

GOUGH ISLAND WILDLIFE RESERVE

Fourth Annual Environmental Inspection

September/October 1994

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INTRODUCTION

Gough Island was visited during the relief voyage of the M.V. *S.A. Agulhas* during September and October 1994 in order to carry out the fourth annual Environmental Inspection on behalf of the Tristan da Cunha Government and the United Kingdom Foreign and Commonwealth Office. The *S.A. Agulhas* sailed from Cape Town on the 8 September and arrived at Gough Island on the 13 September 1994.

On the outward voyage an illustrated talk was presented to the incoming meteorological team members, takeover personnel and other interested parties in which the audience was introduced to the conservation principles outlined in the Management Plan for Gough island (Cooper & Ryan, 1994).

Discussions were held with the incoming Administrator of Tristan da Cunha, Mr Brendan Dalley, regarding management of the rock lobster *Jasus tristani* and linefish resources of the Tristan da Cunha group and Gough Island and matters regarding the licensing of foreign vessels to fish for linefish within the 200 mile zone protected by the Tristan da Cunha Fishery Limits Ordinance. In addition plans for the takeover period were discussed with the Administrator and the Department of Environmental Affairs and Tourism (DEAT) Voyage Coordinator, Mr Jan Hattingh.

The *S.A. Agulhas* remained at Gough for four days during which cargo was unloaded via helicopter and an unsuccessful attempt was made to pump fuel ashore. The ship then left for Tristan da Cunha to transfer passengers and cargo and returned to Gough on 21 September to pump fuel ashore. Fuel pumping was completed by that evening after which the ship departed for Cape Town.

The South African naval ship *S.A.S. Protea* arrived at Gough Island on the morning of the 8 October to take on personnel for transportation back to Cape Town. Onloading was carried out by the ship's helicopter and completed by early afternoon. The DEAT Coordinator, the leader of the Public Works (DPWLA) team, and myself undertook a helicopter flight around the island to inspect erosion on pathways and landed at the Glen to assess the environmental condition of the old base site with the view of a possible clean-up during the 1995 takeover.

The *S.A.S. Protea* then left for Tristan da Cunha to pick up passengers for Cape Town. The ship arrived at Tristan on the morning of 9 October and remained there till early afternoon. During this time I held discussions with the Head of Natural Resources, Mr Jimmy Glass regarding the state of the rock lobster and linefisheries. A helicopter census of southern right whales *Balaena glacialis* was undertaken around Tristan Island with Mr Glass and a video photographer. The *S.A.S. Protea* then left for Cape Town arriving on the morning of the 15 October 1994.

During the return voyage the representative from the South African Weather Bureau, Mr Eugene Burger expressed interest in the work of the GIWRAC and requested that a copy of the Environmental Report and Management Plan should be sent to the Bureau as they are directly involved with personnel and planning of activities at the Meteorological Station.

No instances of the dumping of non-biodegradable waste overboard was noticed on the outward or return voyages. Non-biodegradable waste was stored or incinerated on the *S.A. Agulhas* and stored on the *S.A.S. Protea*.

Details of an inspection of the DEAT and DPWLA stores, and hawsers on the *S.A. Agulhas* by J. Cooper and P.G. Ryan in Cape Town prior to departure are appended to this document.

This report should be read in conjunction with the Management Plan for the Gough Island Wildlife Reserve (Cooper & Ryan, 1994).

THE METEOROLOGICAL STATION AT TRANSVAAL BAY

The inspection party including the Tristan Administrator, Voyage Coordinator and myself landed on the island aboard the first helicopter flight. We conducted an initial inspection of the Station and surrounds accompanied by the leader of the outgoing meteorological team. The area and buildings were clean and tidy and it was apparent that significant effort had been expended throughout the year to keep the Station in this condition.

