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PS 72-16: Modelling the regional dynamics of annual plants

Stephen J. Galsworthy¹, Matthias C. Wichmann², Rosie S. Hails², James M. Bullock², and Philip K. Maini¹. (1) University of Oxford, (2) NERC Centre for Ecology and Hydrology

We develop an integrodifference equation model to describe the large-scale spatial dynamics of an annual plant with a long lived seed bank. Our model is parameterised with data taken from our experiments on natural populations of *Brassica nigra* on the cliffs of Southern England. Our experimentation has suggested that anthropogenic dispersal is a potential dispersal vector in addition to the primary dispersal vector (wind) for this species. Informed by these experimental results we investigate mathematically the effect of a variety of dispersal kernels to describe the distribution of dispersal distances of seeds about their parent plant. We calibrate our model by comparison with data from the natural plant populations. Moreover, we compare our model with an agent-based simulation model, as part of the on-going challenge of investigating the strengths and weaknesses of different modelling approaches.

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