[redacted]

From: [redacted]
Sent: 04 April 2013 17:06
To: [redacted]
Cc:
Subject: Rats - LIFE summary - [redacted] Shiants proposal - [redacted] - 040413
Attachments: [redacted] Shiants B1 B2.doc

[redacted]

Please get comments from [redacted] on both the ornithological aspects and on the black rats' status as rare, but invasive non-native mammals.

Thoughts from [redacted] too please on petrels and shearwaters as qualifying features for SPA.

It's possible that support or otherwise for this bid may be a political rather than ecological decision – can't help thinking it would be better if RSPB were to kill brown rats on other islands first.

[redacted]

From: [redacted]
Sent: 04 April 2013 16:02
To: [redacted]
Subject: FW: LIFE summary - [redacted] Shiants proposal

For info, [redacted] Shiants LIFE proposal

From: [redacted]
Sent: 04 April 2013 12:05
To: EC LIFE+
Cc: [redacted]
Subject: LIFE summary - RSPB Shiants proposal

Dear ScotGov

Please find attached Forms B1 and B2 for a LIFE+ Nature proposal centred on restoration of the Shiant Islands SPA. We hope that the concept meets with your approval, and look forward to receiving your Form A8 in due course.

SNH has already given us some useful comments on the concept – for which we are very grateful. Few of these comments are directly relevant to the attached summary, but we will (of course) take full account of them as we develop the rest of the proposal.

One element of the concept perhaps requires a little additional explanation. This is the proposal to actively promote (re-)colonisation of the Shiants by storm petrels and Manx shearwaters. We are aware that this is likely to be funded by LIFE only if we provide an undertaking from yourselves to add these species to the list of qualifying features for the SPA if/when this becomes appropriate. We plan to discuss this with you over the next couple of months (i.e. before the final submission date of 25 June), but have included it in the concept for now – partly because we hope that you will feel able to provide such an undertaking, and partly because it accounts for only a tiny part of the project budget (just a few thousand Euros) so will not cause problems if it has to be taken out.

Please do not hesitate to contact me if you have any questions. I am on leave next week but back from Monday 15 April.

Thanks and best wishes

[redacted]

Direct dial: [redacted]
Switchboard: [redacted]
Fax [redacted]

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in English)

Project title: Protecting and restoring the Shiant Isles SPA through rat eradication, and safeguarding other seabird SPAs in the UK

Project objectives:

The overall purpose of the project is two-fold: primarily to protect and restore the Shiant Isles SPA through the removal of invasive black rats (*Rattus rattus*), and secondly to use the expertise gained in this project to improve the provision of safeguards against invasive mammal incursions on other important seabird island SPAs around the UK.

The main target species on the Shiant Isles is Atlantic puffin (*Fratercula arctica*), which is a designated feature of the SPA. However, benefits are likely across much of the seabird assemblage for which the SPA is also designated, including razorbill (*Alca torda*) and European shag (*Phalacrocorax aristotelis*). Additional actions will target Manx shearwater (*Puffinus puffinus*) and European storm-petrel (*Hydrobates pelagicus*), which although not presently qualifying features of the SPA, are likely to have bred on the islands historically and will be able to colonise once they are rat-free. It is also expected that there will be significant benefits for non-target species that are susceptible to the impacts of rats, particularly terrestrial birds such as twite (*Carduelis flavirostris*), wheatear (*Oenanthe oenanthe*) and skylark (*Alauda arvensis*), wading bird species like oystercatcher (*Haematopus ostralegus*), common sandpiper (*Actitus hypoleucos*), golden plover (*Pluvialis apricaria*), snipe (*Gallinago gallinago*) and curlew (*Numenius arquata*), invertebrate species and native vegetation including heather (*Calluna vulgaris*), lesser celandine (*Ranunculus ficaria*) and other wild flowers.

The improvement of safeguards to prevent invasive mammal invasions (i.e. biosecurity) will benefit the full suite of seabird species on island SPAs in the UK, particularly the highly sensitive burrow- and ground-nesting species (puffin, Manx shearwater, European storm-petrel and Leach's storm-petrel *Oceanodroma leucorhoa*).

