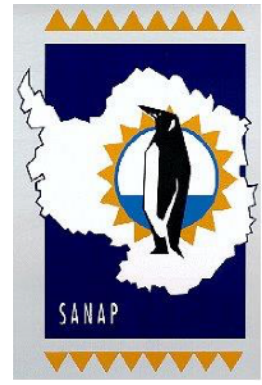




71° Below

SANAE 57 Newsletter
August 2018



Good day everyone! I trust you are all enjoying the first few days of spring and the promise of warmer weather. I know we are! I hope you enjoy this latest newsletter, meeting two more team members and getting to know about the bird research that happens in Antarctica through SANAP.

Lux Ntanyana



Background: I was born in Mdantsane NU1 Township in East London and grew up in Dimbaza area in King William's town where I finish my high school. I went to Port Elizabeth for my tertiary education at Nelson Mandela University where I studied National Diploma in mechanical engineering. I also went to University of South Africa where I studied Bachelor of Technology in mechanical engineering. Since 2014, I have been working in Port Elizabeth at Continental Tyre S.A (Pty) Ltd. I started in the company as a trainee in maintenance department and went to various departments which include energy and projects departments before I was placed in the process engineering department. I spent most of my time with the company in the process engineering department. I was responsible for monitoring and improving manufacturing and engineering processes in order to maximize production efficiencies. I was also responsible for performing process capability studies to determine how efficient and reliable the machines are in the department.

Job title at SANAE IV Base:
Mechanical Engineer

Responsibilities at SANAE IV: I am responsible for the operation, maintenance and fault finding of all the technical systems in the base which include snow smelter plant, waste water treatment plant, power generators, vacuum plant, air condition systems and vehicles. Preparing monthly reports on all work performed, state of technical equipment, and spares utilized or required is also part of my job. I am also responsible for performing team general duties such as cleaning, cooking and filling up the snow smelter.

How did I hear about the SANAP Programme: I was looking for government jobs online then I came across SANAP expedition programme. I started having an interest in the programme and did some research. I then applied and got the job. Here now I'm on the coldest, driest and windiest continent in the world. This is a "once in a life time" opportunity and very grateful to be part of this programme.

Challenges experienced in Antarctica: Working in extreme cold weather condition in winter is one of the most difficult things I've experienced. Temperatures can go as low as -40°C which makes it very difficult to work outside.

One thing I like about Antarctica: Is having 24 hours sunlight during summer season. I like this because I can do my work anything of the day / night whether it's inside or outside the base.

What I miss most back at home: Firstly, I miss my daughter and family so much. Secondly, I miss going to beach and chill with friends. Thirdly, I miss watching rugby and soccer matches during weekends.

How often do I communicate with loved ones: I talk to my family almost every day on whatsapp messenger and whatsapp video calls through wifi internet. We also have telephone landlines which sometimes I use to call family. I get very happy when I hear their voices.

Sabelo Biyela



My father Mthabeleni Biyela and his wife Ntombiyeswazi, in a company of my six brothers named me Sabelo. Our only sister followed 3 years later. My home is on one of many hills between the White and the Black Umfolozi River, eMkhazane, Ondini (Ulundi). Before the "New Age" on these lands, my forefathers lived amongst the wild and the forest nourished them with its fruits, on their long journeys away from home, they drank from newly sprouted springs. Oh! life that once were.

In the days of playing with dry hand molded clay cars on the dirt, to old broken vehicles in various people backyards and to steering a "good hearted uncles" tractor during sowing season, my fascination with machinery with or without wheels

grew, all I wanted was to work on them and get my hands dirty. In this point in time, I am a tradesman (diesel mechanic) in mechanical engineering field.

This is why I am here in Antarctica as part of the SANAE 57 team. When I applied for this opportunity, it was more like trying my luck, but the more I thought of it, the more I fell in love with the idea. I wondered how it would be like, my physical and mental health, doing my work and

living here away from everything else just for a limited period. Yes! Why not I said. Since housekeeping and filling ice to make water is everyone responsibility, my duty is to carry out preventative maintenance and repairs on, (1) vehicles, (2) Base life support systems which includes power generation, water and sanitation, HVAC and, (3) general repairs.

