

# **Gough Island Environmental Inspection Report, September-October 2009**

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NOTE: The format used in recent inspection reports has been followed deliberately, in some cases by repeating the same text where sensible, pending the development and adoption of a new management plan for the Gough and Inaccessible Islands World Heritage Site.

## **MAIN RECOMMENDATIONS**

### **In South Africa**

*Action: Antarctica & Islands, DEA*

1. The SANAP “Environmental Information about Gough Island” document should be distributed to all voyage participants planning to go ashore on Gough Island prior to sailing.
2. The quarantine/biosecurity capability at the DEAT Antarctica & Islands stores at East Pier should be improved by the installation of flying and crawling invertebrate traps in the food-packing and clothing sections. Consideration should be given to fitting a fine mesh screen over the mesh fencing used to close off the food-packing area (above the roller door).
3. Dock-side waste skips should have well-fitting lids that are kept closed when not in active use, especially overnight.
4. Over-trousers with Velcro ankle cuffs should no longer be issued.

*Action: NDPW, with DEA oversight*

5. The quarantine/biosecurity capability of the NDPW facilities in Customs House needs to be improved by the presence of flying and crawling invertebrate traps.

*Action: Titan Helicopters, with DEA oversight*

6. Rodent bait stations should be put out in the hangar where packing takes place and adjacent to the doors outside the hangar.
7. The quarantine/biosecurity capability of the Titan Helicopter Group facilities at Cape Town International Airport needs to be improved by the presence of flying and crawling invertebrate traps.

**Aboard the S.A. Agulhas**

1. The ship should have an adequate supply of mouse traps and extra poison bait in case of a repeat contamination from the island. It would also be prudent to have some rat traps aboard in case a rat is sighted aboard ship at any stage.
2. All non-freezer store rooms containing food should have both flying and crawling invertebrate traps installed.
3. Spaces where food is stored, prepared and consumed and living spaces (including cabins) should have crawling invertebrate traps installed and regularly serviced.

**On Gough Island**

1. The ban on fresh produce coming ashore should be strictly enforced year round.
2. Remaining redundant structures should be dismantled and removed to South Africa.
3. The condition of the old wooden helipad should be assessed annually with a view to its eventual removal.
4. Eradication efforts should continue for *Sagina procumbens* in Transvaal Bay.
5. It is recommended that a back-loading biosecurity plan, that includes the inspection of back cargo ashore, be developed and adopted for Gough Island to avoid mice, and other propagules, reaching the ship.

## **Introduction and itinerary**

PGR was appointed Environmental Inspector for the 2009 annual relief of the Gough meteorological station by Trevor Glass, Head of Tristan's Conservation Department, on behalf of the Administrator and Island Council of Tristan da Cunha. Norman Glass joined the relief voyage in Tristan as the Tristan representative. John Cooper acted as assistant inspector, especially once both PGR and NG had left the ship en route to Cape Town. This also allowed this report to be submitted to the Tristan Conservation Department promptly on the vessel's return.

The *S.A. Agulhas* left Cape Town on 3 September and arrived at Tristan on 10 September. PGR and JC went ashore for the day and met with *inter alia* Trevor Glass, and Brad Robson, RSPB Officer on the island. NG joined the ship that afternoon, when we departed for Gough, arriving on 11 September. The relief team left Gough on 4 October and returned to Cape Town via Tristan da Cunha where PGR was flown to Inaccessible Island on 5 October and NG returned to Tristan on 6 October. The *S.A. Agulhas* left Tristan on 7 October and docked in Cape Town on 13 October.

## **Pre-sailing inspections and activities**

None of the inspection team was able to attend the Gough Takeover Planning Meeting held at the end of July because PGR was in Rwanda, NG was on Tristan and JC was in Australia. On his return from overseas, PGR 'phoned Sam Oosthuizen, the DEA DCO and was told there were no outstanding issues. Unfortunately the updated document "Environmental Information about Gough Island" produced in 2008 (Appendix 1) was once again not distributed to all Gough relief participants before sailing. This should be mandatory, because the document includes essential information on packing of personal possessions for quarantine purposes. The document should be supplied to all Gough Takeover participants via their project leaders at least two weeks before sailing.

Pre-voyage inspections were carried out by PGR on 28 August (DEA and NDPW stores, East Pier and the *S.A. Agulhas*) and 31 August (Titan Helicopter Group [THG] hangers at Cape Town International Airport). Informal observations also were made at DEA stores on 18-20 August during loading of containers for the voyage. No conservation lecture was given to the new (55th) year-round team as part of their team-training. The gist of this talk was included in the general address given to passengers on board ship while en route to Tristan on 7 September.

### *Antarctic Directorate facilities*

All the facilities inspected were clean, with no signs of plant material or invertebrates. Rodent bait stations had been serviced recently (17 August 2009), and were well located around the building and adjacent to all entry doors. Furthermore, rubber flanges on roller doors were all in good condition. The formal inspection of the food-packing area was

made after food packing was complete. There was a large pile of empty cardboard containers and one tote bin (open) containing spilled food. I was assured that during food packing, roller doors were kept closed when active packing was not in progress. The 2008 inspection report called for rodent poison bait stations and flying and crawling invertebrate traps to be placed in the clothing store and food-packing room. I was informed that rodent bait stations could not be installed in the food packing area for health reasons. However, insect traps should be installed, and consideration given to putting fine mesh over the open mesh separating the food-packing area from the general container area to deter flying insects.

Based on our inspection, the following recommendations are made:

1. Flying and crawling invertebrate traps should be placed in the food-packing room, clothing store and the container packing and storage spaces.
2. Fine mesh should be installed above the roller door to seal off the food-packing area from flying insects.
3. All windows should be kept closed or fitted with fine mesh screens to keep out flying invertebrates.
4. Personal meals and food (e.g. packed lunches) and drinks taken into the SANAP stores should be kept in sealed containers and should be consumed elsewhere.
5. Any food spilled during packing operations should be cleaned up immediately and disposed of outside the building.
6. Gaps should be kept between containers, etc. and internal walls, so as to reduce the number of hiding places for pests and to allow for regular inspections.
7. Closed roller doors should be regularly checked to see that their rubber flanges continue to afford an adequate seal against rodents and crawling invertebrates.
8. Over-trousers with Velcro ankle cuffs should no longer be issued.

