

# Government of South Georgia & the South Sandwich Islands



## BIOSECURITY HANDBOOK 2018-2019



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## 1. Introduction

South Georgia & the South Sandwich Islands are a haven for wildlife and are home to globally important populations of marine mammals and seabirds, including five million seals of four different species, and 65 million breeding birds of 30 different species. Environmental stewardship is embodied within the high-level *Strategy 2016-2020* which guides the work of the Government of South Georgia & the South Sandwich Islands (GSGSSI). This Biosecurity Handbook has been developed in response to our Strategy commitments, recognising biosecurity infringements represent one of the most significant risks to the future sustainable management of this UK Overseas Territory.

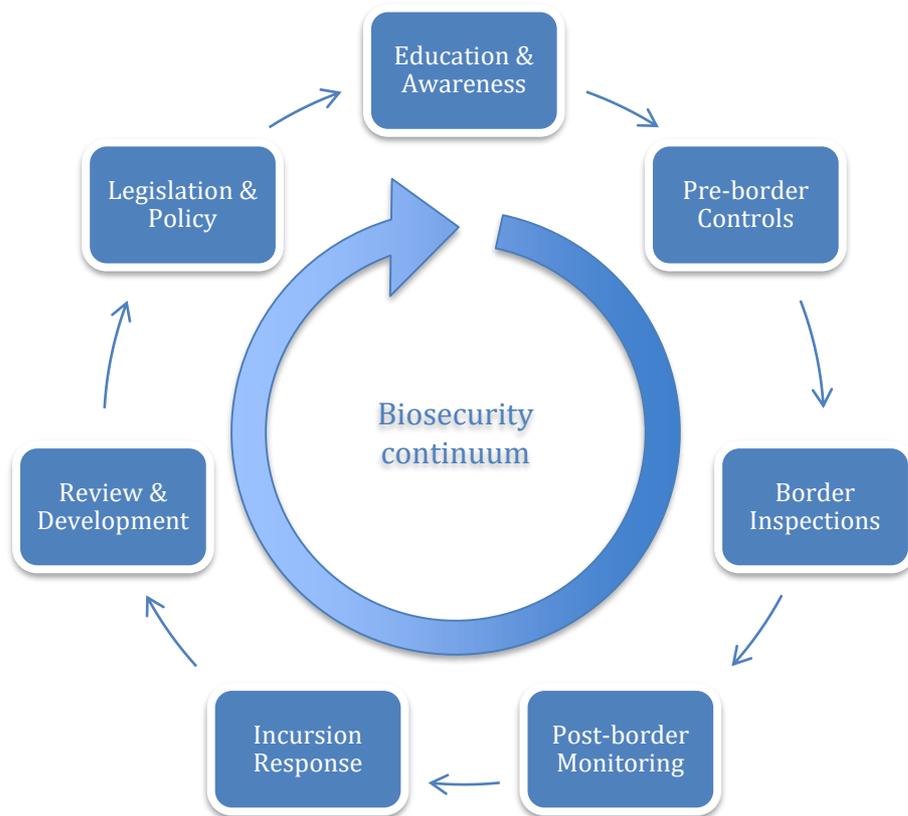
This Biosecurity Handbook represents a statement of current biosecurity policy. To make sure these policies are up to date, and reflect best practice, GSGSSI undertakes an annual review of biosecurity operations, in conjunction with stakeholders, to identify any emerging threats and take action to mitigate risk including the development of new and improved control measures.

In recent years several large habitat restoration projects have sought to eradicate rodents, reindeer and invasive weeds from South Georgia. Significant resources have been used in these important conservation projects and it is now more important than ever that stringent biosecurity measures are in place to prevent non-native species entering the Territory.

As part of GSGSSI's programme of continuous improvement in the coming years, we are also exploring several larger-scale projects which stand to make a significant difference to South Georgia:

- Following a successful trial of a rodent detector dog programme, we will explore and refine the possibilities for a full time detector dog programme which will enable verification of rodent free status for vessels departing for South Georgia. This measure would form a critical element of upstream biosecurity;
- the enhancement of the biosecurity facility at the Government's administrative centre at King Edward Point, as part of a wharf redevelopment project scheduled to commence in 2019.
- GSGSSI will work with FIG to identify areas where mutual collaboration may align to the strategic objectives of each Territory. This may include capacity building in the Falkland Islands as a gateway to the Antarctic.

Non-native species can enter South Georgia & the South Sandwich Islands through a range of pathways including ships, in cargo, with passengers and within personal baggage. To mitigate this risk GSGSSI works across the entire biosecurity continuum and has procedures in place pre-border, during transit, as well as post-border to limit the opportunities for non-native species to get to the island. It has also established a post-border monitoring and incursion response plan (Fig. 1).



*Figure 1. Effective biosecurity operates along the entire biosecurity continuum*

The foundation of this process is ensuring that there is effective, comprehensive biosecurity policy in place and that it is accessible to all user groups. This document is intended to draw together all GSGSSI's current biosecurity policies into a single place so it can be easily accessed and provide the basis for discussion and regular review.

Ultimately this biosecurity policy is enshrined in law under the Wildlife and Protected Areas Ordinance (2011 and amendment 2013) and any breach may be treated as criminal offence.

## 2. Visitors

**Permit Holders must ensure all biosecurity measures are in place before departing for South Georgia. Failure to do so may constitute an offence under the Wildlife and Protected Areas Ordinance (2011) resulting in prosecution and could have catastrophic consequences for the ecology of the Territory.**

South Georgia & the South Sandwich Islands has no native population. Everyone is therefore a visitor and has a responsibility to preserve the environment for future generations. One of the biggest threats to biodiversity is from invasive species and all visitors can help in preventing new non-native species arriving in the Territory or moving existing established non-native species between sites.

Visit permit holders, particularly those on any vessel permitted to make their first landing outside of Grytviken, must ensure that they have adequate supplies of biocide (Virkon) for boot washing.

Vessels departing Stanley may be subject to screening by a rodent detector dog. Rat guards should be deployed at all times when vessels are alongside at gateway ports. Be vigilant to signs of rodents on your vessel at every stage of your visit and undertake rigorous pre-departure inspections.

GSGSSI approved [rodent monitoring stations](#) must be checked prior to entering the South Georgia Maritime Zone, and the findings reported to the Government Officers at King Edward Point. The Government Officer at King Edward Point must be contacted immediately if there is ever any concern or suspicion about the presence of rodents on a vessel. Any vessel believed to have rodents on board will be required to satisfy GSGSSI that appropriate remedial action has been taken and will be required to leave the Territory until such time as this action has been taken.

