Appendix 1: Ecological Evidence Report

Derogation Case

2024

Revision	Comments	Author	Checker	Approver
FINAL	Final	RPS/NIRAS	RPS	RPS

Approval for Issue		
For and on behalf of Ossian OWFL	Andrew Blyth	28 June 2024

Prepared by:	**RPS Energy**
Prepared for:	**Ossian Offshore Wind Farm Limited (OWFL)**
Checked by:	**Davy Still**
Accepted by:	**Fraser Malcolm**
Approved by:	**Andy Blyth**

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1. INTRODUCTION

1. This document reviews and presents evidence in support of the compensation measures proposed by Ossian Offshore Wind Farm Limited (Ossian OWFL) (hereafter referred to as “the Applicant”) as a result of potential Adverse Effects on Integrity (AEoI)associated with the Ossian Array (hereafter referred to as “the Array”).

2. The Applicant has provided information to support a Section 36 Application for the Array, specifically to support the Scottish Ministers making an Appropriate Appraisal (AA) decision as documented in the Report to Inform an Appropriate Appraisal (RIAA) (Ossian OWFL, 2024).

3. The RIAA provides information that enables the Scottish Ministers to make an AA of the relevant Special Protection Areas (SPA). The evidence presented within the RIAA concluded that the Array could have an AEoI for the qualifying seabird species of seven SPAs, when considered in combination with other plans or projects. Those species are:

- razorbill *Alca torda;*
- black-legged kittiwake *Rissa tridactyla* (hereafter kittiwake); and
- northern gannet *Morus bassanus* (hereafter gannet).

4. The compensation measures proposed by the Applicant therefore focus on the above three seabird species.

1.1 SUPPORTING COMPENSATION DOCUMENTS

5. This document focuses specifically on the ecological evidence in support of the proposed compensation measures. The Compensation Plan (appendix 2) sets out all other detail and information required to provide confidence to the decision makers that the compensation measures set out below are appropriate (i.e. that they are feasible, effective, securable, deliverable, can be monitored and have associated adaptive management plans.)

6. Furthermore, the contribution of each compensation measure to maintain the coherence of the designated site network for each relevant species requiring compensation is discussed within the Compensation Plan. It is therefore recommended that this Ecological Evidence Report is read in conjunction with the Compensation Plan.

7. Further information relevant to the RIAA conclusion, along with the species number requiring compensation (i.e., the level of impact) and the relevant SPAs where impact has been apportioned, are presented within the RIAA (Ossian OWFL, 2024).

1.2 GUIDANCE

8. It is essential for all compensation measures to align with compensation guidance available at the time of planning. In developing compensation, the Applicant has followed the most up-to-date guidance on compensation measures, including relevant sections of the recent Scottish Government’s “*Framework to Evaluate Ornithological Compensatory Measures for Offshore Wind – Process Guidance Note for Developers*” (Scottish Government, 2023a) (see the Compensation Plan (appendix 2) for further detail).

1.3 DOCUMENT STRUCTURE

9. Each respective compensation measure section in this report is structured in the following way:

- Introduction – this provides an introduction and description of the relevant measure and which species from the list above it relates to;
- Evidence – this section describes and signposts relevant evidence in relation to each measure and species, including information describing how the measure is technically feasible and effective;
- Best Practice Approaches and Examples – provides a summary of best practice approaches to delivering compensation, lessons learnt and specific examples in support of the compensation measure; and
- Summary – summarises the evidence for that compensation measure.

1.4 COMPENSATION MEASURES

10. In order to determine the most suitable compensation measures for the Array a three-step process was followed (Figure 1.1).

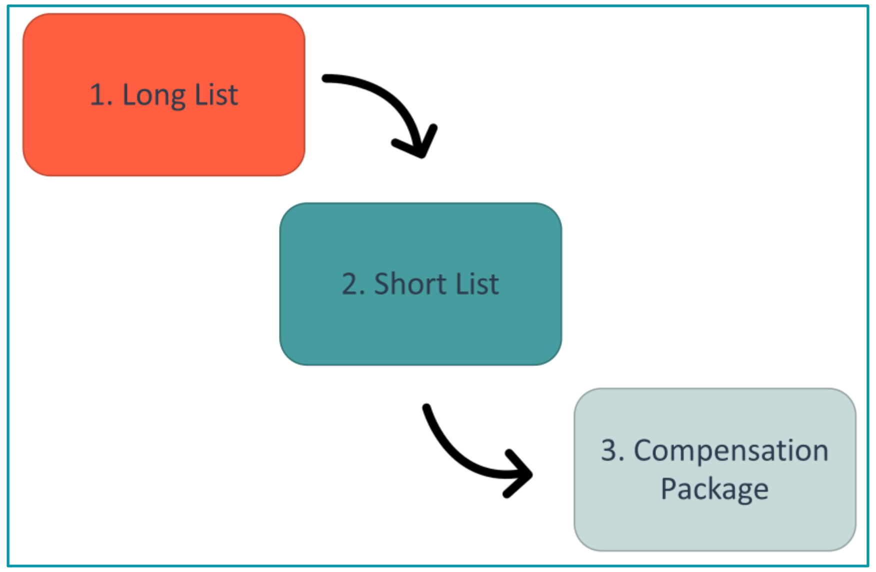


Figure 1.1: Three Step Process Followed to Identify Compensation Measures for The Array

11. Potential compensation measures were identified via a thorough investigation into factors influencing seabird productivity and adult survival. Options to reduce or remove these influencing factors were collated into a compensation long list and then scored using relevant guidance parameters. Subsequently the long list was refined to a short list which allowed further exploration of each compensation measure in line with the requirements of compensation set out in the aforementioned compensation guidance. A comprehensive account of the compensation measure identification undertaken by the Applicant is provided within the Compensation Plan (appendix 2).

12. To permit detailed planning of compensation which is also proportionate to the level of impact anticipated as a result of the Array, a package of compensation measures has been proposed by the Applicant. The package of compensation measures has been designed to be relevant to the species requiring compensation, and effective with regards to its ecological function, scalability and flexibility. Table 1.1 presents the compensation package proposed by the Applicant and evidenced within this Ecological Evidence Report.

Table 1.1: Compensation Package Details

Compensation Measure	Description	Species of Relevance	Relevant Section of this Report
Mink Control in Scotland	Control of American mink *Neovision vision* (hereafter referred to as mink) at key locations in Scotland to reduce detrimental impacts associated with mink presence at seabird colonies including reduced productivity and adult survival. This measure would be led by the Applicant and delivered in conjunction with various organisations (see the Ossian Compensation Plan for further detail).	Razorbill and kittiwake	Section 0
Seabird Bycatch Reduction	Application of bycatch reduction techniques to reduce the level of gannet and razorbill bycatch in Portuguese fisheries within the species' migratory range. This measure would be led by the Applicant and delivered in conjunction with the Portuguese Society for the Study of Birds (SPEA) (see the Ossian Compensation Plan for further detail).	Gannet and razorbill	Section 3

2. MINK CONTROL IN SCOTLAND

1.5 INTRODUCTION

13. Seabirds have a number of natural predators distributed across their range. Natural predators generally pose a low risk to breeding seabirds as they have co-evolved with predation pressure and have mechanisms or behaviours to withstand it. Seabirds primarily use avoidance to counter such predation. This is why they often select nesting areas like cliffs, offshore islands, or secluded boulder fields or beaches where the threat of predators is minimal or non-existent (Furness and Birkhead, 1984). When mammals, which would not typically be present, are introduced into these habitats, the consequences for bird populations globally can be severe (e.g. Courchamp *et al.,* 2003; Jones *et al.,* 2008; Russell *et al.*, 2005; Towns *et al.,* 2011).

14. Invasive mammalian species influence colonies by (depending on the species) predating eggs, chicks and adults, changing the distribution of breeding colonies and changing nesting habitat. There are many species that have been introduced into sensitive island and mainland ecosystems within the UK and the Channel Islands, with a number of offshore islands around the UK and the Channel Islands having established populations of invasive mammals, originating from mainland Britain (e.g., escapees from fur farms) or from further afield (e.g. through stowaways or shipwrecks) (Thomas *et al.,* 2017; Stanbury *et al.,* 2017).

15. The American mink *Neovison vison* (hereafter mink) is a non-native species established across much of the UK and Ireland. In the past century, the fur farming industry has caused mink to artificially spread from its native range in North America, across the globe. Mink are now prevalent in 28 countries across Europe, Asia, and South America, making them one of the most widely distributed and destructive invasive species in the world (Bonesi and Palazon, 2007; Fasola *et al.*, 2021).

16. The concept of this compensation measure is to continue, enhance and intensify the current Scottish Mink Control Project (MCP) (which cover trapping and invasive habitat management) in partnership with Scottish Invasive Species Initiative (SISI). The MCP operates across large areas of Scotland, protecting native Scottish wildlife, including razorbill and kittiwake, from invasive mink. The MCP currently has funding in place until March 2026 however, without support from Ossian, it has no current funding to support the continued existence of the project after this date.

17. The following sections of this report outline the evidence conveying the significance of mink predation to seabirds across the colonised range of the invasive species. Further detail of how the compensation measure would be secured and delivered in partnership with SISI is provided within the Compensation Plan (appendix 2). The Compensation Plan also includes information on scale, location, design, monitoring and adaptive management.

1.6 EVIDENCE

18. Mink have been documented as a threat to seabird colonies in every part of their invasive range (Spatz *et al.,* 2022; López *et al.*, 2023; Bonesi and Palazon, 2007; Hipfner *et al.,* 2010). The Scott Islands in British Columbia has historically supported the largest population of breeding seabirds in the eastern Pacific Ocean, south of Alaska (Hipfner *et al.,* 2010). Fur farmers introduced mink to the islands in the 1930's. They have since had negative impacts on seabird populations and mink removal has been considered a primary conservation priority (Hipfner *et al.,* 2010). Similarly, a study in the Cape Horn Biosphere Reserve in Chile showed seabirds' susceptibility to mink predation, particularly on nests on shores with rocky outcroppings and on highly concealed nests (Schüttler *et al.,* 2009).

19. In Iceland, mink colonised islands over 10 km from the coast by 'island hopping', and have had an adverse impact on Icelandic seabird populations, particularly Atlantic puffin *Fratercula arctica* (hereafter puffin), black guillemot *Cepphus grille* and guillemot, with 200 guillemot chicks found in a single mink den in one example (T. Björnsson *pers. comm* in Clode and Macdonald, 2002; Björnsson and Hernsteinsson, 1991; Johannesson and Gudjonsdotti, 2007; Stefansson *et al.,* 2016). Mink are also the reason for the decline of the only two remaining puffin colonies in France, at Ouessant and Baie de Morlaix (Harris and Wanless, 2011).

20. Mink have spread widely throughout Europe since their introduction in the 1920s (Macdonald and Harrington, 2003). Mink that escaped from fur farms began spreading through the Western Isles of Scotland in the 1950's (Boyd and Boyd, 1990). The prevalence of mink across Scotland, particularly along the coasts, has been a reason behind a complete or near-complete loss of breeding seabirds from many Scottish archipelagos, sea lochs, firths and sounds (Craik, 1997; Fraser *et al.,* 2015). They have contributed to 34 whole colony extinctions of terns, gulls, storm petrels *Hydrobates* spp., Manx shearwater *Puffinus puffinus* and puffin (Mitchell and Daunt, 2010).

