ideally this should be visible while the birds are in the cages, so that some carrion food can be placed there, during nighttime, for a couple of days prior to the release, allowing them to see corvids and buzzards, for example, flying down to feed. If possible the area in front of the cages should have a range of perches and several 'nest type' structures on which food can be placed at night.



Viewing feeding area Loch Maree

Construction of the release cages.

The cages built at Loch Maree in Wester Ross for the release of the sea eagles, and subsequently the same design used at the Irish release site in 2007, are as good as you can get for this sort of project. Each cage should be able to house up to three individual young sea eagles. It is better for the birds to be reared in broods rather than singly.

The cages should be built in the following way. The dimensions of each cage are 12 feet (ca 4 metres) by 12 feet (ca 4 metres); the height is 8 feet (2.7 metres). Ideally, the cages are built in a row. The back of the cage is completely wooded, either strandboard or plywood, so that all activities involving the people feeding the birds and caring for them prior to release takes place behind the cages. It is very important that the birds do not see people while they are in the cages. The side walls of each cage should be similar strandboard or plywood to the full height of



Checking eaglets through viewing holes

the cage, so that birds in one cage cannot see the birds in the next cage. Each cage and brood is a separate unit. Firstly, it allows birds in one cage to be caught for ringing, wing tagging, etc., without the birds in the other cages being disturbed in the process. Secondly, it replicates the wild situation as there are almost certainly added advantages in that after release the three young in one brood get to know new individuals as each new brood is released. This could be beneficial in the process of building relationships, and selecting potential mates, in the future.

The front of the cage should be covered with weld mesh; either plastic coated steel mesh or strong plastic mesh, approximately one inch (2.5 cms) diameter. The mesh should be smaller rather than larger, to prevent damage to the young, especially the cere or flight feathers, when they fly against it. The top of the cage should be covered in similar mesh, but the area over the artificial nest and the back of the cage should be covered with a strip of strandboard or plywood about 4 feet (one+ metre) wide to shelter from heavy rain. But it is important that some rain can blow in on the birds so that they occasionally get wet, which is useful for cleaning and preening their plumage.



This cage system works best when two cages are operated together with a 'closed-lock' system between the two cages, an external door opening into a small chamber 3 feet by 3 feet (one metre by one metre), which then has a door in each side leading into each individual cage. When it is necessary to enter the cages, the operator opens the outside door, climbs into the small chamber then closes the outside door before opening the door into the individual cage to gain access. This system prevents escapes and the small chamber has another advantage, allowing a person standing there to check the birds, without being seen, through small holes drilled through the wood. Similar drilled holes in the back wall allow other views to check on the chicks and their feeding progress.



closed lock system - Killarney

In the back corner, opposite the door, a nest platform is built at half the height of the wall, about 1.5 metres from the floor level. It is a strong wooden platform about 1.2 metres square or hexagonal, with a 15 cm high board running around the outside of the nest. A nest is built on this platform; not a stick nest but a replica of the interior of a wild nest at the time when big chicks are present. So it is covered with soft material such as moss, straw, dried grass, wood chips and leaf mould to create a flat platform on which the young birds can walk around and feed.



young sea eagles in nest

Just above this platform, make a hole in the back wall of the cage to put food in the nest. About 9 in (22cms) square, it has a lockable swing hatch on the outside, and on the inside is nailed a sleeve, made from the leg of a pair of trousers or a heavy shirt, so that chopped up food, such as rabbit, fish and other meat, can be pushed through the hole to land on the nest. The birds can grab food and feed themselves. At convenient places in the back wall of the cage, drill small holes which are convenient for watching the birds, without being seen. A miniature CCTV system should be installed in each cage to monitor the young on the 'nest platforms'. This system is linked by a cable back to a caravan or hut out of sight of the cages. A continuous recording of each brood is maintained for subsequent checking.

A clean branch of a tree is nailed onto the outer edge of the nest and out across to the far corner of the cage so that the young can branch when they are ready. Another branch crosses from corner to corner of the cage so that there is a network of perches for the birds to use. The floor of the cage is left open and free of vegetation. There should be no 45

degree supports within the cage to hold the roof; birds can get wings caught in them. The front of the cage should have a large mesh door, which can be opened to release the birds. It should be locked until release day. The door should be lowered slowly from the back of the cage using a long string, without the birds seeing the person who is operating the cage opening.

In some circumstance, where birds are being released in areas with people in the general countryside, it may be worth instigating a procedure to habituate the birds to people at safe distances. Staff should occasionally walk across the field of view of the birds at right angles, about 400 metres distant. Do not walk towards the birds. In this way, the young can occasionally see people walking in a non-threatening situation. No one should be allowed to walk around the front of the cages while the birds are in captivity and no attempt should be made to tame the birds in any way, or to habituate them to humans. The area around the cages should be kept as quiet as possible, including no noise or loud talking.

Collection and care of young.

Birds should be collected from their nests in as short a time as possible, preferably three to four days at a maximum, so that they are in temporary accommodation for the shortest time possible. They should be of the right age, about two-thirds grown, so they are big enough to regulate their own body heat and mature enough to be able to pick up and eat food placed in front of them. Only chicks in perfect condition should be taken: runts and birds with obvious problems, such as broken feathers, prominent fault bars, etc should not be collected. Each bird should be ringed and colour ringed so that a record of its progress throughout and after the reintroduction can be maintained. After collection, birds should be housed in an artificial nest situation in secluded sheds or a building which has plenty of light from the sky.

Temporary partitions, 3 feet (1 metre) high, can be nailed to create small nest areas for 3 birds. The floor is covered with straw, grass, etc. Pieces of wooden board like large wooden dinner plates are laid on the straw, so that cut up food can be placed in each compartment without becoming unnecessarily soiled. The birds should be left alone with plenty of food (fish and meat) so that they can feed when left alone. Once one starts, the others will follow.

In some cases, where a chick will not feed, the best thing to do is to cut the food into small pieces, small golf ball sized, and artificially feed it by holding the mouth open and placing the food in the back of the throat. Dipping it in water helps. Carry on until the crop is about the size of an orange or large apple. This is also the best time for a vet to take blood and saliva samples, for veterinary checking and for subsequent DNA and sexing analyses.

Once the full collection is complete, the birds should be transferred to the release location as fast as possible. There are advantages in travelling at night, but they are robust and travel well, even country to country by plane is not a problem. The best option is being able to travel with the birds, and in that case large cardboard boxes, with air holes, give the best travelling conditions. On public transport, including aircraft, the travelling cages must adhere to regulations. Plastic flight cages for dogs are suitable, but lightweight and breathable sacking should be taped over the open mesh ends so that people are not visible. Birds need feeding before transport, with wet fresh fish, but do not need feeding en route.

Once the birds have reached the release cages, each bird should be judged by someone with expertise and batched into broods of three of similar size, starting with the biggest, so that cages hold similar aged young. In this way, older birds can be released together and a cage or two of younger birds held back for a week or more until ready for release. The birds are placed in the nest with a large amount of food on the wooden feeding plates, which are

placed around the edge of the nest so that each bird can feed. From then on, food is pushed through the feeding sleeve, morning and evening.

In the first few days it is important that the birds are monitored carefully by checking the CCTVs and footage to check that each bird is feeding well in each cage. Very quickly they will all feed easily and then it is a matter of making certain they have plenty of food. It is impossible to over feed them and the aim is be super efficient parents by providing the young with as much food as possible. There is no need to reduce the food as the birds get near to fledging, but once their main growth of bones and body is complete, and the main flight feathers are fully grown, they will eat less food themselves. Body weight naturally declines just before fledging.

