environment
& tourism

Department:
Environmental Affairs and Tourism
REPUBLIC OF SOUTH AFRICA

Ref: C10/14/2
Enquiries: Mr H Buenk
Tel: 021 405-9415 **Fax:** 021 405-9424 **E-mail:** hbuenk@deat.gov.za

Prof S L Chown
DST-NRF Centre of Excellence for
Invasion Biology
Stellenbosch University
Private Bag X1
MATIELAND
7602

17 February 2009

Dear Steven

PRINCE EDWARD ISLANDS MANAGEMENT COMMITTEE (PEIMC) MEETING:
24 FEBRUARY 2009 (09:30)

1. Enclosed for your information, please find the documentation (including agenda, time and venue) for the above-mentioned meeting. It would be much appreciated if you could kindly go through these documents in detail prior to the meeting.

2. Should you have any queries, you are welcome to contact me.

3. Looking forward to seeing you on 24 February.

Kind regards

Erik Buenk
for DIRECTOR-GENERAL

26th PEIMC Meeting – Tuesday 24 February 2009

APOLOGIES:
Prof Bester - lectures
Antionet vW - prior commitments
Adriaan D - at SANAE
Byren A
Candice S
Tracy B
Mark M - off sick
Hein S - at SANAE
Danie S - on course
Hendricks H - on course

NB1: ***John C Marienne D V are willing to be CO's for the voyage***

NB2: ***SAWS and McQuaid willing to have participants on board until rooms are fixed***

NB3: ***Guidelines received from Geoff Cowen with regards to PEIEMP forwarded by D: EIE***

NB4: ***Accommodation at base:*** 64

E-Base – 7
Ipeki – 2
Bird Lab – 1
Mammal Lab – 1
Double room – 2
Bolug – 1

Total = 78

DOCUMENTS TABLED:

2.1 Funding of portaloos
2.2C Country Clean-ups – Comments from D: EIE
2.8 Application for King Penguins
2.11B 2008 December summer survey CO Report
3.20 Revised SANAP 3 – Prof McQuaid

TEA: 09:15

TEA: 11:30

LUNCH: 13:00

TEA: 14:30

26th Prince Edward Islands Management Committee Meeting

24 February 2009

AGENDA
of the
26th PRINCE EDWARD ISLANDS MANAGEMENT COMMITTEE MEETING

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VENUE: ***Department of Environmental Affairs & Tourism***
Directorate: Antarctica & Islands Conference Room
East Pier Building
East Pier Road
V & A Waterfront
CAPE TOWN

DATE: ***Tuesday, 24 February 2009***

TIME: ***09:30***

****

1. WELCOME AND OPENING

2. MINUTES OF THE 25th PRINCE EDWARD ISLANDS MANAGEMENT COMMITTEE MEETING (*7 November 2008*) ***Doc 2***

MATTERS ARISING:

2.1 Building of new and decommissioning of old Marion Island base
- Update on progress made *(Mr H Valentine)*
- Funding of portaloos & investigate design options *(Mr H Buenk)* ***To be tabled***
- Equipping scientific laboratories *(Mr H Valentine)*

2.2 Removal of rubble and building waste *(Mr J Cooper)* ***Doc 2.2A & B***

2.3 World Heritage Site (WHS) status for the Prince Edward Islands *(Mr H Valentine)*

2.4 Publication and implementation of the Prince Edward Islands Environmental Management Plan and way forward *(Mr H Valentine)*

2.5 Extension of Special Nature Reserve Status of the Prince Edward Islands to include territorial waters out to 12 nautical miles (MPA) *(Mr J Cooper/ Mr H Valentine)*

2.6 RAMSAR Wetland Reserve Status for the Prince Edward Islands *(Ms K Ngxabani-Tikana)* ***Doc 2.6***

2.7 House Mouse update *(Mr J Cooper)*

2.8 Application for King Penguins from Marion Island *(Ms K Ngxabani-Tikana)* ***To be tabled***

2.9 CTBTO Station RN62 – Marion Island (par. 2.10) *(Mr H Valentine)* ***To be tabled***

2.10 Developing an ISO14001-based environmental, health and safety Management system for SANAP (par. 3.2) *(Mr H Valentine)*

2.11 Summer survey to Prince Edward Islands (par. 3.4) *(Prof S Chown /Mr J Cooper)* ***Doc 2.11***

3. SANAP 3 VOYAGE PARTICIPATION FORMS

	AFFILIATION/PRINCIPAL INVESTIGATOR	NO. OF PARTICIPANTS	
3.1	DEAT: A&I	3	*Doc 3.1*
3.2	DEAT: EIE	1	*Doc 3.2*
3.3	NDPW	9	*Doc 3.3*
3.4	TITAN	11	*Doc 3.4*
3.5	SAWS	2	*Doc 3.5*
3.6	GON O	3	*Doc 3.6*
3.7	BASTOS ADS	1	*Doc 3.7*
3.8	BESTER MN	3	*Doc 3.8*
3.9	SMITH V	3	*Doc 3.9*
3.10	van VUUREN B	4	*Doc 3.10*
3.11	CRAWFORD RJM	2	*Doc 3.11*
3.12	RYAN P	3	*Doc 3.12*
3.13	COLLIER A	2	*Doc 3.13*
3.14	MONTEIRO P	1	*Doc 3.14*
3.15	BUMBY A	2	*Doc 3.15*
3.16	MEIKLEJOHN I	4	*Doc 3.16*
3.17	CHOWN SL	3	*Doc 3.17*
3.18	CHOWN SL	6	*Doc 3.18*
3.19	CHOWN SL	3	*Doc 3.19*
3.20	McQUAID C	9	*Doc 3.20*

SHORE-BASED **57 + 16 (M65) + 15 (M66) = 88**
SHIP-BASED **18**

TOTAL **90 – en route <u>to Marion</u>**
TOTAL **91 – en route <u>to Cape Town</u>**

5. DATE OF NEXT MEETING

6. CLOSING

Doc 2

25TH PRINCE EDWARD ISLANDS MANAGEMENT COMMITTEE (PEIMC) MEETING

MINUTES OF THE MEETING HELD ON 7 NOVEMBER 2008 AT THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM, DIRECTORATE: ANTARCTICA AND ISLANDS, EAST PIER BUILDING, EAST PIER ROAD, V & A WATERFRONT, CAPE TOWN

PRESENT

Mr H R Valentine *(Chair)*	: Department of Environment and Tourism (DEAT) Directorate: Antarctica and Islands (D: A&I)
Ms C Phamoli	: DEAT, D: A&I
Ms K Ngxabani-Tikana	: DEAT, D: A&I
Mr H Hendricks	: S A National Parks
Ms T Bossenger	: National Research Foundation (NRF)
Mr H Buenk	: DEAT, D: A&I
Mr G van Zyl	: DEAT, D: A&I
Mr W Smith	: National Department of Public Works (NDPW)
Mr D Smit	: DEAT: Directorate: Environmental Impact Evaluation (D: EIE)
Ms C Jacobs	: DEAT, D: EIE
Ms A van Wyk	: S A National Parks
Mr J Cooper	: University of Cape Town (UCT)
Ms A Charlie	: DEAT, D: A&I *(Scribe)*

APOLOGIES

Prof S L Chown	: University of Stellenbosch (US)
Ms Theressa Frantz	: DEAT
Mr M Majodina	: South African Weather Service (SAWS)
Mr A Dreyer	: DEAT, D: A&I

1. WELCOME AND OPENING

The Chairperson welcomed everyone present and thanked them for attending.

Adoption of agenda
The agenda was adopted

2. APPROVAL OF PREVIOUS MINUTES (24TH PEIMC MEETING)

Minutes were reviewed with amendments as follows:

Page 5, item 2.10 Faanorf should read 'Faanhof',

Additional documents were 2.1 A, 2.2B, 2.5B, 2.6B, 3.2B1 and 3.3 B the recent email sent by Mr Deon Nel under item 2.5.
Ms Ngxabani-Tikana added additional document 3.2 to ISO 14001. 'Marion Island New Research Base Construction and Take over Safety Plan'

The minutes were then adopted.

MATTERS ARISING

2.1 Building of new and decommissioning of old Marion Island base

- Update on progress made

The Chair reported on the current status of the Marion Island base. He reported that the base was supposed to be commissioned early 2008. He stated that NDPW needed R40 million to finish the construction. He added that NDPW required 40 persons for four (4) consecutive months in order to finish the base. Two (2) years ago National Treasury informed DEAT that there would be no more funding for Marion base. DEAT Director-General (DG) requested an urgent meeting with NDPW DG to solve the issue. Mr Smith reported that tenders were withdrawn due to lack of funding and would be continued on approval of additional funding. He stated that damages were not attended to e.g. leakages in roofs, apart from mice that could worsen the situation and no management of the new base was currently in place. A meeting was being held the same morning of the meeting between Messrs Mike Murphy and Nico Ras in that regard. The Chair added that there was still lot of work to be done outside e.g. catwalks. Mr Smith confirmed the Chair's earlier statement that they needed approximately three to four months to complete construction as the base was 90% complete. Hangar walkways incinerator needed attention as well. Ms van Wyk enquired what would happen if no funding was received. The Chair replied that it was a major concern that needed a speedy solution. Dr de Villiers enquired about the possibility of sending people for a year to avoid a need for additional trips. Mr Smith replied that could be an option to save costs on voyages. Ms van Wyk raised her concern about the budget. Mr Smith replied that the estimated budget required to finish the base was approximately R28-30 million. The Chair mentioned that decommissioning would be done only after completion of new base, during relief voyages. Ms Jacobs asked if there would be a plan for decommissioning and the Chair confirmed that there would.

- Funding of portaloos & investigate design options

Mr Buenk reported that he had approached two companies that manufacture portable toilets namely Econ-O-Loo and Woshbox. The toilet manufactured by Econ-O-Loo has a fixed tank and chemicals with a life-span of two (2) weeks were needed for efficient use. It was decided that this portable toilet is not suitable for SANAP's requirements.

The Hydraloo manufactured by Woshbox consists of a single septic tank with an integral bio filter clarifier to treat the effluent before discharge. The system is filled with water on installation, contents broken down, no power needed as everything was filtered out. The application of anerobic digestion in this system means that the waste is treated and not merely stored. Anaerobic sludge will accumulate over time and will need to be removed after 10 years of use. The clarifier or filter section is simply lifted on and sludge removed. The advantages and disadvantages of the system were discussed and it was decided that at about R39 000.00 per unit the HydraLoo was expensive. It was furthermore decided that the system couldn't be used within areas where freezing temperatures were experienced. The meeting decided that a very simple and basic outer unit with a seat and sealable separate tank would still best serve SANAP's requirements.

- Equipping of Scientific laboratories

The Chair reported that Grant holders were requested to provide inputs on the equipment required for the labs and the total was R10 million. Steering Committee would address the issue, adding that 80% of the requirements received were not actual lab equipment. NRF would repeat the survey and that had to be laboratory equipped in order to upgrade the equipment such as microscopes etc. with the assumption that the base would be ready for occupation in 2009.

2.2 Removal of rubble and building waste (Country clean-ups at Marion)

Mr Cooper reported that over the years due to rough seas eroding plastics bags flown to Gunner's Crane Point and in the long term something needed to be done. There's a planned route to Crane Point for the new base and careful consideration should paid to avoid concrete platform from falling. It could be made part of decommissioning of old base. Mr Smith added that walkway thus far was planned up to old Gym and not Crane Point as there was no funding nor clear details with regards to Crane Point. The Chair concluded that there was a need to table it in a joint meeting with DEAT, and requested Mr Smit and Ms Jacobs to peruse the scoping report for the new Marion base with reference to the walkway up to Crane Point.

Mr Cooper stated that Mr Petrus Kritzinger (M65 Team Leader) was keen on walking and exploring around the island and he'd found several rubble piles (took photos) on Marion Island. That rubble had been in existence for approximately 15–20 years. He indicated that it would be added to the 2009 relief voyage rubble removal schedule and would check if there was any support required for helipad. He felt that Mr Kritzinger should be commended for his job on Marion Island. Mr Cooper enquired as to whether pictures of repeater stations should be removed. Mr van Zyl replied that

they were important for communication with the island. It was suggested that repeater sites should be established, to which Mr van Zyl felt that investigation might not be completed during the 2009 take-over due to shortage of manpower. He proposed that removal of repeater stations be put on hold pending finalisation of the investigation. He added that the structure at Repetto's Hill might be used for repeater station. Mr Cooper stated that loose bits had been removed except for metal frames, assuring that there was no environmental harm done currently. He also mentioned that repeater stations at Snok could be looked at during 2009 takeover. He thanked everyone for their assistance over the years in country clean-ups and undertook to continue with the work. The Chair concluded that these sites would be considered when planning for 2009 relief voyage.

2.3 World Heritage Site (WHS) status for the Prince Edward Islands (PEI)

The Chair reported that during DEAT Lekgotla held the previous week he had discussions with Ms Skumza Mancotywa from Bio-diversity Management (within DEAT) to finalise the WHS status for PEI. He reported that he attended WWFSA in South Africa and lot of opinions were explored. Ms Jacobs enquired if nomination was feasible at this stage as the PEIEMP was not in place. Mr Cooper indicated that WHS status could be selected anytime of the year, there were no more restrictions as in the past, enquiring if there was perhaps a meeting planned in 2008. The Chair replied that it would be held in the first week of February 2009. Mr Cooper stated that people participating in December 2008 PEI summer survey could be asked to produce some slides.

Ms van Wyk reported that the strategy of the coast was still the same. Mr Cooper said during the planning discussions, they would try and see if other countries could work in a much better place like Prince Edward. The Chair suggested that Ms Jacobs be involved in that meeting. Mr Cooper mentioned that time and planning needed more consideration and should not be rushed. Mr Cooper raised his concern on finding contractors to have more information. The Chair suggested that they plan a meeting in February/March with Mr Ntsizi November, Deputy Director: Bio-diversity Management to discuss the matter. This meeting should take place in Pretoria. The nominees to drive the process until finalisation were Messrs H Valentine, J Cooper, H Hendricks, D Smit, Ms K Ngxabani-Tikana, Ms C Phamoli and Ms C Jacobs. Mr Cooper requested inputs from PEIMC in preparation for the meeting.

2.4 Publication and implementation of the Prince Edward Islands Environmental Management Plan (EMP)

The Chair reported that he had approached Prof Steven Chown from the Centre of Excellence for Invasion Biology (CIB) of the University of Stellenbosch to revise the document as he had produced the first draft. Ms van Wyk enquired as to when the due date for Minister's signature was. The Chair replied that it was not known at the time. Mr Smit undertook to obtain inputs from Mr Geoff Cowan. Dr Hendricks reported that Mr Cowan provided tips on how the document should look like. He added that the more work done with him the better the chances. The Chair undertook to check Bio-diversity Management minutes where points that needed revision were outlined and also to obtain Mr Cowan's inputs before tasking Prof Chown.

2.5 Extension of Special Nature Reserve Status of the Prince Edward Islands to include territorial waters out to 12 nautical miles (MPA)

The Chair stated that it would not help declare MPA if there was no compliance in place. He said he was not aware of any movement or initiative in that regard. He added that the Minister would like to declare the MPA before his term of office ended. Mr Cooper stated that most MPA's are out of South African waters. He mentioned that he would draft a letter to Mr Deon Nel thanking him for the report and would copy the Director-General.

2.6 RAMSAR Wetland Reserve Status for the Prince Edward Islands (PEIs)

Ms Ngxabani-Tikana requested the Committee's inputs on what needs to be written on the plaque. Mr Cooper mentioned that World Heritage required that information. He undertook to obtain feedback and to send it to Ms Ngxabani-Tikana who on receipt would circulate it to PEIMC members. Mr Cooper undertook to inform M65 team that on 2 February 2009 RAMSAR certificates for PEI's and Makuleke Wetlands Reserve would be handed over by the DEAT Minister, and would ask them to honour the event by standing outside and take a photo. The Chair undertook to send a big banner in December 2008.

2.7 House Mouse update

Mr Cooper reported that he had to finish a draft document and would send it to DEAT in December 2008. He stated that UK government declined eradication for Tristan da Cunha as the poison would pose a threat to humans; however, approval was granted for Gough Island house mouse feasibility study. He suggested that two extra team members currently on Gough Island could overwinter on Marion Island. On Gough Island it was confirmed that mice were killing birds. He added that breeding of Albatross was at 14% and was supposed to be 75%, 248 birds and eggs were counted. Breeding is deteriorating (less than 1%) because mice kill adult birds. He concluded that it was reported that on Marion Island mice attack chicks.

2.8 Application for King Penguins from Marion Island

It was reported that Pretoria Zoo was still under construction. Dr De Villiers suggested that they be asked to re-submit proposal on completion of complex.

2.9 New huts at Marion Island

Mr Cooper reported that he visited all huts and there were minor leakages, windows needed to be attended to etc. NDPW would address the problem during the 2009 Marion relief voyage.

2.10 CTBTO: Station RN62 – Marion Island

Ms Ngxabani-Tikana informed the meeting that Dr Faanhof was currently in Russia and would circulate a response from him to PEIMC members regarding his plans.

2.11 Pollution at Marion base (biodegradable products)

Mr Buenk reported that he requested inputs from various cleaning material suppliers (shops) and had not received any feedback yet. Mr Oosthuizen confirmed that Sta soft is a biodegradable product. Dr De Villiers stated that a simple alternative for Sta soft was vinegar. Mr Cooper undertook to do market research on South African NGO's on the subject. He stated that the current Marion Island team discontinued use of toilet blocks but toilet cleaner instead, for they harm the environment. Mr van Zyl mentioned that in Hobbart there was a rack of biodegradable/environmentally friendly products. Mr Cooper stated that Australians revisited cleaning products at their bases and ended up in 5-6 types which they bought in bulks. The Chair requested everyone who had useful information on biodegradable products to forward it to Mr Buenk.

Mr Smit suggested that recycling of waste from islands should be revisited. He added that glasses could be washed and sorted according to colour before transporting back to South Africa, if required by the waste disposal company. Mr Cooper suggested that domestic bleach used for the boot washing ceremony in the past, should be replaced by Virkon S. Ms Ngxabani-Tikana undertook to do market research on Virkon S.

2.12 Quarantine Procedures: notice of new alien wasp at Marion, placement of Crawling insect sticky traps on SA Agulhas, procedures and facilities at East Pier

Mr Cooper reported that sticky traps were regularly checked on the way to Gough Island during 2008 relief voyage and there were no catch. The Chair was looking forward to Ms Jen Lee's (from CIB) research findings (thesis) through usage of ultra violet lights in the attempt/aim to trap insects.

2.13 Fuel tanks – alarm system/portable drip trays (par. 2.14)

Mr Smith felt it was not necessary to have drip tray at each pipe joint as anti-freeze should be enough to prevent leaks. Mr Cooper mentioned that in the event of spillage there should be a plan in place, in which Mr Smith responded that DEAT provided pads for spillages and they work. Mr Cooper reported that there were no drips experienced during fuel pumping both on Marion and Gough Islands recently. To Dr De Villiers' suggestion to keep chemicals in laboratories handy for washing of birds due to oil spills, Ms Jacobs confirmed that a contingency plan had been requested from SANCOB. Mr Smith concluded that the sooner new tanks were received the better.

NEW ITEMS

3.1 SANAP Approved Projects

Prof Valdon Smith's additional motivation for his new project as requested by the committee was approved and therefore funding would be released to him. Dr Ploen's

application was to be re-submitted to address queries by PEIMC regarding rubber duck etc.

