

*U.S. Antarctic Marine Living Resources Program*  
*2011-2012 Weekly Field Reports*  
*Cape Shirreff, Livingston Island*

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**Science Report**

Seabirds

1. Chinstrap penguin peak crèche occurred on 6 February, and this week they have nearly finished crèche formation. In the chinstrap penguin reproductive study 4% of nests have chicks, 54% are crèched and 42% have failed.
2. We have finished monitoring known-age penguins. Of the nests of known-aged chinstrap penguins 40% have crèched and 60% have failed.
3. We deployed 6 more GLS on adult chinstraps on 8 February for a total of 60. They record light levels in order to calculate latitude and longitude. These tags will be left out over winter and recovered from the birds next year when they return to the colony to breed.
4. We finished diet sampling on chinstraps this week. We followed adults returning from foraging trips back to their nests to verify that they were breeders and captured them before they feed their chicks. Samples were collected using the wet-offloading technique. Data on total mass of stomach contents, diet composition, and length and sex frequency of krill were recorded for each stomach sample. Average krill length for gentoo diets was 42.72mm and average krill length for chinstrap diets was 39.11mm. The sex ratio of krill in the diets of both gentoos and chinstraps was 52.2% male, 26.8% female with 21% juvenile krill of undetermined sex.
5. On 10 February we weighed and banded 170 gentoo penguin chicks. The weights are used as a measure of condition. The mean weight was 4199g which is 15% lower than the previous year's mean. In the future, resights of the bands will help us determine cohort survival and, with luck, some of these penguins will become part of our known age reproduction study.
6. We recovered the last gentoo PTT on 6 February.
7. For skuas, twelve pairs have failed, seven pairs have one chick and one pair has two chicks.
8. A juvenile macaroni penguin is still hanging out on the colonies molting. It seems to have changed its mind again and is molting with the chinstraps in colony 3.



Pinnipeds

9. Of the original 30 CCAMLR attendance study Antarctic fur seal females, 18 have lost their pup.
10. Trip durations decreased slightly again this week. Twenty-six of the thirty attendance study females completed at least six trips to sea before they lost their pups, 17 completed at least nine, and one female has completed 15. The following are mean values for trip durations of all females with living pups by calendar week:

Week of:	Mean Trip Duration (days)	S.D.	N (completed trips by week)
12/4/2011	2.79	2.75	4
12/11/2011	2.53	1.79	28
12/18/2011	4.01	1.84	47
12/25/2011	4.32	1.71	34
01/01/2012	4.16	1.19	38
01/08/2012	4.48	0.92	36
01/15/2012	4.59	0.70	25
01/22/2012	4.15	0.82	20
01/29/2012	3.39	0.79	21
02/05/2012	2.88	1.22	7

11. We continue to monitor our adult tagged female population and mother pup pairs to get a measure of reproductive success and loss of pups due to leopard seal predation. Our current estimate for pup loss to leopard seal predation as of 12 February is 56.7%. Relatedly, 80% of the leopard seal scats collected this week contained pup fur and 60% were composed entirely of pup remains.
12. Systematic surveys of defined areas of the Cape for the 500 per annum fur seals tagged as pups continued this week. This will give us a measure of tags sighted per unit of effort for different cohorts and for different areas of the Cape.
13. This week we collected our eighth fur seal diet sample of ten scats. To date 80 scats have been collected.
14. On February 10 we completed our twelfth weekly Cape-wide Phocid census. Note the sharp decrease in elephant seals as they complete their molt and return to sea. We counted 145 southern elephant seals, 16 Weddell seals, and 18 leopard seals.



15. As of 10 February we have recorded 380 sightings of 37 tagged leopard seals. We have recorded an additional 61 sightings of untagged or otherwise unidentified seals which have been added to our photo-identification database. Twenty-three of the 37 tagged seals returned from previous years and the other fourteen we have tagged this year.
16. We recovered the first of two TDR (Time-Depth Recorder) instruments that were deployed on leopard seals in late January. This extends our data set on diving behavior and foraging patterns and will provide more detailed information about stroke rates based on analysis of the irradiance variation. The TDR was deployed for 14 days, and the female took 12 foraging trips during that time. For the first time (to our knowledge) an adult female leopard seal was captured and weighed twice within a single summer foraging season. The mass gain for this individual was about 10 Kg per week. That was the fourth full capture of a leopard seal this season based on the capture and drug protocol created by Drs. Nicola Pussini and Mike Goebel which has been very safe and efficient.
17. We continued deploying GLS tags on leopard seals to build on our data set of over-winter distributions. The tags will be deployed all winter, and recovered when the animals return to the cape next summer. To date 4 of the 10 instruments have been deployed.

### Weather

18. This was a quite windy and wet week which saw five separate types of precipitation in addition to fog (rain, sleet, snow, hail, and graupel). Winds averaged 11.7 mph with a maximum wind speed of 66 mph. The predominant wind directions were west (58.2%) and north (26.6%). Precipitation for the week was 0.56 inches bringing the season total to 3.4 inches. The average temperature was 3.1° C with a high of 11.8° C and a low of - 1.2° C. Mean daily solar radiation was 14,937 Wm<sup>2</sup>. Sunrise is now at 5:14 AM (CLST) and sunset is at 9:08 PM (CLST).

### Camp

19. Weather did not permit any outdoor camp improvements this week. However, we shifted our water stores to take advantage of the rain and we are now at 100% capacity. In addition, the floors and lower walls in the main camp were scrubbed with bleach, cleaned and dried (thank you Kevin) which brightens things up considerably.



Doug



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