

# Appendix 1: Variogram Inspection and HR Performance Maps

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This document plots the HR estimates of all the emulated sampling regimes over the data from the complete segments.

The plots show the 95% UD estimates with 95% CIs using the data from the different sampling regimes. Each plot shows the total locations from the complete, but the green points are the ones that were selected in the regimes, and the pink points are the data that were thinned out.

## AA Group

**Variograms** Here we plot the variograms for the complete segment and every sampling regime. On each plot includes the mean and confidence intervals of the movement model fitted to the empirical variogram of each sampling regime. These are used as visualization tools to see if the data was sufficient to show range residency.

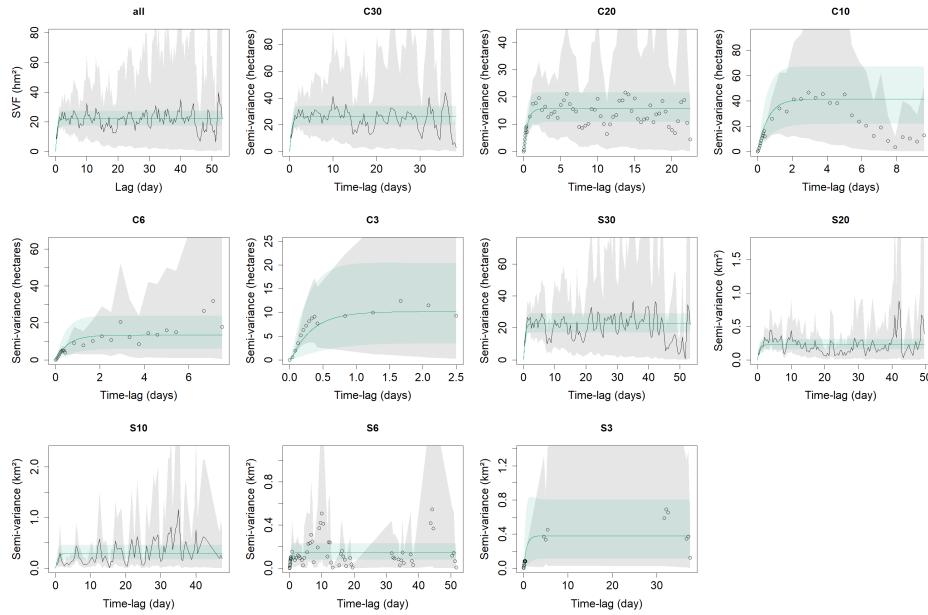


Figure 1: AA Variograms and Model Fits

**HR Performance Maps** Below are the HR performance maps which show the mean HR boundary and 95% confidence intervals. The points indicate the recorded locations. Green points are the locations kept in each sampling regime, and the pink points are the removed locations.

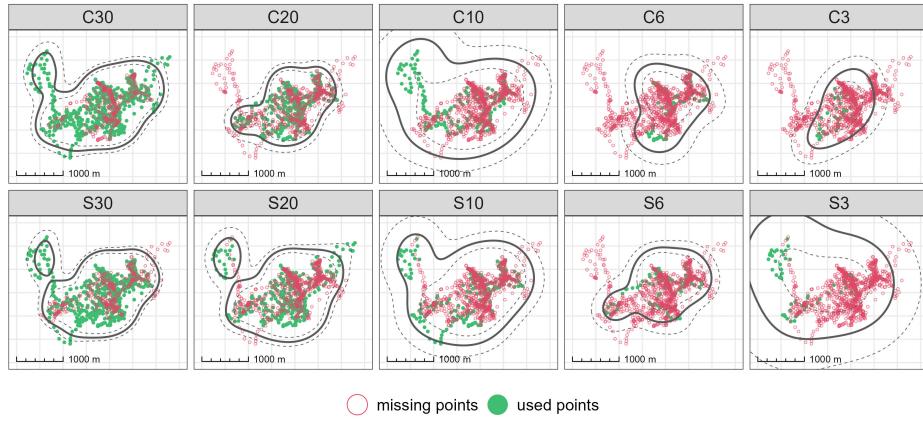


Figure 2: Home Range Estimates from AA sampling regimes plotted over data

### RR Group

**Variograms** Below are the variograms for RR group. Similarly to CE group, there appears to be a shift after about a month.