3.2 Developing an ISO 14001-based environmental, health and safety management system (EHSMS) for SANAP

Ms Jacobs reported an ISO14001-based EHSMS had been developed in 1996, but that ISO had been upgraded and this system required extensive review and revision. She maintained that it needed to have a user-friendly approach and that some documents would be for SANAP in general and others for specific bases. When she and Mr van Zyl attended a series of meetings at the Australian Antarctic Division (AAD), they discovered that the AAD was contained under one division, as opposed to SANAP which involved many institutions/departments, e.g. DEAT, DST, NDPW, Titan, Smit Amandla, etc. The ISO 14001-based system for SANAP aimed to re-establish order and consistency, and it was still to be decided whether the environmental system would be separate from health and safety. In an attempt to identify relevant aspects and impacts, a workshop had been held, which rendered extensive results, which would need to be narrowed down, from which objectives and targets could be developed. It was crucial to get the documentation for the new Marion Island base in place. Mr Van Zyl added that a centralised storage system for all documents would be created. Mr Smit felt that a manageable system should be developed and grown at a later stage. The Chair ascertained that there would be a structure/skeleton in place where information would be obtained.

The Chair reported that SANAE had been officially commissioned to be a Search & Rescue (S&R) centre, with two units, one in Johannesburg and another in Bellville. It was decided that Rope Access Technique (for cliffs) currently provided for Gough Island for a period of two days to transport fatalities via stretcher should be extended to Marion Island as well. From his recent Gough Island relief voyage experience during fuel pumping, Mr Smith deemed it crucial that safety clothing issued be such that visibility is clear especially for helicopters.

- *Marion Island New Research Base Construction and Take over Safety Plan*

One standard document for SANAP community was suggested and should only differ per particular voyage requirements. Mr Smith stated that there should be guidelines not to stop the other parties from using their safety plan during take over voyages. Mr Van Zyl stated that the safety document should be accessible on the website (especially Scientists). Ms Jacobs felt that S&R training was essential, with Mr Cooper suggesting that it could be added as part of team training.

3.3 Guide for Science Co-ordination

The Departmental Coordinating Officer (DCO) title was agreed upon by the committee (not Departmental Controlling Officer as used during 2008 Gough relief voyage). The Chair emphasised that the DCO was in charge and the ship's Captain would override decisions only in cases of emergency. The revised version of the document would be sent to Principal Investigators for inputs.

3.3B Gear Checks document

The Chair thanked all those who had been involved in producing the final product of the document.

3.4 Summer survey to Prince Edward Islands

The Chair reported that approval of funding was received from DEAT DG and planning was underway for December 2008 summer survey to Prince Edward and Marion Islands. Prof Chown would lead the Prince Edward Group and Prof Bester to lead Marion group. Mr Cooper undertook to ensure that Prince Edward Island remains alien and animal free. In principle the voyage was approved.

It was confirmed that SABC Documentary was not supported. The Chair undertook to keep the PEIMC posted of developments.

4. DATE OF NEXT MEETING

5. CLOSING

The Chair thanked everyone for their diligence in serving in the Committee and those who travelled from far and that request for extension of term of office could be received shortly.

Meeting adjourned.

Doc 2.2A

COUNTRY CLEAN-UPS AT MARION ISLAND

SITES FOR ACTION IN APRIL-MAY 2009

NOTE: Helicopter support is required for those sites marked with an asterisk. Hut sites can be cleared during re-stocking.

ZONE 1 (BASE VICINITY)

Two sections of hydroshack power cable remain that run underneath the upper helicopter landing platform (46° 52.548'S, 37° 51.478'E; 40 m) and suspended below the wooden bridge over Prion Valley to the old generator shack. Removal of both sections should probably wait on dismantling of the old base.

ZONE 2

DAM SITE (46° 52.536'S, 37° 49.755'E)

Site requires inspection in 2009 to decide whether remaining stone chips should be removed (depends on degree of re-vegetation).

*DAM POWER CABLE (46° 52.527'S, 37° 49.856'E; 114 m)

End of power cable below dam on south bank (GPS Code MDAMPP). Removal of the cable all the way to the base will require trenching in places and helicopter support for removal of cut and coiled sections.

OLD BASE WATER PIPE (46° 52.670'S, 37° 51.078'E; 51m)

Exposed cut end remains at the above position for removal by trenching. Length of buried pipe unknown.

HYDRO-ELECTRIC SCHEME STRUCTURES (46° 52.186'S, 37° 50.46'E)

Three loose wooden planks and a scaffolding pole stored in drain well require removal. Nine embedded poles alongside river require removal by digging.

METAL STRAP (46° 52.409'S, 37° 51.065'E; 47 m)

Metal strap embedded in mire.

ZONE 3 (EAST COAST)

A.S.S 304

CAPE DAVIS BEACH (No GPS)

Large amounts of drift wood present. A decision is required as to whether the site should be cleaned up, in a way similar to that of Archway Bay.

CAPE DAVIS RONDAVEL SITE (46 49.729'S, 37 42.254'E; 53 m)

Two exposed anchor poles require removal.

*REPETTO'S HILL HUT (46° 50.302'S, 37° 45.201'E; 79 m)

Five long planks stored under the hut and a solar panel frame require removal during hut-restocking. An embedded scaffold pole from the old hut remains, cut off at ground level.

*REPETTO'S HILL (46° 50.543'S, 37° 44.770'E; 366 m)

Defunct repeater station base platform and stakes require removal if no longer needed for communication purposes. Will need a work party with tools.

LONG RIDGE RONDAVEL SITE (46° 51.185'S, 37° 47.841'E; 61 m)

Two anchor poles require removal.

BILL BRIGG'S BEACON ENVIRONS (46° 52.000'S, 37° 48.049'E; 401 m)

One of a reported three pieces of corrugated steel roofing (*ex* geomorphological experiment) is thought to remain in general vicinity of 46° 52.245'S, 37° 47.899'E; 315 m.

*THREE SISTERS VICINITY

Roll of wire mesh plus fence droppers (46 52.348'S, 37 48.221'E)
Roll of wire mesh plus fence droppers (46 52.362'S, 37 48.251'E)

A sheet of corrugated steel roofing from the Bill Briggs Environs site has been moved to one of the above sites. It is suggested both sites can be cleared using a single net.

SEALER'S BEACH (46° 50.876'S, 37° 49.721'E)

Rusted 200-l drum reported on shore adjacent to the King Penguin colony. Site requires checking.

SHIP'S COVE (46° 51.314'S, 37° 50.595'E)

Two poles used in past as abseiling attachments on adjacent bluff require removal by digging out at 46° 51.248'S, 37° 49.468'E; 50 m.

*KATEDRAALKRANS HUT AND ENVIRONS (46° 53.893'S, 37° 46.483'E; 754 m)

Five embedded metal stakes from old hut site require removal. A pick axe will be required, suggested to be done during hut re-stocking. A defunct automatic weather station tripod a hundred metres or so south/south-east of the hut among black lava requires an accurate position. A report of several (3-4?) wooden planks dropped near the hut also requires confirmation and a position.

TAFELBERG (No GPS)

Three wine bottles reported as present.

THE FAULT (46° 52.741'S, 37° 50.137'E)

Rusted stump of an unused pole requires removal. Will need to be dug out.

ARCHWAY BAY VICINITY (46° 54.026'S, 37° 53.608'E; 36 m)

Site to be cleared of a year's accumulation of drift wood. Two embedded poles present on the cliff top *c.* 50 m north of the colony need to be dug out.

*KILDALKEY HUT (46° 57.291'S, 37° 51.211'E; 81 m)

Several old aerial and scaffolding poles stored on hut catwalk require removal during hut re-stocking.

ZONE 3 (WEST AND SOUTH COASTS)

*"HOOKER COVE" (No GPS)

Mooring rope coiled by "sealers" above shore-line during early April 2008. GPS position required. Requires helicopter support with net for removal.

*SNOK

Lower repeater station site (46° 56.714'S, 37° 47.006'E; 602 m)
Upper repeater station site (46 56.680'S, 37 46.426'E)
Single solar panel frame (46 56.702'S, 37 47.038'E)

Platforms and stakes of both defunct repeater stations require removal if no longer required. Will need a work party with tools.

BERET VICINITY (No GPS)

Partially buried piece of suspected roof cladding reported. Site needs to be found.

*GREY-HEADED ALBATROSS RIDGE HUT (46° 57.710'S, 37° 42.515'E; 87 m)

Several fence posts and scaffolding poles stored on hut catwalk require removal during hut-restocking.

ROOK'S PENINSULA RONDAVEL SITE (46° 57.997'S, 37° 40°.976'E; 79 m)

Eight embedded poles and buried cladding remain for removal.

LE GRANGE KOP (46° 56.828'S, 37° 35.701; 183 m)

Rusted stump of metal pole on eastern ridge *c.* 50 m from top. Needs to be dug out.

*SWARTKOP POINT HUT (46° 55.462'E, 37° 35.719'E; 25 m)

Partially-exposed plywood sheets and three old anchor poles used to support a too-short aerial wire require removal (if not yet removed).

KAALKOP (46 54.436'S, 37 36.050'E; 103 m)

Stump of a rusted metal pole with old rope fixed on edge of crater gains access to remove trapped Macaroni Penguins. Should be replaced for safety reasons. Existing pole would need to be dug out.

KAMPKOPPIE RONDAVEL SITE (46° 52.992'S, 37° 37.828'E; 67 m)

Seven embedded poles remain visible, along with various buried hut remains Poles need to be dug out,

LAEKOP HUT SITE (46° 50.937'S, 37° 40.466'E)

Site requires inspection.

SUMMARY OF MAIN AIR SUPPORT REQUIRED DURING 2009 RELIEF

1. Removal of cached items (corrugated roofing sheet. fence posts, wire-mesh rolls) by net from two sites in the vicinity of the Three Sisters.

2. Removal of partially buried power cable which runs from near the dam to the old base. First needs to be dug/pulled out and coiled in cut sections.

3. Removal of cached mooring rope at "Hooker Cove".

4. Removal of remnants of the three repeater stations on Repetto's Hill and on Snok (2), if no longer required for communication purposes.

5. Removal of poles, planks and other items cached at huts during re-stocking.

6. Removal of embedded anchor poles at various sites around the island, including at hydroshack, huts and old hut sites. Most could likely be dug out by hand and then removed by air during hut re-stocking.

John Cooper, 17 February 2009

Doc 2.28

12 February 2009

The Prince Edward Islands Management Committee

Clarification on the status of the Santa Rosa historical route marker

The Santa Rosa route maker (a.k.a. Cat-hunter post) was erected by a cat hunter in the period 1986-1989 and expanded upon by a series of cat hunters through to 1991. For overwintering team members and short term visitors alike, this "route marker" has become a part of Marion history and culture. However duing the late 1990s' the natural elements damaged the relic and unfortunately some of the original parts went missing as they became scattered around the marker. In 2006, overwintering team members made an effort to restore the route marker in memory of the cat hunters and in commemoration of 15 'cat free' years on the island. Removing cats from the island is a remarkable international achievement and seems more than worthy of this small reminder and commemoration.

The historical value of the route marker has been questioned and some feel that it is an eyesore on the island that should be removed. The historical importance, benefit and environmental impact of the route marker seems no different to that of the two commemorative crosses and annexation structure (with commemorative inscription). Although the route marker is representative of more recent achievements on Marion Island, we think its status could be viewed similarly to the two crosses (of an unknown person and of Joseph Daniels') and the concrete block commemorating the island's annexation near Marion Base. Many 'Marionites' believe that the route marker represents an important historical reminder and has no impact as an "eyesore".

Currently preservation or destruction of the route marker is controlled by personal opinion rather than an official stand. It would be useful if the management committee could give an official statement regarding the route marker so that it can either be removed or given the required care and attention.

Yours sincerely

P Kritzinger, G Jones, N de Bruyn

As representatives for concerned 'Marionites'

Doc 2.6

From: "John Cooper" <John.Cooper@uct.ac.za>
To: <bamba@ramsar.org>
Date: 2/6/2009 7:51:11 AM
Subject: RE: Prince Edward Islands Ramsar Site

Dear Abou

Many thanks for your helpful and speedy reply.

The Prince Edward Islands Management Committee has a meeting later this month, when the matter of the islands' Ramsar status and how to commemorate it will be discussed. The wording you have sent will help us consider the design of a commemorative plaque to mount on the weather station at Marion Island. I assume the Ramsar logo should be added to the plaque, similar to World Heritage ones?

If and when a ceremony eventuates, I would expect that it will be possible to send the Secretariat an illustrated account for posting to your web site.

In the meantime, you might like to look at the recent news section on www.deat.gov.za, where you will be able to find the speech given by the South African Deputy Minister of Environmental Affairs & Tourism on World Wetlands Day earleier this week. The speech mentions the Prince Edward Islands and its Ramsar status.

I will endeavour to keep you informed on progress.

On a related matter, I am close to finalizing the Secretariat's queries of late last year on the RIS texts I drafted for Gough and Inaccessible Islands on behalf of the Tristan da Cunha Government, so that these two islands, designated by the UK, may be added to the Ramsar list of Southern Ocean sites, along with the Prince Edwards.

Kind regards

John

>>> "BAMBA Abou" <bamba@ramsar.org> 02/04/09 1:48 PM >>>
Dear John Cooper,

Thanks for your message and your commitment for the management of such a unique Ramsar site.

To respond to your question regarding signs at Ramsar sites, please note that the Ramsar Standing Committee, by Decision SC19.18 (1996), has invited Contracting Parties to identify Ramsar sites with signs bearing the following standard text, translated into the local language(s):

THIS SITE, COVERING XXX HECTARES, HAS BEEN DESIGNATED BY THE NATIONAL GOVERNMENT FOR INCLUSION IN THE LIST OF WETLANDS OF INTERNATIONAL IMPORTANCE ESTABLISHED UNDER THE CONVENTION ON WETLANDS, THE INTERNATIONAL TREATY SIGNED IN RAMSAR (IRAN) IN 1971 TO PROMOTE THE CONSERVATION AND SUSTAINABLE USE OF WETLAND AREAS WORLDWIDE.

The protection and management of this site is under the responsibility of: (name and address, including telephone and fax numbers, of the appropriate agency)

Variation for states with a federal structure: ON THE PROPOSAL OF (NAME OF THE STATE/PROVINCIAL GOVERNMENT), THIS SITE, COVERING XXX HECTARES, HAS BEEN DESIGNATED BY THE NATIONAL GOVERNMENT . . . . . .

We wanted to make the designation of PEI as a Ramsar site a major media event, unfortunately it did not work out. We think that the preparation

(and unveiling) of a permanent plaque may represent another opportunity to increase the visibility of both the site and the Ramsar Secretariat.

Against this background, we will remain grateful if you could keep us posted on any developments regarding this plaque.

Hope I answered your question.

Best regards,

Abou Bamba

Abou B. Bamba
Senior Advisor for Africa
Secretariat of the Convention on Wetlands (Ramsar, 1971)
Rue Mauverney 28
CH-1196 Gland
Switzerland
Tel. +41 22 999 0164; fax +41 22 999 0169
email - bamba@ramsar.org

-----Original Message-----
From: John Cooper [mailto:John.Cooper@uct.ac.za]
Sent: 04 February 2009 09:59
To: BAMBA Abou
Cc: HValentine@deat.gov.za; Kngxabani-Tikana@deat.gov.za
Subject: Prince Edward Islands Ramsar Site

Dear Abou Bamba

Allow me to introduce myself: I am a member of the management committee for South Africa's Prince Edward Islands, a relatively new Ramsar site, the designation text ("RIS") for which I drafted on behalf of the committee.

We are all excited that South Africa's only overseas possession is now a Ramsar site, the first in the sub-Antarctic realm.

I would like to ask whether the Ramsar Secretariat has any advice on the design and wording for a permanent plaque to erect on the site. I know from my involvement with a sub-Antarctic World Heritage Site (Gough Island), that that convention has a particular design and wording that it wishes to be used on site plaques, and so wonder whether the same may apply to the Ramsar Convention.

On a permanent plaque (perhaps cast in bronze) we would most likely want to add the official Ramsar logo (if such use meets with the convention's approval), but suggestions as to wording would also be helpful.

I have previously put this request for advice in an e-mail to your Deputy Director-General, Nick Davidson, whom I have met once or twice, but unfortunately without reply as yet: possibly because I sent it too close to the time of the recent meeting of the convention.

I look forward to hearing from you on this matter. Please kindly pass on my message to a colleague for reply if you deem it appropriate to do so.

With kind regards

John Cooper

CC: <CJacobs@deat.gov.za>, <HValentine@deat.gov.za>, <Kngxabani-Tikana@deat.gov.za>, <africa@ramsar.org>, <peck@ramsar.org>, <TIEGA@ramsar.org>

Doc 2.2C

From: Carol Jacobs
To: Kngxabani-Tikana@deat.gov.za,John.Cooper@uct.ac.za
Date: 2/18/2009 9:32:42 PM
Subject: Re: "Country clean-ups", April-May 2009

Dear Kusi

Please table this as a statement reflecting the position of the Directorate: Environmental Impact Evaluation (D: EIE) on this matter:

It is the D: EIE's opinion that aside from the historical value of the marker in question, it also serves as a clear marker point for the navigation of the Santa Rosa Valley when walking around Marion Island and, as such, it is strongly recommended that the marker should remain in place and NOT be removed.

Kind regards
Carol J
for Danie Smit
DD: EIE

>>> Kusi Ngxabani-Tikana 02/17/09 1:23 PM >>>
Dear John

Many thanks for the document - I have included it (Doc 2.2A) in the meeting document that will be sent to Committee members this afternoon. Marthán just sent me a document (attached) relating to the topic for discussion during the meeting, it is labelled 2.2B. Thanks also for your physical address to send your documents to, I have re-labelled the envelope accordingly.

See you on Tuesday 24 Feb '09.

Kind regards
Kusi

>>> "John Cooper" <John.Cooper@uct.ac.za> 02/17/09 12:34 PM >>>
Dera Kusi

Please find attached, as promised, a list of sites for "country clean-up" attention duing this year's Marion relief.

If I accompany the voyage as has been requested, I am willing to take the lead in the work, but hands-on help will be required at some sites, as well as helicopter flights for those so identified.

I am copying this message to Petrus Kritzinger on Marion in case he has anything new to add from his own recent explorations of the island. The list already includes those sites he found last year and that I reported on at the last meeting of the PEIMC. Additional to the list, Petrus and island colleagues have been slowly removing a newly-found section of the hydroshack power cable to the Base, and this might still need final clearance.

I would be pleased if the attached document could be added to the supporting documents for next week's meeting of the PEIMC.

Lastly, as I rarely go onto the campus these days could you kindly post the agenda and supporting papers to me at:

9 Weltevreden Avenue
Rondebosch 7700

But if already posted to the university please let me know so I can collect them there.

Thank you.

Doc 2.8

From: "Eugene Marais" <eugene@nzg.ac.za>
To: "Kusi Ngxabani-Tikana" <Kngxabani-Tikana@deat.gov.za>
Date: 2/23/2009 10:13:26 AM
Subject: RE: Request for King Penguins

Dear Kusi

We had a meeting last Friday, 20th February, with the Project Manager that has been appointed to oversee the completion of the facility for the Cape Fur Seals and King Penguins.

The completion date will be the end of October 2009. This will allow the staff to commission and test all systems to ensure that they are functioning properly by December 2009, which will then mean that we will be ready to undertake the collection of the Penguins from Marion Island in 2010.

Kind regards.

