
Biosecurity measures for Coastal Defensive Works, St Agnes

Prevention, Surveillance (TMS, CIOS)

Incursion Response (TMS, CIOS, IOS Seabird partnership (RSPB, IOSWT, community volunteers))

Note: This plan has been written by IOSWT Development Manager solely for the planned coastal works planned, St Agnes, May 2023

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Date: 05/05/2023

Invasive Non-Native Species (INNS)

Isles of Scilly Wildlife Trust (IOSWT), RSPB and the community of St Agnes and Gugh are particularly concerned about the potential risks from INNS on the seabirds within the SPA and rat-free status of St Agnes and Gugh, and Annet.

Location for works: Three sites on St Agnes: Porth Killier, Porth Coose and Periglis Beach

Work proposed by CIOS and contractors TMS:

- Installation of geobags at Periglis to replace the core of existing dunes, wrapped in geotextile and covered with excavated material and to stabilise the dune crest with geomat to encourage re-vegetation.
- Installation of rock bags at Porth Coose to heighten the existing protection, backed by earth bund.
- Installing rock armour at the bottom of the existing sea wall at Porth Killier. To reduce the risk of coastal flooding on St Agnes.

Biosecurity requirement: A biosecurity plan requires best practices covering biosecurity measures and re-incursion and both plans need to be adequately resourced.

Summary of biosecurity actions required from TMS contractors and CIOS:

- Please confirm that two personnel (Mark Welsh and David Matthews) will immediately undertake the online rodenticide training to be able to use rodenticide and purchase it.
- Please confirm all TMS staff involved in this operation from Falmouth to St Agnes understand the tasks required of them, if an INNS (most likely a rat or mouse) is found, work ceases until there is no more evidence.

- If an incursion occurs, please confirm that all work will cease. The barge will be moored offshore and TMS and CIOS staff would assist an incursion response as team members. RSPB, IOSWT and community members would be team leaders.
- Please confirm that at least two TMS staff members and two CIOS staff members would assist an incursion response within 48 hours and would support the ongoing response as required.

Please refer to the Biosecurity plan for St Agnes and Gugh

Summary

The island of St Agnes, Isles of Scilly is rat-free after rats were eradicated in 2013 by the Isles of Scilly Seabird Recovery project (partners RSPB, IOS Wildlife Trust, Natural England, WMIL, community of St Agnes and Gugh)

St Agnes plays host to a rich variety of wildlife including nationally and internationally important colonies of seabirds and has been maintained free of many mammalian invasive non-native species (INNS) including rats. Predatory INNS can pose a significant threat to sensitive ground-nesting bird species due to predation of eggs, chicks and even adults.

INNS already present: rabbit, feral cat.

The purpose of this plan is to implement/encourage preventative measures (barriers) along key incursion pathways to the island; to inform the routine surveillance of the island; and to provide necessary information for a rapid incursion response in case of detecting invasive mammals.

Simple, routine biosecurity measures will protect the island by a) preventing INNS from reaching the island and b) maximising the chance of any newly arriving INNS being detected quickly so that a targeted response can be put in place to prevent them from spreading and establishing. Coupled with a clear and effective incursion response plan, ready to be put into effect at short notice, these measures will maximise the chances of the island staying free of INNS and offer the best protection to native wildlife.

Definitions:

- **Invasive non-native species (INNS):** a species that does not naturally occur on an island but when introduced by humans can establish a population on the island **and** cause harm to native species.
- **Biosecurity:** actions that can be taken to reduce the risk of invasive non-native species travelling to (incursion), and establishing a population (invasion), on an island.
- **Incursion pathways:** the ways in which an invasive non-native species can reach an island e.g. Stowaway on a visiting boat.
- **Biosecurity surveillance:** regular checks that can be carried to ensure that any invasive non-native animals arriving on the island are quickly detected.
- **Rapid incursion response:** responding quickly if non-native species are detected in order to prevent them establishing a population, which would require a full eradication.

1. PATHWAYS

Pathways are the ways in which invasive species could travel the island; these are both human mediated and through natural means (such as swimming, storms etc.)

Pathways	Main Invasive Species	Risk Level
Barges from Falmouth docks has a stowaway(s)		
- On the barge itself		
- In the rock and sand which has come from quarries with rodents	Brown Rat	
- In vehicles that have been sitting on the docks prior to being loaded onto the barge	Possibly house mouse. Other INNS unlikely	Medium
- Contractors, equipment and materials which have been in the vicinity of rodents		

Dave to specify amount and how many barge loads, time taken to unload, on St Agnes. Does it stop on St Mary's?