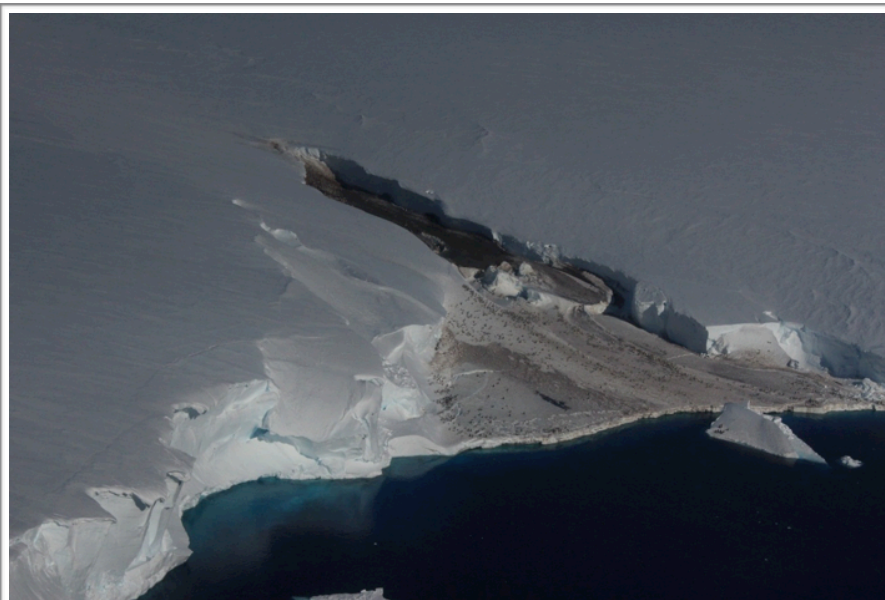
Hhmm! I think I can probably now send an application to be a housemate for Big Brother SA because I have experience. On top of building up your career, this environment exposes you as an individual and helps you identify certain aspects about yourself, that if you're not arrogant. The other advantage is that, it filters some or most of the responsibilities one had back at home and gives one time to revise actions that lead to those responsibilities. Again, one can leave this place improved or just the same. So I am happy that I considered this opportunity and would to definitely reconsidered it, if only I was still in my 20's.

Science at SANAE IV

Many thanks to Bruce Dyer, one of the bird researchers with the DEA, for this fascinating article about the bird research being done by the DEA at the various island bases.

DEA seabird programme in Antarctica

The Department of Environmental Affairs (DEA), commenced a project in Antarctica in the summer of 2016/17. Predators are good indicators of change to their environment, hence Emperor Penguin and Snow Petrels were selected to monitor drivers of change. Muskeg Bukta (30 km east of Penguin Bukta from where logistic operations for the SANAE 4 base occurs) and Atka Bukta near the German base of Neumeyer were selected for monitoring Emperor Penguins. Snow Petrels breed at an aggregation of four nunataks called Robertskollen, which lies about 25 km west of the SANAE IV base. Adelie Penguins occur in the region as visitors to rookeries and in transit on icebergs, but do not breed.



Muskeg Bukta's Emperor penguin colony

A key objective was to establish the colony size of the two species. Ground counts are not always possible, but aerial photography provides a method to keep a permanent record of reproductive output. Adults are easily separable from chicks on the aerial photograph. Drones may be an alternative to helicopters in the future.

Condition of a small number of chicks is achieved by capturing and weighing them. A few

feathers are plucked for stable isotopes related to diet. A small amount of blood is drawn for a similar purpose, but is also used to determine sex and even evidence of disease. Faeces and carcasses are collected for the same purpose. Spillages at feeding bouts are also collected to ascertain some of their physical diet.



