Tristan and Nightingale Islands wildlife monitoring manual

Erica Sommer, Richard Cuthbert and Geoff Hilton

RSPB

OTEP

Tristan and Nightingale Islands Wildlife Monitoring Manual

Research Report

Erica Sommer, Richard Cuthbert, Geoff Hilton

Published by the RSPB Conservation Science Department

RSPB Research Report No 33

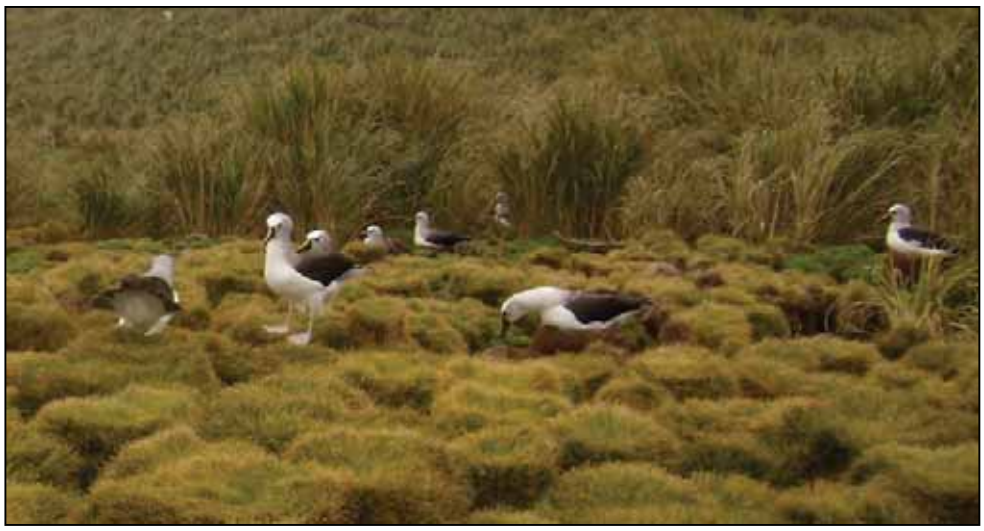
Summary

The islands of the Tristan da Cunha group are important breeding grounds for a total of 21 seabird and four landbird species. Although the islands are remote, many species are at risk from human impacts at sea and on land. Tristan was historically home to large populations of at least 19 seabird species, but introduced rats, habitat disturbance, and human exploitation have led to several island extinctions and greatly reduced numbers of the remaining species. Nightingale Island has remained rodent free and still hosts its full ensemble of species despite regular harvesting of several species. On both islands, long-term monitoring will ensure that changes in population trends are detected.

Gough Island and Inaccessible Island each have their own monitoring manuals outlining long-term monitoring methods. This monitoring manual covers the main island of Tristan and Nightingale Island. It was specifically written in order to provide guidance to the Conservation Officer of Tristan da Cunha. It is hoped that with the post of Conservation Officer now being a full-time position, constant and consistent long-term monitoring of Tristan da Cunha's key bird populations will be possible. Since the Conservation Officer has responsibilities in addition to wildlife monitoring, monitoring is limited to the species of main conservation concern. Detailed methodology is explained for monitoring Atlantic yellow-nosed albatross, sooty albatross, northern rockhopper penguin, burrowing petrels, Tristan thrush, and sub-Antarctic fur seal.

Acknowledgements

Production of this manual was funded by the Royal Society for the Protection of Birds and the UK Overseas Territories Environment Programme (OTEP). Conservation Officer Trevor Glass, his predecessor Simon Glass, and Head of Agriculture and Natural Resources James Glass helped organise fieldtrips during several visits to the islands. They all contributed to discussions about proposed monitoring programmes and this resulting manual reflects their input regarding the feasibility of carrying it out. Permission to carry out fieldwork on the islands was given by the Tristan administrator at the time, Mike Hentley. Ovenstone agencies and the SA Agulhas provided transport to Tristan. Peter Ryan kindly gave us permission to use his photos.



Picture 1.Atlantic yellow-nosed albatrosses on Nightingale Island © Erica Sommer.