21. Mink distributions in the Western Isles of Scotland were highly correlated to that of seabird colonies, and in areas of high mink presence breeding success is lower or in many cases fails altogether (Clode and Macdonald, 2002; Craik, 1995). Between 1989 and 1995, they led to extensive breeding failures that eventually led to whole colony failures among black-headed gulls *Chroicocephalus ridibundus*, common gulls *Larus canus*, and common terns *Sterna hirundo* in colonies on small islands along a 1,000 km stretch of mainland coast in west Scotland (Craik, 1997).

2.1.1. IMPACTS ON RAZORBILL

22. Razorbill have been shown to be extremely vulnerable to nest predation by mammals at breeding locations, and have well-documented instances of substantial mink predation events (i.e. Thomas *et al*., 2017 and Nordström *et al*., 2003). Predation can result in adult mortality and low mean chick survival rates and productivity. Nesting colonies have also been known to redistribute to potentially less favourable locations that are more inaccessible to predators (Barrett, 2015, Booker *et al.*, 2018).

23. The Baltic Islands host several important seabird colonies. However, since the arrival of mink, razorbills in particular have suffered considerable declines (among other species including black guillemot) (Olsson, 1974; Hario *et al*., 1986; Jönsson and Rosenlund, 1990; Hagemeijer and Blair, 1997; Nordström *et al.,* 2003) as these species often breed in accessible crevices, with adults also at high risk of predation from mink (Nordström *et al.,* 2003).

24. The presence of mink across seabird breeding colonies in southeastern Finland resulted in a reduction in breeding pairs of razorbill with a 60% reduction in pairs, and a 78% decline in the number of razorbill

colonies (i.e., localised extinctions) between 1973-1974 and 1994 (Miettinen *et al.,* 1997). As mink inhabited the locations from the 1970s (Kauhala, 1996, 1998) it's suggested that the occurrence of mink is the main cause of impact (Hario *et al*., 1986).

25. Nordström and Korpimaki (2004) suggest that since the introduction of mink in 1973-1974 at the locations in southwest Finland (and considered in Nordström *et al.,* 2003), razorbill had become extinct as a breeding species in historic breeding locations, with the remaining populations having redistributed their breeding locations to more isolated islands (noting that overall the number of breeding pairs had reduced by 60% during that time period (Miettinen *et al.,* 1997). A very similar issue was documented by Andersson (1999) in Baltic Sweden where mink also eliminated many small seabird colonies including razorbill (and other species), eventually causing the concentration of the remainder onto inaccessible islands to the mink. Additionally, a mink control programme in the Finnish Baltic Sea removed the species from several small islands and found increases in the breeding densities of seabirds. Razorbill and black guillemot were both extinct from the islands, but recolonised following the mink eradication (Nordström *et al.,* 2003, Banks *et al.,* 2008).

26. Barrett (2015) recorded exceptionally low razorbill chick mean survival rates as a result of high mink predation rates at Hornøya, northeast Norway. Productivity of puffin was also impacted at that site due to mink predation (Fayet *et al.,* 2017).

27. Within almost all the aforementioned examples of mink impacts on razorbill distribution and population, black guillemot is also mentioned to undergo similar, if not more drastic results as a result of mink presence at breeding colonies. This is not surprising given the very similar and often overlapping nesting preferences for the species within secluded crevices. Razorbill actually have two nesting strategies; they will either lay an open nest on vertical cliffs or, in the absence of cliffs, in an enclosed cavity (which is the preference for black guillemot (Mitchell *et al.,* 2004). Both nesting strategies are vulnerable to predation where their distribution overlaps with invasive mammalian species, such as mink (Booker *et al.,* 2019). Furthermore, both species provision their young within crevices for several weeks (the adopted nesting strategy for razorbill) adding to the vulnerability of the species. Examples show black guillemot declining as a result of mink predation, which can indicate similar impacts on razorbill as a result of their nesting strategy.

28. This theory is supported by the authors of the Seabird Populations of Britain and Ireland (JNCC) (Mitchell *et al.,* 2004) who suggest it is likely to be more than just a coincidence that razorbill and black guillemot have undergone large scale population declines where their nesting habitat coincides with mink present along the north-west mainland coast of Scotland (from Lochaber to north Caithness).

29. Examples of mink predation of razorbill are limited by both the difficulty in accessing or even observing razorbill nesting locations, as well as the practice of mink to cache their prey in dens, which are difficult to find and access. For example, Birks and Dunstone (1984) recorded guillemot and razorbill cached within mink dens on the Galloway Coast, Scotland, and in one study, 200 guillemot chicks were found in a single mink den (T. Björnsson *pers. comm* in Clode and Macdonald, 2002). It is therefore highly likely that mink predation of razorbill is under-represented when compared with more visible nesting species such as gulls and terns.

2.1.2. IMPACTS ON KITTIWAKE

30. Kittiwake are often able to avoid mammalian predation due to their nesting habits, but have been documented as being particularly vulnerable to mink predation on the Scottish east coast where both kittiwake and mink ranges overlap in some locations when not covered within the MCP project coverage. Furness *et al.*, (2013) notes two counts of mink predation at British kittiwake colonies, one of which was at St. Abbs head, Scotland, where the individual mink predated half of the kittiwake colony during one breeding season. Additionally, fully grown kittiwake chicks at Troup Head in north-east Scotland (part of the Troup, Pennan and Lion's Head SPA) were predated by mink, with large numbers (more than 50) of carcasses reported (X Lambin, *pers. comm*.). Additionally, in northern Norway, Dunstone (1993) reported mink to have decapitated kittiwake chicks.

31. The images in Figure 2.1 depict mink approaching a kittiwake colony (bottom left) where they are easily able to access kittiwake nests (bottom right) which are usually inaccessible to mammalian predators. The top two photos show mink predating both kittiwake chicks and adults. Personal accounts from Terje Kolaas at Ekkerøya Bird Cliff in the Varangerfjord, Norway report that a pair of mink had their den in close proximity to the pictured kittiwake colony in Figure 2.1 During just four hours of observation, 18 kittiwake chicks and two adults were predated and taken back to the minks' dens (T. Kolaas, *pers comm*.).

Figure 2.1: Images of mink predating kittiwake. Top left: mink eating adult kittiwake. Top Right: mink eating kittiwake chick. Bottom left: mink approaching a kittiwake colony. Bottom right: mink reaching into a kittiwake nest. Images by Terje Kolaas (Kolaas, n.d)

2.1.3. MINK DISPERSAL AND COLONY ACCESS

32. The highly mobile nature of mink and the predicted probability of mink occurrence in Scotland imply a substantial threat to seabird colonies (Figure 2.2). Numerous studies observe a vastly greater-than-expected innate dispersal ability for mink when compared to similarly-sized carnivorous mammals (Melero *et al.*, 2018; Fraser *et al.*, 2015). In one study, 77% of mink dispersed and settled into non-natal patches, with 20% of mink dispersing > 80 km from their natal patch (Melero *et al.*, 2018). Female mink typically give birth to a litter of three to six kits each year, though larger litters of 10 and 12 kits have been recorded (Melero *et al.,* 2015).

33. Landscape heterogeneity and a lack of traversable waterways is not a barrier to mink dispersal; in one study, 32% of recaptured mink were caught in different river catchments from their natal patch, implying overland dispersal independent of waterways (Oliver *et al.*, 2016).

34. It can be difficult to predict mink incursion due to the confounding influence of current control programmes (Lieury *et al.*, 2015; Oliver *et al.*, 2016). However, multiple studies using sophisticated population modelling note that the long-range dispersal ability of mink requires a large spatial scale for effective control and a

buffer exclusion area of at least 30km based on average dispersal distances (31 km for females and 38 km for males), which range from 4 km to 100km (Oliver *et al.*, 2016). Furthermore, even with such an exclusion area, study authors note that there would be a requirement for ongoing vigilance as a small proportion of mink disperse much further than these distances, and even low numbers of mink can cause substantial seabird mortality at seabird colonies (Oliver *et al.*, 2016).

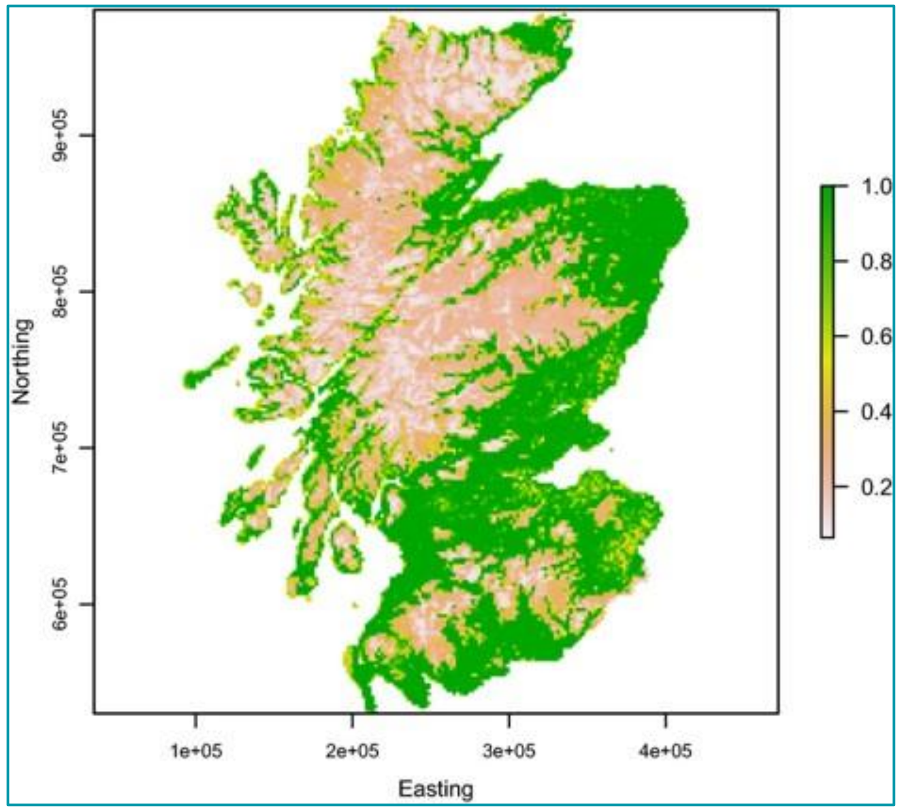


Figure 2.2: Model Predictions for Probability of Occurrence of Mink in Scotland. Green Areas Indicate a Very High Probability of Mink Occurrence, White Areas Indicate an Extremely Low Probability of Mink Occurrence. Figure Taken from Fraser *et al*. (2015)

35. In geographical terms, mink dispersal and subsequent incursion risk cannot reliably be predicted by habitat suitability or quality. This is evident particularly in coastal areas where incursion has not decelerated despite decreasing availability of suitable habitat (Fraser *et al.*, 2015). Available observation data for Scotland repeatedly reports a preference of mink for coastal habitats, independent of landscape heterogeneity and habitat quality (Fraser *et al.*, 2015). This suggests that mink will actively colonise areas of suboptimal habitat suitability where intraspecific competition is reduced. Again, this highlights a credible risk of mink incursion to seabird colonies where mink have not yet been reported.