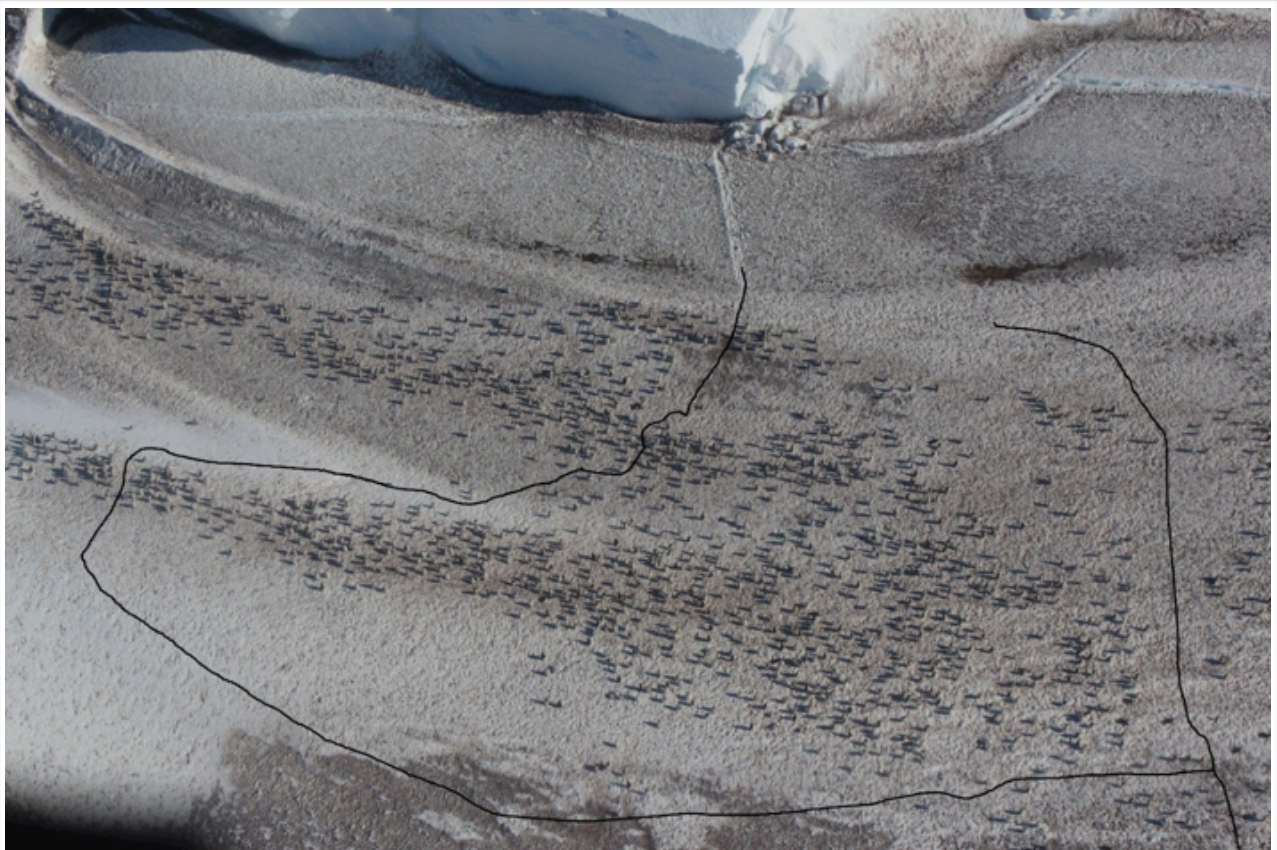
Immature Emperor penguin with satellite transmitter attached.

Satellite transmitters are fitted onto the penguins to determine foraging and perhaps moulting areas of adults and fledglings.

Results from tracking are still in their infancy, as are population trends and other data collected to date. The colonies of Emperor Penguins at Atka and Muskeg Bukta were photographed from a helicopter at a height of 700 feet in 2016, but the counts from these have not yet been completed. Muskeg Bukta was photographed in December 2017 and the count showed at least 3249 chicks present.

Tracking results from several Emperor and Adelie Penguins showed similar movement patterns, but movement to the north of Bouvet Island for Emperor Penguins was unexpected.

Snow Petrels breed in crevices amongst rocks and therefore the methods to collect information differ slightly from that done for penguins. Geo-locators are fitted to birds to ascertain approximate foraging areas of this bird. The devices record both sunlight and time, which are used to calculate and approximate position.



An example of the penguin census method, taken from a helicopter. The juveniles are easy to identify due to the size difference.