Rodent monitoring stations should be collected from the GSGSSI offices in Stanley, Falkland Islands prior to departure for South Georgia. However, if arriving via other ports the vessel may provide their own rodent bait stations after approval from GSGSSI.

## 2.1. General measures

All persons arriving to South Georgia are visitors, regardless of the capacity of their visit as a scientist, government personnel, expedition staff, tourist or serving in HM armed forces. It is imperative that **all** visitors meet their biosecurity obligations.

To fully understand the importance of biosecurity, and the measures which should be taken before and during a visit to South Georgia and/or the South Sandwich Islands, all visitors must receive appropriate briefings from their trip organiser and watch the GSGSSI visitor briefing film before arriving in the Territory. In some circumstances when audio visual facilities are not available on board a vessel, it can be arranged for a Government Officer to give a verbal briefing.

## 2.2. Packing guidelines for personal baggage

Visitors are asked to follow these simple guidelines when packing their personal baggage:

What are you looking for?

- Soil, seeds, organic material and invertebrates.

Purchasing considerations:

- Where possible, take new clothing and equipment, especially coats, over-trousers, boots and socks.
- Choose outdoor wear without Velcro, and boots that have open treads which will be easy to clean.

Before you pack:

- Used clothing and equipment should be washed before leaving home, and any remaining seeds, soil or organic material carefully picked off by hand. Pay particular attention to Velcro, fastenings, seams, folds and pockets.
- Day sacks, camera bags, tripods and walking sticks should be thoroughly cleaned.

Tips:

- A vacuum cleaner will help remove dirt from the inside of pockets, bags, nooks and crannies.
- A needle is useful to pick out seeds stuck in Velcro or in seams.
- A screwdriver is useful to remove soil and seeds from the tread of boots.
- A stiff brush or sticky tape may help to remove seeds from clothing.

After you pack:

- Once packed, bags should be stored in a clean area (not in a shed or garage). This will reduce the risk of invertebrates or mice crawling inside.

NOTE: Import of fresh produce for personal consumption is not permitted and no such items should be packed in personal baggage. Poultry products are of particular concern since they may carry avian diseases.

### 2.3. Pre-border biosecurity checks

Often visitors travel to a number of other destinations before finally reaching South Georgia and/or the South Sandwich Islands. Therefore, even if the packing guidelines have been followed prior to leaving home, they will need to be repeated before making first landing in the Territory. It is the responsibility of the Permit Holder or person in charge of the visit to ensure that all visitors carry out the following actions:

- Thoroughly inspect and clean all luggage and equipment to be brought ashore, such as daypacks and camera bags.
- Special attention should be paid to Velcro, footwear, gaiters, pockets, turn-ups in trousers and hoods of jackets (pockets to be turned inside out or vacuumed).
- Daypacks and camera bags must be brushed out and vacuumed to remove soil, seeds and organic material.

### 2.4. Going ashore

All visitors should note the following when planning a shore excursion:

- Boot washing is obligatory for all persons prior to going ashore and again when returning to the ship. Boots must be cleaned to remove dirt and seeds and then dipped in an approved biocide (e.g. Virkon).
- Clothing inspections and boot washing must be overseen by a competent member of the visit team, for tourist visits this must be either a member of the expedition staff or an appropriate crew member. The Visit Permit holder is responsible for ensuring that this inspection is carried out. All external surfaces of footwear, which will be worn ashore, must be washed.



*Figure 2. Checks to undertake before first landing on SGSSI*

NOTE: Government Officers will inspect boot washing facilities and procedures on visiting vessels (including yachts) and will inspect visitors, including staff and crew before they disembark the vessel to ensure biosecurity protocols have been undertaken properly.

- All boats and tenders must be thoroughly inspected for rodents, invertebrates and organic material before embarking passengers, and again when departing shore to return to the ship.
- No loose cargo should be landed (such as loose items in open bags or nets). All cargo should be inspected, boxed and sealed before landing.

- As far as possible, bags should not be left open and unattended ashore.
- Visitors should avoid putting day sacks or camera cases down on the ground where they may pick up soil, seeds and invertebrates which could be transferred between sites.
- Fresh fruit, vegetables, meat, eggs and unpasteurised dairy products are not to be taken ashore.
- Any permitted foodstuffs that are brought ashore must be in boxes that are robust and fully sealed. Boxes should be made from and either plastic, metal or wood.



*Figure 3. Example of a zodiac being used to support visitors*

### **2.5. Checks between sites**

Different areas of South Georgia & the South Sandwich Islands are biologically unique and it is important not to move material between regions. As well as potentially spreading alien plant or invertebrate species to un-invaded sites there is the potential to spread disease between colonies of seals and seabirds.

- Boot washing facilities should be cleaned and refilled for each new landing or every time personnel move between regions.
- All personnel must inspect clothing, luggage and equipment between landings and repeat cleaning procedures to minimize the risk of intra-regional transfer.
- All personnel are encouraged to check clothing and equipment for invertebrates and rodents after being on board a vessel that is not their usual base.

## 2.6. Additional measures for high-biosecurity- risk groups

Activities that involve visitors spending a large amount of time ashore such as during science or media projects, overnight trips undertaken by mountaineering expeditions or by personnel based at King Edward Point, present an increased biosecurity risk (Fig. 4).



*Figure 4. Camping equipment presents a particular biosecurity risk*

Therefore, the following additional biosecurity procedures should be undertaken:

- Tents should be dry brushed inside and out to remove soil, seeds or invertebrates. If needed a damp cloth or hose should be used on heavily soiled areas. Pegs should be scraped clean and then dipped in Virkon®.
- Field clothing should be thoroughly cleaned before being used in different areas of South Georgia and/or the South Sandwich Islands. For personnel based at King Edward Point this should be done in the biosecurity facility.
- Scientific equipment should be thoroughly cleaned according to the manufacturer's instructions. For any equipment that has been in contact with wild birds or mammals or soil, cleaning protocols must involve a suitable biocide.

For particularly high-risk projects (such as some construction work, expeditions, science/monitoring in sensitive areas) a bespoke biosecurity plan is necessary. If this is required, it will be identified in the permit application process.

