Scottish
Marine
Environmental
Enhancement
Fund

Seabirds

The challenges
What we did
The impacts

Contents

Seabirds 1

Contents 2

Executive Summary 3

Policy Alignment 4

About the SMEEF Seabirds Theme 7

Background 8

Section 1 – Safer Islands 9

Safer Islands – National Coordination 11
Safer Islands – Project Development 15
Impact Focus – Testing Practical Approaches 19

Section 2 – Species Specific Projects 22

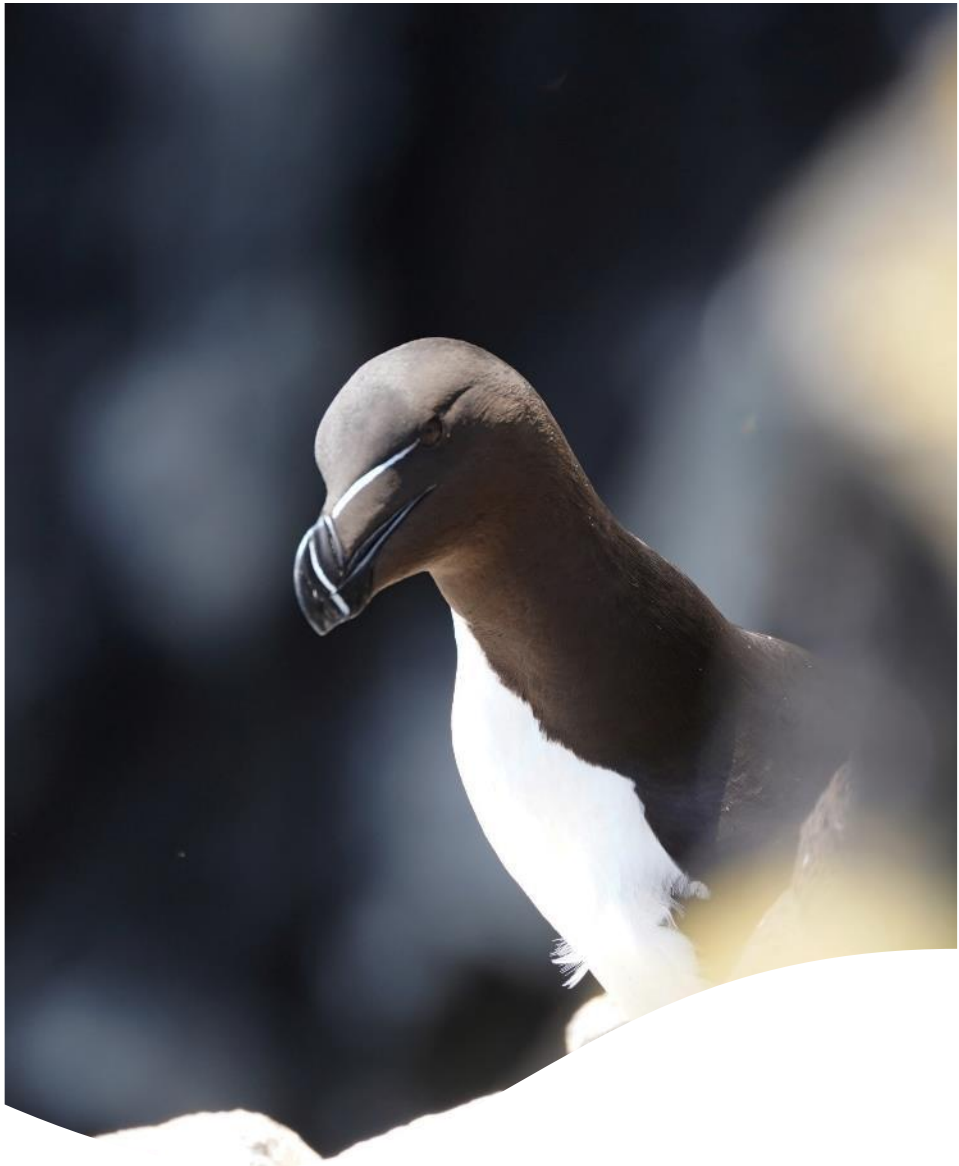
Impact Focus– Burrowing Birds 23
Impact Focus– Ground Nesting Birds 27
Impact Focus – Cliff Nesting Birds 30

Section 3 – Technology and Innovation 34

Section 4 – Coordination and Collaboration 40

Section 5 - Data 46

Appendix – SMEEF project alignment with Seabird CAP priorities 51



Executive Summary

The Scottish Marine Environmental Enhancement Fund, in its 6-year history, has raised almost £10m of funding from public and private sources and supported more than 100 projects across Scotland's coasts and seas. Almost half of this finance is made up of new, voluntary donations which would not have been available for nature enhancements without the work of SMEEF.

However, SMEEF is more than a financial success story. The projects funded have punched above their weight, thanks to the exceptional insights of the partner organisations, NatureScot, Crown Estate Scotland and Scottish Government's Marine Directorate, meaning that never before has private finance been directed so strategically to benefit marine species and habitats in Scotland.

This report tells the story of that policy alignment and the difference it has made to nature and people across Scotland and beyond with specific reference to seabirds. We talk about how our work has unlocked barriers, how public and private sector knowledge and finance has been used to deliver innovation how our work benefits both people and nature creating system wide positive change.

In the last six years SMEEF's convening power, based on trust built through transparent stewardship of funding and consistent delivery against commitments has continued to grow. Our projects, both individually and as a body of work, have shifted the dial – from data collection and analysis that creates an evidence base to harnessing the power of technology to deliver outcomes. We are seeing more and more actions to improve species, habitats and communities most in need but we still need to do more.

SMEEF has distributed funding in a way that has optimises strategic benefits to seabird conservation to help respond to the nature and climate challenges which are so urgent. Working closely with our colleagues in the partnership we have placed funding geographically and thematically to make each pound spent as effective as possible.

SMEEF – the headlines

- **Unlocking finance** – every £1 from private contributions has unlocked more than £1 from other sources. A clear indicator that business and policy are aligned and that we share common goals.
- **Connecting people and nature** – from practical action by volunteers (see page 28) to new technology beaming stunning images into homes and classrooms (see page 39) and new ways to talk about nature (see page 33) every project has a story to tell about people benefiting while celebrating and supporting nature.
- **Community Wealth Building** – across the board communities are identifying the wellbeing benefits of living in a more biodiversity-rich environment (see pages 18-20) when delivered through and with the community.
- **Skills, jobs and capacity** – dozens of full and part time jobs, almost too many posts supported to count and a huge range of volunteer opportunities – this SMEEF funded workforce is making change happen.
- **Convening and collaboration** – making local, regional, national and international collaboration happen to support seabirds. (see pages 51-53)
- **Cultural identity and the visitor economy** – seabirds are deeply woven into Scotland's economy and cultural identity, from proud puffins to great gannets, SMEEF funding is supporting the tourism essential to rural and island communities. (see page 39)

We know there will always be more we can achieve, but SMEEF takes pride in the impact our work is having on the well-being of local communities. Almost every project has been delivered by or with the local community. Jobs have been created and filled. Knowledge has been shared. Opportunities for citizen science, celebration of the natural world and enhanced stewardship of our coasts and seas have been supported. We recognise that people are part of nature.

In short, this collaborative enterprise between public and private sectors has delivered much more than anticipated. Private investment has allowed the flexible use of public finance in a way unanticipated when we began SMEEF, benefitting people and nature through increased collaboration, citizen science and use of technology.

Policy Alignment

At the heart of effective delivery is SMEEF's ability to respond to both established and emerging policy priorities. Our Grants Panel and Steering Group ensure that our work is really delivering against Scotland's established top priorities. Our funding under the Seabirds Theme has been designed to target priorities identified within the:

- Scottish Biodiversity Strategy (2024)
- Scottish Seabird Conservation Action Plan (2025)
- Scottish Action Plan for Invasive Non-Native Species 2026-2032

The next two pages summarise the SMEEF contribution to the six themes of the Seabird Conservation Action Plan (CAP), and the distribution of projects around Scotland. The full list of projects is provided in the Appendix.

Click on this icon to find out more about a project online.

SMEEF contributing to Scotland's priorities for seabirds

SMEEF's seabird-relevant portfolio of projects contributes to all six themes of the **Scottish Seabird Conservation Action Plan**(CAP). Projects do not sit within isolated policy categories: many support several priorities by combining habitat restoration, monitoring, innovation, partnership-building and practical conservation action.

'Core' projects are specific to seabirds. 'Supporting' projects are not directly focused on seabirds but the outcomes have a positive effect on priorities within the Seabird CAP.

Ensuring plentiful food supplies

26 core projects
2 supporting projects

Protecting and restoring marine environments that support abundant prey and healthy food webs.

Stronger food-web resilience supporting seabird populations.

Restoring and improving seabird habitats

12 core projects
2 supporting projects

Recovering, protecting and managing habitats essential for breeding, feeding and resting.

More and better habitats supporting seabird survival and productivity.

Maximising resilience and survival

2 core projects

Reducing key threats and building resilience so seabirds can survive and thrive in a changing world.

Lower threats and improved resilience through targeted action.

Building the evidence

8 core projects
3 supporting projects

Improving monitoring, data and understanding to inform decisions and measure progress.

Better evidence and insights driving effective, adaptive conservation.

Celebrating Scotland's seabirds

2 core projects

Increasing awareness, participation and connection between people, places and seabirds.

Stronger engagement and stewardship for seabirds and coasts.

