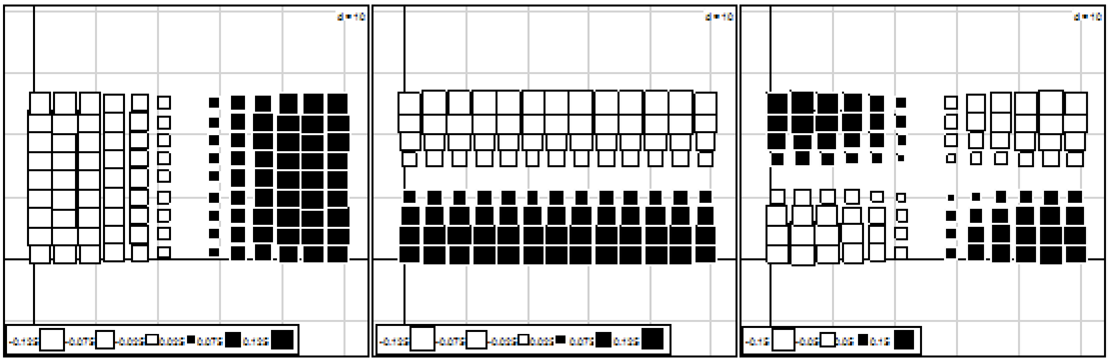
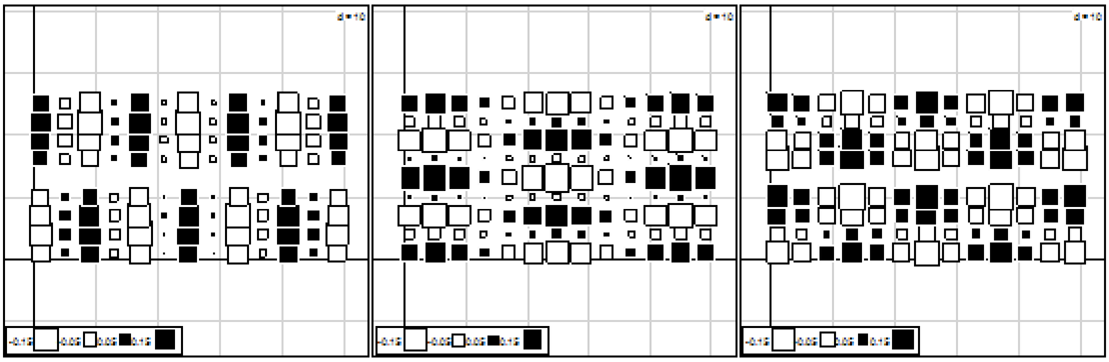
Bauman, D. et al. 2018. Disentangling good from bad practices in the selection of spatial or phylogenetic eigenvectors – Ecography.

Appendix A1: Illustrations and methodological details of the generation of simulated structured species at broad, medium and fine scales.

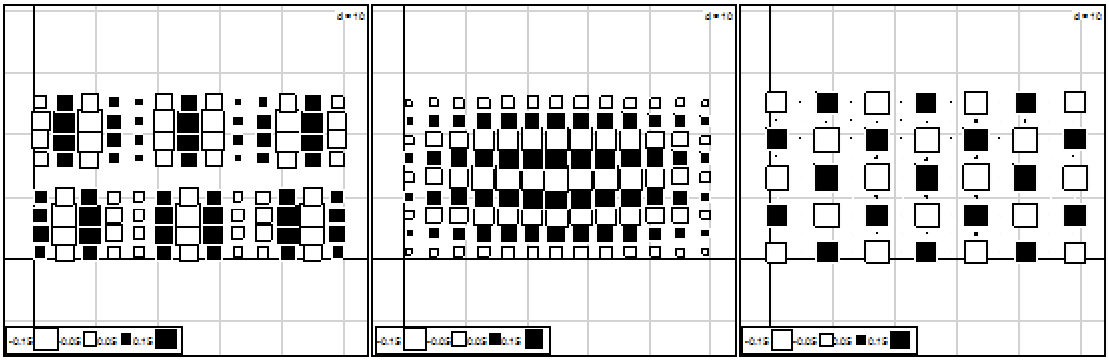
In order to test the power and a possible (adjusted R^2) bias of the spatial EV selection methods, positively autocorrelated response variables were constructed by linear combination of three MEM variables to which a random noise (mean of 0, standard deviation of 1) was added, following Jombart *et al.* (2009). The coefficient of each MEM is given in the legends of the figures below. Structured variables were built at broad, medium, and fine scales, using MEM 1 to 3, 25 to 27, and 56 to 58, respectively. The MEM used at the three scales and for the regular and random designs are illustrated below. An example of the resulting spatial patterns is also presented (for the regular design only, for brevity).