Contents

1. Introduction

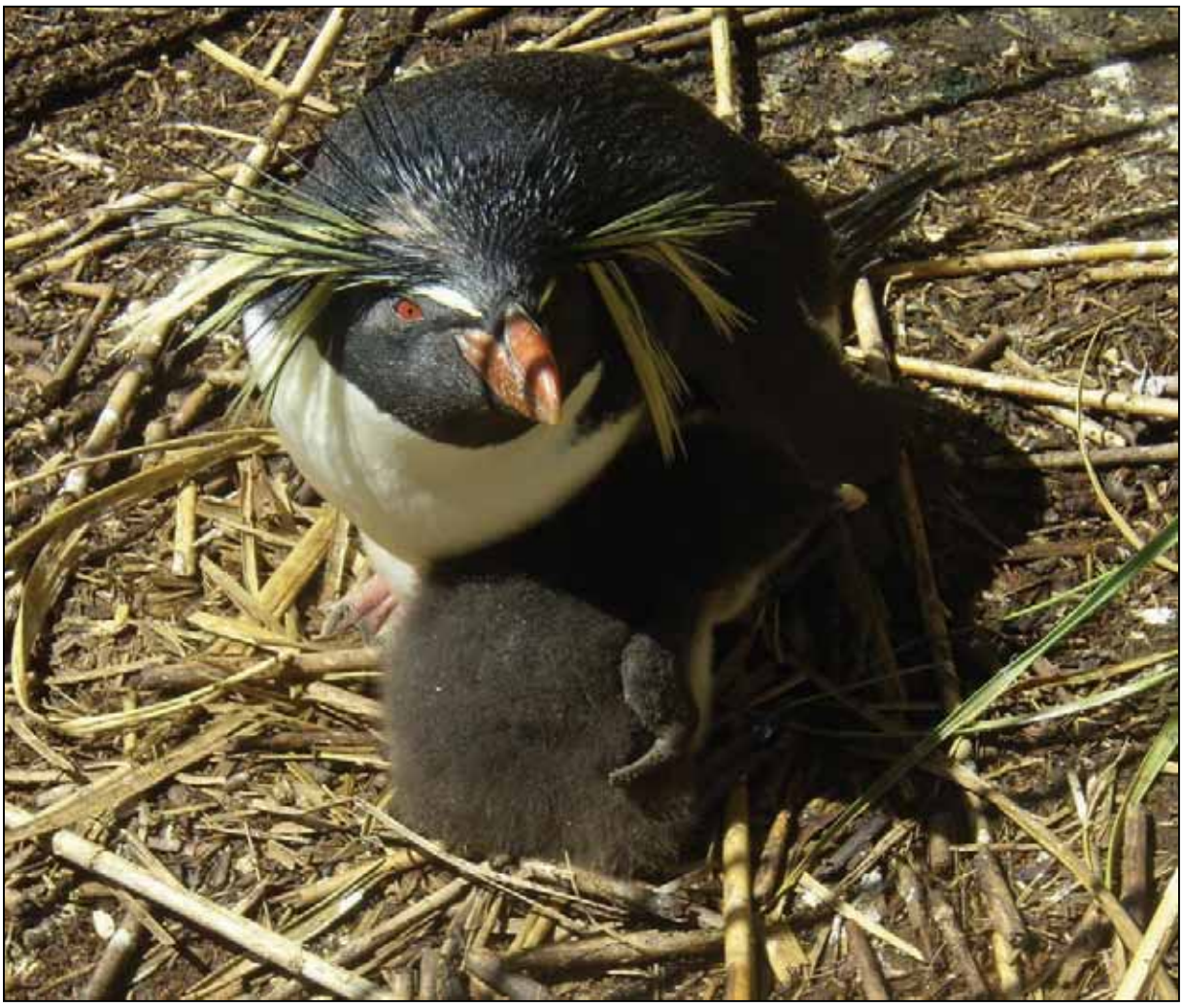
The islands of Tristan da Cunha and its near neighbour Nightingale cover a small area, but support a wealth of biodiversity, much of it unique to these islands. The bird life is of global significance. In particular, the rich surrounding seas support a diverse array of seabirds, including albatrosses, petrels and penguins, while the remoteness of the land has allowed unique, endemic landbird species to evolve in isolation. As everywhere in the world, numerous factors threaten these bird populations. Likewise, there are new opportunities to improve their status, perhaps helping them to recover from the impacts of introduced mammalian predators. If these changes are to be managed, it is crucial that populations are monitored effectively. Monitoring is fundamental to successful nature conservation: it allows us to set conservation priorities, tells us whether our management is working, and alerts us to new problems.

With this in mind, the Tristan Agriculture and Natural Resources Department has worked with the Royal Society for the Protection of Birds, and the University of Cape Town over several years, to develop monitoring systems for the birds of the Territory of Tristan da Cunha. Monitoring manuals are already in existence for Gough Island and Inaccessible Islands (which together form a natural World Heritage Site). This new manual for Tristan da Cunha and Nightingale completes the set.

This monitoring manual was specifically written in order to provide guidance to the newly appointed Conservation Officer of Tristan da Cunha. It is hoped that with the post of Conservation Officer now being a full-time position, constant and consistent long-term monitoring of Tristan da Cunha's key bird populations will be possible. Since the Conservation Officer has responsibilities in addition to wildlife monitoring, monitoring is limited to the species of main conservation concern.

The manual outlines how to carry out the fieldwork and what to do with the data collected. Any questions regarding this manual, or any problems encountered while carrying out the

monitoring should be addressed to Erica Sommer (essommer@yahoo.com) or Richard Cuthbert (richard.cuthbert@rspb.org.uk).



Picture 2. Northern rockhopper penguin and chick on Nightingale Island © Erica Sommer

2. **Atlantic yellow-nosed albatross** *Thalassarche chlororhynchos*

Yellow-nosed albatross return to their breeding colonies in August. They spend several weeks to a month preparing their nest (either building a new one or refurbishing an existing nest). In general albatrosses mate for life, although yellow-nosed albatrosses are not quite as monogamous as some other species. Before they start the breeding season they re-establish their pair bonds by spending time together at their nest site. After the egg is laid, both birds take turns incubating it. The incubation period is approximately 70 days, and shift lengths vary from about 3-10 days. If regular monitoring visits are made to the colony during incubation (i.e. at least once every two to three weeks) then it is likely that both parent birds at each nest can be identified from their rings.

Yellow-nosed albatross are monitored at four sites: Hottentot study area, Tripot and Sandypoint on Tristan, and the Ponds on Nightingale. The Hottentot study area will be the most intensively studied due to its relatively easy accessibility from the Tristan settlement. Tripot and Nightingale require boat access and will therefore be visited less frequently. At all sites, the monitoring will allow us estimate population trends, breeding success, adult survival, and juvenile recruitment.

2.1 HOTTENOT STUDY AREA

This area is located between Hottentot Gulch and Caves Gulch. Everything between these gulches is in the study area and nests can be found right up to the bogfern/pasture boundary.

After egg-laying has begun in late September, make your first visit to the colony. Thoroughly and systematically search the whole area for nests and ringed birds. In order to cover the area thoroughly, it is best to divide the colony in half and spend a whole day searching each section. All birds seen should be checked for rings, and rings should be read when possible. All nests with an egg should be given a unique number (the next available in sequence), marked with a plastic pole, and a GPS location should be recorded. A marker pole is needed in addition to a GPS point, as the precision of the GPS is not fine enough to ensure you refind

the exact nest on your next check (e.g. if two nests are close together). If you save a waypoint for each nest on your GPS then the nests will be easier to find on subsequent visits. Record all the necessary information for each nest following the guidelines given below. If you find an incubating bird without a ring, remove it from the nest and put a metal ring on the **right** leg, and a plastic alpha-numeric ring on its left leg. If an incubating bird has only a metal ring, remove it from the nest and put a plastic ring on the leg without a ring. Once a bird is wearing an alpha-numeric ring it is not necessary to handle the bird on subsequent checks, simply read and record the alpha-numeric combination. If you find a bird with a broken plastic ring apply a new one. Any time you apply a plastic ring to a bird make sure that you record the metal ring number as well as the new plastic ring number.

It is important that every active nest (one with an egg) has a marker pole with a unique number. If a previously marked nest is inactive (after several checks), remove the pole and use it at another nest making sure to record in your notebook that the pole was moved.

