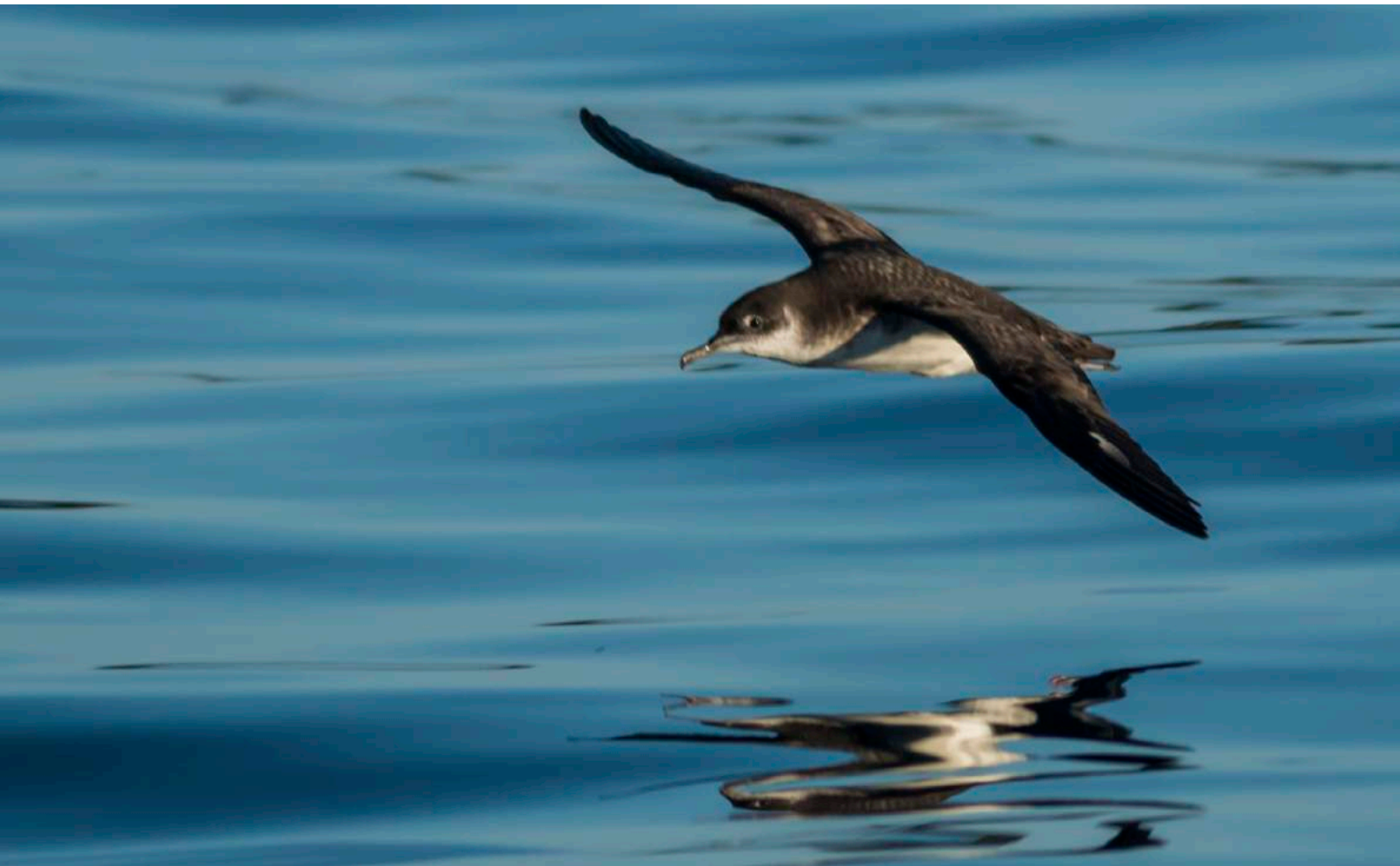
Layman's Report

Isles of Scilly Seabird Recovery Project

'Working with communities and visitors to protect their important seabird heritage'



Project area and key species

The Isles of Scilly, 45 km south west of Land's End and the Cornish coast, are nationally and internationally important for seabirds, home to some 16,000 breeding seabirds of 13 different species.