Twenty eight persons remained on Gough Island for the duration of the takeover (14 September - 8 October) and were affiliated as follows:

South African Department of Environmental Affairs and Tourism (DEAT)	2
South African Weather Bureau	1
South African Department of Public Works and Land Affairs (DPWLA)	6
South African Air Force Radio Technicians	2
Outgoing Meteorological Team	7
Incoming Meteorological Team	7
Minister of Religion	1
Chef	1
Environmental Inspector	1
Total	28

The wife of the Administrator, the helicopter flight crew, the ships medical doctor and the dental team of three bound for Tristan da Cunha came ashore for brief periods while the *S.A. Agulhas* was offloading. I accompanied the Administrator on a walk to Seal Beach and the Yellownosed Albatross *Diomedea chlororhynchos* colony near the Station during his visit ashore.

A number of the ships company from the *S.A.S. Protea* came ashore for short visits during onloading of this ship on the 8 October. While most of these visitors remained at the Station a group was escorted on a walk to Seal Beach by one of the outgoing team members.

The management recommendations outlined below were discussed at the end of the takeover with the DEAT Coordinator, the incoming team leader, and myself. The Coordinator was extremely sympathetic with the need to introduce sound management procedures and assured us that the DEAT desired to conform to these standards and to implement strict control measures at all its remote bases. It is of great importance to arrange a meeting at the end of the takeover period to discuss management with the parties concerned. On the last day on the island the Coordinator arranged for a team including the leader of the DPWLA team to inspect the entire base to identify improvements that should be attended to during the next takeover.

Construction and maintenance activities

Although numerous small maintenance jobs were carried out the main construction programme during this takeover was the erecting of a prefabricated building to house the new satellite communications disc. Construction commenced on the site adjacent to the upper air building chosen during the 1993 takeover. This site had already been disturbed presumably through previous building operations and was heavily colonised by alien vegetation. The building was supported on a platform constructed about 1.5 m above ground level. Piles were driven into the peat for this purpose. No materials that could not be easily removed from the site were used. Some trampling of indigenous flora occurred during building operations but recovery should be rapid as damage was minimal. Pieces of old plastic linoleum amounting to about 3m x 3m was removed from the surface peat during construction.

Effective black blinds to reduce light leakage from Gough House were installed on all windows which had old louvre type blinds. However, blinds should be fitted to the windows of the Food Store/Gymnasium building as it is sometimes used after dark. These blinds proved effective in preventing birds from striking the buildings directly. The only occasion during the takeover when birds collided with the buildings was when an outside spotlight was turned on during a barbecue one evening. As soon as the first bird flew into the building the light was extinguished. Two broad billed prions and a petrel were released unharmed after flying into the building. It is recommended that a smaller directable light be installed at the barbecue site to reduce light interference.

The lights along the catwalk from the Station to the helicopter pad were replaced with low wattage lamps on short supports without stays as recommended in the 1993 Environmental Report (Fraser, 1993). The bollard lamps along the catwalk from the Station to the diesel tanks were replaced with new glassfibre fittings and low wattage lamps. These lights are only used in an emergency and the lower supports and dull lamps should decrease the danger of birds flying into them.

The old generator shed near the crane was dismantled as it had become redundant. The materials were stored for removal during the 1995 takeover. The *S.A.S. Protea* was unable to remove bulky cargo due to limited hold space. The concrete foundation was left in place as it forms part of a larger area suitable as a collection point from which cargo can be removed via helicopter. Some upright steel poles used for supporting structures that have been removed were pulled out of the peat from various sites around the Station. The leader of the incoming team undertook to remove those remaining.

The filter for domestic water was cleaned out and refilled with sterilised sand. The overflow from the water storage tanks had been diverted into the main sewage disposal pipeline thereby reducing excessive wetness of the ground under and near Gough House.

The feasibility of constructing a temporary weir at the water collection point in the stream above the Station was discussed to prevent regular air locks developing in the pipeline during heavy rain. At present water is led by gravity via a polyethylene pipe to the Station. The sieve at the upper end of the pipe is anchored in a shallow pool below a small waterfall. After heavy rain the increased turbulence in the pool allows air into the pipe creating an air lock that has to be rectified by bleeding the pipe near the intake point. During the takeover personnel had to walk up to the collection pool at least four times to rectify the problem. This excessive use has caused extensive erosion to the pathway. The leader of the DPWLA team suggested that a small weir could be constructed from wooden railway sleepers and the sieve could be

attached to this to prevent air locks developing. The structure would not be watertight although water would accumulate behind it to a certain extent. It would serve to deepen the pool slightly and to anchor the intake sieve securely without disrupting the flow of the stream greatly. The construction of a weir would reduce the negative effects of excessive use of the pathway. The desirability of such a construction should be thoroughly discussed with other members of the GIWRAC before any recommendation is submitted.

