Elephant seal weaners research

19 Feb 2021 – Meeting Notes

Location: IMAS - Hobart

Present: Dahlia, Mark, Clive

# ****Bigger picture of this research question:****

Goal of research is multi-pronged:

1. where do the seals go? (do they disperse at random? what determines where they go - ocean currents?)
2. did they get fat? and if so where did this happen – where are the “hotspots”?
   * **Drift dive analysis/body condition:**
     + Fernando's slimmingDive method may be too conservative for our dataset - filtered out many more dives that Martin's method
     + We're not concerned which method is used to determine drift dives/body condition so happy to use Martin's results if he already has them
3. who survived?
   * Clive provided Dahlia with survival, capture mark-recapture data
   * Likely that the analysis will focus on the first trip for now and use 10+ years of re-sight data (6 monthly sample intervals). Reasons for this approach:
     + many of the tags were removed during the mid-year haulout so we don’t have year-long tracks for all the seals.
     + it is hypothesised that the first 6 months are crucial for future survival of the seals.

# ****Quality control of tracks:****

* did visual quality check on individual ssm-filtered tracks as a group during the meeting
* some duds (where SSM has not fitted properly) were identified and we’ll exclude these from the analyses
* some tracks seemed to have spurious sections - looked too smooth - need to double check again.

# ****Actions:****

Mark and Clive suggested more exploratory plots and summaries moving forward

## 1. ****Where do seals go?****

**Identifying first foraging trips:**

* options:
  + plot distance from colony over time - include raw data + smoothed data,
  + within 5–20 km of island.
  + Define a haulout as > 4 days within 5–20 km of land

**Initial data exploration:**

* extract ocean data for each location
* plot tracks and colour locations to current direction – do they go with or against current?
* generate trip duration summary stats
* table with columns: id, lon, lat, trip # (0 = haul out, 1 = 1st trip, 2 = 2nd trip etc.), keep (flag weird locations)

## 2. Did seals get fat?

* Dahlia to request drift dives and body condition results from Martin (the early deployments lack the data needed for drift analysis, so Martin has a already extracted the drift rates for all seals for which it can be calculated
* Plot tracks colour coded by change in drift rate
* Generate plots that show body condition over time

## 3. Did they survive?

* plot of tracks coloured by seen vs not seen (was the individual seen again at any point after the first capture?)
* plot of tracks coloured by size (birth weight, weaning weight)
* create frequency distribution of weights when tagged. The sampling strategy was to take seals from the upper and lower quartiles of weaning mass.
* We need to devise some way of classifying the tacks to examine spatial relationships with survival. e.g. by sector of ocean?

## Other next steps

* Group zoom in late March?

# Other interesting questions:

* Estimate tag failure (i.e. tags that stopped at sea, but the animal was subsequently seen alive
* Where and when did tags stop transmitting (i.e. where and when the animals died
* weaned weight vs tag loss / dead?
* how long was it before survivors were seen again (using the complete sighting history for individuals)?
* We also have return masses for some animals that may be useful