

## EXERCISE BOOBY V

ASCENSION ISLAND, 28 OCT - 9 NOV 1996

By

Maj R C Dickey, Maj B J Hughes, Sgt C Etheridge, Cpl C Wearn and J G Walmsley

### GENERAL INTRODUCTION - Maj R C Dickey

Ascension Island, situated approximately 80 south of the Equator, 1540 km south of Liberia and midway between South America and Africa, has been visited now by five Ex BOOBY ornithological expeditions, the last being in Apr 94.

The aims of the expeditions have been consistent; to continue to monitor the status of breeding seabirds and land birds on Ascension Island with particular attention being paid to that of the Sooty Terns *Sterna fuscata* which has seen significant decline in the last century. Additional studies on Ex BOOBY V included predation on the Sooty Tern colonies, a report of breeding bird distribution on the Letterbox feature, blood sample collection for DNA analysis and biometric data collection combined with the ringing of breeding birds, particularly Sooty Terns.

The expedition adjusted its arrival dates by three weeks in order to coincide with the hatching of the first Sooty Tern chicks. This was crucial to data collection as, with only a two week window and several months between 'night-clubbing' through hatching to final dispersal, it is necessary to combine data collection with the period of maximum numbers of birds on the ground. The period also coincided with breeding Masked Booby *Sula dactylatra* of which several pairs were found for the first time in many years near Bottle Point on Letterbox and one pair bred again at Fort Thornton in Georgetown. Ascension Frigate Birds *Fregata aquila* were into the later stages of breeding with all immatures capable of flight. Other bird species were in different stages of breeding apart from Madeiran Storm Petrel *Oceanodroma castro* which were still at sea but observed in small numbers close to the Island.

It should be noted that the expedition arrived during a period of higher than average monthly precipitation (it rained daily), conditions which had been prevalent for a number of months. The result was a noticeable increase in vegetation distribution and density and was held to account for the increased numbers of rabbits *Oryctolagus cuniculus* and House Mice *Mus musculus* seen across the Island. Climatic conditions however did not seem to have an adverse effect on breeding bird colonies but may serve as an interim food source for feral cats when Sooty Terns are between breeding periods.

Expedition activity was restricted due to the limited availability of members and it was therefore decided to concentrate on the Sooty Tern colonies and thus support the previous work compiled by Ex BOOBY expeditions and the Wildlife Management International Ltd report on the feasibility of cat eradication. It was felt important to explain our aims and activities to the island Administrator, Mr Roger Huxley, and the RAF Station Commander, Wing Commander Boyd. Both were extremely interested and supportive. An article was written for the local weekly newspaper to explain our activities and the need for conservation action to the local population.

### THE EXPEDITION

The following is a chronological record of the expedition and more detailed reports on the studies completed by Ex BOOBY V

#### Mon 28 Oct 96

The expedition gathered at Gateway House RAF Brize Norton with the expedition leader Maj Roger Dickey, Chief Scientist Mr John Walmsley and Lead Ringer Cpl Colin Wear from RAFOS, later joined by Maj John Hughes, veteran of past expeditions. As not all the members had met, the aims of the expedition were discussed and refined for group approval once on Ascension. Responsibilities were agreed as:

Expedition Leader

Maj Roger Dickey

Adv Trg Report to MOD  
Expedition Report to AOS

Deputy and DNA Study	Maj John Hughes	Sooty Tern Fairs and DNA Reports
Ringer	Cpl Colin Wearn	Ringling Report
Scientific Advice	Mr John Walmsley	Predation Report
Unit Expedition Leader	Sgt John McInnes	All Adventure Training advice
Finance	WO2 Martin Phillips	Maintenance of account
Real Administration	Sgt Chris Etheridge	Letterbox Report
Health and Safety	WO2 Mike James	Late arrival precluded early appointment

### Tue 29 Oct 96

The expedition arrived at RAF Ascension at 0730 hrs in cloudy conditions and was met by the Base QMSI in the Expedition minibus (£10 per day). Local rules prevent arrivals driving on the first day. Four members obtained St Helenan driving licences at £5 each. Liaison was established with OC RAF Adv Trg and the Ration SNCO in the All Ranks Mess. Accommodation was taken over in the Travellers Hill transit accommodation huts.

Following a briefing for all members of the expedition, everyone went to Mars Bay to observe the state of the Sooty Tern colony there. It was estimated that between 14 and 20,000 terns were present, at breeding stages between first roosting and actual egg production by birds nesting on the higher slopes. There was considerable evidence of disturbance with fresh corpses of adult birds in most perimeter areas. One Frigate Bird, *Fregata aquila*, was observed over the colony and there were several pairs of Mynahs *Acridotheres tristis* flying around the colony in areas where they have not been recorded in such numbers.

The dry water course was followed to the sea where small numbers of Masked and Brown Boobies *Sula leucogaster*, Brown Noddies *Anous stolidus* and Frigate Birds were observed. The expedition walked back to Travellers Hill during which Red-throated Francolin *Pternistes afer*, House Mice and rabbits were observed on the slopes below Travellers Hill along with family groups of Canaries *Serinus flaviventris* (4-15) and Waxbill *Estrilda astrild*

The day ended with a detailed meeting on responsibilities for work during the expedition period, report writing and future activities.

### Wed 30 Oct 96

The day started on the Waterside Fairs establishing the extent of work ahead and which would require the surveying of new fairs. Starting at Fence End, the party moved east across the grain of the lava flows, finding a general move of Sooty Tern fairs eastwards and higher up the slopes. However, the overall numbers of fairs and densities within fairs were initially estimated to be lower than those in 1990. All fairs hold eggs but birds are still unsettled. Considerable numbers of recently killed and partly eaten birds were found and Mynahs were again seen in pairs around the fairs. On return to the Fence End, chicks were identified in one of the three occupied fairs east of the track. Age was considered at 1.5 days making 28 Oct the date of the first hatching. Chicks and one adult were ringed and DNA samples taken. During this procedure, a male Frigate Bird made two approaches to terns in the middle of the fair only yards from the expedition members. On the second attempt, it moved an adult tern to one side with its bill, picked up a newly hatched chick and ate it, all actions taking place on the wing.

During the journeys to and from the fairs, five rabbits were seen in different areas along the track. Vegetation was far more profuse than in previous years reflecting the amount of precipitation over the previous two months. The afternoon was spent netting 25 adult Sooty Terns at the Fence End and taking DNA samples. The fairs to the west of Fence End were visited and two occupied fairs identified. Again, a number of cat larders were identified with up to eight eaten terns seen per larder. A House Mouse was seen for the first time in the Waterside Fairs. A single Yellow-billed Tropic Bird *Phaethon lepturus* was seen nesting below the south facing cliff (see Thu 7 Nov)

### Thu 31 Oct 96

The expedition left early to survey the cliff line around the Letterbox feature, build survey cairns visible from the sea and obtain general data on the birdlife on and around Letterbox. Frigate Birds, boobies, both tropicbirds, Fairy (White) Terns *Gygis alba*, Black Noddies and over-flying Sooty Terns were observed. Good close-up views were had of male Frigate Birds. For the first time, Masked Boobies were observed nesting (with eggs and young)

on the flat areas above the south facing cliffs Twenty nests were counted and six DNA samples were taken from sitting birds. One juvenile Frigate Bird was found on the cliff top having been eaten by a cat Fresh cat spoor/droppings and a skull were found Skulls of Frigate Birds were collected for post expedition study Trekking conditions were quite arduous involving 3000m of climb, 6 miles of walking over clinker and rock and in arid conditions. Attempts were made to abseil down the cliff by Sgt John McInnes in order to catch juvenile Frigate Birds but these regrettably had to be abandoned

### **Fri 1 Nov 96**

A bad start to the day with the delay in arrival by 24 hrs of WO2 Mike James. The expedition split into two groups, one to the Waterside Fairs to survey, mark and collect data on three of the Waterside Fairs ('Clinker' (2/96) and the easternmost fair, Big Fair (5/96) are still expanding and cannot be surveyed yet). The second group visited the House Sparrows *Passer domesticus* in Georgetown, made arrangements for a boat for the following week and met the Administrator Ascension Island.

