

Elephant Figures 08

15/01/18

Figures and Tables

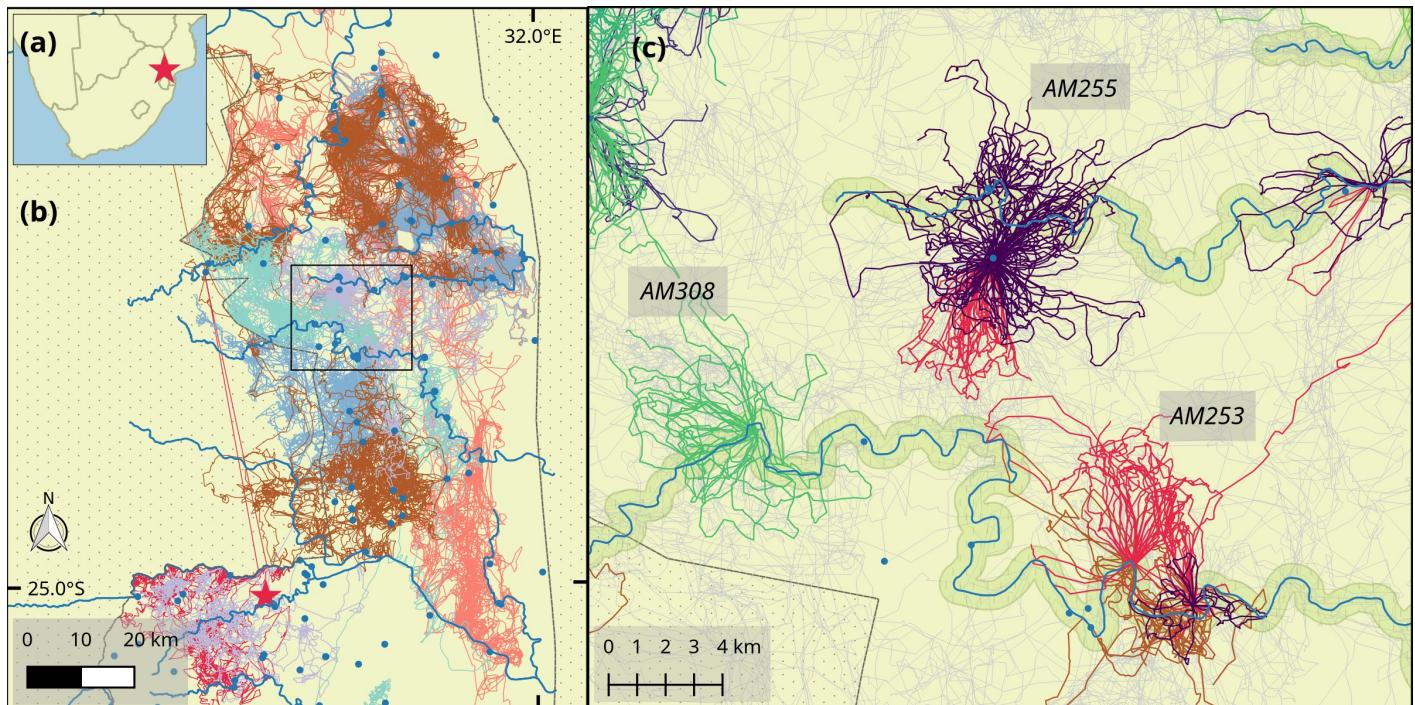


Figure 1: (a) Study site in Kruger National Park, South Africa (red star), showing (b) park boundary (dashed grey line), weather station at Skukuza (red star), major rivers (solid blue lines), open waterholes (blue dots), and raw elephant tracks (coloured lines, $n = 14$). (c) Inset showing identified 24-hour looping behaviour centred on water sources (blue dots and lines), coloured by elephant shown (see labels, $n = 3$), with remaining tracks in the background (grey lines). 500m riparian zone along rivers is shaded green.