Eugene Marais

General Curator: Aquarium and Reptile Park

Animal Transaction Officer

Mobile: 083 408 2941

eugene@nzg.ac.za <mailto:eugene@nzg.ac.za>

Doc 2.11

Report on survey of the Prince Edward Islands, December 2008
Voyage 248 of F.R.S. *Africana*

The F.R.S. *Africana* sailed from Cape Town on 10 December 2008 for a summer survey of the Prince Edward Islands (Prince Edward Island and Marion Island) and returned on 31 December 2008. The survey of the islands was conducted under an entry permit issued by the Director General: Environmental Affairs and Tourism pursuant to the provisions of Section 18 of the Environment Conservation Act (Act 73 of 1989) and the Prince Edward Islands Management Plan. The scientific complement for the survey numbered 23 persons, from Branch Marine and Coastal Management (Department of Environmental Affairs and Tourism), CapeNature, Dyer Island Trust, East London Museum, the universities of Cape Town, Pretoria, Rhodes and Stellenbosch, and WWF-SA.

Ten scientists were successfully landed at Prince Edward Island on the morning of 16 December 2008, and seven at Marion Island later that day. Six scientists remained aboard F.R.S. *Africana* to conduct oceanographic observations. On 22 December, the scientists from Prince Edward Island and some oceanographers were transferred to Marion Island. On 24 December, all scientists were re-embarked on *Africana* for the return trip to Cape Town.

The objectives of the cruise were:

- Count breeding populations of all surface-nesting seabirds at both islands and map their distributions with the aid of portable GPSs;
- Investigate relative abundance of, breeding by and moult of burrowing seabird species;
- Search for and record numbers of bands found on seabirds at both islands (including birds caught at night);
- Band albatrosses at Prince Edward Island;
- Deploy satellite and GLS instruments on some seabird species at both islands;
- Collect genetic material from some seabirds and seals;
- At Prince Edward Island, locate, identify and count breeding colonies of both fur seal species and southern elephant seals;
- Collect specimens of alien plants;
- At Prince Edward Island, collect specimens of invertebrates for comparison to those occurring at Marion Island;
- Record known and new historical sites with the aid of GPS and photography;
- Photograph cetaceans to increase the photographic catalogue used to identify individual animals as part of a project investigating their movements in the Southern Ocean;
- Conduct observations on cetaceans in the vicinity of both islands;
- Conduct observations on the distribution of seabirds and marine mammals en route to and from the Prince Edward Islands;

- Undertake physical and biological oceanographic observations in the vicinity of the Prince Edward Islands;
- Document research activities through photography to increase public awareness of research activities in the Southern Ocean.

These objectives were successfully attained, as outlined in a paper prepared for publication in *South African Journal of Science*, which is appended. Fuller results will be published in a suite of papers on seabirds and seals that is being prepared for *African Journal of Marine Science* and in other scientific journals. The survey repeated an earlier survey of the populations of surface-nesting seabirds on both islands and of fur seals and alien plants on Prince Edward Island in December 2001, with the addition of observations on burrowing seabirds and macro-invertebrates on Prince Edward Island and an oceanographic component conducted in surrounding waters. The survey confirmed many of the observations made on the earlier survey and allows an assessment of trends in the abundance and distribution of biota since 2001. South Africa is a Party to two treaties that have specific relevance to the Prince Edward Islands: the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Agreement on the Conservation of Albatrosses and Petrels (ACAP). The survey will enable many of South Africa's obligations in terms of data submission to the two treaties to be fulfilled. It will also allow reassessment of the conservation status of seabirds and seals at the islands.

Thanks to the skill of the Master and officers of *Africana*, the rubber duck operators and the leaders of scientific teams, the survey was completed without major mishap to personnel or equipment, the only serious injury to occur being the fracture of five ribs of one team member during disembarkation from Marion Island on December 24. It would be very difficult for me to write too highly of the splendid services provided by Captain Viljoen, all his officers and crew on the voyage. The co-operation of the ship in undertaking necessary quarantine procedures was remarked upon by those responsible for ensuring adequate quarantine measures. Every effort was made by the Master, officers and crew to ensure the comfort and well-being of the scientific staff. The catering was remarkable throughout and a special effort was made on Christmas day. All crew were polite, friendly and efficient. I thank the over-wintering team at Marion Island for its hospitality, and Mr Vallentine and his staff at SANAP for all their endeavours to support the survey. I am also most grateful to all scientists for their enthusiasm and excellent work and conduct throughout the survey. I am especially indebted to L Upfold, and in the initial stages of planning BM Dyer, for overseeing the logistics for the survey. Funding for the survey was obtained from Branch Marine and Coastal Management and the National Research Foundation through its South African National Antarctic Programme. Funding for satellite-tracking time was received from the BirdLife International Global Seabird Programme. I am most grateful for the opportunity afforded by the managers of Branch Marine and Coastal Management for conducting this important survey.

RJM Crawford
4 February 2009

Biological Survey of the Prince Edward Islands, December 2008

J. Cooper[a*], M.N. Bester[b], S.L.Chown[c], R.J.M. Crawford[a,d], R. Daly[e], E. Heyns[c], T. Lamont[d], P.G. Ryan[f] and J.D. Shaw[c]

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[c]DST/NRF Centre of Excellence for Invasion Biology, Department of Botany and Zoology, Stellenbosch University, Pvt Bag X1, Matieland 7602, South Africa
[d]Marine & Coastal Management, Department of Environmental Affairs and Tourism, Pvt Bag X2, Roggebaai 8012, South Africa
[e]Southern Ocean Group, Department of Zoology and Entomology, Rhodes University, P.O. Box 94, Grahamstown 6140, South Africa
[f]Percy FitzPatrick Institute DST/NRF Centre of Excellence, University of Cape Town, Rondebosch 7701, South Africa
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A biological survey of the Prince Edward Islands took place in December 2008. The survey repeated an earlier survey of the populations of surface-nesting seabirds on both islands and of fur seals and alien plants on Prince Edward Island in December 2001, with the addition of observations on burrowing seabirds and macro-invertebrates on Prince Edward Island and an oceanographic component conducted in surrounding waters. The survey confirmed many of the observations made on the earlier survey and permits an assessment of trends in the abundance and distribution of biota since 2001.

The Prince Edwards Islands (comprising Marion Island and Prince Edward Island) in the southern Indian Ocean are South Africa's only overseas possession and form a Special Nature Reserve with the highest level of national legal protection, equivalent to World Conservation Union (IUCN) Management Category Ia: Area Managed Mainly for Science and Wilderness Protection (de Villiers & Cooper 2008). In 2007 the islands (including waters to 500 m offshore) were designated as a Site of International Importance under the Ramsar Convention on Wetlands (http://www.ramsar.org/profile/profiles_southafrica.htm). South Africa also is a Party to two international instruments that have specific relevance to the Prince Edward Islands: the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR; www.ccamlr.org) and the Agreement on the Conservation of Albatrosses and Petrels (ACAP; www.acap.aq). South Africa has contributed information on penguins to CCAMLR's Ecosystem Monitoring Program since 1994 (e.g. Crawford *et al.* 2003a, 2003b). Its ratification of ACAP in November 2003 brought this agreement into force on 1 February 2004. In August 2008, South Africa hosted meetings of ACAP's Working Groups and its Advisory Committee. Nine of the 26 species of albatrosses and petrels listed on ACAP's Annex 1 breed regularly at the Prince Edward Islands.

Three major conservation initiatives for the island group are currently under consideration by the South African authorities: the formal adoption of a new environmental management plan drafted in 2006 to replace the current plan adopted in 1996; the declaration of a large Marine Protected Area, including all territorial waters out to 12 nautical miles (nm) and extending in several directions to the limit of the islands' 200-nm Exclusive Economic Zone; and the nomination of the islands as a Natural Site to the World Heritage Convention (PEIMPWG 1996; DEAT 2006; Davies *et al.* 2007, Lombard *et al.* 2007, Nel *et al.* 2008, http://whc.unesco.org/en/tentativelists/1923).

In the main, biological research conducted at the Prince Edward Islands has been restricted to the larger Marion Island, which supports a combined weather and research station which is relieved annually (Chown & Froneman 2008). Visits to uninhabited Prince Edward Island occur more rarely and normally only during the annual relief voyages to Marion in April/May. Such visits are subject to strict controls on party size, duration and interval (PEIMP 1996, DEAT 2006). In addition, most physical, chemical and biological oceanographic research conducted in the vicinity of the islands has been carried out during annual relief voyages.

The Prince Edward Islands are internationally important breeding sites for a diversity of seals and seabirds. Most of these species breed during summer months, when invertebrate and plant activity and growth are also at their highest (Chown & Froneman 2008). Although biological research, including surveys and censuses of biota, does take place at Marion Island during summer (conducted by "over-wintering" personnel spending a year at the island), field teams are then small (normally one to two persons per project), and there are no opportunities to visit Prince Edward Island, 21 km away.

In December 2001 a summer survey of surface-nesting seabirds was undertaken at both islands (and of fur seals *Arctocephalus* spp. and alien plants at Prince Edward), resulting in a suite of publications that has been used to support South Africa's national and international obligations to manage the islands effectively (Cooper 2003, Crawford *et al.* 2003). In order to assess changes (especially in population sizes) that may have occurred since then, a second summer survey of fur seals and seabirds breeding at the Prince Edward Islands took place in December 2008, with the addition of research on macro-invertebrates and plants at Prince Edward Island and of an oceanographic component. This paper describes the main activities undertaken during the survey and highlights its main findings.

Survey party and itinerary

A 23-person team of biologists and oceanographers under the overall leadership of Robert Crawford, Marine & Coastal Management, Department of Environmental Affairs and Tourism sailed from Cape Town, South Africa aboard the F.R.V. *Africana* on 10 December 2008. Following pre-sailing quarantine procedures and checks, a boot-washing and kit-inspection "ceremony" in accordance with SANAP (South African National Antarctic Programme) procedures was undertaken on the southward voyage to ensure

that clothing and equipment going ashore would be free of alien propagules (Davies *et al.* 2007, de Villiers & Cooper 2008). Most equipment and clothing supplied to the Prince Edward Island camping party (see below) was previously unused as an additional quarantine measure.

The islands were reached by dawn on 16 December. A party of 10 persons was landed at Cave Bay, Prince Edward Island by rigid inflatable boats on that morning, where a tented camp was established. As part of the landing protocol at Prince Edward Island, 11 rodent bait stations (with scented, attractive baits) were set in and around the camp. The ship then proceeded to Marion Island and landed a seven-person party the same day, leaving six persons aboard to undertake oceanographic research in the vicinity of the islands. The two shore parties then divided into smaller field teams, working from Cave Bay and Hope Stream on Prince Edward Island, and from the weather station and eight coastal field huts on Marion Island. The Marion field teams were joined by several members of the Marion over-wintering team.

The Prince Edward party was transferred to Marion Island via the *Africana* on 22 December. Following departure from the island the rodent bait stations were inspected for chew marks. No signs were found, and no field evidence for rodents was recorded at any point during the expedition to the island, thought to have always been rodent-free (Chown & Smith 1993). All solid, including human, wastes were removed from Prince Edward for disposal in South Africa. To avoid genetic exchange of biota between the two islands, protective clothing and footwear used on Prince Edward was left aboard the ship, being then replaced by clean items for use on Marion.

Field work on Marion was completed on the 23rd, and all shore-based survey personnel rejoined the ship the next day. After a period spent in the lee of the island sheltering from rough seas, the *Africana* sailed for home on the 25th, arriving in Cape Town on 31 December.

Preliminary achievements

Seals

Antarctic *Arctocephalus gazella* and Subantarctic *A. tropicalis* fur seals were surveyed at Prince Edward Island. Counts were made of territorial males of both species and the numbers of pups present was estimated following Bester *et al.* (2003). Two inaccessible sections of coastline were surveyed for the first time, with the stretch between McNish Bay and Kent Crater scanned from the cliffs above, and that between Albatross Valley Beach and Ross Rocks scanned from adjacent coastal vantages. Preliminary analyses reveal that the population of Antarctic fur seals has increased since 2001, and that there has been an extension of breeding colony sites of Subantarctic fur seals. Checks of moulting southern elephant seals *Mirounga leonina* found very few flipper tags placed on weaned pups at Marion Island in previous years, suggesting limited movement between the two islands.

Birds

Surface-nesting seabirds (penguins, albatrosses, giant petrels, cormorants and larids; see papers in Cooper (2003) for complete species lists and for 2001 population estimates) were surveyed at both islands. Preliminary results suggest that for most species numbers have remained relatively stable since 2001 at both islands, although for some species better coverage at Prince Edward has led to higher figures. The most marked difference was among cliff-nesting sooty albatrosses *Phoebetria fusca*, where the 2008 census was almost double that of 2001. This species has recently been uplisted to Endangered (http://www.birdlife.org/datazone/species/index.html?action=SpcHTMDetails.asp&sid=3967&m=0), and the larger population on Prince Edward further emphasizes the importance of this island for albatrosses. A single shy/white-capped albatross *Thalassarche cauta/steadi* was found incubating on Prince Edward Island among a small colony of grey-headed albatrosses *T. chrysostoma*. This is the first time this taxon has been found breeding outside Australasia (Brooke 2004), bringing the number of albatrosses known to have bred on the island to six.

Since 1994, there has been a large decrease (20%) in the mass of southern rockhopper penguins *Eudyptes chrysocome* returning to Marion Island from their over-wintering feeding grounds to breed (Crawford *et al.* 2006). This has been associated with decreased breeding success (Crawford *et al.* 2008a). The 2008 survey confirmed a large and continued decrease in southern rockhopper penguins at Marion Island, from more than 170 000 pairs in 1994/95 (Crawford *et al.* 2003c) to fewer than 60 000 pairs at present. Because rockhopper penguins at Marion Island do not feed on commercially-exploited prey, their decrease at this and at other localities within Southern Ocean waters is thought to have resulted from environmental change (e.g. Hilton *et al.* 2006). For example, recent large displacements of prey items off South Africa have led to mismatches in the distributions of breeding localities and prey, and consequentially to substantial population decreases of some seabirds (Crawford *et al.* 2008b).

The relative abundances of burrowing petrels (Families Procellariidae and Oceanitidae) were studied via spot-lighting at night on both islands and by analyzing avian remains in Subantarctic skua *Catharacta antarctica* middens at Prince Edward Island. A preliminary survey of the distribution and density of burrows of the white-chinned petrel *Procellaria aequinoctialis* was made at Prince Edward Island, which will enable a first estimate of population size for the whole island to be made. A similar survey is planned for Marion Island.

Time-depth recorders were fitted to eight macaroni penguins *E. chrysocome* brooding small chicks at Funk Bay, Marion Island, of which five containing usable data were recovered. Satellite trackers (Platform Transmitter Terminals; PTTs) were fitted to 10 (eight brooding) Indian yellow-nosed albatrosses *T. carteri* on Prince Edward Island, a species that does not breed at Marion Island. Two PTTs were placed on light-mantled sooty albatrosses *Phoebetria palpebrata* on Marion Island, with a further 10 being left on the island for placement on this species and on sooty albatrosses.

A total of 94 hours of quantified seabird and marine mammal observations was made from the *Africana* during the southern and northern journeys. Almost 2300 seabirds from 45 species and six species of cetaceans were identified.

Invertebrates

The invertebrate work had four major components. First, invertebrate surveys aimed to assess the density of macro-invertebrates as part of an ongoing study to investigate the influence of introduced house mice *Mus musculus*, present on nearby Marion Island, but not on Prince Edward Island (see Chown & Smith 1993). Second, individuals of all six weevil species (see Chown 1992, Grobler *et al.* 2006) were collected as part of an assessment of body-size change on Marion and Prince Edward Islands associated with climate change and predation by mice (see Chown & Smith 1993, Chown & Klok 2003). Third, quantitative assessments of springtail densities were made to compare with previous work (Gabriel *et al.* 2001, Hugo *et al.* 2006) and to determine which alien species are present. Finally, quantitative sampling of caterpillars, vascular plants, peat, and nest material was undertaken around wandering albatross *Diomedea exulans* nests for genetic and isotope analyses. Previous work (Sinclair & Chown 2006) has suggested that wandering albatrosses serve as thermal ecosystem engineers for *Pringleophaga* sp. (Lepidoptera, Tineidae) caterpillars, which are the main bottleneck for nutrient cycling in the terrestrial system. However, mice may also influence the outcome of this interaction, therefore a control on mouse-free Prince Edward Island is essential.

All of the invertebrate work was completed successfully. It is clear that many invasive alien invertebrates common on Marion Island have not as yet managed to colonise Prince Edward Island. These include the springtails *Pogonognathellus flavescens* and *Isotomurus cf. palustris*, the slug *Deroceras panormitanum*, the wasp *Aphidius matricariae*, the moth *Plutella xylostella*, and the psychodid midge *Psychoda parthenogenetica* (see Chown & Marshall 2008 for a species list from Marion Island).

Plants

Work on the vascular plants on Prince Edward Island had three main aims. The first was to examine the change in the distribution of the alien vascular plant species, and document any new arrivals. The second was to provide spatially explicit information for ground-truthing a proposed vegetation map, through sampling vegetation quadrats. The third aim was to collect samples for analysis of genetic variation and relationships among islands of two indigenous species, the prostrate herb *Acaena magellanica* (Rosaceae) and the cushion plant *Azorella selago* (Apiaceae), and the alien annual meadow grass *Poa annua*. This work was successfully completed.

No new alien vascular plant species were found for Prince Edward Island since the last survey conducted in 2001 (Ryan *et al.* 2003). However, procumbent pearlwort *Sagina procumbens* (Caryophyllacaeae) has expanded its distribution rapidly since then, and now occurs virtually along all coasts, except for the remote and rather barren High Bluff region. Mouse-eared chickweed *Cerastium fontanum* (Caryophyllacaeae) also has

extended its range on the north-west side of the island, but was not found above the escarpment and on the eastern side. Further to record landscape-scale changes, fixed-point photographs were taken both at new points expected to show most future change, and at previous points photographed casually by past expeditions to the island.

Oceanography

The Prince Edward Islands are situated in the pathway of the easterly-flowing Antarctic Circumpolar Current (ACC). Bordered to the north by the sub-Antarctic Front (SAF) and to the south by the Antarctic Polar Front (APF), the islands lie within the Polar Frontal Zone (PFZ) which is a transition zone between sub-Antarctic and Antarctic water masses (Froneman & Ansorge 1998). The islands act as obstacles to the ACC, causing high levels of spatial and temporal mesoscale variability within the region (Ansorge *et al.* 1999, Pakhomov & Froneman 1999). Allanson *et al.* (1985) showed that waters surrounding the islands demonstrate an "island mass effect" (enhanced phytoplankton production) whereas Perissinotto (1989) suggested that food (zooplankton) for the islands' predators (specifically birds) is brought into the vicinity of the islands from upstream regions. It has been suggested that the proximity of the islands to the SAF affects the availability of zooplankton for predators breeding at the islands (Froneman & Pakhomov 1998), so that the high degree of latitudinal variability of the SAF may have important implications for the food availability for breeding predators.

The main objective was to obtain a summer comparison of the zooplankton community upstream and downstream of the Prince Edward Islands with previous studies conducted during the austral autumn/winter months. Secondary objectives included a comparison of the zooplankton abundance and biomass upstream, in the vicinity, and downstream of the islands to investigate the potential influence of the "island mass effect".