The meeting with the Administrator established that he was very much in favour of the aims of the AOS on Ascension. We were asked to make a full report later in the week.

The second group then completed 25 full biometric collections on Sooty Terns at Fence End fair (3/96). It was discovered that the disturbance to nesting birds could be reduced and a more random selection of birds for ringing could be made by netting birds on the wing on the principal flight lines in from the sea. Markers were established above the cat ladders to assist in night observations. On the return via Two Boats, two Swifts *Apus apus* were observed over the gardens. Good views of francolin were had before entering the Travellers Hill camp.

### **Sat 2 Nov 96**

A Mars Bay day after collecting WO2 Mike James from the Airhead and deciding against land bird ringing because of the wind. The Mars Bay (1/96) colony were far more stable than in previous days and the colony was surveyed and plotted by John Hughes while the remainder assisted with collecting, ringing, full biometrics and DNA testing of resident birds. Again, Sooty Terns were netted in the air. The expedition was visited by the wives of the Base Commander and Air Vice Marshall Hurrell who were given a full brief on our work. Cat ladders were again surveyed and markers established for the night viewing of feral cats Shelly Bay was visited but other than marine life, nothing of note was observed. Seven continuous hours work on the fairs were completed in particularly hot conditions.

After an evening meal, half of the team returned to Mars Bay to watch for evidence of evening predation by feral cats. No cats were seen on the fair although there was considerable unrest in the colony throughout the evening Sighting was conducted with image intensifiers No cats were seen on this occasion.

### **Sun 3 Nov 96**

Disaster day -the minibus engine blew just below the top of Green Mountain while taking a walking party to a drop off point. This curtailed all plans for the day as RAF Ascension is closed on Sundays The walking party of WO2 James and Sgt Etheridge continues on to the summit of Green Mountain while a 'brakes off' self recovery is effected by the remainder.

The afternoon was spent netting and taking full biometrics and DNA samples from Canaries and Wax bill in Two Boats The wind was too high for a large catch and no Mynahs came near the net. Nevertheless it was the first time that most members of the expedition had managed a good look at male, female and juvenile Waxwings DNA samples were almost impossible from wings and therefore taken from the talon A percentage of birds were photographed as back-up to DNA samples

The walking party returned bloodied and muddy after attempting an off route path around the summit of Green Mountain

#### **Mon 4 Nov 96**

The day started with very low cloud and a strong wind and conditions deteriorated to heavy rain. The morning was spent negotiating the release of the sick minibus and catching up with paperwork including writing an article for the local newsletter -The Islander.

With the return of the bus, all the party moved quickly to the Waterside Fairs John Hughes and John Walmsley commenced the survey of the largest and furthest fair (5/96), completing the task in two hours Chris Etheridge and Mike James completed transects of the Fence End (3/96) fair and the remainder spent the time ringing and taking basic biometrics of the Sooty Terns. The colonies were generally well settled and there was minimum passage of birds unless they were disturbed. During the course of netting terns, an immature Frigate Bird descended to nearly net height to investigate. We must consider more ways of catching a Frigate for samples.

One red tagged Mars Bay tern was spotted in low flight over the Fence End fair proving that there is some degree of off-nest wandering between fairs.

#### **Tue 5 Nov 96**

A full day on the Waterside Fairs. In order to establish numbers and now that most colonies had been surveyed, transects had to be completed for all fairs. Half the group spent the day walking transects while the other half finished the survey of the Clinker Fair (2/96) and continued to ring Sooty Terns.

Chicks were starting to hatch in numbers on the Small Fair (4/96) and there was heavy predation by Frigate Birds. Numbers eaten have yet to be determined.

Cats were seen on two occasions, one north of the airfield runway and the second in a deep gorge by the sea but within 100m of the nearest Sooty Tern nests. A team went out to monitor cat movements during the evening but saw no activity on the fairs after 2 hours of watching. Two cats were seen approaching the fairs from the end of the runway on the drive out, by the use of white light.

#### **Wed 6 Nov 96**

Principally a day at sea with visits to the stacks, Boatswain Bird Island (BBI) and to finish the survey of the breeding areas of Letterbox. A small fishing boat was hired from Georgetown Pier. Within a few minutes of reaching the open sea, Madeiran Storm Petrel were seen off the boat. A total of 13 birds were seen during the day. These birds were likely to be breeding on BBI shortly after but were not seen on the last visit and only brief distant views were gained on previous visits. Shortly after these sightings, a single Northern Great Skua *Stercorarius skua* overflew the boat and remained with it for several minutes. This bird had not been seen before by previous expeditions.

An adult and juvenile Brown Booby were DNA sampled from Stack 1. BBI was surrounded with Frigate Birds and the boat was brought to the cliff face to obtain DNA samples of Black Noddies and Fairy Terns. A Tropic Bird (sp) narrowly evaded netting. Amongst the Boobies and Noddies, ten white phase and five brown phase Red-footed Boobies were observed. Letterbox has three distinct breeding areas on its north facing cliffs Principally Black but also Brown Noddies were observed with up to 60 Frigate Birds. The sea was too rough to get further east and south than Bottle Head. At this point the boat was accompanied by up to ten Bottle-nosed Dolphins. Two members meanwhile visited the breeding Masked Boobies on the Fort and confirmed the presence of a juvenile. They also visited Stacks 1 and 2 in order to update the stacks report.

The afternoon at Mars Bay saw a noticeable extension to the fair (1/96) by Sooty Terns and the requirement to resurvey part of the area. More transects were completed and the occurrence of two eggs in one nest was always noted when found. The pairs were not always similar in shell pattern and varied in colour from red through brown mottling to green. The final six Sooty Terns were ringed in Mars Bay

#### **Thu 7 Nov 96**

A concentrated day on the Waterside Fairs with all members conducting transects, ringing and taking samples. A yellow-billed Tropic Bird was netted after lowering John McInnes down a cliff close to the track-end. This brought the number of DNA samples to 51 from a total of nine species. The Frigate Bird continues to elude the expedition.

and a rabbit's foot was bought to act as a lure on Small Fair (4/96) with Sooty Tern chicks. Regrettably only casual interest was shown by the Frigate Birds. Where Frigate Birds were absent, Sooty Tern chicks were caught, weighed and ringed.

A total of 110 quadrats were conducted on the Big Fair (5/96) and double clutches were again noted. 19 doubles were seen in this fair with most eggs being similarly patterned. The Clinker Fair (2/96) was also transected with 118 quadrats taken. Only three double eggs were seen.