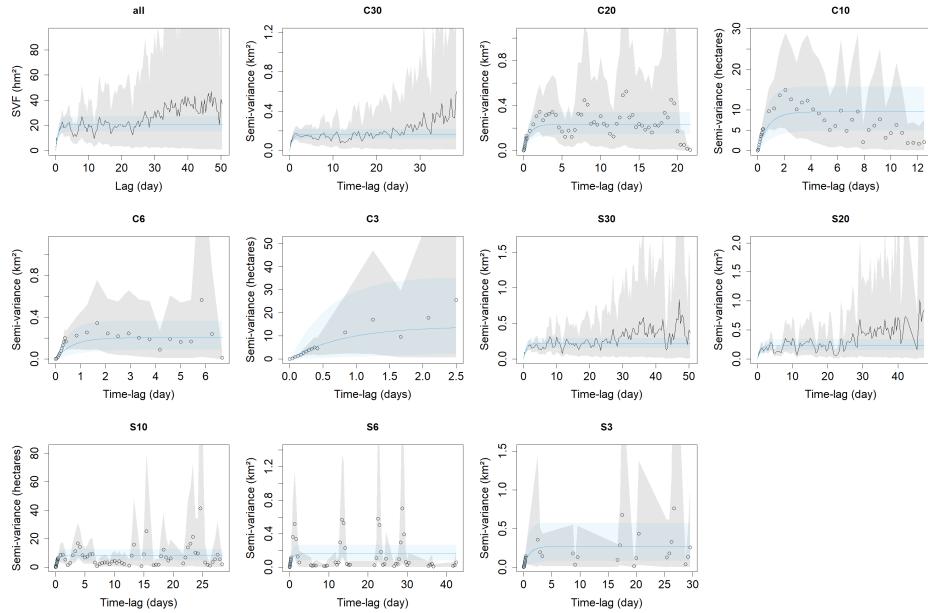


Figure 3: RR Variograms and Model Fits

**HR Performance Maps** Below are the HR performance maps for RR group. Spread sampling regimes did not seem to perform better than concentrated for this group. There is not much of a difference based on the maps alone.

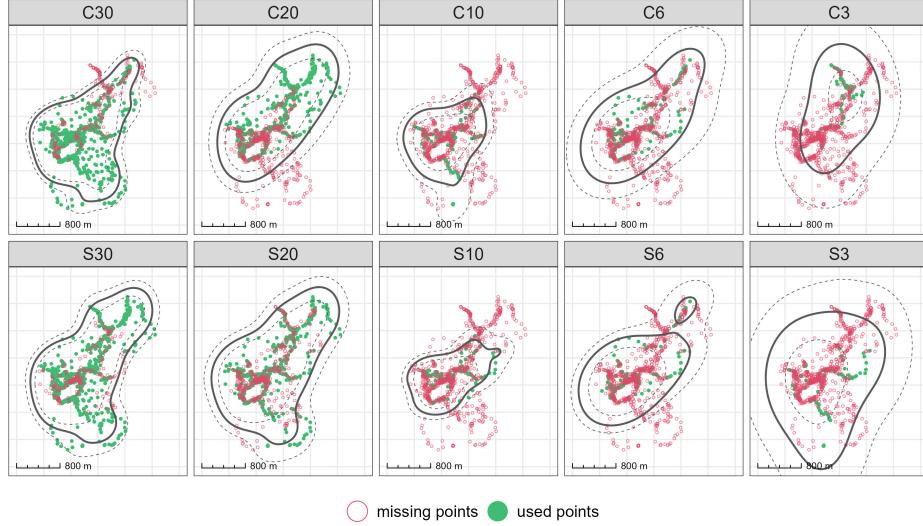


Figure 4: Home Range Estimates from RR sampling regimes plotted over data

## CE Group

**Variograms** Below are the variograms for CE group. Notice how in the complete segment, the empirical variogram asymptotes then jumps up to a higher asymptote. This is the result of this group shifting within their range, which is only captured if the time lag is longer than about one month.