2. Barriers

Pathways	Barrier	Implementation
Barges from Falmouth	<ol style="list-style-type: none"> 1. Inform all staff of biosecurity risks and measures 2. Safe and effective rodent control should be in place at departure points and on boats. 3. Barges closed and have thorough rodent surveillance tools and checking process. 4. Rat rope guards to be used when moored to the quay. 5. Rock and sand for delivery to have rodent surveillance tools and checking process. 6. Rock and sand loaded onto barge under heavy light and noise 7. Vehicles which sit on Falmouth docks and could house stowaways to have a snap trap stations inside. 8. An understanding from all staff that if evidence of rodent(s) is found on the barge, it cannot land/transfer goods to St Agnes. Operations cease, rodenticide and snap traps are used until there is no more evidence of rodent(s) and 	<ol style="list-style-type: none"> 1. Jaclyn Pearson provided training to three staff Mark Walsh, Luke Moore, Doug Reed. Dave Matthews to ensure all other staff aware. 2. Rodent control (through contractors) is carried out at the docks but there are ongoing risks (rat harbourage along the shore, see image 1 there is fish waste and general waste further into the docks), this will now be improved in the area around the quay, the barges, and around the materials as TMS staff trained to use six or more monitoring stations (non-toxic flavoured wax blocks to understand activity areas), bait and snap trap stations. Mark Welsh can purchase more bait after undertaking the online rodenticide course. These stations were provided 5th May (see image 2) 3. The barges are closed to reduce stowaways (see image 3) 4. Although there are no rat rope guards, the barges will be moored out on the water when operations begin and at that stage will have monitoring tools onboard. If this changes Mark Walsh understands how to implement rat rope guards.

- RSPB and IOSWT reinvolved in the decision making.
9. On St Agnes, trained volunteers will watch the unloading process to witness if any INNS (rats) come ashore. They may not be able to stop a stowaway (although they would try to dispatch it) but by witnessing its arrival, an incursion response would be immediate.
 10. St Agnes community volunteers will check the island wide biosecurity stations in case a stowaway did arrive.
5. The rock and sand will have monitoring/bait and snap trap stations around them to monitor and dispatch rodents before the freight departs (see image 4)
 6. Rock and sand loaded under flooded lights and using loud machinery which should deter rats during the loading process. The barge then moors offshore.
 7. The vehicles which will go on the barge do have areas for rodent stowaways so snap trap stations will be placed in these compartments (see image 5 and 6)
 8. TMS staff understand all operations cease in event of rodent/INNS sign. They will liaise with IOSWT and RSPB in the event.
 9. IOSWT will assist TMS to have volunteers on St Agnes watching the unloading of the materials.
 10. Community volunteers will check the 100 biosecurity stations on St Agnes after the unloading process for if a rat did stowaway and avoided being seen by TMS or the volunteer watch.



Image 1 – area near the quay where barge is moored has rat harbourage (vegetation, wood, coastline)



Image 2 – Bait stations now in place



Image 3 – Closed barges, the blue units could have stowaways so will have stations and be checked.



Image 4 - Bait and snap stations will be set up next to the freight



Image 5 - Vehicles (digger) could have stowaway



Image 6 - rodents have been seen in this area of the digger before, so a snap trap/bait will be placed here.



Doug Reed, Mark Welsh, Luke Moore, Jaclyn Pearson setting up INNS surveillance, Falmouth docks

3. INCURSION

Preventing INNS from reaching the island using the methods above is ideal; however, in the event that an INNS animal did reach St Agnes it is very important that it be detected before a population has time to establish. Eradicating a population is difficult, expensive and may not be successful so again: prevention is better than cure.

Any suspected or confirmed incursion should be responded to immediately in order to intercept INNS before they roam more widely.

Possible or probable sightings should be reported immediately as soon as possible to the island biosecurity co-ordinator (Jaclyn Pearson and Paul St Pierre)

Please see the Biosecurity plan for St Agnes and Gugh for further information on delivering an incursion response.