The major objectives of the project are thus:

- To remove invasive rat predation pressure from the Shiant Isles SPA seabird breeding assemblage by undertaking a full rat eradication. This will remove a significant pressure on the existing seabird colony, to which several species are susceptible. It will also build resilience in to the colony in the face of impacts of unknown magnitude from oceanographic change and increasing anthropogenic activity at sea. The problems facing the seabirds on the Shiants are illustrated by the fact that when the condition of this SPA was last formally assessed, in 2008, both of the seabirds covered by the assessment (namely razorbill and guillemot *Uria aalge*) were classified as 'unfavourable declining'.

- To promote the effective colonisation of the Shiant Isles by European storm-petrel and Manx shearwater through the provision of breeding chambers in appropriate locations and playback attraction. Neither of these species could co-exist with rats.

- To protect the UK's most important and vulnerable seabird SPA islands by significantly improving the existing biosecurity measures. At present, biosecurity (i.e. preventative measures to counteract alien species invasions) is severely lacking on many important islands, with consequential risks to a significant proportion of the UK's internationally

important populations of seabirds. The project will co-ordinate improved biosecurity for important seabird islands across the UK by establishing a minimum standard for biosecurity as a guideline document for island managers, accompanied by training exercises across the country. This will be informed by a scientific review of existing practices in place and a risk assessment for seabird SPA islands across the UK to identify the priority islands for implementation of detailed biosecurity measures.

- To use the actions of this project to coordinate and build UK expertise in island restoration as a long-term legacy of the project. This could create opportunities for a greater number of UK/EU island restoration projects to go ahead, reducing reliance on expensive contractors.

A: PREPARATORY AND PLANNING ACTIONS

A.1 Recruit new staff and volunteers
A.2 Select subcontractors
A.3 Carry out pre-rat removal surveys of targets species and other key taxa
A.4 Carry out pre-rat removal assessment and preparation
A.5 Prepare communications and media plan
A.6 Review existing biosecurity practices on seabird island SPAs and assess risk of invasion by invasive non-native species.

B: LAND PURCHASE AND LEASE

N/A

C: CONCRETE CONSERVATION ACTIONS

C.1 Eradicate black rat *Rattus rattus* and carry out intensive monitoring
C.2 Set up playback attraction systems for European storm-petrel and Manx shearwater
C.3 Implement programme of island biosecurity training

D: MONITORING OF PROJECT IMPACT

D.1 Carry out long-term surveillance of rats
D.2 Carry out final check for rats
D.3 Carry out post-rat removal monitoring of target species and other taxa
D.4 Assess overall contribution of rat removal to island ecosystem restoration

E:AWARENESS AND DISSEMINATION ACTIONS

E.1 Erect notice boards (NB: NOT ON SHIANT ISLES!)
E.2 Create and maintain project website
E.3 Produce layman's report
E.4 Produce project newsletter and leaflets
E.5 Organise awareness raising events (???)
E.6 Undertake media work
E.7 End of project conference

F: PROJECT MANAGEMENT ACTIONS

F.1 Manage project effectively and efficiently
F.2 Carry out liaison/networking with other projects
F.3 Obtain independent verification of final financial statements
F.4 Produce after-LIFE conservation plan

Expected results (outputs and quantified achievements):

The first key result will be that the Shiant Isles are declared rat-free after a successful eradication operation. This will allow the puffin colony to expand into suitable habitat and permit an improvement in productivity among other seabird species (razorbills and shags), and will also allow Manx shearwaters and European storm-petrels to establish on the islands.

The recovery of the Shiants' seabird population is difficult to predict because of the vast array of external factors that can affect seabird populations; of particular relevance is the effect of large-scale oceanographic change, which appears to have caused food shortage for many seabird colonies in recent years. However, rather than a reason for inaction, this should be a driver for action – to build resilience into important seabird populations in the face of unknown impacts from climate change. Irrespective of this, we can be confident that rat eradication will lead to substantial increases in the populations of the target species, as numerous successful rat eradication projects around the UK have demonstrated. Puffin numbers continue to rise on Ailsa Craig after the successful removal of rats – the puffin colony had once been too large to count, but was completely extirpated by rats in the 1930s. The Canna Seabird Recovery Project (LIFE05 NAT/UK/000141) resulted in higher breeding success for several seabird species, including European shag and razorbill, almost immediately after rat eradication. Five years after rat eradication on the island of Lundy, the Manx shearwater population increased by 250%. This is clearly an effective tool for improving seabird conservation status. To further encourage the establishment of seabird species for which there is no 'seed' population on the Shiant Isles (Manx shearwater and storm-petrel), active attraction will be used to encourage birds to nest on the island. Such techniques (e.g. broadcasting the calls of target species) have been effectively deployed in establishing colonies elsewhere.