## 3. Vessels

### 3.1. General measures for prevention of rodents

The only way goods and people can access South Georgia & the South Sandwich Islands is by ship. As a result, a wide variety of vessels operate within the Maritime Zone (MZ). The primary risk to terrestrial biodiversity associated with vessels (as opposed to the cargo they carry) is the potential for it to harbour rodents that are subsequently transferred ashore.

The following measures apply to **ALL** vessels that operate in the SGSSI MZ:

- A valid Ship's Sanitation Certificate must be in date on entry into the Territory.
- Effective rat guards must be fitted to mooring lines when alongside at any port; they should be fitted such that they will not blow off in strong wind, or allow rodents to pass over/around them. NOTE: spot checks may be conducted at gateway ports.
- External doors and windows should be closed whenever possible.
- Rodent bait boxes must be carried on-board in each of the areas listed in the below table where present. This means that a vessel could require up to 6 bait boxes if each location is present and distinct.

Location	Type	Bait box
Foc'sle (mooring line locker or Bosun's locker)	Rodent entry / exit point	Y/N
Aft mooring deck	Rodent entry / exit point	Y/N
Zodiac storage or shelter deck	Rodent entry / exit point	Y/N
Cargo receiving areas	Rodent entry / exit point	Y/N
Dry food & provision stores	Rodent harbourage	Y/N
Waste storage areas	Rodent harbourage	Y/N

- Rodent monitoring stations must be deployed on all vessels according to [Annex 2](#), before entering Maritime Zone (MZ). These boxes should be checked and the results reported to the Government Officers upon entry of the SGSSI MZ.
- If rodents are discovered on board the vessel will be required to leave the MZ for remedial action and a new sanitation inspection. GSGSSI must be satisfied that the infestation is cleared before approval to re-enter the MZ is granted.

**NOTE: Rodent monitoring stations are provided to all vessels and may be collected in the GSGSSI office in Stanley, prior to departure for South Georgia, on their first call of the season. Vessels which do not enter the MZ via the Falkland Islands must contact GSGSSI before departure to make necessary arrangements.**

### 3.2 Use of jetties

There are a variety of pathways that a rodent may leave a vessel once in South Georgia but one of the most likely is when a vessel is alongside at a jetty. There are only two jetties on South Georgia and their use is restricted.

Only vessels discharging or loading cargo (or for other, agreed activities or circumstances such as health and safety issues which require them to be alongside) should be alongside the jetties at KEP and Grytviken.

The jetty at King Edward Point may be used by the vessels listed below, when there is an operational, logistics or safety reason as follows:

- The GSGSSI fisheries patrol vessel *Pharos SG*.
- GSGSSI/BAS harbour launches (permanently based on South Georgia).
- The BAS vessels *RRS James Clark Ross* and *RRS Ernest Shackleton*.
- Royal Navy vessel *HMS Clyde*.
- Yachts (small sailing or motor vessels) with a load line length of up to 24 m or less at the discretion of the Government Officer.
- In emergency situations where a serious mechanical failure threatens the safety of those on board.

The Tijuca jetty at Grytviken may only be used by passenger tenders and yachts (small sailing or motor vessels) with a load line length of up to 24 m or less.

Use of the jetty is allowed for the above vessels as it is deemed operationally necessary to discharge cargo, transfer personnel, conduct vessel maintenance, allow for crew rest periods or vessel safety during inclement weather. The following biosecurity measures must be in place when a vessel is alongside:

- Gangways should be lifted at night where practical to do so. Where this is not possible (i.e. because 24h access is needed to the vessel), consideration should be given to lighting the gangway to reduce the chances of it being used by rodents. However, this must be weighed against the chances of bird strike.
- Rodent bait stations/monitoring devices on shore (see section 4) must be checked before the vessel comes alongside and at regular intervals thereafter.

Because of the increased likelihood of transferring rodents when alongside, vessels which are authorised to use jetties are required to have enhanced biosecurity measures in place which are described in the relevant sections below.

### 3.3 Pharos SG

The *Pharos SG* is the Government fishery patrol vessel (Fig. 6) and is engaged in a range of tasks including delivery of cargo and personnel to the station at King Edward Point and sometimes Bird Island, undertaking at sea inspections of fishing vessels and supporting a range of environmental, heritage and scientific projects at sites around the island. Because of this diverse range of tasks, and because the vessel is often working close to the shore at a range of locations, it is imperative that the highest standards of rodent biosecurity are in place at all times on the vessel. The following additional measures are in place on board:

- The ship's company is regularly briefed on biosecurity policy and any particular biosecurity considerations for upcoming tasking.
- Rodent control stations are placed at FIPASS, the home port in the Falklands, to limit the local abundance of rodents and reduce the likelihood of one boarding the vessel.
- Rodent bait stations are placed at key locations on the vessel which are checked by the Master before arriving in the South Georgia Maritime Zone and reported to the Government Officers at KEP.
- Insect traps (sticky and UV) are placed in food storage areas and accommodation areas used by the fishery patrol officer and roaming fisheries observer and are regularly checked by the master.
- When transferring observers or fishery officers between vessels, personal clothing and equipment is required to be checked and cleaned immediately upon arrival on board. If there is any suspicion that the previous vessel had an invertebrate infestation, these checks should be made on deck, not inside the accommodation space. Insecticide should be on hand.



*Figure 5. Pharos SG the GSGSSI fisheries patrol vessel*

### 3.4 British Antarctic Survey vessels

British Antarctic Survey vessels *RRS James Clarke Ross* and *RRS Ernest Shackleton* visit South Georgia during annual re-supply operations and in support of science projects. During annual re-supply, a large volume of cargo is discharged and the vessel may be alongside for several days and so enhanced biosecurity procedures are required. These include:

- Personnel traveling on the BAS vessels are briefed on environmental matters, including biosecurity, prior to travel.
- At least two rodent bait stations are placed at key locations on the vessel which are checked by the Master the day before the vessel comes alongside at KEP and the findings reported to the Government Officers.
- Sticky and UV insect killers are placed inside all food storage areas.
- Ultrasonic rat deterrents are placed on gangways.

### 3.5 Royal Navy vessels

Royal Navy vessels visit the Territory and undertake a range of tasks. A range of Royal Navy vessels visit the Territory throughout the year but the most common visitor is the South Atlantic patrol ship *HMS Clyde* (Fig. 7)



Figure 6. *HMS Clyde* in Cumberland Bay (Photo Sam Crimmin)

Vessels typically remain at anchor, but from time-to-time *HMS Clyde* is required to access the jetty at King Edward Point. To mitigate the risk of transferring rodents the following enhanced biosecurity measures are in place:

- Military vessels will appoint a 'biosecurity point person' who will be responsible for ensuring that the vessel's visit, complies with the biosecurity procedures detailed in the Biosecurity Handbook.