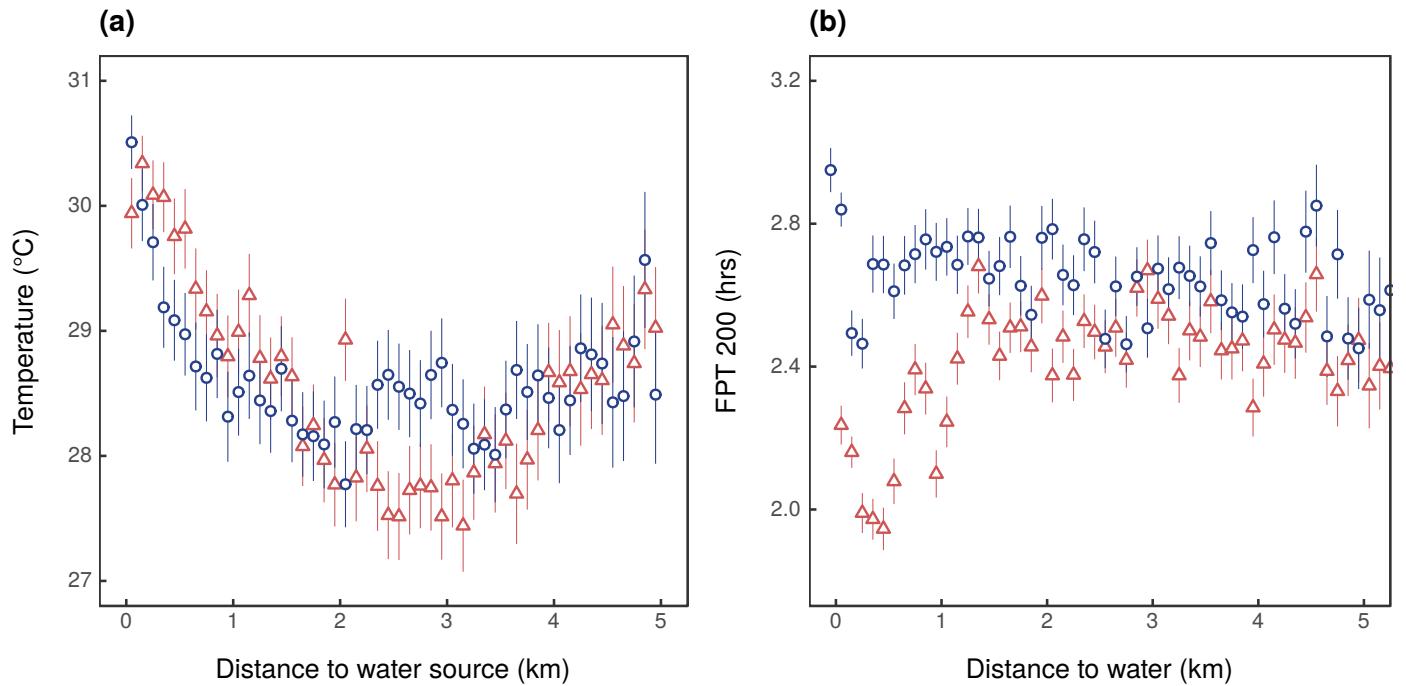


Figure 2: (a) Temperature of moving elephants, and (b) first passage time out of radius of 200m (points) at 100m distance intervals from the nearest water source in each season (cool-dry: blue circles, hot-wet: red triangles). Vertical lineranges represent 95% confidence intervals.