The leader of the DPWLA team consulted me regarding the removal of the concrete base of the old upper magnetometer hut. I instructed him to leave it in place as suggested by Fraser (1993) as its removal would cause great disturbance to the area. Although the site is vegetated largely by alien plants at present it appears as though the indigenous vegetation is encroaching once again and should cover the concrete base in time.

Diesel fuel (100 000 litres) was pumped ashore from the *S.A. Agulhas* on 21 September after an earlier unsuccessful attempt. Although the new pipeline was tested with air pressure aboard ship before arriving at Gough, the pipe couplings came apart repeatedly during pumping. Fortunately the bursts occurred mostly during initial testing with compressed air although some fuel did leak into the sea the couplings parted during pumping. It was impossible to judge the exact amount that was spilled although it was probably less than 300 l. The inadequacies of the pipeline is serious and could result in a far greater environmental problem in the future. The combined forces of pressure from the pumped fuel and the bowing effect of strong surface currents on pipe couplings need to be taken into consideration before making up the pipeline. I suggest that the pipeline should be tested thoroughly in Cape Town long enough prior to departure to allow problems to be rectified. Also, if wind and current cause extensive bowing of the line during pumping operations should be postponed until better conditions prevail. Alternatively, as suggested by Mr Dalley, a heavy duty shore-based pipeline could be used as is the case on Tristan.

Aerials and masts

The present system of communication aerials are a hazard to birds and are unsightly. Discussions were held with the Voyage Coordinator (an electrical engineer) and the radio technicians present during the takeover about the feasibility of installing Yaggi type transmitter aerials for radio communications (Fraser, 1993). This would entail one large horizontal aerial complex which could be erected close to the Station buildings itself and therefore reduce the number of masts and stays in the area. A concrete support already exists near the emergency radio hut on which the new aerial could be erected. The Coordinator was positive about the idea and was prepared to take up the matter with the DEAT.

The necessity of the array of emergency radio aerials was discussed taking into consideration the newly installed satellite communication system. It may be viable to phase out the emergency radio system thereby further reducing the number of masts and aerials in the area. Stays on existing radio masts should be flagged to make them more visible to flying birds.

The anemometer situated in front of Gough House could be placed on a short mast on the roof of this building. This was recommended by Fraser (1993) but no action was taken. This move would not effect the accuracy of the anemometer.

The construction of a new helicopter pad was discussed. The old wooden structure has subsided and is rotting. It was suggested that the old pad should be removed and replaced by a much smaller galvanised metal mesh structure that should be raised off the ground on piles to

prevent vegetation growing through the mesh. A possible problem faced would be the rehabilitation of the area under the present pad. The underside of the wooden surface is lined by a tarry layer and care would have to be taken to remove this substance completely and to prevent alien plants from invading the disturbed ground.

Waste Management

Tins, bottles, plastics (including milk cartons) and metal waste had been crated and stored in "Wastetech" containers for removal from the island. The S.A. Agulhas removed waste accumulated through the year. Until this takeover tins and bottles has been crushed prior to crating, but bottles are now stored whole and separately so that they may be recycled in Cape Town. The attitude of the DEAT Coordinator was that all waste removed to the mainland should be recycled. This is a positive development and should be encouraged.

The sorting of waste at source was carried out efficiently on the whole, although the outgoing team seemed to be unaware that they should burn the leftovers of all poultry products. Egg shells were however crated with plastics for removal from the island. The incoming team were instructed to burn all poultry waste in order to prevent the possible introduction of avian diseases.

The open incinerator was used throughout the year to burn paper and wood. Although burning was strictly supervised to prevent fire spreading the practice has resulted in a substantial build-up of ash on the peat near the incinerator. If the present practice of burning paper and wood continues the ash should be collected and crated dry for removal from the island and in windy conditions only the enclosed incinerator should be used to prevent ash blowing into the vegetation. However, I strongly recommend that a compactor should be installed on the island next year and all paper and wood removed in a compacted form. This is quite feasible, as all waste is currently removed in a compacted form from the South African Antarctic Base. As suggested by Fraser (1993) the open incinerator could then be removed and the enclosed incinerator used only to burn poultry waste and alien plants.

