**Supplemental information SI4. Spatial autocorrelation in the residuals**

Spatial autocorrelation in the residuals was evaluated using the ‘dsm.cor’ function of the‘dsm’ package. As described in the article, the correlogram show a small amount of spatial autocorrelation in the residuals (Fig. SI4.1). The confidence interval increased in width as the number of lags increased.



**Figure SI.4.1.** Autocorrelation of deviance residuals between segments (lags) for the fitted density surface model selected. The dashed line represents the 95% confidence interval. Lag 0 is the correlation between a segment and itself, Lag 1 between a segment and its immediate neighbours (i.e. segments that touch), Lag 2 between a segment and the segment one segment away, and so on. Correlations are only calculated within a given transect.