A further visit was made to Mars Bay Fair (1/96) to complete the survey of the colony extension. An additional 0.52 hectares were added since our first survey, bringing the total size of the Fair to a large 1.75 hectares. Final transects need to be completed tomorrow.

Again throughout the day, mice and rabbits were noted and recorded. The Islander article on the AOS appeared today.

### **Fri 8 Nov**

The final full working day kicks off by Movements denying knowledge of our flight requirements but these problems are resolved with a phone call to JS Bookings. The Administrator agreed to see the expedition on Saturday.

The Mars Bay (1/96) fair was re-visited to iron out possible extensions and to review transects. This work was completed within two hours. There was no luck with ringing Canaries however with the wind high and the weather very overcast with rain showers. North East Bay was visited to monitor seabird movements which were light. The canary population has increased considerably and is worthy of another study. Large flocks rather than single birds were seen in the Casuarina thickets on the road below Two Boats.

The afternoon was spent confirming the transects on the Fence End Fair (3/96) and adjusting the surveys here and at the Big Fair (5/96). The ringing of chicks is carried out on Little Fair (4/96) and further DNA samples are taken from pulli.

From the above, the expedition was now able to compute as accurately as possible in the time, that there are a total of 388,000 individual Sooty Terns on 9.87 hectares of the Fairs showing an increase of 11% on the 1990 numbers. There are 80,000 Sooty Terns alone on Mars Bay Fair.

The expedition has ringed 150 adult and 50 Sooty Tern pulli and taken a total of 56 DNA samples of which 35 came from Sooty Terns. Four fresh Sooty Tern corpses were dissected for sexing.

We must conclude that although feral cats take a high toll of Sooty Tern numbers, they have not, this breeding season, been instrumental in reducing the total numbers below seasonal fluctuations. A good season for Sooty Terns is a good season for feral cats.

### **Sat 9 Nov**

The filming for the BBC Bristol Natural History Unit had been left for last and bad weather almost prevented this. During a break in the rain, surveying and transect techniques were filmed and also a film record made of cat larders and deserted eggs. Regrettably no cats will appear on film. Colin Wearn will hand the footage to the BBC on return.

Four of the expedition went to see the Administrator in Georgetown in order to give him a report of our progress and results. He was very supportive and can be counted on to support future expeditions. A copy of the last expedition's report was left with him. He is nevertheless pulled in two directions as the intrusion of Mexican Mesquite *Prosopis juliflora* (Mimosaceae) thorn bushes in the last ten years threatens the breeding areas of Green Turtles *Chelonia mydas*. Unchecked spread of this plant is most likely to affect turtles before terns but in the long term is a significant threat to both.

During the above meeting, a report was received that an immature Frigate Bird had been caught by John McInnes during his Tuna fishing expedition that morning, after being entangled in fishing line. It was a key bird

for the DNA survey and after the meeting everyone bundled into the minibus to a discreet part of Georgetown to take the sample. On release, the bird needed much coaxing to flex its wings and get airborne once again with the help of an onshore breeze.

After visiting the Ascension Historical Society's museum, all left for English Bay for a sea watch and a brief swim. Nothing significant was seen and all returned to Travellers Hill to pack and clean up. The return flight left at 2230 hrs, landing at RAF Brize Norton the following morning where the expedition dispersed

## **MONITORING THE SOOTY TERN POPULATION ON ASCENSION ISLAND -by Maj B J Hughes**

### **Introduction**

Eight breeding cycles of the Sooty Tern on Ascension Island have passed since the Army Ornithological Society (AOS) completed the first survey in March 1990 and determined the breeding population of the Sooty Tern. The estimate which the society calculated as being 350,000 adult birds has been used by The International Council for Bird Preservation (ICBP) and the Royal Society for the Protection of Birds (RSPB) to develop strategies for preserving the bird life of Ascension Island. The Sooty Terns spend most of their time on the wing and return to Ascension Island in large numbers to breed, approximately every 9.6 months. The species is widespread and numerous, breeding in tropic and sub-tropic zones of the Atlantic, Pacific and Indian Oceans. The breeding population on the Island is significant in global terms because it is a major colony and one of the largest in the South Atlantic. Ascension Island is the only site in half a million square kilometres of ocean for these birds to nest. They are gregarious and their breeding grounds or "fairs" currently extend to about ten hectares with an average density of two pairs per square metre.

This season the birds occupied five fairs, the largest being approximately five hectares and the smallest 0.2 of a hectare and the remaining three fairs were about a hectare each in size. The smallest fair was the first one to be occupied and the largest the last. Chicks were hatching on the smallest fair while at the same time on the largest fair the Sooty Terns were laying claim to nesting sites. The first chicks of this breeding season hatched on the 28 October 1996 the day the expedition arrived on Ascension.

### **The Survey**

Near identical survey techniques to those developed by Ashmole and Hughes in 1990 were used by the expedition. Each fair was surveyed separately. Cairns of lava rock approximately 0.6m high and circled with a strip of orange plastic were built around the perimeter of the five fairs. The cairns were built at intervals of approximately 60m and at each change of direction of the fair's perimeter. The Sooty Terns nested in many cases right up to the boundary marked by the cairns. However the edges of the fairs are not symmetrical and the cairns marked out the mean perimeter edge. A circular compass and pace traverse was run between the cairns and closed back on the starting point. Forward and reverse bearings in mils were taken with a prismatic compass. The distances were checked for gross error by the use of a pedometer. The traverses were then plotted on Chartwell 1mm squared graph paper at a scale of 1:1000. The closing errors were measured from the plot and an accuracy for each survey determined. The average closing error was 1:60. The area of each fair was determined by counting the number of 1mm squares. The total area occupied by the Sooty Terns in November 1996 was 9.87 hectares (Table 1).

Densities of eggs in the five fairs were estimated using a quadrat/transect sampling system. Every effort was made to place quadrats randomly. Several transects were measured across each fair. Prominent features were identified on the opposite side of the fair and used as a marker to establish the transect lines. At regular intervals (normally every 20 paces) along the line, counts of eggs were made in quadrats measuring 10 metres square. One person held a vertical pole, to which was attached a cord 1.784m long, the stretched string was then used to describe a circle, and the two observers separately counted the eggs as the string passed over them. Occasionally there was a small discrepancy between the observations, both of which were recorded and the mean value accepted. Density counts were recorded along 42 transect lines. A total of 472 quadrats containing approximately 10,000 eggs were counted. Quadrats were measured on all but the smallest fair; this fair was not sampled because it would have disturbed the young chicks and caused additional predation by Frigate Birds. The average density of eggs in the four fairs varied from 0.37 to 2.44 eggs per square metre. The terrain occupied by the Sooty Terns dictates the density of eggs. In the most favoured areas the density of eggs can be considerably higher. Two quadrats which were not part of the random sampling process were selected because

of their unusually high density and measured; one had a density of 6.00 and the other 6.70 eggs per square metre. The average number of eggs per square metre in the four large fairs was calculated from the observed data (Table 1) A density count of 2.15 eggs per square metre (a mean of the two adjacent fairs) was used for the fifth and smallest fair.