- Rodent control stations are placed at Mare Harbour, the home port in the Falklands, to limit the local abundance of rodents and reduce the likelihood of one boarding the vessel.
- The vessel will maintain best practices at gateway ports, including the use of rodent guards on mooring lines, to reduce the risk of a rodent getting on board.
- Rodent bait stations are placed at key locations on the vessel and must be checked by a designated Officer prior to entry into the South Georgia maritime Zone and the findings reported to the Government Officers.

### 3.6 Yachts

A range of yachts visit South Georgia & the South Sandwich Islands each year. The majority are members of IAATO but a small number are independent travellers making a one-off visit. Yachts present a particular risk of transferring rodents because they may be alongside/overwinter in harbours that contain rodents and on arrival to the Territory utilize anchorages that are much closer to the coast line than those used by larger vessels such as cruise ships.

- Yachts travelling to the Territory via the Falklands must collect rodent monitoring stations and receive a briefing from the GSGSSI office in Stanley if required. Yachts not passing through the Falklands must source GSGSSI approved rodent monitoring stations prior to entering the South Georgia Maritime Zone and should make contact with GSGSSI at the earliest opportunity.
- [Rodent bait stations](#) must be checked before entry in to the SGSSI MZ and findings reported to the Government Officer.
- Although permitted to anchor en-route, yachts (unless otherwise permitted) must make their first landing at Grytviken and on arrival, as part of the customs clearance process, Government Officers will carry out a visual inspection of the interior of all yachts, to identify signs of rodent and invertebrates.
- Yachts that have either not come via Stanley or are not members of IAATO, must, , make Grytviken their first landing for briefing and biosecurity checks. On arrival the Government Officer will direct the vessel to an anchorage or a jetty to await their arrival. No person should leave the vessel until being cleared to do so.

### 3.7 General measures for invertebrate detection and deterrence

Invertebrates such as cockroaches, earwigs, spiders, moths and flies can enter vessels in association with personal baggage, when loading provisions or simply by flying on board when the vessel is in port. The large variety of microhabitats on board ships mean that once on board, some species can thrive. To reduce the likelihood of invertebrates entering the vessel initially, and to reduce the risk of subsequent transfer between vessels or to the shore, the following measures should be adopted:

- When in port, where possible, windows and doors should be closed and deck lighting kept to a minimum.
- Cardboard packaging, especially on fresh produce should be minimised and incinerated as soon as possible.
- Crawling and flying insect traps should be fitted in high-risk areas such as food storage area and checked regularly so that infestations can be detected early and dealt with.

Government officials may ask to inspect invertebrate traps when on board. If an infestation is discovered, additional biosecurity measures may be required to prevent spread to other vessels or the shore.

## 4. Cargo

### 4.1 Guidelines for packing facilities

Reducing the likelihood of seeds, soil, invertebrates and rodents becoming entrained in cargo at the source destination is a vital step in the biosecurity continuum. If a packing facility is clean and free from potential contamination sources, it is likely that the cargo will also remain clean. For commercial packing facilities that ship materials to the Territory, the following guidelines apply:

- There should be active rodent control in the warehouse facility and surrounding area. As appropriate this should involve different types of bait station and detection devices. If there is evidence of high densities of rodents, use of the facility should be discontinued until the problem is solved. There should be a clear checking and response protocol in place.
- Seeds can sometimes be brought into warehouses on equipment or on air currents and then become entrained in cargo. Efforts should be made to reduce the densities of weed species around warehouse facilities. This can most easily be achieved using a glyphosate-based herbicide.
- If crawling invertebrate's access packing materials, they can lay eggs that are hard to detect and pose a biosecurity threat. Crawling and flying insect traps should be installed in packing facilities.
- Cargo should be stored inside wherever possible. Ideally it should be stored in a dedicated biosecurity area/room/container.
- If stored outside, cargo should be placed on a hard standing to avoid contamination with soil. Cargo should not be placed under overhanging vegetation or trees such that organic material might fall onto the cargo. If items become contaminated with soil and organic material, they should be cleaned before onward transport.
- Warehouse doors and windows should remain shut as far as possible, but especially at night when flying insects may be attracted to the lights.

### 4.2 Cargo packing requirements

The type of packing material and storage location can have a significant effect on the biosecurity risk posed by cargo items. To reduce this risk, the following requirements should be met:

- As far as possible, cardboard packaging should be avoided as it can harbour invertebrates and is easily breached by rodents.
- For routine cargo operations on the *Pharos SG* rodent proof pallet boxes made from high density plastic will be utilized as far as possible.
- Plastic or metal boxes should be used if possible and cleaned between each use.
- If cardboard boxes are to be used they should be in good condition (or new if possible) and sealed using packing tape on ALL edges and across all potential openings, so as to make them impenetrable.
- As far as is practicable, all wood packaging likely to be off-loaded in the Territory (such as cases, crates, dunnage, pallets and timbers for the purpose of bracing, separating, protecting or securing cargo) should be new and comply with the

International Standards for Phytosanitary Measures No. 15 (ISPM 15). Wooden packaging that remains on the ship (i.e. is not off-loaded) does not have to comply with ISPM 15.

- No soil, moss, used sacking, hay, straw, chaff or wood shavings shall be used in packing materials. Acceptable alternatives include shredded paper, vermiculite, bubble wrap and other air-filled cushioning materials.

#### **4.3 Procedure for packing containers**

Shipping containers are universally used to transport goods around the world and some simple precautions can vastly reduce the biosecurity risk they pose. The following standards should be met for any shipping containers that are being transported directly to the Territory:

- Containers should be in good condition with effective door seals that would prohibit passage of rodents and invertebrates.
- Containers should be cleaned before being packed. Ideally this should be done using a commercial steam cleaning service but otherwise being swept out and insecticide spray used in the corners and along the door threshold will suffice.
- Container doors should not be left open and unattended at any time.
- Containers should be placed on hard standing to prevent soil and mud and organic material contaminating the container and cargo.
- Cargo should be packed so that cargo can't fall against the doors and prevent re-closure in case propagules are discovered on opening.
- Once cargo loading is complete, before the container is sealed for shipping, a rodent bait station and crawling insect trap should be placed inside next to the door so it can be easily accessed on opening.
- Unless it contains food, the container should be fumigated with a pyrethrum-based insecticide prior to being sealed.
- The number of containers with food should be minimised i.e. not spread across multiple containers, to reduce the number of un-fumigated containers that are transported.
- Unless required by Customs Officers, sealed containers should not be opened on-route to the Territory.