36. There is evidence to suggest that mink originating from inland areas preferentially disperse to coastal habitats. Stable Isotope and scat analysis studies in Iceland (Magnusdottir *et al*., 2013), the Outer Hebrides (Helyar, 2005; Bodey *et al*., 2010), Argentinean Patagonia (Previtali *et al*., 1998) and Spain (Delibes *et al*., 2004) have demonstrated that the diet of coastal living mink is dominated by marine-based prey. In one Scottish study investigating how stable isotope signatures change at the population level of mink over time in response to an eradication programme, isotope profiles signifying marine prey became increasingly dominant as the programme progressed. This suggests that inland mink increased their reliance on marine food resources and focused their predatory activity on the coastline (Bodey *et al*., 2010). Furthermore, a radio-tracking study of mink in coastal habitat reported that mink occur at higher densities and occupy smaller territories in coastal areas compared to inland regions (Helyar, 2005). This is likely due to the increased abundance of food sources in coastal habitats, such as cliff-nesting seabird colonies (which are highly calorific), where species such as razorbill and kittiwake can nest in high densities.

Figure 2.3: Images of Cliff Tops Above Seabird Colonies at Fowlsheugh SPA and Duncansby Head at North Caithness Cliffs SPA. Top Left: Cliff Lop and Seabird Colony at Fowlsheugh SPA with Two People Standing Close to Seabirds at Cliff Edge (Expedia, n.d.). Top Right: Cliff Top at Fowlsheugh SPA Showing Down-sloping Grassy Patches to Cliffs (Rachel, 2024). Bottom Left: Seabird Colony at Duncansby Head with Clear Down-sloping Grassy Sections into Colony in Top Right of Image (Lovick, 2024). Bottom Right: Seabirds at Fowlsheugh SPA Including Razorbills Nesting in Grassy Sections of Colony (Vergunst, 2022)

37. Based on the innate dispersal ability of mink, the flexibility they exhibit in their feeding ecology with preference for coastal habitats and previous observations of mink predating kittiwake and other seabirds within Fowlsheugh SPA and Troup Head (X. Lambin, 2024 *pers. comm*), it is probable that all sections of cliff-nesting seabird colonies within SPAs are vulnerable to mink predation following incursion. Many of the sites within Fowlsheugh SPA and North Caithness Cliffs SPA (for example) that host cliff-nesting seabird colonies contain sections of down-sloping, grassy patches leading from cliff tops into lower sections of the cliff face (Figure 2.3). These access points could feasibility permit incursion from land-based mink directly into seabird colonies.

38. However, even under the scenario in which mink cannot access certain areas of a cliff-nesting seabird colony, there are likely to be indirect effects resulting from the areas that mink can access that negatively

affect reproductive success of all species within the colony. A study investigating the response of shags to mink predation at nest sites demonstrated that individuals would change nesting locations to sites of lower quality to avoid predation at a cost to reproductive success (Barros *et al*., 2016). This shift in nest-site selection in response to mink predation has also been observed in razorbills (Nordström and Korpimäki, 2004). This may have population-level consequences that negatively impact colony size, as nest-sites at lower risk of mink predation can result in increased density-dependent competition for resources and greater risk from avian predators (Forero *et al*., 1986; Hunt *et al*., 1986).

2.1.4. MINK FEEDING ECOLOGY

39. Mink are generalists and opportunistic predators that feed on fish, reptiles, mammals and ground-nesting birds (Dunstone, 1993; López *et al.,* 2023). They are prolific hunters, with the ability to predate adult birds along with eggs and young. Mink are able to swim across open water for distances up to 6.5 km (Thomas *et al.,* 2017) and are able to access seabird nesting locations and individual nest sites which are usually inaccessible to mammalian predators (such as kittiwake cliff nests) (Mitchell *et al.,* 2004; Figure 2.1).

40. Mink can have a considerable impact on the populations of their prey when they specialise. It is likely prey specialisation does account for a large amount of the predation events undertaken by mink (Dunstone, 1993). The fact that evidence from mink impacts on seabird colonies features kittiwake and auks (guillemots, puffins, razorbills) indicates that as prey they are profitable, with mink being unlikely to target prey in great quantities when uneconomic in terms of calorific content. Prey preference is also likely to focus on those prey species which require less energy expenditure. Aquatic prey (such as fish) have a high calorific yield but require a considerably greater level of energy expenditure to provide an equivalent level of calorie intake when compared to terrestrial animals (Stephenson *et al.,* 1988).

41. Mink are single-prey loading, central place foragers which means they collect single prey items during each foraging bout and carry them back to a cache to store resources, particularly while prey is abundant (Houston and McNamara, 1985). During the breeding season, mink will surplus-kill chicks and adults within the colony and cache them in their dens, of which they may have two to ten near their favoured hunting grounds depending on habitat quality (Breault and Cheng, 1988; British Wildlife Centre, 2024). As noted above, one Icelandic example recovered 200 dead guillemot chicks within a single mink den (Clode and Macdonald, 2002. An individual mink has been found to have cached 600 tern chicks in one week in on the west coast of Scotland (Craik, 1995). High levels of predation are well documented once a prey source has been established and has been considered as a cause of considerable population impacts on multiple seabird species (i.e. Mitchell *et al.* 2004 and Craik, 1997). Although the sex and reproductive phase of the above examples are not known, a female mink weaning kits may have an energy requirement five times that of an individual outside of weaning (Ireland, 1990).

42. Estimates of mink density in coastal habitat vary. Females are territorial and hold territories of 1 km to 3 km along a linear waterway, whereas males can hold territories up to 5 km long, which may overlap with female territories (Invasive Species Scotland, 2024). Other studies have reported greater densities of mink in coastal habitats, ranging from 0.75 to 2.27 mink/km (Table 2.1). Additionally, the mean mink density across the five studies in Table 2.1 is 1.42 mink/km in a coastal habitat (CABI International, 2022).

Table 2.1: Coastal Mink Densities. Table taken from CABI International (2022)

Coastal Mink Density (mink/km)	Country	Reference
1.35 to 2.27	Canada	Hatler, 1976
1.88 to 2.0	Scotland	Dunstone and Birks, 1983; Birks and Dunstone, 1991
1.5	Argentina	Previtali *et al*., 1998
1.1	Scotland	Moore *et al*., 2003
0.75	Chile	Schüttler *et al*., 2010

43. Information on the feeding ecology of mink will be used to inform the calculations required to ascertain the scale of compensation required for razorbill and kittiwake. The method to define scale has been progressed by the Applicant in collaboration with mink experts working with SISI and are described in the Compensation Plan (appendix 2).

1.7 BEST PRACTICE APPROACHES AND EXAMPLES

44. A global review of mink control strategies found 51 studies on mink control that have been carried out in 28 locations in Europe and South America since 1992 (López *et al.,* 2023). Trapping experiments in Patagonia have been effective in removing at least 70% of the mink population in ideal circumstances and using the latest trapping techniques (Bonesi and Palazon, 2007). Despite the presence of invasive mink in 28 European countries, several local control projects appear to be effective in reducing invasive populations and protecting native biodiversity (Bonesi and Palazon, 2007).

45. Control efforts in Scotland have been successful in substantially reducing mink populations through successive joint projects despite short-term funding (Lambin *et al.*, 2019). Scottish mink control projects have included the Hebridean Mink Project which ran from 2001 until 2013, and the 'Scottish Mink Initiative' which focused on removing mink from north Scotland between 2011 and 2015 (MacLeod, 2023; McMullen, 2015). The current control mechanism for mink across a large scale in Scotland is the MCP.

46. The Hebridean Mink Project was initiated in 2001 to address the threat posed by mink to native wildlife populations, particularly ground-nesting birds and migratory species found in SPAs, in the Outer Hebrides. The aim of the project was to completely eliminate mink from North Uist, Benbecula and South Uist, and to furthermore reduce mink density from neighbouring South Harris to prevent recolonisation of the Uists following mink eradication (NatureScot, 2024).

47. The Hebridean Mink Project employed two primary methods to trap mink: operating coastal and riparian cage traps, and utilising trained dogs to trap mink at breeding dens. Trapped mink were then humanely destroyed. In the Uists, this effort involved 100,824 trap nights over four years between 2001 and 2005, along with 500 handler-days dedicated to den searches. A total of 228 mink were captured in the Uists, with the final capture occurring in 2005 (Roy *et al*., 2015). Following the Hebridean Mink Project, mink populations have declined across the Outer Hebrides, with only seven individuals captured in Lewis and Harris in 2016. Among these, one was a non-breeding female, and no juveniles have been captured since 2015. A surveillance network comprising kill traps has since been deployed across the Outer Hebrides to identify and eliminate the remaining few mink (NatureScot, 2024).

48. The Hebridean Mink Project has resulted in widespread benefits for bird species across the Outer Hebrides, with the quantity and dispersion of seabird colonies throughout the project area consistently exceeding expectations. Anecdotal evidence suggests that other bird species, including divers, ducks and waders, has also increased in number throughout the project area (Scottish Natural Heritage, 2018).

49. The Scottish Mink Initiative built on the success of the Hebridean Mink Project but with a focus on removing mink from north Scotland over an area of 20,000 km^2 from northern Tayside across Aberdeenshire, Moray, and the Cairngorms National Park to the north and east Highlands. Due to its location, this project was less directly relevant to seabirds. However, the control of mink at river catchment level is vital in protecting important seabird breeding locations along the coasts of Scotland.

50. The MCP, run by SISI, is currently the largest active project and continues to build on the successful work undertaken previously in Scotland. Between 2018 and 2021 the project caught 371 mink in 172 locations. The project found that just 78 trapping locations accounted for 75% of total captures (Invasive Species Scotland, 2024). SISI as an organisation is committed to managing and mitigating the impact of invasive species in Scotland, including both invasive habitat management and mink. The SISI team comprises eight staff members, including the Project Manager, who has been consulted by the Applicant with regard to the compensation. Their collective responsibility involves the planning, execution, and coordination of various programs aimed at controlling invasive plant species and the mink population across Scotland. The MCP operates approximately 650 mink trapping locations distributed throughout Scotland (Invasive Species Scotland, 2024). The trapping mechanism primarily involves the use of conventional live capture traps. These traps require daily checks to monitor and manage the captured mink.

51. Further information on how the Applicant will deliver compensation in partnership with the MCP and SISI is presented with the Compensation Plan (appendix 2).

52. Ireland also hosts a well-established mink population across both the mainland and islands where various seabird species are currently undergoing impacts associated with mink presence and predation. Roy *et al.* (2009) provides a review of mink control techniques and case studies (including reference to the various Scottish mink control programme mentioned above) with relevant lessons learned gleaned for future application across key Irish sites, with Irish SPAs suggested as a priority.