CTD (conductivity, temperature and depth) casts were conducted at a total of 26 stations, with water samples collected at selected depths for oxygen, salinity, chlorophyll-*a* and nutrient analyses. In addition photosynthesis measurements were conducted, using fast repetition rate fluorometry, on water samples from selected depths within the euphotic zone. The biological component of the oceanographic survey consisted of 21 stations where the mesozooplankton community was sampled using a BONGO net with a 200-µm mesh. Unfortunately, due to unfavourable weather conditions, zooplankton was collected from only nine stations for fatty acid and stable isotope analysis for the determination of trophic links between selected components of plankton and nekton. In addition to net tows, surface seawater was collected with a Crawford bucket at each station for the determination of size-fractionated chlorophyll-*a* concentrations. Surface seawater was collected at three stations for POM (particulate organic matter) analysis. Throughout the survey area, the total zooplankton abundance and biomass was dominated by mesoplankton (200 – 2000 µm), comprising mainly copepods. The macrozooplankton community was dominated by chaetognaths, amphipods, euphausiids and salps.

Full results of the 2008 biological survey of the Prince Edward Islands will be published in specialized scientific journals as detailed analyses and interpretation of findings are

completed.

The survey was supported financially and logistically by the Branch: Marine & Coastal Management and was conducted with the approval of the Prince Edward Islands Management Committee and Directorate: Antarctica and Islands, both of the South African Department of Environmental Affairs and Tourism. Funding was also obtained from the National Research Foundation through its South African National Antarctic Programme. Funding for satellite-tracking time was received from the BirdLife International Global Seabird Programme. We thank the following members of the survey team and of the 65th over-wintering team on Marion Island for their willing contributions and support: L. Clokie, J. Harding, G. Jones, P. Kritzinger, R.W. Leslie, M.R. Mashau, G. McClelland, A. Omardien, S.L. Petersen, L. Pichegru, M. Slabber, R.J.Q. Tarr, A. Treasure, G. Tutt, L. Upfold, J. Visagie, L. Waller, D.A. Whitelaw, P.A.W. Whittington, C. Wilkie, R. Williamson and P. Woodhead. Captain M. Viljoen and the officers and crew of the F.R.V. *Africana* made the sea journeys in often rough seas bearable, and even enjoyable at times, with their friendship and excellent seamanship and catering. We are grateful to the over-wintering team at Marion Island for its hospitality, and to P.W. Froneman for his comments on a draft text.

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Doc 2.11B

ENVIRONMENTAL OFFICER'S REPORT, MARION ISLAND, DECEMBER 2008

John Cooper
Animal Demography Unit, Department of Zoology, University of Cape Town,
Rondebosch 7701, South Africa
John.Cooper@uct.ac.za

APPOINTMENT

I was appointed Environmental Officer for Marion Island by departmental letter dated 9 December for the period 10-26 December 2008, as part of the 2008 Prince Edward Islands Summer Survey.

PRE-VOYAGE INSPECTIONS

I accompanied Ms Jen Lee, who had been appointed to undertake pre-voyage inspections, on her initial inspection of the FRV *Africana* on 4 December 2008, offering advice on quarantine issues (primarily on the need for rat guards on hawsers, pre-voyage fumigation, boat- and ship-cleaning, removal of mouldy/rotten fruit and vegetables and installation of invertebrate and rodent traps). We collected voucher specimens of weeds found growing in the general vicinity for identification. Her e-mailed reports of this and of her final inspection refer. It is most pleasing to note that all her recommendations in relation to the ship were taken up by the its Captain, as set out in her second report.

ON-VOYAGE ACTIVITIES

Newly-made rat guards and rodent sticky traps were present on all ship's hawsers on the day of sailing on 10 December.

On the southward voyage I confirmed that all expedition members had received and taken cognizance of the SANAP Gear Checks document and briefed members on conservation requirements, most especially in relation to quarantine issues.

A successful boot-washing and kit-inspection "ceremony" was held aboard the ship on the southward voyage a few days after its departure. All expedition members and those crew who might go ashore attended the boot-washing and all expedition members' protective clothing, socks, packs, bags, tripods and hiking poles were inspected and cleaned of propagules and other accumulated matter.

The newly-fitted invertebrate traps on the ship (for both flying and crawling animals) were inspected on several occasions, confirming that the ship was not infested.

The two rigid inflatable boats (RIBs) were thoroughly cleaned on the southward voyage and subsequently inspected. However, it was noted that the vessel itself had a deal of

weed on its hull at the waterline. The ship's exterior was washed down on the southward voyage.

Copies of the issued SANAP entry and research permits were obtained and distributed. I viewed the ship's de-ratting exemption and fumigation certificates held by the Captain and confirmed they were up-to-date.

The ship maintained a black-out with blinds drawn at night when in the vicinity of the island to reduce the risks of birds coming aboard.

MARION ISLAND

Following placing the Prince Edward Island party ashore, the Marion Island party was landed on 16 December. After an afternoon spent unpacking and getting orientated, the two field parties left together the next day for Watertunnel Stream Hut where the west coast party proceeding onwards on its round-island survey.

I accompanied a three-person party that undertook coastal censuses between Goodhope Bay and Hansen Point, returning to the Base on 22 December. At each of three huts (Watertunnel Stream, Grey-headed Albatross Ridge and Kildalkey Stream, I conducted environmental audits.

All three hut surrounds were deemed to be in a satisfactory condition with no litter present. Continued re-vegetation of the old hut scars was noticeable since my last visit in April 2008. Two cut-short anchor poles from the old hut site at Grey-Headed Albatross Ridge were dug out and stored on the huts' catwalk for removal during the 2008 relief.

New earth toilets had been dug since April 2008 at Watertunnel Stream and Kildalkey Stream. This confirms the need for a new arrangement to be installed as soon as possible since the number of suitable sites (sheltered, reasonably private, downstream of hut, etc.) for such toilets within a reasonable distance of the huts is diminishing.

Markers (bamboo poles and "koskassie" planks) were removed from five cat trap sites in Santa Rosa Valley and on Feldmark Plateau as part of an ongoing rehabilitation of these sites. However, as is policy, dry-store walls present at the sites were left intact and undisturbed.

I inspected the "cat marker" pole beside the Santa Rosa valley route. I recommend that if it is to be left *in situ* for its historical importance, as has been recently proposed, the various boards (some not well made) with South African city/town names on them should be removed as irrelevant to its original commemorative purpose and no more should be added. The alternative is to remove the whole marker to the Base as I have previously recommended. If is to be left *in situ* then it is critical that this is not to seen as any precedent for team members (or any island visitors) to erect memorials on their own volition and without formal approval and adherence to the islands' management plans.

On 23 December I inspected the immediate surrounds of the new base accompanied by the Marion M65 Team Leader, Petrus Kritzinger, following approval granted by Adriaan Dreyer. The surrounds were reasonably tidy and half a bag of rubble (mostly glass chips and rusted metal items, mostly pre-dating the new base) was collected. Re-vegetation at sites exposed from before April 2008 had progressed slowly, probably because at least two of these had been "poisoned" in the past by dumping rubble containing chemicals associated with weather observations.

I ensured that the herbicide brought ashore was placed in the care of the M65 Conservation Officer for continued treatment of alien vegetation during the summer, with priority being accorded to the Ship's Cove site.

The Prince Edward Island party was transferred to Marion Island on 22 December, and all expedition members left the island on 24 December, arriving in Cape Town on 31 December.

ACKNOWLEDGEMENTS

Thanks are due to all expedition members, the M65 Team and the ship's Captain, officers and crew for their willing adherence to the various conservation measures in place.

RECOMMENDATIONS

1. Quay 500 and surrounds should be cleared of weeds mechanically and by the use of herbicides in advance of any future sailing of the FRV *Africana* to the Prince Edward Islands.

2. Ideally, the ship should have it hull cleaned of growth before proceeding to the islands.

3. Installing field hut toilets that do not result in solid human and kitchen wastes entering the environment and stop the need for digging new earth toilets at now near-annual intervals remains a high priority, ideally to be resolved during the 2008 relief voyage.

4. No more South African town name boards should be added to the Santa Rosa Valley "cat marker" and those present removed.

Doc 3.1

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP Marion relief voyage should describe their plans in detail on this form and submit it to DEAT by no later than Friday 6 February 2009 for approval. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Henry Valentine
Email: hvalentine@deat.gov.za
Tel: 021 4059404
Fax: 021 4059424

2. AFFILIATION/INSTITUTION/GROUP

Department of Environmental Affairs and Tourism
Directorate: Antarctica and Islands

3. NAME OF RESEARCH PROJECT/PROGRAMME

Coordination of Relief voyage for Marion 66. Voyage 145

4. FULL NAME(S) OF PARTICIPANTS

(Including over wintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Mr Shiraan Watson – Departmental Co-ordinating Officer (DCO)
Ms Chuma Phamoli – Assistant DCO
Ms Noma Ntantiso – Administrative Officer (AO)

Overwintering expedition members (if any):

None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

1. S.A. Agulhas
2. Air Support to transport personnel from ship to Marion Island.
3. Air Support for inspection flights and to field huts.
4. Air Support to discharge and back load cargo from and to S.A. Agulhas.
5. On Marion Island coordinate take-over functions e.g. scientific and logistical work
6. DEAT personnel have to do stock take. All personnel must cooperate.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

S Watson – Permits 1,2,3&4
C Phamoli – Permits 1&2,3&4
N Ntantiso – Permits 1&2

Overwintering expedition members (if any):

None

7. NAME OF COMPILER – SIGNATURE – DATE

S Watson 16 February 2009

Doc 3.2

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Mr DWJ Smit (P/Bag X447, Pretoria, 0001)
Tel: 012 310-3659/69
Fax: 012 320-7539
E-mail: dsmit@deat.gov.za

2. AFFILIATION/INSTITUTION/GROUP

Department of Environmental Affairs & Tourism (DEAT)
Directorate: Environmental Impact Evaluation (Sensitive Environments, Antarctica and Islands), Pretoria

3. NAME OF RESEARCH PROJECT/PROGRAMME

Project Environmental Officer- April 2009 Marion Island Relief Voyage

4. FULL NAME(S) OF PARTICIPANTS

(Including over-wintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group. Also indicate male/female)

1. Mr Tambudzani Mulaudzi – PEO (M)

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

- Standard protective clothing issue for 1 person
- Accommodation for 1 person (1M) on board and ashore between the 08/04/2009 -15/05/2009.

Doc 3.3

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Mustakim Gierdien – Group Leader

2. AFFILIATION/INSTITUTION/GROUP

National Department of Public Works

3. NAME OF RESEARCH PROJECT/PROGRAMME

Minor Repairs & Maintenance

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Mustakim Gierdien	-	Group Leader
S. Hamdulay		Refrigeration
E. Ryklief		Painting
A. Abrahams		Painting
C. Tango		Plumbing
N. Dike		Carpentry & Joinery
Mario Porta Nova		Mechanical Fitter
M. Mahe		Mechanical Welding
E. Willams		Electrical

Group Total = 9 (nine)

Overwintering expedition members (if any):

None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

- Cabin accommodation aboard S.A. Agulhas for personnel
- Halaal dietary requirements for seven team members
- Air transport from ship to shore (Marion Island)
- Air support for cargo from ship to shore and back
- Air transport around island for repairs to huts
- Air transport from shore to ship

<u>Work to be executed:</u>

- Minor repairs to leaking areas shall be executed to 'old base'
- Pile driving shall be done to support at diesel bunkers
- Diesel day tank/s shall be replaced
- Minor repairs to plumbing installations at 'old base'
- Work asagreed upon between client DCO and NDPW Group Leader

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. - please refer to the Prince Edward Islands Management Plan for details)

<u>Relief voyage (takeover) personnel:</u>

All 9 (nine) NDPW team members - Zones 1, 2, 3

<u>Overwintering expedition members (if any):</u>

None

7. NAME OF COMPILER – SIGNATURE – DATE

M. LISTAKIM GIERDIEN .... [signature] 2009-02-16

Doc 3.4

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Capt.V.R. (Dick) Hilland
hilland@iafrica.com
dick.hilland@sanae.sanap.ac.za
from o5.03.2009 on :0824546646 RSA
before and up to 18.02 at SANAE, thereafter at SAT SA Agulhas

2. AFFILIATION/INSTITUTION/GROUP

TITAN AVIATION
14817 Pearl Street
Tamsui Industria
George
P.O.Box 10326

South Africa

3. NAME OF RESEARCH PROJECT/PROGRAMME

Marion Take Over Voyage 145

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:
Relief voyage Titan personal:

1.Capt.V.R.Hilland	**Project Manager/Pilot**
2.Capt.A.Hart	**Pilot**
3.Capt.L.Venter	**Pilot**
4.F/O. B.Wessels	**Pilot**
5.J.Britton	**Chief Engineer**
6.M.Alexandroi	**Engineer**

7.D.Jordaan	HLO /Safety Officer
8.B.Hilland	Firefighter
9.C.vd Merwe	HLO in training
10.M.Schwarze	Technical Assistant
11.K.Schwarz	Technical Assistant

This crew listed is subject to changes which will be notified immediately to the DCO if occur.

Overwintering expedition members (if any):

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

TITAN AVIATION provides aerial support for DEAT. During the voyage it is of utmost importance that the crew stays as close as possible together and close to the hangar, to be contactable via phone at any time to attend to any emergency, which could occur.

This also applies if it is required should we have to deploy one or two helicopters on the island.

If for logistic reason at Marion Island in not having enough accommodation, we could reduce, if absolute necessary, our crew to 10 members.

The best located cabins for this purpose on V 145 are:

Cabin:4 Project Manager and Fire-fighter

Cabin:9 Pilots

Cabin:17 Engineers

Cabin:18 Technical Assistant

Otherwise Titan Aviation is self-supporting and will utilise the hangar facilities and the allocated space on board the SA Agulhas.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Overwintering expedition members (if any):

7. NAME OF COMPILER – SIGNATURE – DATE

Capt Hilland ..... at SANAE 06.02.2009.....

Doc 3.5

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Mr J Stander
Regional Manager: Antarctica, Islands and Western Cape, South African Weather Service
Tel: 021 934 0836
Fax021 934 0450

2. AFFILIATION/INSTITUTION/GROUP

South African Weather Service

3. NAME OF RESEARCH PROJECT/PROGRAMME

New Marion Island research base project

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:
Ms. Mellany McPherson – Group leader
Mr. Molatelo Selepe – Electronic technician

Overwintering expedition members (if any):

Ms Dianah Mabizela (Snr Met)
Mr Jack Mathabatha
Mr Mpho Koalepe

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

1. SA AGULHAS

We will conduct routine three-hourly surface observation and twice daily upper air ascents for the duration of the voyage. The Ship may be requested to "turn into the wind" to facilitate balloon launchings under adverse weather conditions. This work will be carried out by SAWS on board personnel.

Should the Met Office become inaccessible owing to bad weather, or in the case of technical problems, we request that South African Weather Service personnel on duty be permitted to conduct observations from the bridge, using the SA Agulhas' observation and communication facilities.

Ms McPherson will provide a forecasting service.

2. BUOY DEPLOYMENTS

There are 2 buoys to be deployed *en route* on this voyage.

3. AUTOMATIC WEATHER STATION

The AWS on Marion Island will no longer be relocated. Instead, the AWS PC and a UPS will be installed in the satellite dome (approval has been obtained from Adriaan Dreyer for this). The PC will be plugged into the UPS and a network connection will be set up between the satellite dome and the met office. This will involve laying an 18 – core cable between the current AWS site and the satellite dome, setting up a UPS inside the satellite dome and then establishing a network connection between the satellite dome and the met office using present infrastructure.

4. INSPECTION

Ms McPherson will carry out an inspection of the AWS, and other meteorological equipment.

5. SERVICING THE HYDROGEN GENERATOR

Mr Selepe will carry out a routine major service on the hydrogen generator.

Special diets: None

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Permits are required for Zone 1&2 for both Ms. McPherson and Mr. Selepe.

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Ofer Gon, Private Bag 1015, Grahamstown 6140
Tel: 046 603-5828
Fax: 046 622-2403
Email: o.gon@saiab.ac.za

2. AFFILIATION/INSTITUTION/GROUP

South African Institute for Aquatic Biodiversity

3. NAME OF RESEARCH PROJECT/PROGRAMME

Sub-Antarctic fish systematics

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Ofer Gon (Male): shore-based and group leader
Bernard Mackenzie (Male): shore-based
AN Other (Male): ship-based

Shore-based fishing activities require two people for operational reasons and for safety.

Overwintering expedition members (if any):

5. **LOGISTIC REQUIREMENTS & OTHER DETAILS**

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, sampling equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

Introduction

Our project requires the sampling of as many of the notothenioid fish species of the Prince Edward Island as we can. This group of fishes has three inshore species and several others that occur in deeper water. We therefore need to do ship-based as well as shore-based work.

Shore-based requirements and activities:

- Wet biological/chemical lab – distilled water and centrifuge, if available.
- Freezer space to keep tissue and blood samples, and for making ice.
- Fishing activities will take place within 2-3 hours walking distance from the base, involving line fishing, trapping and hand-netting while snorkling (where possible) and clove oil.
- Dinghy support may be required for base area.

Ship-base requirements and activities:

- Wet biological/chemical lab – distilled water and centrifuge, if available.
- Freezer space to keep tissue and blood samples, and for making ice.
- Benthic sampling equipment, including a dredge, a benthic sledge and possibly a small otter trawl. More than one dredge and sledge should be available on board the ship in case of gear loss.
- MCM technicians - Deployment of this sampling equipment requires the use of the relevant winches, wires and related equipment, as well as station management instruments, on board the SA Agulhas that we are not familiar with.
- Sampling: All sampling will take place on the bottom or close to it. The fishing area is between and around Marion and Prince Edward islands, at a depth range of 30-400 m. Fishing stations will have to be ad hoc because we do not know where the fish are. To maximise the benefit from the trip the more stations we hold the better until our sampling objectives, in terms of species and number of specimens (see Permit section below), are achieved. To streamline sampling, we could combine stations of appropriate depth with those of other teams (e.g. Rhodes University).

Specimen handling and laboratory procedures: If not already dead, collected specimens will be killed with an overdose of clove oil, a harmless and humane anaesthetic. Blood will be extracted from all fish and centrifuged to separate solids from plasma. The plasma will be frozen for biological antifreeze analysis. In addition, slivers of muscle tissue will be removed from each specimen and fixed in 96% ethanol in eppendorf tubes. The tissue samples will be used for DNA sequencing and analysis.

The fish specimens will be preserved in 10% formalin and lodged with the

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:
Permit: Standard Entry/Research, Collection, for entire takeover period.

Permit Holders: Ofer Gon and Bernard Mackenzie

Location of shore-based work: Between Ship's Cove and Archway Bay (Zone 1?)

- Species (fishes): *Harpagifer georgianus, Notothenia coriiceps, Paranotothenia magellanica.*

Location of ship-based work: Between and around Marion and Prince Edward islands at 30-400 m depth.

- Species (fishes): *Gobionotothen marionensis, G. acuta, Lepidonotothen larseni, L. squamifrons*; there are several other species that are less likely to be caught, e.g. Patagonian toothfish.

Number of specimens: 15 specimens per species for shore- and ship-based species.

Overwintering expedition members (if any):

7. NAME OF COMPILER – SIGNATURE – DATE

.....Ofer Gon..... Ofer Gon .....6 Feb. 2009.....

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MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Prof A.D.S. Bastos, MRI, UP (adbastos@zoology.up.ac.za)

2. AFFILIATION/INSTITUTION/GROUP

MAMMAL RESEARCH INSTITUTE, DEPARTMENT OF ZOOLOGY & ENTOMOLOGY, UNIVERSITY OF PRETORIA

3. NAME OF RESEARCH PROJECT/PROGRAMME

BACTERIAL RESERVOIR HOST POTENTIAL IN *Mus musculus* FROM MARION ISLAND

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:
Miss CANDICE EADIE (SANAP M.Sc STUDENT – MRI)

Miss Eadie will be housed with the Seal Group in the Mammal Laboratory, and supervised by Prof M.N. Bester (MRI)

Overwintering expedition members (if any):
None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(i) Trapping of mice *Mus musculus* (n = 200) at 10 localities on Marion Island. All mice will be allocated an identification number, with locality and trapping date being recorded, prior to being processed at the Base Station.

