

Figure S1: habitat preference

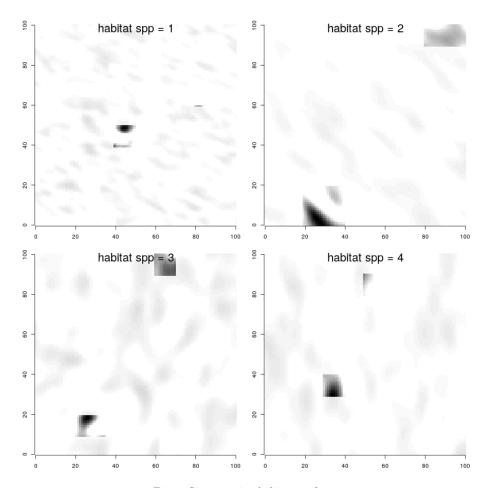


Figure S2: spawning habitat preference

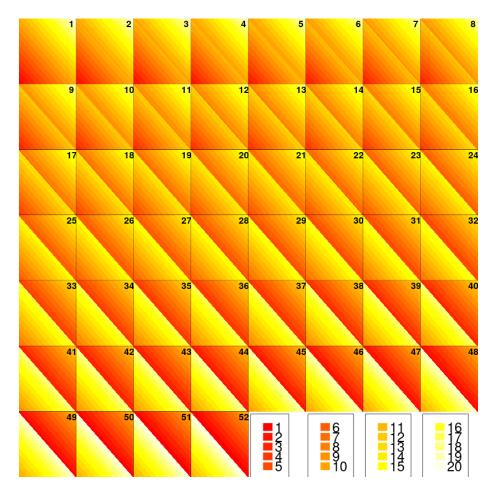


Figure S3: Spatiotemporal temperature gradient

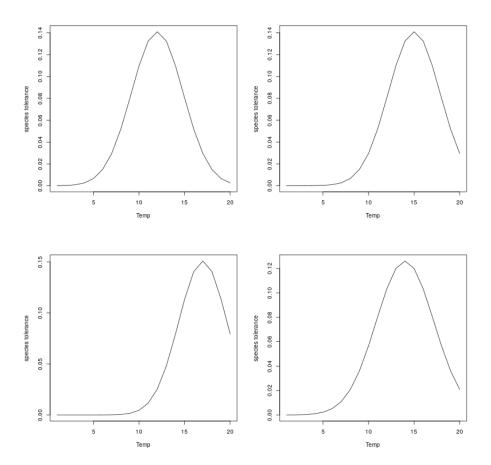


Figure S4: Species thermal tolerances

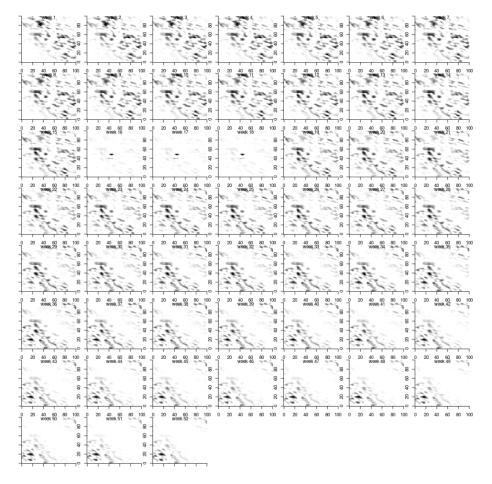


Figure S5: Spatiotemporal habitat suitability - population $1\,$

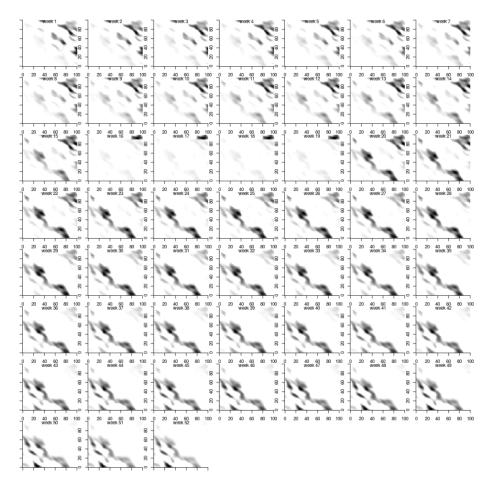


Figure S6: Spatiotemporal habitat suitability - population $2\,$

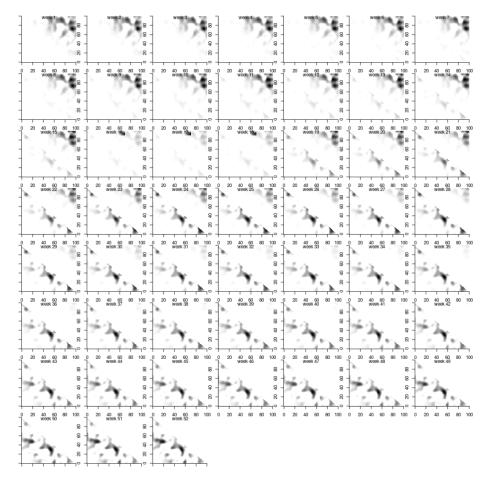


Figure S7: Spatiotemporal habitat suitability - population 3

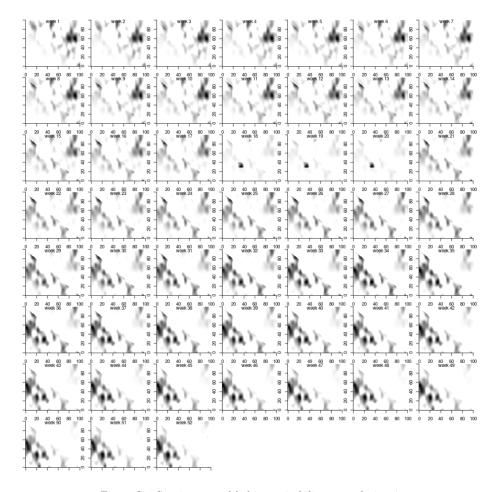


