

*Island life, doing things on Marion Island*

# ***The Wanderer***

## **Rainbow's Rule**

Fun Facts and Photographs

## **Space Monkey**

SANSA Tech

## **Woman's Day**

Pretty Smart

## **END of TAPS**

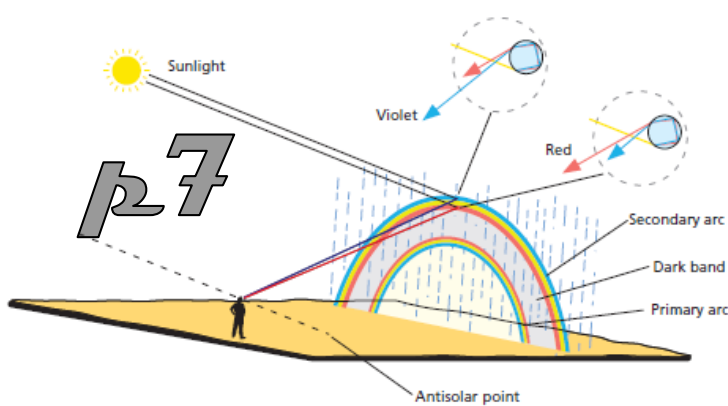


**SANAP**  
South African National Antarctic Programme

*Understand, develop and conserve*



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Photographer:  
Christiaan Willem Brink

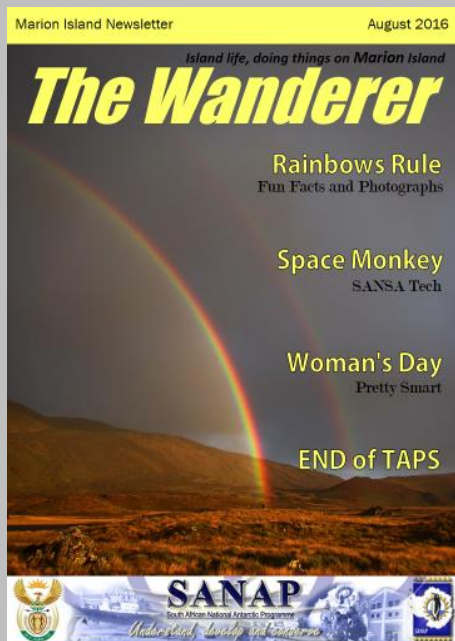




Photo by Jessie Berndt

## Letter from the Editor



September is upon us, and with five months under our belt, we continue slogging through the winter. Without respite, Gentoo Jess and I venture out into the Marion wilderness every five days to "embrace the Plume". This consists of me downloading a multi-probe, which measures water geochemistry, 1km upstream from the Softplume waterfall. We Gentoo monitor along the way, passing the Softplume river plunging into the teal ocean below. The oxygenated water gives off an azure hue which allows ones mind to be cast away to a tropical island paradise for a minute.

But don't be fooled by its beauty, for the ocean, as well as the Softplume, are a cruel mistress, bestowing a chilly fate upon all those who dare tempt the inviting waters, which average a balmy 5 or so degrees Celsius.

With M73 looking forward to getting the coldest month of the year behind us (August), the team has been creative in making the time go faster. From ritualistically watching the sunset from the heli-deck to "dress-up Tuesday's" (hence Jess's tiger ears in the photo above). There have also been soccer matches in the hanger, the invention of new board games, movie nights, snow-ball fights and parties. Most importantly, the love and sharing around base, with "free hug Thursdays" and "real-life presentations" (getting to know about people's personal lives and families back home), has been sure to warm even the coldest of hearts

WITH  
*Love* *Kotzé*

CAMILLA KOTZÉ  
EDITOR

## Spotted

a Leopard Seal!

Photo by Kyle Lloyd & Sydney Tshilingalinga



"smile, you're on camera"

This is the first Leopard Seal sighting on Marion for M73; spotted by the sealers in front of van den Boogard River on Monday the 8<sup>th</sup> of August.