Sewage continued to be discharged together with organic waste into Skivvygat. No leaks were found in the pipe lines although the supports have not yet been replaced in accordance with recommendations in previous environmental reports. It was suggested that a weekly inspection of the sewage lines be included on the official list of duties of the diesel mechanic resident on the island. This will be implemented by the incoming team.

An inspection of Skivvygat from the seaward side indicated that a reasonably effective natural sewage treatment system exists. Sewage entering the hole is already diluted by overflow from the water storage tanks which is connected to the same pipe system. In addition a constant flow of water enters the hole through seepage. A natural pool at the bottom of the hole acts as a settlement tank where solids settle out and decompose. The diluted grey water then overflows over rocks into the sea. It is unlikely that this grey water has any serious ecological effect on the intertidal and subtidal region close to Skivvygat.

Pollution

Oil

As mentioned previously a potentially hazardous situation existed during fuel pumping from the S.A. Agulhas. The polar diesel used on Gough does not seem to form a slick but rather

disperses in the water. Because of this it is unlikely to foul the feathers of seabirds but it is surely toxic to marine organisms. A major oil spill close to the shore at Gough Island would have disastrous effects and every effort should be taken to prevent this from occurring.

A discharge of oil from the stern of the *S.A. Agulhas* occurred at 14h00 on 13 September. A thin slick extending about 1km developed before it was noticed from deck and stopped. On questioning one of the ships officers it was explained that an incorrect valve had been opened in the engine room leading to accidental leakage. Accidents of this nature should be noted and acted upon by the master of the ship.

No incidents of oil being washed ashore or oil-fouled seabirds were reported during the year by the outgoing team.

Old engine oil had leaked from rusted containers stored in the flammables shack during the year. Even though dispersant was applied to this oil the vegetation in the vicinity of the drainage opening of this building had died in an area of about 2m x 1m. This is probably the result of years of leakage. A container should be placed at the drainage hole to collect any leaked oil or other chemicals which can then be removed from the island. Old containers should not be allowed to accumulate in this store but removed regularly each year.

The end cap of the galvanised metal fuel pipe on to which the ship's fuel pipe is attached was found to be dripping. This was repaired soon after it was noticed and dispersant placed on the area of the spill. A small leak of this nature may go unnoticed for weeks. It was therefore suggested that a weekly inspection of all fuel tanks and pipes be included on the official duty list of the diesel mechanic. This will be implemented by the new team.

A small quantity of engine oil (<1 l) was noticed outside the lower generator shack. This was pointed out to the incoming diesel mechanic and it was explained to him how to treat such accidental spills with dispersant.

Heat and exhaust fumes from the crane generator are voided down into the vegetation causing it to die off in an area of about 4m x 2m. The exhaust vent should be turned upwards to prevent this from occurring. This was noted by Fraser (1993) but was not on the list of maintenance activities this year.

Detergents and chemicals

Although toilet air fresheners were "ozone friendly" other aerosol cleaning products in use were not. Washing-up liquid, washing powder and fabric conditioner were not phosphate-free or biodegradable. Toilet and kitchen paper rolls were not chlorine free. When approached on this issue the Coordinator indicated that it would be relatively easy to implement environmentally friendly household products on the island. He undertook to arrange this with the DEAT personnel involved in the procurement of stores for Gough. Slow releasing toilet cistern disinfectant blocks were still in use during the last year. The incoming team leader agreed to discontinue their use. Canisters of insecticide spray were still present in the pantry although not used. These should be removed from the island. Used photographic chemicals were containerised and stored for removal from the island.

Sludge produced from reacting aluminium and caustic soda from the back-up hydrogen generator has until this year been discharged through a pipeline into Skivvygat. It was suggested that this waste be containerised and removed from the island. Although only small

quantities are produced from this generator during sporadic testing (about 25 l/year), larger quantities could be produced if the main generator broke down and the back-up had to be used each day. Aluminium pellets are presently stored near the upper generator shack in two wooden containers that are in the process of rotting. If these were to break open the pellets would be scattered over the soft ground and be difficult to remove. The containers should be strengthened and removed from the island next year.