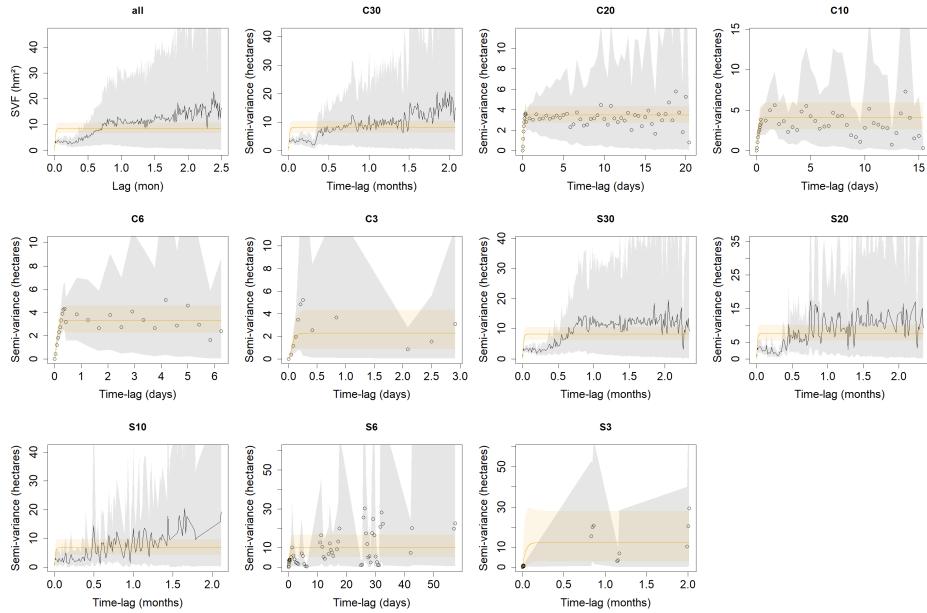


Figure 5: AA Variograms and Model Fits

**HR Performance Maps** Below are the HR performance maps. Notice how the concentrated regimes performed very poorly because they fail to capture the shift in space-use.