Aug 2016 2



# Pretty Smart

TEXT BY CAMILLA KOTZÉ

PHOTO TAKEN BY CHRISTIAAN WILLEN BRINK

CELEBRATING NATIONAL WOMANS DAY IN STYLE ON

DRESS-UP TUESDAY. Left to right: Kim Stevens (Birder), Louise Gadney (Medic), Jessie Berndt (Birder), Marileen Carstens (Meteorologist), Camilla Kotzé (Geographer), Alta Zietsman (Botanist), Elana Mostert (Botanist), Nothando Mhlongo (Botanist).

Inserted: Nasreen Khan (Killer Whaler).

The Antarctic and Southern Ocean regions play an important role in driving natural systems on the planet. It is for this reason that a perpetual stream of young scientists have been travelling to the Prince Edward Islands over the last 60 years, forsaking the comforts of their home countries to lead the life of a naturalist. For the most part, the wintering teams have been predominantly comprised of men, but 2016 is different.

Due to the harsh working conditions in the Antarctic and sub-Antarctic, it was believed for centuries that this "extreme" environment was too difficult for "the weaker sex". This staved off the arrival of women on the ice until only recently. From Ernest Shackleton to the more recent Ranulph Fiennes, Antarctica's history is replete with the names of male explorers. Most of them arose in the early 20th century when men began the 'Heroic Age of Antarctic Exploration', during which Roald Amundsen beat Robert Scott in the dramatic 'Race to the Pole' on December 14<sup>th</sup> 1911. The history of women in the Antarctic began much later in 1935 with Caroline Mikkelsen, the first known woman to briefly set foot on the continent; more than a century after a man had done so. It wasn't until 1969, after the Women's Liberation Movement that the first women, as well as the first all-female research team were allowed to conduct scientific research on the continent.

The representation of women on the Marion winter team occurred much later in 1987/88, with biologists Marianna Steenkamp and Marieta Cawood. Since then, the gender curve on Marion has gradually become less skewed, taking on a more characteristic bell shape this year. With women representing 43% of the Marion 73 team, we are broadening the scope and history of women in polar science.

*"58% of the field assistants on Marion are women"*

Not only are the women on our team well represented across the majority of disciplines found on Marion, but we also constitute more than half of the field assistants; the most physically demanding job sub-Antarctic research has to offer. Ultimately, women on Marion are increasingly contributing toward extensive field research which continues to unravel the effects of environmental change over time on the patterns and processes associated with biodiversity and ecosystem structure and functioning.



# TRAVIS

TEXT BY TRAVIS DUCK

## *out of this world on Marion*



PHOTO by Camilla Kotzé

Travis and some of his personal projects



My name is Travis Duck, I am an electronic engineer, passionate about new things and places, so Marion is amazing for me ☺. Also, I would like to say HELLO MOM and DAD! Love you lots ☺

“...the unofficial “fix it” person...”

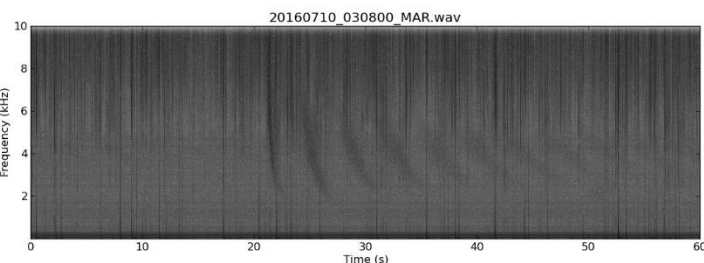
I graduated in 2015 and spent a year in Thailand doing my in service experience working for Western Digital. I am currently taking a bit of a break from getting my Btech as I could not give up the opportunity to be on Marion. Finding out how things work, designing new things and making a plan to get old stuff to work again interests me, which is why I'm the unofficial “fix it” person on the island.

On Marion, I work for SANSA (South African National Space Agency) which entails keeping their systems and data-logging running on the island. During the 2 weeks of training at their office in Hermanus, and the 3 week take-over period, I familiarised myself with their systems. I learnt so much about space physics theorems and systems that I thought my head was going to explode! Despite fears of botching my job, it seems that I have got it all under control a few months in.