They will start to fly from perch to perch, after much wing flapping. They can be very busy flapping against the netting of the cage and this can look very stressful. Do not worry too much that they will damage their feathers. After a couple of days they will quieten down and then perch looking out of the cage watching everything that is going on. Ideally it is best to keep the young eagles about a week past normal fledging time and then they are ready to release. On the day or so before release, the birds are caught up to be measured and weighed, satellite transmitters are fitted and they are checked to see that each is perfect for release. Start putting carrion on the future feeding sites in front of the cages so that birds in the cages get used to seeing other carrion feeders flying to and fro.



The release requires a nice day, preferably with light winds. Delay release if it is raining or there are strong winds. Ideally, cage fronts should be lowered gently pre-dawn so that each bird can make its own decision to leave the confines of the release cage. Observers should be on station at suitable viewpoints with a telescope and binoculars, so that a full record of each bird's behaviour is noted. There should be no one anywhere near the cages or visible close to them at this crucial stage.

Birds may emerge quickly or they may take an hour or more to fly. If a bird has not left by evening, the door should be pulled shut for the night to protect it from predators. Do not chase it out. The next day the release can continue. Once in the air birds may make extended flights or just fly for several minutes and land on perches in the field or in nearby trees. Birds will not re-enter cages, but may return to the top of the cages, and food can be placed on top of the cages in the first week.

Post release

The most important thing post release is to have the young birds coming to a regular food supply. Young sea eagles are provided with food by their parents for several months or more in the wild. In a translocation project, the longer the birds stay around the release site and receive plentiful food at a feeding site, the greater the survival rate in the first autumn and winter of life. Birds which fail to stay close to the release site or get frightened away in the first few days are more likely to have problems finding sufficient food. Remember, even in the wild most mortality occurs in the first year. Translocated birds are exceptionally valuable to a project so every effort must be made to increase survival in any way possible.

After release, food should be deposited at the feeding site during the hours of darkness to avoid frightening them. Food can be placed on the ground but it is then subject to consumption by ground predators, such as red fox. Large flat rocks, each the size of a



Putting out carrion on rock

kitchen table, are ideal for placing food, but it is possible to build feeding platforms in the middle of the open feeding area. Made from wood, 6 feet by 6 feet (2 metres by 2 metres) and more than four feet (1.5 metres) high, covered with an old carpet or artificial grass material, this keeps the food off the ground. The birds will fly to these places to feed or take chunks of food back into the trees to feed.

This is the time to put out as much food you can supply. Each bird requires several kilograms per day. Rabbits, fish and fish off-cuts, dead deer, offal, road kills are all important food. Initially it is best to continue putting out food at night, but later, once the birds really know the feeding area, it is ideal if you can drive to the feeding site and take food out of the vehicle, which causes less disturbance than delivery by foot. Later in the winter it is possible to reduce feeding to every other day or sometimes more, but just put out more carrion on each visit. Remember the longer the birds stay at these feeding sites, the greater their survival. Young sea eagles will certainly locate their own food but the feeding site is very important. You will not make the birds lazy or lacking in ability. Sea eagles are social birds and are used to living in flocks, and there are almost certainly advantages, at these gatherings, to gain social skills and to choose future partners. The feeding area should be maintained throughout the whole winter up until March or April when one will notice a decline of use.

Appendix 2 - White-tailed Eagle study visit to the Netherlands

25th-27th October 2018

Roy Dennis & Dr Tim Mackrill

We visited the Isle of Wight and met whole range of people, including the NFU at Newport, between the 25th - 27th of September 2018 to explore the potential for reintroducing white-tailed eagles to the island. I decided that it would be extremely useful to visit the Netherlands to discuss with the experts there the habits and habitats of the new breeding population of white-tailed eagles.

I got in touch with one of the country's leading raptor specialists, Paul Voskamp (Ecologist with Limburg Provincial Government), who I had previously met in relation to eagle owls and the satellite tracking of migratory hen harriers. I explained to Paul that we were particularly interested in the relationship between the white-tailed eagles and the farming community, and whether there had been any complaints of them attacking livestock. He didn't understand my question because it was not in his mind because nothing of the sort had happened at in the Netherlands. Paul works for the Limburg local authority on wildlife matters and so is fully up to speed on wildlife issues. He said he would be pleased organise a rapid field trip for us to the white-tailed eagle breeding areas and meet members of the Dutch white-tailed eagle working group. So it was arranged that Tim and I would meet Paul on the afternoon of 25th of October.

We were collected at Schiphol airport by Paul Voskamp and he drove us southwest to the most southerly breeding pairs of white-tailed eagles in Zeeland. We stayed the night in a small hotel in the coastal village of Oude-Tonge. By this time we were well up to speed on the situation regarding white-tailed eagles in the country. After many years of birds wintering and numbers increasing, principally at Oostvaardersplassen north of Amsterdam, a pair of bred there in 2006. The population then rose slowly and in 2018 there were 18 territorial pairs of which 11 pairs bred. We learned so much more that evening over dinner.

On the morning of the 26th we were collected by Dirk van Straalen, who is a project biologist with Delta Milieu in Zeeland. He is a member of the white-tailed eagle working group and an expert ornithologist. We drove across the farmlands to the island dyke and then along a private road following the dyke and looking across Krammer-Volkerak, This was originally an inlet of the sea which has been cut off from the North Sea by a big dyke and is now basically freshwater; it is now an EU Nature 2000 site. There were very large numbers of waterbirds, surface feeding and diving ducks, as well as coots and grebes. At the east end we saw an adult and juvenile white-tailed eagle put up the ducks as they flew over them before returning to the wooded island where they perched in the trees. Within 10 minutes of landing back in the willow/poplar trees the water birds had settled back on the water. Dirk pointed out the nest to us, where this pair, in 2018, reared the first young for Zeeland. After returning to the village for our car, we followed Dirk to the main road, which held a lock for the passage of barges and boats, and a line of wind turbines. From here we could see the nest from the other direction and noted that the adult

female was roosting in a tree not far from the nest. Small flocks of brent geese were flying in and out from the sea to wash and to drink.



White-tailed eagle nest at left; adult to right. Krammer-Volkerak

We drove on towards Dordrecht where Dirk showed us another nesting area; it was in a reserve which was being grazed by Heck cattle. The nest tree was in a tree inside an island and not visible from the road. We saw no sign of the eagles but did briefly see a rough-legged buzzard which dropped down on prey the other side of the nest wood. We left Dirk and drove to the famous Biesbosch nature reserve. I had been here before in the 1990s to see the then recently reintroduced beavers. The eagles had bred here for the last five years, mostly with annual success. On the way through the reserve there is a very nice display board featuring the species beside the public roadside. While there we also viewed the osprey nest site which was the first for the Netherlands. We also saw good numbers of greylag geese, ducks and lapwings with great white egret present across the countryside.

Our next area was north of Amsterdam and so we drove on the main roads to meet Stef van Rijk, who is also a project biologist with Delta Milieu working on wildlife monitoring, and leader of the white-tailed eagle working group. We caught up with Stef just north of Huizen and very quickly he showed us an eagle nesting site very close to the main bridge. We drove along the minor road on the dyke and looked at the wooded island where the nest is situated in a tree, but it is not visible. Between the dyke and the island is a navigable channel for shipping, including barges. The nest was about 850 m from the road, 3 kms from the local town, and just 20 kms to Amsterdam.