Summary of Density Counts of Eggs and Size of Breeding Grounds Occupied by Sooty Terns on Ascension Island - November 1996

Fair	Size in Hectares	Accuracy of Survey	Number of Quadrats	Average number of eggs per sq. metre	Number of eggs
Number 1 Mars Bay Grid 665 175	1.77	1:80	68	1.96	35,000
Number 2 Close to Sandy Run Grid 685 173	1.40	1:20	128	0.37	5,000
Number 3 Fence End Grid 689 173	1.44	1:20	50	1.87	27,000
Number 4 Grid 697 173	0.20	1:150	Nil	2.15	4,000
Number 5 West of Pillar Bay Grid Square 70 17	5.06	1:40	226	2.44	123,000
Total	9.87		472		194,000

Table 1

The number of breeding adult pairs was determined by calculating the number of eggs. This assumes one pair of birds per egg but this is not always the case. One interesting fact to come out of the density counts is that 28 double clutches were recorded but this has little significance to the calculation of the breeding population.

### Conclusion

The aims of the AOS expeditions to Ascension Island in 1992 and 1994 was to replicate the breeding survey of March 1990 at the same stage in the breeding cycle so as to permit a valid comparison This has now been achieved The population sizes are similar, the latest count shows a small increase (11% ) in the number of birds. The adult breeding population of Sooty Terns on Ascension Island in November 1996 was 388,000.

### FERAL CAT PREDATION AND OTHER PREDATORS ON THE SEABIRDS OF ASCENSION by G Walmsley

#### Introduction

Following up the work of previous Exercise Booby expeditions in 1990, 1992 and 1994 (Nash et al. 1991 & 1992, Hughes et al. 1994), this report looks at the distribution and impact of feral cats on the breeding population of Sooty Terns and on roosting and breeding seabirds on Letterbox during the period 29 Oct - 09 Nov 96. Information was also recorded for other known and potential predation of Sooty Terns, their eggs and chicks, in particular the Black Rat, House Mouse, Indian Mynah, Frigate Bird, and the Land Crab.

#### Cat Eradication

In 1995, a cat eradication feasibility study team from the UK visited Ascension from 12 May to 27 Jun to "determine whether rats and feral cats could be eradicated from the island, and if so to plan the eradication programme". In a 127 page document, Bell & Ashmole (1995) state that "eradication of cats and rats was practicable, but the programme would be delayed until May 96 or even February 97". We trust that when the

dates have finally been decided, hopefully before the start of the Sooty Tern breeding season beginning in May 97, the AOS will be informed, so that we can have a small team present on the island to monitor the Sooty Terns and report on the positive results of the cat eradication campaign.

At a meeting with Mr Roger Huxley, the Ascension Island Administrator, we discussed the problem concerning feral cats and their eradication. He informed us that in 1996, the RAF had considerably reduced the feral cat population around the settlements and within their administrative area.

### **Cat Predation in 1996**

The last three AOS expeditions established that feral cats kill many adult Sooty Terns each breeding season (approx 1% of the breeding population), besides an unknown number of tern chicks (Ashmole 1963 & Ashmole et al. 1994, Walmsley in Nash et al. at 1991 & 1992, & in Hughes et al. 1994) so we decided not to collect tern corpses for processing (ageing, sexing, and biometrical data) as in previous expeditions. We did however collect 4 fresh tern corpses that had been killed by cats but not eaten. From these we established the sex of each bird (by dissection method) and collected biometrical data for use as future reference material.

During our first visit to Mars Bay on 29 Oct 96, we discovered an important breeding colony of Sooty Terns. A quick survey revealed a large area of broken clinker occupied by incubating birds (the presence of eggs was confirmed). In other areas there was more activity, paired birds could be seen prospecting for nest sites and others were displaying. The breeding colony was situated further north of the site occupied in 1994 (see Hughes et al. 1994), but well within the area occupied in 1990 (see Nash et al. 1991). During a walk around the perimeter of the colony, we found numerous cat scats, fresh and relatively fresh tern corpses and cat middens, that had accumulated since the beginning of the 'Night Club' period and the onset of the current breeding season. Thus there was every indication that feral cats were still prevalent and very active in Mars Bay.

On 30 Oct we visited the Airfield sites and found a large breeding colony of Sooty Terns established at the Fence End with an overflow east of it at the end of the vehicle track. Another colony was located further west on high ground in rough broken clinker. Further east was another large area covered with birds, that began approximately at the 'unoccupied fairs' site recorded in 1990 (Nash et al. 1991), and extended eastwards in the direction of Pillar Bay. In all of these sites we found cat scats and middens and hundreds of tern corpses scattered around the edges of the colonies, especially on the western edge of the eastern colony where the 'night club' birds initially settled on the ground to breed. This was also the colony where the first chicks were recorded. The hatching date was estimated as approximately 28 Oct 96.

On 31 Oct, the team visited Letterbox to carry out a survey of roosting and possible breeding seabirds. We confirmed that small groups of Masked Boobies were actually breeding (incubating birds with eggs and chicks), and 3 -4 cliff sites had roosting, nest prospecting and breeding seabirds. On top of the cliffs we found a number of Frigate Bird corpses, mainly juveniles that had been taken by cats on accessible roosting sites. One particular cat midden in a shallow cave comprised mainly of Frigate Bird bones and feathers, indicating that cats still survived in this isolated site and were living predominantly off Frigate Birds, the only endemic seabird species on Ascension Island.

### **Cat sightings**

Feral cats were seen on three successive days during daylight hours. Two single cats were seen close to the Airfield fence on the north side, and a third cat was observed basking in the sun on a rock close to the sea. Apart from the observation of a single cat seen in a Sooty Tern colony in 1990 (Nash et al. 1991), this is only the second time that AOS expeditions have recorded feral cats in a Sooty Tern colony during the day.

### **Spotlight surveys**

In 1992 the USAF Bird Aircraft Strike Hazard (BASH) team made spotlight surveys over sections of roads on Ascension in an attempt to estimate the number of feral cats. They reported a conservative population estimate of not more than 750 cats for the whole island (Merrit et al. 1992).

In 1994 an AOS team made two spotlight surveys in the area of One Boat rubbish dump and on each occasion recorded 30 and 28 cats respectively. A two hour spotlight survey was also made in Mars Bay and two cats were seen (Walmsley, in Hughes et al. 1994). In 1995 Bell and Ashmole (1995) made spotlight surveys along all

roads and on one coastal track from Long Beach to pyramid Point. The result of this survey was a total of 27 cats (3 in Mars Bay) and an estimated 1000 - 1200 cats for the whole island.

In 1996 the AOS used light intensifying night sights in the Mars Bay and Fence End tern colonies in an attempt to spot predating cats. The results of this exercise were negative probably because of the nature of the terrain and the constant activity of the birds in the colonies.

### Other Predators

During a visit to the Ascension Island Museum I discovered a histogram showing the annual rainfall on the island for the period 1924 -1995. Years of high rainfall could be considered as "wet years" when the annual rainfall was 250 mm and above. This means that during the last 70 years there have been only 8 "wet years", the data for each of these years is presented here:

1924:	480 mm	1974:	250 mm
1934:	310 mm	1984:	300 mm
1963:	430 mm	1985:	500 mm
1964:	250 mm	1995:	340 mm

It also revealed that the last five year period (1990-1994) prior to 1995 was a relatively dry period with a mean annual rainfall of only 100mm. Also, according to the island residents 1996 had been another "wet year" .This was reflected by the lush green vegetation and the increase in the numbers of rats, mice, rabbits, locusts, grasshoppers and crickets.