# The WWLLN

One of SANSA's biggest projects on Marion at the moment is the WWLLN (World Wide Lightning Location Network).

With this system, and the help of others like it around the world, we can pinpoint a lightning strike anywhere on the planet. This data is used by many different companies, for instance, those in the insurance industry use it to show if there was a lightning storm over your area when your house was hit.



When a lightning strike goes off, a massive amount of energy is released in numerous frequencies which "ride" along the earth's magnetic field lines from the point of impact to the opposite end where we pick it up with our VLF (very low frequency) antenna. The lightning strike is visible in a spectrogram, with higher frequencies arriving first and slower ones arriving later, providing information about the ionosphere. In the spectrogram to the left, "a train" of lightning strikes are visible, which occurs when the lightning bounces back and forth along the magnetic field lines. This makes a whistling sound each time we pick it up and so it is called a "whistler".

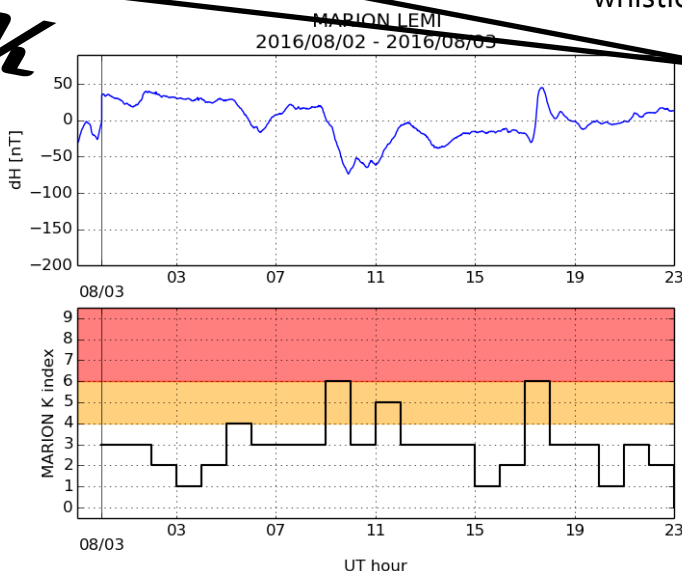
## The Ultra MSH

This device picks up a signal transmitted from military bases around the world; this VLF signal bounces off the ionosphere and makes it possible to pick up a signal anywhere on the planet.

Although we are not concerned about what is contained in the signal, we are interested in the change in signal that is bouncing off the ionosphere and across the world. This is because when the signal crosses a day-night boundary, there is a shift in the signal.

VLF bounces off the so called F-layer of the Ionosphere and this layer disappears at night because the sun's energy is what excites the particle enough to create this layer. We watch this signal for solar flares and CME (coronal mass ejections) from the sun that change the density in the F-layer, in turn, making the signal change.

CME's occur when a massive amount of energy and particles are shot out from the sun. When they are aimed at our planet and big enough, they have the possibility to do a lot of damage to both electronics and the environment. If it were not for the earth's magnetic field, in short, we would all be dead a very long time ago.



The intensity of CME is measured in the planetary K index as seen in the image above. Level 4 and below is normal, 4 – 6 is considered a mild storm and above 6 a severe storm.

Overall, I have had the pleasure of figuring out and learning each of the SANSA systems here on Marion. This, along with the fact that I can help the field assistants with the animals and research here, adds a great and unique experience to my life and something that I will treasure forever.

Family, when you see me in Cape Town again, don't be afraid of the wild man beard and please give me fruit ☺



# Medic to the rescue...

By Louise Gadney

Picture this; a mini-snowy Switzerland, a balmy cobalt blue sky competing with ash grey clouds and a wicked crisp wind keeping hands in gloves. Well, a quick flip by helicopter to Mixed Pickle hut gets you there, and a short-ish hike to Trigaardt Bay leaves me knowing I am in paradise. Whilst here I help guide the Land surveyors (during Take-Over) to an area of vegetated lava plains where I leave them to look for their rock.