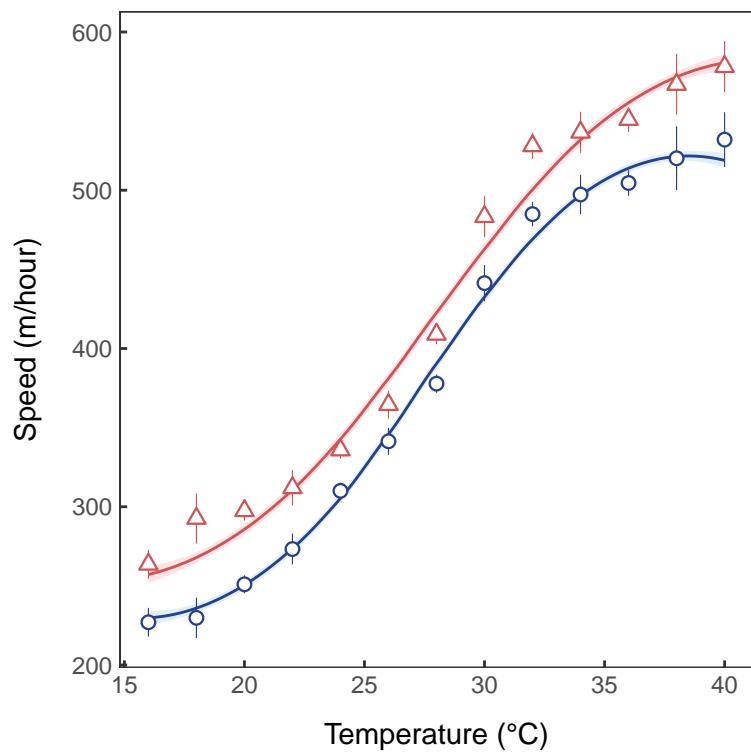


Figure 3: Mean steplength (points) at 2°C temperature intervals in each season (cool-dry: blue circles, hot-wet: red triangles). GAMM fit (lines), data error intervals (lineranges), and fit error intervals (shaded areas) are shown.

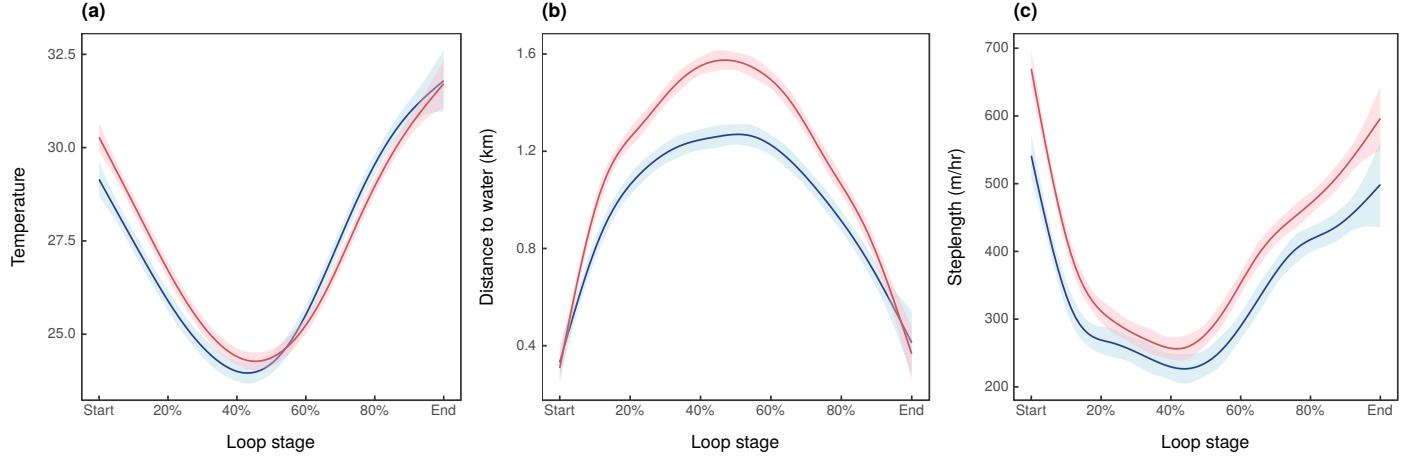


Figure 4: Elephants shuttle to water. GAM smooths coloured by season (cool-dry: blue, hot-wet: red) of (a) temperature, (b) distance to the nearest water source, and (c) steplength at stages in elephant revisits to water sources. Elephants are furthest from water at low temperatures, and move fastest in the initial and final 20% of a loop, i.e., when departing and approaching water sources. Only 24-hour loops considered.