**Black Rat - *Rattus rattus*.** The Black Rats on Ascension are generally observed around the settlements and in the higher altitudes on Green Mountain where colour morphs occur. The presence of rats in the low lying Sooty Tern breeding areas have also been suspected, but none have actually been seen during expeditions. It is interesting to learn that 9 rats were caught in Mars Bay between 17 -20 May 1995 (Bell and Ashmole 1995) One reason why rats have probably increased in Mars Bay is because during the last two years the site has become a waste dump after picnics, barbecues and beer drinking parties.

**House Mouse - *Mus musculus*.** The House Mouse occurs on many seabird islands. On Ascension this species probably occurs in all habitats, even in the tern colonies. The 1996 expedition was the first one to record so many mice in the colonies. I believe that the population has considerably increased as a result of the last two "wet years", in 1995 and 1996. Also in 1995, 49 mice were trapped in Mars Bay during four nights (Bell and Ashmole 1995)

**Indian Mynah - *Acridotheres tristis*.** In 1990, Indian Mynahs were only suspected of predating on Sooty Tern eggs, but confirmation was obtained in 1994, when Mynahs were seen eating tern eggs and disturbing incubating birds (Walmsley, in Hughes et al. 1994). In 1996 Mynahs were observed in all Sooty Tern breeding colonies during every visit, and broken and eaten eggs were often visible in areas where eggs had been abandoned by terns. This form of predation appears to be a minor one at the moment, but it could be serious if ever there was a big increase in the Mynah population.

**Frigate Birds - *Frigata aquila*.** The hatching period of Sooty Tern chicks is monitored with precision by the endemic Ascension Island Frigate Birds. In 1990, the first tern chicks in the colonies were recorded by observing the behaviour of Frigate Birds (Nash et al. 1990). In 1996 up to 15 Frigate Birds (60% adults and 40% juveniles) were recorded daily, predating on newly hatched Sooty Tern chicks in the first established breeding colony close to Pillar Bay. It is fortunate for the Sooty Terns that not all Frigate Birds depend on the tern chicks as a major food source, otherwise the species would have declined dramatically. There appears to be only a small number of Frigate Birds that specialise in this activity, a few juveniles learn from the adults and carry on this predatory role. It would be an interesting exercise to find out how many Frigate Birds do predate on tern chicks and what effect they have on the breeding success of the Sooty Terns. This can be done by regular observations and individual recognition of predating Frigate Birds.

**Land Crabs - *Gecarcinus lagostoma*.** Throughout the time we spent on Ascension, everyone remarked upon the apparent absence of Land Crabs in the Sooty Tern colonies. Although crab holes were found in one or two localities, the crabs were neither visible nor as abundant as in other years. This may be related to climatic conditions, or to changes in distribution at certain times of the year.

## Other Species

Among the other noteworthy species recorded during our visit were species which we found as a result of cat predation. For example, while examining relatively fresh tern corpses which attracted flies, we also found large centipedes up to 10 centimetres in length and a number of large black-brown field crickets.

On Letterbox my attention was drawn to several incubating Masked Boobies which had black marks on the head and neck. A closer examination revealed that the dark spots were a species of Flat Fly, up to 10 flies were visible on one bird and large feather lice, *Mallophaga*, were found on birds that were handled.

## Conclusion

The effects of rainfall during the last two "wet years" (1995 & 1996) has had a considerable effect upon the island vegetation and on the seed and fruit plants. This was particularly apparent in Mars Bay in 1996 where several plant species are now established in former Sooty Tern breeding sites. These conditions have not only provided an abundance of food, but may also be responsible for the successful breeding of certain animal species, and two land bird species; the Canary and the Wax bill, which suggested a much wider distribution in 1996, compared to the landbird survey carried out in 1994 (Varley & Dickey in Hughes et al 1994).

The time schedule and duration of the cat eradication programme proposed by Bell & Ashmole (1995) is not clear. I suggest that the team responsible for its planning and implementation inform all the other interested parties of any changes to the programme. This information would be particularly useful to the AOS who are currently monitoring and studying the Sooty Terns, and who plan more regular scientific expeditions in the future. We plan to have a team on Ascension at the end of the cat eradication campaign. The aim will be to monitor the effect of a reduced cat population on the Sooty Terns and to record any changes in their behaviour and breeding pattern. We are also looking for the appropriate funding that will enable us to continue to monitor this important indicator species, and the endemic Frigate Bird, in a systematic and scientific way.

Within the framework of the "Restoration Project for Ascension Island", we now have confirmation that seabirds are breeding and roosting at Letterbox. The AOS firmly believe that something should be done to protect this site and make it more attractive for those species attempting to re-colonise it (Masked and Brown Boobies, Frigate Birds etc). We therefore suggest that if we are to wait several more years for the cat eradication programme to begin, the Conservation Forum and Foreign and Commonwealth Office should reconsider the alternative proposal by the AOS for the erection of a cat-proof fence around the western perimeter of Letterbox, submitted by (Hughes and Walmsley 1992), and give it full support and funding. The eradication and regular control of terrestrial predators within this zone, together with proper maintenance of a solar-powered fence, would benefit not only those species that are breeding now. It would also accelerate the occupation of Letterbox by seabirds in the short to medium term.

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## **RINGING REPORT -by Cpl C Wearn (RAFOS)**

### **Introduction**

The last known ringing carried out on Ascension Island of the Sooty Tern took place during the visit by members of the British Ornithological Union (BOU) Centenary Expedition during the period 1957-59.

Although there were a number of reasons for carrying out this ringing of the terns, the main one was to attempt to discover where Ascension Island Sooty Terns relocate after leaving the breeding area. Questions that arise are:

1. Do these Ascension Island terns move out to sea and then mix with other known Sooty Tern populations?
2. Do they live as long as Sooty Terns from other parts of the world?
3. Do they move from one breeding site to another if, for any reason, they lose their first egg?

More study, over a considerable period of time will be required before accurate answers are forthcoming. The formation of the lava flow has made a distinctive demarcation between the Mars Bay breeding site and the more easterly area that for convenience of classification because of its much larger size, has been called the 'Waterside Fairs'. The Waterside Fairs have a number of breeding sites of varying sizes, with each having been allocated its own individual name. Because of the close vicinity of the Waterside Fair sites it was found practical on this visit to ring these birds with rings of one colour only.

### **Technique**

A fisherman's landing net, with a large 'bag' was the method of capture used for all adult birds. Some adults were caught as they stood on the ground at, or near, the nest. Others were caught as they flew to or from the sea, using the net in the same manner as a Fleygusting or fowling net Two hundred and fifty adults and fifty pulli (chicks) were caught and ringed. Full biometrics were taken on two hundred adults for analysis at a future date. The weight was the only data taken from the pulli. As the pulli were prone to predation by Frigate Bird, all the pulli underwent selection before ringing. The only requirement for this selection was a likelihood that the chicks would hide under rocks once the adults had moved away. Hiding in this manner was considered to be sufficient insurance against the marauding Frigates. Chosen subjects were removed, ringed and replaced in their chosen hiding spot. One chick was observed to be hiding under a rock overhang that went back as far as a metre.