I cannot bear to see anyone or any creature in pain or distress and always need to help. So whilst exploring around and photographing the seals and pups, I heard a strange barking sound. To my dismay, in front of me, a Fur seal female appeared to be sporting a deadly collar. On closer inspection, a nylon rope was constricting her neck; a slow painful death either by asphyxiation or starvation was guaranteed-oh, horrors of horrors!



Man-made waste carelessly discarded to our seas makes me so mad and is always a danger to our God given creatures, and this rope more than likely came from a discarded fishing net. Running in gumboots anywhere is not easy, but run I did, having to dodge other seals, pups, and the occasional nesting GP. Luckily I found Mike (M72 sealer) and Zuko (M73 ECO) still at Mixed Pickle hut. The three of us dashed back to where I had spotted the luckless seal.

None too pleased to be caught, the seal surprisingly did not struggle much; I like to believe she somehow knew we were only trying to help and make amends for our fellow man. Whilst Mike expertly held her head within the Sealers net, Zuko and I cut a 5cm section of rope away. On release a short while later, our seal shook herself to confirm her escape from a ghastly fate and the remainder of the rope fell to the ground. How happy we were. A life saved, it felt good, so very right.







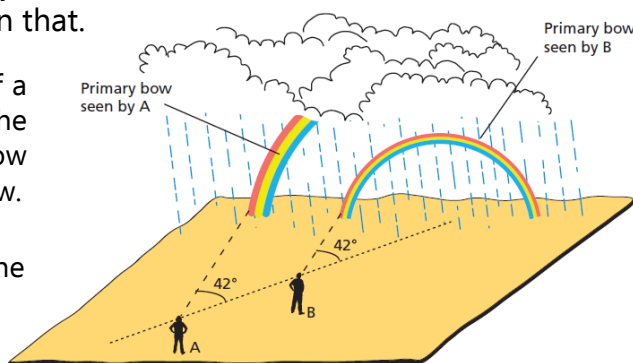
TEXT BY CAMILLA KOTZE

# RAINBOW'S RULE

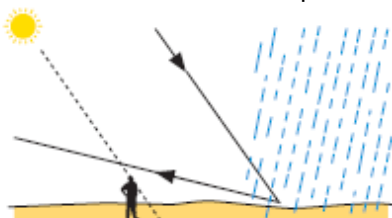
Why is the sky blue and why are sunsets red? When can I see a rainbow? Skywatcher John Naylor provides answers to these questions and practical advice about a wide range of natural phenomena in *Out of the Blue*. This book is for everyone who enjoys being outdoors and find all things optical and astronomical intriguing. I for one, am one of those people. In case you aren't up for 300 odd pages, I have used this book to put together a quick educational on Rainbows; specifically, the one's found on Marion.

Most of us are familiar with the old rule of Sun plus rain equals rainbow. With rain occurring 85% of the time on Marion, seeing Rainbows is almost a daily occurrence. However, rainbow formation is a little more complex than that.

**FUN FACT:** Since the arc of a Rainbow is centered on the antisolar point, it will follow you around like your shadow.



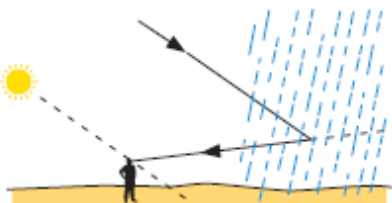
The angle of a rainbow is always  $42^\circ$ , but, how we see it is determined by our position relative to it. The rainbow seen by A is larger and wider than the one seen by B because A is further from the rain in which the bow is formed. Observer A can't see a complete bow because, from her position, the cloud from which the rain is falling is less than  $42^\circ$  above the ground, such as in this Rainbow seen from Stony Ridge.