Making a global contribution

1 core project

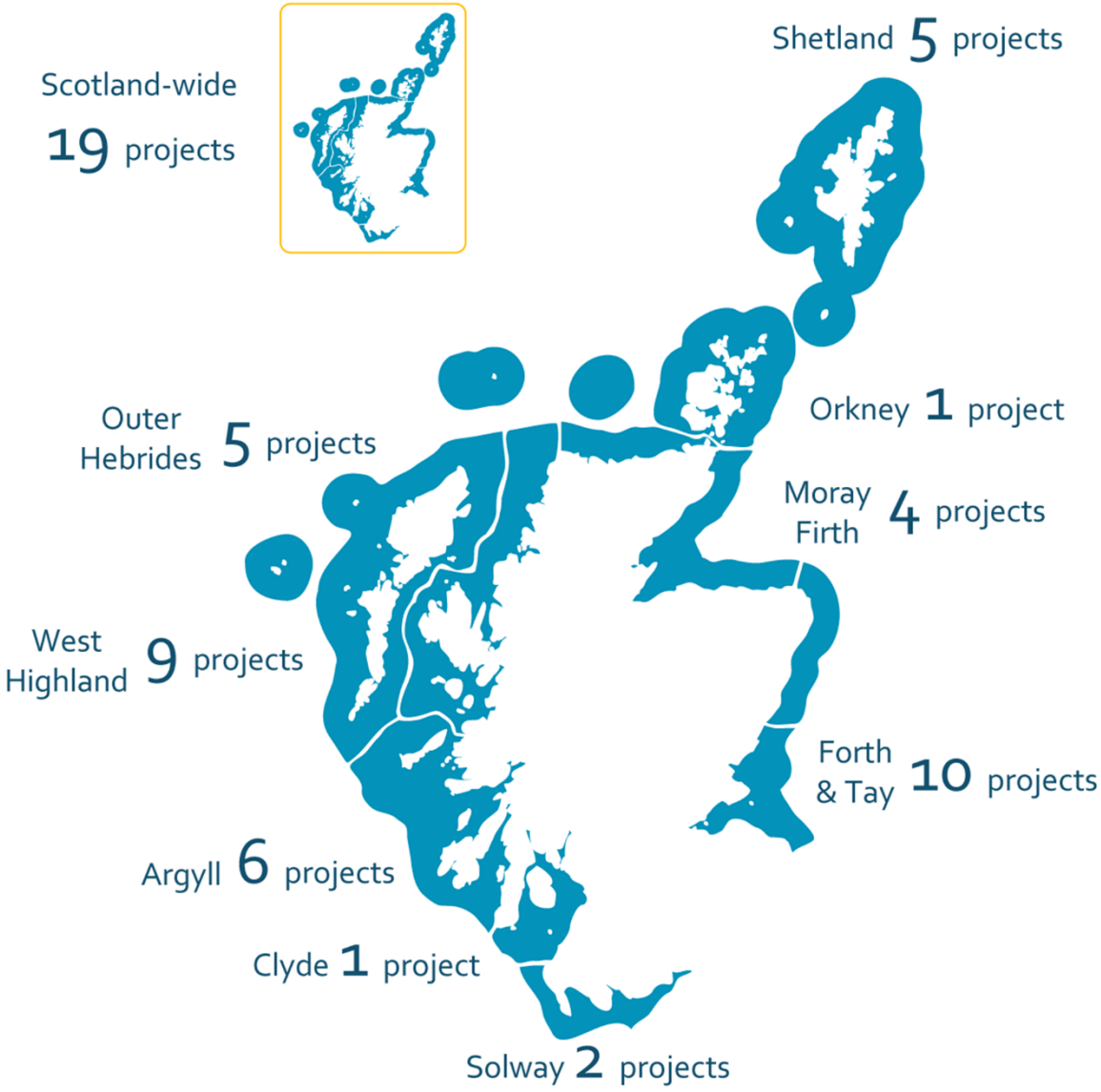
Sharing knowledge and collaborating internationally to support seabird conservation worldwide.

Scotland's expertise and leadership contribute to global solutions.

SMEEF seabird project locations

The distribution of SMEEF-funded projects that support seabirds is shown across the Scottish Marine Regions.

Some projects are active in more than one region, while others have a Scotland-wide focus.



About the SMEEF Seabirds Theme

SMEEF has been delivering grants which support seabird resilience since 2021. To date we have funded 30 projects where seabirds are the major beneficiary amounting to £1.4m. More than £500,000 of new funding for seabirds is committed in the coming years thanks to our Taking Flight fund supported by the NEEOG offshore wind developers who have collaborated to make this important work continue. In addition, a further 28 projects amounting to in excess of £2m worth of grants, have been identified within the SMEEF portfolio where seabirds could be considered a major beneficiary or where they will potentially gain direct benefits. Meaning that for every £1 invested by private businesses more than £1 has come from other sources.

This report tells the story of how SMEEF funding has been used to test, support and take action to deliver real change for seabirds and the communities, individuals and businesses who are determined to see them thrive. Read on for more details.

58
projects in total

30
Core Seabird projects

28
Supporting Seabird projects

Please note some projects deliver in more than one region.

Background

Scotland's coastline and waters are of global significance for seabirds. Twenty-four species breed here regularly, including around 60% of the world's Great Skua population (*Stercorarius skua*), 46% of Northern Gannets (*Morus bassanus*), and 16% of Manx Shearwaters (*Puffinus puffinus*). As top predators, seabirds are vital indicators of marine ecosystem health, playing a key role in maintaining the balance of marine food webs. They are also deeply woven into Scotland's economy and cultural identity, supporting tourism industries that are essential to rural and island communities.

Yet our seabirds are in serious trouble. The proportion of species experiencing widespread breeding failures has grown steadily over the past half-century. In the UK, this is reflected in the marine bird indicator, with breeding seabirds continuing to fall short of Good Environmental Status (GES) in both the Celtic Seas and Greater North Sea. The scale of the crisis was laid bare by Seabirds Count — the fourth census of Britain and Ireland's breeding seabird populations — which found that two thirds of Scotland's seabirds have declined over the last 20 years, with eight species falling by more than 50%.

In addition to this the 2021-2022 outbreak of highly pathogenic avian influenza (HPAI) has driven further large-scale declines at many colonies. Most heavily affected species include Great Skua, Common Tern, Northern Gannet and Sandwich Tern, estimated to have declined by approximately 73%, 40% 16%, 14% respectively. More seabird species now appear on the UK Birds of Conservation Concern Red List than ever before.

The need for action has never been more urgent. Scotland's Biodiversity Strategy to 2045 sets a clear ambition for Scotland to be Nature Positive by 2030 and to have restored and regenerated biodiversity by 2045. It calls for restoration to happen more urgently and at greater scale than before, with every effort made to prevent the extinction of globally threatened species. By delivering on this strategy and achieving GES under the UK Marine Strategy, Scotland will also meet its international obligations to protect the marine environment — and safeguard the ecosystems on which a significant part of the nation's economy depends.

Section 1 – Safer Islands

The introduction of invasive non-native species (INNS) to Scottish islands is one of the biggest threats posed to our breeding seabird colonies. Predators such as rats and mink can cause devastation in colonies and combined with loss of nesting habitat due to invasive plants such as tree mallow the risk associated with INNS is extensive. Taking effective action at national scale to prevent and mitigate the impacts of INNS is highlighted in the Scottish Seabird Conservation Action Plan as a clear and achievable route to maximise seabird breeding opportunities and success and a key element for building resilience in our national seabird populations against pressures such as climate change.

Central to addressing INNS is biosecurity. Biosecurity is the practice of protecting places from the threats to wildlife posed by introducing pathogens or types of plants or animals that do not naturally occur there. The collection of SMEEF funded projects featured here demonstrate our work on biosecurity.

The projects in this section divide into three groupings:

- national coordination,
- project development and
- testing practical approaches.

Safer Islands - National Coordination

£286k+ total grant spending

4 rapid incursion responses

1000+ volunteer hours

20+ secure storage years

2 dog handlers trained

3.5 jobs created

8 seabird islands with remote cameras

Safer Islands - Project Development

£131k+ total grant spending

8 new delivery partnerships

1000+ volunteer hours

15+ jobs supported

2 Community led biosecurity programmes

2 feasibility studies

Safer Islands - Testing Practical Approaches

£34k total grant spending

3 reports published

300ha of nesting area protected

5000+ puffin burrows counted

3 nettle control trials

Safer Islands – National Coordination – Summary of projects

Biosecurity for LIFE: Biosecurity surveillance and rapid response tools

£53,331

Biosecurity for Scotland: Firth of Forth Rapid Response Hub upgrade

£3,360

Biosecurity for Scotland: Scottish Island Remote Surveillance of invasive non-native mammalian predators

£10,000

Biosecurity for Scotland: Long-term biosecurity for Scotland through best practice collaboration and awareness raising