(ii) The mice will be caught using Sherman traps which are baited with peanut butter, oats and raisins.

(iii) Once caught, the mice will be individually placed in a jar and euthanased with halothane, or brought to the laboratory at the Base Station, killed (in the same way)

and processed. An oral swab will then be taken and blood will be drawn from the heart using a disposable needle and syringe. The blood will be stored for further analyses upon return to South Africa.

(iv) Dissections will be preformed targeting four tissue types using a sterile dissection kit, while wearing a protective mask (Dräger biohazardous mask). The mask will be worn to prevent inhalation of any potentially harmful bacteria and will be discarded every 11 hours after use.

(v) Once the tissue samples are collected DNA extractions will be conducted using a Roche high pure PCR template preparation kit. The extracted DNA will then be stored in labelled 1.5ml eppendorf tubes.

Candice Eadie will do the trapping ideally over a three week period in April/May 2009, flights (weather) permitting.

Target Areas & Special Support:

Traps will be set up in the afternoon around the 10 widely spaced localities which fall outside the distribution area of seals and other indigenous vertebrate fauna, one locality at a time. Focal points will be the Base area, and the field huts at Kildalkey, Watertunnel, Greyheaded, Rook's Bay, Swartkop Point, Mixed Pickle Cove, Cape Davis and Repetto's, as well as Long Ridge/Hoppies Hell.

Helicopter support to drop the student firstly at the more distant huts (Watertunnel – Cape Davis) to trap during the evening, one evening per hut, and be retrieved the following day or soon after for return to Base to process the samples. These helicopter flights need not be dedicated, but carried out opportunistically in tandem with other projects that require flights.

[**Week 1** = 14-18 April; **Week 2** = 19-25 April; **Week 3** = 26 April-2 May]

We need the use of the freezer in the Mammal Laboratory to store processed samples. Samples need to remain frozen on the return journey of the SA Agulhas. We shall dispatch the samples from Cape Town upon the arrival of the SA Agulhas (~15 May).

Dissections must be carried out in a laboratory with a dedicated space, close to a sink and water supply, preferably under a fume hood, under sterile conditions. An appropriate decontaminating detergent will be used to clean surfaces and materials pre- and post-dissections. DNA extractions must be carried out in a dedicated space with a centrifuge. Processed mice will either be frozen and stored, or disposed of on the island as per common practice. Samples to be collected will be tissue taken from the liver, heart, kidney and gastro-intestinal tract.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:
Entry Permit to Zones 1-3; Collection permit for 200 feral house mice.

Overwintering expedition members (if any):
None

References

HOFF, J. 2000. Methods of blood collection in the mouse. *Lab Animal* 29: 47-53.

DE BRUYN, P. J. N., BASTOS, A. D.S., EADIE, C., TOSH, C. A. & BESTER, M. N. 2008. Mass mortality of adult male subantarctic fur seals: are alien mice the culprits? *Plos One* 3: e3757.

7. NAME OF COMPILER – SIGNATURE – DATE

Prof A.D.S. BASTOS .Armanda Bastos. 06 February 2009

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Prof M.N. Bester, MRI, UP (mnbester@zoology.up.ac.za) (Tel. 012-4202067)

2. AFFILIATION/INSTITUTION/GROUP

MAMMAL RESEARCH INSTITUTE, DEPARTMENT OF ZOOLOGY & ENTOMOLOGY, UNIVERSITY OF PRETORIA

3. NAME OF RESEARCH PROJECT/PROGRAMME

PINNIPED MONITORING PROGRAMME

(a) ELEPHANT SEALS AS OCEANOGRAPHIC PLATFORMS / EXPLORATION OF THE OCEANS: POLE TO POLE (2007-2009)

(b) POPULATION ECOLOGY OF PINNIPEDS AT THE PRINCE EDWARD ISLANDS (2009-2013)

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Prof MARTHÁN N. BESTER	(GROUP LEADER - MRI)
Mr P.J.NICO DE BRUYN	(SANAP PHD STUDENT MRI)
Dr MARY-ANNE LEA	(AWRU, UTAS, TASMANIA)

Overwintering expedition members (if any):

Mr DEREK VAN DER MERWE	(MRI)
Mr NANGAADZISHUMI NEFHERE	(MRI)
Miss MIA WEGE	(MRI)
Mr MARTIN POSTMA	(MRI)

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(i) Deployment of SMRU CTD (n = 2) and TEMP (n = 2) SLTRs on large, tagged elephant seal males/females, Geolocators (n = 5) on overwintering underyearlings.

(ii) Training and orientation of four new field assistants for the 2009/2010 field season of marking, resighting and censusing of elephant seals; determination of the diet (from scat analyses) of fur seals and early growth of fur seal pups; further instruction in recovery and re-deployment of instrumentation during the 2009 breeding and moulting season.

(iii) Debriefing of the 2008/2009 field assistants, and consolidating all data sets.

(iv) Restraining, marking and instrumenting (Sirtrack PTT and Wildlife Computers TDR combinations) of Subantarctic fur seal mother/pup pairs at the Rockhopper Bay (n = 4), Mixed Pickle Cove (n = 5) and Watertunnel (n = 5) in support of the attendance pattern and at-sea tracking study.

(v) Restraining, marking and instrumenting (GLS = 30, GPS trackers = 2; PTT-TDR combinations n = 5) of Antarctic fur seal females at their Trypot and Watertunnel Beach breeding sites.

(vi) In tandem with deployment of transmitters [(i), (iv) & (v) above] and photogrammetry [(vii) & (x) below], blood and whisker sampling of fur seals (n = 50) and blood sampling of elephant seals (n = 20).

(vii) Pup/underyearling weighing of fur seals (n = 100) & immobilized ≥ yearling elephant seals (n = 20).

(viii) Processing of fur seal scat samples (n = 100).

(ix) Collection (non-invasive) of samples of moulted skin from both tagged and untagged, moulting elephant seals (~ 50) (Genetics project dealing with kinship of elephant seal population).

(x) Digital photogrammetry of immobilized [see (i), (vi) & (vii) above] and tagged (free-ranging) elephant seals.

(xi) Setting up of Automated Active Tag Readers (ATRs) and deployment of Active Tags (ATs) on Subantarctic fur seal females (n = 20) at Rockhopper Bay.

Nico de Bruyn (NdB, ex-Marion 60 & 63 Team member) will be responsible for data management and technical support, digital photogrammetry & weighing of elephant seals (in support of his PhD study into the '*Life History Characteristics of the Marion Island Southern Elephant Seal Population*'), and together with **Marthán Bester (MB,** Group Leader), responsible for elephant seal blood sampling, debriefing of the returning (Marion 65) field biologists **Ryan Reisinger** and **Thomas Mufanadzo,** and briefing of the new field biologists **Derek v.d. Merwe (DvM), Nangaad Nefhere (NN), Mia Wege (MW)** and **Martin Postma (MP)** of Marion 66. **Mary-Anne Lea (ML)** will be responsible for training the new field biologists in handling and analyses of satellite tracking and time-depth recording data of fur seals (**MW**) after Bonadonna *et al.* (2000), Lea & DuBroca (2003) and Lea *et al.* (2006, 2008), and assisting with deployment of the ARGOS-linked PTTs, GPSs, TDRs and Geolocators on fur seals and whisker and blood sampling (**DvD, NN, MP**). **MB** and **NDB** will be responsible for the care of the seals during the deployment of GLS and GPS transmitters, the geolocators, and the day-to-day running of the overall Pinniped Monitoring Project. The work continues the ongoing collaborative research program between the **MRI /AWI /AAD** and University of Tasmania (**UTAS**) Antarctic Wildlife Research Unit (**AWRU**).

Target Areas & Special Support:

(i) Intensive searching for Antarctic fur seal females at Trypot, Landfall and Watertunnel breeding beaches (2 x 4 person teams) during Marion **Week 1** before their final departure after weaning their pups, for deployment of GPS and Argos PTTs, TDR and GLS loggers, and blood & whisker sampling. Clearing/collection of *A. gazella* scats at Watertunnel study site. Overnight at Watertunnel (15, 16 & 17 April) and Kildalkey (18 April).

(ii) Clearing/collection of *A. tropicalis* scats at Cape Davis study site; weighing of Subantarctic fur seal pups (2 evenings at Cape Davis, 15th & 16th) (**Week 1**).

(iii) Searching for marked elephant seals along east coast sites especially between Sealer's Beaches and Archway Bay (2 x 3 person teams) throughout Marion **Weeks 1 - 4** in Zones 1-3. Geolocators and satellite transmitters will be deployed on selected, tagged elephant seals, a time consuming exercise involving searching, up to Kildalkey in the South, and King Penguin Bay Beaches in the North. Deployment of instrumentation is absolutely dependent upon good (dry) weather, and absence of helicopter noise/overflights.

(iv) The main elephant seal breeding & moulting sites from Cape Davis to Goodhope Bay West along the eastern aspect of the island - two traverses on foot (4 persons during Marion **Weeks 2 & 4**), on each occasion spending a night each at various field huts [see next sentence and (vi) below. Will involve **two round island trips**, the **first round island** in **Week 2** to orientate new team members - one night each at Repetto's (20th), Cape Davis (21st), Mixed Pickle (22nd & 23rd), Swartkop (none), Rook's (24th), Watertunnel (25th) and Kildalkey (none).

(v) Deployment of geolocators/satellite transmitters on elephant seal underyearlings on east coast beaches to Kildalkey (**Week 3**).

(vi) Capture, restraint and marking of Subantarctic fur seal mother/pup pairs (at Rockhopper Bay) at intervals throughout **Weeks 1-4**, for attendance patterns and deployment of instrumentation.

(vii) All other work will be done opportunistically during abovementioned periods and in **Week 4** from the Main Base. The days in Marion **Week 4** will be used to (a) consolidate and collate all data, (b) complete scat processing for packing and backloading to the S.A. Agulhas, and (c) the **second round island** to orientate new team members (4 persons) with nights at Kildalkey (3rd), Greyheaded (4th), Swartkop (5th), Mixed Pickle (6th) and Cape Davis (7th); recover/deploy balance of geolocators if the opportunity presents itself.

[**Week 1** = 14-18 April ; **Week 2** = 19-25 April; **Week 3** = 26 April-02 May; **Week 4** = 03–09 May]

We need the exclusive use of the Mammal Laboratory during the takeover [3 takeover personnel, 4 new and 2 returning team members = 9 persons].

Special support is limited to:

(i) Airdrop fur seal restraining equipment (hoopnets) at Mixed Pickle Cove Hut and on the plain west of Watertunnel Beach (together with a party of 4 sealers at Watertunnel) **early in Week 1**.

(ii) Retrieval <u>by air</u> from Watertunnel the remaining sealer party of (two) at the **end of Week 1**.

Special diets: Chicken Breyani only!

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

<u>Relief voyage (takeover) personnel</u>:

(i) Entry Permit to Zones 1 - 3 (MB, ML, NdeB)

<u>Overwintering expedition members (if any)</u>:

(i) Entry Permit to Zones 1 - 3 (DvM, NN, MW, MP). All actions mentioned below (ii-v) will continue past the takeover period, as set out in the relevant SACAR1, and therefore numbers of animals handled/weighed/sampled will be increased.

(ii) Collection Permit for Fur seal Scats (~ 100) and monthly thereafter (MB &

overwinterers).

(iii) Permit to handle (weigh) Fur seal (n = 100) & Elephant seal underyearlings (n = 10) (all participants) and monthly thereafter (expeditioners).

(iv) Permit to chemically immobilize Elephant Seals (n = 20) [DvD, MP, MB, NdB], deploy instrumentation (n = 5), draw blood [NdB + DvD] and weigh a representative sample after photographing them digitally (All participants) and monthly thereafter (overwinterers).

(v) Permit to restrain & mark Subantarctic fur seal mother/pup pairs (n = 40); restrain, mark and draw blood from Antarctic fur seal females (n = 40), and deploy GPS/GLS/PTTs/TDRs on all of these (all participants), and again in October/November 2009, and January-February 2010 (overwinterers).

Fur Seals will be physically restrained by hand and/or hoopnet (Bester 1988; Erickson & Bester 1993, Bonadonna *et al.* 2000), adult females tagged in the trailing edge of the front flippers, tracking instruments deployed (Bonadonna *et al.* 2000), 10ml blood drawn from hindflippers (Geraci & Sweeny 1978), pups paint-marked/fur clipped (Erickson *et al.* 1993) and released. Elephant seals will be immobilized chemically using a remote injection technique (Bester 1988) and appropriate dosages of ketamine (Bester 1988; Erickson & Bester 1993) and weighed (de Bruyn *et al.* 2009). Satellite transmitters, Time-depth recorders and Geolocators will be affixed using a quick setting epoxy resin following standard procedure, retrieved during the spring breeding and summer moulting season (Jonker & Bester 1998, Bonadonna *et al.* 2000), and redeployed thereafter. In addition, at the time of chemical immobilization, 20 ml of blood will be routinely collected from the extradural-intravertebral vein (vide Woods *et al.* 1994) through the use of 90mm x 18 gauge spinal tap needles following the procedure described in Geraci & Sweeney (1978). The procedures employed is considered safe with no lasting detrimental effect, and have been used successfully on Marion Island since 1986, and moulted skin will simply be picked off (Salwicka 2000). Currently all the above procedures have ethics clearance from the Animal Use and Care Committee (AUCC) of the Faculty of Veterinary Science, University of Pretoria, under AUCC 040827-022, AUCC 040827-023, AUCC 040827-024 and EC030602-016 (for confirmation, please contact ethics@up.ac.za and Elmarie.Mostert@up.ac.za).

References

BESTER, M.N. 1988. Chemical restraint of Antarctic fur seals and southern elephant seals. *S. Afr. J. Wildl. Res.* 18: 57 - 60.

BONADONNA, F., LEA, M.A. & GUINET, C. 2000. Foraging routes of Antarctic fur seals (*Arctocephalus gazella*) investigated by the concurrent use of satellite tracking and time depth recorders. *Polar Biol.* 23:149–159.

DE BRUYN, P.J.N., BESTER, M.N., CARLINI, A.R. & OOSTHUIZEN, W.C. 2009. How to weigh an elephant seal with one finger: a simple three-dimensional photogrammetric application. *Aquat. Biol.* 5: 31-39.

GERACI, J.R. & SWEENEY, J. 1978. Clinical techniques. In: Zoo and Wild Animal Medicine. (Ed) M.E. Fowler. Pp. 771-777. W.B. Saunders Co., Toronto.

ERICKSON, A.W. & BESTER, M.N. 1993. Immobilization and capture. In: Antarctic Seals: Research Methods and Techniques. R.M. Laws (ed.). Cambridge University Press, Cambridge, England.

ERICKSON, A.W., BESTER, M.N. & LAWS, R.M. 1993. Marking techniques. In: Antarctic Seals: Research Methods and Techniques. R.M. Laws (ed.). Cambridge University Press, Cambridge, England.

JONKER, F.C. & BESTER, M.N. 1998. Seasonal movements and foraging areas of southern female elephant seals, *Mirounga leonina*, from Marion Island. *Antarct. Sci.* 10: 21-30.

LEA, M-A. & DUBROCA, L. 2003. Fine-scale linkages between diving behaviour of Antarctic fur seals and oceanographic features in the southern Indian ocean. *ICES J. Mar. Sci.* 60: 990-1002.

LEA, M-A., GUINET, C., CHEREL, Y., DUHAMEL, G., DUBROCA, L., PRUVAST, P. & HINDELL, M. 2006. Impacts of climatic anomalies on provisioning strategies of a Southern Ocean predator. *Mar. Ecol. Prog. Ser.* 310: 77-94.

LEA, M-A., GUINET, C., CHEREL, Y., HINDELL, M., DUBROCA, L. & THALMANN, S. 2008. Colony-based foraging segregation by Antarctic fur seals at the Kerguelen Archipelago. *Mar. Ecol. Prog. Ser.* 358: 273-287.

SALWICKA, K. 2000. Identification of kinship of southern elephant seals (*Mirounga leonina*, Linnaeus 1758) in the Admiralty Bay (South Shetland Islands, Antarctica). *Polish Polar Studies* XXVII: 117-120.

WOODS, R., McLEAN, S., NICOL, S. & BURTON, H. 1994. A comparison of some cyclohexamine based drug combinations for chemical restraint of southern elephant seals (*Mirounga leonina*). *Mar. Mamm. Sci.* 10: 412-429.

7. NAME OF COMPILER – SIGNATURE – DATE

Prof M.N. BESTER

05 February 2009

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SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Valdon Smith

2. AFFILIATION/INSTITUTION/GROUP

Stellenbosch University

3. NAME OF RESEARCH PROJECT/PROGRAMME

A vegetation biomass and nutrient budget of Marion Island

4. FULL NAME(S) OF PARTICIPANTS

(Including over-wintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Prof. V.R. Smith
Mr. M. Rossouw
Dr. J. Kalwij

Overwintering expedition members (if any):

None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey

routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance (construction personnel should describe their activities (attach work schedule), areas of work etc.)

Use of chemical analysis/microbiology laboratory on Marion Island
Helicopter support to visit high altitude regions of the island.
Helicopter support to visit west side and south side of island.
Use of field huts.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

1. To enter zones 1, 2, 3 and 4 on Marion Island (motivation submitted to the Prince Edward Island Management Committee on 14 October 2008).
2. To collect about 200 g of each vascular plant species on the island, excepting *Elaphoglossum randii* and *Ranunculus moseleyi*, neither of which will be collected (details of samples to be collected was submitted to the Prince Edward Island Management Committee on 14 October 2008)..
3. To collect 100 soil samples, approx. 100 ml each.
4. To collect 100 moss samples (about 20g each).

Permit to be made out to all three persons listed in section 4.

7. NAME OF COMPILER – SIGNATURE – DATE

Prof V.R. Smith 3 Feb 2009

Doc 3.10

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Dr Bettine van Vuuren
Centre for Invasion Biology / Department of Botany and Zoology
University of Stellenbosch
Tel: (021) 808 4862
Fax: (021) 808 2405
bjvv@sun.ac.za

2. AFFILIATION/INSTITUTION/GROUP

University of Stellenbosch

3. NAME OF RESEARCH PROJECT/PROGRAMME

The evolution of abundance and distribution of indigenous and invasive species on the Prince Edward Islands: **Understanding the history of variability**

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

1. Dr Bettine van Vuuren – Group leader
2. Dr Celine Born
3. Ms Rina Groenewald
4. Ms Mia Cerfontein

Overwintering expedition members (if any):

None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

- **Laboratory space requirements**
  - i. Laboratory and desk space on Marion Island (in the Gogga/Botany lab) will be required for 4 relief personnel.

- **Air support**
  - ii. Helicopter transfer to Mixed Pickle Hut will be required for 4 pax (this can be soon after arrival on Island). This will be to survey altitudinal long-term monitoring transects and sample plant material. Helicopter collection from Swartkops Hut is required for 4 pax 8 days after drop-off. Limited, hand-held equipment and backpacks will be transported.
  - iii. Helicopter transfer to Cape Davis will be required for 4 pax approximately 4 days after the first trip (ii above). This will be to collect plant material. Helicopter collection from Repettos Hut is required for 4 pax 3 days after drop-off. Limited, hand-held equipment and backpacks will be transported.
  - iv. Given previous difficulties encountered with weather conditions and snow cover, it is requested that these flights be scheduled as early as possibly (following logistic cargo handling) during the take-over.