(a) Sun more than  $42^\circ$  above the horizon



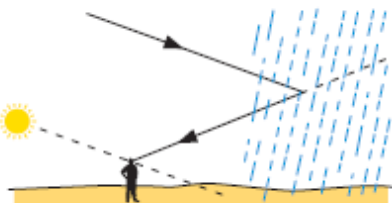
No arc is visible



(b) Sun  $35^\circ$  above the horizon



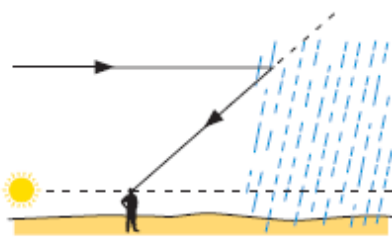
Only the top of the arc is visible



(c) Sun  $20^\circ$  above the horizon



More of the arc is visible



(d) Sun at the horizon



Semi-circular arc is visible



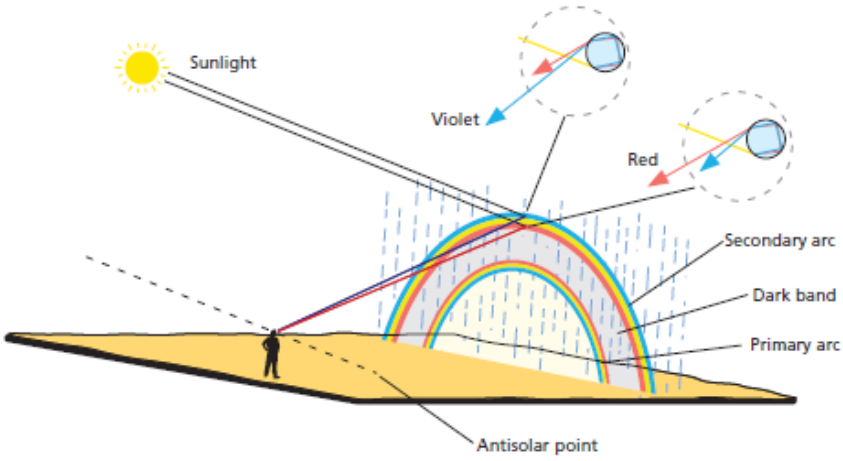
Rainbow at Stony Ridge



In this photo, the Sun is at  $35^\circ$  above the horizon.



# THE DOUBLE RAINBOW



Rainbows often form in two parallel bows, however, the secondary bow is fainter. This is because it is formed by two internal reflections of the rainbow ray. The amount of light remaining after which, is barely enough to be visible.

**FUN FACT:** The outer edge of the primary bow is much more clearly defined than the inner one.

**FUN FACT:** Although the colours in the secondary bow are the same as those in the primary bow, their order is reversed. The secondary bow is also broader and duller than the primary bow.



# Gallery

A selection of excellent photographs taken by our team members



## WINNER

**'Rainbow Splash' by Nasreen Khan**

This rainbow brightened up an otherwise gloomy Killer Whale observation session on Kill Point. The grey clouds and dark, velvety ocean provided the perfect canvas for this rainbow to splash its spectrum of colours across; ROYGBIV-Red, Orange, Yellow, Green, Blue, Indigo, Violet.







2<sup>nd</sup> & 3<sup>rd</sup>

'King Tridents Arc' by Nasreen Khan

Captured on yet another Killer Whale observation on the rock, this time with the sky it's characteristic blue. The rainbow gracefully arcs from the ocean over Marion Base, as if cast by King Trident, the Mer-King, himself. The prions flying over the water provide a playful composition to the image, with their bellies peppering the image in white specs.





**Highly commended**

TOP: 'Coloured Cat-Walk' by Nasreen Khan  
BOTTOM: 'Spectral Stratus' by Louise Gadney







**Highly commended**

TOP: 'Ardently Arched' by Kim Stevens  
BOTTOM: 'Pallor Palette' by Alta Zietsman