53. The Collaboration on Offshore Wind Strategic Compensation (COWSC) is led by the Offshore Wind Industry Council (OWIC) and supported by key stakeholders including offshore wind developers, representatives from statutory nature conservation bodies, The Crown Estate, UK Government, Devolved Governments and environmental non-governmental organisations. COWSC aims to deliver a shared body of evidence on best-practice, research and practical pilot projects for offshore wind compensation in the UK spanning investment in four target measures with one being predator reduction to enhance seabird populations. While COWSC is yet to finalise and publish its proposed strategy, expert working groups as part of the process and chaired by seabird and eradication experts at the JNCC support the inclusion of mink control within the library of measures. This provides confidence that key stakeholders in the process of deciding on suitable compensation projects are supportive of mink control as a compensation measure to offset potential impacts associated with offshore wind farms.

2.1.5. SAINT-BRIEUC OFFSHORE WIND FARM COMPENSATION

54. Saint-Brieuc offshore wind farm (located 16.3 km from the Breton coast, France) implemented a mink eradication project in 2017 as compensation for associated impacts from the offshore wind farm to various seabird species (Ailes Marines, 2024). The compensation is overseen by Ailes Marines, a subsidiary of Iberdrola—a prominent renewable energy developer. Ailes Marines also assumes responsibility for the development, construction, installation, and operation of the offshore wind farm in the Bay of Saint-Brieuc.

55. This compensation measure aims to eradicate mink from Tomé Island (or île Tomé) (Brittany, France) as part of the multi-partnership programme (Trégor-Gestion-Vison) which was set up in 2014 following the first confirmed record of mink on île Tomé in 2012 (Lorvelec *et al.,* 2024). This compensation is supported by the Conservatoire du Littoral, the Departmental Federation of Côtes d'Armor Hunters, the commune of Perros-Guirec, Lannion Trégor Community and Ailes Marines (Ailes Marines, 2024).

56. The aim of Trégor-Gestion-Vison was to implement a campaign to eradicate and control mink on Tomé Island. The programme aimed to monitor mink on the Sept-Îles islands reserve, and to capture several individuals on the coast, between Perros-Guirec and Penvénan (Ouest-France, 2015).

57. Since implementation, the compensation measure has involved a two-phased approach with the initial phase consisting of annual trapping and eradication efforts initiating in 2018 and spanning five years. Following this period, the second phase involves a three-year monitoring phase, which continues throughout the project's duration to ensure the eradication's effectiveness. The project identified multiple instances of recolonisation on the island, but this has now ceased thanks to an updated control plan and implementation of biosecurity measures.

58. This recent case study provides a very relevant example of mink control being utilised as a compensation measure for an offshore wind farm, with the project's involvement of the compensation measure being part of a wider scale, multi-organisational mink eradication project (Trégor-Gestion-Vison).

59. The model of island eradication and subsequent biosecurity to prevent recolonisation is different from that of the MCP, which conducts mink control on mainland Scotland. The MCP is a long standing and highly successful control programme, which publishes annual documents and reviews of outcomes. This enables lessons learned to be incorporated into the planning of future work while also informing how to best manage current locations.

1.8 SUMMARY

60. There is strong evidence and support that mink reduction is an effective means of increasing the productivity of seabird species. This is particularly true for razorbill and kittiwake, species for which there exists compelling evidence of mink impacts from across their breeding range. The evidence above highlights benefits from previous reduction projects and indicates that maintaining mink control across the current areas within the MCP, as well as expanding control to areas where mink are present (both in partnership with SISI), can be an effective compensation measure.

3. BYCATCH REDUCTION

1.9 INTRODUCTION

61. Bycatch is the accidental capture of non-target species in fishing gear and can present a serious threat to seabird populations (Miles *et al*., 2020). Within recent decades, seabird populations have undergone major declines, largely due to commercial fisheries (direct competition and bycatch) (Croxall *et al*., 2012). It is estimated that 100,000's of seabirds of different species are killed globally each year in gillnets (400,000; Žydelis *et al.*, 2013) and longline fisheries (320,000; Anderson *et al*., 2011). Assessments have presented estimates of thousands of bycaught gannets, large shearwaters, gull species, guillemots and razorbills in European longline and static net fisheries (i.e., Araújo *et al*., 2022; see description of evidence in section 1.10).

62. A compensatory measure to reduce the incidence of bycatch would have a beneficial influence on seabird populations by reducing the direct mortality of birds. The concept of this compensation measure is to work in partnership with key organisations to identify, trial and implement bycatch reduction techniques to reduce bycatch of gannet and razorbill. The reduction of Portuguese bycatch has been identified as the most viable option for this measure due to the high rates of detected bycatch, evidence of connectivity with the UK National Site Network (NSN), as well as a well-developed hotspot analysis and programme for trialling bycatch reduction methods. The Applicant will work closely with the Portuguese Society for the Study of Birds (SPEA) who direct this bycatch work. Bycatch reduction research in the UK is comparatively less well-developed, and has therefore been reserved as adaptive management for this measure (outlined in the Compensation Plan, appendix 2).

63. The aim of this section is to review the evidence of bycatch reduction techniques at key Portuguese fisheries as a management option to provide benefits to gannet and/ or razorbill with the aim to increase their survival.

64. Further detail of how the measure would be secured and implemented, along with information on scale, location, design, monitoring and adaptive management are provided within the Compensation Plan (appendix 2).

1.10 EVIDENCE

3.1.1. GANNET

65. Gannet feeding ecology makes the species highly vulnerable to bycatch (Gremillet *et al.,* 2020). It was originally thought that only surface and shallow pelagic fishing gear would catch shallow diving species such as gannet, but despite the lack of overlap in diving range and fishing depth it has also been identified that they can also be caught in deep nets during deployment or hauling (Bradbury *et al.*, 2017). Bradbury *et al.* (2017) ranked gannet in the top ten of 53 species for surface, pelagic and benthic fishing gear, and the top ranked species for surface gear, as shown in Table 3.1.

Table 3.1: SSI Scores and Ranks for Gannet (Bradbury *et al.*, 2017)

Type of Fishing Gear	Gannet SSI	Gannet SSI Rank
Surface	96	1
Pelagic	58	7
Benthic	58	10

66. In Portuguese continental waters gannet are the most abundant pelagic seabird species and face high bycatch risk from both longline and fixed gear fisheries (Araújo *et al*., 2022). Gannet are the main bycaught species among Portuguese fisheries, comprising approximately 76% of all seabird bycatch, with an estimated 14,764 individuals bycaught annually in demersal longlines (>12 m) alone.

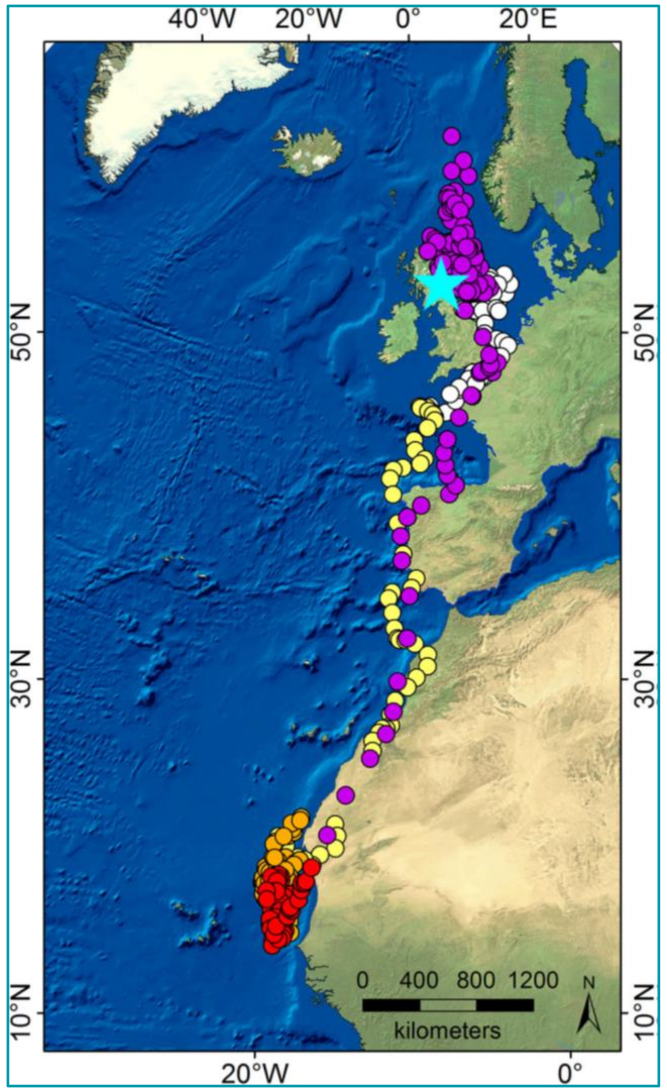


Figure 3.1: Gannet Individual Tracked From the Bass Rock, Scotland (Blue Star) with Different Colour Marks Showing its Migration South Through the North Sea and Through the English Channel in September–October (White Symbols), Through Southern European Waters to West Africa in November (Yellow), Wintering off West Africa in December (Orange) and January (Red), Return Migration Through the English Channel to Near the Breeding Colony in February (Purple) and Pre-Breeding Foraging Predominantly in the Northern North Sea in March (Purple). Reproduced from Furness et al. (2018)

67. Portuguese bycatch hotspots are currently known to be in Ilhas Berlengas (Berlengas Islands, also referred to as 'Berlengas' here) and Aveiro-Nazaré, which overlap with vital passage and wintering areas of UK gannet (Oliveira *et al.,* 2020). As a result, birds caught in these hotspots will likely include many individuals from UK SPA populations. This is also supported by tracking data of gannets during post breeding movements which also shows birds breeding at Scottish SPAs have connectivity with regions of high bycatch off the coast of Portugal (Furness *et al.*, 2018) (Figure 3.1).

68. Gannets from that breed in Northern Europe rely on western Iberian waters for both wintering and migration. One study tracked gannet migration from Alderny and found that first-year birds migrate south earlier than those further north, many to waters off northwest Africa and the Mediterranean (Veron and Lawler, 2009). Another study tracked 15 gannets from Scotland to northwest Africa. Birds migrating to

northwest Africa were found to make many trips in western Europe (Garthe *et al*., 2016). Lane *et al*. (2021) tracked 35 adult and 38 juvenile gannets from Bass Rock off the east coast of Scotland, and found that they migrated through Portuguese waters as far as the Atlantic coast of Africa, staying close to the coast. Aerial surveys conducted between 2010 and 2015 aimed to estimate the absolute population of post-breeding gannets in this region. The study recorded 3,672 gannet sightings along 10,496.3 nautical miles.

69. Araújo *et al.* (2022) estimated a Potential Biological Removal (PBR) threshold for gannet in Portuguese waters of 2,345 individuals per year (95% confidence interval 2,049 to 2,680). Their estimate for longline bycatch numbers (2,288) almost reaches the entire PBR threshold on its own, and when combined with the fixed gear estimate (1,381) exceeds this threshold. Additionally, fisheries monitored in Ilhas Berlengas caught 51 gannets in 295 fishing trips between 2015 and 2018 (Oliveira *et al.,* 2020). Preliminary estimates of bycatch in Aveiro Nazaré (as part of the EU LIFE PanPuffinus project) show more than 300 gannets caught in trammel net fisheries between 2021 and 2022 (A. Almeida, Portuguese Society for the Study of Birds (SPEA), *pers comm.).*

70. Calado *et al.* (2020) found that gannet bycatch in Portuguese waters in the summer months was primarily immature birds, which they theorised was due to adults returning to breeding colonies. This report concluded a high potential for large impacts on the entire gannet population, with scope for bycatch reduction at a strategic level across the species' international migratory range.