£138,929

Safer Islands – National Coordination

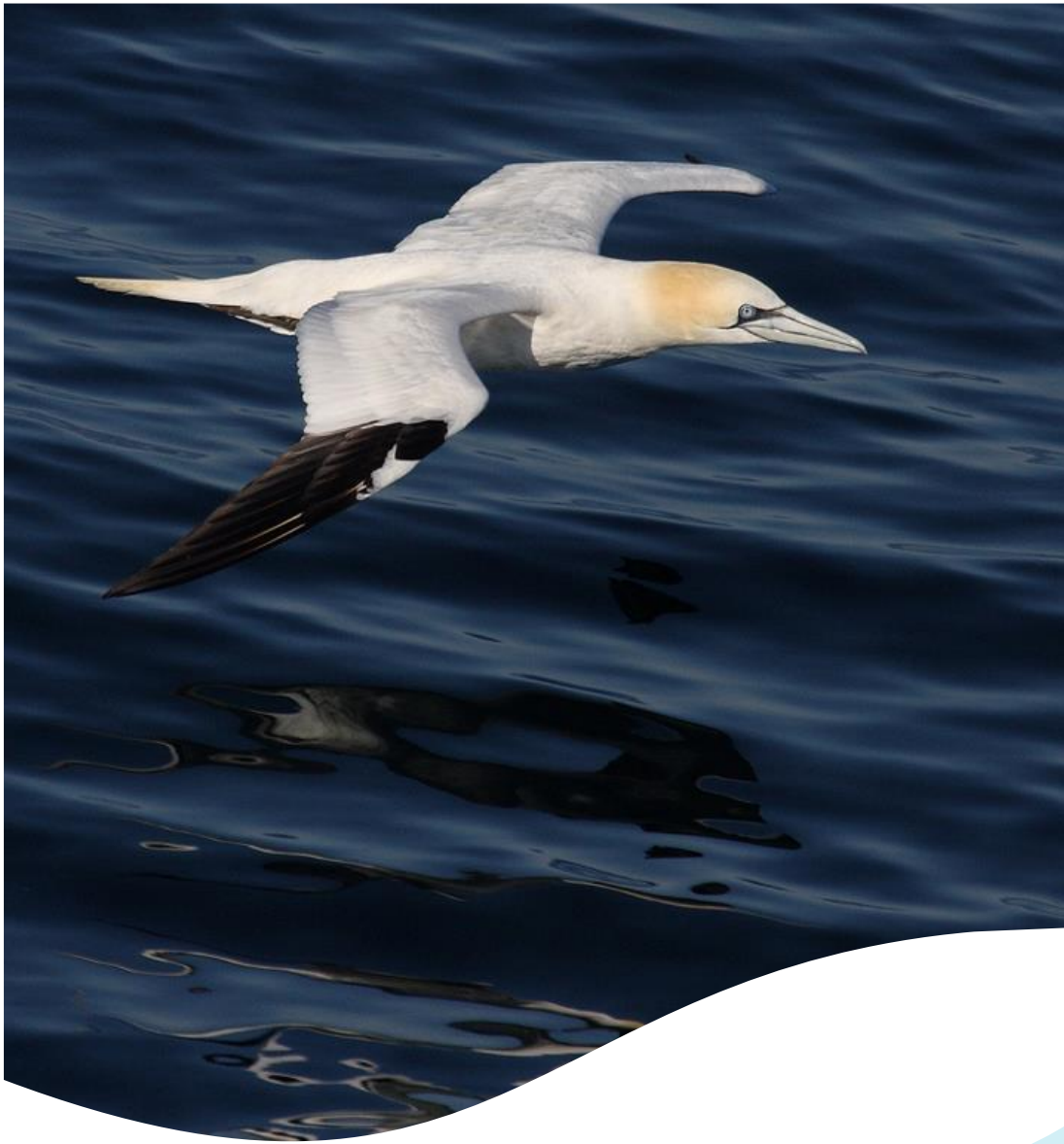
RSPB: Biosecurity for Scotland

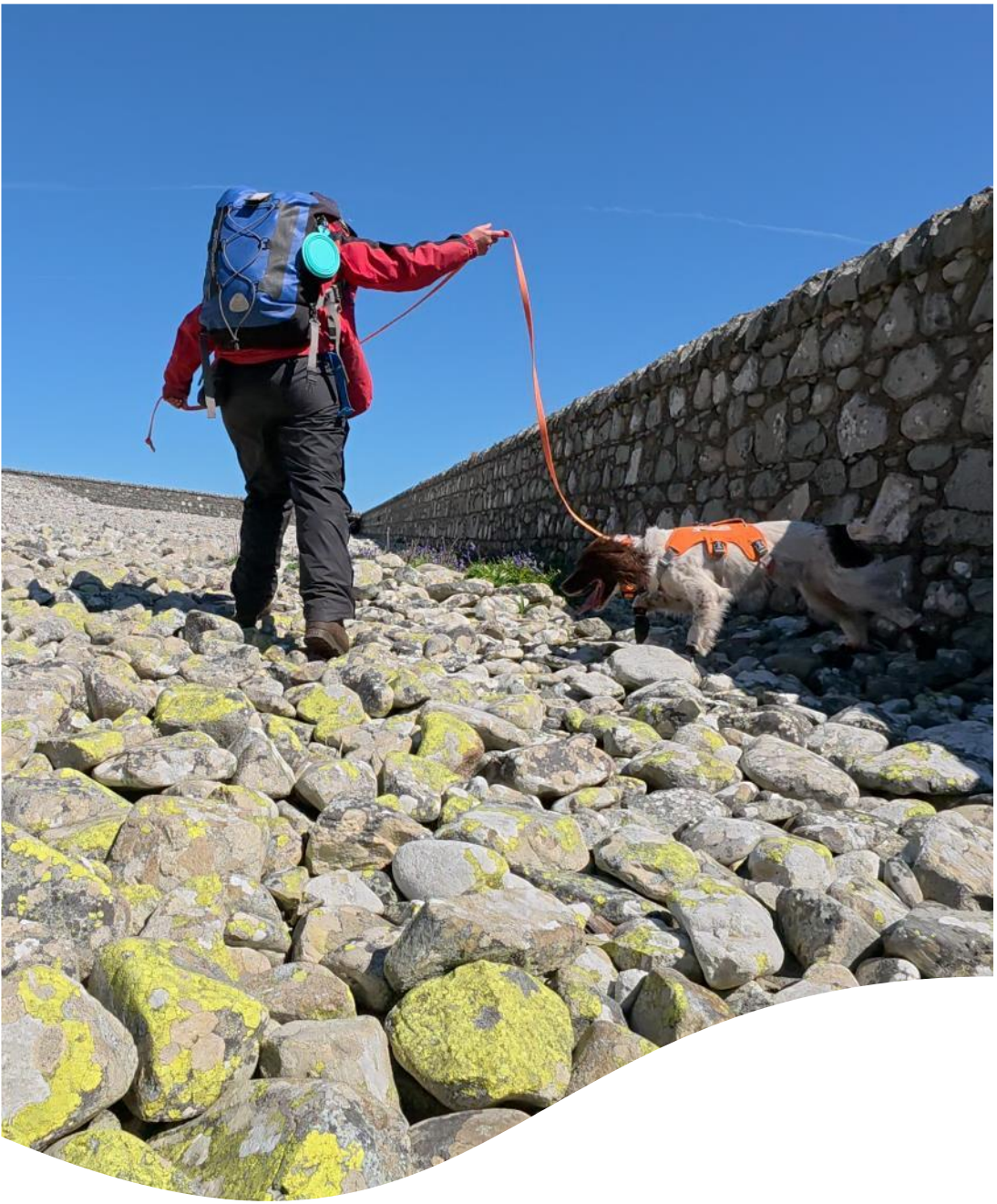
The challenge

Scotland's seabirds nest on the ground and on cliffs, making them highly vulnerable to invasive non-native mammalian predators such as rats, mice and mink. In 2018, the Biosecurity for LIFE project established a co-ordinated UK approach to biosecurity partnering with RSPB, National Trust for Scotland and The National Trust. The project systematized biosecurity across the country, increasing visibility and bringing key stakeholders together for a common cause, resulting in measurable improvements nationally. By the completion of the project in 2023, 95% of the 42 UK Special Protection Areas (SPA) seabird islands had biosecurity plans in place, and regular biosecurity checks were added into island management plans.

When the EU-funded LIFE programme ended, there was no longer funding for a coordinated system to rapidly respond to predator incursions on seabird islands – and no central location where the necessary equipment was quickly accessible for potential incursions at two key seabird sites in the Firth of Forth and Shetland. A lasting, Scotland-wide biosecurity infrastructure was needed to protect seabird colonies. When a mammalian predator is seen on an island, best practice is to take immediate action, preferably within 48 hours, to try and catch the animal. Newly arriving animals can cover a lot of ground in a short space of time, so the chances of intercepting it can decrease if too much time elapses, especially on larger islands. It requires a lot of equipment and effort to survey an island to locate an animal.

Incursion risks were also identified for our most remote, uninhabited seabird islands. Due to the inaccessibility of some islands, there aren't people on the island to carry out regular surveillance checks, relying on dedicated visits adding staff time and costs to surveillance. An alternative remote monitoring solution was needed.





What we did

Between 2021 and 2026, SMEEF provided four grants to strengthen the country-wide Biosecurity for Scotland programme, covering equipment, staff time and methodology development.

The first grant was targeted at supporting the Rapid Incursion Response Hubs (RIRHs) in Shetland and the Firth of Forth, stocking them with camping equipment, approved traps and baits etc., needed to respond quickly to a predator incursion. Local people, led by island management staff and biosecurity officers, have volunteered, mobilising at short notice to find and remove invasive predators from islands if they are suspected to have arrived there. In addition to this, two dog handlers were upskilled in biosecurity, and specially designed traps were trialled in Scottish island settings. Biosecurity information boards were installed at key locations including Oban, Lerwick and North Berwick.

A second grant replaced a deteriorating RIRH storage container in Edinburgh with a purpose-built stainless-steel unit, providing secure, accessible storage with an expected lifespan of 20 years.

A third grant is supporting the deployment of 20 trail cameras across eight priority Scottish seabird islands: Ailsa Craig, Gruney, North Rona, Auskerry, Mousa, Swona, Sule Skerry and the Monach Isles. This remote surveillance equipment allows early detection of any invasive mammalian predators arriving on these islands, enabling immediate action to respond to the incursion before populations can establish and cause serious damage on the seabirds.

The most recent grant 'leaving a lasting legacy' is supporting implementing actions from the co-designed Scottish National Island Biosecurity Programme Plan by securing a sustainable, well serviced future for the existing hubs and on-going surveillance, developing the Predator Free Certification (PFC) scheme for commercial boat operators, national biosecurity guidance for sea users, and a biosecurity volunteer programme.

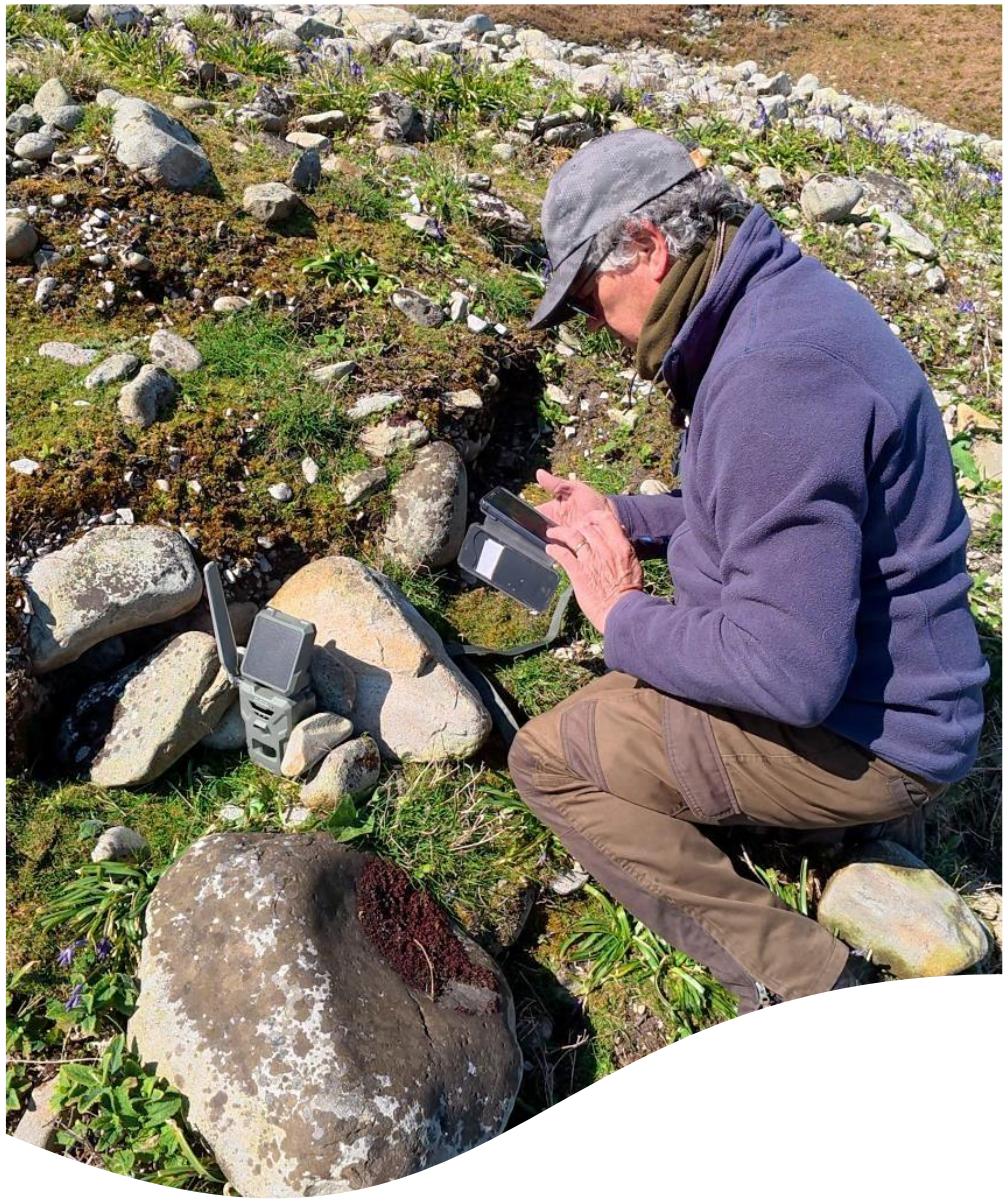
The impact

The hubs, equipment and trained volunteers have already played a critical role — enabling rapid responses to 4 predator incursion events; on The Lamb in the Firth of Forth, Mousa, Priest, Mingulay and Ailsa Craig. The ability to act immediately has ensured these internationally important seabird colonies remain predator-free and safe places for breeding seabirds.