Every time you visit the colony you should check all birds for rings, including those not at nests. Try to put colour rings on any adult you find with a metal ring; this way they will be less disturbed in the future. It is very important that you get a clear view of the plastic ring in order to ensure that you read the number correctly. Some letters and numbers can be easily misread. If you are not positive that you have read the ring correctly, do not record it in your notebook.

Continue visiting the colony at least once every two weeks to three weeks throughout incubation and hatching. Although you can cover the whole colony in one day after the initial check, continue to check for nests that you might have missed on earlier visits as it's very easy to miss nests in this colony. Once all the eggs have hatched and both birds from each nest have been identified, you can visit the colony less frequently. Make sure you check all nests at least once in February. Ring the chicks when they are nearly ready to fledge (mid-March). Chicks should be ringed on their **left** leg; only put metal rings on them (alpha-numeric rings are expensive and only 30-40% of fledglings are likely to return).

If you find a chick with a broken wing, don't ring it as it will not fledge!

During chick rearing there are more non-breeding birds attending the colony and it is important to read their rings. This is the time of year when you are most likely to find birds ringed as chicks that are first returning to the colony.

The reason for ringing adults and chicks on different legs is that chicks are known-age birds (i.e. we know the exact year in which they hatched), whereas birds ringed as adults are of unknown age (because we have no idea how old they were when we ringed them). By ringing them on different legs you can tell from a distance if the bird is a known-age or unknown-age bird.

Do a final check of the study site just after you think the chicks have fledged. Record any chicks that are found dead, and don't forget to enter this on the Excel spreadsheet.

How to record Hottentot data

Set up your notebook as follows:

Nest	Contents	Ring#	Retrap/New	Location	Waypoint	Comments
34	Egg	876543/ A50	New	37.45678 12.34566	34	Had to re-catch and release bird
Loafing	--	823456/ A23	Retrap	--	--	New plastic ring
23	Empty	A 15	Retrap	37.44455 12.33344	23	
16	Empty	--				Pole removed
16	Egg	A22	Retrap	37.44444 12.33333	19	New nest

In the above examples, nest 34 is a new nest and the bird didn't have rings; the second record was a bird by itself not at a nest, and it was given a plastic ring; nest 23 is a previously

marked nest and the bird had a plastic ring; nest 16 was inactive so the pole was used at the next new nest found.

Nest – if it's a new nest try to use the next number in sequence; if the bird is not at a nest, record it as "loafing".

Contents - Egg, Pipped Egg, Chick, Dead Chick, Empty; if the bird is not at a nest, just put a "--" in this column.

Ring # - if the bird has a plastic ring, record this number (and letter) only; if you're putting a new ring(s) on the bird, record both ring numbers (metal and plastic).

Retrap/New - if you're reading an existing ring it's "Retrap", if you're putting a new metal ring on it's "New"; if the bird already has a metal ring and you're adding a plastic ring only, the bird is a "Retrap".

Location - record the latitude and longitude from the GPS; loafing birds do not need a location.

Waypoint - record the name of the waypoint; each season, a nest only needs a waypoint saved once

Comments- here's where you can record any other information you might have

Things to note:

- If two birds are present at a nest, record which one was incubating and which one was sitting alongside,
- If there's a failed nest, any additional comments such as if the eggshell is scattered around a larger area, if there is still yolk in the egg, if there is chick down, etc,
- If a new plastic alpha-numeric ring was put on,
- If a pole has been removed,

- If a nest is new (not previously marked,)
- If a bird is very nervous or "twitchy" (e.g. if it ran away when released, and needed to be re-caught and released),
- If anything went wrong when checking the nest (e.g. if the egg broke when the bird got back on nest),

2.2 TRIPOT AND SANDYPOINT

This area should be visited two times during the breeding season. Once during incubation, and once during the big chick stage. Soon after egg-laying has stopped (early October) count all active nests (nests containing eggs) and record this number in your field notebook. Also count birds on nests without eggs, but make sure to record this number separately. Although ideally this count should be done after egg-laying has finished, if you are in the area in late September for rockhopper penguin counts, you can do the count then. Count failed nests (those with broken eggs) separately; if you are unsure whether a broken egg is from the current or previous season, do not include it in the count. Check all birds for rings, and record their numbers and breeding status (egg or no egg), and ring any new incubating birds on the **right** leg.

When the chicks are big and are losing their down (mid-March), make a second visit to count chicks. Make sure dead chicks are counted too, but record them separately. If you have time, ring fledglings on the **left** leg with a metal band.

2.3 NIGHTINGALE PONDS

Two trips to Nightingale should be made each breeding season. The first visit should be early in incubation, but after all eggs have been laid. When approaching from the main road, ponds one, two, and three are encountered in sequence. Pond four is the small pond between ponds two and three. At each pond count all active nests and record this number in your field notebook. The boundary of each pond is the tall Spartina tussock; since there are birds nesting in this area it can be a bit tricky to define, but the important thing is to be consistent

with your boundary from year to year. Count and record broken egg nests separately. Check all birds for rings and record the ring numbers and the breeding status of the bird (egg or no egg) but do not ring any new birds at this stage. Also note any nests with failed eggs from this season.

After all the ponds have been counted, return to Pond 2 (either on the same day, or the following day) and ring approximately 100 un-ringed incubating adults. Adults should be ringed with a metal ring on their **right** leg.

The second trip should be made before chicks start fledging (aim for mid to late-February). On this visit, count all the chicks in each pond. Also count all dead chicks but record these separately. After all four ponds have been counted aim to ring about 200 chicks in Pond 2. Chicks should be ringed with a metal ring on their **left** leg.

Picture 3. Atlantic yellow-nosed albatross chicks © Erica Sommer.

2.4 HOW TO HANDLE THE BIRDS

Yellow-nosed albatrosses can get very nervous when approached by people. Always take note of the birds' behaviour as you approach the nest. If it starts to back off the nest, take a few steps back and wait for the bird to resettle on the nest (they usually do). If a bird only has a metal ring (on Nightingale), sometimes you can read the ring number without grabbing the bird. If this doesn't work (because the bird is going to bite you or if it's getting very agitated), carefully grab the bird's beak and read the ring number. Usually you can read the ring while it is still on the nest. Before you let go of the beak make sure it's not struggling too much (you don't want it to fall off the nest when you release it nor do you want it to crush down on the egg!). Very rarely you might need to take the bird off the nest to read the ring.