White-tailed Eagle road sign at the Biesbosch Nature Reserve

Next we crossed the polder so that we could view Oostvaardersplassen from the raised viewpoint above the major rail mainline to Amsterdam. The area had changed quite dramatically in the decade or so that I had last been there and most of the trees were now dead and fallen. We could see some herds of red deer, Konik ponies and Heck cattle. There were also some big flocks of barnacle geese. Out in the reed bed areas we could see the white-tailed eagle eyrie in a willow tree. This was the site of the first nest in the Netherlands in 2006, and had been used regularly since. We drove round by Lelystad and along the main road between the big reserve and the open Markermeer. At one of the roadside viewpoints we could look across the marshes to the nest from a different angle and could see one of the eagles perched near it. Again there are very large numbers of waterbirds, including a couple big flocks of tufted ducks.



Tufted duck flock at Oostvaardersplassen

Finally that day we drove through Lelystad and out on the main road on the dyke which separates the Markermeer from the IJsselmeer. We viewed the newly created islands which are being constructed from dredged material as secluded nature reserves. As dusk came we headed inland to Radio Kootwijk in the Veluwe forest where we all stayed overnight with Dr Hugh Jansman, a research ecologist with Wageningen University. Again we were able to talk over dinner about our day and the history and behaviour of white-tailed eagles in the Netherlands to compare with the situation in the UK, and particularly with the Isle of Wight and the south of England.

On 27th of October it was a much better day weather-wise and Paul drove us across country to Zwolle; where Paul, Stef and Hugh started their birding careers as teenagers. Near Kampen, we passed through typical Dutch rich farmland to a tower hide which overlooked the nature reserve. One adult eagle was flying as we approached and very quickly we could see the big nest in a willow on the island. It was another area with lots of ducks, coots, great crested grebes and greylag geese, with some of the geese grazing on the polder in winter cereal fields. This breeding site is 700 m from the local road, 500 m from farmland and 2.5 km to the nearest town. We then drove across the polder to the main road for our return to Amsterdam airport.



Breeding location on reserve within 500 metres of farmland near Kampen

The first pair of white-tailed eagles bred at Oostvaardersplassen in 2006. This State Forest reserve was created when one of the polders failed to drain properly and it was chosen as a special site to allow ecological processes to continue naturally in the presence of large grazing animals. Heck cattle to replicate the original aurochs, Konik ponies from Poland and red deer were released in the reserve. This resulted in dramatic ecological changes over the decades. White-tailed eagles started to visit this area regularly in winter nearly 50 years ago and from the 1990s were attracted to carcasses of large herbivores which had died in the reserve. Since 2006 a pair have always nested there and were the forerunner of the recovery, with in 2018 over 18 pairs on territory in the Netherlands, a distance of about 250 kms from near Groningen in the north to Zeeland in the south.

Conclusions. We had some questions before our visit which we were eager to explore with the Dutch white-tailed eagle experts.

1. Their presence in a human dominated landscape. In the UK most people think of the white-tailed eagle as a species of the wild regions of the northwest highlands and islands of Scotland. A species which is shy and needs quiet areas in which to live and breed. They generally cannot envisage them living again in the populated areas of the UK. Our field visit showed the ability of the white-tailed eagle, when it is not persecuted, to live in landscapes of farmland, villages, towns and even cities in the background, along with motorways and the general bustle of humanity as long as there is sufficient wild food and suitable nesting places in quieter areas. The distances of nest sites from busy activity can be as little as 500 metres. This

behaviour is similar in Germany and Poland. In consequence places in our country, like the Isle of Wight are certainly potential future breeding sites.



Large barge passing behind white-tailed eagle nest – a daily occurrence

2. Potential conflict with farming. Following our discussions with the NFU on the island and with individual farmers, some had serious and understandable concerns that any reintroduced white-tailed eagles would kill lambs on the island. The Irish reintroduction of white-tailed eagles was met with hostility from sheep farmers, because they had heard about the problems in the western highlands and islands of Scotland. Ten years after the reintroduction in Co Kerry, no lambs have been killed and now the Irish farmers are either neutral or positive towards the eagles.

In the Netherlands there has been no conflict with livestock farming. We understand there are about half a million sheep in the Netherlands; many are kept in flocks on the farms while others graze the dykes to maintain a low vegetation for dyke protection. We saw good numbers of sheep as we drove across the countryside; and in several areas we saw free range hen farms for egg production. Several of the nesting sites we visited were within a half a kilometre of intensively farmed land. Paul Voskamp works for the local government and is involved in resolving wildlife conflicts with land users, including farming. At the present time this involves wild boar. But he has never come across or been made aware of agricultural conflicts with white-tailed eagle. Following this visit we consider that the farming situation on the Isle of Wight is closely comparable to the Netherlands and adjacent countries than to western Scotland. The Irish experience is also important in trying to allay the fears of the island's sheep farmers. We do recognise the apprehensions of the Isle of Wight farmers and have written to the NFU in Newport to say that we wish to maintain dialogue and if the project went ahead we would wish them to be a key member of any steering group.

3. Disturbance to wildlife. On several occasions we have been questioned about the disturbance and damage that white-tailed eagles might do to wintering populations of waterfowl and waders and to breeding colonies of terns and rare breeding species such as Mediterranean gulls. They said that in the worst case scenario they might frighten them away. We discussed this with the Dutch

ornithologists where white-tailed eagles in the Netherlands principally hunt waterfowl such as ducks, coot, grebes, young geese, a range of fish and carrion. Because of the large numbers of water birds present in the Dutch wetlands, they said that the hunting range of individual eagles is often very small – no more than a kilometre or two. In fact their nests are often close to the main resting and feeding areas of waterfowl. As regards general disturbance, these ornithologists thought that it was no different to that caused by, for example peregrine falcons, and that the bird flocks just get used to the presence of white-tailed eagles. They probably recognise when the eagles are hunting rather than moving location. The waterfowl fly up or scatter when they think they are at risk and then settle back down on the water, in much the same places, once the danger has passed. It is important to note that white-tailed eagles spend much of the day perched in a tree in these habitats. In fact on the day we were there a hunting goshawk can cause as much disturbance.

We also discussed with them the potential risk of disturbance to breeding concentrations of nesting birds. We were told that the breeding colonies, for example Mediterranean gulls and breeding terns, were very effective at 'swarming' out to drive off any approaching white-tailed eagle. With breeding waders, such as black tailed godwits, the off-duty bird was effective at chasing white-tailed eagles away from the nesting sites of their mates. The general attitude of the Dutch experts was that nearly all these species evolved with white-tailed eagles as neighbours so the species was part of their ecosystem. Additionally, many of the birds that winter around the Isle of Wight will have known the species in their summer breeding grounds or on migration, so will be well aware of the hunting ability of white-tailed eagles.

3 December 2018

Appendix 3 – Letter of support from Professor Miguel Ferrer



Mr. Roy Dennis
Half Davoch Cottage
Dunphail, Forres, Moray
IV36 2QR

Seville, 28th November 2018

Dear Roy

I am very pleased that you are working on a reintroduction project for white-tailed eagle in southern England, as you know we are eager to reintroduce the bird to Andalusia in southern Spain. You will also remember that we are both in favour of restoring the species throughout southern Europe, where it was exterminated centuries ago.

Your team's proposal will be an important start in that recovery and will give extra encouragement to other countries in south-west Europe to do likewise. I am fully supportive of the reintroduction proposal, which has strong scientific and conservation credibility, and I hope that you receive a licence to carry out this important project.