#### **4.4 Procedure for cleaning vehicles**

Biological material and soil can become attached to vehicles such as quad bikes, 4x4 vehicles such as Land Rovers, construction vehicles, bicycles etc. during everyday use. When vehicles are moved from one location to another, these materials may also be transferred. The following procedures should be employed to reduce the risk of biological material being transported to the Territory:

- Vehicles should be inspected to ensure that they are free of visible soil and biological material (e.g. plant fragments, seeds and insects) and if necessary thoroughly cleaned before being loaded onto the re-supply ship. This should include all external and internal surfaces as well as the undercarriage.
- Where practicable, high-pressure steam/hot water cleaning of vehicles is recommended. Alternatively, vehicles may be cleaned manually, such as with a bucket of water and brush.

- Any external surfaces of the vehicle that come in to contact with the ground i.e. tyres, tracks, skis should be washed with Virkon.
- Vehicle interiors, upholstery and mats should be brushed and/or vacuum cleaned to remove any soil or biological material.
- Engine compartments should be carefully checked for the presence of biosecurity risks such as rodents, seeds, invertebrates and organic material.
- The interior of vehicles should be fumigated with a pyrethrum-based insecticide prior to being shipped.

Any vehicles being transported through the Falkland Islands, should be presented to a GSGSSI official with at least 3-working days before cargo loading in order for checks to be carried out and any necessary remedial measures carried out. Consignees should work through the vehicle cleaning checklist and sign the declaration (see [annex 1](#)).

If vehicles are not being transported through the Falkland Islands, the shipper should contact GSGSSI to make alternative arrangements. Note that the Falkland Islands have stringent import health standards controlling vehicle imports, and advice should be sought from the Biosecurity Officer at the Department of Agriculture ([biosecurity@doa.gov.fk](mailto:biosecurity@doa.gov.fk)) to ensure that these can be met before importing a vehicle.

#### **4.5 Pre-border checks for cargo**

The majority of cargo on the British Antarctic Survey vessels and some fully-loaded containers of construction material from SATLAN are consigned directly from the UK to South Georgia. Other cargo is either purchased in the Falkland Islands or arrives in the Falklands from the UK as consolidated cargo and needs to be re-packed for onward transport. It is therefore imperative that imported goods meet the Falkland Islands' import health standards and do not pose a threat to the biosecurity of the Falkland Islands. Also, under these circumstances there is the potential for non-native species to become entrained with the cargo whilst in storage in the Falkland Islands so a GSGSSI official must undertake some additional checks prior to loading. These include:

- Making sure packaging meets packing guidelines (see above).
- Checking to ensure packaging is still intact and repairing any holes if needed. The contents of any boxes which have been breached will require inspecting to ensure that rodents or invertebrates have not been able to enter.
- Ensuring the inside of containers is clean and the outside of containers have been washed.

If cargo is received at the dock-side and a biosecurity risk is identified, the GSGSSI official has the authority to prevent it being loaded onto the vessel until remedial action has been undertaken.

#### **4.6 Border inspections**

Although every effort is made to prevent non-native species being accidentally brought into the Territory with cargo in the first place, it is important that cargo receives a final inspection on arrival in the Territory.

- Smaller items of cargo and personal bags must be taken straight to a designated biosecurity facility on arrival. There are dedicated biosecurity facilities at both King Edward Point and Bird Island.
- Post bags are taken to the post office where crawling insect traps and insecticide spray are on hand.
- During the annual re-supply, the boatshed may be converted into a temporary biosecurity facility (see below) and packaged food can be opened, inspected and placed on the shelving within the food storage facility.
- On arrival in the biosecurity facility, bags and boxes are opened and thoroughly checked for soil, organic material, seeds and invertebrates.
- Individuals must sign to say they have completed these checks before the item is released.
- If an item of cargo contains a small amount of biological material it may be possible to take remedial action on site to reduce the biosecurity risk. The Government Officer is responsible for making this decision but will consult with the Biosecurity Officer to determine appropriate mitigation measures.
- If an item is heavily infested, it should be sealed inside a container. The Government Officer will identify the best method for destroying or treating the item in conjunction with the Biosecurity Officer.

At the current time facilities do not exist to place entire shipping containers inside a biosecurity area. To ensure appropriate biosecurity checks can be undertaken, the following measures should be in place.

- When shipping containers come ashore they should remain sealed until there is time/space to unpack them fully.
- At no point should a partly unpacked container be left open and unattended.
- A Government official should be present when containers are first opened to monitor for any non-native species and check the rodent and invertebrate traps within.
- In the event that a biosecurity hazard is detected, the container should be sealed immediately and returned to the ship for remedial action or removal from the territory.

#### **4.7 Annual re-supply**

Once a year, the British Antarctic Survey James Clark Ross re-supplies the stations at KEP and Bird Island with the majority of the food and equipment needed for the year. Because of the large quantities of cargo, not everything can be processed within the usual biosecurity facility. Instead, the boatshed is utilized and additional biosecurity devices are installed for the resupply period. These include:

- At least five sticky invertebrate/mouse traps stationed around the periphery of the building.
- Four additional rodent bait stations positioned within the building

Staff are briefed to remain vigilant for biosecurity breaches and a box containing insecticide spray is available. If a suspicious box is found, it should be taken to the biosecurity shed before it is completely unpacked and the magnitude of the infestation is established.

#### **4.8 Aggregate**

Aggregate is defined as any coarse particulate material used in construction, including sand, gravel, crushed stone, boulders, pebbles or slag. It may present a biosecurity risk because biological material such as seeds, soil and invertebrates can become entrained during production and transport.

Decisions will be made on a case-by-case basis on if it is appropriate to source aggregate locally or if it should be imported from outside the Territory.