#### *East Pier*

The pier was clean and tidy, but waste skips remained un covered. The following recommendations are made:

1. Dock-side waste skips should have well-fitting lids that are kept closed when not in active use, especially overnight.
2. The dock and gangplank area should be kept well lit at night to deter rodents.

#### *S.A. Agulhas*

The *S.A. Agulhas* was inspected at the invitation of the Captain. As in previous years, the ship was clean and tidy, with the holds freshly painted and all nets being pressure cleaned prior to use on Gough. All flying insect traps were in good order, with new sticky sheets due to be installed prior to sailing. Poison-bait stations were present in the helicopter hangar. Rat guards were in place on most of the ship's hawsers with "glue boards" fitted on the remainder of hawsers. The following recommendations are made:

1. More crawling invertebrate “sticky” traps should be placed strategically around the ship, especially in areas where food and drinks are stored, prepared and/or consumed and in passenger, officer and crew cabins.
2. UV sticky traps for flying insects should be placed in the two store rooms where fresh vegetables, including pockets of potatoes, are kept.

#### *NDPW facilities, Customs House*

The NDPW Antarctic storage and packing facility in Customs House was clean and tidy, with no weeds or debris as reported in previous inspections. Rodent bait stations had been serviced and a certificate by Pest Relievers c.c. was issued on 26 August 2009 reporting the use of Brodifacoum (rodenticide) and ‘Tempo SC’ for “general pests” (copy available on request). The following recommendation is made:

1. Flying and crawling invertebrate traps should be placed in the packing area to check for the abundance and diversity of invertebrates in the stores.

#### *Titan Helicopter Group (THG)*

The THG facilities at Cape Town International Airport were clean and tidy. However, they were in a state of flux, with equipment for the *S.A. Agulhas* being packed in the northern hangar rather than the southern hangar that previously was used for this purpose. Although there were rodent bait stations (last serviced 27 August 2009) around the periphery of the buildings, there were none in the new hangar. Also, the hangar doors have large gaps, allowing access to rodents even when closed. Although no food is in the packing area, storage cases are kept closed when not in use, and most are raised off the ground on wheels, the following recommendations are made:

1. Rodent bait stations should be put out in the hangar and adjacent to the doors outside the hangar.
2. Flying and crawling invertebrate traps should be placed in the packing area to check for the abundance and diversity of invertebrates in the stores.

#### *Table Bay Marine*

The Table Bay Marine packing store was not visited because only one container was going to Tristan from this facility. This contained household effects and was deemed to be of low risk. In the event, some packaging for the factory on Tristan also was loaded onto the ship shortly before sailing.

### **Activities aboard ship**

An illustrated environmental talk was given in the passenger lounge on 7 September during the voyage to Tristan. The obligatory boot-washing ceremony for all personnel intending to go ashore on Gough (including prospective day visitors) was held on the poop deck the following day (8 September). Encouragingly, many passengers going to Tristan took the opportunity to clean their clothing and equipment. We believe that holding the boot-washing prior to arrival on Tristan is warranted. Most SANAP-issued kit

was clean of propagules, but some vegetation was found in Velcro fasteners on waterproof jackets and trousers, and orange pips were found in the pocket of one set of padded over-trousers issued to Titan personnel. Several seeds were found in personal shoes and packs. It is again recommended that the issuing of over-trousers with Velcro ankle cuffs be halted.

Following most passengers going ashore on Tristan on 10 September, a repeat boot-washing was held en route to Gough Island on 11 September for footwear and equipment taken ashore on Tristan. Both helicopters were clean. The Kamov was hosed down daily with fresh water to remove salt spray. However, there was some mud adhering to its wheels after landing at Tristan; this was cleaned thoroughly en route to Gough Island.

Daily counts of insects caught on the sticky traps were made to assess accumulation rate throughout the cruise. Traps were sampled in the officers' pantry, passengers' lounge, hangar, passengers' mess, crews' mess, galley and at two sites near food storerooms aft of the galley. There was a steady accumulation of insects at most sites, with no obvious drop after time at sea, suggesting that many insects can survive aboard the ship at least until it reaches the islands. There was no pick-up in catch rates when the ship visited Tristan or Gough, suggesting limited dispersal to the ship from the islands.

### **Inspections on arrival and subsequently**

The meteorological station and surrounding areas were inspected on 11 September, immediately following the first flight ashore. It was evident that the Gough 54 team had kept the facilities in a tidy and clean condition. No evidence of litter was seen around the buildings. The vegetation had been cut beneath catwalks, and in areas where containers are landed behind the base.

### **Off-loading**

Containers were landed either on structures (wooden helipad, crane platform) or at three sites on mainly alien vegetation adjacent to buildings (next to the diesel tanks/Skivvygat, the fuel store or behind the base). All containers were inspected on opening from the top (with very few exceptions). A dead fly was found in one container with the new team's boxes, and some insect cocoons were found on the lid of a second container when it was flown ashore with frozen food. This latter container had already come ashore with general cargo, and then was later filled with frozen food on the ship. The fact that the cocoons were overlooked on the first trip ashore emphasizes the need for vigilance when checking containers. Subsequently, a small, live hemipteran (stink bug) was found on one of the team member's trunks in the base and collected for identification.

No fresh produce was brought ashore (but see section later on control of materials brought ashore outside the relief period). All eggs had been irradiated, and only de-boned poultry meat came ashore.

### **Small boat operations**

Small boat operations were restricted to assisting with diesel pumping on two days (see below) and the deployment of two seal biologists to Reef Point, near Long Beach, on 28 September. This party was subsequently recovered by helicopter after spending four nights ashore.

### **Flying operations**

No-fly zones were followed as set out in previous years. Most operations were close to the base, with four exceptions:

1. Deployment of a high-pressure water pump and hoses to Snoekgat for *Sagina* eradication work took place on 15 September. The associated water tank was carried to the site by hand.
2. Deployment of 6 personnel and 3 tote bins of food at Waterfall Camp for the census of Tristan Albatross chicks on 15 September. Two bins of food left at the camp site since 2007 were removed back to base. On this flight a set of strops was dropped at the Gonydale container.
3. The container in Gonydale was removed and replaced by a new container (washed down before lifting) with food and equipment for the UCT/RSPB project late on 27 September.
4. Two seal biologists were recovered from Long Beach on 2 October after large seas prevented their recovery by small boat. The helicopter landing site between Reef Point and Wild Glen was chosen as being free of breeding Northern Rockhopper Penguins and no disturbance to wildlife was reported.