Yours sincerely



Miguel Ferrer
Research Professor
Doñana Biological Station (EBD)
Spanish Council of Scientific Research (CSIC)



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Appendix 4 - The Solent and Isle of Wight WeBS counts – 5 year winter averages 2011-2016

	Christchurch Harbour	Yar Estuary (IoW)	Newtown Estuary (IoW)	NW Solent	Beaulieu Estuary	Southampton Water	Portsmouth Harbour	Brading Harbour (IoW)	Ryde Pier to Puckpool Point (IoW)	Langstone Harbour	Chichester Harbour	TOTAL
Mute Swan	174	8	12	94	10	120	79	15	8	30	260	810
Greylag Goose	1	2	2	47	68	25	1	16	0	2	1	165
Canada Goose	63	37	344	657	223	837	144	691	0	312	146	3454
Barnacle Goose	0	0	1	1	2	5	1	3	0	1	1	15
Brent Goose	284	328	1641	2370	1275	2322	3009	601	410	5437	12620	30297
Egyp. Goose	0	0	0	0	1	2	0	0	0	1	0	4
Shelduck	23	13	227	204	106	107	200	16	0	505	507	1908
Mandarin Duck	0	0	1	3	0	4	0	0	0	0	1	9
Wigeon	706	474	2386	1846	772	2365	654	603	0	1014	2795	13615
Gadwall	3	2	0	86	44	103	3	55	0	117	97	510
Teal	263	440	1548	2041	915	1055	261	475	0	362	1569	8929
Mallard	148	132	161	372	145	409	87	141	0	98	469	2162
Pintail	22	0	214	391	44	77	6	2	0	136	222	1114
Garganey	0	0	0	0	0	2	0	2	0	0	0	4
Shoveler	8	41	4	194	37	105	12	36	0	67	12	516
Pochard	2	0	0	26	4	32	2	51	0	9	5	131
Tufted Duck	2	4	1	55	29	46	19	44	0	24	65	289
Scaup	0	0	0	0	0	0	1	0	0	0	0	1
Eider	0	0	0	37	16	5	1	0	0	2	3	64
Longtailed Duck	0	0	0	1	0	0	0	0	0	0	1	2
Common Scoter	4	0	1	1	2	6	3	0	0	1	1	19
Velvet Scoter	0	0	0	0	0	2	0	0	0	0	0	2
Goldeneye	1	1	18	9	0	2	18	0	0	24	15	88
Smew	0	0	0	0	0	1	0	0	0	0	0	1

Red-breasted Merganser	1	0	30	67	8	4	87	0	3	188	187	575
Goosander	1	0	1	4	0	4	0	0	0	0	0	10
Red-throated Diver	0	0	0	1	1	1	0	0	0	0	0	3
Black-throated Diver	0	0	0	0	0	1	0	0	0	0	0	1
Great Northern Diver	0	0	0	1	1	2	0	0	0	1	3	8
Little Grebe	11	18	26	46	11	61	88	14	0	31	73	379
Great Crested Grebe	7	0	9	20	14	198	41	2	4	71	44	410
Slavonian Grebe	0	0	0	5	5	1	2	0	0	4	4	21
Cormorant	88	4	11	45	13	130	66	44	3	37	81	522
Shag	0	0	0	1	0	1	1	0	1	1	0	5
Bittern	0	0	0	0	0	2	0	1	0	0	0	3
Little Egret	45	11	44	44	26	71	103	18	4	108	198	672
Grey Heron	8	2	4	14	7	30	29	16	0	19	23	152
Spoonbill	0	0	0	2	6	2	0	0	0	1	1	12
Water Rail	6	2	0	3	1	20	3	6	0	4	7	52
Moorhen	9	41	10	9	7	91	29	31	0	50	71	348
Coot	294	28	2	100	81	76	26	161	0	80	258	1106
Oystercatcher	89	7	129	212	224	975	593	13	27	1391	1655	5315
Avocet	2	0	0	4	62	38	0	0	0	39	40	185
Little Ringed Plover	0	0	0	3	1	2	0	0	0	2	0	8
Ringed Plover	60	3	80	270	52	141	63	23	46	221	567	1526
Golden Plover	1	110	774	193	237	247	147	0	0	35	860	2604
Grey Plover	22	6	118	321	98	158	26	18	0	729	1468	2964
Lapwing	500	303	1461	1067	676	1257	45	588	0	552	1858	8307
Knot	3	2	532	331	12	19	2	0	0	320	1805	3026
Sanderling	2	0	0	4	5	19	0	1	215	30	392	668
Little Stint	0	0	0	2	0	3	0	0	0	1	0	6
Curlew Sandpiper	1	0	0	2	1	1	0	0	0	4	1	10
Purple Sandpiper	20	0	0	0	0	1	0	0	0	0	0	21
Dunlin	359	10	1438	3137	503	1860	5587	128	8	15986	12209	41225
Ruff	2	0	0	7	2	1	0	0	0	0	0	12
Jack Snipe	1	0	1	0	0	9	0	1	0	2	10	24
Snipe	26	12	50	29	34	193	72	53	0	33	115	617
Black-tailed Godwit	81	163	112	485	160	437	553	21	0	447	646	3105
Bar-tailed Godwit	18	0	3	29	11	11	0	3	1	201	754	1031

Whimbrel	0	1	9	46	36	30	3	0	0	74	92	291
Curlew	30	15	216	319	268	434	484	32	19	1507	1578	4902
Common Sandpiper	0	1	7	7	2	27	3	3	0	8	5	63
Green Sandpiper	0	0	0	3	0	9	1	3	0	3	1	20
Spotted Redshank	1	0	1	11	6	0	0	0	0	2	5	26
Greenshank	4	1	7	26	17	13	11	8	0	27	98	212
Redshank	184	27	77	327	130	342	701	34	0	880	2076	4778
Turnstone	29	12	18	199	73	281	271	1	1	333	218	1436
Black-headed Gull	1487	369	1095	445	633	2042	3234	235	268	1833	2194	13835
Mediterranean Gull	2	32	155	72	76	323	6	152	63	3	55	939
Common Gull	5	0	5	10	36	67	232	71	45	160	354	985
Lesser Black-backed Gull	7	1	5	5	1	7	5	21	1	1	13	67
Herring Gull	222	54	2014	59	32	109	223	66	79	181	102	3141
Yellow-legged Gull	0	0	0	0	0	2	1	0	0	0	1	4
Great Black-backed Gull	32	3	38	21	49	15	30	19	15	6	38	266
Little Tern	0	0	1	29	1	3	0	0	0	0	31	65
Sandwich Tern	10	3	12	12	15	18	3	3	3	0	45	124
Common Tern	0	1	27	35	40	198	2	2	3	1	60	369
Kingfisher	4	1	3	4	1	10	4	2	0	2	3	34

Source: Frost, T.M., Austin, G.E., Calbrade, Mellan, H.J., Hearn, R.D., Stroud, D.A., Wotton, S.R. and Balmer, D.E. 2017. Waterbirds in the UK 2015/16: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford.

Appendix 5 - Letter of support from Dr Allan Mee



Irish White-tailed Sea Eagle Reintroduction Project

Golden Eagle Trust, Ardpatrick, Kilmallock

Co. Limerick, Ireland

Tel: +353-873117608

Email: kerryeagle@gmail.com

Web: www.goldeneagle.ie

29 November 2018

Roy Dennis

Isle of Wight Sea Eagle Project Group

Dear Roy,

Thank you for enquiring about the latest situation regarding the reintroduction of White-tailed Eagles to Ireland. As you know White-tailed Eagles were reintroduced to Ireland over 5 years, 2007-11, with the release of 100 young birds, taken under licence from nests in Norway, and released in Killarney National Park in south-west Ireland. Our first pair formed as early as 2010 and nesting began in 2012. Since 2013 a total of 25 Irish-bred eaglets have fledged in the wild. In 2018 we had 10 breeding pairs and are encouraged with the progress of the population to date.