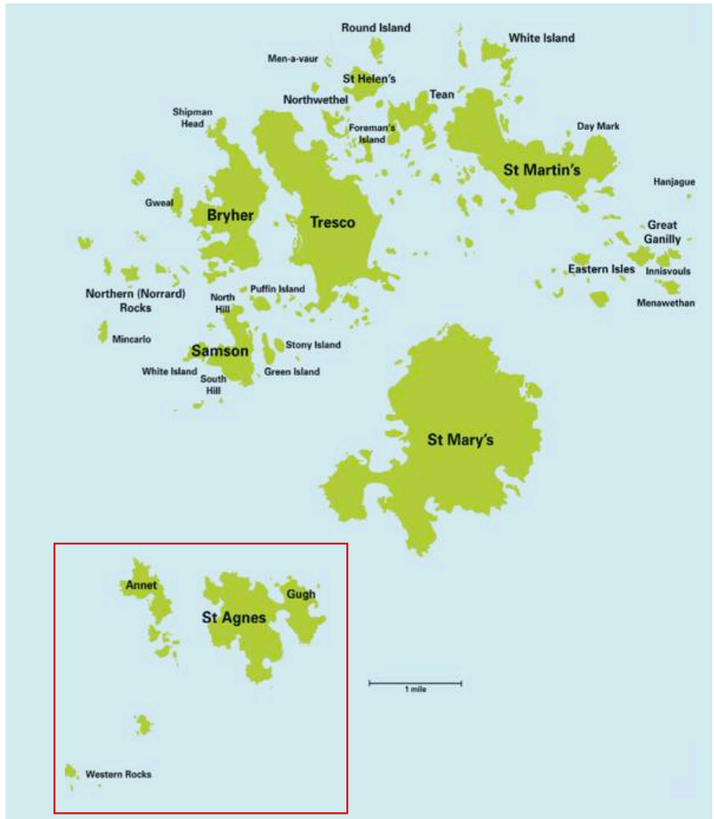
In recognition of their value for seabirds, the Isles of Scilly are designated a Special Protection Area (SPA), part of the European-wide network of key wildlife sites called Natura 2000.

The isolated islands surrounded by rich seas for feeding make the archipelago ideal for nesting seabirds, particularly burrow-nesting species Manx shearwater, *Puffinus puffinus* and European storm petrel, *Hydrobates pelagicus*.

As members of the petrel family, Manx shearwaters and storm petrels spend most of their lives at sea, performing astounding migrations across the oceans and only coming ashore to breed.

Both species are amber listed under the United Kingdom Birds of Conservation Concern threat categorisation and in England only breed in Scilly and on Lundy, Bristol Channel.

Rafting Manx shearwaters inshore below St Agnes Lighthouse.
Photo Ed Marshall.



Scilly has five inhabited islands and the Project is based on St Agnes and Gugh, the most south westerly of the islands. St Agnes covers 105ha and Gugh covers 37ha and they are connected by a rock and sand bar at low tide.

St Agnes and Gugh have a number of important land areas designated for seabirds as Sites of Special Scientific Interest (SSSI), Ramsar, and SPA as part of the Natura 2000 network, made up of the best wildlife sites throughout the European Union. Storm petrel is a qualifying feature for the SPA in its own right and Manx shearwater is a key component of the internationally important seabird assemblage for which the SPA is also designated.

St Agnes and Gugh are also the closest inhabited islands to Annet, the most important seabird island in the archipelago, which is closed to visitors.

Cover images
Top: Community celebration at 'rat-free' event on Periglis Meadow, February 2016.
Bottom: Manx shearwater.
Photos Ed Marshall.

Threats to burrow nesting seabirds

Evidence of Manx shearwaters was found in excavations of a site on the island of Nornour, Scilly dating back to 2000 BC. In the 13th century, seabirds were so important that they were used as currency; there were vast numbers, perhaps 150,000 Manx shearwaters and many thousands of puffins.