71. The Gran Sol fishery in the Atlantic Ocean, west of the UK and operated by Spanish fleets, has also been found to have extremely high bycatch rates, with 48 to 141 birds caught per fishing trip reported in a study by Anderson *et al.* (2022), which also found gannet to have among the highest recorded bycatch rates for seabird species. Bycatch has also been identified as responsible for gannet population decline in the Rouzic colony in Brittany (Gremillet *et al.,* 2020). Other fisheries where high levels of gannet bycatch have been reported include longline fisheries across Atlantic Iberian waters (Calado *et al.,* 2020), international fisheries in West African waters (Gremillet *et al.,* 2020) and purse seine fisheries across the world (ICES, 2013).

72. In summary, gannet are extremely vulnerable to bycatch across both their breeding and migratory range with large scales bycatch events being recorded at key hotspot locations. Evidence suggests strong connectivity between Scottish breeding gannets and bycatch hotspots in waters along the migratory flyway. When this is coupled with the fact that Scotland holds the majority of the world's breeding gannets, and over 97% of the entire UK breeding population of gannet belongs to a colony located within an SPA, delivery of a reduction in bycatch away from breeding colonies will have a direct benefit to the UK National Site Network (Mitchell *et al*., 2004).

3.1.2. RAZORBILL

73. Razorbills see the most mortality in coastal static net fisheries, some mortality in midwater trawls, and only sporadic cases of bycatch in longline fisheries. Depth and mesh size also appeared to be important for razorbill bycatch, though razorbills are less susceptible altogether than guillemot and cormorants (Northridge *et al.*, 2020).

74. Diving behaviour is a large predictor of bycatch risk, which increases at sunrise and decreases at sunset for razorbill (Cleasby *et al.*, 2022). Instead of diving into nets they are caught while foraging underwater, and drowned in the catch before the net is hauled onto the boat. It is expected that much of the bycatch from midwater trawls is underestimated, because many of these birds would not be detected during the separation process, especially for smaller species such as razorbill (Northridge *et al.*, 2020).

75. Preliminary results from a bycatch study in Aveiro-Nazaré Portugal (as part of the EU LIFE PanPuffinus project) show strong evidence for high rates of razorbill bycatch. Questionnaires documenting bycatch from 2021-2022 reported around 75 instances of razorbill bycatch in just 115 surveys of vessels less than 12 m in length, and around 100 birds reported from 140 questionnaires from vessels larger than 12 m in length (A. Almeida, SPEA, *pers comm.)*.

76. Any razorbill that are caught in Portuguese fisheries are likely to be related to the UK National Site Network as razorbills migrate south in the non-breeding season along the Atlantic coast and off the coast of Iberia (Wright, *et al.*, 2012). The British Trust for Ornithology's (BTO) ringing report recorded foreign locations of recovered razorbills that were ringed in the UK. The report shows razorbills were recovered all along the coast of western Europe, with heavy overlap in Portuguese waters (BTO, n.d.).

77. Therefore, as for gannet, there is strong evidence to show the bycatch of razorbill happens at scale in Portuguese waters.

1.11 BEST PRACTICE APPROACHES AND EXAMPLES

78. There are a variety of factors which can influence bycatch numbers. Bycatch rates may be affected by bird behaviour, the time of day lines are set, the prevailing weather conditions, and the performance of any bird deterrent devices used. Increased sunlight is understood to lead to higher bycatch rates, explaining the higher rates seen in the summer months and in lines set at dawn (Marine Directorate, 2023). The Agreement on the Conservation of Albatrosses and Petrels (ACAP) recommends a minimum gear sink rate of 0.3 m/s in order to limit the temporal overlap with diving bird species, but the documented average sinking speed was between two and nine times slower in non-weighted parts of the fishing gear, and was especially slow over the top 2 m. This suggests that baited hooks may be within the foraging range of near-surface feeding species, such as gannet for an extended period of time (Rouxel *et al.,* 2022). It has also been noted that bycatch often occurs in clusters, with some skippers believing that bycaught birds tangle the line, keeping it from sinking, and may keep adjacent baits at the surface for longer (Marine Directorate, 2023).

79. It is important to consider that bycatch is vastly under-monitored and reported (Pott and Wiedenfeld, 2017). A study by the Marine Directorate (2023) had a key objective to examine how representative of the wider fleet their data were, given the constraints placed on data accuracy by the observer-based sampling methodology. The selection of sampled vessels is typically opportunistic, with vessel selection dependent on the willingness of vessel skippers/owners and the variable and unpredictable distribution of overall fishing effort (Marine Directorate, 2023). This suggests that many incidents of bycatch are missed, and bycatch rates are likely to be higher than we are currently aware.

80. In terms of bycatch reduction strategies to deliver as a compensation measure, O'Keefe *et al.* (2012) defined six criteria that characterise successful techniques:

- reduces identified bycatch or discards;
- does not adversely affect target catch rate;
- does not increase the bycatch of other vulnerable species;
- does not lead to spatial or temporal displacement of bycatch;
- does not adversely impact the ecosystem; and
- is economically viable for a fishery.

81. Several methods that meet the above criteria are described by a Marine Directorate (2023) (see Table 3.2). It must be noted that this investigation was primarily related to fulmar, though its results are applicable to gannet and other relevant species, as they are methods commonly explored for reducing bycatch across many species and locations.

82. Few studies exist on bycatch reduction for gannet specifically, but likely gannet behaviour can be indicated by other plunge diving species which include boobies, some pelicans *Pelecanus*, terns, some shearwaters *Puffinus* and petrels *Procellariiformes* (Wiedenfeld, 2016). Many of these studies have been carried out with beneficial results, making it highly likely that bycatch reduction techniques have the capacity to greatly reduce gannet bycatch in UK fisheries (Marine Directorate, 2023).

83. For longline fisheries, a combination of bird scaring and night setting of lines, along with double weight branch lines, has been considered best practice (Melvin *et al.,* 2014). A type of branchline called a Hookpod has also been trialled in southern Brazil and South Africa, with a 95% reduction in comparative bycatch rates when compared to control branchlines (Sullivan *et al.,* 2017). Marine Directorate (2023)

surveyed fishermen on five suggested approaches, three of which were considered suitable by all respondents (Table 3.3).

Table 3.2: Bycatch Avoidance Measures Currently in Use (Information Extracted from Marine Directorate (2023))

Bycatch Reduction Measure	Further Information
Night setting of gear	Recommended as best practice by ACAP and New Zealand fisheries management, but effectiveness may vary across species, e.g. fulmar have higher bycatch rates in night set operations.
Swivel hooks	Evidence suggests reduction of fulmar longline bycatch by a factor of up to 100. Potential explanations include increased sink rates due to heavier hooks, and/or less efficient hooking of seabirds.
Underwater line setters	Some promising trials, but not yet proven practicable and thus not widely used commercially. Depth required to avoid gannet foraging zone unlikely to be viable.
Bird scarers	Often homemade. Can help reduce bycatch but may also tangle with fishing lines. Case study in Namibia: bird scaring lines reduced bycatch in hake fishery from 0.57 birds/1000 hooks to 0.04 birds/1000 hooks (Paterson *et al.*, 2019).
Weighted branchlines	Normally associated with pelagic longline fisheries, little research on demersal. Alternative but conceptually similar approaches in development.

84. Bycatch reduction for static net fisheries, such as gillnets, focuses on deterring birds, with proposed measures including both above and below water visual deterrents, as well as acoustic deterrents (Wiedenfeld *et al.,* 2015; Parker, 2017). With respect to gillnets, netting types change annually, depending on available catch, meaning that it may be necessary for bycatch reduction techniques to target a variety of gillnet types in order to increase chance of success (Hornsea 4, 2021). Criteria for effective visual bycatch reduction methods for gillnet fisheries were specified by Martin and Crawford (2015) as:

- alerting species of net presence over a range of light levels;
- not disrupting the dark-adapted state of the species retina;
- high probability of being detected;
- simple to deploy and robust in sea conditions; and
- not reducing the target fish catch rate.

Table 3.3: Respondent Conclusions on Measures Suggested by Marine Directorate (2023)

Approach	Respondent Conclusions
Reducing deck lighting during line setting	All thought suitable.
Bird scaring lines during line setting	All thought suitable.
Increasing line sink rates	Most thought either unsuitable for fishery or ineffective.
Changing where discards/offal exit the vessel	Some but not all thought suitable.
Keeping birds away from the line hauling area	All thought suitable.

85. In a study conducted between 2019 and 2020 (Almeida *et al*., 2023), the scarybird was tested on a fishing vessel operating bottom gillnets near and within the Berlengas SPA. The scarybird device is designed with the shape of a bird of prey and features a retractable system, which ensures that the device remains in constant motion even with a gentle breeze. The primary purpose of the scarybird is to simulate the presence of a bird of prey flying over the fishing area. The device is strategically placed at the stern of a fishing vessel, secured using a 4 m long pole and a 0.65 m craft line. Following deployment, the scarybird reached a maximum height of 7 m above sea level (Almeida *et al*., 2023). In the Berlengas SPA, the scarybird effectively reduced the presence of gannet around the vessel by 72% when fishing when compared to the control fishing trips. Notably, this aerial deterrent had no adverse impact on the fishery's target catches or revenue, making it a promising method for bycatch reduction in bottom gillnets and other similar gear (Almeida *et al*., 2023).

86. Trawl fisheries should also be taken into account, given the potential for underrepresentation of gannet bycatch. Measures suggested for trawlers include visual deterrence methods (e.g. Melvin *et al.,* 2011), changes to net type and setting (e.g. ACAP, 2011), acoustic deterrents, and operational fishing measures such as fisheries closures (e.g. Paz *et al.,* 2018). Many of these methods have been trialled for other plunge diving species and have shown strong potential for impactful bycatch reduction (Hornsea 4, 2021).

87. The fishing industry has responded largely in a beneficial manner to bycatch reduction measures. Hornsea 4 (2021) noted that 80% of surveyed Cornish fishermen agreed to participate in a requested pilot study. Furthermore, SPEA have forged strong working relationships with fishermen operating across Portuguese waters with successful testing of reduction techniques undertaken as a result. Skippers interviewed for the Marine Directorate (2023) study also expressed a willingness to test further bycatch reduction methods and suggested potential solutions such as acoustic deterrents, spraying water to keep birds away, or use of a kite to simulate a bird of prey.

88. Various potential bycatch reduction techniques are being considered to reduce gannet and razorbill bycatch. To ensure the effectiveness of these techniques, ongoing monitoring and reporting are being discussed with SPEA before finalising the selection. This process is detailed further in the Compensation Plan (appendix 2).