I understand you have had concerns raised about the possibility of lamb mortality related to sea eagle predation from farmers on the Isle of Wight. Here in Ireland we had similar arguments when the project was proposed and in the first few years of the project, we made big efforts to address these fears by meeting with farming groups and working with farmers locally where eagles took up residence. Despite early difficulties with the perception of the bird as a serious predator the reality is that now, 11 years after the first release in 2007, White-tailed Eagles are now seen as very much part of the landscape. In fact, in that time, we have had no proven case of an eagle taking a lamb, even where pairs are breeding in hill sheep areas. As has been seen in Norway, the eagles are well known to scavenge carrion including sheep and lamb carcasses. It has taken several years but I believe we can categorically state that there has not been the damage to farming interests that were

feared initially and most sheep farmers are now either neutral or positive towards the eagles. Indeed, we are delighted that two sheep farmers are helping us to monitor eagle nests by watching nests in their area. One of these farmers was interviewed in a recent press article highlighted in the Farming Independent:

<https://www.independent.ie/business/farming/forestry-enviro/from-protests-to-partnerships-how-farmers-are-supporting-the-reintroduction-of-the-whitetailed-eagle-36378114.html>

<https://www.independent.ie/business/farming/forestry-enviro/they-never-touched-a-lamb-lough-derg-farmer-on-the-reintroduction-of-the-white-tailed-eagle-36378101.html>

I have read your proposals to reintroduce the White-tailed Eagle to the Isle of Wight. I fully support this exciting project as I am firmly of the view that there is an international aspect. Over time it is inevitable that the existing and expanding Scottish and Irish populations will link up while occasional Irish birds may reach Wales and Cornwall, and finally inter-link with a population established on the Channel coasts and ultimately with new and expanding populations in Holland and France.

I attach a copy of our latest report and hope that your team receives the support and licencing to carry out this iconic reintroduction and wish you every success in the future.

Best wishes



Dr. Allan Mee
Project Manager
Irish White-tailed Sea Eagle Reintroduction Project

Appendix 6 – Statement from NFU

Received on 30th November 2018

NFU Position on White Tailed Eagles, Isle of Wight:

The NFU is generally opposed to species re-introductions as they represent poor value for money and present risks to farm businesses. We feel that efforts would be better directed elsewhere – like supporting the resilience of our existing native wildlife rather than focusing on reintroducing species which may no longer be compatible with our modern day infrastructure.

The NFU and its membership in the Isle of Wight branch have reviewed the proposals to release White Tailed Eagles on the Island, and we have had extensive discussion about the benefits and risks of the project. We have around 150 members on the island, and they have all been contacted to hear their views, as well as holding a meeting to discuss the specific project, where around 70 members attended.

We appreciate the aims of the project. However, we have a number of concerns about the reintroduction including:

- Impact on livestock, especially sheep & lambs
- Impact on general wildlife, rare birds & mammals such as hares
- Impact on game birds such as pheasants, partridge and duck.
- Controls on the project long term – what happens if numbers get out of control?

Following the meeting held with the Roy Dennis Foundation, our members were able to present these concerns to be answered. Unfortunately our members felt that not enough assurances were given and they voted unanimously against the proposed introduction of White Tailed Eagles to the Isle of Wight.

We are aware of the problems caused by White Tailed Eagles to livestock in Scotland, and we are not convinced that the situation would be any different on the Isle of Wight.

The principal concern remains around control of the birds once released, as the licencing process is very long winded, and the burden of proof lies heavily on the farmer. Our members do not feel like they have any mechanism or support to tackle birds which are causing damage and therefore they feel that they have no option but to object to the proposals.

Therefore, unless there are significant changes to the proposals, the NFU and its members on the Isle of Wight are formally objecting to the re-introduction of White Tailed Eagles to the Isle of Wight.

Appendix 7 – Letter of support from Professor Ian Newton

To Natural England

28 November 2018

To whom it may concern,

I have taken a keen interest in the re-establishment of the White-tailed Eagle in the United Kingdom ever since the early 1970s when I was a scientist in the Nature Conservancy based in the Edinburgh headquarters. I was heavily involved in the initial reintroduction by the NC, beginning in 1975, and have remained abreast of developments ever since. I am delighted that the species has also been successfully reintroduced in more recent times to southern Ireland. In addition to my involvement with White-tailed Eagles, I was also involved at an early stage in reintroduction programmes for Red Kites and Ospreys in England, and for California Condors and Aplomado Falcons in the United States. The necessary methodology is now well tried and tested.

I am writing now in strong support of the current proposal to reintroduce the White-tailed Eagle to the Isle of Wight. As is clear from historical records and bone remains, the species was once widespread throughout Britain, around the coastlines and at suitable wetlands inland. The Isle of Wight held one of the last known territories to have been occupied in southern England, and is still surrounded by excellent habitat to support the species, mainly on marine resources. In my view, this is a sound conservation proposal, which should lead to the species re-colonising the island and parts of the south coast of England. The resulting population could in due course join up with developing populations in the Netherlands and France.

Where the species has become re-established in western Scotland, its presence has done a great deal for tourism and local economies, bring in millions of pounds per

year. Any reintroduction in southern England is far enough from the established Scottish population to develop its own tourist potential, if this consideration is at all important.

In short, I am fully supportive of this reintroduction proposal, and hope soon to visit the island with the project team to view the prospective release areas. I hope therefore that Natural England will be similarly supportive, and feel able to grant the licence necessary to carry out this important and exciting project.

Yours sincerely,



Professor Ian Newton, OBE, FRS, FRSE.

Appendix 8 - Statement from RSPB

Received by email on 4th December 2018

Dear Tim and Roy,

I write to outline the RSPB's position about the proposed reintroduction of white-tailed eagles to the Isle of Wight.

The RSPB strongly supports the principle of restoring white tailed eagle across its former range, and welcomes this proposal by the Roy Dennis Wildlife Foundation and Forestry Commission.

The project would see a native species return to a region where it has been extinct for hundreds of years – the last recorded breeding of white tailed eagles on the Isle of Wight was in the 1780s and the species was declared extinct in the UK in the early 20th century. Although successfully reintroduced to Scotland, we believe it would be decades until the species naturally spreads into its former range in Southern England.

As we have said in our public statements on the proposal, we believe that the reintroduction needs to be carefully considered and developed in accordance with internationally agreed IUCN guidelines to ensure that the projects works for local wildlife and local people on and around the Isle of Wight. Specifically, given the detailed experience and knowledge of white tailed eagle ecology and management held by the UK/Ireland White tailed Eagle Project Team, RSPB support would be subject to any recommendations made by this group.

As I think you know, Leigh Lock is our lead contact for this project and please do get in touch with him if you require any further assistance. Good luck as you develop the next stage of your proposal.

Best wishes,

Martin

Martin Harper

Executive Director, Global Conservation

Appendix 9 – Press release issued on 31st October 2018



Press release

Invitation to White-tailed Eagle Project public meetings

Members of the public are being invited to three public meetings to be held on the Isle of Wight on 12th and 13th November to find out more about a proposed project aiming to restore the magnificent White-tailed Eagle to the area.

White-tailed Eagles were once widespread along the whole of the South Coast, from Cornwall to Kent, before being driven to extinction by relentless persecution. The last pair bred on Culver Cliff on the Isle of Wight in 1780.