Among many challenges seabirds face, the greatest threat on land is predation of eggs and chicks by brown rats *Rattus norvegicus*.

Brown rats are not native to Scilly and were accidentally introduced in the 18th century from shipwrecks.

25% of the seabird population was lost from the islands between 1983 and 2006.

Brown rat and monitoring wax. Photo Pam Davis.

Islands selected for rat-removal

Across Scilly there is strong support for the islands' seabird heritage. St Agnes and Gugh were identified as the best places to carry out an island restoration programme because;

- They are the inhabited islands least likely to be recolonised by rats, as they are separated from the island of St Mary's by a deep channel and strong tidal currents.
- They have suitable habitats for nesting seabirds. Manx shearwaters were already present with 22 nest burrows, but no evidence of chicks successfully fledging in over 100 years.
- They represent a front line of defence to protect Annet, the most important seabird island in Scilly.
- A feasibility study carried out prior to the project found there was 100% support from the St Agnes and Gugh community which ensured a project could proceed.

Isles of Scilly Seabird Recovery Project (IOSSRP)

Project Objectives

- To enable storm petrels and Manx shearwaters to use the large areas of suitable breeding habitat that exist on the islands of St Agnes and Gugh, but are currently unoccupied by these species, by removing rats from both islands. St Agnes and Gugh would be the first inhabited islands in Scilly to be cleared of rats and the project would therefore represent a major step forward in the fight against these highly damaging predators.
- To protect the uninhabited island of Annet and nearby smaller islands from invasion by rats. Removal of rats from St Agnes and Gugh would greatly reduce the possibility of rats ever reaching Annet again.
- To improve knowledge and understanding among residents and visitors of the threats facing these internationally important seabird colonies in Scilly and of the methods available to address those threats. This will help to build support for future initiatives.

The project is funded by LIFE, the EU's financial instrument for the environment, and the Heritage Lottery Fund.

Project partners are RSPB, Isles of Scilly Wildlife Trust, Isles of Scilly Area of Outstanding Natural Beauty, Natural England, Duchy of Cornwall and a representative of St Agnes and Gugh.

Community

This is the largest community based rat-removal project in the world to date. The community of St Agnes and Gugh is defined as the 82 residents who live on St Agnes and Gugh full or part-time. There is one pub, Post Office stores, two cafes, a campsite, two community halls and six farms.

Project development

Prior to the project starting a workshop was held to seek community support for restoring inhabited islands for seabirds. It was found feasible to remove rats from St Agnes and Gugh. All adults on St Agnes and Gugh were interviewed and completed questionnaires which asked; why they would support the removal of rats, for any concerns or stipulations they had, what benefits they would expect and what would motivate them to keep the islands rat-free. All residents valued seabirds. The 100% collective support for removal of rats would also benefit the inhabitants.

Farmers reported rats damaging crops and livestock (45%) and taking or damaging food (40%). Fisherman reported rats damaging lobster pots and nets. The campsite reported damage to tents and customers' belongings. Rats entered houses (76%). Rats were estimated to cost between £10 and £1000 per household per year, due to purchasing bait, loss of crops, loss of stock feed and damage, therefore rats were costing the St Agnes and Gugh community approximately £15,000 per year. Regards health and enjoyment, up to 80% felt that the removal of rats would deliver health benefits.

Project delivery

Project staff were employed and following a tender process, Wildlife Management International Limited (WMIL) was the successful contractor for the rat-removal operation. WMIL's Senior Ecologist Biz Bell carried out a full audit of each of the properties and prepared 'rat-removal ready' instructions with all residents. These conservation actions aimed to reduce the food and harbourage material available for rats so they would be most likely to take bait.

The risks to non-target species including pets was explained, including how measures would be taken to reduce the likelihood of access to bait and an antidote treatment (Vitamin K) would be used. Trapping for rats was also carried out and resistance (L120Q mutation) was detected in one individual, identifying the requirement for multiple bait types.