#### **4.9 Movement of cargo between King Edward Point and Bird Island**

On occasion goods are shipped between the research stations at King Edward Point and Bird Island. King Edward Point is home to several species of introduced plants and invertebrate that are not found on Bird Island. Bird Island is home to dense aggregations of wildlife and there is potential for spread of disease. For any cargo/equipment which has been brought ashore and opened/used on station, or cargo which has been brought ashore and stored outside, extreme caution must be exercised and the following steps taken to reduce risk:

- Prior to loading on a re-supply vessel, cargo should be checked and where necessary unpacked, cleaned and re-packed in clean, intact packaging.
- At King Edward Point and Bird Island, small items should be checked in the biosecurity facility.
- Any items which are too large to fit inside a biosecurity facility must be checked on board the vessel.
- Personal effects should be checked and cleaned following methods described in section 2.3.

## 5. Fresh produce

### 5.1 General measures

Fresh produce such as vegetables, fruit, salad etc. poses a biosecurity risk as it may contain soil, seeds, pests or diseases. No fresh produce should be brought ashore at any location other than King Edward Point and Bird Island station.

At King Edward Point the Government Officers are responsible for ensuring the biosecurity checks are correctly implemented and deciding if an infested shipment should be returned to the supplier or if it can be dealt with locally. At Bird Island the Station Leader fulfils this role.

### 5.2 Guidelines for ordering fresh produce

Only quantities of fresh food produce sufficient to meet the stations needs between provisioning calls are to be ordered so to reduce the burden of biosecurity checking for station personnel.

It has been deemed that some fresh produce items cannot be checked adequately on receipt in the biosecurity facility and therefore should not be ordered. This includes loose leafy vegetables such as:

- Broccoli
- Cauliflower
- Lettuce
- Kale
- Spinach
- Cabbages (white cabbage and red cabbage are acceptable providing the outer leaves are removed)
- Leeks
- Globe artichokes
- Celery

Root vegetables should only be ordered if they are pre-washed and do not contain surface soil.

Cruise ships may gift fresh produce, this policy applies and such donations should not be accepted unless they are pre-washed and do not contain soil. The Government Officer should ensure that cruise ships are aware of this policy and do not send fresh produce ashore without authorisation.

### 5.3 Biosecurity checks on arrival in on station

Upon arrival, all fresh produce must be taken directly to a biosecurity facility where it should be checked for signs of infestation by fungus, non-native invertebrates, soil from outside the territory, or non-native plant seeds.

At King Edward Point and Grytviken, produce should be taken to the biosecurity shed (Fig. 8) which is equipped with crawling insect traps and UV flying insect traps. At Bird Island, produce should be kept in sealed containers and taken to the kitchen. The kitchen should be equipped with flying and crawling invertebrate traps.



*Figure 8. Checking fresh produce in the biosecurity shed at King Edward Point*

If a shipment is heavily infested, the responsible officer should determine if the produce should be returned to the sender/re-supply ship for disposal/incineration. If only a few items are affected, the responsible officer may decide that remedial action can be taken to reduce the biosecurity risk. Depending on the type of infestation the following actions may be taken:

- If an item has fungal growth, the infected part should be cut out and stored until such time as it can be rendered inert\*.
- If live invertebrates are found they should be killed immediately with insecticide spray or placed in ethanol. Be aware that if live or dead invertebrates are seen, there may also be microscopic eggs that could hatch at a later date (timing will depend on species and temperature). Extra vigilance should be exercised including weekly checks of sticky traps in food storage areas.
- If there are non-native plant seeds associated with the packaging or outer surface of the produce they should be rendered inert. Seeds may be stored in a sealed container and batch processed if necessary.
- For items with a small amount of surface soil, it may be removed either by removing the skin/peel or by using a dry brush. The material should be rendered inert\*.
- Under no circumstances should food or food scraps be fed to local birds.

Onions and garlic should have all outer skins removed such that only the edible bulb remains. The discarded skins should be rendered inert.

\*At King Edward Point, material which needs to be rendered inert should be incinerated. Government Officers will be responsible for incineration of contaminated material as soon as practical after a shipment has been processed. If immediate incineration is not possible, it is acceptable to freeze contaminated waste when conditions/opportunity allow. At Bird Island, material which needs to be rendered inert should be heated in a pressure cooker for 10 minutes.

At log of all biosecurity checks and biosecurity breaches should be kept. The responsible officer is to take photographs of the consignment for evidence if the fresh produce is to be returned to the supplier.

Once processed in the biosecurity facility fresh produce should be taken to a designated food storage area i.e. food store, kitchen.

## 6. Post-border monitoring

### 6.1 King Edward Point and Grytviken rodent monitoring procedures

Although the focus of biosecurity efforts is to prevent non-native species entering the Territory, the vital last stage in the biosecurity continuum is to monitor the efficacy of those efforts and be in a position to take action in the event of an incursion. In the case of rodents, this is particularly important as early detection and rapid response has a high probability of success.

As the majority of visitors and cargo comes ashore at King Edward Cove and it is the only place ships are allowed to come alongside stringent biosecurity and monitoring is in place. The following monitoring devices have been installed in this area:

- At KEP there are a minimum 17 rodent monitoring stations consisting of a DOC 200 trap, an oil-soaked gnaw stick, a wax tag and a poison bait block.
- At the KEP jetty there are a minimum of 3 'rat hotels' (Fig. 9).
- A line of at least 24 wax tags radiating out at 25 m intervals from the jetty through the station complex.
- At Grytviken there are at least 14 rodent monitoring stations consisting of a DOC 200 trap, an oil-soaked gnaw stick, a wax tag and a poison bait block.
- Around Grytviken there are a minimum of 2 'rat hotels' (one close to Tijuca, the others(s) at zodiac landing sites).



Figure 9. Rat hotels have a DOC 200 trap, mouse traps, wax tags, poison bait (formulated for rats and mice) and a poison bait block

The Government Officers are responsible for checking the rodent monitoring devices. Frequency of monitoring is proportionate to risk and so is highest during the summer months and when ships come along side. The schedule is as follows:

- Monitoring stations and rat hotels at KEP checked no more than 48 hours before a vessel comes alongside the jetty. This means that any rat signs found subsequently are likely to have arrived on the ship.
- If the *Pharos SG* is coming alongside multiple times during a patrol, typically checks need only be made the first time as there is no chance of a rat embarking in the intervening period unless significant cargo work has been undertaken at a site which has not yet been declared rat free.
- After a vessel has come alongside all traps should be checked again within 48-72 hours in order to allow newly-arrived rodents time to get accustomed to their new surroundings and try the traps, tags, gnaw sticks etc.
- If there has been more than two weeks (summer) or one month (winter) since checks were needed because of a vessel coming along side, these are repeated.