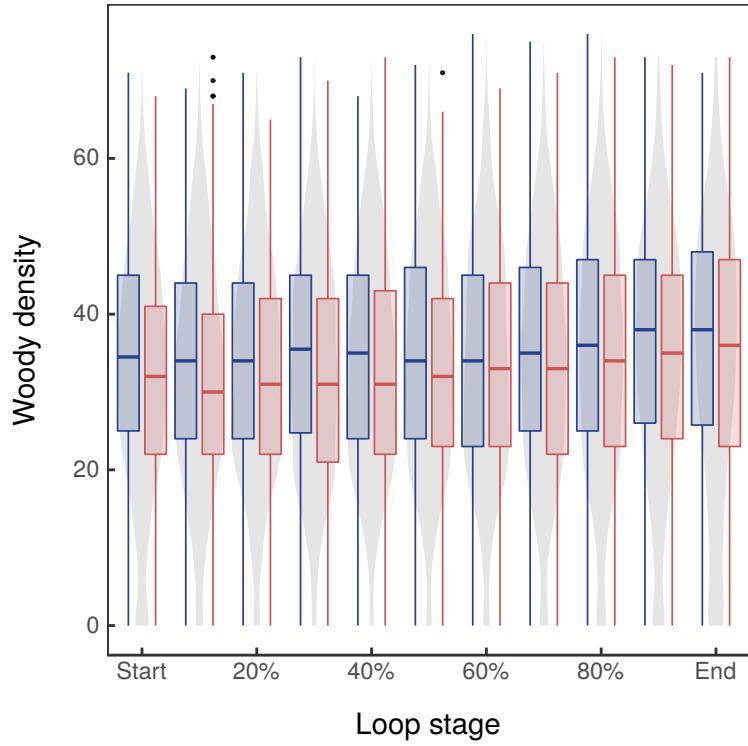


Figure 5: Elephant shuttling is not driven by woody density. Boxplots (coloured by season, cool-dry: blue, hot-wet: red) overlaid on violin plots (grey, background, pooled over seasons) of the woody density along the stages of elephant revisits to water. Only 24-hour loops considered.