Back-loading of containers (including those containing accumulated wastes and boxed *Sagina* plants) and relief personnel proceeded without incident (but see below).

### **Mice aboard the *S.A. Agulhas***

Shortly after the *S.A. Agulhas* left Gough for the buoy run Captain Dave Hall emailed the island to say that a House Mouse *Mus musculus* had been caught in the store in the passenger's lounge, following evidence of its presence in the form of nibbled chocolates (Figs 1 & 2). Subsequently a second mouse was seen in the aft labs coming out of a bait station (which contained droppings). The second mouse is presumed to have died after consuming poison bait. Given that these events occurred after the ship had commenced back-loading from the island, it is assumed that the mice came from Gough. The passenger's lounge mouse may have travelled within a fork-lift opening (Fig. 3) of one of

several SANAP waste containers flown from the island as these were left on the foredeck (unopened) for some time before being loaded into the hold – and had been on the island for a year. A redundant can crusher removed from Gough is thought more likely to have been the source of the second mouse as it was stored aft on No. 2 Deck above the labs. Unfortunately the waste containers and crusher were not properly inspected ashore before being flown to the ship. Given that the ship proceeded directly from Gough to mouse-free Inaccessible Island to land passengers and materials the potential deleterious consequences of a rodent-infested ship are obvious. It is recommended that a back-loading biosecurity plan be developed and adopted within SANAP, which would include inspecting the contents and openings of back cargo.



Fig. 1. Mouse-chewed chocolate bars on the *S.A. Agulhas*





Fig. 2. Chief Steward with a House Mouse caught aboard the *S.A. Agulhas*



Fig.3. Fork-lift opening in a SANAP container deemed accessible to mice

On a more positive note, 50 live mice were removed from the island under permit (copy available on request) for genetic research by collaborators in the USA.

#### **Waste management and clean-up of rubble and redundant structures**

As in the previous year, solid wastes were separated into bones and eggshells, other food waste, metals, glass, and plastics plus ‘burnables’ (wood, cardboard and paper). Food wastes were dumped untreated into Skivvygat whereas all other wastes (including bones and eggshells) were placed into dedicated containers for return to South Africa. Sewage and grey water from the main base also were disposed of in Skivvygat without further treatment. Sewage and grey water from the emergency base were piped over the adjacent cliff into the sea.

No wastes were incinerated in accordance with policy. Open fires were limited to recreational braais (barbecues) using charcoal briquettes in the designated fireplace in the quadrangle.

The NDPW team made a concerted effort to return to South Africa redundant and disused materials and structures. Items removed included waste timber, metal poles and sheets, and the disused and damaged diesel pump shed and associated electrical cabling from Diesel Cove. The pumping equipment (Fig. 4) will be removed from the shed's concrete base in 2010. A total of 57 redundant and embedded scaffolding poles was removed from around the buildings and from sites of previously removed aerial masts. In total seven containers were filled with waste with an estimated net mass of about four tonnes. Items remaining for removal in subsequent years include the non-operable catwalk lights and associated cabling leading to the helipad and the crane platform and the disused sewage pipe between Gough House and Skivvygat.



Fig. 4. Disused fuel pumps scheduled for removal in 2010

The old wooden helipad still continues to deteriorate. In discussion with the NDPW Leader it was agreed that the structure should be removed.

Unfortunately, downdraft from the helicopter at the crane platform caused an empty Orange SANAP container to be blown into the sea. It is not considered recoverable.

A “chicken run” clean-up was planned for the day before departure. In the event, only the science/environmental management group participated, apparently due to a miscommunication. Small amounts of litter and other items were collected and added to the waste stream.

### **Management activities**

*Sagina eradication*

Alien plant eradication continued under the auspices of Tristan's Conservation Department and the Royal Society for the Protection of Birds with funding provided by the Overseas Territories Environment Programme. The *Sagina* relief team was led by John Cooper (CORE Initiatives), assisted by Donovan Willis (Level-3 Rope-access technician/trainer), and Dalton Gibbs (Biodiversity Management Branch, City of Cape Town, asked to audit the eradication effort), Norman Glass (Tristan Conservation Department) and the four RSPB field assistants, Henk Louw and Paul Visser (G54, 2008/09) and Graham Parker and Kalinka Rexer-Huber (G55, 2009/10), all six of whom have Level-1 Rope access qualifications. Several volunteers assisted in stripping peat and vegetation ready for water blasting.

A total of 114 rope-assisted descents was made between Seal Beach and Admiral's, covering all sections of the cliffs within and immediately outside the known distribution. No further spread of *Sagina* was found outside its known distribution from "Beach Rocks" (between the Archway rock and Seal Beach) and the northern bowl of Snoekgat. Small numbers (<150) of small plants were found in all previously-infested areas and removed. No flowering plants were seen, but the few larger plants (up to palm size) found had likely set seed the previous summer.

As in recent annual reliefs, all plants found were removed mechanically using paint scrapers or spades and the sites treated with a herbicide mixture (5% each of Glyphosate and Outpace Flowable), using 1.5-l hand-held pressure sprayers. Some areas also were experimentally treated with handfuls of coarse salt, resulting in browning of the surrounding vegetation.

Following placement and anchoring of a portable water pump and salt-water storage tank next to the Snoekgat Pond (Fig. 5), approximately one-fifth of the infested area at Snoekgat was stripped to bed rock using spades, mattocks and a high-pressure hose over a period of 10 days. Stripped material from ridges was dumped into gullies (Figs 6 - 8). On 2 October, c. 1500 l of water treated with 100 kg of salt to simulate sea water was sprayed onto the infested area in an effort both to reduce the remaining seed load and kill the remaining vegetation. These efforts will continue during the year.



Fig. 5. Water pump and salt-water storage tank at Snoekgat



Fig. 6. Stripping ridges of vegetation at Snoekgat



Fig. 7. Using a high-pressure hose to expose bedrock at Snoekgat



Fig. 8: Perhaps one-fifth of the necessary area was stripped during the relief

Fourteen 55-l “tote” boxes were filled with bagged *Sagina* and adhering soil during the year and relief. Boxes were back-loaded to the ship in an orange container, thus avoiding the cracking of boxes that had happened when using a net in 2007. The contents of these boxes were dumped overboard (without their plastic bags) at 35° 21’S; 04° 15’E on 10 October, along with six boxes of mouse litter (faeces, spilled food, mouldy (non-poisonous!) rodent pellets and shredded paper) from captive experiments conducted during the year.