The Forestry Commission and Roy Dennis Wildlife Foundation, with other partners, hope to undertake a White-tailed Eagle reintroduction project in the south of England and have identified the Isle of Wight as a potential release area due to its proximity to rich foraging areas in the Solent and as a strategic location on the South Coast. The project would involve the release of small numbers of Scottish White-tailed Eagles at a confidential site on the Isle of Wight over a five year period. Evidence from Scotland, where the species has been successfully reintroduced, indicates that these birds would remain to breed in the area once they are four-five years old. Restoring a population of White-tailed Eagles on the Island would help to link populations in Scotland and Ireland with those in the Netherlands and France, and is part of wider international efforts to help the species.

Roy Dennis, who is one of the world's leading experts on White-tailed Eagle reintroductions having helped pioneer the work in Scotland, and who spent a great deal of time on the Isle of Wight as a teenager said, "We believe that the Isle of Wight is highly suitable for White-tailed Eagles. It is the last known breeding site of the species in southern England, the Solent and surrounding estuaries will provide a rich food supply, there are numerous potential nesting sites in woods and cliffs, and also good loafing areas for young birds. Evidence from the Netherlands where there is a small but growing population of White-tailed Eagles indicates that the birds will do very well in this landscape. We are keen to consult the local community, landowners and other stakeholders on the Island to encourage support and involvement in the project, and to identify and resolve any concerns."

The public drop-in sessions will be held at three locations across the Island, as follows:

Mon 12th November: 6-8pm at YMCA Winchester House, Shanklin;

Tues 13th November: 11am – 1pm at 5th Ryde Scout Group Hall, Ryde; and 6-8pm at Cowes Yacht Haven, Cowes.

Members of the public can arrive at any time during the drop-in sessions, and the project team will be present to answer questions and to discuss the proposals. There will also be an opportunity to provide feedback via an online questionnaire.

In addition to the conservation benefits, it is thought that the project would give a significant boost to the Isle of Wight economy, including in winter. In Scotland eagle tourism is extremely popular and recent reports have shown White-tailed Eagles generate up to £5 million to the economy of the Isle of Mull each year, and £2.4 million to the Isle of Skye.

For more information about the project please visit <http://www.roydennis.org/isleofwight/> which includes a comprehensive frequently asked questions section.

ENDS

Photo editor

Image credit: Mike Crutch

Notes to Editors

- The Roy Dennis Wildlife Foundation was established in Scotland in 1995 as the Highland Foundation for Wildlife. It is a non-membership charitable trust dedicated to wildlife conservation and research, with a special emphasis on species recovery projects and the restoration of natural ecosystems.
- The Forestry Commission is the government department responsible in England for protecting, expanding and promoting the sustainable management of woods and forests and increasing their value to society and the environment. <http://www.forestry.gov.uk/england-about-us>
- England's Woods and Forests are cared for by Forest Enterprise England, an agency of the Forestry Commission. <http://www.forestry.gov.uk/englandsforests>
- The White-tailed Eagle Project is a collaborative partnership between The Roy Dennis Wildlife Foundation and the Forestry Commission. The partnership is working together to explore the feasibility of restoring the White-tailed Eagle to the South Coast of England through a reintroduction project based on the Isle of Wight. Further information can be found at <http://www.roydennis.org/isleofwight>
- The White-tailed Eagle, often called the Sea Eagle, is the fourth largest eagle in the world and is associated with sea coasts and large inland waters.
- The dark brown adult with its 2.5 metre wingspan is a distinctive bird with a white head and tail. Juveniles are initially brown all over before gradually moulting to adult plumage after four years.
- The species ranges from Greenland to northern Japan and usually nests in cliffs or tall mature trees.
- There are now over 130 pairs of White-tailed Eagles in Scotland following a successful reintroduction project. The species has also been reintroduced to Ireland.

- As a generalist predator White-tailed Eagles take fish, birds and medium-sized mammals and also scavenge carrion, which can be an important element of the diet at certain times of the year.

Appendix 10 – Project leaflet

Isle of Wight Reintroduction

The Forestry Commission and Roy Dennis Wildlife Foundation, with other partners, hope to undertake a reintroduction project in the south of England and have identified the Isle of Wight as a potential release area. The Solent and surrounding estuaries would provide a rich food supply and there are potential nesting sites in woods and cliffs. Establishing a population here would enable the birds to spread east and west along the South Coast. It would also help to link the Scottish and Irish White-tailed Eagle populations with new and expanding populations in the Netherlands and France. Furthermore, we believe that the White-tailed Eagle could act as an important flagship species for the conservation of coastal and estuarine habitats.

What would the project involve?

Juvenile White-tailed Eagles would be collected from nests in Scotland and translocated to the Isle of Wight in late June. They would be held in special cages in a quiet location for approximately four weeks before being released. Food would be provided close to the release site during the autumn and winter before the young eagles become independent.

Up to 12 birds would be translocated each year over a five year period. The project requires a special licence from Scottish Natural Heritage to collect eagle chicks from Scottish nests, and permission from Natural England to release them on the Isle of Wight.

When would the first birds breed?

Young White-tailed Eagles do not breed until they are four or five years of age. It is hoped that an initial population of six to eight pairs would become established on the Isle of Wight and wider Solent area, with birds spreading east and west along the South Coast thereafter.

Find out more and give us your views

We are keen to consult with the local community and key stakeholders to encourage support and involvement with the project, and to identify and resolve any concerns.

To find out more about the plans, and to give your views via a simple online questionnaire, please visit www.roydennis.org/isleofwight

What is a White-tailed Eagle?

The White-tailed Eagle, often called the Sea Eagle, is the fourth largest eagle in the world and is associated with sea coasts and large inland waters.

The dark brown adult with its 2.5 metre wingspan is a distinctive bird with a pale head and white tail. Juveniles are initially brown all over before gradually moulting to adult plumage after four years.

The species ranges from Greenland to northern Japan. White-tailed Eagles nest in cliffs, tall mature trees and even on the ground in treeless areas of the world. The huge nest, built in quiet areas, is used to raise one or two young.



What do they eat?

The White-tailed Eagle is a generalist raptor, often eating carrion such as dead mammals and birds, and fish dead in the water and along tidelines; they rob gulls and otters of food, and will hunt water birds, small mammals and fish for themselves. They tend to favour the most seasonally abundant prey. Fish are often particularly important in spring and summer, with birds and mammals favoured in autumn and winter.

Inside photos by Mike Crutch, cover photo by Roy Dennis

Assessing the feasibility of a White-tailed Eagle reintroduction on the Isle of Wight



Did they occur in England in the past?

The White-tailed Eagle was formerly widespread across southern Britain before suffering intense persecution during the Middle Ages, which led to its eventual extinction as a breeding species by the early nineteenth century.

Evidence suggests that White-tailed Eagles likely bred across the whole of the south coast, from Cornwall to Kent. The last known pair in southern England bred on Culver Cliff on the Isle of Wight in 1780.

The Government has flagged the White-tailed Eagle up as a key consideration for reintroduction in its 25-year environment plan.



Scottish White-tailed Eagles

White-tailed Eagles were successfully reintroduced to Scotland by the Scottish Government through translocations of young eagles from Norway to the island of Rum, in the Hebrides, between 1975 and 1985. Two subsequent releases were carried out in Wester Ross and Fife.

The population in Scotland, mainly in the north and west, is now about 130 pairs. Eagle tourism is extremely popular and recent research has shown the presence of the birds generates up to £5 million to the economy of the Isle of Mull each year, and £2.4 million to the Isle of Skye.