The remote surveillance network will be a game changer on the eight seabird islands where they have been installed, providing an early-warning coverage throughout the year and working in partnership the PFC scheme will continue building a culture of biosecurity responsibility among Scotland's maritime operators.

Looking ahead, the Scottish National Island Biosecurity Programme Plan will underpin future INNS eradication proposals for seabird colonies across Scotland. Through working collaboratively with NatureScot, National Trust for Scotland, the Northern Lighthouse Board, the Marine Directorate and JNCC, Biosecurity for Scotland will contribute to prioritise the biosecurity related actions contained in the Scottish Seabird Conservation Action Plan.

The capital investment aspects of this work have been completed, other parts of the Biosecurity for Scotland project are ongoing.



NatureScot: Seabird Restoration and Resilience Officer

£80,000

Project is ongoing

NatureScot: Seabird Restoration and Resilience Officer

The challenge

Seabird populations across Scotland are in decline, and predator pressure from INNS is a significant contributing factor. Predator reduction and removal projects are expensive (often reaching 100's of £1000s), require long lead-in times and specialist skills to design bespoke projects - barriers previously hampering our ability to proactively take action. Opportunities now potentially exist to fund future predator reduction and removal projects but meeting this new demand at the necessary scale and pace requires dedicated resource.

What we did

SMEEF funded a new Seabird Restoration and Resilience Officer post within NatureScot — a role specifically designed to lay the groundwork for predator reduction and removal projects at priority seabird colonies across Scotland. In the first year, the Seabird Officer is working on a 10-year programme of INNS predator reduction and removal at priority colonies working with island communities, landowners, Scottish Government and the offshore wind industry. The Seabird Officer will support the development of feasibility studies, play an active role in community and stakeholder engagement and ensure that project designs and operational planning meet the high standards required to achieve success.

The Seabird Officer has been instrumental in advising the Scottish Government on predator reduction and removal.

The impact

By investing in the planning, quality assurance and relationship-building phase that predator reduction and removal projects require, this role is creating the conditions for effective, large-scale action on one of the most significant threats to Scottish seabirds. The role directly supports both the Scottish Biodiversity Delivery Plan, the Scottish Seabird Conservation Action Plan and the Scottish Action Plan for INNS, advancing key measures for seabird resilience in predation reduction and biosecurity. The groundwork being laid now will determine the scale and success of practical biodiversity and conservation delivery in the years ahead.

Safer Islands – Project Development

Atlantic58: Building seabird resilience across the Summer Isles

The challenge

The Summer Isles off the northwest coast of Scotland support internationally important seabird populations, including Priest Island which is home to one of the largest European Storm Petrel (*Hydrobates pelagicus*) colonies in the UK. Ground-nesting seabirds like Storm Petrels are highly vulnerable to mammalian predators, and American Mink (*Neogale vison*) pose a serious and ongoing threat across the archipelago. Despite existing volunteer efforts, no coordinated, archipelago-wide biosecurity system was in place, and no reliable population estimate existed for Storm Petrels across the Summer Isles as a whole. Without a structured response plan and baseline population data, effective long-term protection of these colonies was difficult to deliver or demonstrate.

Atlantic58: Building seabird resilience across the Summer Isles

£90,924

Completion expected March 2028

What we did

SMEEF have funded a partnership project on behalf of the Summer Isles Mink Control Initiative (SIMCI) to build a comprehensive, community-led biosecurity and monitoring system across the archipelago. The work is comprised of several distinct elements:

- **Mink biosecurity** — An archipelago-wide mink biosecurity and rapid response plan is being co-designed with the local community, establishing active trap networks, surveillance systems and response protocols across the Summer Isles to reduce predation pressure on Storm Petrels and other ground-nesting seabirds.
- **Population monitoring** — Using calibrated call-back methods, the project is delivering the first known archipelago-wide population estimate for European Storm Petrels, providing a baseline to inform how well the population is doing and management decisions. Novel survey methods using acoustic, infrared and thermal techniques in vegetated and peat pipe breeding habitats are also being tested across multiple islands, with findings to be submitted for publication in a peer-reviewed journal.
- **Data and communications** — All biosecurity data is being recorded and shared through a bespoke app 'Invasalert' enabling real-time reporting, open data access between partners and public engagement through citizen reporting.
- **Community capacity** — Island owners, volunteers and boat operators are being trained to maintain trap networks and respond to incursions, creating a locally based biosecurity network with the skills and structure to continue beyond the project.
- **Lesson learning** – A case study and recommendations report will capture lessons learned on mink dispersal, island ecology and the development of community-led archipelago biosecurity, for application in other island groups.

The impact

The project is providing lasting habitat protection for one of the UK's most significant Storm Petrel populations, moving from ad hoc volunteer effort to a structured, self-sustaining community biosecurity system. The first archipelago-wide population estimate for European Storm Petrels will fill a critical evidence gap, supporting conservation management and reinforcing the importance of continued protection.

With the ambition to produce a peer-reviewed methods paper, this will provide a replicable framework for surveying Storm Petrels in challenging vegetated habitats — extending the value of this work to colonies elsewhere in the UK and beyond. The Invasalert data platform and the community training model offer a transferable blueprint for community-led biosecurity that could be adopted by other island groups facing similar predator pressures.

Isle of Eigg Heritage Trust: Rat eradication feasibility study

The challenge

The Isle of Eigg has seen a serious decline in its seabird populations over the last 40 years, with rat predation identified as a significant contributing factor. Ground and cliff-nesting seabirds have evolved without mammalian predators and are acutely vulnerable to rats, which predate eggs, chicks and small adults. However, no formal assessment had been carried out to establish whether a rat eradication programme on Eigg is feasible — and if so, how it should be designed and delivered.

Isle of Eigg Heritage Trust: Feasibility study for rat eradication on the Isle of Eigg

£40,481

Project is ongoing

What we did

SMEEF has funded the Isle of Eigg Heritage Trust (IEHT) to commission a comprehensive feasibility study for a rat eradication programme on the island, delivered in partnership with RSPB, the Scottish Wildlife Trust and the Isle of Eigg Residents Association.

The study is being carried out across a series of phases: project planning and partnership development; community meetings and stakeholder workshops; desk research; personnel training; detailed topographical mapping of the island; habitat and protected species surveys and collection of historical records; development of monitoring and evaluation frameworks; co-design of a draft biosecurity plan; and production of a full feasibility study report, reviewed by RSPB and IEHT.

The impact

The feasibility study will determine whether and how a rat eradication programme can be successfully delivered on Eigg — laying the groundwork for what could be a transformative intervention for seabirds, biodiversity and the island community. For seabirds, successful eradication could reverse the declines and see seabird and other ground nesting bird populations recover. There is also a knock-on benefit for residents: reduced property damage, lower agricultural losses, decreased rat control costs and the wellbeing benefits of living in a more biodiversity-rich environment.

By involving the local community from the outset through co-design principles, the project is building the trust, shared ownership and practical knowledge that any future eradication programme would depend on to succeed. The partnership model — bringing together a community land trust, conservation organisations and island residents — offers a replicable approach for other island communities facing similar challenges.

FLEXS

Impact Focus – Testing Practical Approaches

RSPB Scotland: Saltmarsh protection for nesting birds

The challenge

Loch Gruinart on Islay is a nationally and internationally important site, designated as an SSSI, SPA and Ramsar site. The area supports vital habitats for Greenland White-Fronted Geese (*Anser albifrons*) and Barnacle Geese (*Branta leucopsis*), including salt marsh, wet grassland, mud flats and freshwater floods. Following refurbishment of the Loch Gruinart sea wall, quality permanent fencing was needed to protect the structure and enable the grazing and hydrological management essential to maintaining these habitats across 300 hectares.

RSPB Scotland: Saltmarsh protection for nesting birds

£13,414

HABITAT

Completed 2022

What we did

SMEEF funded RSPB Scotland to erect permanent fencing along the refurbished sea wall, enabling controlled grazing of the salt marsh and wet grassland. The fence was designed to protect the sea wall structure while allowing the livestock management needed to maintain the grassland in the right condition for wintering geese.

The impact

The benefits were immediate and have been sustained. The fencing has enabled effective grazing management across the Gruinart Flats, including the Gruinart Floods, which can now be managed specifically for Greenland White-Fronted Geese and breeding waders. The mud flats and freshwater floods serve as important roosts for Barnacle Geese and White-Fronted Geese respectively, while the salt marsh provides a vital food source for both species

By making hydrological management and grazing regimes possible, the fence is central to the long-term delivery of conservation objectives within the SSSI and SPA. Looking ahead, further freshwater scrapes are planned on the Gruinart Flats to further benefit White-Fronted Geese and breeding waders, and to help the site adapt to the impacts of climate change.

Scottish Seabird Centre: Guidance, control and impacts

The challenge

Craigleith, in the Firth of Forth, is a key site for Atlantic Puffin (*Fratercula arctica*) and the focus of the SOS Puffin project — an 18-year community conservation programme run by the Scottish Seabird Centre (SSC). Despite this long history, several important management questions remained unanswered: how best to control invasive nettles and tree mallow, how rabbit activity was affecting vegetation and puffin burrows, and how to build a comprehensive, long-term picture of vegetation change across the island. There was also a need to bring together nearly two decades of monitoring data into a single, accessible resource.

Scottish Seabird Centre: Providing guidance, testing nettle control and assessing rabbit impacts

£20,923

Completed 2025

What we did

SMEEF funded SSC to carry out a programme of research and monitoring on Craigleith, addressing key management questions and consolidating the project's knowledge base.

- **Nettle control trials** tested three methods across trial plots. Treatment with Grazon Pro significantly reduced nettle growth. Cutting nettles close to the ground produced strong regrowth in the same year but reduced growth the following year. Pulling nettles by hand proved ineffective — soil disturbance triggered germination of both nettle and tree mallow seeds.
- **Rabbit impact surveys** confirmed that higher numbers of tree mallow seedlings occur in the disturbed soil around burrow entrances compared to undisturbed areas, helping to clarify the relationship between rabbit activity, soil disturbance and invasive plant spread.
- **Vegetation monitoring** used drone-based mapping and ground-truth surveys to produce high-resolution datasets. Combined with historic data, this created a long-term picture of vegetation change across the island and improved understanding of the decline of tree mallow on Craigleith.
- **Puffin burrow counts** were completed in line with established methodology, estimating 5,135 Apparently Occupied Burrows in 2024 — adding a further data point to the island's long-term population dataset.