A one-day training course was given by Don Willis to the new team members so that they would be able to undertake an upward cliff rescue of an incapacitated climber, using the *Sagina* Project safety equipment and the base rescue stretcher.

#### *Other alien plants*

No signs of Tall Vervain *Verbena bonariensis* were found at Skivvygat. Potatoes *Solanum tuberosum* were not found at the four previously-known sites in recent years (quadrangle, Skivvygat and Crane Point region) The alien grass *Arrhenatherum elatius* also appears to have been eradicated from the island, following herbicide treatment in 2005/06 with the treated site next to the base continuing to revegetate. The abundance of Sowthistles *Sonchus* spp. and Greater Plantains *Plantago major* appeared to have decreased around the base environs, possibly due to the weeding efforts made in past summers. Small sections of five Annual Meadow Grass *Poa annua* plants were collected from the wooden helipad for genetic study at Stellenbosch University.

#### *Mouse eradication research*

During 2008/09 Henk Louw and Paul Visser continued work leading up to the proposed eradication attempt for mice. They conducted numerous trials on the efficacy of poison bait on captive mice, and the proportion of mice that willingly consume the bait. They also conducted field trials around caves to ensure that all mice in caves forage on the surface and would thus be exposed to bait in the event of a bait drop from a helicopter. During the current relief a 20-ha area was hand baited with 330 kg of non-toxic bait dyed with rhodamine to ensure that all mice consume bait. Trapping over three subsequent nights found that all mice caught within a core 0.5-ha trapping grid, as well as in two cave systems, had consumed the bait. The results from all these studies support the viability of an eradication effort. Trials also were conducted to assess the susceptibility of native species, especially Subantarctic Skuas *Catharacta antarctica*, Gough Moorhens *Gallinula comeri* and Gough Buntings *Rowettia goughensis*, to primary or secondary poisoning. It is clear that at least skuas and moorhens consume both bait and mice, so would be at risk if an eradication attempt was conducted.

### **Fuel pumping and diesel storage**

An attempt to pump diesel took place on 17 September. The hose was run out from the ship and connected to the box at Diesel Cove without incident, but there was not pressure

coming through up to the tanks. After some fiddling the operation was called off by Captain Hall due to rising winds. When the ship returned from the buoy run, diesel pumping took place on 27 September. There were four small dripping leaks in the pipe leading from the shore connector box to the metal pipe network. These were all caught in 50-l tote bins. Pumping was completed in around five hours, with just over 90 000 litres pumped ashore.

The diesel tanks were scraped, primed and repainted. Attempts were made to catch paint chips on drop cloths for disposal in South Africa, but some chips remained in the environment.

### **Light pollution**

Window blinds at the station were closed at dusk each evening to reduce the risk of bird strikes. A light was left on outside the annex on 19 September, attracting several Broad-billed Prions *Pachyptila vittata*. As a result the switches to this and another outside light were both taped in the off position. No bird strikes on base buildings took place during the relief, but the year team (G54) reported some incidents on calm, misty evenings despite the closing of all blinds and switching off all unnecessary lights on base.

### **Paths and erosion issues**

All the paths around the base were walked, including paths to Gonydale, Tafelkop and South Peak. In the mountains, we also walked the path along the Rowetts and around the West Rowetts to Low Hump. The condition of paths was similar to previous years, with large amounts of wear accumulating during the relief along paths to Snoekgat (*Sagina* control) and Tumbledown (mouse bait trials). A short ladder should be installed to assist the climb out of the first river crossing en route to Tumbledown/Gonydale; the other three ascents are all ladder assisted and as a result are in better condition than this site (see Appendix Three).

During the last few years, the path from base to Seal Beach has switched from the coastal path to an inland route, which has increased disturbance to the Yellow-nosed Albatross *Thalassarche chlororhynchos* study colony, with several nests along the new path. The new team has been encouraged to revert to the coastal path. The descent to Seal Beach also has become quite eroded, forcing people to rely on the rope. This appears to be the result of people jumping down onto soil 'steps'. Installing a rope ladder to replace the existing rope would be advantageous. A new rope ladder was installed for the descent to Swemgat.

The usual container site in Gonydale has not been used for two years. The site was fully re-vegetated with native vegetation, dominated by *Sphagnum* moss. The only alien plant noted at the site was a small patch of Farm Grass *Holcus lanatus* at the tent site; this was



removed. During the last year, a container was sited more in the open, about 100 m from the traditional site. The area adjacent to this site suffered some trampling damage, but this should soon recover. The new container for the coming field season was placed adjacent to the traditional site, 2-3 m to the north.

### **Recreational fishing**

Fishing by rod and/or hand line took place from the ship in both Tristan and Gough waters and from the shore on Gough, under permit from Tristan's Fishery Department. Traps were deployed for Tristan Rock Lobster *Jasus tristani* from the base by year-round expedition members. A copy of the permit can be made available on request.

### **Controlling import of materials during the year**

It was reported that fresh produce (including potatoes, tomatoes, onions, avocados, etc.) were twice landed at the base outside the relief period during the last year. The 1993 management plan for the island does not permit "leafy vegetables" to be taken ashore and none has been sent since 1991. The current lease, signed in 2005, allows only potatoes to be sent ashore. Current South African practice is to not allow any fresh produce ashore, including potatoes, as this is contrary to SANAP's biosecurity policy for both Gough and Marion Islands. In future, we recommend that if offers of fresh produce are made the island team, through its Team Leader and voluntary Team Conservation Officer, should politely refuse them, explaining the reasons for doing so. If made, they might accept offers to go aboard visiting vessels in Gough waters to consume fresh fruit and vegetables there.

### **Appointment of a voluntary Team Conservation Officer**

Graham Parker (G55) took up the voluntary responsibilities of an over-wintering Team Conservation Officer for the year (see Appendix Two).

### **Collection of seaweed**

A small collection of seaweeds was made earlier in the year for a researcher at the University of Otago, New Zealand. A copy of the collection/export permit is available on request.