Appendix 11 – Disease/Hazard Risk Assessment

Hazard	Justification for Hazard Status	Risk Assessment	RISK MANAGEMENT	
			Risk Evaluation	Risk Options
<i>Aspergillus fumigatus</i>	<i>Aspergillus fumigatus</i> is a ubiquitous fungus. Raptors can usually mount an effective immune response but aspergillosis occurs in captive raptors in association with damp and poorly ventilated surroundings favouring proliferation of the fungus and stressed birds (Dahlhausen 2006). Reintroduction may represent a stressor for WTE and render them susceptible to aspergillosis.	There is a likelihood of infection and disease, if poor husbandry and stressful conditions allow. Disease cases represent a significant cost to the reintroduction programme. Overall risk is considered LOW.	Preventive measures are necessary to reduce the risk.	Provide well-ventilated (minimum ten air changes an hour) dry environment for the birds with minimal human interference. If birds show inactivity, lethargy or lack of appetite, investigate their health immediately.
Highly Pathogenic Avian Influenza viruses (HPAI), and primarily the H5N8 and N6 subtype.	H5N8 clade 2.3.4.4b viruses caused numerous cases of lethal infections in WTE (affecting mainly young eagles < 5 years) in Germany during winter 2016/2017 (Krone 2018). Further fatal infections of WTE with HPAIV H5N8 were recently reported around the Baltic Sea from Finland (Isomursu et al 2017), Denmark, and Sweden (World Organisation for Animal Health 2018). In addition in 2018 a juvenile WTE was reported to be infected with HPAIV H5N6 clade 2.3.4.4b in Ireland (Animal Disease Notification System 2018). In the UK a small number of wildfowl have been found to be infected with H5N6 as well as Common Buzzards, Northern Goshawk and Peregrine (DEFRA 2018). These virus strains may become a new health threat to WTE across its range in Europe. Positive cloacal swabs suggest that eagles can spread the virus with their faeces	Of free-living wild animals, waterfowl appear to be most susceptible to HPAI. The transmission route for HPAI in wild bird populations is faeco-oral (Stallknecht and Brown 2007) but HPAI can persist for extended periods in water (Brown et al 2007) and surface water contaminated by infected waterfowl has been suggested as a source of HPAI for other birds (Stallknecht et al 2007). Given that WTE are carrion feeders and that waterfowl is usually the main prey in autumn and winter, WTE may be repeatedly exposed, particularly as diseased and handicapped waterfowl are an attractive prey for the eagles. Individual birds may acquire immunity against such pathogens but young birds that have yet to develop immunity are thought to be particularly susceptible. Nevertheless to date there have been only limited cases of H5N6 and no cases of H5N8 in the UK, and so the overall risk is considered LOW.	Preventive measures should be employed to reduce the disease risks	Reintroduced WTE will be closely monitored by VHF and satellite tracking. If a sick bird is detected it will be captured and returned to captivity, under quarantine conditions, and treated and rehabilitated if possible. The sick WTE will be tested for HPAI. Any WTE that are found dead will be tested for
<i>Salmonella</i> spp	Infections induced by Salmonella, including <i>S. enterica</i> Typhimurium have the potential to cause the death of WTEs, particularly those that are immune-suppressed.	Experiences during the Rutland Water Osprey translocation demonstrate that immune-suppressed birds may be susceptible to Salmonella infections. This may be exacerbated by poor husbandry or	Preventive measures should be employed to	No runt WTE chicks will be collected. Transport crates and vehicles must be cleaned and disinfected prior to use, or new crates used. Use a bactericidal and

	<p>Although cases are rarely registered in free-living birds, a White-tailed Eagle was recently found to have died of a <i>Salmonella</i> infection in Poland (Zieba et al 2018). During the first year of the Rutland Water Osprey translocation licence restrictions permitted the collection of runt chicks only. These individuals were found to be susceptible to disease and four birds contracted salmonella infections that ultimately resulted in mortality.</p>	<p>stressful conditions. Overall risk is considered to be LOW.</p>	<p>reduce the disease risks</p>	<p>virucidal disinfectant at the appropriate dilution rate (follow manufacturers' guidelines). Strict hygiene practices should be implemented at the aviaries and in the preparation of food. This should include</p> <ul style="list-style-type: none"> • Maintenance of a clean environment throughout: soiled bedding and food removed regularly, and clean, dry bedding provided when required. • Disposable gloves worn during food preparation and when placing or removing fish from release pens. • Food preparation utensils disinfected daily using aviary products. • Faecal samples from any birds showing signs of ill health should be immediately tested for <i>Salmonella</i> spp.
<p>Poisoning due to misuse or abuse of agricultural chemicals</p>	<p>Poisoning of WTE due to misuse and abuse of agricultural chemicals has occurred in both Scotland (RSPB 2008) and in Ireland (Mee et al. 2016) as well as Russia, Germany and Austria (Krone et al 2000; Helander and Stjernberg 2002) . In Ireland it has led to the loss of several breeding birds (Mee et al 2017)</p>	<p>WTE, as carrion eaters, have a probability of being poisoned by agricultural chemicals. In attempting to kill pest species such as corvids, carcasses, to which the poison has been added (poisoned baits), may be left out in the open. Where misuse of chemicals occurs, for example in the use of anticoagulant rodenticides, the target pest species may die in the open. WTE, as a carrion eater, may feed from such carcasses. The likelihood of exposure of WTE is high and there is medium likelihood of severe disease if a bird is exposed. However, knowledge that the reintroduced red kite population was able to become established in the UK despite this threat and that illegal poisoning has also declined in UK suggests that the overall risk is LOW.</p>	<p>Preventive measures should be employed to reduce the disease risks.</p>	<p>An education campaign to remind landowners of the dangers of the attempted poisoning of pest species such as corvids, in the vicinity of the WTE reintroduction site might be of value. Similarly a targeted education campaign on the safe use of anticoagulant rodenticides might be of value. Any WTE found dead will receive a full post-mortem examination and if poisoning through agricultural chemicals is diagnosed the appropriate authorities will be notified.</p>
<p>Collision with wind turbines</p>	<p>38% of 61 radio-tagged golden eagles (<i>Aquila chrysaetos</i>) died following collisions with wind turbines in California, USA (Hunt et al 1998) but this was in a raptor hotspot.</p>	<p>There have been increasing numbers of wind turbines built in the UK in recent years, particularly in coastal area. Furthermore the gregarious behaviour of WTE and their high density in coastal</p>	<p>Preventive measures should be employed to</p>	<p>There should be a distance of at least 10kms (WTE home range recorded as 4.5km² in one bird (Krone et al 2008)) between a wind farm and the reintroduction</p>