1.12 SUMMARY

89. A compensatory measure to reduce the incidence of bycatch would have a beneficial influence on gannet and razorbill by reducing the direct mortality of birds. The evidence presented above highlights the scale of the issue, along with both experimental and proven techniques which could be trialled and implemented as compensation to offset impacts associated with the Array.

90. Regional bycatch rates that have been extrapolated from opportunistic trials done on several vessels. These values suggest an enormous potential for bycatch reduction techniques to minimise seabird mortality.

91. The Applicant proposes a compensation measure aimed at reducing bycatch to benefit gannet and razorbill populations associated with the UK NSN. The Applicant has worked with the Portuguese Society for the Study of Birds (SPEA) to formulate an approach to delivering bycatch reduction as compensation in Portugal (Compensation Plan (appendix 2)).

4. REFERENCES

Ailes Marines (2024). *Eradication of American mink on the Trégor islands - Pink Granite Coast, Ailes Marines*. Available at: https://ailes-marines.bzh/en/measures/compensation-measures/eradication-of-american-mink-on-the-tregor-islands-pink-granite-coast/ Accessed on: 01 March 2024.

Almeida, A., Alonso, H., Oliveira, N., Silva, E. and Andrade, J. (2023). *Using a visual deterrent to reduce seabird interactions with gillnets*. Biological Conservation, 285, 110236.

Anderson, O., Small, C., Croxall, J., Dunn, E., Sullivan, B., Yates, O. and Black, A. (2011). *Global seabird bycatch in longline fisheries.* Endangered Species Research 14(2), 91-106.

Anderson, O. R. J., Thompson, D. and Parsons, M. (2022). *Seabird bycatch mitigation: evidence base for possible UK application and research*. JNCC Report No. 717, JNCC, Peterborough. ISSN 0963-8091.

Andersson, A. (1999). *The effect of non-native American mink on breeding coast birds in the archipelagos in the Baltic Sea. In: Workshop on the Control and Eradication of Non-Native Terrestrial Vertebrates*. Report to The Council of Europe 1999.

Araújo, H., Correia-Rodrigues, P., Debru, P., Ferreira, M., Vingada, J. and Eira, C. (2022). *Balearic shearwater and northern gannet bycatch risk assessment in Portuguese Continental Waters*. Biological Conservation, 267, pp. 109463.

Banks, P. B., Nordström, M., Ahola, M., Salo, P., Fey, K. and Korpimäki, E. (2008). *Impacts of alien mink predation on island vertebrate communities of the Baltic Sea Archipelago: review of a long-term experimental study*. Boreal Environment Research, 13, 3.

Barrett, R. T. (2015). *The diet, growth and survival of Razorbill Alca torda chicks in the southern Barents Sea*. Ornis Norvegica, 38, 25-31.

Barros, Á., Romero, R., Munilla, I., Pérez, C. and Velando, A. (2016*). Behavioural plasticity in nest-site selection of a colonial seabird in response to an invasive carnivore*. Biological Invasions, 18, 3149-3161.

Bibby, C. (1971). *Auks drowned in fish nets*. Seabird Reports, 2, 48–49.

Birks, J. D. S. and Dunstone, N. (1984). *A note on prey remains collected from the dens of a coast-living mink (Mustela vison) population*. Journal of Zoology, 203, 279-281.

Birks, J. D. S and Dunstone, N. (1991). *Mink*. In*: The Handbook of British Mammals*. 3rd ed. Blackwell Scientific Publications, Oxford, UK.

Björnsson, T. and Hernsteinsson, P. (1991). *Mink in southern Breidfjordur Bay.* Wildlife Management News (Iceland), 7, 3–12 (in Icelandic).

Bodey, T. W., Bearhop, S., Roy, S. S., Newton, J. and McDonald, R. A. (2010). *Behavioural responses of invasive American mink Neovison vison to an eradication campaign, revealed by stable isotope analysis. Journal of Applied Ecology*, 47(1), 114-120.

Bonesi, L. and Palazon, S. (2007). *The American mink in Europe: status, impacts, and control.* Biological conservation, 134(4), 470-483.

Booker, H., Slader, P., Price, D., Bellamy, A. J. and Frayling, T. (2018). *Cliff Nesting Seabirds On Lundy: Population Trends From 1981 To 2017*. Journal of the Lundy Field Society, 6, 65-76.

Booker, H., Price, D., Slader, P., Frayling, T., Williams, T. and Bolton, M. (2019). *Seabird recovery on Lundy population change in Manx shearwaters and other seabirds in response to the eradication of rats*. British Birds, 112, 217-230.

Boyd, J. M. and Boyd, I. L. (1990). *The Hebrides*. Collins, London

Bradbury, G., Shackshaft, M., Scott-Hayward, L., Rexstad, E., Miller, D. and Edwards, D. (2017). *Risk assessment of seabird bycatch in UK waters*. Report prepared for the Department for Environment Food and Rural Affairs (Project Code MB0126).

Breault, A. M. and Cheng, K. M. (1988). *Surplus killing of eared grebes Podiceps nigricallis by mink Mustela vison in central British Columbia*. Canadian Field Naturalist, 102, 738–739.

British Wildlife Centre. (2024). *American Mink*. Available at: https://britishwildlifecentre.co.uk/planyourvisit/animals/american-mink/ Accessed on: 12 February 2024.

BTO. (n.d.). *Summary of ringing totals: BTO - British Trust for Ornithology.* Available at: https://app.bto.org/ring/countyrec/resultsall/rec6360all.htm Accessed on: 19 April 2024.

CABI International (2022). *Neovison vison (American mink)*. In CABI Compendium (No. 74428). doi:10.1079/cabicompendium.74428

Calado, J. G., Ramos, J. A., Almeida, A., Oliveira, N. and Paiva, V. H. (2020). *Seabird-fishery interactions and bycatch at multiple gears in the Atlantic Iberian coast.* Ocean and Coastal Management, 200, 105306.

Cleasby, I. R., Wilson, L. J., Crawford, R., Owen, E., Rouxel, Y. and Bolton, M. (2022). *Assessing bycatch risk from gillnet fisheries for three species of diving seabird in the UK.* Marine Ecology Progress Series, 684, 157-179.

Clode, D. and Macdonald, D. W. (2002). *Invasive predators and the conservation of island birds: the case of American Mink Mustela vison and terns Sterna spp. in the Western Isles, Scotland*. Bird Study, 49(2), 118-123.

Cobb, J. L. S. (1976). *Seabird mortality*. Bird Study, 23, 299–300.

Courchamp, F., Chapuis, J. L. and Pascal, M. (2003). *Mammal invaders on islands: impact, control and control impact*. Biological reviews, 78(3), 347-383.

Craik, J. C. A. (1995). *Effects of North American mink on the breeding success of terns and smaller gulls in west Scotland*. Seabird, 17, 3-11.

Craik, J. C. A. (1997). *Long-term effects of North American mink Mustela vison on seabirds in Western Scotland*. Bird Study, 44, 303–309.

Croxall, J. P., Butchart, S. H. M., Lascelles, B., Stattersfield, A. J., Sullivan, B., Symes, A. and Taylor, P. (2012). *Seabird conservation status, threats and priority actions: a global assessment*. Bird Conservation International, 22, 1-34.

Delibes, M., Clavero, M., Prenda, J., del Carmen Blázquez, M. and Ferreras, P. (2004). *Potential impact of an exotic mammal on rocky intertidal communities of northwestern Spain*. Biological Invasions, 6, 213-219.

Dunn, E. (1994). *Interactions between fisheries and marine birds.* RSPB, Sandy.

Dunstone, N., and Birks, J. S. (1985). *The comparative ecology of coastal, riverine and lacustrine mink Mustela vison in Britain.* Zeitschrift für angewandte Zoologie, 72(1-2), 59-70.

Dunstone, N. (1993). *The Mink*. London, Poyser Natural History.

Expedia (n.d.). *RSPB Fowlsheugh Stonehaven*. Available at: https://www.expedia.co.uk/RSPB-Fowlsheugh-Stonehaven.d553248621532495108.Attraction Accessed on: 07 May 2024.

Fasola, L., Muzio, J., Chehébar, C., Cassini, M. and Macdonald, D. W. (2011). *Range expansion and prey use of American mink in Argentinean Patagonia: dilemmas for conservation*. European Journal of Wildlife Research, 57, 283-294.

Fayet, A. L., Freeman, R., Anker-Nilssen, T., Diamond, A., Erikstad, K. E., Fifield, D., Fitzsimmons, M. G., Hansen, E. S., Harris, M. P., Jessopp, M. and Kouwenberg, A. L. (2017). *Ocean-wide drivers of migration strategies and their influence on population breeding performance in a declining seabird*. Current Biology, 27(24), 3871-3878.

Forero, M. G., Tella, J. L., Hobson, K. A., Bertellotti, M. and Blanco, G. (2002). *Conspecific food competition explains variability in colony size: a test in Magellanic penguins*. Ecology, 83(12), 3466-3475.

Fraser, E. J., Lambin, X., Travis, J. M., Harrington, L. A., Palmer, S. C., Bocedi, G. and Macdonald, D. W. (2015). *Range expansion of an invasive species through a heterogeneous landscape–the case of American mink in Scotland.* Diversity and Distributions, 21(8), 888-900.

Furness, R., MacArthur, D Trinder, M. and Macarthur, K. (2013). *Evidence review to support the identification of potential conservation measures for selected species of seabirds*. Report to Defra.

Furness, R. W. and Birkhead, T. R. (1984). *Seabird colony distributions suggest competition for food supplies during the breeding season*. Nature 311, 655-656.

Furness, R. W., Garthe, S., Trinder, M., Matthiopoulos, J., Wanless, S. and Jeglinski, J. (2018). *Nocturnal flight activity of northern gannets Morus bassanus and implications for modelling collision risk at offshore wind farms*. Environmental Impact Assessment Review, 73, 1-6.

Garthe, S., Hallgrimsson, G. T., Montevecchi, W. A., Fifield, D. and Furness, R. W. (2016). *East or west? Migration routes and wintering sites of Northern Gannets Morus bassanus from south-eastern Iceland*. Marine biology, 163, 1-9.

Global Invasive Species Database (2024). *Species profile: Neovison vison*. Available at: http://www.iucngisd.org/gisd/species.php?sc=969 on 19-04-2024. Accessed on: 05 February 2024.

Gremillet, D., Peron, C., Lescroel, A., Fort, J., Patrick, S., Besnard, A. and Provost, P. (2020). *No way home: collapse in northern gannet survival rates point to critical marine ecosystem perturbation*. Marine Biology, 167, 189.

Hagemeijer, J. M. and Blair, M. J. (1997). *The EBCC atlas of European breeding birds – their distribution and abundance*. T. and A. D. Poyser.

Hario, M., Komu, R., Muuronen, P. and Selin, K. (1986). *Population trends among archipelago birds in Söderskär bird sanctuary 1963-86 (in Finnish with English summary).* Suomen Riista, 33, 79-90.

Harris, M. P. and Wanless, S. (2011). *The Puffin*. T & AD Poyser, London, UK.

Hatler, D. F. (1976). *The coastal mink on Vancouver island*. British Columbia.

Helyar, A. (2005). *The ecology of American mink (Mustela vison); response to control*. PhD Thesis, University of York.