Full grown birds from both the colonies were ringed with British Trust for Ornithology (BTO) meta rings fitted to the right leg, and a coloured ring fitted to the left. The coloured rings denoted the colony in which the birds bred. The chicks were fitted with a metal ring only, thereby giving a known age if they were to be found in a different location.

## Observations

W.B. Robertson, Jr (Transatlantic Migration of Juvenile Sooty Terns Nature, Vol 222, May 1969) writes of Sooty Terns ringed on Dry Tortugas being found along the West Coast of Africa Given the amount of ocean covered by wandering seabirds, there is always the possibility that Ascension Sooty Terns join up with terns from other populations and move to new areas, possibly even staying to breed.

Of the 250 full grown birds ringed, two were found to have some juvenile feathers on the body. These were the only two birds without a brood patch, possibly suggesting that they are sub-adults making a pre-breeding visit to the colony. If this assumption is correct, then how many other sub-adults are flying over the breeding areas along with the full breeding adults?

## Plea

Ringling provides data to help formulate answer to these many questions, but ringling is a specialised part of ornithology. There are not many ringers in the Services, but the need for more ringling to be carried out on future expeditions to Ascension Island is essential, hence the requirement to encourage additional active ringers This is the only way ahead, but ultimately the reward will be answers to these intriguing questions.

## BLOOD SAMPLES FOR DNA ANALYSIS OF AVIFAUNA ON ASCENSION ISLAND - Maj B J Hughes

### Introduction

The Army Ornithological Society (AOS) expedition to Ascension Island in November 1996 collected blood samples for DNA analysis from about half of the species of sea and land birds that occupy the Island. Most of the birds breed in reproductive isolation and are ideal targets for studies using DNA techniques. Samples collected by the expedition are the only known samples taken from birds on the island and were forwarded to the Zoology Museum, University of Copenhagen to add to their world wide DNA data base. The information in this data base is freely available to all and can be viewed via the Internet. In total 57 samples were taken from nine different species including the endemic Frigate Birds *Fregata aquila*. This report describes the field procedures used to capture the birds and the techniques used to obtain the specimen. Samples were taken from live birds which were rung and then released.

DNA analysis is becoming a commonly used tool in ornithology, notably in studies of population structure and life history traits. A letter by Peter Arctander and Jon Fjeldsa in ibis Volume 136 March 1994, where they suggested that field ornithologists who were handling birds should consider collecting blood samples and a proposal by some of the expedition members to start ringling birds on Ascension Island, generated the initial idea that the Society should get involved in collecting blood samples to add to the world wide database. Planning and organising the operation turned out to be remarkably simple

### Sampling

Samples are easy to collect even from live birds and are easy and cheap to store Only a very small amount of blood is needed. A single drop is sufficient to share between a dozen research groups Prior to departure for Ascension Island the expedition obtained 200 buffers and syringes from the Zoological Museum at the University of Copenhagen. The equipment together with a field guide to the process (Annex A) was supplied free of charge and was sent by return post The AOS was issued with a unique identification code "JHG" which prefixed all the reference numbers of the samples collected by the Society.

DNA can be obtained from any live bird by tapping a small amount of blood via a tiny puncture of the wing vein (for small to medium-sized species, e.g. up to doves) or the tarsal vein (for larger birds). Using the buffers that were supplied by the museum, avian blood can be stored at ambient temperatures, which made the field collection extremely easy This type of buffer was essential because the expedition was without a refrigerator.

### Ex BOOBY V

The majority of the field work was carried out by the two members who had ringling licences and they were assisted by others from the team. The expedition collected 57 blood samples from nine different species (Table 2).

In common with other oceanic islands Ascension has endemic species. The Ascension Island Rail became extinct during the last century but the Ascension Frigate Bird although on the "red list" of endangered species still survives there in good numbers. The species is rare with a small world population of about 5,000 birds.

Without going to Boatswain Bird Island (BBI) it is difficult to capture this species. The expedition however was fortunate and obtained DNA samples from two of these birds. The first was obtained from juvenile bird which had recently been killed and partly eaten by a cat. A good sample was obtained by scooping into a buffer, soft congealing blood taken from the neck.

Blood Samples Collect by the AOS on Ascension Island

English Name	Scientific Name	Number of Samples
Brown Booby	<i>Sula leucogaster</i>	2
Masked Booby	<i>Sula dactylata</i>	6
Ascension Island Frigate	<i>Fregata aquila</i>	2
Yellow-Billed Tropic Bird	<i>Phaethon lepturus</i>	1
Sooty Tern	<i>Sterna fuscata</i>	36
Fairy Tern	<i>Gygis alba</i>	1
Black Noddy	<i>Anous tenuirostris</i>	2
Canary	<i>Serinus flaviventris</i>	1
Red-cheeked Waxbill	<i>Estrida astrid</i>	6
	Total	57

Table 2

A lucky break on the last day of the expedition provided the second sample. Frigate Birds are in the habit of following fishing boats and attacking the live fish bait used by the fishermen. One juvenile bird, less skilled than the others, became completely entangled in the fishing line and was pulled back into the boat. Fortunately this boat contained one of the expedition members who dried the bird and nursed it until the boat docked. This specimen although bedraggled, looked impressive - the head and breast were white and the long hooked bill, light turquoise. The blood sample was taken from the tarsus vein at the top of the centre toe. The bird was placed on a rock close to the shore line where it slowly recovered from its ordeal and eventually sailed away.

The Yellow-billed Tropic Bird has a range which extends across the tropics from the Indian Ocean and South America to the Gulf of Guinea. Harrison (1983) suggests that the distinction allocated to the Ascension Island sub-species is dubious. The single DNA sample obtained by the AOS may be of use to confirm or deny the existence of the Ascension sub-species. Yellow-billed Tropic Birds nest in good numbers on BBI but on the main island of Ascension they nest on high sea cliffs almost completely inaccessible to man. One nest was found close to South Point and could be reached. An experienced climber and a team of four using a long rope were needed to lift the bird from its nest and carry it back to the cliff top. The bird was easily netted, it sat tight as it was protecting a single recently hatched chick. The blood sample was again taken from the tarsus and the bird released. It flew off strongly, dropping low and along the cliff away from the nest. The whole operation had taken 30 minutes. Everyone involved was relieved to see that the bird had returned to the nest when they passed the site and checked some two hours later.

### Sooty Terns

The last four AOS expeditions to Ascension have allocated considerable field time to the study of Sooty Terns. The effects of cat predation on this bird has been investigated and the population size determined. One rather unusual trait which occurs on Ascension is that some species breed on a less than an annual cycle while elsewhere in their range, they breed annually. This is true for the Sooty Terns which breed on Ascension every 9.6 months. The work on population size was considerably enhanced by the latest expedition which completed a repeat survey of the breeding grounds. This was accomplished at the same time of the breeding cycle as the first survey in 1990, thus enabling direct comparisons of results. The ringing team concentrated entirely on the Sooty Terns, ringing some 200 individuals including the 36 from which blood samples were obtained. These latest two projects will provide additional opportunities for future AOS expeditions to continue with the Society's long term study of the Sooty Tern.