If the bird doesn't have a ring (or if a bird in the Hottentot colony only has a metal ring) then have one person grab the bird by the beak with one hand and with the other pick it up from the nest. Make sure the wings are properly folded in, and that the egg doesn't get kicked out of the nest. The second person should cover the egg or small chick with a hat (otherwise eggs are vulnerable to skuas or moorhens). Step away from the nest so that if you accidentally drop the ringing pliers or anything else, the egg or chick isn't harmed. Adults should be metal ringed on their **right** leg, and the ring should be applied so that when the bird is standing the numbers are the right way up (this makes them easier to read in the future). Make sure that the bird's leg is always held while applying the ring, and do not hold it out to the side of the bird (it should only be held in the bird's normal movement range; straight back in line with the tail, or straight down). The tarsus joint is like your knee or elbow and only hinges in one direction, and can be easily damaged if twisted to the side.

Use specially made pliers or band stretchers (for agricultural use) to apply a plastic ring. Put plastic rings on the opposite leg to the metal ring, never have two rings on the same leg. Make sure you record the numbers of any broken or lost rings, otherwise it is easy to forget and assume these were put on a bird.

When you are finished, the ringer should remove the hat from the egg and move 4-5 metres away from the nest. Release the bird close (1-2 m) to the nest, but not on it. Make sure the bird is facing the nest and can see the egg, and that it isn't struggling too much when it's released. If the bird immediately turns away from the nest and starts walking away, you must interfere so that it doesn't fly off. Usually you can 'shepherd' the bird to turn back to the nest, but occasionally this doesn't work and you must catch and release it again. Often you can release it in a spot where the only way it can walk away from the nest is by passing you or the other person (this is often the case in the gullies or in the dense bogfern), which it will not want to do. Don't leave the area until the bird is back on the nest.

Some things to remember:

- Use rings in sequential order.
- If a ring is lost or broken record this so you know it was not put on a bird.

Some important Don'ts:

- Don't pick up a bird by its wing
- Don't hold a bird by its neck without supporting the rest of its body
- Don't ring a bird when it's struggling; wait for it to stop and then continue

2.5 WHAT YOU NEED

Hottentot Study Area

Ringing pliers

Pliers for plastic rings or agricultural spreaders

Rings - metal and plastic alpha-numeric

Marker poles

Binoculars (to read alpha numeric rings from a distance)

Permanent marker pen to mark poles

GPS

Notebook and pencils

Map of previously marked nests

Tripot and Sandypoint

Notebook and pencils

Rings and ringing pliers

Nightingale

Notebook and pencils

Rings and Ringing pliers

2.6 STORING THE DATA

Each of the monitoring areas has its own Excel file. Try to enter the data as soon as possible after its collection so it's still fresh in your memory. The Hottentot file has a new worksheet for each year. Look at previous years for guidance in entering data. The Nightingale file has three worksheets; one for counts, one for recapture data (the ring numbers that were read), and one for new rings. There is another file for Sandypoint, and Tripot. It is very important to record all the new rings that were used as this is vital for analysing the recapture data. It is also necessary to submit a ringing form to the SAFRING office in Cape Town. This form should include all the new metal rings that are put on each season. It is easier to enter each session of ringing immediately afterwards rather than wait to the end of the season to enter them all. This form should be sent to SAFRING (safring@adu.uct.ac.za) and the RSPB (richard.cuthbert@rspb.org.uk) at the end of the breeding season.

3. **Sooty albatross** *Phoebetria fusca*

Sooty albatrosses build their mud nests on ledges on steep, vegetated slopes. On Tristan this usually means the sides of gulches and gullies, or on the edge of the base. Usually they nest in small colonies, with several nests found in an area, but this isn't always the case. Their dark colour makes them hard to spot sometimes, but their scream-like call is hard to miss.

3.1 MONITORING

During the rockhopper penguin counts scan the cliffs above each of the eight colonies and count the number of sooty albatrosses on nests and the total number of birds present. In the first year of doing this find a point with a good view, take a GPS waypoint, and take photos of the area to be counted. Make colour prints of these photos and use a pen or marker to indicate the area counted; if possible, get the photos laminated so they are waterproof and suitable for use in the field. Use these photos the following year to ensure that you are counting exactly the same area.

Since the Hottentot yellow-nosed albatross study area is visited regularly, at least once during incubation and once during chick rearing walk the entire length of both Hottentot Gulch and Caves Gulch to look for sooty albatross nests. For each gulch record the number of incubating adults, loafing adults, and chicks found.

3.2 WHAT YOU NEED

Binoculars

Notebook and pencils

GPS

Laminated colour photos of count plots

3.3 STORING THE DATA

Enter counts from the penguin count areas on one worksheet in the 'sooty albatross' workbook. Enter the counts from Hottentot Gulch and Caves Gulch on the other worksheet in the same workbook.

Picture 4. Sooty albatross on Nightingale Island © Peter Ryan.

4. Northern rockhopper penguin *Eudyptes moseleyi*

There are two species of rockhopper penguins found on islands across the southern oceans. Northern rockhopper penguins breed on the Tristan da Cunha group, Gough Island, and Amsterdam and Saint Paul Islands in the Indian Ocean. Worldwide, rockhopper penguin populations have decreased greatly. On the main island of Tristan, both eggs and adults were harvested in the past. This is no longer legal and the population has had a chance to recover. Eggs are still legally collected from Nightingale.

Picture 5. Northern rockhopper penguin colony on Nightingale Island ©Erica Sommer.

4.1 TRISTAN

There are eight rookeries on Tristan: West Jew's Point, Big Gulch, Phoenix Beach, Tripot Beach, Goat Road Gulch, Stony Beach, Stony Hill, and East End of Sandy Point. In late September, after all the eggs have been laid and before chicks hatch, visit each rookery and count all incubating birds. Walk through the rookeries slowly and carefully to ensure

minimal disturbance. If there are two birds present at a nest only one bird should be counted (i.e. you are really counting active nests, not birds). Try to count all eight rookeries, but if conditions do not allow you to reach Tripot and Goat Road Gulch, then the minimum six will suffice. The closer the count dates are from year to year, the more comparable the data. If your incubation count is late, and some chicks are present, make sure you count incubating adults and chicks separately.