Figure S8: Spatiotemporal habitat suitability - population $4\,$

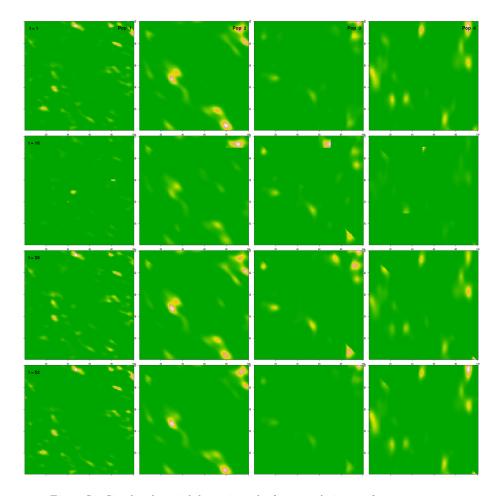


Figure S9: Simulated spatial dynamics - the four populations at four time steps.

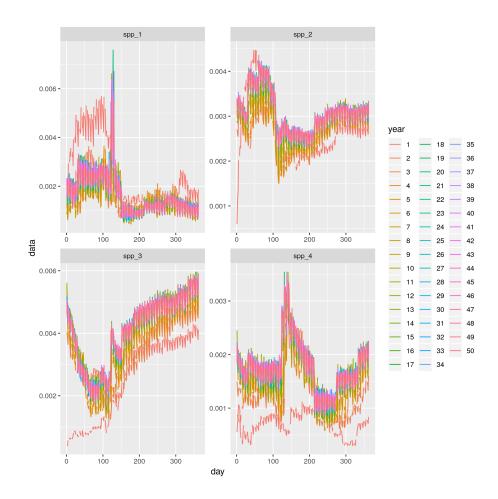


Figure S10: f dynamics - the daily fishing mortalities, each year is a different colour

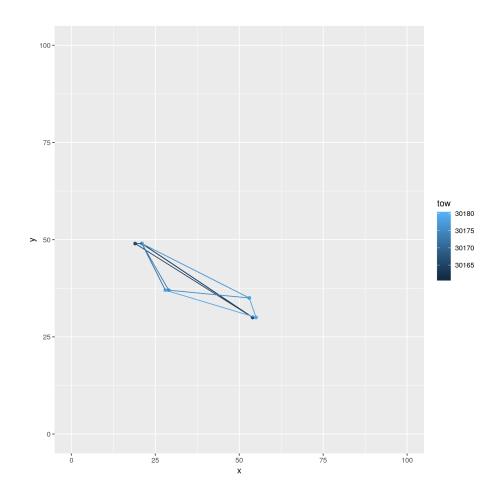


Figure S11: vessel movement - a single trip movement for one vessel $\,$

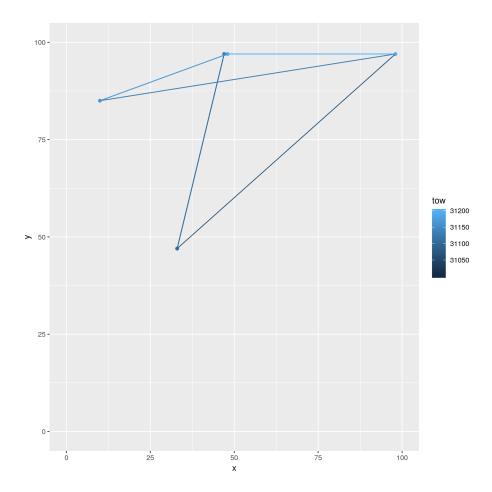


Figure S12: vessel movement for multiple trips from a single vessel. Note the movement off the side pops up the other side, but is joined by a line across the grid. This is from the torus approach rather than the edges being barriers

