

# Baywide Little Penguin Monitoring Program

## Data Report 11 (May 2009)

June 2009

### Introduction

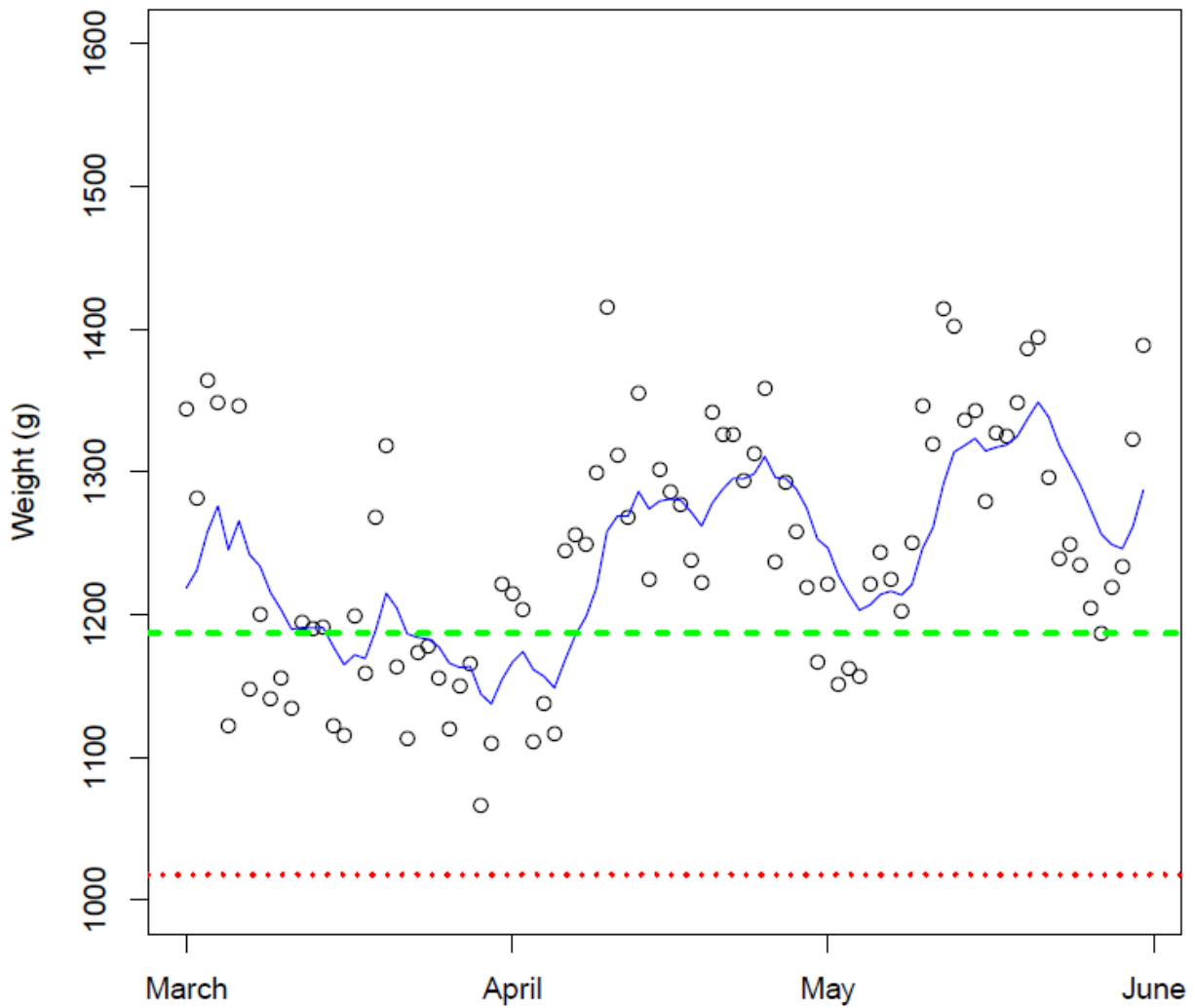
This report provides an analysis of data collected on the body mass of Little Penguins (*Eudyptula minor*) for the Channel Deepening Project Baywide Monitoring Program, for May 2009. The data were collected at Phillip Island Nature Park (PINP) using an Automated Penguin Monitoring System (APMS, Australian 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

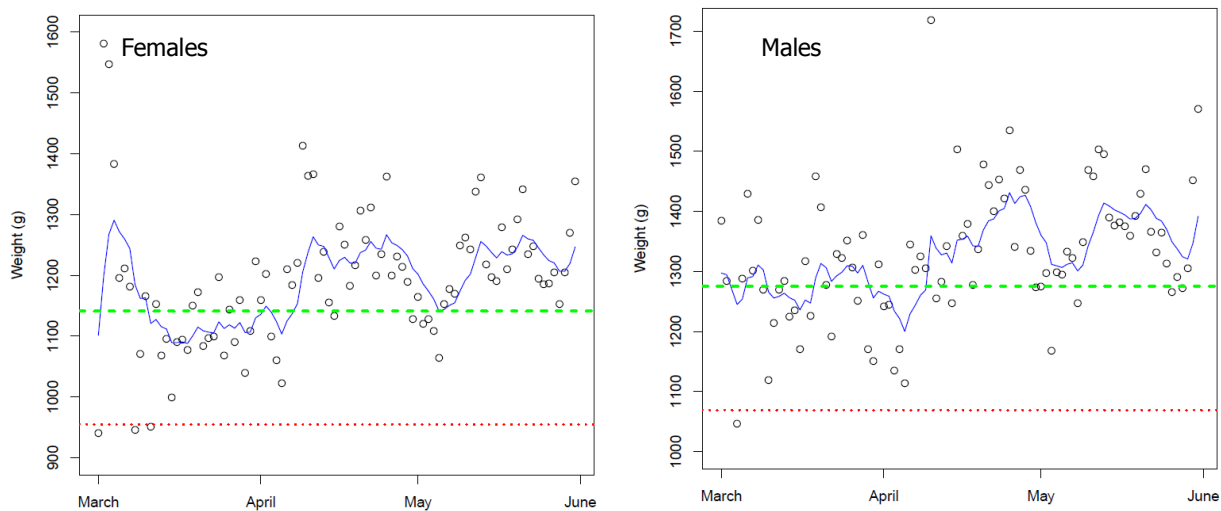
The raw data were filtered to remove non-target and spurious records. Records were removed from the raw data if they included:

- weight readings of  $\leq 700\text{g}$  (indicates one bird stepping off as the following bird steps onto the platform; 16 records)
- weight readings of  $\geq 1700\text{g}$  (indicates two birds on the weighing platform at the same time; 33 records)
- a time stamp of between 1am local time and sunset the following night (indicating penguins leaving the colony).

There were a total of 1295 records after filtering, 356 of which were known to be female and 305 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. 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 5, which covers the period April-June 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> March 2009 to 31<sup>st</sup> May 2009 (this report relates to the May 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> March 2009 to 31<sup>st</sup> May 2009 (this report relates to the May 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)

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