'Rat-removal ready' actions

The community ceased baiting for a year prior to the baiting operation to ensure rats were not overly exposed to bait, instead snap traps were supplied. On farms, livestock pens were adapted to ensure full baiting tunnel coverage, access of rats to feed and bedding was reduced. The highest risk biosecurity pathway to St Agnes and Gugh is via boats, so advice was given to residents and the 'Harbour Users Group' regarding vigilance and reduction in high risk freight items. Conservation workshops were delivered:

- 'Bin Friendly Workshops'. Residents' waste practices were improved, many received new bins. Waste collection and transfer to St Mary's recycling centre were reviewed and deemed fit for purpose.
- 'Shed clearance days', 'beach clean days' and 'wood collection and bonfire-night' events reduced rat food and harbourage.
- 'Apple Day' removed wind-fallen apples from the ground and was coordinated with the school.
- 'Bait Awareness Workshops' were delivered to the school and wider community providing full health and safety information regards the upcoming operation.

Project Volunteer and Project Manager at St Agnes Post Office stores. Photo Alastair Wilson.

WMIL's Biz Bell carrying out community interviews on Gugh. Photo Jaclyn Pearson.

Project Manager and Volunteer carrying out community questionnaires. Photo Christine Hicks.

Volunteers carry out beach cleans on St Agnes. Photo Alastair Wilson.

Rat-removal and short term monitoring 2013-2014

A ground-based baiting operation was delivered by WMIL with a team of more than 30 volunteers, between 8th November 2013 and 8th March 2014. During winter, natural food is at its minimum so rats are most likely to take bait.

A total of 1036 bait stations were established in a 50m grid across both islands. Bait stations were made from corrugated black plastic drainage pipes, wired into the ground to prevent movement by animals and wind. Cereal-based bait blocks (either Contrac® or Roban Excel®, containing the anticoagulant bromadiolone or difenacoum respectively) were placed in each station and were checked five times a week, with bait being replaced as it was eaten by rats. The design of the bait stations allowed access for rats but prevented entry by non-target species including livestock, rabbits and birds. Although Scilly shrews could access the bait stations, due to their insect diet they were unlikely to eat cereal-based bait. In properties, lockable bait stations were used to prevent access by people or pets.

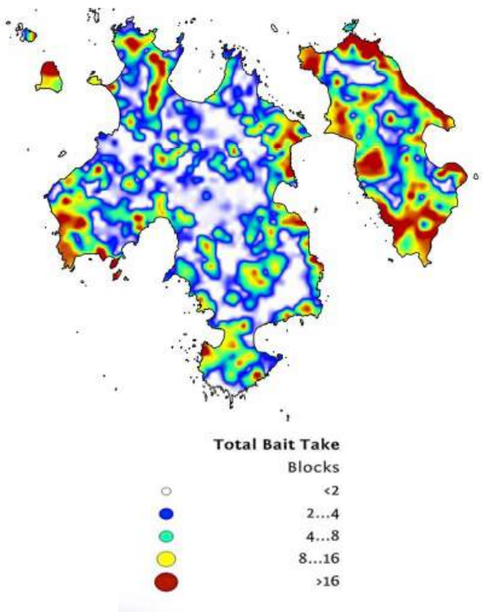
There was no evidence that any non-target species were affected by the rat-removal phase. Rats often return to their burrows to die, of the estimated population of 3,500 rats only 19 were found dead and collected from the surface. This did not pose a risk for cats as they would need to eat 18 rats within 7 days and dogs would need to eat 28 rats within 7 days to receive a lethal dose.

Intensive monitoring to find any possible 'fussy rats' not taking bait was carried out alongside the baiting programme. Monitoring tools were footprint tracking tunnels (with a peanut butter lure), trail cameras and rat-attractive food items which show rat teeth marks when nibbled such as wax flavoured with chocolate, peanut or coconut.

There was no further sign of rats after 1st December 2013 but baiting and monitoring continued to seek out any surviving rats. This was indeed the last sign of rats; the baiting operation had taken fewer than four weeks. Most of the rats had been living around the coast and seabird colonies as shown by the 'bait-take' map opposite.