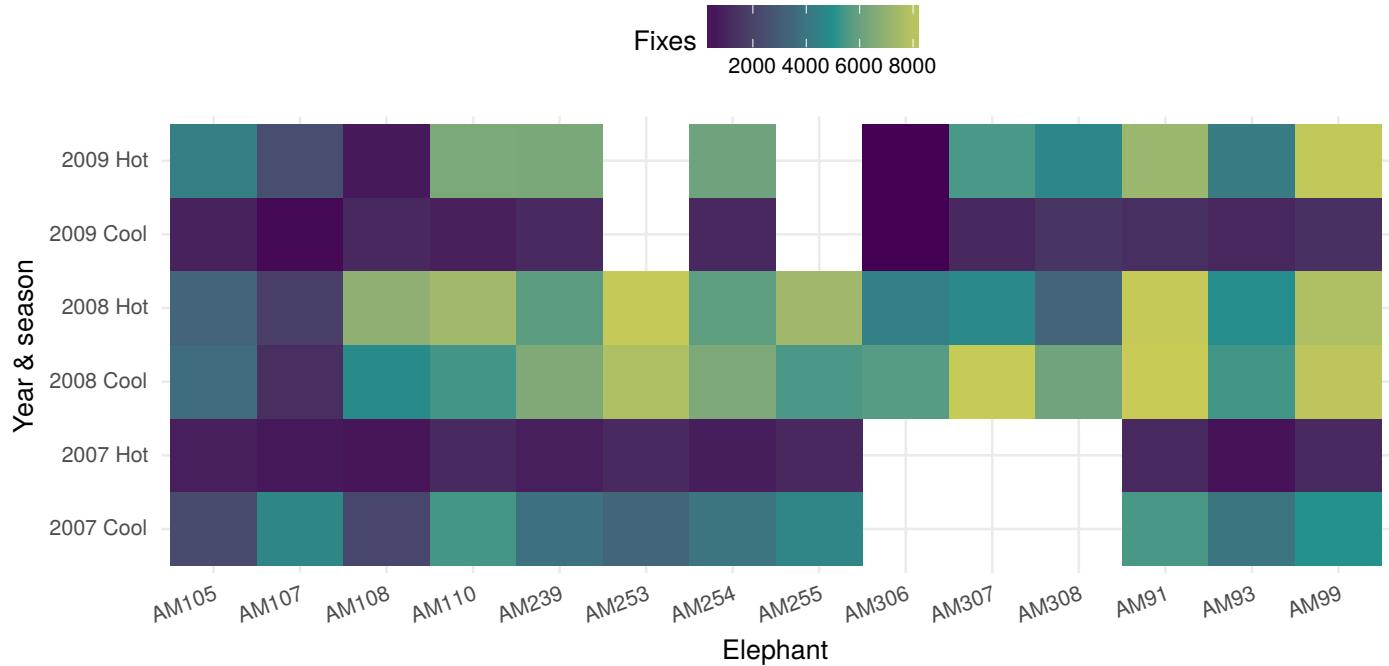


Figure 6: **Supplementary material.** Heatmap of fixes per individual, grouped by season and year.

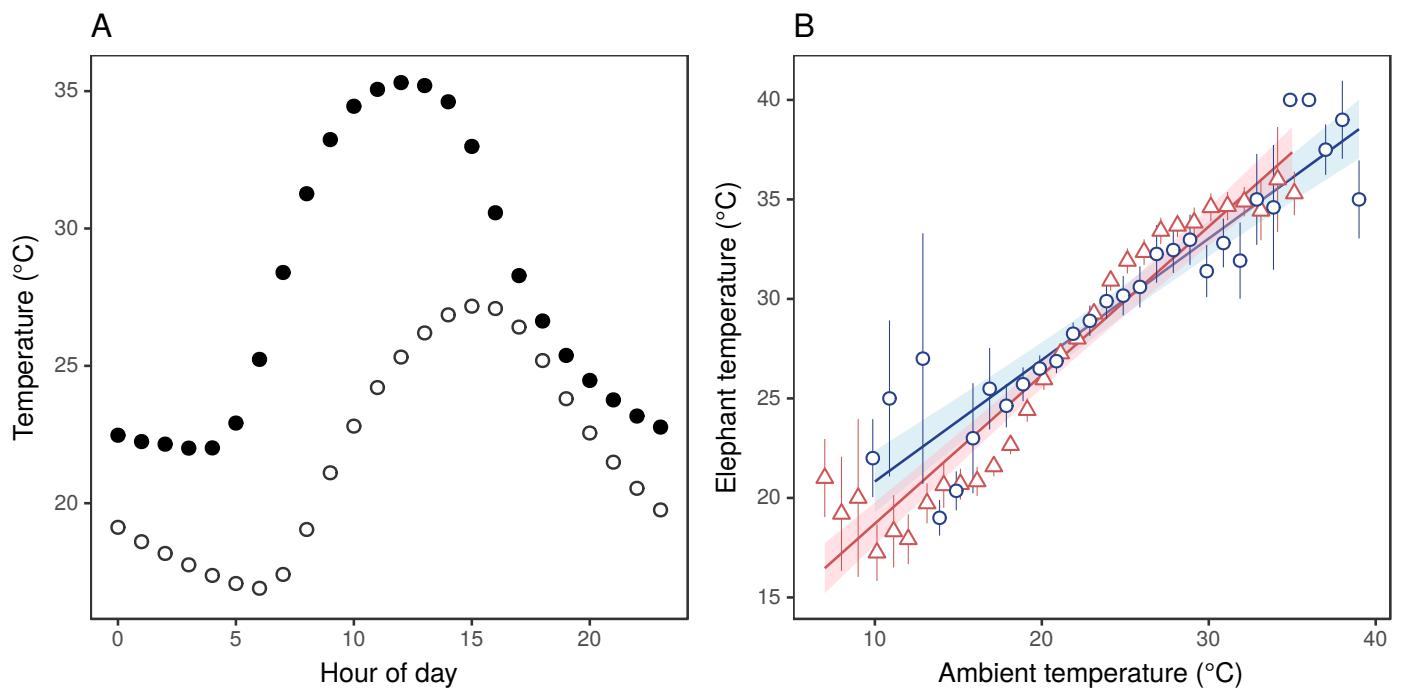


Figure 7: **Supplementary material.** Mean thermochron temperature (points) at measured ambient temperature, and GLM fits (lines) in each season (cool-dry: blue circles & lines, hot-wet: red triangles & lines). Vertical lineranges and shaded areas (coloured by season) indicate 95% confidence intervals at each point.