Name	Role	Contact Details	Rodenticide Trained?
Jaclyn Pearson	Biosecurity co-ordinator	07789548304 jaclyn@ios-widlifetrust.org.uk	Yes
Paul St Pierre	Response Hub co-ordinator	Paul.stpierre@rspb.org.uk	Yes
Karen Varnham	SIRP, RSPB	Karen.varnham@rspb.org.uk	Yes
Tessa Coledale	Biosecurity Officer, Biosecurity for LIFE	Tessa.Coledale@rspb.org.uk	Yes

INCURSION equipment

There is a fully stocked incursion shed on St Agnes with all the supplies required to launch a full incursion response as well as additional surveillance.

TMS and IOS Council will be asked to replace any equipment used after the response and to replenish the tools needed during the response.

Item	Quantity
Laminated sheets showing rodent/mustelid sign	5
Laminated sheets showing marks left on wax monitoring blocks	5
Copy of Biosecurity Manual	1
Map of island with monitoring/bait/tracking tunnels etc	3
Poison posters (to be put up if rodenticide is used)	10
Surveillance 'Protecta' Boxes	36

Wax monitoring blocks (replaced yearly or when gnawed or damaged)	100
Tunnel Bait Stations (boxes or pipe)	50
Rodent motels	3
Tracking tunnels	20
Tracking ink pads	30
Rodenticide bait	4 buckets
Trail camera	3
Large clear plastic box for storing reference and detection kit	1

Note that this is not enough equipment to launch a full incursion but enough to get started whilst awaiting TMS/CIOS to supply the rest.

4. RISK TO NON-TARGET SPECIES

Species	Risks	Mitigation
Native Bird Species	Rodenticides are toxic to birds.	Rodenticides should only be used in bait tunnels which exclude the majority of birds. Rodenticide blocks are unlikely to prove attractive to birds.
	Secondary poisoning due to ingestion of poisoned rodents is possible.	Any bait crumbs found outside the boxes should be removed and disposed of.
	Secondary poisoning via ingestion of invertebrates is possible but has not been shown to be a major risk in studies on UK islands.	Personnel should search for carcasses of rats and potential non-target species and any found should be removed and disposed of to reduce risk of secondary poisoning.
	Snap traps could injure/kill birds.	Snap traps should only be used inside protected boxes, in buildings that cannot be accessed by birds.
	Mustelid traps could kill non-target species.	This risk should be managed by putting housing around the trap (a legal requirement) making access unlikely by birds. Calibrating the trap to a weight >100 g. Frequent checks of traps will also help reduce the risk.

Cats and Dogs	Rodenticides are toxic to mammals. Secondary poisoning due to ingestion of poisoned rodents is possible.	Rodenticides should only be used in bait tunnels which exclude cats and dogs. Any bait crumbs found outside the boxes should be removed and disposed of. Personnel should search for carcasses of rats and potential non-target species and any found should be removed and disposed of to reduce risk of secondary poisoning. If any cat or dog is known or suspected to have eaten bait contact vet immediately. They will need to be given Vitamin K.
	Some wax block flavourings (eg. cocoa powder) are toxic to cats and/or dogs and any wax block can cause issues/death if swallowed whole.	Wax blocks should only be used in bait boxes.
	Mustelid traps could kill non-target species.	This risk should be managed by putting housing around the trap to make access unlikely by cats and dogs Frequent checks of traps will also help reduce the risk.
	Rodenticides are toxic to mammals.	Rodenticides should only be used in bait tunnels which exclude livestock. Try to avoid putting tunnels in fields with livestock.
Livestock	Wax blocks may cause harm if ingested.	Wax blocks should only be used in bait boxes which exclude livestock.
	Mustelid traps could injure non-target species.	This risk should be managed by putting housing around the trap to make access unlikely by livestock Frequent checks of traps will also help reduce the risk.

Appendix 1: References, resources, and further guidance

Biosecurity for LIFE website: <https://biosecurityforlife.org.uk/>

Island biosecurity manual: <https://biosecurityforlife.org.uk/admin/resources/island-biosecurity-manual-1.pdf>

How far can an INNS swim?: <https://biosecurityforlife.org.uk/admin/resources/how-far-can-rodents-swim.pdf>

Appendix 2: Best practice for vessels

Guidance for all vessels:

- Check regularly for signs of stowaways: deploy chew cards or wax blocks and check for rodent sign (<https://biosecurityforlife.org.uk/admin/resources/id-tool-rodent-identification-and-signs-of-stowaways-1.pdf>).