During their breeding season these birds are easily caught. A fishing net was initially used to enmesh the birds as they sat on their eggs. This however proved to be unsatisfactory as it took the terns some time to return to their eggs once they were released. The majority of Sooty Terns were taken from the air using the same telescopic long handled fishing net. The birds actively defended their territory and circled low overhead making mainly faint attacks. Samples of blood were taken from a vein near the elbow of the wing. It was often difficult to find the vein and some birds were repeatedly probed without yielding any blood. This is in sharp contrast to the amount of blood spilt by the ringers who often fell onto sharp volcanic rocks, while looking skywards, as they attempted to net the passing Sooty Terns.

### **Other Birds**

The two species of land bird, Canary and Wax bill were introduced to the island in 1840 and since then have lived in reproductive isolation. DNA sequence analysis of other populations of Canary and Wax bill when compared with the population on Ascension, may reveal that these birds have evolved during the last 150 years into a separate sub species. Both species have thrived on the island and exist in good numbers. The water available in some of the gardens in the Two Boat settlement attract these birds and this is where they were trapped. A short mist net was set up in one of the gardens close to a small pool and the team retired to the patio to observe events. Within minutes a flock of Canaries appeared but only one female was enmeshed. The bird was measured and a blood sample was taken by clipping a toe nail short. As this operation continued six Wax bills were trapped in the net; they were measured and the blood sample taken using the same technique.

The expedition discovered the first evidence, in recent years, of large scale breeding of Masked Boobys on the main island. Twenty breeding pairs with eggs or young chicks together with a roost of 85 adults were found at Letterbox. Six nesting birds were lifted off the nest and a blood sample extracted from the foot. When the operation was complete the birds were then placed back on the ground, where they scurried back to the nest and sat glowering at the intruders. The birds were infested by parasites including large flat flies so those individuals who had handled the birds had to de-lice themselves.

BBI and all the stacks situated off the main island have been designated SSIs. These rocks are the roosts and nest sites of thousands of sea birds. The cliffs also provided homes to lesser numbers of birds. The only practical way of approaching the birds on these cliffs is by boat. Two Brown Boobys, two Black Noddys and one Fairy Tern were lifted from ledges and blood samples extracted from their feet. The rocking boat, cramped conditions and the swell made the process difficult. However, with time and the will, it would be possible to sample and ring many more sea birds using this method.

### **Data Handling and Accession**

Detailed records were made of each bird from which a blood sample was obtained. Two team members confirmed the identification of each species. Ringing data, photographs and the exact location in the form of a six figure grid reference were compiled. A six page abstract of this data together with the buffers containing the blood samples were sent to the University of Copenhagen when the expedition returned to the UK and receipt was acknowledged. Currently c 10,000 samples from c 1600 species are stored on the University's database. All of the species sampled on Ascension Island were new additions to the database.

The collections can be viewed on the Internet by anonymous ftp on virus.fki.dth.dk (129.142.74.40). Login as user anonymous and your e-mail address as the password then change directory to pub/blood. The file aves.2 contains the data in an uncompressed version, while aves.2.Z is compressed (remember to use binary ftp when transferring the compressed version). Bona fide users who want to carry out research can obtain tissue (blood or muscle) in either EDTA or DMSO buffers, which are stable at room temperature. The samples will be sent by ordinary mail.

### **Conclusion**

The 1996 AOS expedition has collected unique field data and made it available to all research scientists. The 57 new blood samples which were gathered will allow molecular biologists to answer a few more questions relating to the birds of Ascension Island.

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## Annex A

### COLLECTING OF SAMPLES FOR DNA-WORK

The following instructions are based on the experiences of the DNA laboratory of the Department of Population Biology and Vertebrate Department, Zoological Museum, University of Copenhagen. We urge all those who help us by collecting material for our DNA collections to follow these instructions carefully.

1. **Identification:** When collecting samples from live animals it is impossible to make a posteriori controls of the species' identity. Therefore it is of utmost importance that the identification of the individual is 100% correct. It is preferable to have one less rather than a misidentified data set in our computer. In uncertain cases photo-identification can be used, but it must be stated on the sample tube and in the journal that photos must be consulted. The sex should be recorded when possible. When the DNA-samples are taken in connection with the collection of whole animals (such as skins and alcohol specimens), it must be stated both in the journal and on the label of the specimen that a DNA-sample No exists. The scientific species name must be given, also on the sample tube.
2. **Marking of samples:** Regardless of which kind of DNA-sample is being taken, it must be marked with a "sample number", which should be composed according to the following example PA8-17.01.1990. Here the first two letters represent the initials of the collector. These have to be designated by the Zoological Museum (Tammes Menne) prior to collecting, in order to avoid different persons using the same "sample number" (3 letters can be used as well). The number directly after the initials gives the serial number for that day, i.e., in this case the 8th sample. After the dash comes the collecting date (day, month, year). Always use two digits for day and month and always use four digits for the year. By using this number the locality can be found in the journal. The sample number has to be written on the sample tube as well as in the journal.
3. **Preservation:** For all methods of preservation, the samples must be preserved as soon as possible (DNA degradation starts shortly after the death of the tissue). In the tubes there is DMSO (Dimethyl Sulfoxide), 25%, saturated with NaCl (ca 5 M). This preservation liquid is well suited for storage at room temperature, whereas long-time storage is done in a refrigerator. If the samples contain tissue, it is best that it is finely partitioned.
4. **Practical:** Tammes Menne at the Zoological Museum delivers tubes filled with buffer, and syringes, against receipt. **IMPORTANT** Return all unused equipment as soon as possible. The filled tubes must be returned together with a complete list: sample number, species names, localities and remarks on f.inst skin, photos, etc and the collector's address and telephone number.

### 5. Collecting blood samples from birds:

- a. From hummingbirds and the other very small birds a few small blood drops can be obtained by cutting a toenail at its base. Have patience; the bleeding may be slow, and may start as late as one minute after the cutting.
- b. From small to thrush-sized birds the blood sample is taken from the wing vein. Clear away the feathers on the elbow, using a wet finger-tip. The vein usually easily visible, is punctured by using a single-use syringe. The blood drops appearing on the surface are sucked up in the syringe or allowed to run right into the cryo-tube, which is held up to the skin. If the latter method is used, the puncture may be made with a sharp and sterile needle or insect pin. With small birds, don't try to induce the syringe into the vein, as the delicate vein wall is easily sucked into the syringe. Normally the bird bleeds only one or

a few drops of blood In case of stronger bleeding, put a piece of cotton or porous paper on the wound, and hold the bird with its wing closed for a minute.

c. Larger birds can be bled from the tarsus with a single-use syringe. The tarsal vein is usually easily detectable.

**DNA SAMPLING - Cpl C Wearn (RAFOS)**

Blood samples for DNA analysis were taken from the Sooty Tern, Black Noddy, Fairy Tern, Ascension Frigate Bird, Yellow-billed Tropic Bird, Brown Booby, Masked Booby, Wax bill and Canary.

The first birds to be sampled were the Sooty Terns from the Waterside Fairs, followed by the Masked Boobies which were resident on Letterbox. It took a boat trip around the coast to Boatswain Bird Island and back to find our next species, an adult and one juvenile Brown Booby and two Brown Noddys. Then came a Fairy Tern; a Yellow-billed Tropic bird came forward but changed its mind about alighting on the boat. It was not until one of the later trips to the Fairs that a sample from a different Yellow-billed Tropic Bird was taken.

Two techniques were used to take the blood samples: the first was by using a hypodermic syringe and the second was by cutting a claw, so nicking the blood vessel which runs through the length of the claw. Once the sample had been taken slight pressure was applied to the sampling point to stop the flow of blood.