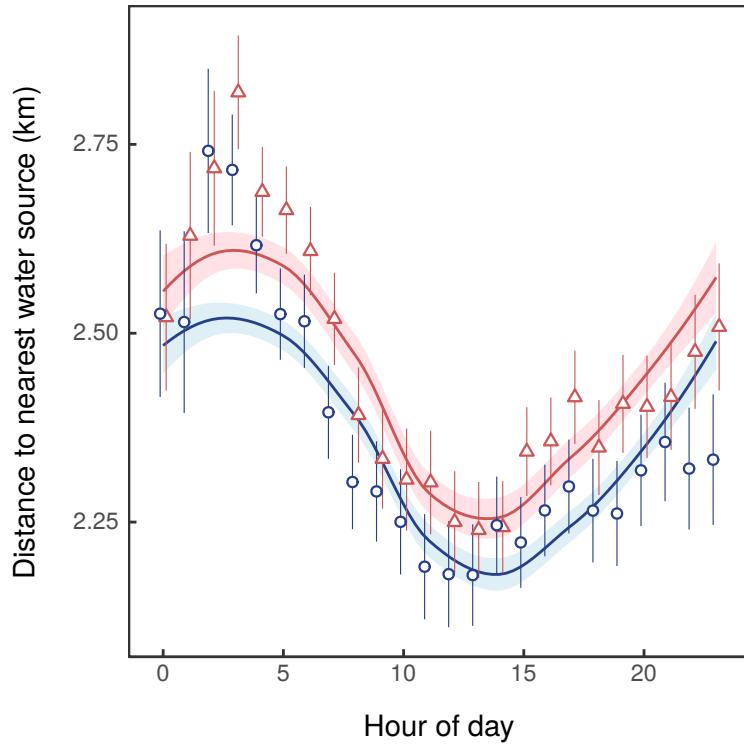


Figure 8: **Supplementary material.** GAMM fit (lines) and mean distance to the nearest water source in each season (point) through the day in each season (cool-dry: blue circles & lines, hot-wet: red triangles & lines). Vertical lineranges and shaded areas (coloured by season) indicate 95% confidence intervals at each point. Only moving elephants included.

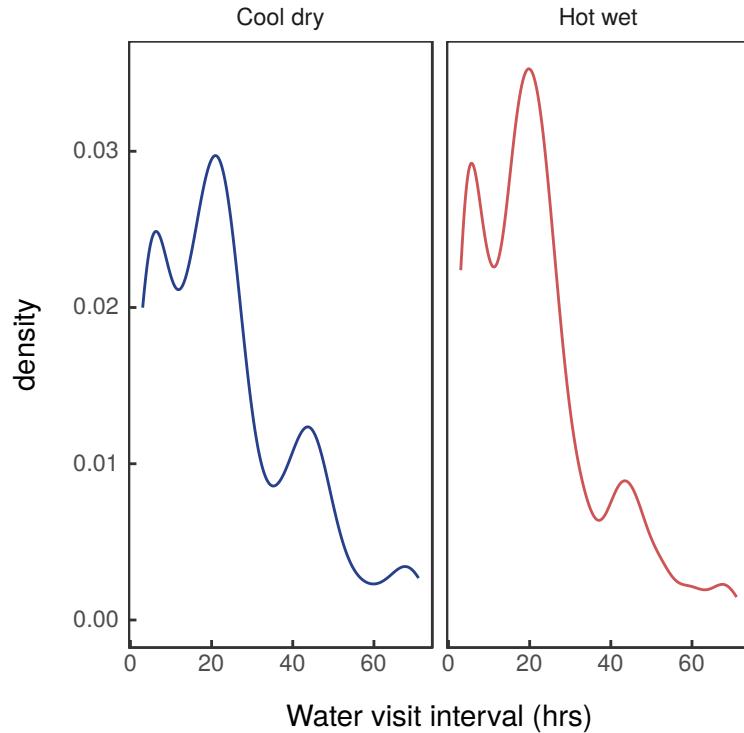


Figure 9: **Supplementary material.** Distribution of intervals between elephant revisits to water sources.