The Government Officers keep a record of checks that are made.

### **6.2 Sticky traps for monitoring invertebrate and mouse incursions**

Occasionally invertebrates arrive in cargo, personal baggage or mail. Although every effort is made to detect these creatures in the biosecurity shed their cryptic nature means they can escape into the station facilities. They are often then contained within a building and because only a single animal is present they do not reproduce and spread. However, there is the potential for multiple individuals or species that are capable of colonising the natural environment to be introduced. Earwigs are prolific in the Falkland Islands and it is thought that South Georgia could provide a suitable environment for their breeding success. The most effective traps to detect crawling insects are also effective at trapping mice and so serve a dual purpose (Fig. 10). Sticky traps are placed on the ground, alongside walls in areas where the Government Officers deem the risk of an incursion to be highest:

- Crawling insect traps are installed in all habited buildings, food and waste storage areas.
- Particular attention is paid to rooms that receive large amounts of luggage, cargo or mail including the museum storerooms and workshops where building supplies are stored.
- Traps are checked by the Government Officers each month and recorded.



*Figure 10. Sticky traps used to monitor for invertebrates and mice*

## 7. Reporting

### 7.1 General Principal

Keeping records of the number and type of biosecurity inspections undertaken and any incursions that are detected is vital for accurate reporting. In turn this forms the basis of regular biosecurity reviews that are necessary to ensure that policies remain fit for purpose (Fig. 11).



Figure 11. Biosecurity cycle

All visitors have a responsibility to undertake biosecurity checks and report findings. Findings are typically reported to the Government Officer who collates this information and reports to the Environment Officer. The Environment Officer is responsible for reviewing policy, ensuring that procedures are in place to mitigate biosecurity threats facing the Territory and liaising with key stakeholders involved in logistic support and visitor management such as Byron Marine, BAS and IAATO as required. Any significant changes in policy are discussed with stakeholders and signed off by the Chief Executive Officer.

### 7.2 Reporting procedures for visitors

The first and most important element of reporting rests with individuals themselves. Depending on the nature of the visit and a visitor's role on the island there are different reporting requirements:

- Every individual is expected to sign the self-audit checklists.
- Visit Permit holders (or equivalent) are responsible for ensuring self-audit checks have been completed by all and pass these on to the Government Officer.

- Ships Masters are responsible for ensuring rodent monitoring stations on their vessel (see section 3) are checked and reporting findings to the Government Officer on arrival into the MZ. For vessels that are in the MZ for an extended stay (e.g. fishing vessels, yachts), after the initial report, Masters are also responsible for ensuring that bait stations are checked and findings reported to the Government Officers on the 1<sup>st</sup> and 15<sup>th</sup> of each month for the duration on their visit.
- All visitors should report any suspicious sightings of rodent or reindeer sign and invertebrates or plants not already known from the islands to the Government Officers via the visit permit holder (or equivalent). As much information as possible should be included such as a photograph and GPS location.

### **7.3 Reporting procedures for Government Officers**

Government Officers are responsible for consolidating biosecurity reports/declarations from visitors and the day-to-day monitoring of compliance with biosecurity policies at KEP. As part of this role they are to keep records of checks made on the various biosecurity devices installed around station and ensure that the record book in the biosecurity facility is completed accurately.

In the absence of any major biosecurity breaches, a monthly biosecurity report is sent to the Environment Officer. This report contains the following information:

- Dates of vessels alongside jetties (KEP and Grytviken).
- Dates of rodent monitoring checks.
- Rodent monitoring resources used e.g. bait stations.
- Dates of invertebrate monitoring checks.
- Invertebrate monitoring resources used.
- Number of cargo/personal baggage checks undertaken and any breaches.
- Details of fresh produce checks and any remedial action taken.
- Number of rodent bait stations deployed on vessels (name of vessels).
- Collation of reports from vessel masters checking bait stations deployed on their vessel.
- Collation of (potential) sighting reports from other parts of the island by visitors.
- Details of biosecurity building management e.g. cleaning, replacement of insect traps etc.

NOTE: Breaches involving a rodent or invertebrate incursions would be reported to the Environment Officer immediately.

Biosecurity related incidents which are reported through the British Antarctic Survey Accident Incident Near Miss Environment (AINME) system should be forwarded to the GSGSSI Environment Officer from the BAS Environment Office as appropriate.

#### **7.4 Annual biosecurity review**

In June each year the Biosecurity Officer and a named Government Officer will review biosecurity for the preceding 12 months. This involves gathering all records together from all parts of the biosecurity continuum and consolidating these into a single document. As part of the review items and or activities that have been the most frequent causes of breaches are to be identified and action plans developed to mitigate this risk in the future. The report contains the following sections:

- Pre-departure biosecurity checks.
- Cargo at King Edward Point.
- Intra-regional movements.
- Rodent Monitoring.
- Insect monitoring.

The Biosecurity Officer is responsible for ensuring that action plans are implemented and, where needed, that biosecurity policy is updated. For major changes to biosecurity policy e.g. changes in access to landing sites, procedures for visiting vessels etc. the Biosecurity Officer will work with the Chief Executive Officer to ensure that the changes are discussed with stakeholders.

Stakeholders that wish to make suggestions or feed into the annual review process are encouraged to submit their comments to GSGSSI ([info@gov.gs](mailto:info@gov.gs)) by May of each year so that they can be accounted for in the review process.

## 8. Incursion response

### *8.1 Rodent incursion*

The South Georgia Heritage Trust (SGHT) has recently successfully completed a project to eradicate rodents from South Georgia. In March 2011, bait was spread on the Thatcher, Greene, and Mercer Peninsulas and Teie Point. Systematic monitoring of the area undertaken in the three years since baiting indicate that the operation was a success and it is considered that these areas are now rat free. In 2013 SGHT returned to South Georgia to spread bait over the rat infested areas to the north of the Phase 1 area (from the Busen area to Peggotty Bluff). In addition, areas infested with mice (Cape Rosa and the Nunez Peninsula) were baited in 2013. The remaining rat infested areas (to the south of the Phase 1 area from the Barff Peninsula to Cooper Bay) were baited in 2015.

The SGHT eradication project involved a significant amount of planning and the cost was in the region of £10 million. It is therefore vital that the right protocols are in place to reduce the risk of any future rodent incursion. GSGSSI seeks to continue to develop and enhance these protocols changes to which will be published in future editions of the Biosecurity Handbook.