In summary, the key results of rat eradication and active seabird attraction techniques on the Shiant Isles will be:

- Improved breeding success and increase in the number of breeding pairs of puffin, razorbill and European shag. Similar improvements expected in non-SPA features including black guillemot (*Cepphus grylle*) and kittiwake (*Rissa tridactyla*).
- Establishment and successful breeding of Manx shearwater and European storm-petrel for the first time in at least 100 years.

Another critical result of the project will be the implementation of a minimum standard for biosecurity on important seabird islands – not just the Shiant Isles, but all of the most important and vulnerable (to the impacts of invasive species) islands across the UK. This is prevention rather than cure – ensuring invasive species do not arrive on sensitive islands and cause problems for Annex 1 Birds Directive (and other) species. There are few existing biosecurity plans for key islands, and no clearly stated best practice guidelines, leaving many critically important breeding colonies more open to the invasion of alien species, and staff ill-prepared to respond in the event of an invasion. By setting minimum standards and establishing a formal training programme, practitioners and island managers will be equipped to ensure that the UK's most important seabird islands are not invaded by non-native species. The most important islands for such measures will be prioritised in the course of the project, to identify the island managers most in need of this training.

There will, of course, also be numerous additional or fringe benefits in undertaking this project, including improvements for non-target species on the Shiant Isles (plants, invertebrates, terrestrial bird species). A key element of the project will be monitoring the full ecosystem recovery of the islands, something which has been overlooked in many UK island restoration projects to date. Additionally, the project will raise public awareness – at a local and national level – of the threat of invasive species to seabirds and biodiversity more broadly. Such education is a vital tool in preventing invasive species introductions, as many occur accidentally through a lack of understanding or vigilance.

Can the project be considered to be a climate change adaptation project?	Yes	☑
	No	☐

GENERAL DESCRIPTION OF THE AREA / SITE(S) TARGETED BY THE PROJECT

Name of the project area: Shiant Isles

Surface area (ha): 6,936 ha (of which just 212 ha is land)

EU protection status: SPA ☑ **NATURA 2000 Code** : UK9001041

SAC ☐ **NATURA 2000 Code** :

Other protection status according to national or regional legislation:

The **Shiant Isles SPA** is also designated as a Site of Special Scientific Interest (**Shiant Islands SSSI**) under national legislation (Nature Conservation (Scotland) Act 2004), designated for the seabird assemblage (*Uria aalge, Fratercula arctica, Alca torda, Phalacrocorax aristotelis*) and wintering Barnacle goose *Branta leucopsis* population, as well as for the tertiary igneous geology.

Main land uses and ownership status of the project area:

The islands are uninhabited and are privately owned by an individual; a local shepherd leases the grazing right on the islands. There is extensive sheep grazing on all three of the main islands (Eilean Mhuire, Eilean an Tighe and Garbh Eilean) throughout the year. There is a small house on Eilean an Tighe which can be used by visitors. Visitor pressure is generally low – there is no regular ferry to the islands and no pier, so access can be awkward in poor weather. Small numbers of people do visit and stay in the house between April and August (generally not more than eight at a time), and a number of boat operators offer day trips out to the islands in the summer. In this sense tourism is another 'use' of the islands, with visitors going to enjoy the wildlife, space and 'wildness'. Researchers in various disciplines (archaeology and ornithology in particular) are among the more regular visitors. The island is also visited by private sailing boats.

Scientific description of the project area:

The Shiant Isles are composed of three large islands: Garbh Eilean (98ha), Eilean an Tighe (62ha) – which are connected by a small shingle beach – and the separate Eilean Mhuire (40ha) as well as a number of smaller islands and skerries (the Galtachean). The islands are located approximately 6km east of the Isle of Lewis and 20km north of Skye in the Minch, the sea between the Outer Hebrides and mainland Scotland. The SPA covers the entire land area of the Shiant Isles, as well a recently designated (2009) 2km seaward extension into the marine environment.