Fires

Cooking fires had been lit during the year at various points on the island during camping excursions. Evidence of fires were found on Tafelkop and at the Glen. In addition a barbecue was held at Swemgat during the takeover while I was away on an overnight trip to Gonydale. According to the Management Plan fires are only allowed in the designated barbecue area and in the incinerators at the Station. The new team was instructed to adhere to this rule to minimise the risk of peat fires on the island. It has also been the custom to fire off expired flares at the Station. This was prevented during the takeover as recommended in the Management Plan. Flares can accidentally ignite vegetation and cause confusion to ships at sea if used randomly.

CONDITION OF THE ISLAND AND ITS BIOTA AWAY FROM THE STATION

A two day hike was undertaken to South Peak and Gonydale. The new path up Ruin Ridge was used to reach South Peak while we returned to the Station via the stream in which Upper Swemgat is situated. In addition shorter day walks to South Point via Richmond Hill, and to areas closer to the Station were undertaken. No litter was noticed on any of the walks although an old wooden food crate was found near the stream in Gonydale.

Erosion

Erosion of pathways is a problem on Gough due to the soft substrate and high rainfall. Erosion was more pronounced near the Station where pathways are more regularly used. As suggested by Fraser (1993) construction of catwalks on some of the badly eroded parts of pathways close to the Station would limit erosion to some extent but the desirability of increasing the number of structures on the island should be weighed up against the benefit that this would have.

The new pathway up Ruin Ridge to Tafelkop is becoming eroded. The old Golden Highway route was inspected by helicopter. Substantial revegetation has occurred in the three years that it has not been used and the pathway was not visible on large stretches of the route. This would indicate that the use of alternative paths every few years may be a solution to the problem of erosion on commonly used routes. The extent of rehabilitation of the Golden Highway route should be examined from the ground during the next inspection so that a decision on path usage can be made.

Stream banks are particularly prone to erosion by walkers. This was especially apparent on the route to Upper Swemgat. Walkers should attempt to stay on the rocks in the river bed as much as possible to prevent the steep banks being eroded and caving in.

Intertidal and Subtidal region in Transvaal Bay

A inspection of the subtidal area down to about 12 m in the vicinity of the Archway Rock and Seal Beach was undertaken with SCUBA. This area was found to be free from accumulated scrap material and generally in good ecological condition. No plastics were observed on the sea bed while some metal scrap was in an advanced state of corrosion. Species diversity and abundance of marine fauna and flora appeared to be similar to other areas around the island inspected in the past.

Scrap material at the Glen

The site of the old expedition base at the Glen was visited by helicopter on the 8 October. The area is littered with scrap material from the old base. Although the historical ambience of the area should be preserved in accordance with the Management Plan, plastic piping and scrap metal should be removed. In addition the wrecked hull of a fibreglass powerboat from the *M.F.V. Hekla* lies on the rocky beach. The feasibility of undertaking a clean-up at the Glen was discussed with the Coordinator and DPWLA leader. It was agreed that it would be possible for a team to clean up over a few days and remove scrap via helicopter during the next takeover. A decision on the course of action to be taken should be conveyed to the DEAT timeously so arrangements can be made before the 1995 relief voyage.

ALIEN BIOTA

Mammals

No evidence of the presence of rats *Rattus* sp. anywhere on the island was found by myself or team members through the last year. Recommendations for preventing the possible transport of rats to the island are appended to this report. The House Mouse *Mus musculus* was scarce around the Station but apparently become more populous in the area at certain times of the year. The interior of the Station itself was free of mice during the takeover. Members of the outgoing team had continued the ongoing trapping of mice in the area. No signs of rats or mice were found in cargo brought ashore from the *S.A. Agulhas*.