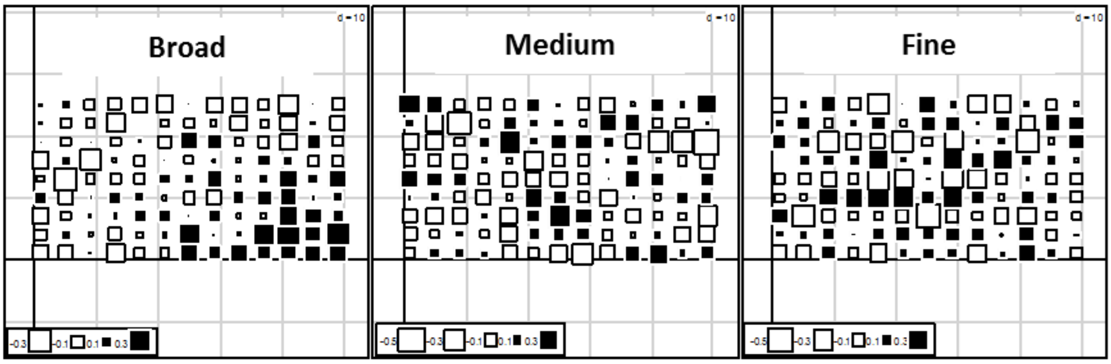
Appendix A1 Figure 1: MEM variables (1, 2 and 3, from the left to the right) used for constructing simulated species structured at a broad scale in a regular design. The linear combination coefficient of the MEM for the linear combination was 0.5 for the three variables. The bottom legend of each box relates each colour and size of the quadrats (white and black squares) to their coordinate on the corresponding eigenvector (see Introduction). Quadrats of the same colour and similar size are very alike (species abundance).



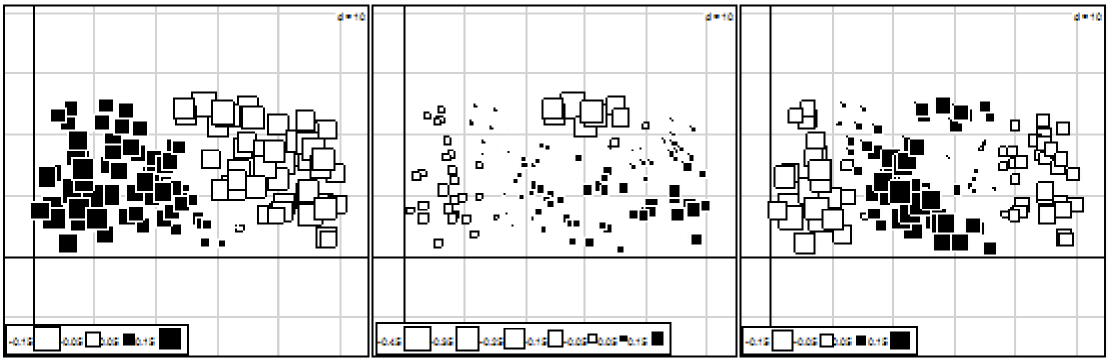
Appendix A1 Figure 2: MEM variables (25, 26 and 27, from the left to the right) used for constructing simulated species structured at a medium scale in a regular design. The linear combination coefficients of the MEM were 0.6, 1 and 0.8 for the three variables. See the Fig. 1 caption of the present appendix for the legend of the boxes.



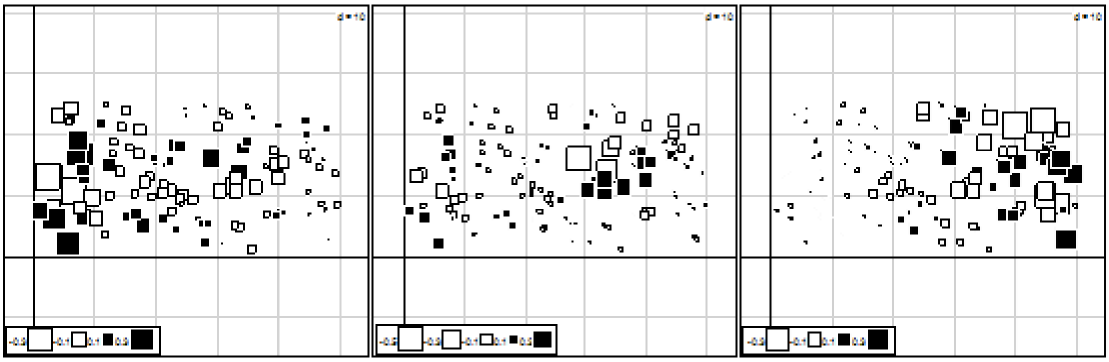
Appendix A1 Figure 3: MEM variables (56, 57 and 58, from the left to the right) used for constructing simulated species structured at a fine scale in a regular design. The linear combination coefficients of the MEM were 0.5, 1 and 1 for the three variables. See the Fig. 1 caption of the present appendix for the legend of the boxes.



