

## **Dispatch from Sat, 14 April 2007**

### Introduction

I'll be sending frequent updates about our progress and activities of our National Science Foundation funded project to study the foraging ecology of crabeater and southern elephant seals. This work is also part of the International Polar Year (IPY) and is specifically part of a program called MEOP for Marine Mammals Exploring the Oceans Pole to Pole. MEOP has two primary goals, the first is understand the foraging behavior of a wide array of seals, both in the Antarctic and Arctic, and second to show how these animals can be used to acquire data on the physical properties of their environment. To this end will we be deploying tags built by the Sea Mammal Research Unit in St Andrews, Scotland. These tags transmit information on the seals location, its diving behavior, as well as data on the temperature and salinity of the water as they dive. Such data are important to understand why the seals go where they go, as well as to understand the basic physics of the ocean. In fact, such data are quite valuable to physical oceanographers, as they can use them to model the ocean currents. While our specific project is focused on understanding the movement patterns of seals and the physical oceanography of the Antarctic Peninsula region, they will also contribute to the MEOP program which will collate all the data collected by an array of researchers from the UK, Australia, France, Norway, Germany, South Africa, Canada and the USA. Finally this project is also part of the Census of Antarctic Marine Life (CAML). CAML is the Antarctic program from the Census of Marine Life (CoML). The CoML is 10 year program to census the worlds oceans. As many of you know I am involved in another CoML project called Tagging of Pacific Pelagics (TOPP). TOPP has many of the same goals as the current effort that of understanding the foraging behavior and habitats of marine vertebrates by using electronic tags, and using these tags to acquire physical oceanographic data on their environment.

### The Project

This project has two goals the first is to track the movements and diving patterns of two species of seal, the crabeater seal and the southern elephant seal. The second is to acquire physical oceanographic data on the seals environment. To do this we will put the specially designed Sea Mammal Research Unit tags out on 12 crabeater seals and 12 southern elephant seals. This cruise is specifically focused on putting tags out on crabeater seals, as Mike Goebel and Gitte McDonald deployed 12 tags on southern elephant seals during February from the South Shetland Islands and we are currently following these around the Antarctic Peninsula. Elephant seals are easier to tag as they haul out in rookeries and can be approached on land. In contrast, crabeater seals are much more dispersed as they breed and haul out on pack ice. We therefore need a ship to capture and tag them.

The ship we are using is the ARSV *L.M. Gould*. This is a vessel operated for the National Science Foundation to support Antarctic research in the Palmer Peninsula region. We will be sharing the vessel with another research Dr. Bruce Sidell who is studying with Patagonia Toothfish. There will be two cruises, this one which left Punta Area Chile on April 11-9 May and another which will leave Punta Arenas Chile on 12 May returning 3 June. We have an international research team, on first cruise (this cruise) is Dan Costa, Mike Goebel, Birgitte McDonald, Luis Huckstadt (Chile), Mike Fedak (UK) and Dave Shuman. The second cruise will

consist of Dan Crocker, Patrick Robinson, Samantha Simmons, Birgitte McDonald, Stella Villegas (Mexico) and Tracy Goldstein.

### Previous work

As part of the Southern Ocean GLOBEC program we tracked the behavior of 34 crabeater seals during 2001 and 2002. More recently we have tracked the behavior of 31 southern elephant seals from the South Shetland Islands at the northern end of the Antarctic Peninsula. Results from this earlier work shows that crabeater and elephant seals use different but adjacent regions of the Antarctic Peninsula. Southern elephant seals go far offshore, while crabeater seals stay much closer to shore along the continental shelf. We are now on our way to tag 14 crabeater seals, so that we can follow the movement patterns of southern elephant seals and crabeater seals at the same time.

### Current Status

We left Punta Arenas at 10:30 am on April 11 and sailed through the straits of Magellan and then down along the coast of Argentina. We crossed over the continental shelf and into the Drake Passage around 18:00 on the evening of 12 April. While we had light winds we have a 10-15 ft swell that made the ride rather uncomfortable. For the next two days we dealt with the swell and passed out of the Drake Passage and into the protection of the Antarctic Peninsula around 15:00 on April 14. The change was noticeable, as we began seeing people we hadn't seen in the last day or so, as they stayed in their bunks to avoid getting sick.

We're just about to pass next to Smith Island, the southern most of the South Shetland Islands. The next stop will be Palmer Station which we will reach at 10:00 am tomorrow, April 15.

It's a lot colder now. Outside temperature is  $-2.0^{\circ}\text{C}$ , with wind chill its  $-16^{\circ}\text{C}$ , and the water is  $-0.7^{\circ}\text{C}$ . Along the way south we've seen a lot of wildlife. Coming along the coast of Argentina we saw a lot of Black Browed Albatross (attached), White Chinned Petrels and other seabirds. We also saw several groups of dusky dolphins (attached) that briefly rode the bow of the ship. As we passed over the continental shelf into the Drake Passage we saw a few Wandering Albatross. Once into the Drake and now along the Peninsula we are constantly being followed by Cape Petrels and we've even seen a large number of whales, most likely fin whales.

We are all looking forward to the next phase of operations that will begin when we reach Palmer Station tomorrow.

Best

Dan Costa

Onboard the ARSV *LM Gould*