**Highly commended**

TOP: 'Base Bow' by Nasreen Khan

MIDDLE: 'Rainbow Plane' by Kim Stevens



BOTTOM: 'Peek-a-bow' by Jessie Berndt







**Highly commended**

TOP: 'Skyward Sweep' by Kim Stevens  
MIDDLE: 'Beach and Bow' by Jessie Berndt







**Highly commended**

TOP: 'Colours in the Cloud' by Nasreen Khan

BOTTOM: 'Swartkop Semi-Circle' by Christiaan Willem Brink







**Highly commended**

TOP: 'Kaleidoscopic Coastline' by Louise Gadney

BOTTOM: 'Multi-hued Mist' by Louise Gadney







Ultamate

# Accessories

TEXT AND PHOTOS BY CAMILLA KOTZÉ



## *Albert's August Essentials*

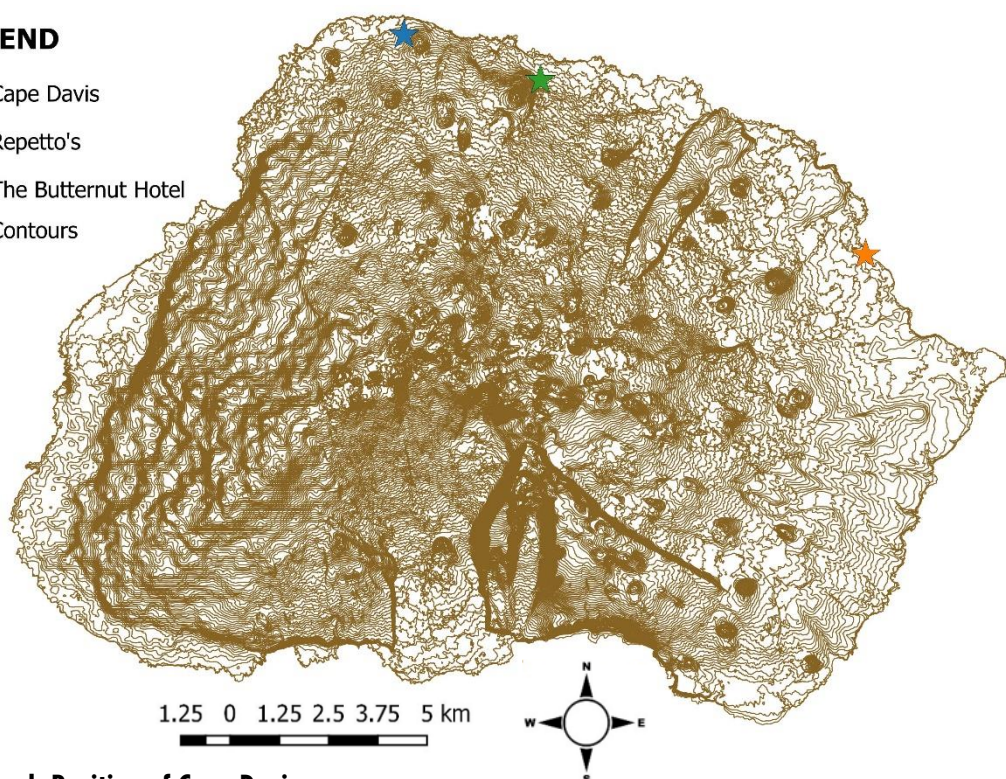
Albert is the epitome of effortless hipster chic, with his grizzly beard and knitted cosy-wear. The weak August sun rays filtering in from the base window enhance the character of the bespoke knit-wear, giving off a cosy log-cabin feel.

P.S. We love the penguin detailing on the fingerless mittens!

## *Readers' Round Island*

### LEGEND

- ★ Cape Davis
- ★ Repetto's
- ★ The Butternut Hotel
- Contours





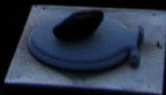
# CAPE DAVIS

*The Beer & Buoy*

TEXT BY CAMILLA KOTZÉ

CAPE DAVIS DERIVES ITS NAME FROM LIEUTENANT SAM DAVIS, WHO CAME TO MARION ABOARD THE H.M.S.A.S. NATAL MANY MOONS AGO.