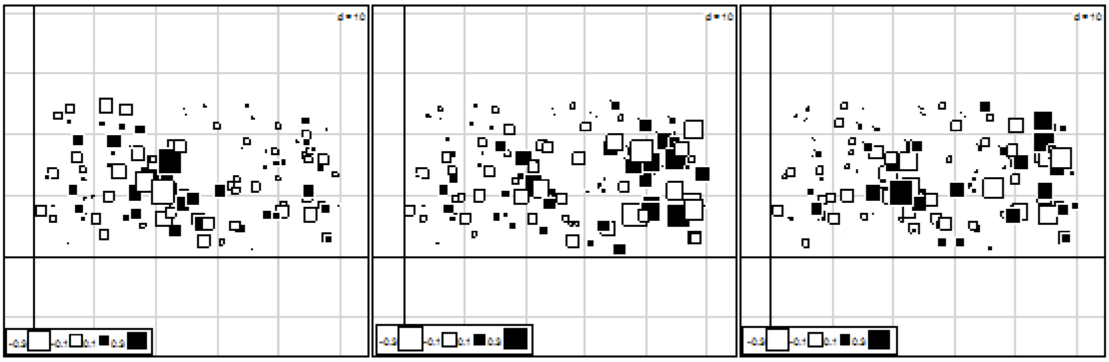
Appendix A1 Figure 4: Examples of a realisation of the linear combination of the MEM variables to which some random noise was added at broad, medium and fine scales, for the regular design. In this example, the three MEM variables explained 0.44, 0.61, and 0.70 (adjusted R^2) of the simulated distributions at broad, medium and fine scales, respectively.



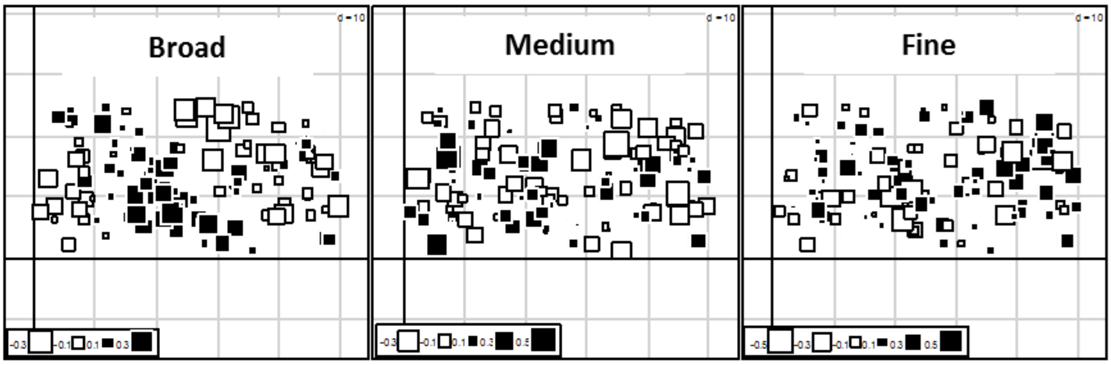
Appendix A1 Figure 5: MEM variables (1, 2 and 3, from the left to the right) used for constructing simulated species structured at a broad scale in a random design. The linear combination coefficient of the MEM for the linear combination was 0.5 for the three variables. See the Fig. 1 caption of the present appendix for the legend of the boxes.



Appendix A1 Figure 6: MEM variables (19, 20 and 21, from the left to the right) used for constructing simulated species structured at a medium scale in a random design. The linear combination coefficients of the MEM for the linear combination were 0.6, 1, and 0.8 for the three variables. See the Fig. 1 caption of the present appendix for the legend of the boxes.



Appendix A1 Figure 7: MEM variables (38, 39 and 40, from the left to the right) used for constructing simulated species structured at a fine scale in a random design. The linear combination coefficients of the MEM for the linear combination were 0.5, 1, and 1 for the three variables. See the Fig. 1 caption of the present appendix for the legend of the boxes.



Appendix A1 Figure 8: Examples of a realisation of the linear combination of the MEM variables to which some random noise was added at broad, medium and fine scales, for the random design. In this example, the three MEM variables explained 0.49, 0.58, and 0.67 (adjusted R^2) of the simulated distributions at broad, medium and fine scales, respectively.