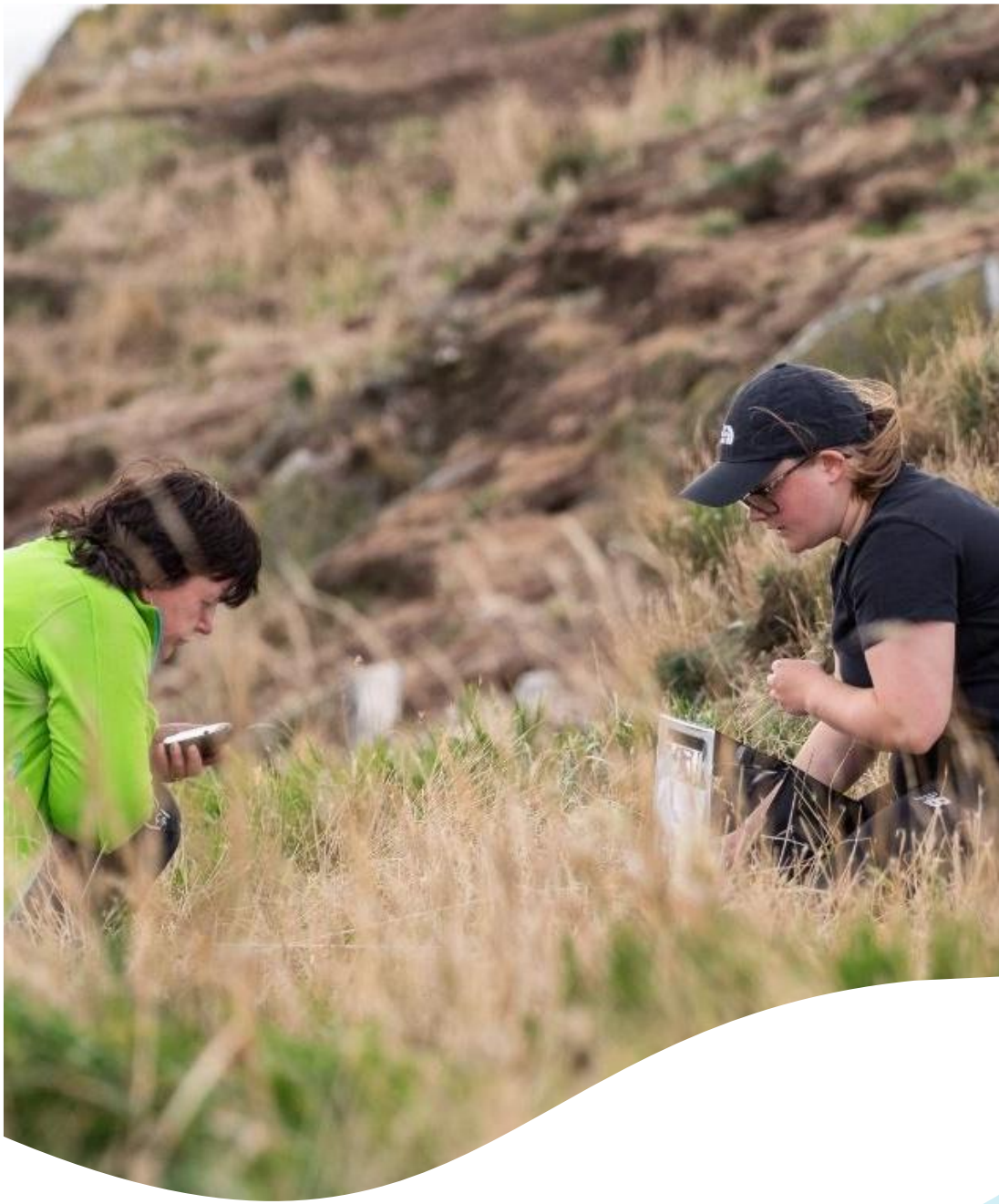
Alongside the fieldwork, SSC consolidated 18 years of SOS Puffin data, experience and monitoring into a single publicly available document, now being shared with community groups, conservation partners and academics as a model for community conservation best practice.

The impact

The project has directly informed future management approaches on Craigleith, providing clear evidence on which vegetation control methods work, and which do not. The project produced three reports outlining the current status of tree mallow seedbank on Craigleith, the work of their nettle control trials, and the relationship between Soil Disturbance at Puffin Burrows and Tree Mallow Seedling Numbers.

The drone monitoring protocols developed are suitable for use across other Scottish coastal conservation projects. The research strengthened the partnership between SSC and Scotland's Rural College (SRuC), laying the groundwork for future collaboration on the Forth islands.

Most significantly, the consolidation of 18 years of SOS Puffin data into a single accessible resource ensures that this body of knowledge is preserved, shareable and useful — both as a practical conservation reference and as a model for community-led conservation projects elsewhere. SOS Puffin: Research and Guidance is available on the SSC website, providing detailed guidance to support other organisations planning invasive species removal or island restoration work.



Section 2 – Species Specific Projects

Seabirds are all unique, and each species may face challenges specific to their food source, breeding or roosting habitats, range or other aspects of their life cycle. SMEEF has used the expert advice available to us to target our funding to tackle some very specific issues related to threatened species. In 2021, Birds of Conservation Concern 5 (BOCC5) was published, with an addendum in 2024, adding a further 5 seabirds to the UK Red list. Our seabirds are more threatened than ever before, with 22 of the 25 UK breeding species red or amber listed.

Projects in this section fall into three categories:

- burrowing birds – puffins and petrels
- ground nesting birds – Red-necked Phalaropes and terns
- cliff nesting birds – Fulmars, gannets and kittiwakes

Burrowing Birds

Impact in numbers

£32k total grant spending

600m² of invasive plants removed

250m of cliff & steep ground cleared

18 volunteers worked 194hrs

64% increase in puffin numbers

Ground Nesting Birds

Impact in numbers

£39k total grant spending

2 tern rafts

Cliff Nesting Birds

Impact in numbers

£68k total grant spending

10 base stations

700+ 'likes' of live feed in first month

40 bespoke GPS tags deployed

2 360 degree cameras installed

Impact Focus– Burrowing Birds

RSPB Scotland: Removal of invasive non-native species

The challenge

Fidra and Inchmickery are two of the Firth of Forth islands, covering 9.5 hectares at mean high water, and are important breeding sites for Atlantic Puffin (*Fratercula arctica*), Northern Fulmar (*Fulmarus glacialis*), Common Eider (*Somateria mollissima*), Common Guillemot (Uria aalge) and other seabirds. Invasive non-native plants — tree mallow and elder — had been encroaching on available habitat, reducing the quality and extent of suitable nesting ground. Clearing these species is part of a long-term programme to restore optimal breeding conditions across the Forth islands.

RSPB Scotland: Removal of invasive non-native species to support seabirds

£8,188

Completed 2023

What we did

SMEEF funded RSPB Scotland to carry out targeted clearance of invasive vegetation on both islands. On Inchmickery, 200m² of tree mallow and 400m² of elder were removed. On Fidra, 250 metres of cliff and steep ground were cleared of tree mallow, with rope access contractors brought in to tackle the most challenging terrain.

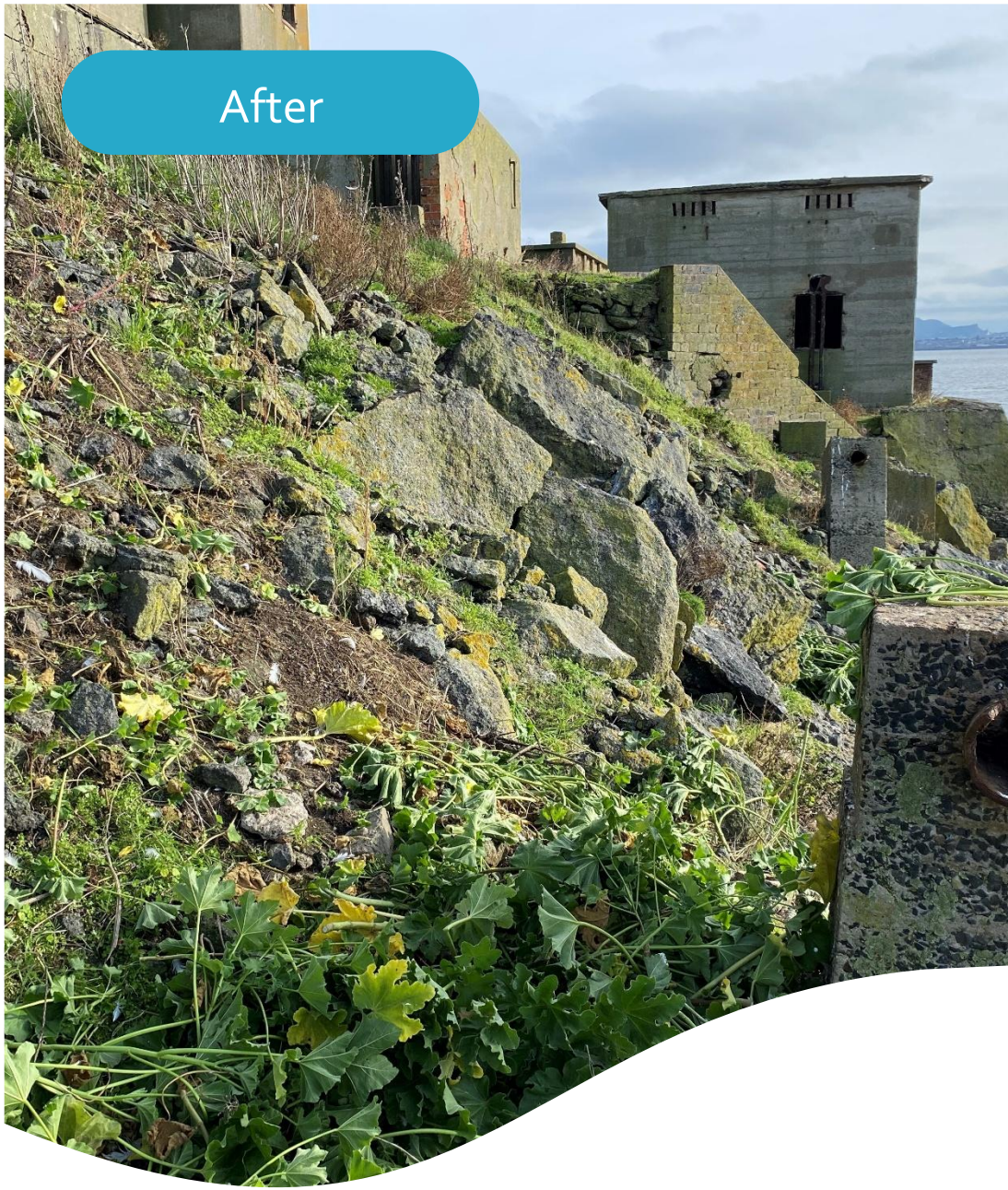
The work was delivered in partnership with SOS Puffin, who supplied volunteers to work alongside the rope access contractors on Fidra, and with the Forth Seabird Group on Inchmickery. In total, 18 volunteers contributed 194 hours — the equivalent of 25 working days — with all clearance carried out by hand.