- Store waste securely in rodent proof bins and dispose of regularly, preferably on the mainland.
- Use rat guards on mooring lines and anchor chains when in harbour.
- Inform all crew of biosecurity risks and measures.
- Inform all passengers of biosecurity risks and measures either directly or through signs onboard/at departure points.
- Follow best practice for cargo/baggage (see appendix 3).
- Avoid mooring overnight on/close to rat-free islands.
- If an animal or signs of an animal are found do NOT travel to or land on an island. Follow guidance: <https://biosecurityforlife.org.uk/admin/resources/found-signs-of-stowawys-onboard-your-boat-here-are-the-steps-to-take.pdf>
- NEVER push an animal overboard as this may result in them swimming to an island.

Resources:

- Guidance for boat owners/users: <https://biosecurityforlife.org.uk/resources/category/boating-owners-guide>
- Visitor boats: <https://biosecurityforlife.org.uk/admin/resources/information-for-visitor-boats.pdf>
- Fishing vessels: <https://biosecurityforlife.org.uk/admin/resources/fishing-vessel-biosecurity.pdf>
- Yachts: <https://biosecurityforlife.org.uk/admin/resources/yacht-operators-biosecurity.pdf>
- Kayak stickers: <https://biosecurityforlife.org.uk/admin/resources/kayak-stickers-1.pdf>
- Vessels: what to do if you find a rodent onboard: <https://biosecurityforlife.org.uk/admin/resources/found-signs-of-stowawys-onboard-your-boat-here-are-the-steps-to-take.pdf>
- Kayaks: what do to if you find a rodent onboard: <https://biosecurityforlife.org.uk/admin/resources/found-signs-of-a-stowaway-on-your-kayak.pdf>

Appendix 3: Best practice for cargo

Bulky cargo, such as building materials, farm equipment, animal feed and bedding, is high risk due to its potential to transport invasive mammals to islands.

- Check cargo for sign of animals before travelling. If any sign is found do not transport or ensure that cargo is free of INNS before travelling.
- Avoid storing cargo in areas/buildings or on the quayside where it could be accessed by animals like rats. Store cargo off the ground in a secure building where possible and load onto the vessel on the day of departure.
- Where possible wrap or pack cargo in a way that is not accessible to animals.
- Store all edible cargo in secure boxes/packaging.
- Do not transport damaged bags of animal feed.

- If travel is delayed biosecurity checks should be repeated on day of travel.
- Where possible, and particularly with high-risk cargo, store incoming cargo in an enclosed space on-island for a day or two with rodent control in place to ensure that any animals are contained.

Resources:

Leaflet for those travelling to islands: <https://biosecurityforlife.org.uk/admin/resources/what-to-do-when-travelling-to-and-from-islands-3.pdf>

Appendix 4: Best practice for baggage

Baggage can be attractive to animals like mice or rats, especially if it contains food, so biosecurity precautions should be taken with any bags/boxes taken to an island.

- Pack/check bags on day of travel for signs of stowaways. If any sign is found do not transport or ensure that cargo is free of INNS before travelling.
- Avoid storing or leaving your bags in areas/buildings or on the quayside where it could be accessed by animals.
- Where possible wrap or pack cargo in a way that is not accessible to animals.
- Store all food in rodent-proof containers.
- Do not transport damaged boxes of food.
- If travel is delayed biosecurity checks should be repeated on day of travel.

Resources:

Leaflet for those travelling to islands: <https://biosecurityforlife.org.uk/admin/resources/what-to-do-when-travelling-to-and-from-islands-3.pdf>

Appendix 5: Best practice for vehicles

- Check vehicle for signs of rodents on day of travel. If any sign is found do not transport or ensure that vehicle is free of INNS before travelling.
- Avoid leaving your vehicle in areas or on the quayside where it could be accessed by animals prior to travel.
- Avoid leaving potential food sources in your vehicle to reduce the attraction to rodents.
- If travel is delayed biosecurity checks should be repeated on day of travel.

Resources:

Leaflet for those travelling to islands: <https://biosecurityforlife.org.uk/admin/resources/what-to-do-when-travelling-to-and-from-islands-3.pdf>

Appendix 6: Best practice for construction

Bulky cargo, such as building materials, is high risk due to its potential to transport invasive mammals such as rats or stoats to islands.

- Produce a biosecurity plan to cover all aspects of the project as per planning condition.