Hipfner, J. M., Lemon, M. J. and Rodway, M. S. (2010). *Introduced mammals, vegetation changes and seabird conservation on the Scott Islands, British Columbia, Canada*. Bird Conservation International, 20(3), 295-305.

Hornsea 4 (2021). *Hornsea Project Four: Derogation Information*. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010098/EN010098-000511-B2.8.1%20RP%20Volume%20B2%20Annex%208.1%20Compensation%20measures%20for%20FFC%20SPA%20Bycatch%20Reduction%20Ecological%20Evidence.pdf. Accessed on: 24 August 2023.

Houston, A. I. and McNamara, J. M. (1985). *A general theory of central place foraging for single-prey loaders.* Theoretical Population Biology, 28(3), 233-262.

Hunt, G. L., Eppley, Z. A. and Schneider, D. C. (1986). *Reproductive performance of seabirds: the importance of population and colony size*. The Auk, 103(2), 306-317.

ICES (2013). *Report of the Working to Review and Advise on Seabird Bycatch (WKBYCS)*. 14-18 October 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:77.

Ireland, M. C. (1990). *The behaviour and ecology of the American mink Mustela vison (Schreber) in a coastal habitat.* (Doctoral dissertation, Durham University).

Invasive Species Scotland. (2024). *Mink Control Project | Scottish Invasive Species Initiative*. Available at: https://www.invasivespecies.scot/mink-control-project. Accessed on: 19 January 2024.

Johannesson, J. H. and Gudjonsdottir, B. (2007). *The effect of mink-predation on six monitored Black Guillemot colonies in Strandasysla, NW-Iceland*. Natturufraedingurinn, 76, 29–36.

Jones, H. P., Tershy, B. R., Zavaleta, E. S., Croll, D. A., Keitt, B. S., Finkelstein, M. E. and Howald, G. R. (2008). *Severity of the effects of invasive rats on seabirds: a global review.* Conservation Biology, 22(1), 16-26.

Jönsson, P. E. and Rosenlund, N. (1990). *Mink – a serious threat to the Black guillemot Cepphus grylle on Halland's Island (in Swedish)*. Anser, 29, 278-281.

Kauhala, K. (1996). *Distributional history of the American mink (Mustela vison) in Finland with special reference to the trends in otter (Lutra lutra) populations*. Annales Zoologici Fennici, 283-291.

Kauhala, K. (1998). *The effects of introduced carnivores on native fauna in Finland: distribution history of the American mink and raccoon dog*. Suomen Riista, 44, 7-17.

Kelly, J., Maguire, C.M. and Cosgrove, P.J. (2008). *Invasive Predatory Mammals on Islands Strategy*. Prepared for NIEA and NPWS as part of Invasive Species Ireland.

Kingston, A., Northridge, S., Paxton, C. G., & Buratti, J. P. F. (2023). *Improving understanding of seabird bycatch in Scottish longline fisheries and exploring potential solutions.*

Kolaas, T. (n.d.). *American mink. Terje Kolaas Photography*. Retrieved from Terje Kolaas Photography. Available at: https://terjekolaas.com/galleries/pattedyr-mammals/051-american-mink/. Accessed on: 19 March 2024.

Lambin, X., Horrill, J. C. and Raynor, R. (2019). *Achieving large scale, long-term invasive American mink control in northern Scotland despite short term funding*. Island invasives: scaling up to meet the challenge, 62, 651.

Lane, J. V., Pollock, C. J., Jeavons, R., Sheddan, M., Furness, R. W. and Hamer, K. C. (2021). *Post-fledging movements, mortality and migration of juvenile northern gannets*. Marine Ecology Progress Series, 671, 207-218.

Lieury, N., Ruette, S., Devillard, S., Albaret, M., Drouyer, F., Baudoux, B. and Millon, A. (2015). *Compensatory immigration challenges predator control: An experimental evidence-based approach improves management*. The Journal of Wildlife Management, 79(3), 425-434.

López, R., Clapperton, B. K. and Medina-Voguel, G. (2023). *A global review of the American mink (Neovison vison) removal techniques–Patagonia as a case study for their potential application*. Gayana, 87(1), 43-62.

Lorvelec, O., Riallin, S., Boisson, P. Y., Bredin, M., Deniau, A., Dutouquet, L., Guiguen, S., Le Hervé, Q., Le Quilliec, P., Primas, O., Provost, P. and Petit É. J. (2024). *L'apport de la génétique pour comprendre la colonisation de l'île Tomé (Côtesd'Armor, France) par le Vison d'Amérique, Mustela vison Schreber, 1777: conséquences pour sa gestion*. Naturae 2024, 2, 13-30. Available at: https://doi.org/10.5852/naturae2024a2. Accessed on: 26 March 2024.

Lovick, L. (2024). *The Sea Bird Cliffs of Duncansby Head* [Blog post]. Northern Lace Blog. Available at: https://northernlace.co.uk/2019/08/11/the-sea-bird-cliffs-of-duncansby-head/ Accessed on: 07 May 2024.

Macdonald, D. W., and Harrington, L. A. (2003). *The American mink: the triumph and tragedy of adaptation out of context.* New Zealand Journal of Zoology, 30(4), 421-441.

MacLeod, I. (2023). *Hebridean Mink Project.* [online] NatureScot. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/hebridean-mink-project. Accessed on: 08 February 2024.

Magnusdottir, R., von Schmalensee, M., Stefansson, R. A., Macdonald, D. W. and Hersteinsson, P. (2014). *A foe in woe: American mink (Neovison vison) diet changes during a population decrease*. Mammalian Biology, 79, 58-63.

Marine Directorate (2023). *Improving understanding of seabird bycatch in Scottish longline fisheries and exploring potential solutions*. Available at: https://www.gov.scot/publications/improving-understanding-seabird-bycatch-scottish-longline-fisheries-exploring-potential-solutions/pages/1/ Accessed on: 24 August 2023.

Martin, G. R. and Crawford, R. (2015). *Reducing bycatch in gillnets: a sensory ecology perspective*. Global Ecology and Conservation, 3, 28-50.

McMullen, N. (2015). *Invasive Non-Native Species Monitoring and Control - The River South Esk*. Available at: https://theriversouthesk.org/projects/american-mink-control-2/ Accessed on: 12 January 2024.

Melero, Y., Robinson, E., & Lambin, X. (2015). *Density-and age-dependent reproduction partially compensates culling efforts of invasive non-native American mink*. Biological Invasions, 17, 2645-2657.

Melero, Y., Cornulier, T., Oliver, M. K. and Lambin, X. (2018). *Ecological traps for large-scale invasive species control: Predicting settling rules by recolonising American mink post-culling*. Journal of Applied Ecology, 55(4), 1769-1779.

Melville, D. (1973). *Birds in Salmon Nets*. Seabird Reports, 3, 47–50.

Melvin, E. F., Dietrich, K. S., Fitzgerald, S. and Cardoso, T. (2011). *Reducing seabird strikes with trawl cables in the pollock catcher-processor fleet in the eastern Bering Sea*. Polar Biology, 34, 215-226.

Melvin, E. F., Guy, T. J. and Read, L. B. (2014). *Best practice seabird bycatch mitigation for pelagic longline fisheries targeting tuna and related species*. Fisheries Research, 149, 5-18.

Miettinen, M., Stjernberg, T., Ho¨gmander, J. (1997). *Breeding bird fauna in the Southwestern Archipelago National Park and its cooperation area in the beginning of 1970's and 1990's*. Metsa¨hallituksen luonnonsuojelu julkaisuja sarja A 68 (in Finnish with English summary).

Miles, J., Parsons, M. and O'Brien, S. (2020). *Preliminary assessment of seabird population response to potential bycatch mitigation in the UK-registered fishing fleet.* Report prepared for the Department for Environment Food and Rural Affairs (Project Code ME6024).

Mitchell, I. and Daunt, F. (2010). *Seabirds in MCCIP Annual Report Card 2010-11*. MCCIP Science 20 Review, 12.

Mitchell, P. I., Newton, S., Ratcliff E. N. and Dunn, T. E. (eds.) (2004). *Seabird Populations of Britain and Ireland: results of the Seabird 2000 census (1998–2002)*. London, UK: T and A.D. Poyser.

Moore, N. P., Roy, S. S. and Helyar, A. (2003). *Mink (Mustela vison) eradication to protect ground‐nesting birds in the Western Isles, Scotland, United Kingdom*. New Zealand Journal of Zoology, 30(4), 443-452.

Murray, S., Wanless, S. and Harris, M. P. (1994). *The Effects of Fixed Salmon Salmo-Salar Nets on Guillemot Uria-Aalge and Razorbill Alca-Torda in Northeast Scotland in 1992*. Biological Conservation, 70, 251–256.

NatureScot. (2024). *Hebridean Mink Project*. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-wildlife/hebridean-mink-project Accessed on: 19 March 2024.

Nordström, M., Högmander, J., Laine, J., Nummelin, J., Laanetu, N. and Korpimäki, E. (2003). *Effects of feral mink removal on seabirds, waders and passerines on small islands in the Baltic Sea*. Biological Conservation, 109(3), 359-368.

Nordström, M. and Korpimäki, E. (2004). *Effects of island isolation and feral mink removal on bird communities on small islands in the Baltic Sea*. Journal of Animal Ecology, 73(3), 424-433.

Northridge, S., Kingston, A. and Coram, A. (2020). *Preliminary estimates of seabird bycatch by UK vessels in UK and adjacent waters*'. Report prepared for the Department for Environment Food and Rural Affairs (Project Code ME6024).

Northridge, S., Kingston, A. and Coram, A. (2023). *Regional seabird bycatch hotspot analysis*., JNCC Report No. 726. JNCC, Peterborough, ISSN 0963-8091. Available at: https://hub.jncc.gov.uk/assets/a00403c7-6f56-4f38-8b57-b2ab1859c564. Accessed on: 08 February 2024.

O'Keefe, C. E., Cadrin, S. X. and Stokesbury, K. D. (2012). *Evaluating success of bycatch mitigation measures*. ICES CM 2012/C17.

Oliveira, N., Almeida, A., Alonso, H., Constantino, E., Ferreira, A., Gutiérrez, I., Santos, A., Silva, E. and Andrade, J. (2020). *A contribution to reducing bycatch in a high priority area for seabird conservation in Portugal*. Bird Conservation International, 31(4), 553-572.

Oliver, M. K., Piertney, S. B., Zalewski, A., Melero, Y. and Lambin, X. (2016). *The compensatory potential of increased immigration following intensive American mink population control is diluted by male-biased dispersal.* Biological Invasions, 18, 3047-3061.

Olsson, V. (1974). *Razorbill Alca torda and black guillemot Cepphus grylle on the Swedish east coast 1954–73. Changes in population*. Vår Fågelvärld, 33, 3-14.

Ouest-France (2015). *'Le vison d'Amérique indésirable sur les îles'*, Ouest-France. Available at: https://www.ouest-france.fr/bretagne/perros-guirec-22700/le-vison-damerique-indesirable-sur-les-iles-3495528. Accessed on: 18 March 2024.