A two year period was then required to achieve official success of rat-free status. This is based on the average life expectancy of a wild adult rat.

Biz Bell places bait in baiting tunnel. Photo Jaclyn Pearson.



Total bait take map. Image courtesy WMIL.

WMIL and volunteers on the first day of baiting 8th November 2013. Photo Paul St Pierre.

Chocolate wax monitoring blocks. Photo Alastair Wilson

Post rat-removal monitoring 2014-2016

WMIL produced a 'biosecurity plan' and trained IOSSRP who in turn trained community members registered as 'Seabird Heritage Volunteers' (SHVs) to carry out monthly checks of the permanent monitoring boxes and assist any surveillance after 'Rat on a Rat' (ROAR) calls. This is a 24 hour hotline based at Isles of Scilly Wildlife Trust office where anyone can report sign of a rat. SHV roles included helping IOSSRP staff to set up and check a 300m wide monitoring grid. There were 28 'ROARs' during this project phase, all of which resulted in no sign of rat activity.

Final check phase 2016 and official rat-free status!

WMIL returned for a six week final check after which St Agnes and Gugh were deemed officially rat-free on 13th February 2016.

Rat-free community celebration in the Island Hall, St Agnes, February 2016.
Photo Ed Marshall.

Long-term monitoring and legacy phase

A 'Biosecurity Plan for SHVs' and 'Maintenance Plan' were written by IOSSRP staff, partners and the community. Isles of Scilly Wildlife Trust are committed to raising the ongoing funds required for annual maintenance costs. RSPB are committed to managing the SHV volunteers, providing ongoing training to ensure their continued interest and commitment. RSPB will also provide the resources for any incursion response.

SHVs are committed to long-term monitoring and keeping the islands rat-free through the following five tasks.

1. Check permanent monitoring stations once a month for sign of rats.
2. Maintain biosecurity on boats and freight.
3. Carry out surveillance for potential incursion (within 24 hours of a 'ROAR' call). Revised methodology requires SHV Coordinators to contact SHVs with the nearest stations to the 'ROAR site' to check their stations within 24 hours.
4. Assist incursion response baiting, each of the SHVs received certified rodenticide training and took part in a 'mock incursion response' to test protocols. If sign of rats is found, SHV Coordinators will confirm this with IOSWT and RSPB and then coordinate SHVs to exchange wax for bait in their stations within 24 hours. SHVs will then assist the RSPB incursion team to deliver a month of baiting and monitoring.
5. Assist IOSWT contractors to monitor key species. SHVs joined IOSSRP staff to carry out Manx shearwater and storm petrel breeding surveys including evening 'chick-check walks' during the project.

On the key uninhabited islands with rats (St Helen's group, where Manx shearwaters and storm petrels breed or attempt to breed), IOSWT monitored and controlled rats (through ground-based baiting) between 2013 and 2015. Each year rats returned from nearby inhabited islands (Tresco and St Martin's) and research replaced baiting in 2016. On St Helen's the IOSSRP team monitored rat diet, behaviour and trapped rats for resistance analysis (L120Q mutation) with no resistance recorded.

Project Achievements

Key species: Manx shearwater

By removing rats from St Agnes and Gugh, 43.7ha of suitable breeding habitat has become available for Manx shearwaters.

Manx shearwater breeding colonies have expanded with new sites so there has been recruitment of new breeding birds.

Chicks were recorded fledging for the first time in living memory the year after rat removal (2014). Recorded outside their burrows at night from late August to mid September during 'chick-check walks'. In the final year of the project (2017) over 40 chicks were recorded.

Project Manager Jaclyn Pearson with Manx shearwater chick. Photo Nick Tomalin.

Year	Manx shearwater Apparently Occupied Burrows	Manx shearwater chicks recorded
2013	22	0
2014	26	10
2015	57	28
2016	74	32
2017	59	43

Key species: storm petrel

By removing rats from St Agnes and Gugh, 41.6 ha of suitable breeding habitat, together with 3,610m of walls with suitable cavities, has become available for storm petrels.