Invertebrates

No invertebrates were found in fresh produce brought ashore; a possible source of introduction. Samples of all the following 15 varieties of fruit and vegetables imported were inspected: potatoes, onions, tomatoes, pumpkins, bananas, gem squash, butternut, lemons, carrots, apples, oranges, cucumbers, baby marrows, paw paws and pineapples. The chef reported that he had not found any invertebrates in produce during preparation. No leafy vegetables were brought ashore and the leaves of the carrots had been removed. Mould was found on some of the fruit and vegetables as was the case in previous years.

Weevils and flour beetles were still present in food containers in the pantry. It was suggested that these pests could be controlled on the island by keeping all farinaceous food stuffs in the coldroom. However, treatment of these foods by radiation on the mainland prior to packing needs to be carried out to eliminate the problem.

Invertebrates collected in and around the Station throughout the year were brought back to South Africa for identification. The presence of any new aliens amongst these will be reported at a later date.

Plants

The following species of alien plants remain abundant in the vicinity of the Station: milkthistle *Sonchus oleraceus*, largeleafed dock *Rumex obtusifolius*, chickweed *Stellaria media*, potato *Solanum tuberosum* and the grasses *Agrostis stolonifera*, *Holcus lanatus* and *Poa annua*. One small patch of about 20 plants of *Plantago* sp. was found on the disturbed area near the new satellite building. These were removed and burnt. Only five potato plants were found and removed, all near the flammables shack. Dock and milkthistle are also common on the paths leading out from the Station. The site of the old Upper Magnetometer hut was inspected on three occasions for aliens. The three grasses found near the base, dock and milkthistle were all abundant. All (about 40) milkthistle plants present were removed and burnt. No sign of Molteno disease senecio *Senecio burchellii* or fleabane *Conyza* sp., alien species reported by Fraser (1993) to have become extinct were found at this site.

The stream from the water intake point to Seal Beach was inspected for alien plants, particularly *Senecio burchellii* and *Conyza* sp. None of these was found although dock and milkthistle were common. The incoming team leader was shown how to identify the common alien plants and agreed to arrange for weeding to take place around the Station. It was also stressed that weeds should be taken out before mowing the grass around the catwalks to prevent accelerated growth and colonisation.

FISHING ACTIVITIES

Limited linefishing took place from the *S.A. Agulhas* off Gough Island and Tristan da Cunha after permission was granted by the Administrator on the understanding that fish caught should be consumed on board and not transported back to Cape Town. Limited quantities of snoek *Thyrsites atun* and fivefinger *Acantholatris monodactylus* were caught for this purpose. The Management Plan (Section 5.4.2) recommends that fishing should not take place within the management area from vessels other than those of the concession holder. However, if catches are limited to that which can be consumed aboard this practice would have no noticeable effect on the fish stocks around the islands. The Tristan da Cunha Fishery Ordinance No. 1 of 1983, as amended in Legal Notice No. 1 of 1983 (part 5b) addresses the matter of obtaining authorization from the Administrator regarding fishing for consumption aboard ship.

Approximately 45 snoek were caught from the shore at Snoekgat during the takeover which were eaten at the Station. Only five snoek were caught during the year by the meteorological team. A few fivefingers and false jacobever *Sebastes capensis* were caught for the table through the year.

Fishing with handlines took place from the *S.A.S Protea* for about two hours at Gough during which time fivefinger and false jacobever were caught for the table. In this case permission was not sought. In future authority should be obtained from the Tristan Administrator by any vessel wishing to fish.

The two rock lobster vessels belonging to the concessionaires were not fishing at Gough during the takeover period. I was therefore unable to go aboard to inspect catches and fishing operations. It is important for representatives of the Tristan Government to maintain a high profile with regard to the inspection of catches aboard these fishing vessels. Every opportunity should be taken at Tristan da Cunha itself or at the outlying islands to board and inspect catches, including those already frozen for transport back to Cape Town.

Although the Tristan da Cunha Government has already established limits to the amount of finfish to be taken by the two rock lobster vessels, it is strongly recommended that vessels should be forbidden from removing finfish from the inshore waters of the islands to Cape Town when the new concession is negotiated in the near future. Until that time it is suggested that Tristan Investments be requested to report catches of finfish to the Tristan Government and that these catches are inspected at Tristan before departure to Cape Town. These measures are essential to reduce the noticeable decline in finfish catches in recent years, especially around Tristan Island. It should be noted that most of the desirable eating species have larvae and juveniles that move substantial distances in the pelagic before settling and depletion of stocks at the outlying islands and seamounts in the area is likely to negatively effect catches at Tristan Island itself. For this reason management of the linefishery should encompass all the islands and seamounts of the group rather than individual localities.

