Estimates of seed production per reproductive basal area per year for 38 Barro Colorado Island tree species for the period 1993-2012.

S. Joseph Wright and Osvaldo Calderón

This seed production dataset contains information on total yearly seed captures and estimates of total reproductive basal area and seed production per mm^2 basal area for 38 tree species from Barro Colorado Island, Panama. Seed captures are observed in seed traps located in a stratified random manner along trails within the 50-ha Forest Dynamics Plot (FDP) on Barro Colorado Island, Panama (the southwest corner of the FDP is located at 625773 easting and 1011774 northing in UTM Zone 17). The 50-ha FDP is a 1000 by 500 meter rectangle in which all woody stems greater than 1 cm in diameter (at 1.3 meter height) have been identified and mapped (see dataset: DOI: 10.5479/data.bci.20130603). The total observed yearly seed rain (yearly flux of arriving seeds; column Seeds_year) was recorded in 200 0.5 m^2 seed traps and contains counts from January 1^{st} to December 31^{st} from 1993 to 2012. Seeds were identified to species and counted weekly (see Wright *et al.* 1999).

The total reproductive basal area (RBA_year) represents the sum of the stem area in that year (at 1.3 meter height) of all reproductive individuals within the FDP plot. RBA_year was calculated from the FDP tree census data (DOI: 10.5479/data.bci.20130603) in combination with the fitted logistic models (GLMMs with binomial error; see Visser et al, in press) that predict a size-dependent probability of reproduction. Models were fit to dataset 5 from Visser et al (in press), see "The Barro Colorado Island Tree Reproduction Dataset" for details (DOI: XXXXX). The logistic models predicted each individual's reproductive probability as a function of its size. Each individual's basal area is then weighted by its reproductive probability to calculate total reproductive basal area. Total reproductive basal area was interpolated between forest dynamics plot censuses (see dataset: DOI: 10.5479/data.bci.20130603).

Species-specific seed production (column sp_est; seeds per year per mm^2 of reproductive basal area) was quantified as the mean flux of seeds arriving (seeds per year per m^2 of trap area) divided by mean reproductive basal area density (mm^2 of reproductive basal area per m^2 of plot area). We used seed trap and tree census data from 1993 through 2010.

FILES

Yearly seed flux, reproductive basal area and seed production. The seed production dataset contain values for 38 species from Barro Colorado Island, Panama. Data can be found in **BCIseedproduction.csv**, a csv text file containing the data records on seed production described above. It contains the following columns.

Column

Species Species name

Seeds_year Total seed count, from January 1^{st} to December 31^{st} , for the corresponding year. There are 20 years and therefore 20 columns.

RBA_year Total estimated reproductive basal area within the FDP plot in that year. There are 20 years and therefore 20 columns.

sp_est seed production per year per mm^2 reproductive basal area (the mean of Seeds_year/RBA_year)

References

1.

Wright, S., Carrasco, C., Calderon, O. & Paton, S. (1999). The El Niño Southern Oscillation, variable fruit production, and famine in a tropical forest. *Ecology*.