The islands are primarily composed of a basaltic sill, and the main habitat types are: shingle beaches and sea cliffs (15%), boulder screes and sands (10%), bog/marsh (10%), heath and scrub (30%) and alpine and sub-alpine grassland (35%) (NB: these percentages do not include the marine component of the SPA).

Importance of the project area for biodiversity and/or for the conservation of the species / habitat types targeted at regional, national and EU level (give quantitative information if possible):

The **Shiant Isles SPA** qualifies under Article 4.2 of the Birds Directive, by regularly supporting in excess of 20,000 seabirds (more than 200,000 seabirds are regularly supported on the Shiant Isles). The Shiant Isles SPA further qualifies under Article 4.2 of the Birds Directive by regularly supporting populations of European importance of:
- Atlantic puffin *Fratercula arctica* (65,200 pairs, one of the largest puffin colonies in the UK)
- Razorbill *Alca torda* (10,950 pairs, 1% of the biogeographic population)
- European shag *Phalacrocorax aristotelis* (1,780 pairs, 1.5% of the Western European biogeographic population)
- Northern fulmar *Fulmarus glacialis* (6,820 pairs, 1% of the Great British population, at least 0.1% of the North Atlantic breeding population)
- Common guillemot *Uria aalge* (18,380, 2% of the Great British population).
- Black-legged kittiwake *Rissa tridactyla* (1,800 pairs, 0.4% of the Great British population).

The SPA also qualifies under article 4.1 of the Birds Directive, supporting a winter flock (490 birds, 1.5% of the EC population, 2% of the Great British population) of the Annex 1 species Greenland barnacle goose *Branta leucopsis*.

The islands are also host to breeding great skua *Stercorarius skua* (for which the UK hosts 60% of the global population), black guillemot *Cepphus grylle*, herring gull *Larus argentatus* and great black-backed gull *Larus marinus*. Archaeological work on the islands has resulted in the discovery of shearwater bones (likely Manx shearwater) in a post-Medieval midden, indicating that there is a good possibility that the species once bred here – there is ample available habitat for this species to move in to, and this will be encouraged through nest site provision and playback attraction techniques.

The Shiant Isles are situated 50km west of the large European storm-petrel breeding colony on Priest Island, an SPA (UK9001261) for this species, home to an estimated 2,168 breeding pairs. This (and other colonies) could act as key source populations, with immature birds prospecting the Shiants as a breeding site in the absence of predators. Ringing records from the Shiant Isles indicate that up to 258 individual European storm-petrels have been caught in mist nets in a single season. The Shiant Isles have extensive (10% of project sub-area) talus scree habitat, which could provide ideal nesting sites for this Annex I species. Establishment will be actively encouraged through established attraction methods.

The Shiant Isles SPA has been selected for this project because of its importance in global, regional and local terms, particularly for seabirds; because of the presence of invasive rats and the associated predation pressure on the important seabird colonies; because preparatory work suggests that an eradication of rats is feasible at a reasonable cost, particularly considering the remote nature of the islands; and because we have confidence that this project will have significant beneficial effects on the seabird populations of the islands, particularly puffins.

Sources:

Citation for Shiant Isles Special Protection Area (http://www.snh.org.uk/about/directives/ShiantB433702.pdf)

MAP OF THE GENERAL LOCATION OF THE PROJECT AREA
(Please indicate the scale of the map)

[TO BE ADDED]

LOCATION
IN THE COUNTRY

LOCATION IN
THE REGION

This map must be provided in an A4 format

DESCRIPTION OF SPECIES / HABITATS / BIODIVERSITY ISSUES TARGETED BY THE PROJECT

ATLANTIC PUFFIN

Scientific name: *Fratercula arctica*

Annex where listed: N/A, though receives protection under Article 4.2 of the Birds Directive as a regularly occurring migratory species.

Population size within project area: After the last complete survey (2000) of the Shiant Isles SPA, the puffin population was assessed at 65,200 pairs. This is a decrease from the previous survey, which indicated a population of 77,000 pairs in 1970 (though this is within the bounds of counting error).

