

*U.S. Antarctic Marine Living Resources Program*  
*2013/2014 Weekly Field Reports*  
*Cape Shirreff, Livingston Island*

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**Science Report**

Seabirds

1. It has been approximately four weeks since peak hatch for both gentoo and chinstrap penguins, and chicks are starting to form crèches on the western colonies. To date, of the 50 gentoo reproductive success study nests, 22% have crèched, 22% are brooding two chicks, 26% are brooding one chick, and 30% have failed. Results from the 100 chinstrap reproductive study nests indicate that only 2% have crèched, while 33% are brooding two chicks, 35% are brooding one chick, and 30% have failed.
2. We continue to monitor known-age penguins. The 42 gentoo penguin nests monitored, 12% have crèched, 7% are brooding two chicks, 38% are brooding one chick, and 43% have failed. The 39 known-aged chinstrap penguin pairs that are monitored, have not yet creched any chicks, while 28% are brooding two chicks, 49% are brooding one chick, and 23% have failed.
3. We have almost finished weighing chicks from the reproduction study and known-aged breeder nests. The mass is recorded from these chicks at 21 days old to determine their condition before crèche.
4. We have successfully recovered all eight bio-logging instruments (five PTTs and three TDRs) from gentoos, and seven out of eight (four PTTs and three TDRs) from chinstraps. We are still missing one PTT that was deployed on a chinstrap. However, the instrument stopped transmitting on 14<sup>th</sup> January and the bird has not been seen again since.
5. We continue to sample the diets of the penguins using the wet offloading technique. To date, we have collected samples from 20 chinstrap and 15 gentoo penguins.
6. We continue to monitor Brown skua territories. One territory is only monitored opportunistically when we are able to make the trek over to the far south west side of Cape Shirreff. Currently, we do not know the status of that nest. However, of the 21 territories that are regularly monitored, 11 are brooding chicks and 10 have failed.



## Pinnipeds

7. We currently have three remaining time depth recorder (TDR) or GPS/TDR instruments (one and two, respectively) deployed on females for monitoring foraging locations as well as diving behavior. Seven TDRs have been recovered this past week. These TDRs were recovered because either the female had lost her pup or the TDR mounts were so worn that there was danger of losing the instruments.
8. Twenty-six of our thirty CCAMLR attendance females have completed six trips to sea; two of these lost their pups during the 6<sup>th</sup> trip. To date, nine of the 30 have lost their pups.
9. Trip durations continue to be shorter than last year. Twenty-six of the thirty attendance study females completed at least six trips to sea before they lost their pups and seventeen have completed at least eight. Trip durations are as follows: first trip: 3.26 d (s.d. = 1.29, n = 30); second trip: 3.21 d (s.d. = 1.46, n = 30); third trip: 3.24 d (s.d. = 1.13, n = 29); fourth trip: 3.21 d (s.d. = 0.96, n = 28); fifth trip: 3.54 d (s.d. = 0.97, n = 28); sixth trip: 3.59 d (s.d. = 1.06, n = 26). The maximum trip duration remains at 6.69 days.
10. Twenty four of the pups of the 26 females that have completed six trips to sea have been weighed according to protocol. Mean mass gain from the start of female foraging cycles to completion of the sixth trip suckling bout is 131.0 g/d (s.d. = 34.8, n = 24, range: 26.5-195.4).
11. We continue to monitor mother pup pairs in our adult tagged female population to get a measure of reproductive success and loss of pups due to leopard seal predation. Pups are now actively playing and swimming near shore where they are easily accessible to leopard seals. Our current estimate for pup loss to leopard seal predation as of yesterday (26 January) is 33.8%.
12. On 20 January we completed the second sample of CCAMLR pup weights. Mean mass for males was 11.9 kg (s.d. = 1.9, n = 58, range: 6.7-15.6) and mean mass for females was 10.3 kg (s.d.=1.0, n = 50, range: 7.7-12.1).
13. With the breeding season over, we are seeing more and more juvenile fur seals returning. Of the animals that were tagged here as pups, we have seen 14 four-year-olds, three three-year-olds, and 12 two-year-olds.
14. We have observed two sub-adult males with over-winter geolocation light sensor (GLS) tags. Repeated attempts to capture them, however, have so far been fruitless. We hope to retrieve these remaining GLS instruments that were deployed on juveniles two years ago.
15. We are currently collecting our fifth fur seal diet sample of ten scats. To date 59 scats have been collected, and 51 have been processed.



16. On 24 January we completed our twelfth weekly Cape-wide Phocid census. We counted 267 southern elephant seals, 24 Weddell seals, and 10 leopard seals.
17. Leopard seals continue to arrive at the Cape, and as of 26 January we have recorded 188 sightings of 26 tagged seals. We have recorded an additional 19 sightings of untagged or otherwise unidentified seals.
18. This week we continued our study to describe leopard seal foraging behavior and quantify their impact on fur seals and penguins. We have now deployed five GPS-TDRs and three CRITTERCAM systems in conjunction with diet sampling. We have recovered four of the GPS-TDRs and two CRITTERCAMS. The CRITTERCAMS have recorded over 16 hours of HD video footage which continue to reveal never-before-seen leopard seal behavior.
19. Due to a long stretch of precipitation and high winds, we were not able to conduct operations with the APH-22 hexacopter this week. However, it has been prepped and readied to fly more missions as soon as we have a weather window.

### Weather

20. A calm foggy week gave way to three days of high winds and driving sleet out of the east. Winds averaged 10.9 mph with a maximum wind speed of 46 mph. Wind direction has been predominately from the East. The average temperature was 1.0°C with a high of 5.3°C and a low of -0.9°C. Mean daily solar radiation was 10,875 Wm<sup>2</sup>. Sunrise is now at 4:21 am and sunset is at 09:58 pm.

### Camp

21. This has been a week of stymied personnel transfer operations. The Chileans were set to transfer science parties on 23 January, and the National Geographic Explorer was scheduled to pick up Kyler Abernathy on 26 January. Both operations were prevented by poor weather.
22. We celebrated Martin Luther King Jr. Day by having the Chilean group over for an old-country style lasagna dinner. It was a nice, relaxing evening.
23. Camp maintenance: (1) Two doors were repaired this week with new door knobs; (2) Some areas at the base of the main camp are rotting out due to prolonged moisture exposure. The areas were scraped out, and sealed with caulking; (3) The skis, which are no longer in use, were serviced (sharpened, bindings replaced, etc.) and will be stored for the winter.



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Presented by Doug Krause and Michelle Goh, with assistance from Kevin Pietrzak, McKenzie Mudge, Trevor Joyce, and David Vejar at the Cape Shirreff Field Camp, Livingston Island, South Shetland Islands, Antarctica