Most effort should be focused on ensuring that rodents do not enter the Territory and this Biosecurity Handbook details the measures GSGSSI has in place to prevent any re-introduction. However, in the event that a rodent does get ashore, a comprehensive incursion response plan has been prepared that details actions to be taken to prevent the rodent becoming established and spreading beyond the point of introduction.

This incursion response would be led by Government Officers who would co-ordinate the response using personnel available on station. The plan is practiced each year to ensure that all the equipment is in place and staff are familiar with procedures. The plan is available from GSGSSI on request.

### *8.2 Non-native plant incursion*

GSGSSI is engaged in a programme to manage non-native plants in the Territory. With the assistance of UK Government funding through the Darwin initiative, great progress has been made in controlling target species around King Edward Point and Grytviken and limiting the spread of species elsewhere. Recently GSGSSI committed £250,000 over 5-years to continue this work and it is vital that this is not undermined by the introduction of new species.

As with other groups, the focus of biosecurity is to ensure that new species are not introduced. With plants this is particularly important because their cryptic nature means in some cases it may be some time before they are discovered by which time a seed bank could have established.

With the support of the Darwin funding, GSGSSI has prepared a non-native plant management strategy that, in addition to detailing controls measures for existing species, details the process on discovering a new unidentified plant species and the steps needed to make a decision on how to manage the incursion.

### ***8.3 Non-native invertebrate introduction***

Plans for dealing with an incursion of non-native invertebrates are focused on measures which can be taken inside accommodation blocks and storage areas. The response will be tailored to the specific invertebrate species that has been detected but would likely involve fumigation followed by a period of intense trapping.

## Annex 1

### VEHICLE CLEANING CHECKLIST

Before submitting your vehicle for inspection prior to cargo loading, make sure you can answer YES to all these questions:

- Has the under -carriage has been inspected and is it free of soil and plant material?
- Are all tyres (including the spare) clean with particular care paid to deep treads?
- Has the engine compartment has been checked (and steam cleaned where possible) to ensure there are no rodents, invertebrates or signs they may have been there?
- Have all tyres, tracks, skis been cleaned and washed with Virkon?
- Has the interior, including upholstery, underneath seats and in storage compartments been cleaned and any biological material removed?
- Has the vehicle been fumigated with a pyrethrum based insecticide?

Vehicle description	
Name of consignee	
Organisation	
Date	

**I certify that I have cleaned the above vehicle(s) as described in the GSGSSI biosecurity handbook and to the best of my knowledge it is free from all biological material.**

**I understand that failure to comply with biosecurity protocols may result in a delay in my vehicle being loaded.**

Signed (consignee)

Date:

*Internal use only*

<i>Vehicle checked on (date)</i>	
<i>Action taken</i>	
<i>Signed</i>	
<i>Date</i>	

## Annex 2 Government of South Georgia & the South Sandwich Islands Number and placement of rodent bait boxes on vessels



Preventing the re-introduction of rodents to South Georgia remains a priority. As part of our ongoing development of biosecurity policies to better protect South Georgia, we have reviewed the protocol guiding the number and placement of rodent monitoring stations on board vessels.

Based on results from a recent rodent detector dog trial, a number of areas were identified as being higher risk in terms of rodent presence, and these areas should be the focus of monitoring. These monitoring areas include Rodent entry / exit points such as the forward and aft mooring areas, gangway, zodiac storage and cargo receiving areas, and potential rodent harbourage such as waste and dry provision storage areas.

**For vessels with a load line length of more than 24 metres, rodent monitoring stations should be placed in each of the areas described in Table 1, where those areas exist such that a vessel may have up to a maximum of 6 rodent monitoring stations. Note that some vessels will not have all of these distinct areas, and as such will require fewer bait boxes.**

Rodent monitoring stations should be placed in quiet and sheltered areas according to Table 1, and fixed where necessary to prevent movement in heavy seas.

**Table 1 Locations of Rodent Monitoring Stations (for vessels LOA >24 metres)**

Location	Type	Bait box
Foc'sle (mooring line locker or Bosun's locker)	Rodent entry / exit point	Y/N
Aft mooring deck	Rodent entry / exit point	Y/N
Zodiac storage or shelter deck	Rodent entry / exit point	Y/N
Cargo receiving areas	Rodent entry / exit point	Y/N
Dry food & provision stores	Rodent harbourage	Y/N
Waste storage areas	Rodent harbourage	Y/N

**Vessels with a load line length of less than 24 metres (including yachts) should place 1 rodent monitoring station inside the vessel in an area with suitable conditions for rodents, and 1 rodent monitoring station on a sheltered area of deck while at anchor or alongside.**



**Image 1 Rodent monitoring stations (or bait box) and wax bait blocks.**

Rodent monitoring stations can be collected from the GSGSSI offices in Stanley, Falkland Islands, prior to departure for South Georgia. If the vessel will not be calling in the Falklands prior to landing in South Georgia it is the responsibility of the vessel to ensure that acceptable alternative rodent monitoring stations are in place. Contact GSGSSI to check requirements.

## **Rat Poison Information**

### **The poison contains 0.005% Difenacoum**

Avoid contact with eyes and skin. Do not smoke eat or drink while handling this product. Wash hands and face before eating, drinking or smoking.

Rodent monitoring stations contain wax blocks impregnated with rodenticide (0.005% Difenacoum). Gnaw marks or unexplained damage to the wax block may indicate the presence of rodents and should be reported to GSGSSI before entry into the maritime zone.

If you have bait boxes already on board from previous visits to SGSSI, please check that the bait is intact and in good condition prior to departing for SGSSI. **At a minimum, bait should be replaced annually or if the bait becomes damp or damaged.** Bait will deteriorate more rapidly in wet locations than in dry sites. **Dispose of old bait blocks by incineration or in landfill – do not throw them overboard if birds might scavenge them.**

Additional boxes and replacement baits may be collected from the GSGSSI offices at Government House in Stanley.



*Image 2 Intact bait (left) and bait in need of replacement (right)*

Remain vigilant to the presence of rodents on board ship, including the presence of faeces, gnaw or chew marks, damage to provisions or suspected sightings. Ensure well-fitting rodent guards are fitted to mooring lines at gateway ports prior to arrival in SGSSI.



*Image 3 Rat & mouse faeces*