There are significant uncertainties in survey methods used for puffin populations, which may be responsible for some of the differences in population estimates. It is thus difficult to establish what the long-term trend is for the puffin colony on the Shiant Isles.

It seems likely that puffin numbers on the Shiants are significantly lower than in the 19th century. Formal counts were not undertaken at this time, but visitors observed very large numbers. For example, the renowned Victorian naturalist J.A. Harvie Brown visited the Shiant Isles in 1879, and was struck by the size of the puffin colonies. "*Enormous are the legions of Puffins breeding here, filling the air, and covering the sea with their hosts. Compared with all other rock stations of the Puffin which we have seen, the 3½ miles of Puffins of Garbh-eilean of the Shiant Isles far and away carry off the palm in numbers. The face of the basaltic precipices is also covered with Puffins, which nestle amongst the long loose tufts of grass and bunches of bright green sorrel which cap each broken column. They tunnel deep into these tufts, and between them and the rock, and lay their eggs at the far extremities. On the summit of the cliffs the grass-slopes are tunnelled in every direction for many years back from the cliff-edge. On the east side of Garbh-eilean is another slope equally populous with Puffins. Coming, as we then did, with all the memory of the great St. Kilda fresh upon us, nevertheless we can safely say that, for Puffins alone, the Shiant Isles will prove hard to surpass*".

Conservation status within project area: SPEC 2, (a species which has its global population/range concentrated in Europe and an unfavourable conservation status, as defined in BirdLife International's 'Birds in Europe' (2004)). Favourable maintained status when last assessed (1999).

Timing of use of project area: During the breeding season, spring and summer

RAZORBILL

Scientific name: *Alca torda*

Annex where listed: N/A, though receives protection under Article 4.2 of the Birds Directive as a regularly occurring migratory species

Population size within project area: 10,950 pairs on the Shiant Isles

Conservation status within project area: Unfavourable declining, assessed in 2008.

Timing of use of project area: During the breeding season, spring and summer

EUROPEAN SHAG

Scientific name: *Phalacrocorax aristotelis*

Annex where listed: N/A, though receives protection under Article 4.2 of the Birds Directive as a regularly occurring migratory species

Population size within project area: 1,780 pairs

Conservation status within project area: Favourable maintained, assessed in 1999

Timing of use of project area: During the breeding season, spring and summer

EUROPEAN STORM-PETREL

Scientific name: *Hydrobates pelagicus*

Annex where listed: Annex I

Population size within project area: The breeding population is currently zero – although birds have been caught in mist nets and ringed on the islands, storm petrels do very poorly in the presence of rats (the distribution of rats and storm-petrels is mutually exclusive in the UK), so any attempt to colonise the Shiant Isles is likely to be prevented by rat predation. The sub-species to which all UK storm petrels belong is *Hydrobates pelagicus pelagicus* [to be checked]. This subspecies has a breeding range extending along the eastern seaboard of the Atlantic from the Azores to Northern Norway and Iceland. Its minimum world population size is 296,925 pairs (Mitchell et al 2004); the EU supports 245,925 pairs or up to 82.8% of this total and therefore has a global responsibility to maintain and enhance the conservation status of the subspecies. The UK supports 21,000 pairs or up to 7% of the global population - 60% of this population is found on just six islands.

Conservation status within project area: In the UK storm petrel is amber-listed on the Birds of Conservation Concern, as at least 50% of the UK breeding population is found on 10 or fewer sites.

Timing of use of project area: During the breeding season, spring and summer

MANX SHEARWATER

Scientific name: *Puffinus puffinus*

Annex where listed: N/A, though receives protection under Article 4.2 of the Birds Directive as a regularly occurring migratory species

Population size within project area: The Manx shearwater population is currently zero on the Shiant Isles SPA. Since there are poor historical records for the islands, it is not known

what size any historical population of the species may have been, though archaeological excavations on the islands have uncovered evidence of nesting shearwaters. The estimated national population size is between 280,000 and 310,000 breeding pairs (~80% of the global population).

