Data repository metadata for the manuscript *Resource partitioning at different life stages alters competitive neighborhoods and observed community patterns.*

**/landscapes\_C** contains files with original abiotic value matrices for landscapes 1:20 used to simulate abiotically-mediated germination and competition (1.csv, 2.csv, …, 20.csv); a file specifying the points (3/landscape) where species curves intersect to define the range of abiotic conditions for which a focal species performs better than its heterospecific competitors (breakpoints.csv), and abiotic predictor variables as measured within small and large subunits across the 20 landscapes (smallpred.csv and largepred.csv).

**/code\_editedsumm2019/neutral** contains simulation output, and **/results** contains the R code used to analyze data

**/code\_editedsumm2019** contains matlab and data files for making landscapes and running simulations:

1. **get landscape pairs**
   1. getmultipleuncorrelatedlandscapepairs.m: specify landscape dimension and how many replicates to make. Also specify whether the random fractal algorithm should include successive additions, the input fractal dimension, how different output fractal dimension can be, how many landscapes to make in one go,and what the final standard deviation of abiotic conditions should be once landscapes are normalized, .
      1. uncorrelatedlandscapes.m (fxn): generates landscapes one at a time and screens them for using , and makes sure the abiotic mean and variance of subunits in a landscape do not have >.2 correlation with each other, or the mean and variance of subunits of the second abiotic factor.
         * createlandscapes.m (fxn): creates random fractals using the midpoint displacement method with successive additions (Palmer 1992).
           + diagonals (fxn) & offdiagonals (fxn): rotations used to fill in matrix values according to the midpoint displacement method.
           + diagnostics.m (fxn): calculates .
         * computemeanvar.m (fxn): calculates the mean and variance of abiotic conditions in all landscapes at all specified spatial scales
         * corrsfunction.m (fxn): determines correlation structure within and among abiotic conditions in all landscapes
      2. **output**
         * setsofuncorrelatedlandscapes.mat:
           + all\_landscapes: returns information on the landscape pairs after filtering out landscapes and landscape pairs with strong correlation between the mean and variance of any abiotic factor(s) (any ) or with more than away from .
   2. **simulate species interactions**
      1. getresults.m: specify number of replicate landscapes to use, initial conditions, how many generations to simulate, landscape and species parameters, and spatial scales at which to measure output. Also specify what assembly process to model, N (neutral), EF (environmental filtering), AMC (abiotically-mediated competition), or EF + AMC, which then specifies within the code whether species’ responses are independent of abiotic conditions or not during germination, competition, or both. Specify and standardize niche optima according to abiotic factors R and C.
         * getbreakpoints.m: calculate the abiotic conditions at which performance curves intersect for each replicated landscape to use as categorical “habitats”
         * neutAbaselines.m: calculate the average number of seeds produced by initial individuals of each species with a reproductive niche optimum = 0 along the abiotic factor A niche axis.
         * neutBbaselines.m: calculate the average germination probability and competitive ability of each species across replicated landscapes in combination EF + AMC simulations
         * simulationv2018.m:
           + {competition\_sym.m: first generation only}
           + reproduction\_dispersal.m:
           + germination.m:
           + {compenv.m: last generation only}
           + competition\_asym.m:

bigloop.m

whodies.m

* + - * + {calculateS.m: last generation only}
        + mortality.m:
        + {seedoutput.m: last generation only}:
        + {calculatefit.m: last generation only}
    1. **output**
       - simulation output is saved in the corresponding folder **code\_editedsumm2019/neutral/***dispersal type/per capita intersp dd/model* where *dispersal type* refers to simulations with adjacent (adj), intermediate (int), or universal (uni) dispersal; *per capita intersp dd* refers to simulations with (\_0\_5), (\_1\_0), or (\_1\_5); and *model* refers to simulations with neither environmental filtering nor abiotically-mediated competition (neutral, N), environmental filtering alone (EF), abiotitcally-mediated competition alone (AMC), both combined when abiotic factor (EF+AMC), and both combined when abiotic factor (EF#AMC).
         * .png files are point pattern maps of species distributions
         * .mat files are the original matrices of species data
         * .csv files include point pattern data in matrix form, as well as three files for species richness data recorded at microsite, small, and large spatial scales.

Palmer, M. W. 1992. The Coexistence of Species in Fractal Landscapes. The American Naturalist 139:375–397.