*View from  
the loo*



VIEW FROM THE LOO: NASREEN KHAN

Upon leaving the shadow of Repetto's Hill, aim for the bottom of Lou-se-kop which is where Cape Davis Hut is situated. If per chance, you lose your bearing, Boot Rock towering from the ocean on the right hand side is a good indication that you are getting warmer (learn more about this magnificent stack on the next page: "Marion Island's Boot Rock: an historical perspective"). The duration of the walk is less than an hour, the ease of which is augmented by the track, etched into the ground by numerous gum-boot garbed feet over the years.

With the sealers frequenting the hut for sub-Antarctic fur seal mark-recapture studies and pup weighing, it became known over time as "The Beer and Buoy". This name was birthed a multi-national assortment of beers, enjoyed within the confines of its walls. As well as the mix match of buoys washed up on beaches, used to decorate its frame.



# Marion Island's Boot Rock: an historical perspective

by John Cooper, Principal Investigator, Antarctic Legacy of South Africa, Department of Botany and Zoology, Stellenbosch University

Boot Rock is situated c. 850 m offshore of the northern part of Marion Island between Cape Davis and Storm Petrel Bay. It is a very prominent offshore sea stack with vertical sides and a sloping top, rising straight out of the sea, described by geologist Wilhelm Verwoerd as "built of massive grey basalt capped by massive to thinly bedded tuff of the older succession". Some tumbled rocks can be seen at its base among the surf. Its black colour helps to make it stand out.

The stack was named for its "most curious resemblance to a sea boot" by Captain Sir George S. Nares of the H.M.S. *Challenger* on its visit on 26 December 1873. However, Boot Rock was first remarked on and charted by Captain James Cook (without, however, giving it a specific name) when he sailed between the Marion and Prince Edward Islands in the *Resolution* and *Discovery* on 12 December 1776: "On the north side of each [island] is a detached rock, that near the South island [Marion] is shaped like a tower and seemed to be some distance from the shore".

The French naval corvette *L'Héroïne* (Capitaine (later Admiral) Jean-Baptiste Thomas Médée Cécille) passed Marion Island without landing in November 1838 and gave the rock its first name of '*Le Prince*'. Commander Francis R.M. Crozier of the *Terror* (on an Antarctic expedition as second-in-command to Captain Sir James Clark Ross on the *Erebus*) sailed past Marion's north coast on 22 April 1840 and mentions "a remarkable detached tower-shaped rock at some distance off the North Cape" – which must be Boot Rock. Cape Crozier on Marion Island is named after the *Terror's* Captain. John James Wild, a scientist aboard the *Challenger*, thought that Boot Rock "...dimly seen through the mist, might be mistaken for a ship under full sail".

It has been said that a South African Airforce Flight engineer in a SANAP Aerospatiale Puma helicopter leant (or climbed) out and collected a rock as a souvenir from the top of Boot Rock, following a one-wheel touch-down some time in the 1980)s. This account still needs confirmation. It seems unlikely it will ever be climbed from the sea.



Photograph taken by Tom McSherry M63, 2007

Text adapted from "Red Scoria Breaks the Island Mist: A Historical Gazetteer of the Geographical Features of the Prince Edward Islands", a work in progress.



# CHOCOLATE HUT FLAP JACKS

TEXT, PHOTO & RECIPE BY ALBERT SNYMAN

## Hut Recipe of the Month



### Ingredients:

- 1 cup flour
- 1/2 cup cold water
- 8 x heaped tsp chocolate Nesquick
- Pinch of salt
- Cooking Oil

### Method:

1. Mix ingredients (except oil) until a thick paste has formed.
2. Add oil to a hot pan & pour flapjack mixture into pan, turning after a few seconds.

***\*Makes enough to feed 3 field assistants or 1 Kyle.***

Photo by Jessie Berndt

# SAWS STATS

## July

MAXIMUM WIND GUST	155 km/h
TOTAL RAINFALL	108.4 mm
HIGHEST IN 24 HOURS	12.8 mm
TOTAL DAYS WITH RAIN	24 days
TOTAL DAYS > 1 MM	16 days
TOTAL SUNSHINE	89.9 hours

	AVE	MAX	MIN
TEMPERATURE (°C)	4.5	12.1	-1.8
PRESSURE (hPa)	1010	1035	979
HUMIDITY (%)	84	100	43





Photo by Camilla Kotzé



Photo by Camilla Kotzé



Photo by Alta Zietsman



# NEEDLE ICE

by Camilla Kotzé

## What is needle ice?

It is the build-up of thin, bristle-like ice crystals at or beneath the ground surface.