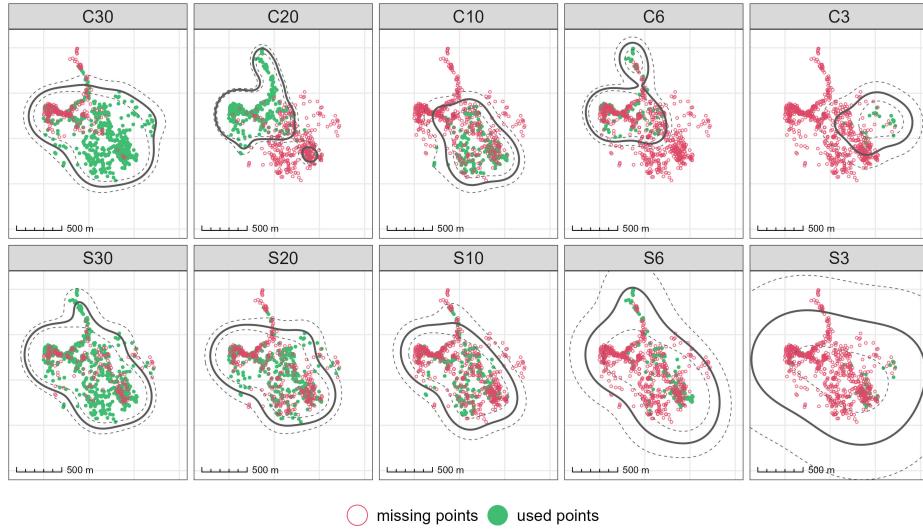


Figure 6: Home Range Estimates from AA sampling regimes plotted over data

## AA2 Group

**Variograms** Below are the variograms for AA2 group, which is just another complete segment selected from AA group.

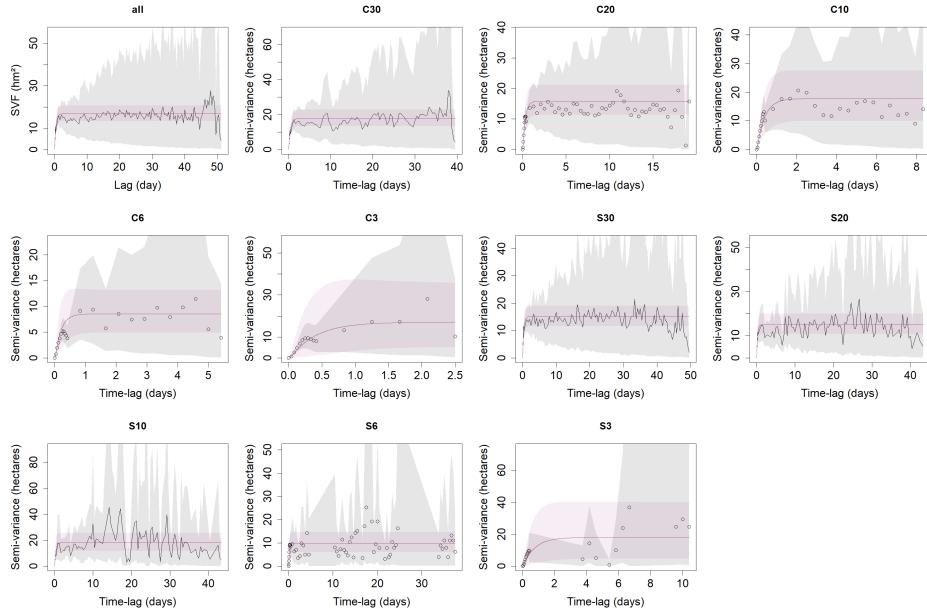


Figure 7: AA2 Variograms and Model Fits

**HR Performance Maps** Below are the HR performance maps for AA2 group.

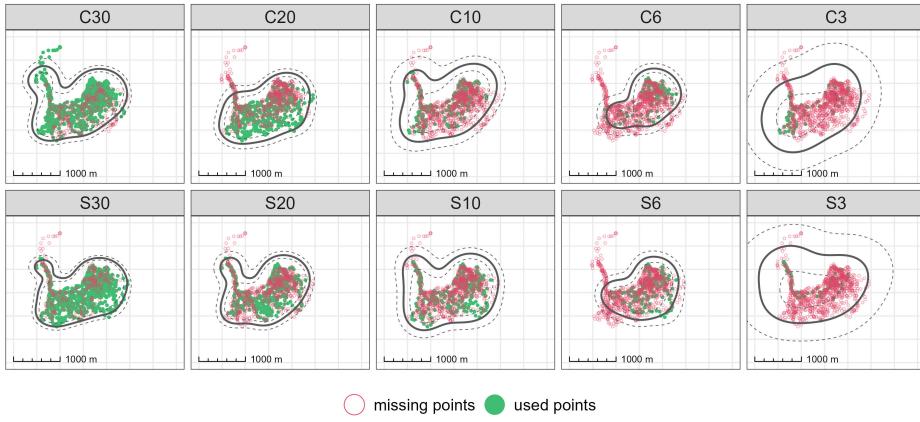


Figure 8: Home Range Estimates from AA2 sampling regimes plotted over data

### SP Group

**Variograms** Below are the variograms for SP group. These tend to be messier than the other groups because this segment has a longer duration and therefore the time lag bins are more frequent. The messiness does not cause an issue; the main point of these is to see if there is an asymptote.