Most of the samples taken from seabirds were from a vein in the foot of the bird, where the veins could be seen more easily The dark skin on some of the birds made the detection of veins more difficult It is essential to know exactly where to locate the veins and to do this with care, so minimising the stress experienced by the birds. The Canary had its blood taken from the wing, but the Waxbills had their blood taken by nicking the vein in the claw.

LOCATION OF SAMPLE SITE		
WING	WEB	CLAW
Sooty Tern Fairy Tern Brown Noddy Canary	Sooty Tern Brown Noddy Masked Booby Brown Boody Yellow-billed Tropic Bird Ascension Frigate Bird	Wax bill

The sample site favoured for the Sooty Tern was the wing, with samples also being taken from the wings of Fairy Tern, Brown Noddy and the Canary. By far the easiest sampling site on the larger birds was the web, where the veins could be seen more clearly This site was also used on a few of the Sooty Terns, a second Brown Noddy, and the very last bird to be sampled, the Ascension Frigate Bird. The size of the Wax bill in relation to the syringe needle, meant that the claw was the most viable and safest option

**LETTERBOX BREEDING SURVEY REPORT - Sgt C Etheridge (RAFOS)**

**Introduction**

One of the aims of the Ex BOOBY V expedition to Ascension was to observe and record seabird activity around the Letterbox feature and especially to look for breeding and roosting sites of seabirds.

Letterbox is the most easterly part of Ascension and forms a remote circular projection from the main island. Its close proximity to the densely populated Boatswain Bird Island (BBI) marks Letterbox as one of the most likely on-shore areas where seabirds may still breed. The only seabird species that still breeds in any number of the main island is the Sooty Tern in the south western part of the island. Along the northern edge of Letterbox are steep cliffs some 400 feet high. Across the top, the surface of ash and lava is relatively flat and slopes southwards to the eastern and southern shores. As in many other parts of Ascension, breeding seabirds on Letterbox have suffered badly from the introduction of cats and rats. A more detailed AOS Letterbox report has been prepared by Hughes and Walmsley (1992).

## **The 1996 Survey**

Breeding bird surveys were carried out on two days during the expedition. On 31 Oct 96 after a two hour hike we arrived on Letterbox where we split into two teams, one walking from South East Bay around the southern coastline, then north to Bottle Point. The second team walked west along the northern cliffs to Bottle Point erecting cairns at Ordinance Survey Grids 5768 1217, 5771 1218, and 5774 1217, to provide future reference points. Because of the difficulty in viewing the northern cliffs, roosting and breeding seabird sites were recorded during a boat survey to BBI on 6 Nov 96.

### **Systematic list or observations**

Red-billed Tropic Bird. Breeding was confirmed at two locations on Letterbox (Grid 5774 1206) Whale Point and (Grid 5767 1207) South East Bay. Up to five birds were seen flying along the northern cliffs or moving in and out of the lower cliff faces.

Yellow-billed Tropic Bird. Breeding was recorded at one location in South East Bay (Grid 5767 1207) where three pairs were observed at nest sites. Up to six birds were observed along the northern cliffs.

Masked Booby. Important and significant records were made of breeding Masked Boobies on Letterbox, from the lower coastal slopes of Bottle Point round to South East Bay. At Bottle Point (Grid 57761214) twelve nests were found, all but one nest with an incubating adult. The nest contents were: four with one egg, five with two eggs, and three with one egg and one small chick in each. There was also a group of 85 Boobies comprising adults and juveniles at this site. Further south was another small group of four incubating Boobies which were not disturbed. A further small breeding colony with six breeding pairs was found at Whale Point (Grid 5776 1205), and single nests at Grids 5772 1205 and 5766 1204. This gives a total of 24 recorded nests of Masked Boobies on Letterbox during our visit. Additionally small groups of Boobies were observed passing west and south along and around the coastline.

Brown Booby. Breeding was confirmed at three localities and suspected at two others on Letterbox. On the northern cliffs there is a mixed seabird breeding site judging from the amount of guano covered ledges. One Brown Booby nest contained a chick with an adult at Grid 5768 1218, and five more pairs were seen on the cliff ledges. Further west another suspected mixed seabird breeding colony was recorded at Grid 5772 1219 during the boat trip to BBI, but we were unable to give accurate species composition and breeding figures because of the agitated sea conditions in this area. North of Bottle Point and immediately below the Letterbox position at Grid 5775 1216, eleven Brown Boobies and other species were seen flying and landing on the cliff ledges. On the south coast mixed seabird breeding site was located west of Whale Point at Grid 5774 1206, but probable incubating adults were seen. In South East Bay is another mixed seabird breeding colony at Grid 5767 1207; one pair of Brown Boobies were seen at a nest site and up to twelve roosting birds were present.

Ascension Frigate Bird. There was no evidence of breeding of this endemic species on Letterbox. However, roosting birds were found on ledges and there was a constant movement of Frigates over and around Letterbox. Higher counts were made on the northern cliffs with up to 60 at the mixed colony site at Grid 57681218. North of Bottle Point at Grid 5775 1216, a total of 15 Frigates were on ledges and a freshly killed juvenile (white headed) bird, probably killed by a cat, was found near Whale Point.

Sooty Tern. There was movement of small groups of birds flying west and around Letterbox, but at present there are no breeding colonies.

Brown Noddy. This is mainly a species that breeds on the small inshore stacks around the mainland, but may occur in cliff nesting sites. One individual was seen landing in a mixed colony north of Bottle Point.

Black Noddy. Large numbers of this species were seen on the ledges and flying around Letterbox. Along the northern cliffs there were few birds to be seen on ledges, but small groups were moving west at Grid 5768 1218 and 5772 1219. North of Bottle Point several birds were seen landing on ledges. Counts could however be made along the south and west coast; approximately 200 birds were recorded west of Whale Point at Grid 5774 1206, 250 birds on a south-west facing cliff at South East Bay at Grid 5767 1207 and another 200 birds on a north-west facing cliff at the same site Grid 5767 1206.

Fairy Tern. Single birds and small groups were occasionally seen flying along the northern cliffs.

## **Other observations**

Red-footed Booby. None were observed on Letterbox during our visit on the 31 Oct. This species occurs on BBI where the usual small number of birds (ten white and five brown phase) were recorded on 6 Nov during the boat trip.

Feral cats were not seen, but their presence was evident in the number of scats that were found and in the three cat larders, one of which comprised mainly of Frigate Birds. Other corpses found included six Sooty Terns and one Noddy Tern.

## **Conclusion**

The importance of Letterbox as a restoration site for breeding seabirds cannot be over-emphasized. This preliminary breeding survey is an indication of its conservation value as an over-spill site for birds from BBI and is especially attractive for species like the Masked and Brown Booby and Frigate Bird. Other confirmed breeding species were Red and Yellow-billed Tropic Birds and probably Black Noddies. Further surveys are needed for species breeding at different periods in the year.

With the confirmed breeding of seabirds on the cliffs and especially on the low lying parts of Letterbox, the eradication of feral cats on Ascension is now even more urgent. To witness the spectacle of half-eaten and decapitated seabird corpses, some of which are vulnerable and endangered species, provokes the thought that since man is responsible for the introduction of an alien predator, on Ascension Island he should take full responsibility for their control.