- **Field hut requirements**
  - v. Mixed Pickle Hut (4 nights; 4 pax) and Swartkops Hut (4 nights; 4 pax) to correspond to helicopter transfer (see ii above).
  - vi. Cape Davis Hut (2 nights; 4 pax) and Repettos Hut (1 nights; 4 pax) to correspond to helicopter transfer (see iii above).
  - vii. Katedraalkrans Hut (1 night; 4 pax) later during takeover
  - viii. Kildalkey Hut (2 nights; 4 pax) later during takeover.

- **Other requirements**
  - ix. One orange container will be needed to transport research material to and from Marion Island.

- **Fieldwork**
  - x. Fieldwork for genetic analyses will include the sampling of plant species and the Marion flightless moth *Pringleophaga marioni* (< 0.0001% of species populations will be removed). Plant species of interest are *Poa annua* (alien), *Azorella selago* (indigenous), *Juncus scheuchzerioides* and *Juncus cf. effusus* (indigenous) as well as *Acaena magellanica* (indigenous). Two or three younger leaves from the plant species will be removed and dried in silica gel for analyses in the laboratory at Stellenbosch University. This method of sampling causes minimal damage to the plant itself. Forty sites (positions not yet determined) will be selected across Marion Island to provide good spatial

coverage; twenty plants will be sampled within each site. Sites will be reduced for *Juncus* spp. as the distribution across the island is not extensive. For the Marion flightless moth, caterpillars will be removed from 40 sites (positions not yet determined) that will ensure good coverage across the island. Abandoned albatross nests (40) will be searched for caterpillars. Caterpillars will be collected into absolute ethanol and brought back to Stellenbosch University for genetic analyses.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

1. Permits for Zone 3 are needed for 4 relief personnel (listed above) for the duration of relief voyage.
2. Collection permits are required to collect vascular and non-vascular plant species as well as Marion flightless moth caterpillars from localities across the island (see x. above). These localities will be determined when on the island, but will present good coverage of the island. Less than 0.0001% of individuals in populations will be removed or sampled destructively.

Overwintering expedition members (if any):

None

7. NAME OF COMPILER – SIGNATURE – DATE

Bettine van Vuuren 4 February 2009

Doc 3.11

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP Marion relief voyage should describe their plans in detail on this form and submit it to DEAT by no later than 6 February 2009 for approval. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Dr R.J.M. Crawford : 0825781533 (Cellular)
021-4023140 (Work)
021-9483697 (Home)

2. AFFILIATION/INSTITUTION/GROUP

Marine and Coastal Management

3. NAME OF RESEARCH PROJECT/PROGRAMME

Monitoring seabirds at Marion Island

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Mr B.M. Dyer (Group Leader, MCM - male)
Mr D.R. Anders (MCM - male)

Overwintering expedition members (if any):

Mrs D. Davis (female)
Ms M. van Onselen (female)

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

Objectives

- Updating of all historical time series of seabird data;
- De-briefing of Ms Clokie and Mr Harding following the 2008/09 CEMP-monitoring at Marion Island. Interrogation and validation of all data collected and of results obtained;
- Completion of CCAMLR submission forms;
- Finalization of the 2009/10 work schedule and procedures for the new field assistants;
- Training and orientation of new field assistants at all seabird monitoring sites. Train new staff on the use of the burrow camera equipment in the heli-hanger;
- Training to apply methods used for analysis of seabird diet samples;
- Census of King Penguin chicks at all breeding sites coastally;
- Visit all field huts on a round island orientation hike with new field assistants over an eight day period; visit all seabird monitoring sites for monitoring and orientation purposes – note that some of the sites to be visited, e.g. all Gentoo Penguin, Crozet Shag and Southern Giant Petrel colonies, are classified as Zone 4 areas.
- Search for and get GPS positions of all White-chinned Petrels burrows found around island;
- Census of King Penguin chicks at all breeding sites;
- Visit nest sites of Light-and Dark-mantled Sooty Albatross for which GPS positions were recorded on the summer survey to determine breeding success – sample size of 100 nests per species if possible. Formulate standard management count zones to access breeding success for each species;
- Census of King Penguin chicks at all breeding sites;
- Refurbishment of nest markers at all monitoring sites;
- Investigate nesting density of Great-winged Petrel at Skua Ridge;
- Identify species composition of burrowing petrels at Nellies Humps through the aid of spot-lamping. Check for bands and band and take measurements of all birds downed;
- Deployment of Platform Terminal Transmitters to satellites (PTT's): four to winter foraging Macaroni and four to winter foraging Rockhopper Penguins (Swartkop and Kildalkey/Bullard/ VD Boogaard); Attach ten PTT's to *Phoebetria* Albatrosses if not already deployed;
- Search for Southern Giant Petrel at Sealer's Beach. Macaroni Penguin at Bullard and Light-mantled Sooty Albatross at Trypot that are present ashore with PTT'S and recover if possible.
- Stock taking and transfer of new and replaced equipment to new staff members;

Air Support

- Helicopter support will be required to transport four staff to Swartkop and Kildalkey in order to deploy PTT's to two Macaroni Penguins colonies as soon after the *SA Agulhas* arrives at Marion Island as is possible. Macaroni Penguins leave the island unpredictably in April and thus require reaching the remote colonies at the soonest practical time after arrival. Deployment of PTT's will take less than 45 minutes, so it may need to shut down and wait before being transferred to Kildalkey thereafter. Staff

can walk back to Base from Kildalkey the following morning.

- An additional flight to Swartkop shortly before departure is requested to deploy PTT's to two Rockhopper Penguins. Rockhopper Penguins moult in April, but complete this near the end of takeover. The helicopter may have to shut down for 1 hour while the PTT's are attached.
- Diet samples (n=10) left at Swartkop hut will need to be collected and returned to Base. This can be accomplished during the hut re-stock or during PTT deployment. Samples are preserved in ethanol.

Ship requirement

- 2 m^2 freezer space may be required aboard the *SA Agulhas* for samples returning to South Africa.

Camping Equipment n/a

Hut Bookings

- Kildalkey, Grey-headed, Rook's, Swartkop, Mixed Pickle, Cape Davis and Repetto's will each be needed each for one night. Watertunnel hut will not be used overnight.
- One additional overnight stay (before the round island) at Kildalkey is requested for the PTT deployment.
- One night at Katedraal is requested to investigate inland breeding success of Light-mantled Sooty Albatross. This is weather dependant.

Laboratory Space ashore

- MCM uses the left-hand office in the Bird Laboratory for its over-wintering staff. There is a large chest freezer used to preserve samples and specimens collected during the year in the open area. Other equipment is also stored in cupboards in the open area. A metre of wet area on either side of the double basin in the open lab area is required to train field assistants with the methods of analysis of penguin diet samples.
- If possible, an additional email/internet connection must be put in place other than at the MCM computer.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Mr B.M Dyer (Group Leader)
Mr D.R. Anders

Access to Zones 1, 2, 3 and 4 and all permit types for both members will be required for research, orientation and training purposes during the April-May takeover.

- All Zone 4 seabird sites, e.g. all Gentoo Penguin, Crozet Shag and Southern Giant Petrel colonies may require approach closer than 200 m for orientation purposes.

Samples collected (and some to be returned to South Africa)

- 30 Rockhopper Penguin diet samples (5 in January and 10 in February and March collected from Skua Ridge to Archway and 5 samples collected at Swartkop in January; the analysis of these will be completed during takeover). Unidentified material will be returned to Cape Town;
- 45 Macaroni Penguin diet samples (10 in December and January; 15 in February collected at Bullard North; 5 collected at Swartkop in January). The analysis of these samples will be completed during takeover. Unidentified material will be returned to Cape Town;
- 5 diet samples from King Penguins at Archway. These samples will be collected and analyzed during takeover. Unidentified prey will be returned to South Africa;
- 20 opportunistic diet samples from burrowing petrels that may regurgitate during handling;
- As many pellets as possible (but not more than 50) from Crozet Shags throughout the post incubation period and before post brooding-fledging period to minimize disturbance. Pellets will be returned to South Africa for analysis.
- Freshly dead carcasses or organs of seabirds for morphometric and moult data or to identify potential disease outbreaks (max. 20);
- Abandoned seabird eggs for morphometric information (max. 20 in total and not more than 6 per species);
- Banding seabirds for age at first breeding, longevity, morphometric, moult and movement information (max. 500 – all species, but does not include the four penguin species, Crozet Shags nor Southern Giant Petrel);
- Attachment of PTT's to four Macaroni Penguin and four Rockhopper Penguin at Swartkop and Kildalkey/Bullard; 10 PTT'S to *Phoebatria* Albtrosses if not already completed.

Overwintering expedition members (if any):

Mrs D. Davis
Ms M. van Onselen

- Access to Zones 1, 2, 3 and 4 will be required for data collection and monitoring purposes during 2009/10.
- All Huts will be used up to six times annually (May/ August/ September/ October/ December/January). Duration of visits is 1-3 days per hut. Kildalkey and Repetto's Hut may be used for an additional six overnight visits. In addition they will require the use of Katedraal hut on at least two occasions (December/March) for one night while conducting inland census' of Light-mantled and Sooty Albatross.
- All Zone 4 seabird sites, e.g. all Gentoo Penguin, Crozet Shag and Southern Giant Petrel colonies require approach closer than 200 m to conduct required census' and monitoring. Passage through Macaroni Bay, Goney and Sealers Beach Albatross study sites will also be necessary for census purposes; Movement along Grey-headed Albatross Ridge will be necessary to census Sooty Albatrosses.
- The over-wintering members will also require permits to collect those samples listed in Point 6 - "Type of Permits required" during 2009/10. .

7. NAME OF COMPILER – SIGNATURE – DATE

B.M. DYER  27 JANUARY 2009

Doc 3.12

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Peter Ryan
peter.ryan@uct.ac.za (ph) 021 650 2966, (fax) 021 650 3295

2. AFFILIATION/INSTITUTION/GROUP

Percy FitzPatrick Institute, University of Cape Town

3. NAME OF RESEARCH PROJECT/PROGRAMME

Individual variation in albatross reproduction

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Peter Ryan (male)
Frances Taylor (female)
Viviane Barquete (female)

Overwintering expedition members (if any):

Ben Dilley (male)

405 9424 Attn: Kusi

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc , laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

We shall require use of lab/office space for processing and storing samples and working on computers during the relief (6 persons) and throughout the year (1 person). During the relief we shall require use of hut accommodation at Repettos for work at the Gony Plain study colony, and one protracted round island trip to survey White-chinned Petrels and familiarise the new team member with study areas.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Special entry permits for all team members to access all albatross study colonies (Zone 4: Grey-headed Albatross Ridge and the three Wandering Albatross colonies: Gony Plain, Sealer's Beach and Macaroni Bay). We shall also deploy tracking devices (both satellite transmitters and GPS loggers) onto Wandering Albatrosses, using approved Tesa tape and GLS loggers onto Grey and White-chinned Petrels on plastic leg bands.

Collection permit for blood (<1 ml) from some albatrosses (up to 100 chicks to test sex ratio of offspring and any outstanding parents that have not already been sampled to confirm parentage of chicks). Full details of the sampling protocol are in our SANAP proposal. We also request a permit to collect 4-5 feathers from selected albatrosses and feathers and nail clippings from *Eudyptes* penguins for stable isotope analysis (linked to Rob Crawford's project).

Overwintering expedition members (if any):

Access to all albatross study colonies (Zone 4, listed above).

7. NAME OF COMPILER – SIGNATURE – DATE

.....Peter Ryan..... ...2 February 2009...

Doc 3.13

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP Marion relief voyage should describe their plans in detail on this form and submit it to DEAT by 31 January 2009 for approval. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Dr Andrew Collier Phone: 083 3813655 E-mail: colliera@ukzn.ac.za	Dr Pierre Cilliers Phone: 028-312-1196 E-mail: pjcilliers@hmo.ac.za

2. AFFILIATION/INSTITUTION/GROUP

Space Physics Research Institute University of KwaZulu-Natal, Durban and Hermanus Magnetic Observatory	Polar Space Weather Programme Hermanus Magnetic Observatory Hermanus

3. NAME OF RESEARCH PROJECT/PROGRAMME

IPY: Window on Geospace

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Mr Etienne Koen
Hermanus Magnetic Observatory
Hospital Street
Hermanus
phone: 076 6610170
email: koenej@gmail.com; ekoen@hmo.ac.za

Mr. Daleen Koch [team leader]
Hermanus Magnetic Observatory
Hospital Street
Hermanus
Phone: 082 563 5160
Email: daleen.koch@sanae.sanap.ac.za; dkoch@hmo.ac.za

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Offic...

should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

We request provision of the following:

- berths and passage for two persons to and from Marion Island on the SA Agulhas;
- accomodation for two persons at the Marion Island base (it would be preferable if both persons could be accomodated in the emergency base since this is the location of our instruments);
- transport of a limited amount of equipment (approximately 40 kg).

The objectives for the takeover are the following:

VLF-project:

- maintenance of the magnetic loop antenna and pre-amplifier;
- maintenance of the whip antenna;
- retrieve data from broadband VLF system, ultraMSK and Doppler receiver;
- upgrade of software on the VLF system.

GPS & ISM projects

- supervision of GPS receiver on board the SA Agulhas (located Lab D);
- maintenance of the Ionospheric Scintillation Monitor (ISM);
- retrieve data from ISM receiver;
- upgrade of computer and software on the ISM system;
- test software for daily upload of ISM data from Marion Island via ftp;
- feasibility study of moving ISM receiver to a location nearer to the new base.

We would like to request the installation of a Microwave (or similar) network link from either the old or new base to the emergency base. This would allow the efficient operation of the experimental equipment which is located in the emergency base. At present the equipment is operating in isolation and it is impossible for us to determine during the course of the year whether or not the apparatus is functioning properly (or at all). A network connection would allow us to remotely access the machines to assess their functionality and request assistance from one of the team members if necessary.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:
Zones 1 and 2 with permission for entry and research. No specimens will be collected.

Overwintering expedition members (if any):

7. NAME OF COMPILER – SIGNATURE – DATE

Andrew B. Collier 26 January 2009

Ms Kusi Ngxabani-Tikana 0214059424

Doc 3.14

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Dr Pedro M.S. Monteiro
Tel: +27218882437
Mobile: +27824488822
pmonteir@csir.co.za

2. AFFILIATION/INSTITUTION/GROUP

CSIR
Jan Cilliers St, Stellenbosch 7599

3. NAME OF RESEARCH PROJECT/PROGRAMME

NRF – SANAP Southern Ocean CO2 Observatory

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Ship Based: Mr Leletu Nohayi. Technical Officer in Charge of underway pCO2 system in the Aft Lab of the SA Agulhas

Overwintering expedition members (if any):

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

As previously:

Instrument will be in the aft lab where the main requirements will be

Scientific sea water supply (please could the pump be serviced or at least checked)

TSG (please request that the TSG system be strengthened)

Special Request: if it can be fitted into the schedule I would request that the ship undertakes a special trip from Marion to 55oS and back to provide pCO2 data across the polar front. It does not have to stop and can undertake the whole trip at normal cruising speed. It is expected that this would add 4 – 5 days depending on the weather.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Overwintering expedition members (if any):

7. NAME OF COMPILER – SIGNATURE – DATE

Dr Pedro MS Monteiro 2 February 2009

Doc 3.15

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Dr Adam Bumby
Department of Geology
University of Pretoria
Pretoria 0002
Tel: 012 420 3316
e-mail: adam.bumby@up.ac.za

2. AFFILIATION/INSTITUTION/GROUP

University of Pretoria

3. NAME OF RESEARCH PROJECT/PROGRAMME

Neotectonic stress analysis on Marion Island

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Dr. Adam J. Bumby (Leader)
Mr. Andries E. J. Botha

Overwintering expedition members (if any):

None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, ship's support, sampling equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

Accommodation on SA Agulhas:
2 Pax to Marion Island for takeover and 2 Pax from Marion Island after takeover.

Accommodation on Marion Island:
2 Pax to be housed on Marion Island for the duration of the takeover.

Laboratory Space:
Space for 2 Pax; preferentially housed in Lower General Purpose Laboratory (Bird Lab).

Flights:

The dates requested for flights are not fixed and can be shifted to fit in with other teams' programmes and weather conditions.

1 x Flight to Truter Peak area on April 27th for 3 Pax. Will walk to Swartkop Hut
1x Flight from Swartkop to Base on April 29th

Hut Bookings:

The dates requested are not fixed and can be shifted to fit in with other teams' programmes and weather conditions. In

Wed 15th April: Repetto's (2 Pax)
Thurs 16th April: Cape Davis (2 Pax)
Fri 17th April: Repetto's (2 Pax)
Sun 19th April: Kildalkey (2 Pax)

1 Round Island (2 Pax; will perform in conjunction with Davis & van der Merwe of Geomorphology), possibly starting on 21st April (and possibly linked with Geomorphologist's flight to Repetto's) with the with the following itinerary:

Night 1 (21st April): Repetto's Hut
Night 2 (22nd April): Mixed Pickle Hut
Night 3 (23rd April): Swartkops Hut
Night 4 (24th April): Watertunnel Hut

Mon 27th and 28th April: Swartkop (3 Pax: AJB, AEJB and Davis of Geomorphology to act as field guide)
May 3rd and May 4th: Watertunnel (2 Pax, together with Mieklejohn and Hall of Geomorphology)
May 6th and May 7th: Katedraal (2 Pax)

Other:
The following study sites are to be visited from Base during the take-over:
Long Ridge, Plew Crags, The Fault, Ships Cove, Archway Bay, Macaroni Bay. The work conducted involves identification and measurement of the orientation of slickenside lineations in grey and black lavas for palaeostress analysis.

Special diets:
None

7.	**NAME OF COMPILER – SIGNATURE – DATE**
Adam Bumby	Adam J. Bumby 23/01/09

Doc 3.16

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Prof. Ian Meiklejohn
Department of Geography, Geoinformatics and Meteorology
University of Pretoria
PRETORIA
0002
Tel: 012-420 4049
E-Mail: ian.meiklejohn@up.ac.za

2. AFFILIATION/INSTITUTION/GROUP

University of Pretoria

3. NAME OF RESEARCH PROJECT/PROGRAMME

Geomorphology and Climate Change

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Prof. Keith Ian Meiklejohn (University of Pretoria) – Team Leader
Prof. Kevin John Hall (University of Northern British Columbia/University of Pretoria – Marion 32, 33 & 34 Teams)
Ms Jacqueline Karen Davis (University of Pretoria – Marion 64 Team)
Mr Barend Jacobus van der Merwe (University of Pretoria – Marion 64 Team)

Overwintering & Returning:
Mr Mphumzi Brooklyn Zilindile (University of Fort Hare – Marion 65 Team)

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

Accommodation on SA Agulhas:
4 Pax to Marion Island for takeover and 4 Pax from Marion Island after takeover.

Accommodation on Marion Island:
4 Pax to be housed on Marion Island for the duration of the takeover.

Laboratory Space:
Space for 5 Pax (includes overwintering personnel from Marion 65) and for undertaking soil property tests; normally we are housed in Lower General Purpose Laboratory (Bird Lab).

Flights:

The dates requested for flights are not fixed and can be shifted to fit in with other teams' programmes and weather conditions.

