MEDIA RELEASE

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Southern Ocean commuters

Groundbreaking research undertaken by the UTAS School of Zoology has discovered Antarctic fur seals commute, rather than migrate, south for the winter.

The investigation by the UTAS Antarctic Wildlife Research Unit found some pregnant seals swim over 12,000km during winter as they make multiple trips between sub-Antarctic islands and the rich winter feeding grounds off the coast of Antarctica.

It was assumed that the southern Indian Ocean female Antarctic fur seals, *Arctocephalus gazella,* spent the coldest eight months of the year in the Southern Ocean feeding on fish and squid, only returning to their sub-Antarctic island to give birth in summer.

However, satellite tracking of two female seals has revealed that during winter they actually make multiple trips between the sub-Antarctic islands and Antarctica – travelling at least 1300km each way.

The study, conducted by UTAS's Dr Mary-Anne Lea and Professor Mark Hindell and South African collaborators Professor Marthan Bester, Nico de Bruyn and Chris Oosthuizen, tracked female seals from Marion Island, a sub-Antarctic island 1770km to the southeast of South Africa.

The satellite tracking devices also recorded diving behaviour, which indicated where the seals were likely feeding during their epic journey.

"We were able to log into the satellite tracking system each day and locate the seals in live time," Dr Lea said.

"We tracked them as they swam south to the Antarctic Polar Front and then watched as we noticed one of the seals had stopped diving behaviour associated with feeding and was heading north again.

"This was unexpected as we thought the females spent the entire winter within the Polar Frontal Zone. When the second female who was being tracked by satellite also began heading north we knew we'd discovered something."

"It was especially interesting as all previous reports from scientists on Marion Island indicated that fur seals were rarely seen during the winter months"

Both females made up to four trips between Marion Island and Antarctica during the winter, before the batteries on the satellite tags expired.

The seals swam 67km a day on average, and up to ~90km per day during the transit between the island and the Polar Frontal Zone. For the majority of the transit the nocturnally diving animals are likely not feeding much.

Professor Hindell says the seals were sacrificing up 10 days of foraging time for each one-way trip.

“It was astonishing to see the seals stop feeding for such a long time,” he said.

“The female seals are pregnant and so there must be a very good reason why they would give-up foraging time and use up valuable energy to swim 1300km back to Marion Island through huge storms and strong currents.”

Dr Lea said it was not known why the seals were making multiple return trips to the sub-Antarctic islands, but it had been theorised it may be to escape the icy -2°C Antarctic waters, to rest on land while gestating their pups or to avoid predators.

Another significant part of the research project is investigating what the seals are feeding on while off the coast of Antarctica – something that has never been fully studied.

The seals focus their feeding in the Antarctic Polar Front, where cold waters mix with warm currents from the north and cause an upwelling and consequently a zone rich in productivity, as well as the region north of the winter sea ice edge.

Prof. Hindell said revelations that the seals focus their feeding efforts in the Antarctic Polar Front and dive shallowly, indicated they were likely feeding on krill, but this has not been proven.

Prof. Hindell says that if the seals are found to be feeding on krill rather than fish, then this will have big repercussions for krill ecosystem modelling and may impact on future policies for marine conservation.

In addition to the two seals that were tagged with the satellite tracking devices, 60 Marion Island seals were tagged with tiny geolocating GLS tags, which are collected from the seals when they return to the island. The research teams is now analysing this data to track the swimming behaviour of many more seals over the winter.

This winter, two new seals are being satellite tracked and have already made two return trips to the Polar Front.

The research, which is funded by the Australian Research Council, Sea World Research and Rescue Foundation and the Australian Antarctic Division, was presented by Dr Lea at the recent Australian Marine Sciences Association conference in Adelaide and the Scientific Committee for Antarctic Research (SCAR) conference in Sapporo, Japan.

The Antarctic fur seal was thought to be extinct 150 years ago after the population was decimated by hunters. The population is recovering at its 11 breeding sites in the southern hemisphere, including Marion Island, a sub-Antarctic island between South Africa and Antarctica, where 2000 pups are born each year.

For more details on the project, please contact Dr Mary-Anne Lea by calling (03) 6226 2644.

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