**How will climate variability interact with long-term climate change to affect the persistence of plant species in fragmented landscapes?**

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**APPENDIX 1**

The R code provided as supplementary material is the implementation of the PPunCC model that was used for the study. The code is provided in a zipped folder, along with files defining the four landscapes described in the paper. To run a PPunCC simulation, first download the PPunCC5.7 zip file, save to your computer and unzip the file/folder. Then open R (download for free from <http://cran.r-project.org/> and install if needed), and change directory to the unzipped folder. Open the R script and then run the whole script. The script will look for landscape files, so these must be in the R working directory. You should see things happening as the simulation runs, and when it ends you will be told if the species persisted or not. Additional information is provided as comments in the code.

**APPENDIX 2**

When investigating how regular climate variability, occasional extreme events with specific effects on plant populations and step-changes in climate would be likely to interact with climate change to impact species persistence, we used an adaptive algorithm to efficiently explore values of the climate variable under consideration where the chance of persistence was marginal (between zero and one). For example, when considering the effect of regular interannual climate variability, the adaptive algorithm focused on values of climvar where the chance of persistence was marginal. The algorithm involved running four simulations at each of a wide range of values of climvar. When all four resulted in persistence, then climvar was set to increase by a specified step size; when none of the four resulted in persistence, then climvar was set to decrease by a specified step size; and when one, two or three of the four resulted in persistence, then climvar was set to continue to increase or decrease in the same direction as previously by a specified step size. Each time all four or none of the four resulted in persistence, then the algorithm step size was decreased. The algorithm continued until at least 50 values of climvar had been tested and at least 30 values of climvar had resulted in marginal results. In this way, the range of values of climvar where the chance of persistence was marginal was eventually explored in detail, while mostly avoiding the range of values where the chance of persistence was very close to zero or one.