Conservation status within project area: This species is listed as SPEC 2 under Species of European Conservation Concern, because it has an unfavourable conservation status, primarily because the population is highly localised, and over 50% of the global population is concentrated in Europe. In the UK, it is amber-listed on the Birds of Conservation Concern, because of a longer-term (since 1969) breeding range decline of more than 25%, localisation of breeding sites (50% of UK breeding population found in 10 or fewer sites) and the high proportion (>20%) of the European population found in the UK.

Timing of use of project area: During the breeding season, spring and summer

OTHER SPECIES THAT MAY BENEFIT:

Remainder of the breeding seabird assemblage:

Although the aforementioned seabird species on the Shiant Isles are those likely to be most impacted by rat predation (particularly burrow-nesters), cliff-nesting species (e.g. common guillemot and northern fulmar, both constituents of the SPA seabird assemblage) are also vulnerable to predation by black rats in more accessible areas, and may benefit from rat eradication. Black guillemot *Cepphus grylle*, although not covered by the Birds Directive, is also likely to benefit from rat eradication – a recovery in the population on Ailsa Craig has been observed post-rat eradication.

Other birds:

The Shiant Isles SPA also supports small populations of terrestrial birds such as twite (*Carduelis flavirostris*), wheatear (*Oenathe oenathe*) and skylark (*Alauda arvensis*), wading bird species like oystercatcher (*Haematopus ostralegus*), common sandpiper (*Actitus hypoleucos*), golden plover (*Pluvialis apricaria*), snipe (*Gallinago gallinago*) and curlew (*Numenius arquata*). As all these species are ground-nesting, they may benefit from the eradication of rats from the islands.

Other taxa:

Invertebrate species and native vegetation including heather (*Calluna vulgaris*) and lesser celandine (*Ranunculus ficaria*) were found in the stomach contents of rats necropsied on the Shiant Isles. It is likely that rats are suppressing not only populations of these species, but also rare or thus far undetected species yet to be recorded on the islands. Rat eradication is likely to have positive effects on both invertebrate and plant assemblages on the islands.

REFERENCES

- Bell, E (2012). Shiant Isles Project: Feasibility Study and Operational Plan for the eradication of black rats (Rattus rattus) from Shiant Isles, Hebrides, Scotland. Prepared for the Royal Society for the Protection of Birds.

- Brooke, M de L, Douse, A, Haysom, S, Jones, FC & Nicolson, A (2002). The Atlantic Puffin Population of the Shiant Islands, 2000. Scottish Birds (23), 22-26.

- Harvie-Brown, JA & Buckley, TE (1888). A Vertebrate Fauna of the Outer Hebrides.

- Mitchell, PI, Newton, SF, Ratcliffe, N & Dunn, TE, (2004), Seabird Populations of Britain and Ireland.

CONSERVATION / BIODIVERSITY PROBLEMS AND THREATS

Please provide this information for those species and habitat types **directly targeted** by the project

THREAT1: RAT PREDATION OF SEABIRDS

Description and impact on target species:

Stable isotope analysis of Shiant Isles black rats (Rattus rattus) indicates that they are feeding on seabirds; it is notable that the highest rat densities on the islands are found around the seabird colonies (particularly among the major puffin colonies) (Stapp, 2002) as well as around the single house on Eilean an Tighe (a potential source of food and shelter for rats). Burrow-nesting birds like puffins are particularly vulnerable given the ease with which rats can access the nest site. Eggs and chicks are particularly susceptible due to their inability to defend themselves. It is thus highly likely that rats are at very least limiting, and possibly decreasing the puffin population on the islands, as large areas of suitable habitat remains unoccupied by the species. Other seabird species (razorbill and shag) nest predominantly among the boulder screes on the island, and as such are also easily accessible prey for rats. Storm petrels and Manx shearwaters will not be able to colonise the islands in the presence of black rats, as characterised by the mutually exclusive distribution of storm petrels and invasive rats.

Proposed action to deal with threat:

We propose to undertake a full rat removal from the Shiant Isles, improving the breeding success and increasing the population size of Atlantic puffin, razorbill and European shag colonies. This action will also improve conditions for Manx shearwater and European storm petrel and will allow both species to colonise the SPA, addressing they key issue affecting their conservation status (breeding population constrained to small number of locations). To ensure invasive predators do not recolonise, appropriate biosecurity measures will be in put in place.