By November 1994 six vessels had been granted licences to fish for linefish outside of the shelf areas surrounding the Tristan Group and Gough Island from 50 to 200 miles offshore. These vessels will target pelagic tuna species with longlines, but should be prevented from fishing the offshore seamounts for deeper water species such as bluefish *Hyperoglyphe antarctica*. Careful control of the fishing activities of these vessels is essential and the verification of catch records submitted to the Tristan da Cunha Government is a high priority. This could be achieved by placing an observer aboard at least one of these vessels during a fishing trip. A danger exists that these vessels may poach linefish on the inshore areas around the islands, especially at Gough where they would have less chance of being detected. This could have disastrous effects on the inshore fish stocks which have already become depleted over the last few years.

No poaching vessels were reported fishing in Gough waters by the outgoing team.

MONITORING ACTIVITIES

The long-term demographic study on the Yellow-nosed Albatross colony at Transvaal Bay was continued while a census of Wandering Albatross *Diomedea exulans* chicks at Tafelkop and Gonydale was carried out. Sixty seven Wandering Albatross chicks were ringed at these two localities. Members of the incoming meteorological team are to continue monitoring both Yellow-nosed and Wandering Albatrosses in the coming year.

Fish specimens were collected with hook and line from the shore for ongoing biological and taxonomic work. Liver and muscle tissue was removed from three specimens each of fivefinger, false jacobever and *Mendosoma lineatum* for genetic comparison with specimens from Tristan da Cunha and other localities further afield. The results of this study will hopefully increase our understanding of dispersal of fishes in the oceans and evolutionary processes at oceanic islands. Twenty-five specimens of the klipfish *Bovichtus diacanthus*, which is endemic to Tristan da Cunha and Gough Island, were collected from rockpools at the Admiral for the fish collection at the J.L.B. Smith Institute of Ichthyology in Grahamstown.

SCUBA observations were made of fish diversity and abundance in the shallow subtidal region of Transvaal Bay which will add to the data already collected on the fishes of the islands.

Subantarctic Fur Seal *Arctocephalus tropicalis* pups were weighed in January 1994 and during the takeover period for the monitoring programme of the Mammal Research Institute at the University of Pretoria. Approved research activities such as these should be encouraged in future.

ENVIRONMENTAL AWARENESS OF VISITORS AND METEOROLOGICAL TEAM MEMBERS

The presence of a Tristan Conservation Officer is essential during the takeover period. During this time takeover personnel and the incoming team can be instructed on the natural history of the island and also the principles involved in effective management of the area. As in previous years members of the outgoing team assisted in guiding visitors to areas of interest near the Station. Groups should be kept small when visiting breeding colonies of birds and seals and disturbance should be kept to the minimum. Properly conducted walks have an educational value and should form an important aspect of the function of a wildlife reserve.

It was discovered that the incoming team had very little knowledge of the natural history of Gough and the management principles that should be applied on the island. I suggested to the DEAT Coordinator that a member of the GIWRAC (preferably the Environmental Inspector for that year) be invited to present a lecture and workshop to team members during training in South Africa. The idea was well received and the Coordinator indicated that the costs of this service could be covered by the DEAT.

SUMMARY OF RECOMMENDATIONS

Previous recommendations that still need to be addressed:

1. The automatic weather station anemometer should be relocated onto the roof of the meteorological station.
2. A Yaggi type aerial should replace the existing vertical aerials for radio communication and the redundant aerials removed to reduce bird strikes.
3. Incineration of wastepaper and wood should be phased out. The open incinerator should be removed and the enclosed incinerator should be retained for burning poultry remains and alien plants.
4. The exhaust of the crane generator should be directed upwards to prevent drying out of the peat and the subsequent fire hazard.
5. A compactor should be installed to crush and bale waste paper and plastic for storage and subsequent removal from the island. Wood should be strapped and crated for removal.
6. Phosphate-free, biodegradable washing powders and detergents, and chlorine-free toilet roll and paper towels should be used. Use of slow release disinfectants in toilet cisterns

should be discontinued. Insecticides and other biocides should not be used on the island and those present should be removed. All aerosols should be "ozone friendly".