- Ensure all staff are made aware of risks and biosecurity measures including those relating to personal baggage.
- Ensure that there is a member of staff responsible for ensuring biosecurity measures are followed during transportation and on-island.
- Check cargo for sign of animals before travelling. If any sign is found do not transport or ensure that cargo is free of INNS before travelling.
- Avoid storing cargo in areas/buildings or on the quayside where it could be accessed by animals like rats. Store cargo off the ground in a secure building where possible and load onto the vessel on the day of departure.
- Where possible wrap or pack cargo in a way that is not accessible to animals.
- Store all edible cargo in secure boxes/packaging.
- If travel is delayed biosecurity checks should be repeated on day of travel.
- Where possible, and particularly with high-risk cargo, store incoming cargo in an enclosed space on-island for a day or two with rodent control in place to ensure that any animals are contained.
- Maintain surveillance at the construction site and anywhere that materials are stored.
- If using a charter boat this should be included in the biosecurity plan, all crew should be informed of measures and best practice for vessels should be followed.

Resources:

Leaflet for those travelling to islands: <https://biosecurityforlife.org.uk/admin/resources/what-to-do-when-travelling-to-and-from-islands-3.pdf>

Appendix 7: Surveillance and Incursion log sheet

Island name:			Date:
Checked by:			
Station no.	Type	Action Taken eg. checked, replaced wax	Was there sign?
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

13			
14			
15			
16			
17			
18			
19			
20			

Island name:			Date:	
Checked by:				
Station no.	Bait taken by rats 0-25% 25-50% 50-75% 75- 100%	Rat droppings? Y/N If Y, Blue or brown?	No. of bait blocks added	Non-target species sign? Y/N If Y, which species?
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Appendix 8: Wax block instructions – note that replacement blocks should be available at the Sumburgh Hub

Instructions for making wax monitoring blocks:

Flavoured wax blocks are simple and effective monitoring tools that can be used to detect rodents (and other species). This is the recipe provided by Wildlife Management International Ltd, the NZ-based contractors who have run many of the successful rat eradication projects in the UK in recent years.

Makes approximately 30 large or 60 small blocks

Equipment:

Standard 25 cm saucepan

Heat source (e.g. gas ring and gas bottle)

Silicon muffin tray (12 large or 24 mini)

Wooden spoon for mixing

Heatproof glass jug for pouring

Different flavour blocks are made as follows:

Chocolate wax:

Ingredients:

12 standard white wax candles

5 heaped tablespoons of pure cocoa powder

Instructions:

Melt candles in pot, remove wicks, add cocoa powder, stir thoroughly to mix, pour into silicon tray. Just before wax sets, put hole through centre of the block (alternatively put bent paperclip for hanging in tree/vegetation). Note: do not use drinking chocolate as this contains milk powder and the mixture will split and burn.

Coconut wax:

As above but add 5 teaspoons of coconut essence one spoonful at a time (taking care as the mixture will bubble and fizz) or ½ block of creamed coconut after removing the chocolate wax from the heat. (Cocoa is still added to make teethmarks easier to see on the wax block).

Peanut wax:

As for chocolate wax but omit the cocoa and add ½ jar of smooth peanut butter instead (do not leave on the heat too long as the peanut butter can burn). Note: this wax does not last or store as long as the other types as it can spoil due to the peanut butter content

Appendix 9: Reported sightings sheet

Name of person reporting sighting:		Name of person who made sighting (if different):	
Contact details of person reporting sighting Email: Telephone:		Contact for person who made sighting (if different):	
Date of sighting:	Date of interview:	Interviewer:	
Overview of action taken:			
Circumstances (circles as appropriate): Live animal Dead animal Footprints Droppings Damage Other:			

<p>Conditions of sighting – as much detail as possible: Time: Exact location: Any other observers? Name and contact details if known:</p>
<p>Description of the sighting What did you see?</p> <p>Can you describe the animal? [<i>colour, size, describe ears / tail / other features</i>]</p> <p>What was it doing?</p> <p>How long did you observe it for?</p> <p>How close were you to it?</p> <p>Have you seen mice / rats / (other) in the wild before / Do you have any experience with mice / rats / (other)?</p> <p>What makes you think it was a rat / mouse / other?</p> <p>How sure are you that it was a rat / mouse?</p>
<p>Does the observer wish to be notified of outcome of the monitoring? [<i>inform them it will take at least six weeks</i>]</p>

Appendix 10: Incursion Response guidance

Incursion response guidance: <https://biosecurityforlife.org.uk/resources/category/incursion-response-for-rats-mice-and-mink.php>

Full incursion/eradication handbook: <https://biosecurityforlife.org.uk/resources/detail/uk-rodent-eradication-best-practice-toolkit>