## Where is it found?

In the upper 2cm of the soil, between altitudes of 350 m.a.s.l and 700 m.a.s.l

## What conditions are required for its formation?

- Frequent freeze–thaw cycles.
- Soil moisture.
- Soils with a high silt content .
- Radiative cooling (facilitated by clear, windless nights) so that the soil loses enough heat for the near-surface soil water to reach freezing point.

## What are the effects of needle ice on Marion Island?

- Soil heave.
- Surficial soil creep .
- Small-scale spatial variability in sediment erosion and accumulation.
- Increased seedling mortality in *A. selago* cushions.
- Lee-side turf-exfoliation of *A. selago* cushions (see image directly to the left: in the centre of the cushion, a fragment of needle ice has been exhumed to reveal its presence).



# THANDO'S THROW BACK: BASE PADDY MANIA

Story 1: I woke up in pain, my wisdoms are growing, soon I'll be filled with so much wisdom Base won't be able to contain me. As I walked out of my corridor, bang! The ladies (Jessie and Camilla) were chilling in the tunnels; the tunnels were so warm but at first I didn't even notice that I was in pain. So I went to see Louise (our beloved medic) and she gave me meds which helped a lot. On my way back, I found that Vhangani has joined the movement☺. So as I was also about to, Phillip told me how the braai area is so warm, it's like you are in a sauna. The party moved to the braai area where we had a beautiful and amazing day just chilling, reading a book and listening to music.



Story 2: We had a braai night and the braai area was so warm on a cold base night. After supper the guys went to chill by the fire and warmed up, obviously they are my people, I can't be left out. We had a blast just talking about our day, field work and about the island.



Story 3: Our sealer brother left us for Mix-Pickle and we said good-bye with a bang! Whenever Sydney comes back from his stay at Mix-Pickle, you just know Mr Tshilingalinga is back; he be picking on everyone's jobs of which is funny and we love. This party was organised of course by his sealer sister Nasreen, and it was epic with Phillip dancing like tomorrow will never come, and Makhudu making us all dance even when we were chilling. Sydney left with so much chocolate, I even wished it was me going☺.



PS- NO MATTER WHAT WE ARE GOING THROUGH THERE IS ALWAYS SOMEBODY OUT THERE THAT IS THINKING ABOUT YOU.....  
SHALOM! FROM SUSAN VOSLOO  
☺

Story 4: Blue corridor is the place for champions, even Sanele from Recreation can agree, you could swear he stays in the blue corridor☺. There are five amazing woman (Alta, Marileen, Nasreen, Jessie and Thando) and four awesome men (Vhangani, Kyle, Zuko and Gerald) staying in the blue corridor. From time to time, we come together to chill, but this morning was different. We woke up and had a breakfast meeting (that's what we called it); we had breakfast in our corridor, which was epic☺, but was soon followed by big base skivvy. Washa Malume!





THE SPEECH



THE CAKE



THE THANK-YOU'S  
FOR THOSE WHO  
HELPED THE  
SEALERS

The sealers say good-bye to their *Tropicalis* Attendance Pattern Studies (TAPS) for the year. And this is how they celebrated...ISLAND STYLE



# TAPS PARTY

ISLAND STYLE

THE PARTY PEOPLE









**STRETCHER TRAINING**



**YOGA IN THE CHINESE TEA GARDEN**



**SNOWBALL FIGHTING**



**BAKING**



**SUNSET WATCHING**



**SOCCER**



What M73 has been up to in the last couple months

**WISHING TEAM SA  
LUCK FOR OLYMPICS**

**#GoTeamSA  
@csnmmu**





# 100 DAYS PARTY



## Padama Party



FUN!