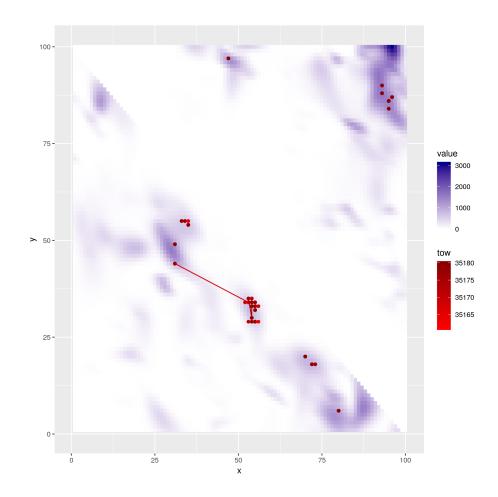


Figure S13: movement of a fleet over a single trip reference overlaid on the value field (i.e. sum of the population abundance ${\bf x}$ catchability ${\bf x}$ value

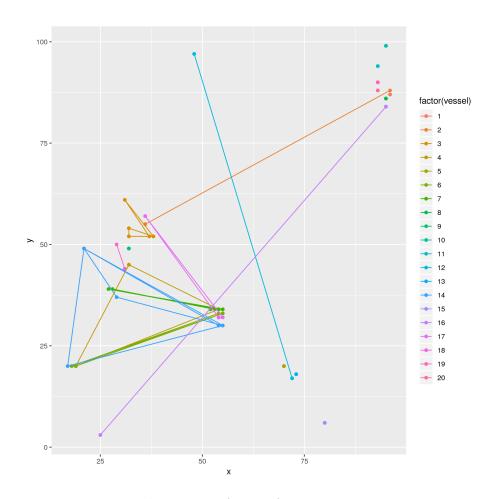


Figure S14: An entire fleets (20 vessels) movement for a single trip

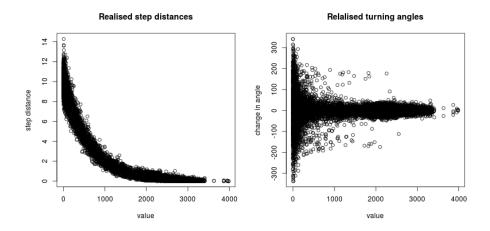


Figure S15: Realised step function - the step function as realised for a single fleet. For turning angles, it can be seen that at higher values, the turning range is less

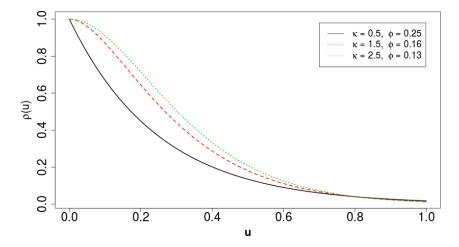


Figure S16: Example of different implementation of the Matern correlation function on auto-correlation distance

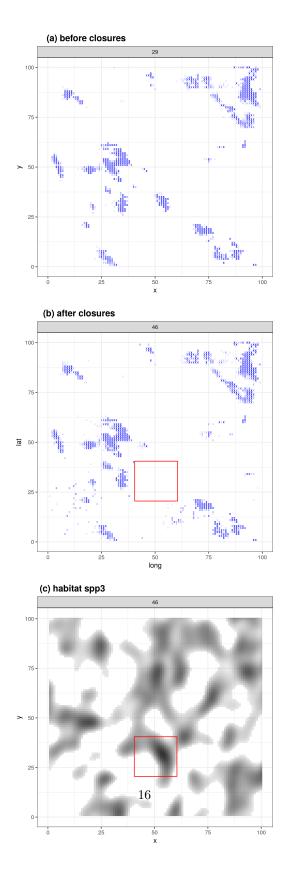


Figure S17: Closure fishing locations based on annual closures with a coarse spatial resolution. Closure location can be seen in red in relation to a) before the closure fishing locations, b) after the closure fishing locations, c) species 3 habitat distribution