- 2 x Flights into the interior of the island to drop off and repair logging equipment; one flight is requested to the saddle between Mascarin (State President Swart) and Resolution (Jan Smuts) Peaks and the other is to the base of Bald Peak. It is requested that one of these flights (the former) be used to photograph the Ice-Plateau as part of long-term monitoring. In both cases, the Pax will walk back to Katedraalkrans Hut (4 Pax) and base. On the first of the inbound flights, it is requested that data-logging equipment be dropped off at Katedraalkrans Hut and the base of Bob Rand Peak for later installation. One flight is requested for early in the take-over (±17 April) and the other for the middle of takeover (±27 April). However, given that flights to the interior of the island are so weather dependant, it is requested that any suitable conditions be utilised for them.
- 1x Flight to the lower part of the Feldmark Plateau to retrieve and download data loggers (15 or 16 April) - 3 Pax. To be collected after 3 hours.
- 1x Flight to Repetto's to retrieve and download data loggers (± 21 April) - 5 Pax. 2 Pax to be collected after 3 hours, the other 3 will spend the night at Repetto's Hut and continue on a "Round Island".
- 1x Flight to Beret (Feldmark Plateau) ± 3 May for 2Pax. The Pax will continue to Watertunnel. The flight is required for the transport of logging equipment. It is possible that 2 Pax from the Structural Geology group may want to be in the same area at the same time – the two groups could possibly be accommodated together.
- 1x Flight from Watertunnel for Pax to return to base on 6 May (returning logging equipment).

Hut Bookings:

The dates requested are not fixed and can be shifted to fit in with other teams' programmes and weather conditions.

- 2 nights at Katedraalkerans hut, linked to the first flight above (3/4 Pax) to set up and repair logging equipment and to monitor/photograph the Ice Plateau - 17 & 18 April.
- 3 nights at Katedraalkrans Hut to set-up and repair logging equipment and study sites, linked to second flight above (3/4 Pax) – 28, 29, 30 April.
- 3 Nights at Kildalkey to investigate Quaternary glacial deposits (2 Pax – Meiklejohn & Hall) on 22, 23, 24 April, if possible.
- 3 nights at Watertunnel Hut (2 Pax) to investigate Quaternary glacial deposits in the Santa Rosa, Watertunnel and Black Haglet Valleys. This is requested for 3, 4, 5 May and is linked to the flight to Beret requested above. As with all the helicopter flights, this can be shifted, depending on availability of flights and the weather. It is possible that 2 Pax from the Structural Geology group may want to share the hut with us – the two groups can be accommodated together.

- 1 Round Island (2 Pax – Davis & van der Merwe – the Structural Geologist also aim to do a Round-Island, which could coincide with this), possibly starting on 21 April (linked to flight to Repetto's with the with the following itinerary:
  - Night 1 (21 April): Repetto's Hut
  - Night 2 (22 April): Mixed Pickle Hut
  - Night 3 (23 April): Swartkops Hut
  - Night 4 (24 April): Watertunnel Hut

Other:

- The following study sites are to be visited from Base during the take-over: Tates, Freds, Long Ridge, Juniors Kop, Tafelberg, The Fault, Ships Cove, Archway Bay, Macaroni Bay, Piew Craggs. The work conducted involves:
  - Monitoring and recording environmental parameters, and downloading data loggers.
  - Monitoring environmental conditions for weathering studies
  - Sediment analyses as part of studies into the Quaternary glaciation of the Island.
  - Collection of rock and soil samples for chemical and textural analysis.

Special diets:

None

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

- Zone 3 permits for the entire takeover for:
  JK Davis, KJ Hall, KI Meiklejohn, BJ van der Merwe and MB Zilindile (Overwintering – Old Team).
- Zone 4 permits for:
  JK Davis, KJ Hall, KI Meiklejohn, BJ van der Merwe and MB Zilindile (Overwintering – Old Team)
  To enter areas on the edge of breeding colonies at Albatross Lakes and Grey Headed Ridge, and the lava tunnel at Fred's (46°54'25"S; 37°50'26"E). In all cases, our study sites are away from nesting birds and due care will be taken to maintain a safe distance from them.
- Sampling Permits for:
  JK Davis, KJ Hall, KI Meiklejohn, BJ van der Merwe and MB Zilindile (Overwintering – Old Team).
  A maximum of 25kg rock samples, 25kg ground/soil, and 20l water for analysis in Pretoria and the University of Northern British Columbia.

Overwintering expedition members (if any):

See above for Mr MB Zilindile

7. NAME OF COMPILER – SIGNATURE – DATE

KI Meiklejohn ..... KMeiklejohn ..... 26 January 2009

Doc 3.17

SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

Applicants wishing to participate in the SANAP 2009 Marion relief voyage should describe their plans in detail on this form and submit it to Ms Kusi Ngxabani-Tikana by no later than 6 February 2009 for approval to e-mail: kngxabani-tikana@deat.gov.za. A copy of the completed form will be attached to the Sailing Instructions for the voyage. Please complete this form carefully and legibly (typed). Add additional sheets if necessary.

1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Prof. Steven L. Chown
Director: DST-NRF Centre of Excellence for Invasion Biology
Stellenbosch University
Private Bag X1
Matieland
7602
South Africa

Tel: +27 (0)21 808 2385
Fax: +27 (0)21 808 2995
Email: slchown@sun.ac.za

2. AFFILIATION/INSTITUTION/GROUP

DST-NRF Centre of Excellence for Invasion Biology, Stellenbosch University

3. NAME OF RESEARCH PROJECT/PROGRAMME

Promoting South Africa's Antarctic Legacy

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel

Mr. John Cooper (M) (Group Leader)
Dr. Aleks Terauds (M)
Ms. Lize-Marie v.d. Watt (F)

Overwintering expedition members (if any):
None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

This project involves two major aspects, each of which is rather different, but closely related.

The first aspect consists of documenting oral history of activities at Marion Island in keeping with the SANAP-funded project. The idea will be for Ms. v.d. Watt, the project researcher to interview staff and students on the station to obtain an idea of how they view working and living on the island currently. Ms. v.d. Watt will also use the opportunity on Marion to obtain oral history accounts from those who have travelled more frequently to the island, using the Marion Island environment as a sounding board for eliciting discussion. Mr. Cooper will be closely involved and assist, also providing guidance for ms. v.d. Watt and Dr. Terauds for period away from the station. It is essential that Ms. v.d. Watt experience both base and field conditions so that she can share with and so further draw out the experiences of previous visitors to the islands (either recent or as far back as are still available for interviewing in South Africa).

The second part of this project involves taking fixed point photographs at a range of sites that had either been photographed previously, or that will form the basis of a new series of images that are properly archived and documented for future use. This will be the main focus of Dr. Teraud's duties during the relief. He will focus his activities both at the station and around the island, concentrating especially in areas where major change in vegetation has been documented or expected. To this end he will have Mr. Cooper as a guide, and will collaborate closer with Dr. Peter le Roux who also intends to be present on the relief voyage.

For this part project, three berths on the S.A. Agulhas are required as well as space on the station for three relief personnel. Laboratory space is not required. Rather, all three personnel can operate either from their rooms, using the desk space therein (so long as these are not in 'Squatters') or from the field huts. If limited space is required, access to some desk space in the Microbiology/Botany/Entomology or Ornithology/Geomorphology laboratory would be suitable. Helicopter or boat transport ashore and back to the ship is required. The personnel require a round-island trip (one night at each of the huts) for the fixed-point photography, and social sciences documentation, as well as two trips to Katedraalkrans for high elevation site work. A maximum of three personnel would be involved in the field activities. Helicopter assistance in the field is not required (except in the case of an emergency).

If possible, it would be appreciated if Mr. Cooper could be provided with cabin space on the SA Agulhas that is not subject to cigarette smoke (as are all cabins adjacent to the smokers' lounge – a substantial health concern).

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Entry permits to Zones 1-3 for Mr. Cooper, Dr. Terauds and Ms. v.d. Watt. For fixed-point documentation purposes, an entry permit to the Zone 4 Fred's Hill lava tunnels for Dr. Terauds (accompanied by Mr. Cooper, and Prof. Chown – see Albatrosses as Ecosystem Engineers SANAP 3).

No collection permits are required.

Overwintering expedition members (if any):
N/A

7. NAME OF COMPILER – SIGNATURE – DATE

Prof. Steven L. Chown ..... **3 February 2009**

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Entry permits to Zones 1-3 for Mr. Cooper, Dr. Terauds and Ms. v.d. Watt. For fixed-point documentation purposes, an entry permit to the Zone 4 Fred's Hill lava tunnels for Dr. Terauds (accompanied by Mr. Cooper, and Prof. Chown – see Albatrosses as Ecosystem Engineers SANAP 3).

No collection permits are required.

Overwintering expedition members (if any):
N/A

7. NAME OF COMPILER – SIGNATURE – DATE

Prof. Steven L. Chown ..... **3 February 2009**

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SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Prof. Steven L. Chown
Director: DST-NRF Centre of Excellence for Invasion Biology
Stellenbosch University
Private Bag X1
Matieland
7602
South Africa

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Fax: +27 (0)21 808 2995
Email: slchown@sun.ac.za

2. AFFILIATION/INSTITUTION/GROUP

DST-NRF Centre of Excellence for Invasion Biology, Stellenbosch University

3. NAME OF RESEARCH PROJECT/PROGRAMME

Albatrosses as Ecosystem Engineers
Final work on Sheathbills for USAID grant
BAS-SU collaborative project
Alien Plant Survey requested by PEIMC

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

1. Prof. Steven L. Chown (M) (Group Leader – contact 082 7881410)
2. Dr. Brent J. Sinclair (M) (Canada)
3. Dr. Susana Clusella-Trullas (F) (Spain)
4. Dr. Justine D. Shaw (F) (Australia)
5. Ms. Ethel E. Phiri (F)
6. Ms. Tanya Haupt (F)

Overwintering expedition members (if any):

1. Mr. James Wilshere (M)
2. Ms. Asanda Phiri (F)

Returning expedition members from previous team

1. Ms. Anne Treasure (F)
2. Mr. Greg McClelland (M)
3. Mr. Mashudu Mashau (M)

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

Work to be undertaken

The current group has several major aims for the relief:

1. Completion of the alien plant survey work. This will involve inspection of the mouse exclosures, final assessment of the phenology sites, and a final survey in detail of sites invaded by *Cerastium fontanum*. Several true absence records for aliens will also be obtained in the high elevation areas by visiting a range of sites where alien species are known to be absent but where quantification has not been undertaken. The work will also provide several permanent (in the sense of being GPS tracks and not marked with poles) altitudinal transects against which invasive plant spread uphill can be assessed. These will include the sites previously investigated by Brian Huntley in the 1960s and more recently by Peter le Roux. Propagules of common alien and indigenous plants will be collected to examine if alien and indigenous species have differing germination requirements. Additional, alien surveys that are typically carried out on an annual basis will also be undertaken, especially to assess the extent to which alien isopods (*Porcellio scaber*) and wasps (*Aphidius matricariae*), and the springtail *Pogonognathellus flavescens* might have spread. All three species have restricted distributions (one to the base and the other two to the south and east coasts of the island). The survey will also fill in several gaps in the alien plant survey undertaken by T. Ramaswiela in 2006/7. Staff involved: Chown, Shaw, A. Phiri, E. Phiri, A. Treasure.

2. Continuation of Albatrosses as Ecosystem Engineers project. The aim of the present study is to undertake work to continue to address the key questions posed. Specifically, Q1. Nutrient content of nests differs from surrounding sites. This work will involve collection of many, small (10g or thereabouts) soil samples from around nests and generally along the nutrient gradient in four quadrants on Marion Island. Q2. Further logging of albatross nest temperatures in collaboration with bird researchers at Marion

Island. This will involve inserting i-button loggers (four) into nests, and their removal at quarterly intervals over the year during inspections by bird researchers. Q3. Behavioural choice work on caterpillars to determine whether they cue on nest or bird odours. Q4. Initiate ecophysiological work on *Pringleophaga marioni* in the laboratory. Q6. Phylogeography (via microsatellite work) of individuals both from nests and the surroundings. This will involve field collections of caterpillars, rearing the laboratory, and assessment of physiological parameters such as feeding rate and ionic compositional change with feeding and cooling/heating. The role of the species in the food web relative to other species and to predators will also be assessed, necessitating collection of spiders, springtails, aphids, mites and midges. Staff involved: Chown, Sinclair, Treasure, Haupt, Shaw (see Dr. Jansen van Vuuren's SANAP 3 for student name and permit application for genetic samples).

3. Sheathbill demographics. The USAID/DEAT/SU programme had as its final goal an assessment of demographics of the Lesser (Black-faced) Sheathbill on Marion and Prince Edward Island. This work was never completed owing to a lack of appropriate staff. This work has now started with Greg McClelland undertaking the field research and Dr. Peter Ryan providing additional advice and input. The work will continue over the relief and Mr. Wilshere will be trained to resight birds and to replace tags where necessary as part of his duties.

4. Intertidal invertebrate physiology. The BAS-SU collaborative project aims to study the upper temperature limits of intertidal and nearshore invertebrates on Marion Island. The research aims at determining the extent to which Marion's marine invertebrates are able to acclimate to short and long-term changes in temperature as well as estimating the likely impact of ocean warming on these marine assemblages. The work will involve field collection of invertebrate species from the intertidal zone of rocky shores that are relatively close to the research station (Ship's cove, Duiker's point, Transvaal Cove, Macaroni Bay). Individuals will be collected from intertidal pools, underneath boulders and kelp holdfasts. The latter will involve detaching the kelp from the rock and removing the invertebrates that live in the inner folds and fissures of the base of the kelp. Invertebrates will be taken to the laboratory for physiological trials: acclimations, heating rate treatments and determination of upper thermal limits.

Shipping Requirements:
Berths for six relief personnel (Chown, Sinclair, Shaw, Clusella-Trullas, Haupt, Phiri) and two overwintering expeditioners (Wilshere, A. Phiri) from Cape Town to Marion Island. Return berths for six relief personnel and three returning expeditioners (Treasure, McClelland, Mashau). Four orange containers for scientific equipment. Space in a laboratory on the ship for a small chest freezer for samples that require dedicated conditions (front lab worked well in the past), as well as for two temperature regulated tanks for transport of marine invertebrates.

Air-Transport Requirements:
Transport to Marion Island from the mv *SA Agulhas* for six (6) relief personnel and two (2) expeditioners; and from the Island to the mv *SA Agulhas* for (6) relief personnel and three (3) returning expeditioners. Slinging of orange containers to and from the island.

Fitting in with other scientific and logistic programmes: Drop off and collect: Mixed Pickle Cove drop-off for 2 pax and their backpacks, return after two nights. Rooks Bay Cove drop-off for 2 pax and their backpacks, return after two nights. Cape Davis drop-off for 2 pax and their backpacks, return after two nights. Watertunnel drop-off for 2 pax and their backpacks, return after two nights. Kildalkey drop-off for 2 pax and their backpacks, return after two nights. Katedraal drop-off for 4 pax and their backpacks, plus four red bins, return after two nights. Swartkop hut drop-off for 3 pax and their backpacks, pick up after 5 nights from Mixed Pickle hut.

Hut Requirements
Fitting in with other scientific and logistic programmes:
Group 1
Mixed Pickle hut: 2 nights for 2 people
Cape Davis Hut: 2 nights for 2 people
Katedraal hut: 2 nights for 4 people
Watertunnel: 2 nights for 2 people
Swartkop hut: 4 nights for 4 people
Kildalkey: 2 nights for 2 people

Group 2
Swartkop hut: 3 nights for 3 people
Mixed Pickle hut: 2 nights for 3 people
Kildalkey hut: 2 nights for 2 people
Repettos hut: 2 nights for 3 people

Round island with one night at each hut for 2 people. Direction and timing negotiable.

Laboratory requirements
Space in entomology/microbiology/botany laboratory for six relief and five overwintering personnel (returning and new). Space for tanks for intertidal species for thermal work.

Special diets:
Ms. Phiri is allergic to sulphur-containing preservatives. She is adept at managing her own diet on Marion Island to avoid these products.
Dr. Shaw is a vegetarian.

Clothing requirements:
Herewith notification that personnel will be using non-issue outer garments. These garments will be inspected prior to departure and will be made available for inspection as requested by the conservation officer(s). The quality of the outer gear issued does not stand up to the demands of Entomological and Botanical field research.

Field rations:
For staff that has reasonable to substantial field work commitments the field rations (especially chocolate, energy bars, etc) made available at Marion Island are insufficient. To prevent field safety from being compromised the group will source and bring along field rations. It will also bring along several items to ensure the health and morale of the group active in the laboratory, especially given the very stringent use regulations applied to food at the base. The material will not compromise the provisions of the current management plan, will be repacked into transparent containers and will be available for inspection at any time by the conservation officers.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Permits for Zones 1-3. The work proposed above cannot be completed in Zones 1 and 2 for the following reasons: Alien plants and animals occur in all zones. Albatrosses and their nests occur mostly outside Zones 1 and 2. Several arthropod species found only in Zone 3, and it is not possible to sample from high elevations or the intertidal inside Zones 1 and 2. Sheathbills largely occur in Zone 3. In consequence, access to Zones 1-3 is required for all relief project

personnel, and for the two overwintering team members (Wilshere, A. Phiri).

Lesser Sheathbills are very abundant in the Sealer's Beach and Goney Plain (Log Beach, Prinsloo Meer) areas of Marion Island owing to large penguin colonies in these areas. To undertake the sheathbill demographic work properly, access to these areas is required. Both areas are included within Zone 4 wandering albatross study colony areas. Excluding work in these areas would mean that substantial portions of the sheathbill population would be excluded (see Burger's 1977 work). In consequence, Zone 4 permits will be required for Mr. Wilshere and Ms. A. Phiri for the relief period, and for a full year up to and including their departure from Marion Island in May 2010.

Collection Permits
Collection permits are required for the following –

Collembola: < 5000 individuals of each species. Abundances on Marion are typically 10 000 – 38 000.m^{-2} (Gabriel et al. 2001). The collections are for studying the physiology of the species both at the island and in South Africa. Permission to return specimens to South Africa to our DoA-approved quarantine lab will be sought from the Department of Agriculture. Relief (all personnel).

Mites: < 100 specimens of any species. Densities of mites are high and we will be impacting on < 0.001% of the local population (Barendse et al. 2002). The purpose is to ensure that any new species are submitted to appropriate systematists for identification (e.g. D.J. Marshall, L. Coetzee). Relief (all personnel).

Moths: 200 individuals of *Embryonopsis halticella*, 500 individuals pf *Pringleophaga marioni*. From around the island both during the relief and over the full year. Impact less than 0.1% of total population. 500 individuals of *Plutella xylostella* an alien species (population information: C. Hänel 1998, M.Sc. Thesis, Univ. Pretoria; Crafford & Scholtz (1986)). Purpose is to further knowledge of life histories, for stable isotope analysis, for olfaction choice experiments, and for physiological research as indicated in the albatrosses as ecosystem engineers project. Relief (all personnel) and year-long permits (A. Phiri, Wilshere).

Flies: 100 individuals of *Paractora dreuxi*, and 100 individuals of *Apetaenus littoralis* (less than 0.1% of population based on estimates made by Crafford & Scholtz 1987). Purpose of investigation is to examine interactions between these species and the parasitic wasp *Kleidotoma icarus*. Relief (all personnel).

Wasps: Collection of 10 000 individuals of the alien *Aphidius matricariae* to undertake life history and feeding work. Collection of 100 *Kleidotoma icarus* for food web analysis. The *K. icarus* population size is unknown. If the species appears to be rare we will reduce collections to 15% of the proposed number. Relief (all personnel).

Spiders: 500 individuals each of all three spider species at Marion Island (*Myro kerguelensis, Myro paucispinosus, Prinerigone vagans*) for food-web studies and stable isotope analysis. Population data from C. Hänel 1998, M.Sc. Thesis, Univ. Pretoria suggest that the impact will be smaller than 0.1% of the population. Relief (all personnel).

