

# Baywide Little Penguin Monitoring Program

## Data Report 9 (February 2009)

March 2009

### Introduction

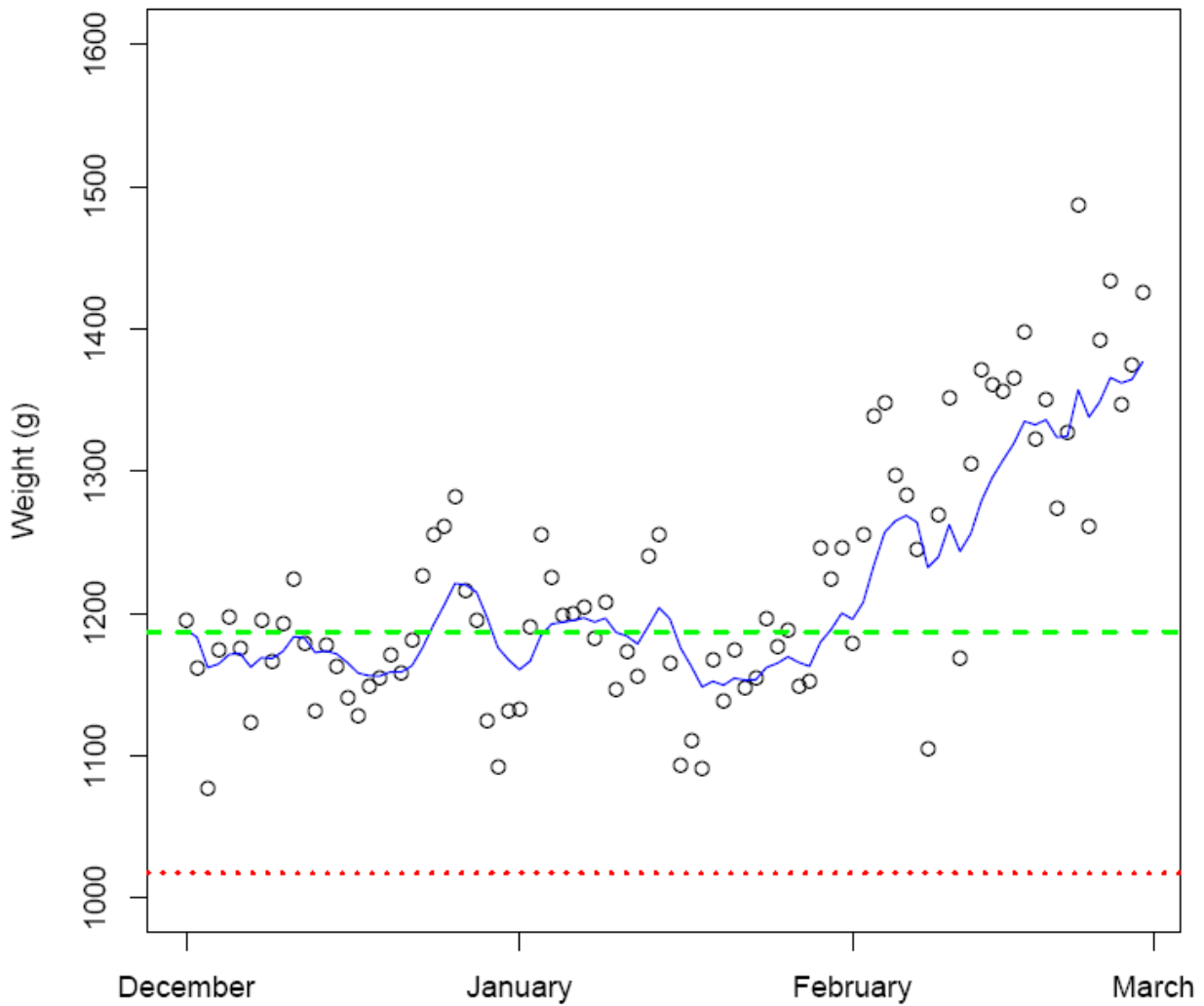
This report provides an analysis of data collected on the body mass of Little Penguins (*Eudyptula minor*) for the Channel Deepening Project Baywide Monitoring Program, for February 2009. The data were collected at Phillip Island Nature Park (PINP) using an Automated Penguin Monitoring System (APMS, Australian Antarctic Division) located in the Summerland Peninsula penguin colony, Phillip Island, as described in the Detailed Design for the Program (PoMC 2008). The analysis applies only to penguins weighed on entry to the colony. Where fluctuations in Little Penguin weights occur outside expected variability, further investigation will be undertaken.