The impact

In the breeding season following the clearance work on Fidra, Puffin counts increased by 65%, alongside a broader overall increase in seabird numbers on the island. While it is difficult to attribute these changes solely to the habitat work, the timing is encouraging and consistent with the long-term goals of the programme.

Beyond the direct conservation benefit, the project also strengthened the volunteer community around the Forth islands. Inchmickery was a new site for many participants, generating strong interest in the work parties. Volunteers from several different organisations worked side by side, building new connections among people with shared conservation goals.

Before


After

RSPB Scotland: Audio deep-learning for recognition of Leach's Petrel

The challenge

Following substantial population declines across the north Atlantic, Leach's Petrels (*Hydrobates leucorhous*) were added to the BoCC's red listed species in 2024. Despite this concern, key measures of their population health — including survival rates — remain poorly understood. Studying them is logistically difficult: they breed exclusively on remote offshore islands, are nocturnal, and nest in burrows, making traditional ringing-based mark-recapture approaches challenging to carry out at scale. Without reliable individual identification data, it is extremely difficult to calculate survival rates or track population trends at the colony level. A non-invasive, scalable alternative to physical marking was needed.

RSPB Scotland: Audio-based deep-learning framework for individual recognition of Leach's Petrel

£23,464

EVIDENCE

Completed March 2026

What we did

SMEEF funded RSPB Scotland to develop and test an audio-based deep-learning framework for identifying individual Leach's Petrels at their breeding colonies, using existing acoustic recordings collected across four years of tracking work on St Kilda — the largest UK colony.

The project began with a rapid review of existing acoustic individual identification systems and deep-learning architectures to assess their suitability for this application. This identified BirdNET as the most promising tool, and testing of the deep-learning framework followed based on these findings.

The approach is grounded in a well-established biological characteristic of the species: Leach's Petrels are long-lived, site-faithful colonial seabirds with a limited vocal repertoire — and like humans with regional accents, individual birds produce stable, distinctively recognisable calls. Acoustic data was collected through targeted playback at burrow entrances on St Kilda, providing the raw material to train and test the identification system.

The impact

The project demonstrated that acoustic individual identification is a powerful, non-invasive alternative to physical marking for Leach's Petrels. The framework developed will be used to assess the inter-annual occupancy of burrows by individual birds, building a recapture history that will — for the first time — allow the estimation of apparent local annual survival probability at St Kilda. This will give NTS the ability to calculate inter-annual survival rates at the most important UK colony for the species, where the population has suffered a severe decline.

The RSPB and NTS plan to build on the momentum of the project, with their next steps to include incorporating additional playback data collected in 2026, refining classification thresholds, quantifying misidentification error, and expanding the training dataset by assembling a library of calls from other sites. The team will also evaluate passive acoustic data collection methods and work towards automating the detection, labelling and extraction of petrel calls from recordings — further reducing the need for manual fieldwork on one of the UK's most remote and logistically demanding island groups.

Impact Focus– Ground Nesting Birds

RSPB Scotland: Tern rafts expanding breeding space in Loch Spiggie

The challenge

Loch of Spiggie in Shetland is an important breeding site for Arctic (Sterna paradisaea) and Common terns (*Sterna Hirundo*). However, the shallow loch's coastal location means that wave and sea damage continuously erodes available nesting habitat, putting breeding terns at ongoing risk. Without intervention, the loss of suitable ground-level nesting sites threatened the viability of the colony.

RSPB Scotland: Tern rafts expanding breeding space in Loch Spiggie

£29,278

HABITAT

Completed 2022

What we did

SMEEF funded RSPB Scotland to install a tern raft at the Loch of Spiggie nature reserve, providing a stable, protected nesting platform for terns away from the threat of coastal erosion and ground predators. Interpretation materials about the rafts were also installed in the reserve's hide, informing visitors about the project, the threats facing terns and the importance of avoiding disturbance.

The impact

The raft has been successfully adopted by both Arctic and Common terns as a breeding site. In 2023, 36 Arctic Terns and 4 Common Terns were recorded using the raft, followed by 24 Arctic Terns and 8 Common Terns in 2024. The reserve attracts wildlife enthusiasts year-round — with Whooper Swans (Cygnus cygnus), Eurasian Teal (Anas crecca) and Eurasian Wigeon (Anas Penelope) in autumn and winter, and terns, Great Skua (Stercorarius skua) and wildfowl in spring and summer — meaning the raft and its interpretation reach a wide and engaged audience. The hide display has prompted many conversations at RSPB Spiggie open days, raising awareness of tern conservation and the threats these birds face.

RSPB Scotland: Port Edgar tern raft for ground nesting birds

The challenge

The tern raft at Port Edgar in the Firth of Forth had become one of the most important Common Tern (*Sterna Hirundo*) breeding sites in the region, with 118 chicks fledging in 2019. However, severe storm damage left the raft in a badly deteriorated state — anchors were lost, the navigation marker was knocked off, and a listing corner created easy access for otters.

What we did

SMEEF funded repairs to restore the raft in 2021. Creating a functional and secure breeding platform. Work included repairing the listing section, replacing lost anchors, and installing a more robust predator barrier to prevent otter access. Cameras were also fitted to monitor tern activity, track the condition of the raft, and provide images for public engagement.

The impact

By 2024 the raft was once again supporting an active breeding colony. The colony is suspected to have been heavily affected by HPAI and recovery has been gradual, but the numbers are slowly building, and we have high hopes for the 2026 season.

The experience also highlights a broader conservation lesson — other colonies in the Firth of Forth appeared to avoid the worst of the suspected HPAI outbreak, underscoring the value of having multiple breeding sites available. Providing additional space across a network of sites to supporting multiple colonies, gives species a greater chance of weathering disease outbreaks and other setbacks.

RSPB Scotland: Installation of a tern raft to provide protection for ground nesting birds

£9,176

Completed 2022

Impact Focus – Cliff Nesting Birds

National Trust for Scotland: Fulmar tags for St Kilda and Fair Isle

The challenge

Across Scotland, populations of Northern Fulmar (*Fulmarus glacialis*) are in decline. With approximately 88% of UK fulmars found in Scotland, National Trust for Scotland (NTS) care for two of the largest colonies, at St Kilda and the Fair Isles. Between these two colonies, population trends currently vary, with St Kilda in steep decline and Fair Isle remaining relatively stable. More information is needed on the foraging and migration of these populations to better support predictions of their behaviour and survival, as well as establishing any correlation with presence of offshore threats such as fisheries bycatch.

National Trust for Scotland: Bespoke Fulmar tags for St Kilda and Fair Isle birds

£25,000

Completed March 2026

What we did

SMEEF contributed towards the purchase of 40 bespoke GPS tags, and 8 mobile and 2 fixed base stations to remotely download data from the tags whilst they are on the birds. These tags were bespoke designed, smaller in size than the recommended carrying weight to further reduce the carrying burden and therefore minimise effects on the birds' survival. The GPS tags track fulmar movement to help understand spatial overlap between the birds and threats they may encounter at sea, principally offshore wind developments and fishing operations, due to their very large foraging ranges.

In collaboration with the 'Focus on Fulmars' workshop, the NTS seabird team identified the best tags required for the 2026 fieldwork to support their current research aims and aid in addressing additional knowledge gaps for wider research. Through the addition of barometric pressure sensors, data is collected to assess flight heights, supporting wider research on the downwind effects of offshore wind farms on birds who fly using the power of the wind.

The impact

The purchase of these tags and accompanying base stations has enabled the continuation of the NTS fulmar tracking planned for this season. The data that these tags will help to gather will be used to infer indications of decline and responsible variables, supporting wider conservation planning to reduce anthropogenic impacts on their success.

Scottish Seabird Centre: 360-degree cameras for Bass Rock monitoring

The challenge

The Bass Rock gannet colony is one of the world's most remarkable wildlife spectacles, yet for most people its scale, drama and beauty are difficult to experience up close because of the challenges of accessing this internationally important seabird colony. 360-degree camera systems had not been previously used to observe seabirds or other wildlife, leaving an unexplored opportunity to transform how the colony is studied for conservation and citizen science, in additional to enhancing public engagement and experience with the colony.

Scottish Seabird Centre: Installation of two 360 degree cameras for Bass Rock gannet monitoring

£42,860

Completed March 2026

What we did

SMEEF funded the Scottish Seabird Centre (SSC) to acquire, set up and trial two 360-degree camera systems on the Bass Rock during the 2026 gannet breeding season, exploring their potential across three areas.

- For **conservation science**, the cameras are being trialled as part of SSC's productivity monitoring work, with recommendations for future research use to follow at the end of the season. A high-resolution feed is also being made available directly to researchers.
- For **citizen science**, a range of approaches are being tested with SSC volunteers during the 2026 season, with the aim of designing and delivering a larger citizen science project in 2027.
- For **public engagement**, low-resolution live feeds are available on YouTube, while high-resolution feeds are displayed to visitors at the SSC using existing equipment. The SSC has also secured Heritage Lottery Fund support to build a small 360-degree theatre, which will show live and curated content from the cameras and microphones to create an immersive Bass Rock remote experience.

The impact

This project has demonstrated for the first time that 360-degree camera systems are viable for wildlife observation and conservation use. Over the 2026 season SSC is building an evidence base on the reliability, performance and range of applications these systems can support. The cameras are simultaneously advancing research, expanding volunteer participation and bringing the Bass Rock to audiences who could never visit in person.

Looking ahead, SSC intends to install a larger solar PV array for the 2027 season, subject to planning permission, to improve system performance and reliability. With a 360-degree audio and visual theatre also in development, the project is laying the groundwork for a step change in how the public connects with one of the UK's most important seabird colonies.

Section 3 – Technology and Innovation

The world of technology is rapidly evolving. SMEEF seeks to harness technology for positive impact, updating outdated protocols and testing new technological solutions to problems facing seabirds today.

Technology and Innovation –
Impact in numbers

£266k total grant spending	**2** CivTech programmes
1000's of puffin smell data points	**x20** more counts possible
14 survey plans	**1000's** of burrow survey data points
x9 potential increase in colony counts	

ArcTech Innovation: CivTech 10.3 – Digital sniffer dog

The challenge

Atlantic Puffins (*Fratercula arctica*) are burrow-nesting birds, laying their eggs and raising their chicks underground — which makes monitoring their breeding success extremely difficult without causing disturbance. Traditional survey methods require physical checks that can disrupt nesting activity, yet understanding population health, breeding success and the presence of threats such as HPAI or invasive predators is essential for effective conservation management. A non-invasive, scalable solution was needed.

ArcTech Innovation: CivTech 10.3 – Digital sniffer dog

£131,240

EVIDENCE

Completion expected March 2027

What we did

SMEEF funded the development of a novel monitoring device through CivTech 10.3, a Scottish Government programme that brings together the public, private and third sectors to develop solutions to real-world challenges. The device is designed to be placed outside puffin burrows, where it samples organic compounds from the air within the burrow and transmits data wirelessly to a central hub for analysis.