### **Acknowledgements**

We thank all the participants on the 2009 Gough relief, both aboard ship and ashore, for their willing help and support with environmental matters at Gough Island. We especially thank Marlene Hoekstra for continuing counts of flying insects on sticky traps aboard

ship while we were on the island and the Titan Helicopter team for expertly placing items in the field.

Peter Ryan, Norman Glass & John Cooper  
13 October 2009

## APPENDIX ONE

**Note:** this document has been left largely unchanged, pending the new management plan

### **ENVIRONMENTAL INFORMATION ABOUT GOUGH ISLAND AND PRECAUTIONS TO BE TAKEN BY ALL EXPEDITION AND TAKE-OVER MEMBERS**

*Gough Island has been described as the most important seabird island in the world. It is a Nature Reserve of the Tristan da Cunha Government, and with Inaccessible Island forms one of the United Kingdom's very few World Heritage Natural Sites. It is also from November 2008 a Ramsar Wetland of International Importance.*

Oceanic islands are very sensitive to human disturbance. This is mainly due to their evolution in the absence of human beings and other terrestrial mammals. The indigenous animals and plants of these islands, many of which occur nowhere else, are thus poorly adapted to direct human disturbance, trampling, pollution or competition from terrestrial predators, hardier plants, insects and diseases that could possibly be brought across from the mainland (referred to as alien species).

The following message is to inform you of some of the precautions you need to take before you reach the islands. The precautions to be taken during your stay on the island will be explained in more detail during the voyage (although some are summarized here). Please comply with the following precautions before boarding the research vessel *S.A. Agulhas*.

#### **A. PRECAUTIONS AGAINST INTRODUCING ALIEN SPECIES TO THE ISLAND**

##### **1. CHECK ALL PERSONAL CLOTHES AND SHOES**

###### **1.1 Personal clothes**

Before packing your personal clothes, please give them a thorough wash and iron. Please be especially careful with hiking socks, fleece and outer jackets and any other clothing you might have used previously in the natural environment, in city parks or on farms. These clothing items make excellent vectors for the transport of alien plants, especially of their seeds. Empty all jacket pockets and clean seams that might have trapped plant material, especially seeds. Pay special attention to cleaning Velcro strips.

###### **1.2 Footwear**

The soles of all shoes, boots and sandals are to be scrubbed thoroughly and cleaned of soil, stones and other dirt. Careful attention must be paid to cleaning Velcro straps. In addition, a compulsory “Boot-washing Ceremony” will be held on the ship on the outward voyage for all those going ashore, even if only for a day visit.

### **1.3 Walking and hiking equipment**

Rucksacks, day packs, camera/video bags, walking sticks, tripods and protective clothing

Please wash and check these items thoroughly, especially Velcro seams and straps, pockets and below removable stiffeners. All these items will be inspected at the boot-washing ceremony for seeds and insects, etc. along with your issued and personal outer/protective clothing.

2. Take care while packing equipment and personal belongings into trolleys (metal trunks) and other containers
  - 2.1 Ensure that the container is absolutely clean inside and outside before packing.
  - 2.2 Pack in a secure environment in a pest- and plant-free closed room preferably during daylight hours
  - 2.3 Keep containers fully closed (preferably sealed) when not actually packing them and once fully packed.
  - 2.4 Store containers inside a building (not in the open), preferably lifted above the ground surface, in a pest/plant-free environment before transport to the SANAP stores and onto the *S.A. Agulhas*.
  - 2.5 Remember that packing at night with a localized light source could attract insects into your containers, so avoid packing at night whenever possible.

## **B. PRECAUTIONS AGAINST POLLUTION**

### **1. STYROFOAM PACKAGING CHIPS ARE BANNED FROM THE ISLAND**

Due to the risk of environmental pollution posed by Styrofoam packaging chips, these are not allowed onto the island.

### **2. NYLON STRAPPING IS STRONGLY DISCOURAGED**

Nylon strapping is lethal to seals and birds, which can become entangled in these straps. Once a young seal has become entangled the strap will slowly cut into the

flesh of the seal as it grows, eventually killing it. This is an extremely slow and painful death.. For this reason the use of nylon strapping for packaging is strongly discouraged. All such straps must be cut before proper disposal.

### 3. MINIMISE PLASTIC AND CARDBOARD PACKAGING

Plastic cannot be incinerated on Gough due to the emission of PCBs, which have an adverse effect on birds and seals. Cardboard, especially in corrugated form, can harbour invertebrates, such as cockroaches and spiders and their eggs and larvae. This means that all plastic and cardboard (as well as all waste paper and wood) is stored on the island and later returned to South Africa for proper disposal. You are thus requested to minimize the amount of plastic and cardboard packaging used as far as practically possible, since storage space on the island for such wastes is severely limited. Rather use one large refuse bag than many small plastic bags and remove items from unnecessary cardboard boxes and wrapping whenever feasible. Note that incineration of any wastes (including wood) is not allowed on Gough Island. The only open fire that may be lit is in the braai/barbecue facility in the base quadrangle, using the charcoal briquettes provided.

### 4. OLD PLYWOOD IS NOT TO BE USED

Old plywood is not to be used as packing material or brought to the island, since it may be contaminated with fungi, etc..

## C. MINIMISING BIRD STRIKES ON THE ISLAND

Gough Island is the breeding ground for hundreds and thousands of night birds (also referred to as burrowing petrels due to their habit of making their nests in underground burrows). These birds have very acute night vision and only venture onto the island during the hours of darkness in order to avoid the larger predatory birds.

Unfortunately, these birds become blinded by even a dim light and will fly towards the light source. If this light emanates from a building or fixed structure they may collide with the structure and be injured or killed. In a dazed and injured state they become easy prey for predatory skuas, which soon learn that outside lights represent a potential food source.

For this reason no outside lights are permitted to be left on at night. Therefore please bring your own small hand torch for moving around outside the buildings at night.

Blinds on all base windows must be fully closed by dusk and kept closed all night.

**D. FRESH FOOD**

No fresh fruit or vegetables of any sort whatsoever may be taken ashore at Gough Island.

**E. LITTERING**

Absolutely no littering or disposal of rubble, etc. is allowed anywhere on the island, including cigarette butts, matches, sweet wrappers, food remains, etc.