7. Consideration should be given to importing only irradiated and sterile-packed fresh fruit and vegetables, and farinaceous products.
8. Poultry remains should be incinerated and not dumped into the sea.
9. Single-file catwalks, possibly comprising plastic wood substitute, could be laid along eroded paths to Seal Beach and the water supply (but see notes on erosion in this report).
10. The by-catch of octopus by Tristan Investments vessels should be monitored to assess the levels of removal.

New recommendations:

1. A lecture/workshop on the natural history and management principles of Gough Island Wildlife Reserve should be presented to the incoming meteorological team by a Tristan Conservation Officer during training prior to departure for the island.
2. The spotlight in the barbecue area should be replaced by a focusable light which should be used only when essential.
3. The possible construction of a temporary weir at the water intake point should be assessed by the GIWRAC.
4. The fuel pipeline used to pump fuel ashore from the S.A. Agulhas should be thoroughly checked above operating pressure prior to departure from Cape Town. Pumping operations should be aborted if wind and current conditions cause excessive bowing in the pipeline. Alternatively, the installation of a heavy duty shore-based pipeline should be investigated.
5. Black roller blinds should be placed in the food store/gymnasium building.
6. Redundant metal poles and supports should be removed during the 1995 takeover.
7. Stays on aerials and masts should be flagged to improve visibility to birds.
8. The construction of a new helicopter pad should be assessed by the GIWRAC.
9. Bottles and glass should be stored whole and removed to Cape Town in separate containers to facilitate recycling. It should be aimed to recycle all waste removed from Gough Island.
10. The supports of the sewage lines from Gough House and the Emergency Base should be checked and replaced where necessary.
11. Checking of fuel and sewage lines on a weekly basis should be included in the Diesel Mechanic's official list of duties.
12. All old and rusted oil cans should be removed from the flammables and generator shacks each takeover and a drip tank should be placed under the drain from the flammables shack.

13. Sludge produced by the back-up hydrogen generator should be containerised and removed from the island.
14. The extent of vegetation regeneration on the old Golden Highway pathway to Tafelkop should be assessed next year to enable a decision to be made regarding the periodic use of alternate pathways on the island to reduce erosion.
15. Walkers should remain in the stream bed as much as possible on the route to Upper Swemgat to reduce erosion.
16. Unsightly scrap at the site of the old base at the Glen should be removed without detracting from the historical ambience of the site.
17. Farinaceous products should be stored in the cold room to control weevils and flour beetles on the island.
18. Vessels visiting Gough waters should always obtain permission from the Administrator to catch finfish to be consumed aboard in accordance with the Tristan da Cunha Fishery Limits Ordinance.
19. The two rock lobster vessels of Tristan Investments should be required to report catches of finfish before leaving the islands after each fishing trip.
20. A trained observer should be placed on at least one of the ships licensed to undertake experimental fishing in Tristan da Cunha waters in order to verify catch records.
21. Appropriate long-term monitoring and research activities at Gough Island should be encouraged although these activities should be outlined in detail to the GIWRAC and the Tristan da Cunha Government for approval.
22. An annual environmental inspection should continue to be carried out by a Tristan da Cunha Conservation Officer who should remain on the island for the duration of the takeover.

ACKNOWLEDGEMENTS

I would like to thank the Administrator, Mr Brendan Dalley, and the Island Council of Tristan da Cunha for making this Inspection possible. The DEAT Voyage Coordinator, Mr Jan Hattingh, is thanked for his enthusiastic support of our work on Gough Island. Mr John McLinden and the Gough 39 team were extremely hospitable, and Pieter Greyling and Colin Spencer are particularly thanked for their assistance in specific tasks undertaken during the Inspection. The logistical assistance received from the South African Department of Environmental Affairs and Tourism and the South African Navy is much appreciated. Mr John Cooper and Dr Peter Ryan are thanked for their assistance with preparations for the Inspection and for commenting on this manuscript.

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