

Weekly Situation Report B-232
Monday Nov 7th – Wednesday Nov 16th
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Project Goals: B-232 is deploying to McMurdo Station twice during austral summer 2011-2012. The primary goal of the Oct-Nov field season is to locate Weddell seals that we outfitted with satellite tags last Jan-Feb, and recover the tags. Over the winter months the tags transmitted information on animal location, diving behavior, and temperature and conductivity information from the water column. However, bandwidth and transmission constraints mean that not all the recorded data is recovered via the satellite link. Retrieving the tag allows us to recover all the collected data, and significantly improves the information on animal behavior and winter oceanography. This is particularly true for the late winter months, as wear and tear on the antenna that occurs when seals swim around ice eventually causes antenna breakage, and this further reduces the amount and quality of the data transmitted. When we recover the tag, we also assess the physiological condition of the animal: this allows us to assess diet, how behavior influences growth and health, and to examine the relative impact of exercise on aerobic capacity. Samples collected during recovery are compared to similar samples collected when tags were deployed. For comparative purposes, additional, non-tagged animals are also handled.

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This week's good weather was a welcome break from the condition 1 and 2 storms that limited our ability to work on the sea ice the last two weeks, and we took advantage of the nice weather to complete our animal capture and handling work for this part of the season.

During this period we were able to recapture 2 more adult females from our January 2011 tag deployments, and we are hot on the trail of a third. Seal WS11-04 was relocated at Hutton Cliffs on Nov 7th with a healthy pup, and all physiological measurements were taken. Unfortunately, her satellite tag was no longer attached: it had ceased transmitting in June. However, on Nov 14th, WS 11-08 was located in Tripp Bay by helicopter search following receipt of a high-quality satellite transmission. With the help of PHI pilot Dustin, two of our team members, Luis and Kim, were able to recover the tag and collect physiology measurements. The tag was still transmitting data and locations, but only sporadically, as its antenna was extensively damaged (see photo). The elusive Weddell seal WS11-01, which was originally sighted at Hutton Cliffs with a pup was recently resighted at the Pressure Ridges in front of Scott Base, and the team will hopefully be able to find and catch her in the few days remaining before we redeploy home. This brings our recapture success 6 adult females, with hope for a 7th in the next few days.

In addition to the recapture success, we continued to collect physiological measurements on non-reproductive females and adult males. In combination with samples from our recaptures (reproductive females), these additional animals will allow us to expand our conclusions about seasonal changes in condition, aerobic capacity, and muscle biochemistry, and how they are linked with diving patterns and foraging behavior. During this week of good weather, we were able to complete measurements on 4 non-reproductive females, and 5 adult males, bringing our total sample size for the season to 6 reproductive females (5 recaptures), 12 non-reproductive females (1 recapture), and 5 males. During

these efforts, we also relocated several Weddell seals and the crabeater seal that we had handled earlier in the season, and found all of the animals to be healthy and doing well. We also have started to see Weddell seal pups swimming in cracks and holes, and molting into their regular pelage.

As part of a project to examine longer-term changes in foraging ecology of Antarctic seals, the team headed to the Dry Valleys on Nov. 12th to collect tissue samples from some of the mummified crabeater seals in the area. While taking caution to disturb as little as possible, we collected fur, whiskers, a tooth, nail, bone, and skull and body length measurements from 21 mummified seals. Samples will be used to determine the crabeater seals' diet and trophic level via stable isotope analysis, while morphological measurements will be used to estimate animal age. At first glance, the small size of many of the animals suggests that they were juveniles. We were dropped off by Helo in Taylor Valley, and hiked 6 miles to Mummy Lake, collecting samples along the way. Luckily for us, the GPS coordinates of many of the seals had been recorded by earlier researchers, and so we were able to find our targets fairly easily. In addition to being very successful scientifically, it was a gorgeous day, with the entire team wearing "little red" or just a sweatshirt along the hike. The Dry Valley scenery was astounding, with huge glaciers and lakes covered with ice that was so clear we were able to see all the way to the algal mats at the bottom.

With the success of our animal handling and sampling plans so far, our Oct/Nov season is rapidly coming to a close. PI Dan Costa headed back to Santa Cruz on Nov. 17th, and Luis Huckstadt leaves Nov. 18th. However, the remaining three graduate students will be staying for another week to wrap up data entry, packing, and sample processing. We will also continue searching for tagged animals that may return to McMurdo Sound.

All activities/animals depicted were conducted pursuant to NMFS Permit No 87-1851.

Some images from the week:



*WS11-08 after her tag was removed in Tripp Bay. The tag is shown on the right *note that the antenna is starting to break off*



A Weddell seal pup getting one of its first swimming lessons by Hutton Cliffs, and an older pup starting to molt its lanugo pelage.



One of the well-preserved crabeater seal mummies, and students collecting samples from a mummified crabeater seal in the dry valleys.