Storm petrels returned to breed on St Agnes and Gugh and their chicks calls were recorded within two years of rat removal (2015). This was the first time they were recorded as breeding on St Agnes and Gugh in living memory.

Sample nesting locations in boulder beaches and stone walls have been selected to monitor the breeding numbers. Breeding colonies have expanded with new sites so there has been recruitment of new breeding birds.

Storm petrel chick, St Agnes. Photo David Price.

Chicks were recorded either calling at their nest sites or seen from mid September to early October during 'chick-check walks'. In the final year of the project (2017), five chicks were recorded at study sites (at time of report 18/09/2017).

Year	Storm petrel Apparently Occupied sites	Storm petrel chicks recorded
2013	0	0
2014	0	0
2015	8	4
2016	13	6
2017	14	5 (at time of report 18/09/17)

Project Achievements

Wider Species

Shrews, rabbits, vegetation, land birds and invertebrates were monitored by the contractor, Spalding Associates. A control site for comparison was selected on Bryher due to its similar size to St Agnes and Gugh (129ha against 149ha). If ecological trends were similar on St Agnes and Gugh, but different on Bryher, then it is possible that rat removal was the cause.

Surveys were carried out with four habitat types; European gorse scrub, coastal grassland, heathland and foreshore. Baseline surveys were carried out in the spring/summer 2013 prior to rat removal and were continued in 2014, 2015 and 2016.

Overall the only trend which can be definitively attributed to rat-removal is the increase in Scilly shrews (lesser white-toothed shrew *Crocidura suaveolens*) which are normally predated by rats. All other trends could not be solely attributed to rat-removal although increases in rabbits (*Oryctolagus cuniculus*) are probably mainly due to rat-removal and decreases in lawn hoppers are probably partly due to shrew increase.

Points of interest from the invertebrate surveys were:

- 33 species of spider were identified, of which one species, the Red Data Book species *Clubiona genevensis*, was a first record for Gugh and first records for Scilly of *Pardosa agrestis* (a nationally scarce spider), *Argenna subnigra* and *Silometopus ambiguus*.
- Likely first records for beetles on St Agnes, Gugh and Bryher for five species; *Cassida nobilis, Nalassus laevioctostriatus, Otiorhynchus atroapterus, Phaleria cadaverina* and *Psylliodes marcida*.

In 2015 a full 'Special Protection Area' breeding seabird survey was carried out, with the seabird assemblage unchanged since the previous 2006 audit. Though most seabird species had declined due to a range of challenges which reflect national declines (pollution, climate change etc), storm petrel breeding numbers were stable and Manx shearwater breeding numbers increased.

Seabird Friendly Visitors

In total over 12,000 visitors engaged with activities which included

- 42 walks delivered across all inhabited islands
- 310 'Date With Nature' walks on Tresco
- Over 300 Scillonian III Ferry wildlife sailings (wildlife guides on board Friday sailings)
- 10 inter-island boat trips and 80 trips affiliated with the project delivered by partners

We also featured on local radio, local and national press, national and international television. These encouraged further visitors to the islands assisting the local economy (based on feedback from 'Islands Partnership' a non profit company marketing the Isles of Scilly).

- Highlights included BBC Countryfile (approx 8 million viewers) and BBC Springwatch (approx 3 million viewers)
- We have had over 26,500 hits on the project website and over 800 'followers' on facebook and 770 on Twitter

Young Seabird Ambassadors

In total over 1,600 young people engaged in activities;

- 54 in-school activities in Scilly
- 21 out-of-school activities in Scilly
- 12 mainland schools joined field trips
- 8 University field trips were delivered

Scilly shrew, St Agnes. Photo Dave Grundy.

Spalding Associates and volunteers, vegetation surveys, Gugh. Photo Jaclyn Pearson.

'Date with Nature walks', Tresco. Photo Ed Marshall.

St Agnes School carry out a shrew survey. Photo Ed Marshall

Seabird Friendly Communities

St Agnes and Gugh

All 82 residents fully supported the project attending **20** community talks, **30** workshops, and **8** themed conservation events.