### Results

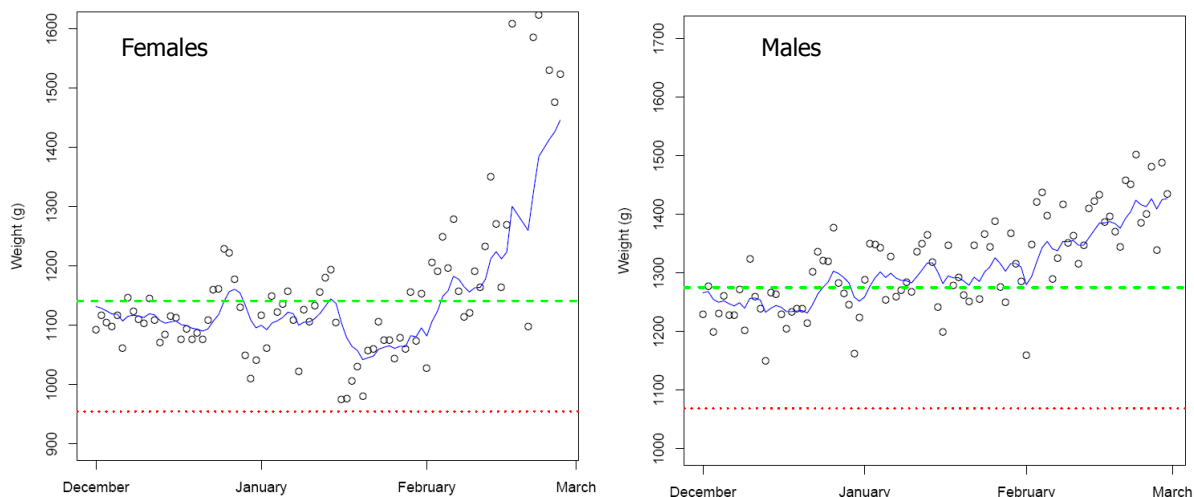
The raw data were filtered to remove non-target and spurious records. Records were removed from the raw data if they included:

- weight readings of  $\leq 700\text{g}$  (indicates one bird stepping off as the following bird steps onto the platform; 93 records)
- weight readings of  $\geq 1700\text{g}$  (indicates two birds on the weighing platform at the same time; 139 records)
- a time stamp of between 1am local time and sunset the following night (indicating penguins leaving the colony).

There were a total of 481 records after filtering, 50 of which were known to be female and 151 of which were known to be male. The filtered data were de-seasonalised to account for known seasonal variation in Little Penguin weight and analysed using a control chart with an exponentially weighted moving average (EWMA) fitted to the data (Emphron 2008), according to the Detailed Design (PoMC 2008). The result of this analysis is presented in Figure 1 for all filtered data, and in Figure 2 for females and males separately. Data from the preceding two months is included to provide recent historical context. Average de-seasonalised weights (as EWMA) show marked increase throughout February (Figure 1), with females increasing more rapidly than males (Figure 2). However, the daily averages are based on a relatively small sample size compared to previous months, and the male and female data are therefore unreliable for this reason. Regardless, there is no evidence of any reduction in de-seasonalised body weight and all EWMA values are well above the control limit (Figure 1). Ecological interpretation of these results will be provided in Quarterly Report 4 (January-March 2009).



**Figure 1.** EWMA of de-seasonalised daily average weight for Little Penguins at PINP, measured using the Automated Penguin Monitoring System, for the period 1<sup>st</sup> December 2008 to 28<sup>th</sup> February 2009 (this report relates to the February results only). The open circles indicate the mean daily weight, the blue solid line is the EWMA, the green dashed line is the target value (long-term average) of 1187g, and the red dotted line indicates the control limit of 1018g (average weight; analysis prepared by Emphron Informatics Pty Ltd).



**Figure 2.** EWMA of de-seasonalised daily average weight for female and male Little Penguins from PINP, 1<sup>st</sup> December 2008 to 28<sup>th</sup> February 2009 (this report relates to the February results only; open circles indicate average daily weight; the blue solid line is the EWMA; the green dashed line is the target value (long-term average) of 1141g for females and 1275g for males; the red dotted line is the control limit of 955g for females and 1069g for males (analysis by Emphron Informatics Pty Ltd).

## Reference

Emphron 2008. Channel Deepening Project Bay-Wide Monitoring Program: Little Penguins. Report 2007.0035. Emphron Informatics Pty Ltd

PoMC 2008. Little\_Penguins\_Detailed\_Design CDP\_ENV\_PR\_020 (Rev 1). Port of Melbourne Corporation. Published on [www.channelproject.com/environment/monitoring.asp](http://www.channelproject.com/environment/monitoring.asp)

### Disclaimer

This publication contains data supplied by the Phillip Island Nature Park Board of Management Inc. The Phillip Island Nature Park Board of Management Inc does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the Phillip Island Nature Park Board of Management Inc shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. The views presented in this report are not necessarily those of the Phillip Island Nature Park Board of Management Inc.