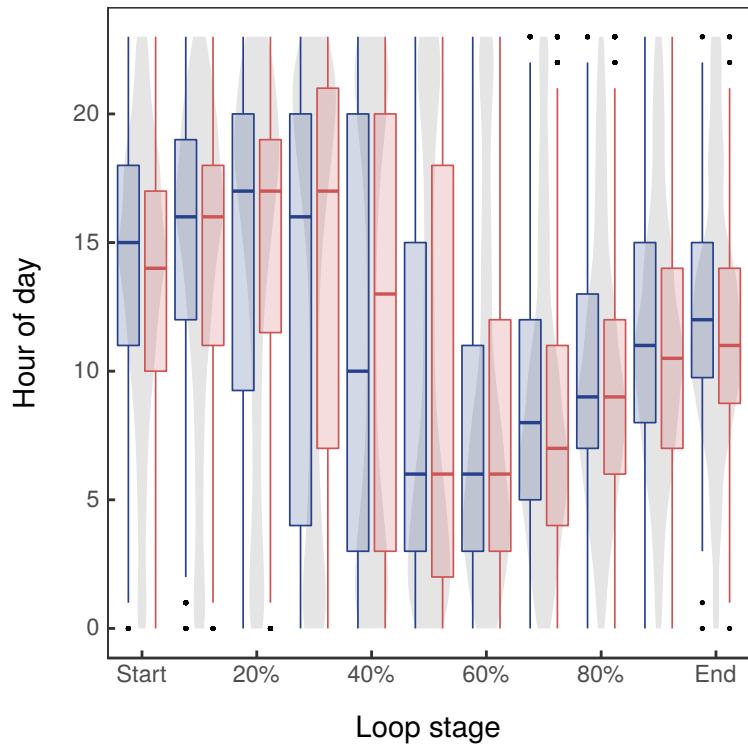


Figure 10: Supplementary material. Elephants loop at all times. Boxplots of the hour of day at stages of elephant looping behaviour, coloured by season (cool-dry: blue, hot-wet: red). Each loop begins and terminates at a water source. Violin plots of the probability distribution of hour of day at each stage in the loop, pooled over seasons are shown in the background.