Feedback questionnaires as part of semi-structured interviews were carried out with the residents, consisting of biodiversity, socio-economic and methodology questions.

Biodiversity

- 100% of the community felt the project had a positive effect on the key species Manx shearwaters and storm petrels and wider biodiversity.
- Compared to the 2012 questionnaire the number of residents being more sympathetic to seabirds and the challenges they face had increased by 47% due to the information from the project.

Social

- 100% of the community felt the project had positively affected their day-to-day life. A strong theme was they no longer need to worry about rats.
- When asked if the project had any positive or negative impacts on the community, 100% answered 'positive', the main theme was 'we do not have to mitigate against the negative impacts of rats any longer' another theme was ' the community was united and not divided in any way'.

Economy

- 100% of the community felt the project had benefited the local economy, with most of this benefit to certain sectors; agriculture, fishing and particularly tourism and that the benefits had potential to increase.
- 68% of the community felt that businesses had benefited from the project. The most popular answer was the theme of 'no further costs due to rat damage' and 'the contractors had used the local businesses and providers'.
- 17% of the community had developed new products. One community member explained that 'Visitors on his 'wildlife boat trips' had increased by 200%, as there has been high publicity of the project, and he and his team received interpretation training so could offer informed wildlife tours'. Tourism is the largest income in Scilly and 100% of the population felt the project had a positive impact.

Delivery

- 100% of the community were happy with the project procedures and methods.
- Common themes were, 'clear explanation of what we needed to do and when', 'involved everyone and engagement with the school', 'uniform of orange hats were helpful for us to recognise you and what you were doing', 'felt reassured that pets would be safe', 'the team was passionate about the cause', 'we felt listened to, as things were altered if we asked them to be'.

Wider inhabited islands (Tresco, Bryher, St Martin's, St Mary's), Scilly

Over 360 community members in total attended **6** community talks, **2** community workshops and **5** beach cleans.

Seabird Friendly Volunteers

Over 300 volunteers have delivered over 24,000 volunteer hours during the five year project. These volunteers were; mainland volunteers on residential placements or day trippers, local volunteers from St Mary's, RSPB sabbaticals, and SHVs.

Seabird Heritage Volunteers assist Manx shearwater surveys on St Agnes. Photo Lydia Titterton.

Seabird Heritage Volunteers Joss and Grace check monitoring wax. Photo Nick Tomalin.

Project Manager trains Seabird Volunteer Coordinators John and Trish. Photo Nick Tomalin.

WMIL provides bait station training to resident Pam. Photo Alastair Wilson.

Bathing Manx shearwaters inshore below St Agnes Lighthouse. Photo Ed Marshall.

Conclusions

The aims of the project were completed successfully. Due to removal of rats from St Agnes and Gugh, large areas of suitable breeding habitat for Manx shearwaters and storm petrels are now available and both species' breeding populations have increased. Removal of rats from St Agnes and Gugh has also greatly reduced the possibility of them reaching the seabird colonies on Annet or the Western Rocks.

The successful removal of rats from St Agnes and Gugh was due to support of 100% of the community. Community members joined decision making processes from the outset. These relationships then sustained trust through the 'rat-free ready' and 'rat-removal' actions. Excellent contractors and team members were enlisted and worked with the community addressing all stipulations, being adaptive to altering practices and accommodating community concerns where required.

The trust and knowledge the community and partners gained during the preparation and eradication phases paired with the positive impacts the removal of rats continue to have on the seabirds and socio-economics turned into 'pride and ownership of their project' in the long-term phase. For visitors, the seabird interpretation including the call to action 'Rat on a rat' stickers will help to keep the islands rat-free and protect these important seabirds into the future.

Apple Day 2015, reducing food for rats, St Agnes School collect wind-fallen apples. Winning photo in a competition organised for UK projects supported by LIFE. Photo Lydia Titterton.

For further information about the project please see the website at **www.ios-seabirds.org.uk**

LIFE11 NAT/UK/000387 and HLF HG-11-06880

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