Beetles: 120 specimens of each species (*Bothrometopus randi, Palirhoeus eatoni, B. parvulus, B. elongatus, Ectemnorhinus marioni, E. similes, Halmaeusa atriceps, Meropathus chuni*) for determination of body size, diet and performance. The estimated impact is less than 0.1% of population based on data from Hänel (1998) and Chown et al. (2002). Relief (all personnel).

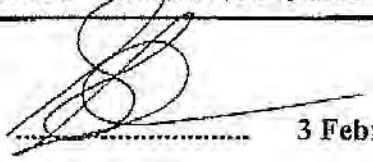
Isopod: Collection of 100 individuals of the alien isopod, *Porcellio scaber*, that has recently been introduced to the island. The purpose is to try to eradicate the species. Relief (all personnel) and year-long permits (A. Phiri. Wilshere).

Plants and soil: 100 core samples (70 mm diameter) for springtail extraction. Species such as *Megalothorax* and *Katianna* sp. can only be obtained in this way. 500 tillas of *Poa cookii* for extraction of *Embryonopsis halticella*. All plant samples will be dried and used for stable isotope analysis after extraction. 500 small (40 mm diameter, 20 mm depth) soil samples for stable isotope analysis and nutrient analysis as per the albatrosses as ecosystem engineers proposal. 200 small leaf specimens of each of the common vascular plant species on Marion Island (excluding Kerguelen Cabbage, *Limosella australis*, *Elaphoglossum randi*, *Polystichum marionense*, *Grammitis poepeggiana*) for stable isotope analysis. In addition, 200 g of wet weight propagules of *Acaena magellanica*, *Agrostis magellanica*, *Agrostis stolonifera*, *Poa cookii*, *Poa annua*, *Sagina procumbens*, *Cerastium fontanum*, *Pringlea antiscorbutica*, *Azorella selago*, *Leptinella plumosa*.5 0 small (40 mm diameter, 20 mm depth) samples of material from occupied and recently abandoned albatross nests for stable isotope analysis and nutrient analysis as per the albatrosses as ecosystem engineers proposal. Material from occupied nests will be obtained using a small 'biopsy' rod and the hole closed afterwards. during inspections of birds on nests by bird researchers so adding no additional stress to birds. Sampling will be done by bird researchers or we will assist researchers in their usual fashion to limit approach numbers. Relief (all personnel) and year-long permits (A. Phiri, Wilshere).

Marine organisms: Representative samples of marine invertebrates for thermal work. Specifically, 50 to 100 individuals of each of the following species will be collected: amphipods: *Hyale grandicornis*, *Hyale hirtipalma*; isopods: *Dynamenella huttoni*, *Exosphaeroma gigas*, *Munna instructa*; copepod: *Trigriopus angulatus*; gastropods: *Kerguelenella lateralis*, *Nacella delesserti*; pelecypodans: *Kidderia bicolour*; amphineurans: *Hemiarthrum setulosum*; echinorderms: *Anosterias rupicola*. The collections are for studying the physiology of the species both at the island and in South Africa. Permission to return specimens to South Africa to our DoA-approved quarantine lab will be sought from the Department of Agriculture. All species are considered abundant by de Villiers (1976). Permit for Chown and Clusella-Trullas only.

House mice: Snap trapping of c. 3500, house mice for gut content analyses (impacts on *Pringleophaga marioni* and other invertebrates). Ear tagging of c. 2000 mice for capture mark-recapture studies following Sherman trapping. Ethics clearance has been obtained from Stellenbosch University for this work and has served previously at the PEIMC. The methods will be identical. Permit for relief for McClelland, Mashau and Treasure and for full year for Wilshere and A. Phiri only.

Lesser (Black-faced) Sheathbill: Banding and mass/age measurements of total population following capture with hand nests and noose carpet. Once-off measurements of each bird over 2008/9 year (see Appendices where all protocols are described). Stringent precautions (such as alcohol cleaning of ringing pliers, and replacement of latex gloves between each bird captured) will be used. Traps will be washed and cleaned with ethanol on a daily basis. Samples of blood and feathers from 60 birds will be taken and 60 birds will be used for doubly-labelled water studies of field metabolic rates (requiring two capture bouts – new techniques do not require a lengthy resampling period). Ethics clearance has been obtained from Stellenbosch University for this work and has served previously at the PEIMC. Permit for relief for McClelland and Mashau only and for Wilshere and A. Phiri for full year.

7. NAME OF COMPILER – SIGNATURE – DATE		
Prof. Steven L. Chown		3 February 2009

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SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

Prof. Steven L. Chown
Director: DST-NRF Centre of Excellence for Invasion Biology
Stellenbosch University
Private Bag X1
Matieland
7602
South Africa

Tel: +27 (0)21 808 2385
Fax: +27 (0)21 808 2995
Email: slchown@sun.ac.za

2. AFFILIATION/INSTITUTION/GROUP

DST-NRF Centre of Excellence for Invasion Biology, Stellenbosch University

3. NAME OF RESEARCH PROJECT/PROGRAMME

1) Drivers of sub-Antarctic terrestrial ecosystems
2) South Africa-Sweden bio-geomorphology collaboration

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

1. Dr. Peter C. le Roux (M) (Group Leader – contact 072 385 1428)
2. Ms. Natalie S. Haussmann (F)
3. Mr. Bert Eriksson (M) (Sweden)

Overwintering expedition members (if any):

None

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

Work to be undertaken

The current group has several major aims for the relief:

1. Resurveying long-term *Azorella selago* monitoring plots. The twelve long-term monitoring plots established by Mawethu Nyakatya in 2001 will be revisited. All *A. selago* plants within the plots will be re-photographed and re-measured to estimate the growth and survival rates of this species. All other plant species in the plots will be noted, testing if changes in species composition have occurred over the last 8 years (as expected based on recent research indicating an upslope expansion of most of the island's indigenous vascular plants). The long-term monitoring plots are currently marked by four PVS marker poles. To facilitate more accurate future re-surveying of the plots we will place additional metal markers (extending < 1m above the ground) around the edge of the plots. We will take precautions to minimize disturbance to the plots. As six of the twelve plots are located on the western side of the island, we will require time at the Mixed Pickle and Swartkops huts (listed on SANAP 3 form of Dr. Bettine van Vuuren).
Staff involved: le Roux

2. Maintenance of automatic weather stations. Batteries and dataloggers will be replaced on the two automatic weather stations (situated next to the mid-altitude long-term monitoring plots at Tafelberg and above Mixed Pickle). Similarly, iButton temperature and humidity dataloggers will be replaced at another four of the long-term monitoring sites. This equipment has been in place since April 2007 and contributes to our understanding of spatial variation in climate across the island. Because half of the automatic weather stations are on the western side of the island, we will require time at the Mixed Pickle hut (see below).
Staff involved: le Roux, Haussmann

3. Altitudinal variation in *Azorella selago* seedling abundance. A survey along a single altitudinal transect in 2008 showed that the number of *A. selago* seedlings declined with altitude. We will be surveying additional transects to determine if this pattern is consistent in different locations. Furthermore, we will be documenting the fine-scale location of seedlings to test if they are disproportionately associated with specific microsites (and if microsite preference varies with altitude). These data will also help to identify if recruitment by this keystone species is continuous or episodic.
Staff involved: Haussmann

4. The biogeomorphological impact of rodent burrowing. This study will investigate the

impact of mice burrowing on landform stability and soil erosion through direct burrowing and indirectly through changes in micro-climate, vegetation destruction and impacts on slope drainage. Surveys will be conducted at *Azorella*-banked solifluction terraces through i) detailed plot-scale documentation of burrow location, density, morphometry within the landforms; ii) measurement of the ground micro-climate of impacted and non-impacted sites; iii) sediment displacement rates at impacted and non-impacted sites. Based on existing estimates of *Azorella* and burrow densities across the island a quantitative estimate of burrowing impact for the island can be given. Three iButton temperature loggers and one line of painted stones will be left for one year at each of four *Azorella*-banked terraces (to be collected in April 2010). This study will complement a recent island-scale survey of the impacts of the alien house mouse on *Azorella selago* by Ethel Phiri.
Staff involved: Eriksson

Shipping Requirements:
Berths for three relief personnel (le Roux, Haussmann, Eriksson) from Cape Town to Marion Island, and for the return voyage. One orange container for scientific equipment.

Air-Transport Requirements:
Transport to Marion Island from the mv *SA Agulhas* for three (3) relief personnel; and from the Island to the mv *SA Agulhas* for three (3) relief personnel. Slinging of orange container to and from the island.

Fitting in with other scientific and logistic programmes:
Mixed Pickle Cove drop-off for 2 pax and their backpacks, and collection after four nights.

Hut Requirements
Mixed Pickle hut: 4 nights for 2 people

Laboratory requirements
Space in entomology/microbiology/botany laboratory for two relief personnel (le Roux, Haussmann), and space for one relief personnel (Eriksson) in the bird/geomorphology laboratory.

Special diets:
None.

6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Permits for Zones 1-3. The work proposed above cannot be completed in Zones 1 and 2 for the following reasons: Eleven of the twelve long-term monitoring plots are located in Zone 3. There is insufficient altitudinal variation within Zone 2 for long enough altitudinal transects to be surveyed. There are insufficient (and weakly developed) *Azorella*-banked terraces within Zone 2.

7. NAME OF COMPILER – SIGNATURE – DATE

Dr. Peter C. le Roux ..... **3 February 2009**

pp P. Le Roux

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SANAP 3
MARION

SOUTH AFRICAN NATIONAL ANTARCTIC PROGRAMME (SANAP) VOYAGE PARTICIPATION DETAILS

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1. PRINCIPAL INVESTIGATOR & CONTACT DETAILS

PROF CHRISTOPHER McQUAID
C.McQuaid@ru.ac.za
Phone: + 46 603 8535
Fax: + 46 622 8959

2. AFFILIATION/INSTITUTION/GROUP

Southern Ocean Group, Department of Zoology & Entomology
Rhodes University, Grahamstown 6140

3. NAME OF RESEARCH PROJECT/PROGRAMME

SPATIAL VARIABILITY IN THE SOUTHERN OCEAN ECOSYSTEMS.

4. FULL NAME(S) OF PARTICIPANTS

(Including overwintering expedition members (for permitting purposes ONLY), and indicating who the group leader for the whole group will be when there are two or more persons in the group)

Relief voyage (takeover) personnel:

Prof. Christopher McQuaid (Group leader) – island based
Dr. Maelle Connan – island based (female)
Mr. Bo Bonnevie – island based
Dr Mathilda Shapira - ship based
Dr Nicole Richoux-ship based
Miss Louise Allan- ship based
AN other- ship based
AN other- ship based
AN other- ship based

Overwintering expedition members (if any):

05.F 2017

5. LOGISTIC REQUIREMENTS & OTHER DETAILS

(Please provide details of location and number of visits to each area, special support required such as air support, dinghy support, camping equipment, specific food requirements etc., laboratory/work space required ashore or aboard, and details of any other important factors/requirements which the Departmental Coordinating Officer should be aware of. For ship-based activities, please also provide survey routes and/or station positions and attach a diagrammatic representation of these. Logistical support and maintenance/construction personnel should describe their activities (attach work schedule), areas of work etc.)

A. Ship based project

During the cruise, we hope to conduct a grid survey consisting of seven north south transects between 46°S 30'- 47°S 00' and 37°E 20'-38°E 20'. Transect will be spaced 10 nm apart. Three biological stations, 15 nm apart, will be occupied along each transect. A total of 21 biological stations will therefore be occupied during the grid survey. At each station, vertical profile of seawater temperature and salinity to a depth of 300 m or to within 10m of the bottom will be determined using a CTD. Sea surface water samples (1 - 5L) will be collected at each station for the determination of size fractionated chlorophyll-a concentration and bacterial/viral counts. Additionally, an oblique Bongo net tow will be conducted at each station to a depth of 300m during the day or to 200m during the night (or to within 10m of the bottom within the inter-island region) to sample the mesozooplankton (200-2000µm). Samples collected will be preserved in 10% buffered (hexamine) formalin and transported to the laboratory for further community analyses.

In addition to the open ocean research, we hope to conduct a number of ad hoc trawls in the shallow inter-island shelf region between the islands. These trawls will be conducted using a benthic sledge and will be conducted at depths of between 30 and 200m. All samples collected will be frozen for subsequent lipid analyses in the laboratory.

B. Island based project: Diet of seabirds at different time scales

Introduction: The extensive sampling of marine species from the ship will allow us to describe and to better understand the Prince Edward Ecosystem from phytoplankton up to nekton. That Part B 'Island based' complements that study by integrating top predators. This project aims particularly to understand the resource partitioning within the Albatross community breeding on Marion Island, and the connection between Albatrosses and Petrels with long-line fisheries. The diet of seabirds will be investigated at different time scales using both direct (conventional stomach content analysis) and indirect methods (stable isotopes, and fatty acids and fatty alcohols as dietary tracers) (Table 1). These two indirect methods have already been used successfully to assess the diet of seabirds (stable isotopes: *e.g.* Hobson 1993; Cherel *et al.* 2005; lipids: *e.g.* Horgan & Barrett 1985; Connan *et al.* 2007; Tierney *et al.* 2008).

Table 1. Time scale and description of the three methodologies that will be applied.

Analysis	Time scale	Description
Stomach content	"Snap-shot"	Prey species and size – quantitative analysis
Stable isotopes		
Blood	2-3 months	Foraging areas and trophic level
Feather	Moulting period	Foraging areas and trophic level
Lipids		
Stomach oil	Long foraging trips (~ 10 days	Prey species – qualitative analysis

	depending on species)	
Blood	1 week to months	Prey species – qualitative analysis

Data collection: We would like to sample 45 birds (30 adults + 15 chicks) for each Albatross species and for White-chinned Petrels, and 15 adults of Blue Petrels and Salvin's Prions (Table 2).

Table 2. Planned samples.

	White-chinned Petrels	Grey-headed Albatrosses	Light-mantled Albatrosses	Dark-mantled Albatrosses	Wandering Albatrosses	Blue Petrels	Salvin's Prions
Breeding Adults							
Short foraging trips							
Stomach contents	15	15	15	15	15		
Blood samples	15	15	15	15	15		
Feathers	15	15	15	15	15		
Long foraging trips							
Stomach contents[a]	15	15	15	15	15		
Blood samples	15	15	15	15	15		
Feathers	15	15	15	15	15		
Chicks							
Stomach contents[b]	15	15	15	15	15[c]		
Blood samples	15	15	15	15	15[c]		
Feathers	15	15	15	15	15[c]		
Adults							
Blood samples						15	15
Feathers						15	15

[a]prey remains + stomach oils; [b]mix of short and long trip samples; [c]depending on their age

Collecting methods:

- Stomach contents: Obtained by spontaneous regurgitation (or gentle stomach massaging).

- Adult short trip samples: stomach contents will be directly placed in a plastic bag and frozen at –20°C. ==> *Direct analysis of prey remains.*

- Chick and adult long trip samples: stomach oil will be separated from prey remains with a sieve, and will be placed in a glass vial with some chloroform + butylated-hydroxytoluen (BHT) 0.01% (=anti-oxidant) under a nitrogen saturated atmosphere. ==> *Lipid analysis of stomach oils = lipids of the prey of birds.* Prey remains will be placed in a plastic bag and frozen at –20°C. ==> *Direct analysis of prey remains.*

- Blood samples: 2-3mL (2 for small species such as Blue Petrels) of blood will be collected into a heparinized syringe by venipuncture in the wing (or in tarsus for albatross species).

- 1mL of total blood will be complemented with ethanol 70 % in an eppendorf, and frozen at –20°C. ==> *Stable isotope studies.*

- 2mL of total blood (or 1 for Blue Petrels) will be centrifuged in order to separate blood cells from the plasma which will be stored in two eppendorfs + complemented with chloroform + BHT 0.01 % and a nitrogen saturated atmosphere. Eppendorf will be then frozen (-20°C). ==> *Lipid analysis of the plasma = lipids assimilated by birds.*

- Feather samples: 6 to 8 feathers from the back (between the wings) will be cut and stored dry in a plastic bag. ==> *Stable isotope studies.*

Sampling Strategy: We will discuss with Peter Ryan and Rob Crawford at the beginning of February about the most appropriate colonies where we could work in order to avoid interfering with other studies that are already taking place on the island (*e.g.* demographic studies). As soon as we will have their answers, we could plan all our fieldwork.

LOGISTICAL REQUIREMENTS ON THE ISLAND

- **Ad hoc transport (by air) between base and seabird colonies not accessible by walking.**
- **Some place in Island labs to use an electric centrifuge (provided by Rhodes).**

- Some place in a Island lab freezer (-20°C) and in the ship freezer to store the samples which should never be defrosted.
- Camping equipment if the huts close to the seabird colonies are occupied.
- Climbing gear required for working in the Sooty and Light-mantled Albatross colonies.

References

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Hobson KA (1993). Trophic relationships among high Arctic seabirds: insights from tissue-dependent stable-isotope models. Mar. Ecol. Prog. Ser. 95: 7–18.

Horgan IE, Barrett JA (1985) The use of lipid profiles in comparng the diet of seabirds. In: Siegfried WR, Condy PR, Laws RM (eds), Antarctic nutrient cycles and food webs. Berlin-Heidelberg, pp 493-497.

Tierney M, Nichols PD, Wheatley KE, Hindell MA (2008) Blood fatty acids indicate inter- and intra-annual variation in the diet of Adélie penguins: Comparison with stomach content and stable isotope analysis. J. Exp. Mar. Biol. Ecol. 367: 65-74.

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Relief voyage (takeover) personnel:

Zone 1-4 required for **Prof Christopher McQuaid, Dr. Maelle Connan** and **Mr Bo Bonnevie** during the entire take over period to reach the seabird colonies and collect samples (number of samples: see Table 2) from birds breeding on Marion Island.

Overwintering expedition members (if any):

7. NAME OF COMPILER – SIGNATURE – DATE

PW Froneman, M Connan 3 / 2 /2009...

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SANAP 3
MARION

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PROF CHRISTOPHER McQUAID
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A final component is to examine small-scale variation in the microbial biology of the water column inshore of, inside and immediately outside the nearshore kelp beds. Sampling will involve the use of bottles to collect water from the surface and near the bottom. The samples will be preserved for analysis in the laboratory.

To achieve this we require the use of the ship's boat plus crew. Sampling can be done in the vicinity of the ship and on an ad hoc basis as long as it is during daylight hours. Sampling will take approximately 3 -4 hours on each of three days. These do not need to be consecutive.

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Cherel Y, Hobson KA, Weimerskirch H (2005) Using stable isotopes to study resource acquisition and allocation in procellariiform seabirds. Oecologia 145: 533-540.

Connan M, Cherel Y, Mayzaud P (2007) Lipids from stomach oil of procellariiform seabirds document the importance of myctophid fish in the Southern Ocean. Limnol. Oceanogr. 52: 2445-2455.

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6. TYPE OF PERMIT/S REQUIRED

(Zones 1, 2, 3 and 4 - Standard Entry/Research, Collection and/or Special Entry Permits - including names of permit holders, location of work (zone), number of samples/specimens to be collected, etc. – please refer to the Prince Edward Islands Management Plan for details)

Relief voyage (takeover) personnel:

Zone 1-4 required for **Prof Christopher McQuaid, Dr. Maelle Connan** and **Mr Bo Bonnevie** during the entire take over period to reach the seabird colonies and collect samples (number of samples: see Table 2) from birds breeding on Marion Island.

Overwintering expedition members (if any):

7. NAME OF COMPILER – SIGNATURE – DATE

PW Froneman, M Connan 3 / 2 /2009...