

## Supplemental methods

Animal handling methods, biollogger specifications, and calculation of arrival and departure dates are described in Robinson, et al.<sup>1</sup> Satellite tracking data were filtered and processed using the R package *crawl*<sup>2,3</sup> to eliminate inaccurate location points and interpolate between locations. The resulting latitude and longitude estimates were used to calculate great circle distance (in kilometers) from the Año Nuevo breeding beach (37.1083°N, 122.3366°W) for each time-latitude-longitude point in the R package *distm* (NOTE: I don't think this is right. According to the workflow file, this was done in MATLAB with the *distance()* function.) Across all seals, foraging trip timing (mean  $\pm$  SD day-of-year) was as follows: departure  $157 \pm 9$ , turnaround  $287 \pm 40$ , and arrival  $15 \pm 8$  (Figure 1C). Therefore, outbound trip durations were  $130 \pm 41$  days, and inbound trip durations were  $93 \pm 41$  days. Turnaround dates were calculated using Gaussian kernels with standard deviation 6 hours using custom functions in R. Code and data for a subset of animals are available on GitHub (link available upon review of manuscript) (NOTE: The GitHub repo will be archived on Zenodo, so cite that instead when ready.) Drift rate dates were calculated using...<sup>4</sup> Dates are presented as day-of-year relative to parturition date, with negative numbers indicating dates before pupping. All analyses were carried out in R v4.0.2. The linear mixed effects model was run in the package *lme4*<sup>5</sup> after scaling and centering the continuous variables and including individual as a random effect.

Figure S1 will go here. There's a bug in analysis/data/9SupplementalFigure.R:105.

1. Robinson, P.W., Costa, D.P., Crocker, D.E., Gallo-Reynoso, J.P., Champagne, C.D., Fowler, M.A., Goetsch, C., Goetz, K.T., Hassrick, J.L., Hückstädt, L.A., et al. (2012). Foraging Behavior and Success of a Mesopelagic Predator in the Northeast Pacific Ocean: Insights from a Data-Rich Species, the Northern Elephant Seal. *PLoS ONE* 7, e36728.
2. Johnson, D.S., London, J.M., Lea, M.-A., and Durban, J.W. (2008). CONTINUOUS-TIME CORRELATED RANDOM WALK MODEL FOR ANIMAL TELEMETRY DATA. *Ecology* 89, 1208–1215.
3. Johnson, D., Josh M. London (NOAA), and Kenady (2016). *Crawl*: V2.0.
4. Robinson, P.W., Simmons, S.E., Crocker, D.E., and Costa, D.P. (2010). Measurements of foraging success in a highly pelagic marine predator, the northern elephant seal. *Journal of Animal Ecology* 79, 1146–1156.
5. Bates, D., Mächler, M., Bolker, B., and Walker, S. (2015). Fitting Linear Mixed-Effects Models Using *lme4*. *Journal of Statistical Software* 67.