In December, before the chicks fledge, return to Sandy Point and Stony Hill and count all the chicks in order to estimate breeding success. If possible, count chicks at any other rookeries.

4.2 NIGHTINGALE

The rockhopper penguins on Nightingale are difficult to monitor because they nest under the tall *Spartina* tussock. There are three main rookeries reachable from the road and there is a fourth one not too far from the one furthest up the road. Each of these should be mapped using a GPS. During incubation (September to October) walk along the boundary of the rookeries and mark a waypoint every 5m or so. If there is a bend try to mark enough points so that when they're plotted on a map it will show up. Make sure that while you are mapping you have good satellite reception (wait for the accuracy to be 5m or less if possible; sometimes you may have to hold the GPS above your head). In your notebook, record which waypoints belong to each colony.

It is not possible to actually count the number of incubating pairs within the biggest colony on Nightingale, as there are around 15-18,000 pairs in here. In this large colony set up 5 x 5 metre square quadrats, using 20 metres of rope with knots every 5m so that you can stake out the corners with plastic poles. Carefully set up the quadrat, moving slowly and carefully to keep disturbance to a minimum. Count the number of active nests (with a penguin incubating an egg) and number of empty nests within the 5 x 5 metre area. For nests close to the edge of the quadrat line only include them if more than half of the nest is within the quadrat. Repeat this at 20 different sites across the colony and take a GPS fix at each quadrat.

It is important that these 20 quadrats are randomly scattered over the colony and are not selected in areas with particularly high (or low) numbers of birds. The other two areas on Nightingale are small enough (around 1000 pairs) for all the nests to be counted. The area estimate and the density estimates will allow the population size to be estimated, and will provide information on how the penguin population is faring at Nightingale.

4.3 ALEX ISLAND

When possible access Alex (Middle) Island during the incubation period to do a count of penguins here. Repeat the same methods as for Nightingale: GPS the boundaries of the colony (or sub-colonies), and then count the number of nests in 20 random 5 x 5 m quadrats to record the density of nests within the sub-colonies. The area and density estimates will provide a population estimate for Alex Island.

4.4 WHAT YOU NEED

Tally whackers (counting clickers)

GPS

Notebook and pencils

20 m rope for 5 x 5 metre quadrat

4 plastic/metal poles for staking out corners of quadrat

4.5 STORING THE DATA

Enter the count data from the Tristan rookeries into the 'penguin counts' spreadsheet. Ensure that the date of the count is entered since this is important for analysing the data.

Download the GPS waypoints for the Nightingale and Alex Island rookeries. Make sure to add a column to record which colony each waypoint refers to and save as a new file each year. Give the file a title that includes the date (eg Nightingale_Sep_08).

Enter the Nightingale counts in another spreadsheet.

5. Burrowing Petrels

Thirteen species of burrowing petrels are known to have bred on Tristan in the past. Only a few of these species are still likely to breed here, and their present populations are just a remnant of those found historically. We don't know which species are definitely still breeding on Tristan, or what sort of numbers are present (Table 1).

There are several known caves in which broad-billed prions breed; one up Hottentot Gulch, one in Devil's Hole, and one below Hillpiece. Additionally, there are burrows on the ridge up to Devils' Hole and on Tommy's Hill probably belonging to great-winged petrels and Atlantic petrels. These locations are easy to access and should be monitored.

Although these known areas are easily accessible, they only account for a very small proportion of the total area of Tristan. The Southeast quadrant of the island (Stony Beach to Sandy Point) is the least disturbed but historically 'the ridges', near Big Gulch, was visited for harvesting burrowing petrels. Scattered burrows have been found on the slopes leading up to the base from Sandy Point, but it is unknown which species they belong to since they have not been visited during the breeding season (they likely belong to either Atlantic or great-winged petrels, both winter breeders).

Picture 6. Broad-billed prions ©Richard Cuthbert.

Table 1: Burrowing petrel species on Tristan.

Common name	Tristan name	Scientific name	Still breeding on Tristan?
Great-winged petrel	black haglet	*Pterodroma macroptera*	Yes?
Atlantic petrel	white-breasted black haglet	*Pterodroma incerta*	Yes?
Grey petrel	pediunker	*Procellaria cinerea*	Yes?
Kerguelen petrel	blue nighthawk	*Lugensa brevirostris*	No?
Broad-billed prion	nightbird	*Pachyptila vittata*	Yes
Soft-plumaged petrel	littlest white-breasted or whistler	*Pterodroma mollis*	Yes?
Great shearwater	Petrel	*Puffinus gravis*	No?
Little shearwater	whistler or nighthawk	*Puffinus assimilis*	No?
Sooty shearwater	blue petrel	*Puffinus griseus*	Yes?
Common diving-petrel	flying pinnamin	*Pelecanoides urinatrix*	No?
White-faced storm-petrel	skipjack	*Pelagodroma marina*	No?
White-bellied storm-petrel	skipjack	*Fregetta grallaria*	No?
Grey-backed storm-petrel	skipjack	*Garrodia nereis*	No?

5.1 PRION CAVES

The accessible prion caves (one in Hottentot Gulch, and one at Devil's Hole) should be visited in late August to estimate the number of incubating birds. If it is possible to count from one vantage point than do so, otherwise make sure to move through the cave slowly, in a crouched position in order to minimise disturbance to the birds. Visit the caves again in October. If there are any chicks at this stage, they should be counted as well as any birds that are still incubating eggs. If during the October visit there are still nests containing eggs or chicks, then another visit should be made before they reach fledging age (November-December). At this final visit, again count the number of eggs and chicks. Look carefully at any dead birds or egg shells and examine them for signs of rat or mouse predation, such as gnawing and droppings, and record any observations of this.