	Dahl et al (2012) found that the presence of wind farms in Norway reduced WTE breeding success due to mortality and displacement.	populations precipitates a low likelihood of collisions (Helander and Stjernberg 2002). The likelihood of exposure is considered to be low, but if exposed, there is a potential of death. Overall there is a low likelihood that the reintroduced population will be affected as windfarms are scarce on the Isle of Wight, therefore the overall risk is LOW.	reduce the disease risks.	site in an attempt to reduce mortality from wind turbine collisions in the early stages of the reintroduction.
Collision with electricity pylons or electrocution	8 of 85 WTEs released in Fife were killed by powerline strikes or electrocution (RSPB 2016). WTEs have also been found dead from electrocution, and in association with powerline collisions in other European countries and England has similar types of powerlines. Krone et al (2000) showed that electrocution was associated with 11 deaths and collisions with wires occurred in seven WTE of 120 found dead. In Finland a further four of 11 WTE examined were electrocuted (Krone et al 2006).	Stable or increasing populations of WTE in Finland, Sweden, Germany and Norway appear to be able to sustain losses from these causes without a reduction in numbers (Helander and Stjernberg 2002; Isomursu et al 2018) but a recently reintroduced small population in England may be more susceptible to deaths from this cause. Nevertheless the overall risk is considered LOW	Preventive measures should be employed to reduce the risks.	There should be no power lines in the immediate vicinity of the release site in order to reduce the risk of collisions or electrocution in the early stages of the reintroduction when the population will be most susceptible.
Lead poisoning	Lead shot is used in southern England to kill terrestrial prey and these carcasses are a source of lead for carrion-eating WTE. Lead poisoning was found to account for 31% of deaths of 123 WTEs found dead in Finland between 2000-2014 (Isomursu et al 2018). Similarly 25% of 120 WTSE found dead in Germany were presumed to have died of lead intoxication (Krone et al 2000). Lead poisoning has also resulted in the death of WTEs in Ireland (Mee 2017).	As carrion eaters WTEs are susceptible to lead poisoning. Shot carcasses will likely be available to WTE because these carcasses are known to be consumed by other raptors in England (Pain et al 2007). In England the lead shot regulations ban the use of lead shot over all foreshore, over specified SSSIs, and for the shooting of all ducks and geese, coot and moorhen, wherever they occur. Furthermore, the reintroduced Red Kite population in southern England was able to become established despite the threat of lead poisoning. This indicates that the overall risk is LOW.	Preventive measures should be employed to reduce the risks.	Individual reintroduced WTE must be closely monitored, by VHF and satellite tracking and strenuous efforts made to capture them when sick. It is possible to treat cases of lead poisoning with a medium likelihood of success. A local education campaign to remind landowners of the dangers of leaving shot carcasses on the land for carrion-eaters would be advisable.

Appendix 12 – Letter from Prof. Anthony Fox



Roy Dennis
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Dear Roy,

Impacts of White-tailed Eagles on wintering Brent Geese and gull/tern colonies

Thank you for your letter regarding the effects of the dramatic increases in White-tailed Eagles in Denmark on other avian features of protected areas. I regret that this missive will be a very long response to say that we simply do not know! We are unable to undertake the type of research needed to provide a definitive answer to the question about cause and effect in relation to eagle presence and prey abundance and distribution. Nevertheless, for what they are worth, we can offer some experiences to date.

It is the case that we now have White-tailed Eagles occupying over 100 breeding sites (from none in the early 1990s), not all of these are successful, but multiple pairs nest at some of the best sites. Half of the successful nests fledge two offspring, so our population is increasing and seemingly doing very well. This has generated a large pool of non-breeding birds as well as the adults, so your estimate of 400 wintering birds may actually be an underestimate.

Particular aggregations of wintering eagles occur in the Danish Wadden Sea, where the extensive areas of intertidal *Zostera* and saltmarsh attract very large numbers of waterbirds, including dense flocks of staging Dark-bellied Brent Geese in autumn. We cannot say with any certainty that increasing numbers of eagles have not affected the distribution of the birds, nor increased their rate of turnover (i.e. pushing them to travel down the flyway more rapidly than in their absence). However, there has been little obvious effect on the annual counted numbers of Dark-bellied Brent Geese and their phenology there. Wadden Sea counts were constant during the 10 years up to 2014/15 and showed long-term (27 year) declines in line with the overall declines in the flyway population. Nothing has apparently changed since that time.

Bioscience

Anthony David Fox
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I myself have seen a White-tailed Sea Eagle feeding on a Brent Goose carcass on Wadden Sea mudflats, but the geese aggregate around their food supply and there is no evidence of shifts in distribution of the geese, or of any overall decline in specific areas because of the presence of increasing numbers of eagles. Brent Geese, like the dabbling ducks that also occur in very large numbers in the same area, are very capable fast-flying birds, adept at avoiding the generally cumbersome efforts of eagles to kill them. It is the belief of my colleagues of whom I have canvassed here, that most geese and ducks taken by eagles are likely injured or sick, features that are easily detectable to eagles that regularly test the manoeuvrability of these species but seem relatively rarely to be successful in making kills of healthy flocks of these species.

— The same is not true of Coot, since during aerial and ground surveys, we have frequently witnessed flocks of this species being continually harassed by eagles, often in prolonged coordinated attacks that cause the Coot to tightly pack in open water. This species is a much more cumbersome and unwilling flyer. Coot suffer disproportionate attention from and predation by eagles, compared to most other wintering waterbird species with which they associate. Intriguingly, there have been declines in wintering Coot numbers in shallow waters in Denmark in recent years that we cannot explain by shifts in wintering distribution associated with climate change. Hence, there is a possibility the distribution and abundance of this species has been affected here because of eagles, although we lack any evidence to definitively make this link.

— We know of one island in Mariager Fjord in eastern Jutland where the increasing presence of eagles apparently resulted in the eventual abandonment of a colony of Sandwich Terns, but how does one truly determine cause and effect in such situations? There is no doubt that eagles (including many sub-adult birds) favour offshore islands and islets for resting, where they potentially compete for space with breeding terns and gulls. However, with the exception of the above example, my colleague, Thomas Bregnballe, who monitors all colonial nesting species in Denmark, is not aware of any other examples of colony desertion by gull and tern species due to eagle presence. On the contrary, there are several island sites, which eagles frequent throughout the summer, which retain their breeding gull and tern colonies.

— The same is not true for Cormorant tree-nesting colonies in Denmark. For this species, we have several instances where regular depredation of Cormorant young in the nest by eagles has led to major declines in overall breeding numbers and in a very few cases, complete desertion of the colony. Again, you have to ask: can we really be sure this is truly cause and effect?

I am sorry to be so frustratingly the eternal scientist coming with caveats and conditions! It is impossible to state with scientific certainty that the eagles have not had effects on staging Brent Geese and nesting gull and tern colonies, with the possible exception single instance of the Mariager Fjord Sandwich Terns. What we can say is that in all other situations, the effects of the arrival and increase in numbers of eagles to the

present day seem not to have been suffice to reduce the attractiveness of SPA/Ramsar sites designated for species such as staging Brent Geese and breeding gulls and terns. This may not be so in the case of Cormorant breeding colonies and wintering Coot.

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Hope this may be of some use in this discussion.

With all best wishes

Yours sincerely



Tony
Professor Anthony David Fox

Appendix 13 – Public consultation questionnaire



Please give us your views of the proposed White-tailed Eagle Project

1. Are you in favour of a White-tailed Eagle reintroduction on the Isle of Wight?

Yes | No | Not sure

please delete as appropriate

If you wish, please explain the answer you have given _____

2. Do you live on the Isle of Wight?

Yes | No

If no, please tell us which county you live in? _____

3. Do you work on the Isle of Wight?

Yes | No

Please specify your occupation? _____

4. What is your gender?

Male | Female

5. What is your age?

Under 18 | 18-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+

please circle

6. Are you interested in any of the following activities?

Birdwatching | Walking and hiking | Cycling | Fishing |

Shooting (gamebirds or wildfowl) | Horse riding

please circle

7. Have you visited the Isle of Wight as a tourist?

Yes | No | Not applicable

8. If the project was to go ahead would you be more likely to visit the Isle of Wight in order to see White-tailed Eagles?

Yes | No | Not applicable

Thank you very much for taking the time to complete this questionnaire.

The information you have given us will be held by the Roy Dennis Wildlife Foundation and shared with the Forestry Commission and Natural England. We will use this information to help substantiate support for the release of White-tailed Eagles on the Isle of Wight. All information will be processed in accordance with the requirements of current data protection legislation.