At the heart of the technology are trained odour sensor arrays and sophisticated algorithms capable of recognising when a puffin is present. While currently focused on identifying unique Puffin odour signatures, the technology has the potential to be modified to identify other volatile organic compounds (VOCs) that may be used to detect the presence of diseases like HPAI, invasive non-native predators such as rats, shifts in food supply, or the presence of chicks – building a detailed picture of burrow health without any physical disturbance to the birds.

The impact

The device has the potential to transform how puffins — and potentially other burrow-nesting species — are monitored at scale. It offers seabird ecologists a continuous, non-invasive means of tracking population counts, breeding timing and success, and early warning signals of disease or predator incursion. The technology represents a significant step forward in surveillance capability for vulnerable seabird species, with applications that could extend well beyond puffins to other species and conservation contexts across Scotland and beyond.

EOLAS / University of Edinburgh: CivTech 10.3 AI Puffin monitoring

The challenge

Counting Atlantic Puffin (*Fratercula arctica*) burrows accurately is a time-consuming, labour-intensive process that typically requires surveyors to physically walk colonies — disturbing nesting birds and limiting the scale and frequency at which monitoring can take place. As puffin populations face increasing pressures, conservation managers need faster, less invasive and more scalable ways to assess colony size, track population trends and measure whether restoration and eradication work is having the desired effect.

EOLAS / University of Edinburgh: CivTech 10.3 AI Puffin burrow monitoring

£135,076

Completion expected July 2027

What we did

SMEEF funded EOLAS and the University of Edinburgh, through the CivTech 10.3 programme, to complete the final stage of development of an AI-enhanced, drone-based monitoring platform for puffin colonies.

Using drones and light aircraft, the system captures high-resolution imagery and sensor data across a colony to map burrow locations. This data is used to build a 3D 'digital twin' of the colony — a virtual replica that allows users to explore the site, identify burrows and tag them as occupied or unoccupied entirely from their desk, without any need for ground disturbance. AI-enhanced burrow recognition accelerates and improves the accuracy of the process. The resulting data integrates with EOLAS's advanced mapping and reporting platform, THEIA, creating a comprehensive virtual fieldwork environment for conservation use.

The impact

The platform makes puffin monitoring faster, less invasive and scalable in a way that current methods cannot match. Presently, only approximately 11% of the UK population are reliably counted, with this advance in technology we could see this increase to around 90% - reaching previously inaccessible colonies and supporting the increase of counts from every 20 years to annually. In addition to this, digital twins of colonies will allow conservation managers to assess whether habitat restoration is working, whether eradication programmes have been effective, and whether breeding populations are recovering — all with greater speed and precision than traditional survey methods allow.

The technology has been designed with broader applicability in mind and has the potential to be used for all seabird species, extending its conservation value well beyond puffins.

Section 4 – Coordination and Collaboration

Seabirds have wide ranges covering not only Scottish coasts and seas but the whole of the UK and further afield too. Coordinating across the UK is hugely important for supporting successful management of the threats to seabirds and SMEEF has funded a range of actions to help this to happen.

Coordination and Collaboration

Impact in numbers

£89k total grant spending	**40** expert reviewers of SMP	**13** 'How' ideas generated
48 attendees at 2 international conferences		**13** 'Now' ideas generated
12 priority knowledge gaps identified	**+++** Multiple task and finish groups	**11** 'Wow' ideas generated

JNCC: Inaugural Seabird Conservation UK Advisory Science Forum

The challenge

Seabird conservation in the UK spans multiple organisations, disciplines and geographic areas, but there was no dedicated forum bringing together the scientific community to align on evidence needs, share knowledge and set a common direction for research. Without a coordinated approach, efforts risked being fragmented and key conservation questions left unaddressed. A shared understanding of research priorities — at a UK scale — was needed to drive more effective and collaborative seabird conservation science.

JNCC: Inaugural meeting of the Seabird Conservation UK Advisory Science Forum

£1,712

Completed March 2026

What we did

SMEEF funded JNCC to coordinate and lead the inaugural workshop of the newly formed Seabird Conservation UK Advisory Science (SCUAS) forum in 2025, bringing its members together for the first time. The workshop was structured across four sessions — scene setting, species knowledge, pressure knowledge and prioritisation — with the aim of establishing a sense of community among members, identifying key evidence needs and research questions, and prioritising those most likely to have a direct applied conservation impact.

The final prioritisation session generated 13 'How', 13 'Now' and 11 'Wow' ideas to take forward for further investigation. A full project report capturing the workshop outcomes and prioritised ideas has been drafted and is currently with members for comment and feedback.

The impact

Feedback from the workshop has been overwhelmingly positive, with members expressing gratitude both for being included and for having a dedicated space to discuss and challenge this important topic. The breadth and quality of ideas generated suggest the workshop achieved exactly what it set out to do.

An unexpected benefit has been the potential to bridge multiple disciplines — many of the prioritised research ideas span ecosystem function more broadly, opening up opportunities to connect different streams of knowledge and improve understanding of wider ecological processes as a basis for conservation decision-making.

The impact is already being felt: ideas from the prioritised list have been submitted through government research and development bids, with outcomes expected in the next financial year. Regardless of the success of individual bids, the SCUAS forum has established a clear set of priorities that will shape the direction of UK seabird conservation science for years to come.

National Trust for Scotland: International Fulmar expert workshop

The challenge

Northern Fulmar (*Fulmarus glacialis*) populations across Scotland have been declining significantly, yet research into the drivers of this decline has lagged behind that of other seabird species. The causes are poorly understood, monitoring is inconsistent, and no coordinated international community existed to bring together the expertise needed to address these gaps. Without a clearer picture of what is driving fulmar declines — whether climate change, bycatch, dietary shifts, offshore wind or other pressures — targeted conservation action is difficult to design or justify.

National Trust for Scotland: Fulmar expert workshop supporting international collaboration

£13,539

Completed March 2026

What we did

SMEEF funded the National Trust for Scotland (NTS) to deliver the first phase of Project Fulmar, focused on two goals: convening an international community of experts in fulmar population change, and identifying opportunities to improve monitoring and research.

In 2026, the NTS seabirds team hosted a 'Focus on Fulmars' workshop, bringing together international experts to review current understanding of fulmar population trends, identify knowledge gaps and explore potential research directions across Scotland and the wider North Atlantic. The first day combined presentations and group discussions covering regional population updates and key threats including climate change, bycatch, dietary change, offshore wind and raptors. Participants identified 12 priority knowledge gaps, with improving demographic data emerging as the most pressing, followed by reducing bycatch. A detailed workshop report is currently being finalised.

The impact

The workshop has already generated concrete collaborative opportunities. Researchers from the Norwegian Institute for Nature Research (NINA) invited participants to contribute tracking data to the BIRDWAKE project investigating offshore wind farm wake effects on seabird flight energetics, to share feather samples to help link beached and bycaught fulmars to specific populations, and to deploy GLS devices as part of the SEATRACK migratory tracking programme.

Participants unanimously agreed that an in-person follow-up event in 18 months would be valuable to review progress and maintain momentum. The workshop demonstrated the particular value of bringing this community together face to face, with collaborations forming that would be unlikely to emerge through online meetings alone. Project Fulmar has established the foundation of an international network focused on understanding and addressing fulmar decline — a species that, until now, has not received the scientific attention its situation warrants.

BTO: SMP Handbook update

The challenge

The Seabird Monitoring Programme (SMP) has provided consistent, standardised monitoring of seabird populations across the UK for several decades. However, the methodologies at its core are now more than 30 years old. Technological advances — including drone surveys, automated image analysis and digital data management — have transformed what is possible in the field, yet the existing handbook has not kept pace. Outdated guidance risks undermining the validity of new data collected alongside historic records, limits the integration of modern techniques, and creates a barrier to broader participation in seabird monitoring at a time when greater coverage is urgently needed.

BTO: SMP Handbook update

£88,872

Completion expected December 2027

What we did

SMEEF has funded the first stage of a comprehensive update to the Seabird Monitoring Programme Handbook — the primary fieldwork guidance document for seabird monitoring across the UK. The update is being developed through a structured process involving a Project Steering Group, targeted Task and Finish Groups, external specialists and a two-day in-person workshop, drawing on a wide range of expertise across species and methodologies.

Work includes editing the existing handbook to identify where changes are needed, establishing an expert-agreed template for updating all species accounts, and producing updated accounts for all 25 UK species in the original handbook — plus a new chapter for Eurpoean Storm Petrel (*Hydrobates pelagicus*) and Leach's Petrel (*Hydrobates leucorhous*). Expert recommendations on which methods, including new technologies, should be included for each species group are being gathered throughout. Plans for an accessible online format for the handbook are also being developed, alongside a full external expert review process.

The impact

An updated handbook will ensure that seabird monitoring across the UK is built on current, validated methods — preserving the integrity of long-term datasets while enabling the integration of modern survey techniques. By improving accessibility and clarity, the new handbook is designed to bring a wider and more diverse range of participants into the SMP, increasing the geographic coverage and consistency of monitoring at a critical time for seabird conservation.

The inclusion of new species accounts for European Storm Petrel and Leach's Petrel addresses gaps in the existing guidance for two of the UK's most challenging and conservation-relevant species to monitor. The move to an online format will make the handbook easier to update, share and use in the field — ensuring it remains a living resource rather than a document that risks falling out of date again.