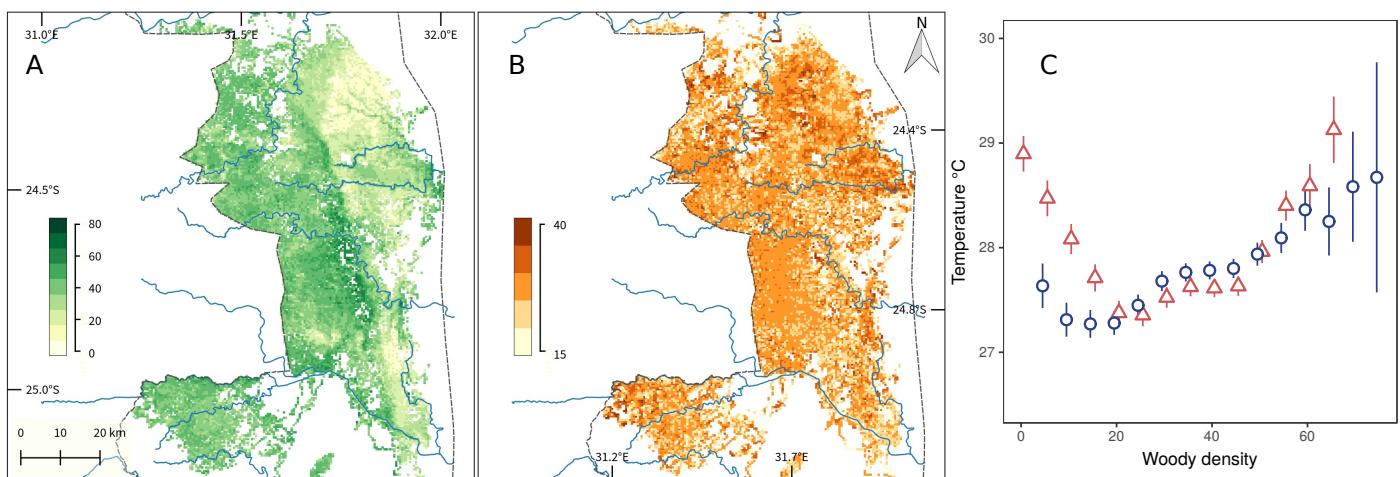


Figure 11: Supplementary material. **(A)**. Woody density, and **(B)**. Elephant temperature at relocation sites. Values shown are 500m² pooled means. **(C)**. Mean elephant temperatures at woody densities in increments of 5, separated by season (cool dry: blue circles, hot wet: red triangles), showing 95% confidence intervals (lineranges coloured by season.). Rivers (light blue lines) and Kruger boundary (dashed black line) are shown.

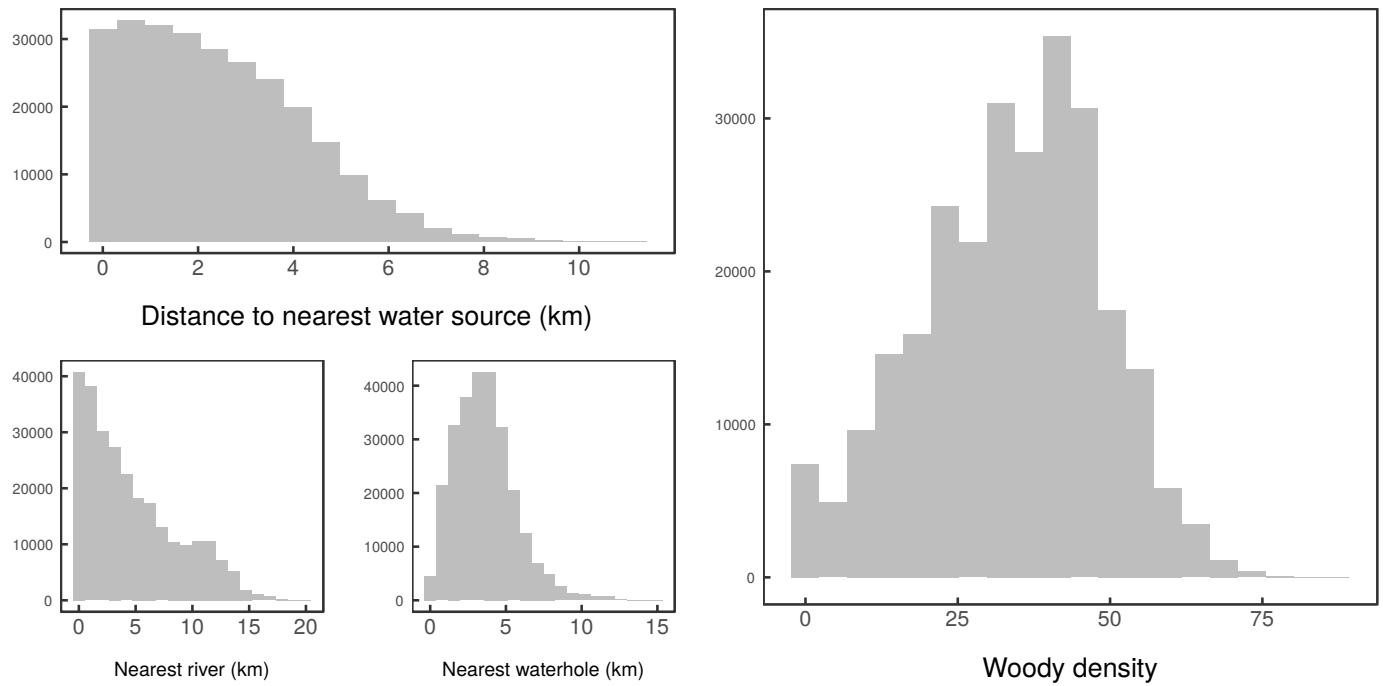


Figure 12: **Supplementary material.** (a). Frequency distributions of distance to the nearest water source (waterhole or river, see separate histograms below), and (b). Frequency distribution of the woody density encountered by elephants.