Disgruntled Snow Petrel in it's nest.

The battery on these tiny devices last about 1-2 years, so they need to be recovered to download stored data.

Feathers are also collected for stable isotope signatures and to ascertain diet. Snow Petrels spit oil at threats when at the nest. When captured this is an inevitability, but this oil is then used also to determine isotopes as well as possible traces of micro-particle plastic ingestion.

Four nunataks at Robertskollen were counted in 2016/17 and 2017/18. Ice Axe Peak had 35 pairs in 2017/18; Cairn Peak had 24 in 2017/18; Peaceful Hill had no birds breeding; Petrel's Rest had only 7 pairs in 2017/18. The trend between the two seasons showed a substantial decrease. Heavy snow and icing were noted at Peaceful Hill and Petrel's Rest which may have influenced the low figures.

Distribution and relative abundance of seabirds and marine mammals are conducted through direct observation en route to and from Antarctica.



Lessons: Goggles for safety from oil spat by Snow Petrels at an intruder; the inverted bag to collect spat oil to test for micro plastics. The ruler is to check bird's legs



The census team at Cairn Peak (Robertskollen): Back (left to right): Phillip Whittington; Ben Hall; Cobus van der Merwe; Alexis Osborne. Front: Bruce Dyer.

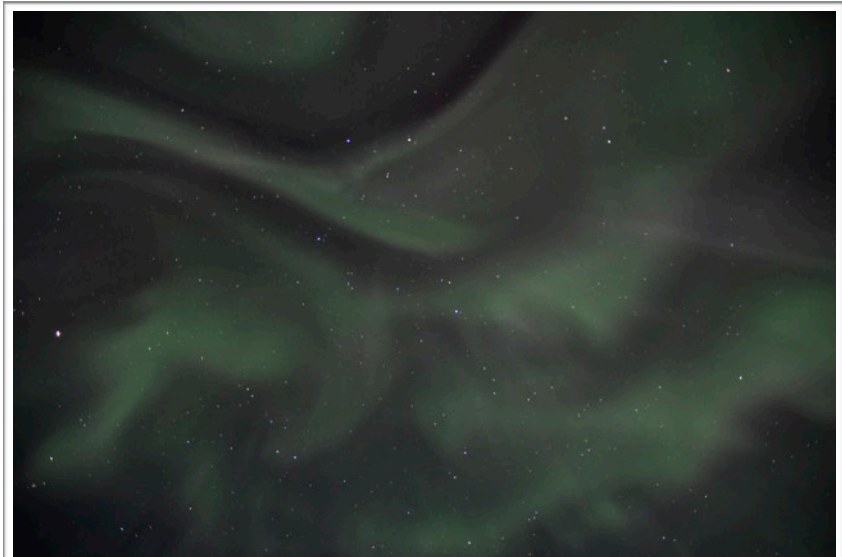
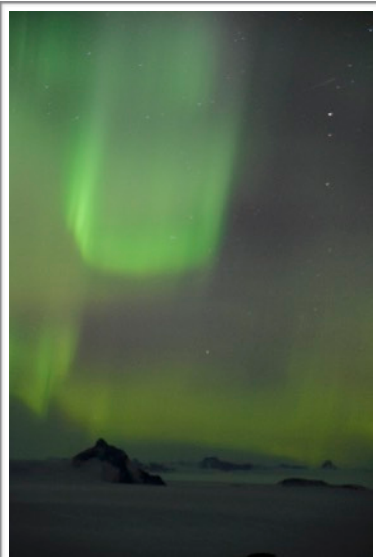
Weather news

The weather is slowly getting warmer and less stormy. We are seeing now several days at a time with low winds and good sunshine.

Maximum temperature: -9.1°C
Minimum temperature: -34.0°C
Average temperature: -21.6°C
Strongest wind gust: 45.1m/s (162.36 km/hr or 87.7 knots)

Aurora Australis

We have been fortunate enough to have a few sightings of the Aurora Australis, or the southern lights. Here are a few pics. In an upcoming newsletter I will ask one of our scientists to explain what causes this breathtaking natural phenomenon. In the meantime enjoy some photos...



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