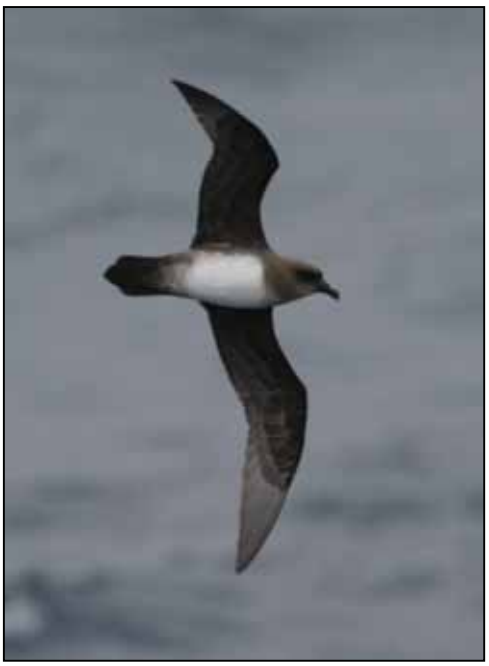
5.2 TOMMY'S HILL AND DEVIL'S HOLE RIDGE

Visits should be made to these burrows in late June-early July. Reach down each burrow and try to establish whether it has a bird in it. Use a short stick (50cm) to feel beyond your arm if the end of the burrow is out of reach. If you can reach a bird, first feel to see if it has an egg. If it does, be very careful not to damage the egg when you pull the bird out. The easiest way to remove the bird (and the safest way for the bird) is to grab the bird's beak (make sure you have both the top and bottom mandibles of its bill) and gently and slowly pull the bird out. This allows the bird to walk along the burrow and there is no danger of hurting its legs or wings, which could occur if it is dragged out too quickly or forcefully. Once you pull the bird out, identify what species it is and then return the bird to its burrow (if you put it in the burrow head first it will find its way back to the nest).

All burrows that are found should be marked with either a piece of flagging tape on a *Phylica* tree (if one is within 1m of the nest), or use a piece of wire stuck into the ground near the entrance. Make sure that the empty burrows and burrows with unknown contents are marked. Give each burrow a unique number.

Check all the burrows again in September and November to check for hatched chicks and near fledging age chicks. Since it is possible for late eggs to be laid, and for eggs to go undetected, make sure you recheck the burrows that were empty or where the end was not reached on the first check.

In your notebook, record the nest number and contents for every burrow. Make notes of any eggshell (and try to determine if it's new or old), feathers (record colour), bones, and rat droppings. Also, record if there are cobwebs in the entrance, or if there's fresh digging on the burrow floor. If you are unsure of a bird's identity, take a photo showing its head and breast. Sometimes the birds may respond to hearing a recording of their call played down the burrow entrance. If possible, play the Atlantic petrel call and the great-winged petrel call down each burrow and record in your notebook if there was any response to either. Do this for all burrows.

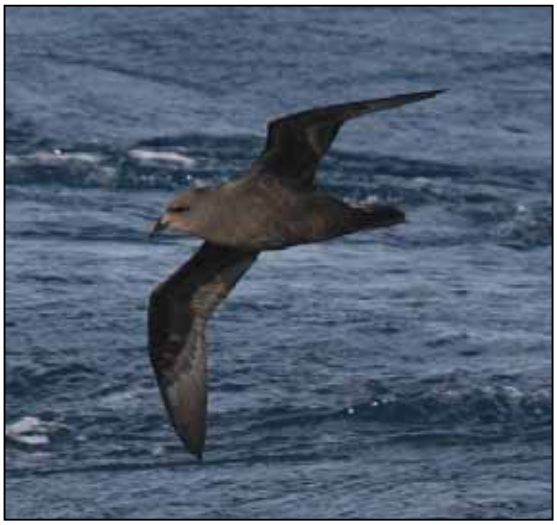


Picture 7. Atlantic petrel © Peter Ryan.

5.3 HOTTENTOT GULCH

There are a few burrows near the road up to Hottentot Gulch, but there are probably more scattered around closer to the edge of the gulch. When you make visits to the yellow-nosed albatross study area in March and April, try to check the burrow contents in these burrows. Remember to mark each burrow with some sort of tag or pole, and number them. Follow the instructions for Tommy's Hill and Devil's Hole for the rest of the monitoring.

When you have time, search accessible areas above the settlement plain for burrows. Make sure you record all searches (date and location), even those where no burrows were found. Try to get a GPS location for all areas with burrows. Record the approximate number of burrows in the area, and measure the height and width of the burrow entrances (if they're all approximately the same size you can just measure 5).



Picture 8.Great-winged petrel ©Peter Ryan.

5.4 PETREL SURVEYS

The best time to conduct surveys to locate breeding areas and numbers is when night activity on the ground is at its peak. Since the surveys are for several different species the period of peak activity is spread, but in early to mid-May there should be decent numbers of all three winter breeders (Table 2). A key area to visit is 'the ridges' (near Big Gulch) and you should camp as close to here as possible for 2-3 nights. If there's another area on the base where there used to be large numbers of petrels, it would be good to make a 2-3 night trip there too. At both sites watch and listen for petrels until there is not enough light to see birds flying. Identify the species you see and/or hear, and try to estimate the number of each species. Note any places you see the birds landing. Record this in a notebook and make sure you also record the time you start and stop your survey.

During the day you should try to cover as much ground as possible searching for burrows. If you see birds landing in the evening make sure you visit these areas. For all burrows found record a GPS location, measure the entrance, and try to determine the contents with your arm. If a bird is detected, remove it from the burrow (as described above) in order to confirm its identity.

Move your tents to a new area with a different view for each night that you camp. If you find an area with a large number of burrows try to camp nearby in order to identify the species using the burrows.

Preparation for the trip

Everyone going on the trip must spend some learning how to identify the burrowing petrels both by sight and by call. The birds to focus on are Atlantic petrel, great-winged petrel, grey petrel, and soft-plumaged petrel. It would also be useful to spend an hour around Bugsby Hole to practice identifying great-winged petrels and to look out for any Atlantic petrels.

5.5 WHAT YOU NEED

Notebook and pencil

Identification guide

Digital camera

GPS

Torch

Ruler or tape measure

Tape player and recording of Atlantic petrel and great-winged petrel

Flagging tape- for monitoring areas only

Short lengths of wire (30-50cm)- for monitoring areas only

Metal or plastic tags (or duct tape if tags aren't available)- for monitoring areas only

Permanent marker- for monitoring areas only

5.6 STORING THE DATA

Enter the data for Tommy's Hill, Devil's Hole, and Hottentot Gulch on the 'Great-winged and Atlantic petrel' workbook (each site has its own worksheet).