THREAT 2: POOR/NON-EXISTENT BIOSECURITY ON SEABIRD ISLAND SPAS

Description and impact on target species:

The threat of a rat invasion on the UK's internationally important seabird island SPAs is an ever-present risk, since there are almost invariably source populations nearby and varying degrees of human traffic to and form islands. It is thus vital that all these sites, in addition to the project area, are protected as effectively as possible with comprehensive biosecurity measures. At present, there is a lack of consistency in the biosecurity measures in place for the UK's important seabird island colonies. Although plans exist for some islands, not all are covered by biosecurity plans complying to a consistent standard. Further, the existing capacity for responding to a potential invasive non-native predator incursion is not as substantive as it ought to be, and again is not consistent across all SPAs. This represents a significant risk to critical seabird islands across the country.

Proposed action to deal with threat:

Using the project on the Shiant Isles as a learning experience (developing skills in UK-based staff working on the project), we propose to develop a biosecurity protocol as a minimum standard for seabird island biosecurity measures. This will be informed by a scientific review of existing practices in place and a risk assessment for seabird SPA islands across the UK to identify the priority islands for implementation of detailed biosecurity measures. Once the Shiant Isles restoration is complete, project staff will undertake a training programme with relevant island managers around the UK, to ensure that this minimum standard is well-publicised, understood, and is adapted for specific sites.

THREAT 3: LACK OF PRACTICAL RAT ERADICATION EXPERTISE IN THE UK

Description and impact on target species

A number of eradications have taken place in the EU, but expertise is often bought in from outside the EU and the knowledge and experience gained from such operations has not been formally retained within EU organisations. So while there is knowledge of eradication operations in Europe, it has not been co-ordinated and fully developed. This situation is not sustainable, as it regularly requires the costly hiring of external contractors. The result is that conservation priorities may not be achieved because of the prohibitive expense.

Proposed action to deal with threat:

Further to delivering biosecurity training, project staff will additionally train provide conservation staff across the UK in ground-based eradication techniques, developing best practice guidelines for undertaking island eradication projects.

Such training should facilitate the development of a greater number of priority island restoration projects, by reducing the costs of hiring external contractors.

PREVIOUS CONSERVATION EFFORTS IN THE PROJECT AREA AND/OR FOR THE HABITATS / SPECIES TARGETED BY THE PROJECT

There have been no specific conservation efforts targeted at the Shiant Isles for the seabird population. Rats have been trapped and poisoned in and around the house from time to time, and care has been taken to ensure that nothing happens on the islands that might harm the bird colonies. In addition, the owner has sought since 1978 to ensure that the islands are grazed by sheep each year, so that the grass is the right length for puffins and in a good condition for wintering barnacle geese. A management plan was drawn up by the owner and Scottish Natural Heritage in 2012, bird surveys have been carried out regularly, and rat surveys have been carried out occasionally.

There have been a number of successful island restoration projects targeting invasive rats elsewhere in the UK to date, including Canna (a LIFE+ project), Lundy, Puffin, Ramsey, Cardigan, Flatholm, Ailsa Craig and Handa. The primary objective of all these projects was to conserve seabird populations on the islands, and success has been significant: for example, puffins have re-colonised Ailsa Craig, Lundy Manx shearwater numbers increased by 250% between 2001 and 2008 and populations of several vulnerable species began to recover on Canna after eradication, including puffin, razorbill, shag and Manx shearwater.

In addition, there has been an ongoing mink eradication project in the Western Isles, which began as a LIFE+ Nature project (Mink control to protect important birds in the SPAs in the Western Isles (LIFE00 NAT/UK/007073)). This project eradicated mink from the Uists and Benbecula, and continues as the 'Hebridean Mink Project', which is focussing on eradicating mink from Harris and Lewis. The core aim of this project is to completely eradicate mink from the archipelago to protect ground-nesting birds (predominantly *Sterna* sp. and waders), especially those found on Special Protection Areas. While mink have never been on the Shiant Isles, the removal of the Western Isles population provides further protection to the seabird colony on the Shiant Isles, as this significantly reduces the risk of mink invasion via boats visiting the islands from the Western Isles.