Please immediately clean up any rubble that has been generated as a result of maintenance or other work that has been undertaken outside (e.g. dropped nails and screws, pieces of metal, bits of wood, plastic piping off-cuts, etc.), to prevent loss and dispersal by the wind.

**F. DISTURBANCE**

Birds and seals must be approached slowly and only to a distance that does not result in causing undue alarm (do not approach within 5 m of seabirds or 10 m of fur and elephant seals). If approached animals appear agitated retreat slowly until they calm down. Please remember that albatrosses, penguins and most especially fur seals can give nasty bites. The Tristan Albatrosses breeding in Gonydale and on Tafelkop and the Atlantic Yellow-nosed Albatrosses breeding south of the base towards Seal Beach form part of long-term population studies. Birds on nests in these areas are not to be approached closer than 10 m and the nest markers are to be left undisturbed.

**G. FISHING**

Over-wintering personnel only are granted an open license by the Tristan Government for recreational fishing from the shore only for domestic consumption only throughout their years' stay. Such fish may not be removed from the island.

All other shore-based and ship-based personnel during the relief must purchase a recreational fishing license for GBP 150 that allows a maximum of 250 kg of fish (gutted, filleted or whole) to be caught. Licenses are to be purchased on arrival on Tristan da Cunha from the Fisheries Department by individuals or groups of named individuals (syndicates) before they will be allowed to fish from the sea or shore. These fish may be removed to South Africa with a legitimate export license issued by the Tristan Government.

All fishers must fish in a responsible manner, throwing back unwanted and under-sized fish alive and uninjured.

We trust you will appreciate that you are among the privileged few to have the opportunity to visit this unique environment and that you will do your part in preserving it for posterity, as well as thoroughly enjoying your stay.

All relief visits to Gough Island are accompanied by Environmental Officer(s) appointed by the Tristan Conservation Department. These officers may be approached for advice, and their requests are to be followed at all times.

Further environmental information may be found in the management plan for Gough Island.

Tristan Conservation Department

Updated 16 August 2009

## APPENDIX TWO

**Note:** this document has been left largely unchanged, pending the new management plan

### TEAM CONSERVATION OFFICER GUIDELINES – GOUGH ISLAND

The Team Conservation Officer is responsible for conservation issues on Gough Island during the over-wintering period. Decisions regarding such issues should be made in conjunction with the Team Leader. This document is meant as a guideline and is by no means all-inclusive. All regulations pertaining to the Gough Island Nature Reserve (GINR) are dealt with in more detail in the GINR management plan. If in doubt, please consult with the Tristan Administrator and Tristan Conservation and Fisheries Departments (see contact details below).

#### RELIEF DUTIES

Relief activities should be undertaken by the Environmental Inspector, appointed by Tristan da Cunha, in conjunction with the outgoing and incoming Team Conservation Officers:

1. Inspect all premises where cargo and equipment is stored (i.e. DEA, NPWD and all freighting companies' stores), to ensure that these premises are clean, have a rat-free certificate, employ effective means of preventing rodent infestation, and are free of any other propagules.
2. Ensure that all containers are clean and dedicated Gough Island containers.
3. Inspect the *SA Agulhas* to ensure that the vessel has a rat-free certificate, that rat guards are effectively deployed on all mooring lines and that propagules are reduced to the minimum.
4. Inspect the hold of the *SA Agulhas* before reaching the island, for any signs of rodents and other propagules (i.e. soils, seeds or insects).
5. Present a lecture aboard the *SA Agulhas* to all personnel visiting Gough Island dealing with the conservation status, the ecological sensitivity of the island and environmental conduct while on the ship and on the island during the relief period.
6. Inspect Zone 1, at the start of the relief, with the Team Leaders to ensure that the base is in an acceptable condition.
7. Inspect all food coming ashore, to ensure that no fresh fruit and/or vegetables are landed, that only de-boned poultry is supplied, and that the number of eggs is kept to the minimum required and are irradiated.
8. Inspection of the logistic zone for signs of introduced weeds, especially *Sagina procumbens*. Affected areas should be clearly marked out and treated as soon as possible. All personnel should be advised about the position of affected areas.
9. The Environmental Inspector should ensure that the incoming Team Conservation Officer is completely with *Sagina* eradication procedures, as well as the working of the equipment (especially the boiler).



10. Inspect all paths leading out of the logistic zone for any signs of newly introduced species, especially *Sagina procumbens*.
11. Present an information session to all personnel on the island regarding alien plants, their whereabouts, and measures needed to avoid assisting their spread, the risks of bird strike and how to avoid this, and all other provisions of the GINR management plan, including codes of conduct regarding animal approach distances.
12. Provide the necessary information to helicopter crews regarding seabird and seal colonies and their proximity to flying operations. Monitor helicopter activities to ensure that sensitive areas on the island (especially the east coast Southern Elephant Seal colony) are avoided.
13. Monitor the pumping of diesel from the supply vessel to the base. Ensure that the line is pressure tested with air and that no leaks have been detected, before diesel is pumped through. Ensure that dispersant and buckets and brushes are placed at critical points along the line on the island. Dispersant should also be aboard the small boat monitoring the line between the supply vessel and the island.
14. Monitoring all logistic activities to ensure that they comply with the provisions of the GINR management plan.
15. Update this document (with approval of the Tristan authorities).

## **ANNUAL DUTIES**

These duties are to be performed and/or coordinated by the over-wintering Team Conservation Officer. The Team Conservation Officer is encouraged to consult with the Environmental Inspector, the Tristan authorities, the out-going Team Conservation Officer, any biologists present on the team and any other contact persons provided at the end of this document.

## **Alien Species**

1. The logistic zone, as well the entire area where *Sagina procumbens* has been recorded, should be searched thoroughly at least two-month intervals during the summer (September to March) and three-month intervals during the winter. Any seedlings detected should be recorded and treated according the procedures set out in Niek Gremmen's "Manual for monitoring and eradication of invasive weeds". Detailed notes should be made in the "*Sagina* log-book".
2. The over-wintering team should be reminded of the importance of washing their boots before and after leaving the logistic zone, in order to prevent assisting the spread of alien plants.
3. The over-wintering team should be reminded to wash their boots after they have stepped off the catwalks within the logistic zone.
4. Areas where *Sagina* has been recorded should be clearly marked and avoided, except when absolutely necessary. In this case boots should be washed thoroughly immediately afterwards.