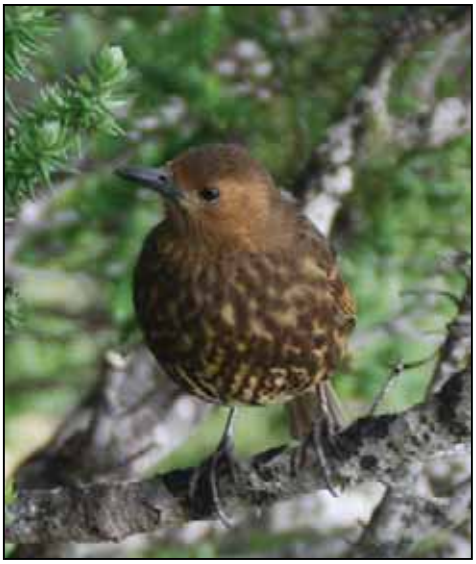
Enter the prion cave data into the 'Broad-billed prion' workbook.

Table 2: Timing of breeding for the main burrowing petrels on Tristan (from Richardson, 1984)

	Arrival on island	**Egg laying**	**Chick hatching**	**Chick Fledging**
Broad-billed prion	breeding sites visited throughout the year	majority in mid-late August (from August-October)	majority in beginning of October	majority in December
Great-winged petrel	mid-March, peak activity in April and May; pre-laying exodus end May-early June	mid-June	beginning of August	mid-November
Atlantic petrel	mid-March	beginning of July	beginning of September	late December
Grey petrel	late February	March-April	June-July	September-October

6.Tristan Thrush *Nesocichla eremita*

Although the Tristan thrush (starchy) is still common on Nightingale and Inaccessible Islands, on Tristan the population is thinly scattered, mostly on the base. There is not enough time for the Conservation Officer to carry out detailed monitoring of the Tristan thrushes, but it is still useful to keep a record of when and where they are seen.



Picture 9. Tristan thrush ©Erica Sommer.

6.1 MONITORING

Keep a record of all Tristan thrushes seen when possible. Record the date, location, a GPS position if you have one, and the number of birds seen. If you see a bird being fed, indicating a nearby nest, or any other interesting behaviour note this down too. There are only a few ringed birds, but if you see one make sure you record their rings (record the left leg first, and the colours are read from top to bottom—eg L:metal, R:white/blue= metal on the left leg, white over blue on the right leg.

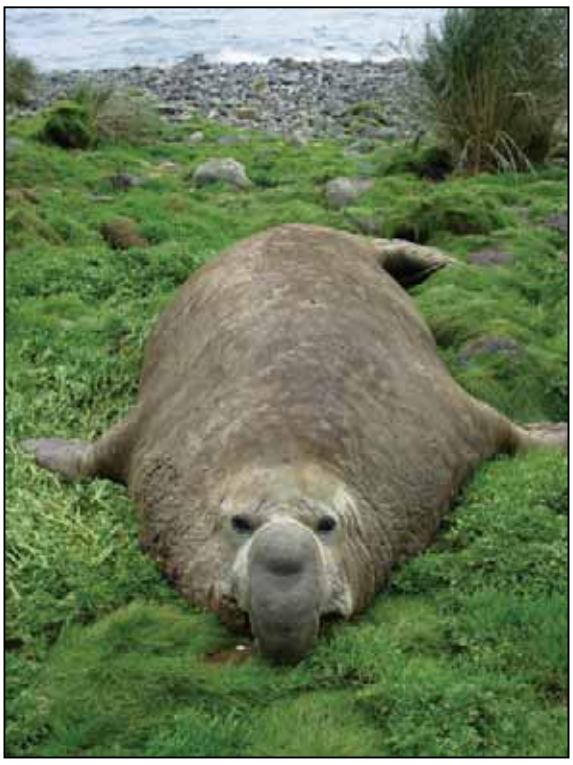
6.2 STORING THE DATA

Store the data in the 'Tristan thrush' workbook.

7. Seals

Two types of seal breed in the Tristan da Cunha group: sub-Antarctic fur seals, and Southern elephant seals. The elephant seal no longer breeds on any of the northern islands, but occasionally hauls out on the beaches. Fur seals still breed on all of the islands, and the populations appear still to be growing after a substantial decline due to sealing in the 17th-18th centuries.

On Tristan there is only one main fur seal rookery at Cave Point. However, fur seal populations have been increasing so keep an eye out for and record the GPS position of any new breeding sites.



Pictures 10 and 11. Sub-Antarctic fur seal (left) and Southern elephant sea. ©Richard Cuthbert.

7.1 MONITORING

Sometime between late December and the middle of January, walk along the rocks at Cave Point and count all new pups. The new season's pups will be small and with soft black fur and may be found with their mother. Make sure to look under boulders as they may try to hide. If the previous season's pups are present, they will be much bigger and should be lighter in colour than the new pups.

If an elephant seal is seen hauled out on any beach at any time of year make note of this.

If you see any seals with plastic around their necks or torso, make a note of this.

7.2 WHAT YOU NEED

Tally whacker (counting clickers)

Notebook and pencils

7.3 STORING THE DATA

Enter the fur seal pup counts and the date counted in the 'Seal' workbook, on the 'fur seal' worksheet.

Elephant seal sightings should be entered on the 'elephant seal' worksheet in the same workbook.

Notes about seals with plastic around them should be entered on the 'notes' sheet.

8. REFERENCES

Richardson, J. (1984) Aspects of the Ornithology of the Tristan da Cunha Group and Gough Island. Cormorant 12: 122-201.

Appendix 1: How to fill in the SAFRING ringing schedules

The easiest way to fill in the SAFRING form is by entering the new rings after each ringing session rather than waiting until the end of the season.

Open the SAFRING template and go to the file menu and select 'Save as'. Each year make a new file- the file name should include 901(which is the ringer number) and the year (eg 901-2008). Use the following guidelines to help complete the form.