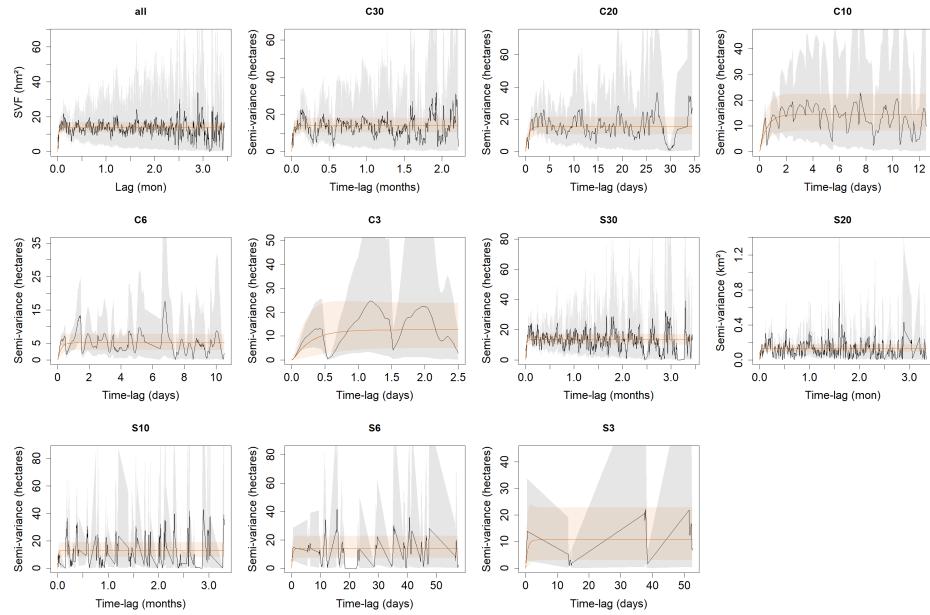


Figure 9: SP Variograms and Model Fits

**HR Performance Maps** Below are the HR performance maps for SP group.

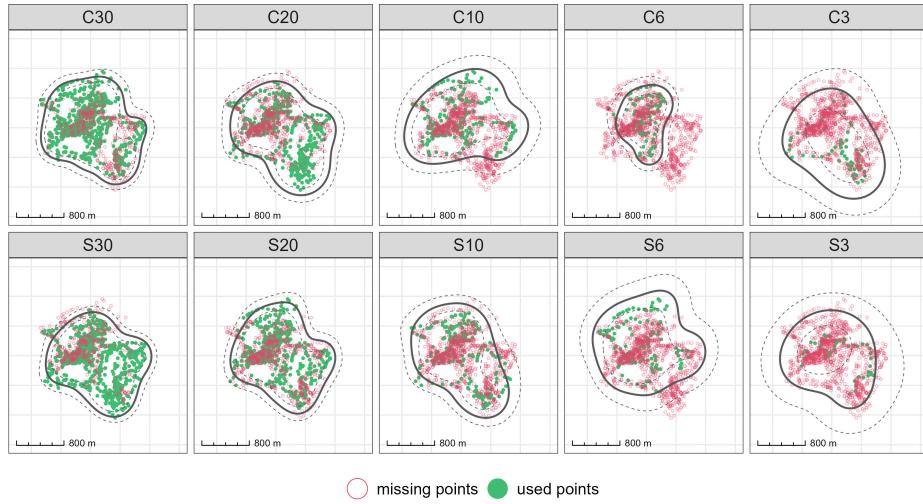


Figure 10: Home Range Estimates from SP sampling regimes plotted over data

## FL Group

**Variograms** Below are the variograms for FL group.

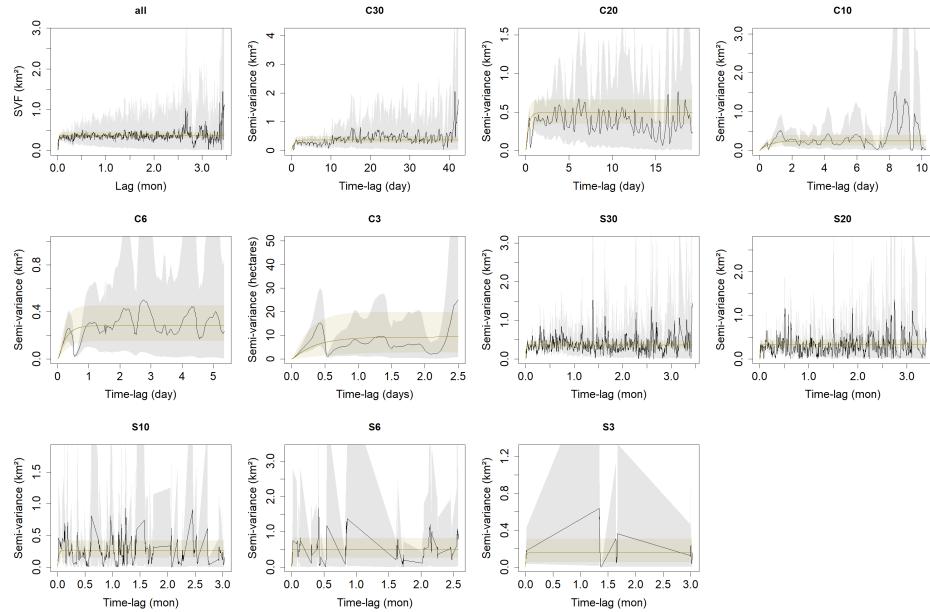


Figure 11: FL Variograms and Model Fits

**HR Performance Maps** Below are the HR performance maps for FL group.

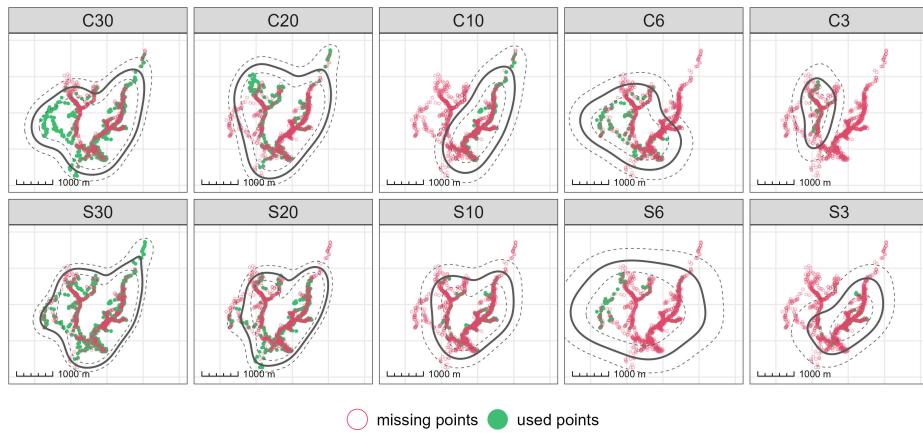


Figure 12: Home Range Estimates from FL sampling regimes plotted over data