### **Indigenous Species**

1. The over-wintering team should be reminded to not disturb animals in any way, especially when they are breeding.
2. Bird strikes should be minimized by turning off all outside lights and by keeping blinds drawn after dark. On misty nights, interior lights should also be kept to the minimum.
3. Birds that hit the base and are stunned should be collected in a container (beware of packing too many birds into a container) and released farther away from the base, once they have recovered and during the night. Do not release them during daylight hours or on the helipad as this is where skuas congregate.

### **Path Degradation and Peat Slips**

1. The over-wintering team should be reminded of the danger of causing unnecessary peat slips through irresponsible hiking routes.
2. All recreational hikes and commuting hikes (for scientists) should be restricted to approved hiking paths as far as possible.
3. A register of all walks should be kept by the Team Conservation Officer, for safety reasons, as well to quantify the impact on various paths.
4. The state of all hiking paths should be assessed regularly and modifications suggested.

### **Visits by Ships**

1. All visits are strictly regulated by the Administrator of Tristan da Cunha, who should be contacted for permission prior to landing any visitors or parcels. The exception is in the case of medical emergencies. In this case, DEAT and the Administrator of Tristan da Cunha should still be notified at the earliest possible opportunity (preferably prior to landing).
2. In the cases of approved visits and medical emergencies, the protocol for visiting ships should be followed.

### **Waste Management at the Base and Field Camps**

1. The Conservation Officer must ensure that waste is separated and contained and/or disposed of as prescribe by the GINR management plan and by current practices.
2. Special attention and precaution should be given to the storage of hazardous wastes.
3. Any serious chemical or fuel spills should be quantified and reported to the Tristan authorities and to DEAT within 24 hours.
4. The incinerator is no longer to be used and the only exposed fires allowed are in the braai/barbecue pits at the base using charcoal briquettes. Braais with open fires are not allowed away from the base (e.g. at Swemgat).

## **Other Activities**

1. The Conservation Officer will ensure that no human-made structures are erected on the island without an Environmental Impact Assessment (EIA) being first conducted and subsequent approval from Tristan da Cunha.
2. The Conservation Officer should make detailed notes (including date, time and location) of any incidences of deleterious effects to the environment that could possibly be human-related (e.g. animals entangled in debris or oiled).
3. Monitoring of the Yellow-nosed (Base) & Tristan (Gonydale and Green Hill Tafelkop) Albatross study colonies, following procedures set out in instructions in Gough Laboratory.
4. Collect and record debris washed up at Seal Beach.
5. Collect all used wood, paper, cardboard, plastics, glass, metals (including cans) for return to South Africa .
6. Ensure poultry waste (including egg shells), meat bones and dried fruit, olive and prune pips go into the poultry waste container.
7. Remove and seal in plastic fertilizer bags any potato plants (including tubers) found growing at Skivvygat and elsewhere.
8. Check the exposed sand about 20 metres past the German GPS receiver for alien plants. Remove any and keep herbarium specimens.
9. Weed out thistles as seen around base and anywhere away from coast before flowering.
10. Record ship and yacht visits (date, time, names etc.) and any evidence of poaching vessels.
11. Check pantry and food store for presence of invertebrates, especially weevils in flour, pasta etc. Collect specimens in alcohol. Fumigate if necessary.
12. Collect any “odd” invertebrates seen in base, including moths etc.
13. Keep an approximate record of number of mice killed in and around base.
14. Record all “night bird strikes” (on buildings).
15. Record all birds killed by hitting aerials, stays, etc. and keep corpses.

## **CONTACT PERSONS**

David Morley, Administrator, Tristan da Cunha  
Trevor Glass, Head, Tristan Conservation Department  
James Glass, Head, Tristan Fisheries Department

Revised 03 October 2009

## APPENDIX THREE

### REGISTER OF FIELD AIDS ON GOUGH ISLAND

An annually updated list of field aids (mainly fixed ropes and ladders) on Gough Island is given, as an aid to improving safety and access to various parts of the island, mainly away from the weather base.

It is suggested that the list be checked in the field, amended as necessary and kept up-to-date, and that field aids have their positions recorded by GPS as they are visited.

Field aids should be kept in good repair and redundant and unsafe aids (e.g. worn and/or rotten ropes and rope ladders with several missing rungs ) should be removed.

In terms of the island's current management plan, placement of new field aids will require prior approval from the Tristan authorities.

#### **Tumbledown**

40° 21.431'S; 09° 53.054'W; 31 m.

Rope fixed to an anchor pole leading down to the shore rocks.

#### **Gonydale River**

Rope(s) in vicinity of waterfall(s) require checking for exact positions and condition. One rope is reported next to a waterfall about 200 m upstream from the Swemgat waterfall.

#### **Gonydale River crossing**

Gonydale riverbank; 40° 21.120'S, 09° 50.091'W; 21 m

Five-rung aluminium ladder.

Base riverbank; 40° 21.105'S, 09° 53.089'W; 36 m

Short aluminium ladder fixed with a rope.

#### **Seal Beach River crossing (base riverbank)**

40° 21. 089'S, 09° 50.058'W; 12 m

Short aluminium ladder fixed with a rope.

#### **Swemgat, above Seal Beach**

Short aluminium ladder above a new (September 2009) rope ladder fixed to a tree and to an overly long anchor pole.

#### **Seal Beach**

Fixed rope to gain access to the shore down a steep muddy and eroding slope.

**Crane Lookout Site**

Short fixed rope. Used only for *Sagina* eradication work.

**Sagina Gully**

40° 21.014, 09° 52.805'W; 34 m

Knotted synthetic rope fixed to an anchor point in 2008. Used only for *Sagina* eradication work.

**Crane cliff**

40° 21.022'S, 09° 52.699'W; 34 m

Fixed rope among tussock adjacent to crane. Not recommended for use as cliff descent exposed.

**Emergency Base cliff**

40° 21.020'S, 09° 52.767'W; 33 m

Fixed rope among tussock below Emergency Base. Not in use as largely overgrown and should be removed.

**Diesel Cove**

40° 21.014'S, 09° 52.763'W; 35 m

A pilot-type wood-runged rope ladder (2008) gains access to Diesel Cove.. Lower down a removed section of the same ladder (fixed to poles and pitons by rope) allows access to the fuel-pumping coupling site. Two large metal pitons driven into rock cracks (currently unused) in the vicinity.