Parker, G. C. (2017). *Stocktake of measures for mitigating the incidental capture of seabirds in New Zealand commercial fisheries*. Report to Southern Seabird Solutions Trust by Parker Conservation, Dunedin.

Paterson, J., Yates, O., Holtzhausen, H., Reid, T., Shimooshili, K., Yates, S. and Wanless, R. (2019). *Seabird mortality in the Namibian demersal longline fishery and recommendations for best practice mitigation measures.* Oryx, 53(2), 300-309. doi:10.1017/S0030605317000230.

Paz, J. A., Pon, J. P. S., Favero, M., Blanco, G. and Copello, S. (2018). *Seabird interactions and bycatch in the anchovy pelagic trawl fishery operating in northern Argentina*. Aquatic Conservation: Marine and Freshwater Ecosystems, 28, 850-860.

Pott, C. and Wiedenfeld, D. (2017). *Information gaps limit our understanding of seabird bycatch in global fisheries*. Biological Conservation, 210, 192-204.

Previtali, A., Cassini, M. H. and Macdonald, D. W. (1998). *Habitat use and diet of the American mink (Mustela vison) in Argentinian Patagonia*. Journal of Zoology, 246(4), 443-486.

Rachel M. (2024). *Fowlsheugh Nature Reserve* [Blog post]. Available at: https://rachel.blog/2024/03/03/fowlsheugh-nature-reserve/ Accessed on: 07 May 2024.

Rouxel, Y., Crawford, R., Buratti, J. P. F. and Cleasby, I. R. (2022). *Slow sink rate in floated-demersal longline and implications for seabird bycatch risk*. PLoS ONE 17(4), e0267169. Available at: https://doi.org/10.1371/journal.pone.0267169. Accessed on: 08 February 2024.

Roy, S., Reid, N. and McDonald, R. A. (2009). *A review of mink predation and control in Ireland*. Irish Wildlife Manuals, No. 40. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Roy, S. S., Chauvenet, A. L. M. and Robertson, P. A. (2015). *Removal of American mink (Neovison vison) from the Uists, outer Hebrides, Scotland*. Biological Invasions, 17, 2811-2820.

Russell, J. C., Towns, D. R., Anderson, S. H. and Clout, M. N. (2005). *Intercepting the first rat ashore*. Nature, 437(7062), 1107-1107.

Schüttler, E., Klenke, R., McGehee, S., Rozzi, R. and Jax, K. (2009). *Vulnerability of ground-nesting waterbirds to predation by invasive American mink in the Cape Horn Biosphere Reserve, Chile.* Biological Conservation, 142(7), 1450-1460.

Schüttler, E., Ibarra, J. T., Gruber, B., Rozzi, R. and Jax, K. (2010). *Abundance and habitat preferences of the southernmost population of mink: implications for managing a recent island invasion*. Biodiversity and Conservation, 19, 725-743.

Scottish Government, (2023a). *Framework to Evaluate Ornithological Compensatory Measures for Offshore Wind – Process Guidance Note for Developers.*

Scottish Government, (2023b). *Strategic Environmental Assessment of proposals to close fishing for sandeel in all Scottish waters*. Available at:: https://www.gov.scot/publications/sandeel-consultation-strategic-environmental-assessment-draft-environmental-report/#:~:text=It%20is%20assessed%20that%20the,Areas%20(%20MPA%20s)%20in%20which. Accessed on: 18 December 2023.

Scottish Natural Heritage. (2018). *Birds flock back to mink-free Hebrides*. Available at: https://presscentre.nature.scot/news/birds-flock-back-to-mink-free-hebrides Accessed on: 19 March 2024.

Spatz, D. R., Jones, H. P., Bonnaud, E., Kappes, P., Holmes, N. D. and Guzmán, Y. B. (2022). *Invasive species*. In: Young, L. and VanderWerf, E. A. (eds.). *Conservation of Marine Birds*. 1st ed. Elsevier.

Stanbury, A., Thomas, S., Aegerter, J., Brown, A., Bullock, D., Eaton, M., Lock, L., Luxmoore, R., Roy, S., Whitaker, S. and Oppel, S. (2017). *Prioritising islands in the United Kingdom and crown dependencies for the eradication of invasive alien vertebrates and rodent biosecurity*. European Journal of Wildlife Research, 63, 31.

Stephenson, R., Butler, P. J., Dunstone, N. and Woakes, A. J. (1988). *Heart rate and gas exchange in freely diving American mink (Mustela vison)*. Journal of experimental biology, 134(1), 435-442.

Stefansson, R. A., von Schmalensee, M. and Skorupski, J. (2016). *A tale of conquest and crisis: invasion history and status of the American mink (Neovison vison) in Iceland*. Acta Biologica, 23, 87-100.

Sullivan, B. J., Kibel, B., Kibel, P., Yates, O., Potts, J. M., Ingham, B., Domingo, A., Gianuca, D., Jimenez, S., Lebepe, B., Maree, B. A., Neves, T., Peppes, F., Rasehlomi, T., Silva-Costa, A. and Wanless, R. M. (2017). *At-sea trialling of the Hookpod: a 'one-stop' mitigation solution for seabird bycatch in pelagic longline fisheries*. Animal Conservation, 21, 159-167.

Thomas, S., Brown, A., Bullock, D., Lock, L., Luxmoore, R., Roy, S., Stanbury, A. and Varnham, K. (2017). *Island restoration in the UK – past present and future*. British Wildlife, 28, 231–242.

Towns, D. R., Byrd, G. V., Jones, H. P., Rauzon, M. J., Russell, J. C. and Wilcox, C. (2011). *Impacts of introduced predators on seabirds*. Seabird islands: ecology, invasion, and restoration. Oxford University Press, New York, 56-90.Vergunst, P. (2022). *Fowlsheugh: lichens in a seabird colony* [Blog post]. Available at: https://scottishlichens.co.uk/2022/02/12/fowlsheugh-lichens-in-a-seabird-colony/ Accessed on: 07 May 2024.

Veron, P. and Lawlor, M. (2009). The dispersal and migration of the Northern Gannet Morus bassanus from Channel Islands breeding colonies. *Seabird*, *22*, 37-47.

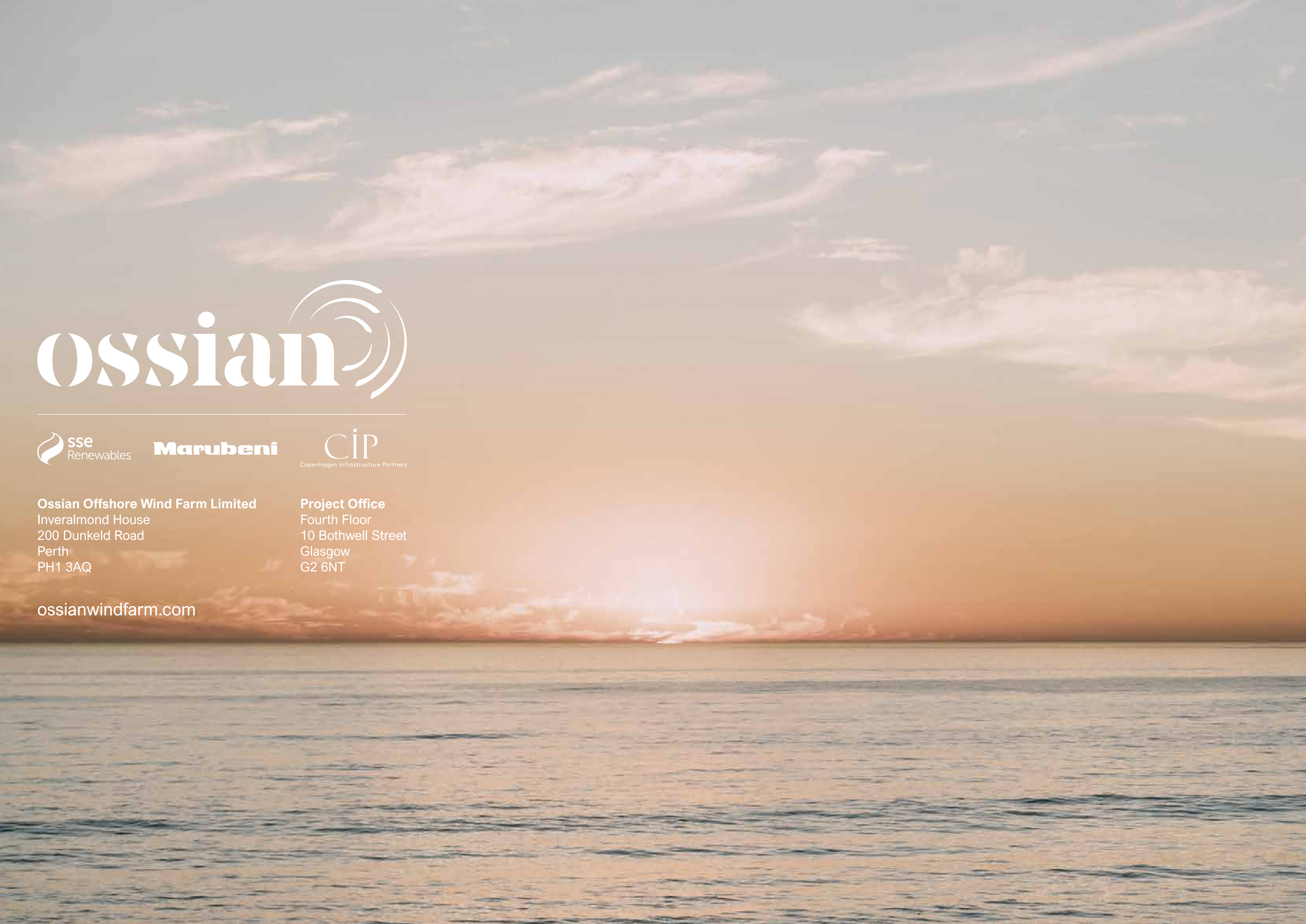
Wiedenfeld, D. A., Crawford, R., and Pott, C. M. (2015). *Results of a Workshop on Reduction of Bycatch of Seabirds, Sea Turtles, and Sea Mammals in Gillnets*.. American Bird Conservancy and BirdLife International.

Wiedenfeld, D. A. (2016). *Seabird bycatch solutions for fishery sustainability*. American Bird Conservancy.

Woodward, I., Thaxter, C. B., Owen, E. and Cook, A. S. C. P. (2019). *Desk-based revision of seabird foraging ranges used for HRA screening*. Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate. BTO Research Report No. 724. Thetford, Norfolk.

Wright, L. J., Ross-Smith, V. H., Austin, G. E., Massimino, D., Dadam, D., Cook, A. S. C. P., Calbrade, N. A. and Burton, N. H. K. (2012). *Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas (and other Annex 1 species).* BTO Research Report, No. 592. Thetford, Norfolk.

Žydelis, R., Small, C. and French, G. (2013). *The incidental catch of seabirds in gillnet fisheries: A global review*. Biological Conservation, 162, 76–88.



Ossian Offshore Wind Farm Limited
Inveralmond House
200 Dunkeld Road
Perth
PH1 3AQ

Project Office
Fourth Floor
10 Bothwell Street
Glasgow
G2 6NT

ossianwindfarm.com