

Exciting bird-life discovery on Island

Study finds King penguins swim 2 000km to find food for young

Nicky Willemse
SPECIAL CORRESPONDENT

A STUDENT'S year-long study on Marion Island has revealed new penguin behaviour. King penguins off the sub-Antarctic Marion Island make epic trips to find food for their young, some swimming 2 000km away from the island, crossing from the Indian Ocean into the Atlantic, and lasting as long as four weeks.

This was among the findings of a year's research at the sub-Antarctic Marion Island for Nelson Mandela Metropolitan University zoology master's graduate Tegan Carpenter-Kling, who returned to South Africa last month on board the country's newest research vessel, the Agulhas II.

The research conducted by Carpenter-Kling forms part of a large-scale project under the South African National Antarctic Programme (SANAP), of which NMMU's Dr Pierre Pistorius is the principle investigator.

The data she collected, which will form part of her upcoming doctoral studies, is unique in that she studied the foraging behaviour of 12 of Marion Island's top-predator surface-breeding species (which includes seabirds and seals), rather than just a single species, as most researchers have done in the past.

"I was trying to simultaneously track all 12 species to be able to identify areas of ecological or biological importance," she said.

Besides discovering the epic journey King penguins make, which has not been documented before, Carpenter-Kling also

discovered new foraging behaviour for Gentoo penguins – in that they alternate between short foraging trips, to feed themselves, and much longer ones, to find food for their young.

She also recorded the deepest dive yet for a Gentoo penguin, which was more than 200m.

The broader project, which is a collaboration between NMMU, the Department of Environmental Affairs and the University of Cape Town, involves mapping areas of conservation importance around the island, while also monitoring the impact of climate change and other factors on the various species, many of which are a conservation concern due to their declining numbers.

Carpenter-Kling was part of the annual "over-wintering" team: she spent 13 months on Marion Island with a team of about 20 others, several of whom were responsible for the logistical running of the sub-Antarctic research station, while others were doing research under the different SANAP projects.

To gather her data, she needed to fit GPS devices and depth recorders onto the study animals, which included two species of fur seals, four species of penguins, four species of albatrosses and two species of giant petrels – a difficult task considering so many breeding colonies had to be accessed, which required walking long distances.

"Fortunately, the other researchers helped me with this, particularly with the seals, as it is quite dangerous to do this on your own."

It was her second stay on the near-pristine island, which forms part of the Prince Edward Islands – and she is hoping to return again for more research.



RESEARCH: Students have revealed new penguin behaviour after a year-long study off and on Marion Island.

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"We want to use the data Tegan has collected to make recommendations on the expansion of the existing Marine Protected Area around the Prince Edward Islands," said Dr Pistorius, who journeyed to the island on the Agulhas II's recent annual

five-week research trip, and is supervising Carpenter-Kling's PhD project.

He said the value of her studying so many different species was that they could identify overlaps in the foraging range of the various species, which would help them to identify areas of importance.

Under the SANAP study, Pistorius said NMMU was also compiling the tracking data collected on Marion Island, which started in the 1980s, to contribute towards an international project called the Retrospective Analysis of Antarctic Tracking Data, which will involve a global analysis of tracking data throughout the Antarctic and sub-Antarctic waters.

"We are using all the information to look at habitat use and the response of marine top predators to changing climatic conditions.

"We know climate change is a major influence in the Southern Oceans. The Antarctic Polar Front is an important foraging area.

"The Front is shifting southwards, moving away from Marion Islands – and often the animals have to work harder to get food before returning to their offspring.

The impact of climate change is felt most strongly in the Polar Regions.

"Working together with oceanographers, we are using marine top predators to better understand ecosystem changes in the Southern Ocean."

NMMU postgraduate Jess Berndt has replaced Carpenter-Kling to over-winter on Marion Island until the Agulhas II returns in a year's time. Pistorius said researchers on the latest Agulhas II trip included academics from NMMU, the universities of Cape Town and Pretoria, as well as researchers from the Department of Environmental Affairs.

"Data collected by the ship-based oceanographers is particularly important for us, as we need this information to better understand climate change impacts across all trophic levels."