**Snoekgat**

Southern approach: two short ladders, the top aluminium, the lowest rusted steel; 40° 20.883'S, 09° 52.726'W; 44 m. This access is becoming severely eroded and care is required.

Northern approach: a short fixed (to a tussock) synthetic rope at entrance to bowl.

At pond: short rope ladder tied to an anchor pole. 40° 20.878'S, 09° 52.699'W.

Three other non-fixed aluminium ladders are currently being used at Snoekgat for access to *Sagina* eradication sites.

**“Nextgat”**

40° 20.797'S, 09° 52.641'W; 26 m

A knotted synthetic rope (fixed round a rock and to a large steel piton) gains access to the lowest part.

**Admirals**

A difficult descent and an even harder ascent. From the top there are a fixed knotted rope and a 2006 (but already rotting) pilot-type rope ladder with wooden rungs placed in position in September 2007, a long aluminum ladder and finally two free-hanging rope ladders. One of the lower rope ladders has many rungs missing. It is recommended that users proceed with caution and ideally make use of a safety line of static rope, a sit

harness and a shunt. Note that the Antarctic & Islands Directorate has stated in the past that it does not intend to place new aids at this locality.

### **Admirals, northern section**

40° 20.596'S; 09° 52.836'W

Little-known fixed rope above a short aluminium ladder high up below the ridge above the shore reported as present in 2007. Ability to reach the shore from these two aids requires checking.

### **Tafelkop climb**

Two short fixed ropes on path roughly half way up from the Golden Highway

Lower at 40 20.446'S, 09 53.485'W, 303 m.

Higher at 40 20.426'S, 09 53.507'W; 345 m.

### **Waterfall Point**

A fixed rope (marked by a buoy) was placed in 2001 to allow access to the shore at the southern end of the boulder beach stretching north from Waterfall Point. Present condition requires checking. GPS required.

### **Archway Rock, The Glen**

Remnants of rope and anchor pole to allow access to the Sophora Glen rocky beach from The Glen over the Archway Rock were found in January 2008. No longer functional. Several (two?) short ropes are present along the course of the Glen River. They are old and should be used with care.

### **Blechnum Bridge**

A substantial metal and rope structure crossing a small stream on the path towards Tafelkop, about a hundred metres inland from the helipad. Erected in October 1986, now deteriorating due to rust, with one support rope trailing loose. The remaining remnants of an older wooden and rope suspension bridge at the site should be removed. Apparently, these bridges, falling outside the South African-leased area, were put up without Tristan approval.

### **South Peak**

Overgrown rock cairn at top of path marks route to Michael's Col.

### **Gonydale**

Orange container placed at central camp site in September 2009. For non-emergency use by field researchers only.

### **Waterfall Camp**

Food cache (three tote boxes) placed under a small overhang on the left bank adjacent to waterfall in September 2009. For non-emergency use by field researchers only.

Updated 2 October 2009

## APPENDIX FOUR

### REGISTER OF FIELD MARKERS

This register lists long-term markers in use on the island, either for research or for management. No new long-term field markers were placed during the 2009 relief

#### **Atlantic Yellow-nosed Albatross Demographic Study**

Commenced: 1982, ongoing, no projected year of completion.

Between weather base at Transvaal Bay and Gonydale River, bounded by coastal cliffs and inland by the Golden Highway River from Tafelkop.

Markers: one-metre plastic poles bearing yellow alpha-numeric tags in series A2-99 and C1-46 at nest sites. Poles are left in place and are not removed each year.

Contact person: Peter Ryan, FitzPatrick Institute, University of Cape Town;  
[Peter.Ryan@uct.ac.za](mailto:Peter.Ryan@uct.ac.za).

#### **Tristan Albatross Demographic Study**

*Tafelkop, Memorial Cross Valley and south slopes of South Peak.*

Commenced mid 1980s, ongoing, no projected year of completion.

*Gonydale and Hummocks Path*

Commenced 2007, no projected year of completion.

Markers for all three Tristan Albatross study colonies: 1.33- and 1.5-m plastic poles bearing yellow alpha-numeric tags in series A2-99 and C1-99 (not all yet used) at occupied nests. Poles are removed and repositioned annually.

Contact persons: Peter Ryan, FitzPatrick Institute, University of Cape Town;  
[Peter.Ryan@uct.ac.za](mailto:Peter.Ryan@uct.ac.za) and John Cooper, CORE Initiatives; [John.Cooper61@gmail.com](mailto:John.Cooper61@gmail.com).

#### **Atlantic Petrel long-term monitoring transects**

*Before Blechnum Bridge to left of path to stream, past Blechnum Bridge on first rise and across Gonydale River to right of path*

Commenced 2001, no projected year of completion.

Ten white conduit poles with aluminium tags punched AP 1 to AP 10 in a straight line at each locality.

Contact person: Richard Cuthbert, Royal Society for the Protection of Birds;  
[richard.cuthbert@rspb.org.uk](mailto:richard.cuthbert@rspb.org.uk).

#### **Great Shearwater breeding colony**

*Coastward of the path to Snoekgat*

Commenced 2008, renewed annually.

Bamboo stakes with aluminium punched tags numbered 1-100.

Contact person: Richard Cuthbert, Royal Society for the Protection of Birds;  
[richard.cuthbert@rspb.org.uk](mailto:richard.cuthbert@rspb.org.uk). (also Jacob Gonzales-Solis, Rob Ronconi)

**Vegetation transects**

Ruin Ridge, Lower Slip

Markers: red metal poles on Ruin Ridge, top pole labeled “PFIAO vegetation transects, do not remove, C. Moloney, 1990”.

Person responsible: Peter Ryan, FitzPatrick Institute, University of Cape Town;

[Peter.Ryan@uct.ac.za](mailto:Peter.Ryan@uct.ac.za).

**Sagina Eradication Programme**

Markers: 2-m white conduit poles labelled SAGINA marking most positions of steel scaffolding poles for attachment of ropes along cliff top between Seal Beach and Admiral’s.

Person responsible: John Cooper, CORE Initiatives; [John.Cooper61@gmail.com](mailto:John.Cooper61@gmail.com).