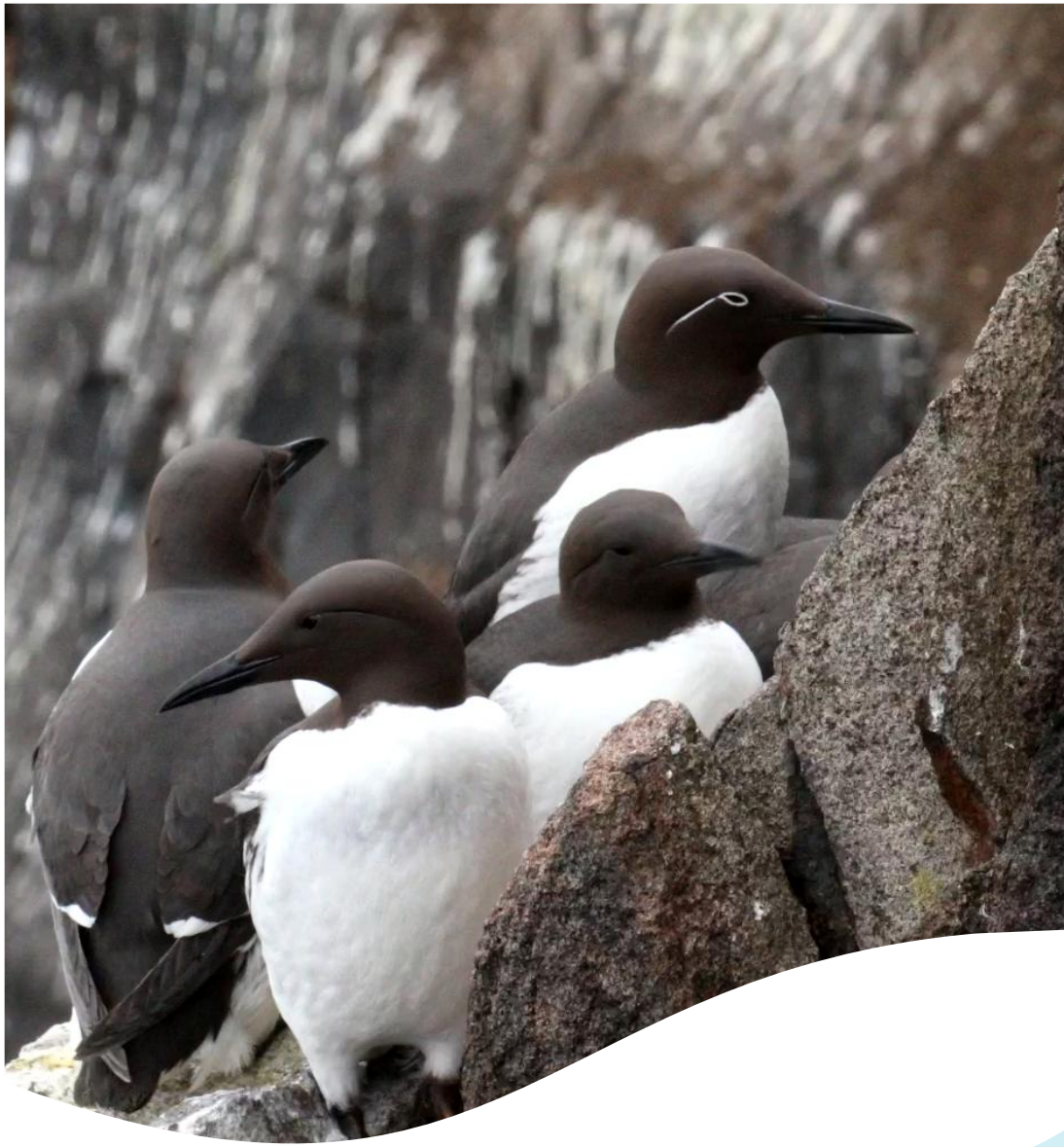
Section 5 - Data

Collection and analysis of data is crucial to understand and manage the threats to seabirds and the impact of actions taken to tackle them. Over the years many data sets have been collected but not fully analysed and SMEEF has funded several projects designed to unlock this gold mine of information. We also know the importance of testing fresh tools and techniques for collecting, analysing and sharing data and have funded several projects in this area too.

Data

Impact in numbers

£87k total grant spending	**60** years of field data digitised
1 communications strategy	**2** reports published
1 set of new recommendations	**+++** multi-partner collaboration



National Trust for Scotland: For the love of data!

The challenge

National Trust for Scotland (NTS) protects over 1 million seabirds across their sites which include Fair Isle, St. Abb's Head, Staffa and St Kilda – the latter of which is recognised as one of the most important breeding areas in the North Atlantic, supporting 16 of the 25 UK seabird species. These internationally important sites hold some of the largest seabird colonies in the UK, and across them, data has been collected for up to 60 years, providing a critically important resource for monitoring population trends and adapting conservation management techniques. However, much of this data is not centrally stored and is therefore inaccessible for wider seabird research.

National Trust for Scotland: For the love of data – the creation of a unified, searchable seabird database

£61,410

Completed March 2026

What we did

SMEEF funded the creation of a new game-changing database to support future seabird conservation actions. This database is a redesign of the existing seabird data that the charity holds, creating a unified, searchable dataset with additional tools to support visualisation of the data by species, area and time. In addition to the database work, the project has developed a field app for rangers to collect and input data into the new database to support more efficient record updates.

The impact

As a result, NTS have been able to develop a new communication strategy to promote the charity's conservation work for seabirds. This includes the launch of the database for public use, storyboards to communicate findings of the database project to the public and digital interpretation strategy for the NTS's seabird comms work has been produced, including audience engagement research.

This central datahub has supported the digital interpretation, marketing and communications workstreams from the NTS internal comms teams of this previously untapped resource, enabling stronger, more targeted future seabird campaigns.

Scottish Seabird Centre: Population monitoring of Bass Rock colony

The challenge

The Bass Rock in the Firth of Forth is home to one of the largest Northern Gannet (*Morus bassanus*) colonies in the world, making it a site of international conservation significance. When Highly Pathogenic Avian Influenza swept through gannet populations across the North Atlantic in 2022, the Bass Rock colony suffered substantial mortality. Since then, annual monitoring has been essential to track the extent of the decline and any signs of recovery — but translating raw field data into robust, interpretable evidence requires dedicated analytical resource that existing programmes could not fully provide.

Scottish Seabird Centre: Population monitoring and baseline data analysis of Bass Rock gannet colony

£25,739

Completed March 2026

What we did

SMEEF funded the analysis, interpretation and reporting of data collected during the 2025 Bass Rock monitoring programme by the Scottish Seabird Centre (SSC), Edinburgh Napier University (ENU) and the UK Centre for Ecology & Hydrology (UKCEH). Fieldwork — including drone surveys, trail camera installation and retrieval, and productivity data collection — was carried out through existing programmes by SSC, ENU and the University of Edinburgh.

The funded analytical work produced two detailed outputs: a report presenting the methods and results of the Count of Northern Gannets on the Bass Rock in July 2025, and a report on Productivity Monitoring of Northern Gannets on the Bass Rock in 2025 alongside a set of recommendations for future monitoring approaches.

The impact

The colony count provided a robust, up-to-date estimate of population size, enabling continued assessment of post-HPAI trends. The productivity analysis addressed a critical evidence gap, providing insight into breeding success that allows population changes to be interpreted in a fuller ecological context — distinguishing, for example, between a colony that is recovering in numbers but struggling to breed successfully, and one showing genuine signs of resilience.

Beyond the immediate findings, the project has established important foundations for the future. The manually verified count dataset provides a high-quality baseline to support the development of automated, machine-learning-based counting methods, being progressed in collaboration with the University of Edinburgh. The productivity work has also tested and refined remote monitoring methodologies that reduce the need for site visits and minimise disturbance to the colony.

The project strengthened collaboration between SSC, ENU and UKCEH, contributing to a shared evidence base for seabird monitoring at a nationally and internationally important site. The findings have relevance well beyond the Bass Rock, contributing to broader understanding of HPAI impacts on Northern Gannets across the North Atlantic.

TION

Appendix – SMEEF project alignment with Seabird CAP priorities

Ensuring plentiful food supplies

26 Projects

- Seagrass and Native Oyster nursery – Restoration Forth / WWF
- Seagrass and Native Oyster research – Seawilding / Resow
- Mini-Buoy monitoring for seagrass restoration – Solway Firth Partnership
- West Coast Salmon Smolt Tracking Project 2023 – Atlantic Salmon Trust
- Pilot Seagrass Nursery – Seawilding
- Assessing and protecting spawning herring and associated biodiversity – ENU / CCRS
- Native Oyster Restoration – MacArthur Green
- Horse Mussel Restoration Project – Berwickshire Marine Reserve
- Searching for Shetland's lost seagrass – UHI - Shetland
- Assessment of European flat oyster restoration: eDNA, acoustic & visual surveys – Edinburgh Napier University
- Seagrass planting for restoration or enhancement – UHI - Shetland
- Seagrass planting for restoration or enhancement – Kintyre Coastal Network
- Seagrass planting for restoration or enhancement – Mossy Earth
- Seagrass planting for restoration or enhancement – Wester Ross Fisheries Trust
- Meadow Maker – automating seagrass seed planting – Robocean
- Science-centred solutions for successful seagrass restoration – SAMS
- Seagrass mapping and restoration site selection – Seawilding
- Seagrass nursery improvement and expansion – Wester Ross Fisheries Trust
- Seagrass survey drone – Mossy Earth
- Equipment for Benthic Survey – Action West Loch
- Seagrass planting for restoration or enhancement – Namara Projects Ltd
- Seagrass planting for restoration or enhancement phase 2 – Wester Ross Fisheries Trust
- Seagrass planting for restoration or enhancement – Barra & Vatersay Community Ltd
- Seagrass planting for restoration or enhancement – Robocean
- Seagrass planting for restoration or enhancement – Marine Conservation Society
- Seagrass planting for restoration or enhancement – FNLRT

Restoring and improving seabird habitats

12 Projects

- Installation of a tern raft to provide protection for ground nesting birds — RSPB Scotland
- Removal of invasive species and installation of remote cameras to support seabirds — RSPB Scotland
- Biosecurity surveillance and rapid response tools — Biosecurity for LIFE
- Increase Scottish Island Remote Surveillance of invasive non-native mammalian predators — Biosecurity for Scotland
- Tern rafts expanding breeding space in Loch Spiggie — RSPB Scotland
- Seabird Restoration and Resilience Officer — NatureScot
- Saltmarsh protection for nesting birds — RSPB Scotland
- Firth of Forth Rapid Response Hub upgrade — Biosecurity for Scotland
- Removal of invasive non-native species to support seabirds — RSPB Scotland
- Conduct a feasibility study for rat eradication on the Isle of Eigg — Isle of Eigg Heritage Trust
- Providing guidance, testing nettle control and assessing rabbit impacts — Scottish Seabird Centre
- Long-term biosecurity through best practice collaboration and awareness raising — Biosecurity for Scotland

Maximising resilience and survival

2 Projects

- Marine litter survey and roadshow equipment — Clean Coast Outer Hebrides
- Beachwatch — Marine Conservation Society

Building the evidence

8 Projects

- Digital sniffer dog - novel technology to monitor puffin burrow health — ArcTech Innovation
- AI Puffin Burrow Monitoring - novel technology to map puffin burrows — EOLAS / University of Edinburgh
- Inaugural meeting of the Seabird Conservation UK Advisory Science Forum — JNCC
- Audio-based deep-learning framework for individual recognition of Leach's petrels — RSPB Scotland
- Population Monitoring and Baseline Data Analysis of Bass Rock Gannet Colony — Scottish Seabird Centre
- Bespoke fulmar tags for St Kilda and Fair Isle birds — National Trust for Scotland
- Building seabird resilience across the Summer Isles — Atlantic 58
- Seabird Monitoring Programme review — BTO

Celebrating Scotland's seabirds

2 Projects

- For the love of data: the creation of a unified, searchable seabird database — National Trust for Scotland
- Installation of two 360 degree cameras for Bass Rock gannet monitoring — Scottish Seabird Centre

Making a global contribution

1 Project

- Fulmar expert workshop supporting international collaboration — National Trust for Scotland

Founding Partners

NatureScot NàdarAlba – Scotland's Nature Agency, Buidheann Nàdair na h-Alba

Crown Estate Scotland – Oighreachd a' Chrùin Alba

Scottish Government – Riaghaltas na h-Alba – gov.scot

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