Model parameter settings of the specific use case

Landscape parameters

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| --- | --- | --- |
| Parameter | Description | Values |
| Landscape file | Filename(s) of the landscape map(s) | Corine\_2018\_4km\_France.asc |
| Resolution | Resolution in meters | 4000 |
| HabPercent | Whether habitat types/codes or habitat cover/quality | FALSE |
| NHabitats | Number of different habitat codes | 10 |
| K\_or\_DensDep | Demographic density dependence | 0, 0, 0, 0.04, 0, 0, 0, 0, 0, 0 |
| PatchFile | Filename(s) of the patch map(s) | Corine\_2018\_4km\_France\_patches.asc |
| DynamicLandYears | Years of landscape changes | 0 |

Demography parameters

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| --- | --- | --- |
| Parameter | Description | Values |
| Stages | Number of life stages | 5 |
| TransMatrix | Transition matrix. |  |
|  | Defines the development probabilities |  |
|  | from each stage into the next as well as the |  |
|  | respective survival probabilities and fecundities |  |
| MaxAge | Maximum age in years | 27 |
| MinAge | Ages which an individual in stage | 0, 0, 0, 0, 0 |
|  | i-1 must already have reached before |  |
|  | it can develop into the next stage i. |  |
| RepSeasons | Number of potential reproduction events per year | 1 |
| RepInterval | Number of reproductive seasons | 0 |
|  | which must be missed following a reproduction attempt |  |
|  | before another reproduction attempt may occur |  |
| PRep | Probability of reproducing in | 1 |
|  | subsequent reproductive seasons |  |
| SurvSched | Scheduling of survival | 1 |
|  | (0: at reproduction, 1: between reproductive events, |  |
|  | 2: annually) |  |
| FecDensDep | whether density dependent | TRUE |
|  | fecundity probability is modelled |  |
| DevDensDep | Whether density dependent | FALSE |
|  | development probability is modelled |  |
| SurvDensDep | Whether density dependent | FALSE |
|  | survival probability is modelled |  |
| DevDensCoeff | Relative density dependence | 1 |
|  | coefficient for development |  |
| SurvDensCoeff | Relative density dependence | 1 |
|  | coefficient for survival |  |
| FecStageWtsMatrix | Stage-dependent weights | Not selected. |
|  | in density dependence of fecundity |  |
| DevStageWtsMatrix | Stage-dependent weights | Not selected. |
|  | in density dependence of development |  |
| SurvStageWtsMatrix | Stage dependent weights | Not selected. |
|  | in density dependence of survival |  |
| PostDestrictn | Whether individuals of a population | FALSE |
|  | die (FALSE) or disperse (TRUE) |  |
|  | if its patch gets destroyed |  |
| ReproductionType | Decribes the reproduction type | 0 |
|  | (0: asexual/only female; 1: simple sexual model; |  |
|  | 2: sexual model with explicit mating system) |  |

Initialisation parameters

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| Parameter | Description | Values |
| InitType | Type of initialisation | 2 |
|  | (0: free initialisation according to habitat map, |  |
|  | 1: from loaded species distribution map, |  |
|  | 2: from initial individuals list file) |  |
|  | (0: random in given number of cells, |  |
|  | 1: all suitable cells/patches) |  |
|  | species distribution map (0: all suitable cells within |  |
|  | all distribution presence cells, |  |
|  | 1: all suitable cells within given |  |
|  | number of randomly chosen presence cells) |  |
| InitIndsFile | Name if the initial individuals list file | InitInds\_single.txt |
| InitDens | Number of individuals seeded in each cell/patch | 0 |
|  | (0: at demographic density dependence, |  |
|  | 1: at half of the demographic density dependence, |  |
|  | 2: according to quasi-equilibrium distribution) |  |
|  | (0: minimum age for the respective stage, |  |
|  | 1: random age between the minimum |  |
|  | and maximum age for the respective stage, |  |
|  | 2: according to a quasi-equilibrium distribution) |  |
| InitFreezeYear | Year until which species is | 0 |
|  | confined to its initial range limits |  |
| RestrictRows | Number of rows at northern | 0 |
|  | front to restrict range. |  |
| RestrictFreq | Frequency in years at which | 0 |
|  | range is restricted to northern front. |  |
| FinalFreezeYear | The year after which species is | 0 |
|  | confined to its new, current range limits, |  |
|  | after a period of range expansion. |  |

Simulation parameters

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| Parameter | Description | Values |
| Year | Number of simulated years | 100 |
| Replicates | Number of simulation iterations | 20 |
| Absorbing | Whether non-valid cells lead to direct | FALSE |
|  | mortality of the individual during transfer |  |
| LocalExt | Local extinction | FALSE |
| EnvStoch | Environmental stochasticity | 0 |
|  | (0: none, 1: global, 2: local) |  |
|  | stochasticity acts (0: growth rate/fecundity, |  |
|  | 1: demographic density dependence) |  |
| OutIntRange | Output of range file | 1 |
| OutIntOcc | Output of occupancy file | 1 |
| OutIntPop | Output of population file | 1 |
| OutIntInd | Output of individual file | 0 |
| OutIntConn | Output of connectivity file | 0 |
| OutIntPaths | Output of SMS paths file | 0 |
| OutStartPop | Starting year for output population file | 0 |
| OutStartInd | Starting year for output individual file | 0 |
| OutStartConn | Starting year for output connectivity file | 0 |
| OutStartPaths | Starting year for output SMS paths file | 0 |
| SMSHeatMap | Output SMS heat map raster file | FALSE |