A. Ring number- enter the full ring number, including the prefix 8, entered without spaces (eg 867676)

B. Code- '1' is for new rings, '2' is for recaptures

C. Date- the date the ring was put on a bird

D. Species- always '10' for yellow-nosed

E. Ringer- always 901

F. Age- 4 for adults, 1 for chicks

G. Sex- always '0' (unknown)

H. Marking- '0' for metal ring only, '10' for metal and plastic

I. Condition- always '0'

J. Coordinates:

Nightingale- 3742S 1248W

Hottentot Study Area- 3704S 1218W

Tripot- 3708S 1216W

Sandypoint- 3707S 1213W

K. Locality:

Tristan da Cunha- Nightingale Pond 2

Tristan da Cunha- Tristan, Hottentot Study Area

Tristan da Cunha- Tristan, Tripot

L. Year- the year the breeding season began (eg record the year as '2008' for chicks ringed in March 2009)

M. Colour ring- enter the colour and alpha-numeric number if the bird has a plastic (eg Red A01); leave this cell blank if the bird only has a metal ring

At the end of the breeding season make sure all the ringing records have been entered and send the completed file as an attachment to safring@adu.uct.ac.za. Also send a copy to the RSPB.

Appendix 2:Monitoring Calendar

	August	September	October	November	December	January	February	March	April	May	June	July
Yellow-nosed albatross: Hottentot			mark nests, read rings (spend 2 days for initial nest search between 1-10 October; then every 2 to 3 weeks)			Check for hatching as early as possible	1-2 checks (especially for non-breeders)	Ring chicks mid-late March	Check to make sure all chicks fledged	Submit SAFRING file		
Yellow-nosed albatross: Tripot, Sandypoint			Count (and ring if time permits) incubating birds (10^{th}-20^{th}-can be done when counting Rockhoppers)					Count (and ring if time permits) big chicks in mid-March		Submit SAFRING file		
Yellow-nosed albatross: Nightingale			Count incubating birds in all ponds; ring incubating birds in Pond 2 (25^{th} September-13 October)				Count chicks in all ponds; ring chicks in Pond 2 (late Feb to early March)			Submit SAFRING file		
Rockhoppers: Nightingale and Alex Island			Map rookeries; collect feathers (25^{th} September-13 October)									
Rockhoppers: Tristan			Count incubating birds as soon as possible after Nightingale trip; if delayed from Nightingale but can do Tristan penguins then do so		Chick counts in 2 colonies (before break-up)							

	August	September	October	November	December	January	February	March	April	May	June	July
Broad-billed prion	Visit all accessible caves to count incubating birds		Visit all caves to count chicks	Visit all caves to check for big chicks								
Great-winged & Atlantic petrels		Visit Devil's Hole, Tommy's Hill, Hottentot Gulch to check all burrows for chicks		Visit Devil's Hole, Tommy's Hill, Hottentot Gulch to check for big chicks						Camping trips and night surveys to listen for birds	Visit Devil's Hole, Tommy's Hill, Hottetot Gulch to check burrows for birds and eggs	
Sooty albatross			Scan count of adults above rockhopper rookeries	Scan for birds in Hottentot and Caves Gulch								
Tristan thrush	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings	Record all sightings
Seals					Count new seal pups	Count new seal pups						

Published by the Royal Society for the Protection of Birds,
The Lodge, Sandy, Bedfordshire SG19 2DL, UK. © 2008

ISBN 978-1-905601-16-5

Recommended citation: Sommer, E, Cuthbert, R, Hilton, G (2008). Tristan and Nightingale Islands Wildlife Monitoring Manual. RSPB Research Report No.33. Royal Society for the Protection of Birds, Sandy, Bedfordshire, UK. ISBN 978-1-905601-16-5.

Front cover photograph: Tristan Peak from Hottentot Gulch Study Colony. © Erica Sommer

The RSPB speaks out for birds and wildlife, tackling the problems that threaten our environment. Nature is amazing – help us keep it that way.

We belong to BirdLife International, the global partnership of bird conservation organisations.

www.rspb.org.uk

The Tristan Natural Resource Department is responsible for biodiversity conservation on Tristan da Cunha. It works in partnership with organisations from around the world, specifically the UK and South Africa, to reduce the rate of biodiversity loss on the Tristan Island group.

We are grateful to the Overseas Territories Environment Programme, a joint programme of the Department for International Development and the Foreign and Commonwealth Office to support the implementation of the Environment Charters, and environmental management more generally, in the UK Overseas Territories.

For further information, please contact:

Dr Richard Cuthbert
The RSPB, UK Headquarters
The Lodge
Sandy
Bedfordshire SG19 2DL
United Kingdom
Tel: +44 (0) 1767 680551
Fax: +44 (0) 1767 683211
E-mail: richard.cuthbert@rspb.org.uk

Cover photo: Tristan Peak by Erica Sommer

210-1526-08-09

The four islands of Tristan da Cunha, Inaccessible, Nightingale and Gough are now bio-logically unique as a group of extremely isolated oceanic volcanic islands with a temperate climate, a typically impoverished and disharmonic biota, a number of endemic species, large seabird and seal colonies and relatively little human interference.Â Such use of oceanic islands for baseline monitoring is. 12 N. M. Wace and M. W. Holdgate. likely to increase in future, as a consequence of world-wide concern about the environmental impact of world population growth and industrialization, and give a new scientific importance to remote islands such as the Tristan da Cunha Group. Other islands in the group, Nightingale Island and Inaccessible Island, are eroded volcanic cones once similar in size to Tristan Island (Ashworth et al. 2000). Two small islands near Nightingale are named Stoltenhoff Island and Center, or Middle, Island. Often referred to as the "Remotest Island in the World", Tristan Island has an unusual human history. The island group was discovered by Portuguese Admiral Tristado d'Ancunha in 1506 (Ashworth et al. Nightingales can be found in broadleaved woodlands, south of a line drawn between the Humber and the Severn. They sing from the densest bushes and shrubs, so you are a lot more likely to hear their loud song than you are to see this shy singer. Make sure you have listened to the song of the nightingale, either on The Wildlife Trustsâ€™ soundcloud or elsewhere so that you know what to listen for. If you can't get to these sites. If you canâ€™t get to the special places listed above, there is a wonderful short film of Fingringhoe Wickâ€™s nightingales on Youtube.