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**Figure 1.** Investment in increased leaf area versus reproductive output (both on a year basis) for all reproducing individuals within the population. Panel (a) colours the individuals by species and panel (b) colours the individuals by age (in years). Note that leaf investment values are scaled as positive in these plots. See methods for details on the transformation. (*Lizzy: I can also create this figure using the same data as in Figure 2, where the data aren’t scaled – it results in some very odd RA values among individuals with negative leaf investment, especially those where leaf loss exceed reproductive input and RA becomes negative. Right now, for each species, the smallest (largest negative) leaf investment value for each species is added to all leaf investment values for that species. No transformation is done if all leaf investment values are positive Not at all sure about the best approach here. Also, I know legends are rudimentary right now.)*

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**Figure 2.** RA schedules for 14 study species. Grey boxes indicate ages at which a species is no longer present in the community. Lines indicate mean RA values for each species by age combination, where RA is calculated are the proportion of energy going to reproduction (versus increased leaf area). (*Lizzy – note the means sometimes seem high, because there are RA values that would plot off the top of the chart, due to negative leaf investment values, some individuals have very high RA values – and others have negative RA values. Not sure how to deal with this. Maybe reassign them a fixed value (?1.5) for the purpose of plotting. Alternatively use the “scaled” values I have in figure 1. Also, in the end, we might want to sort individuals non-alphabetically for easier visual groupings.*)

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**Figure 3.** Correlations between maximum RA, calculated as the mean RA of species at the two oldest sites on which they occur\*, and a selection of demographic and functional traits.

\* For PEPU, the mean RA of the three oldest sites is used, since this species shows declining RA at the older sites.

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**Figure 4a.** Investment in leaves (closed circles) and reproductive material (open circles) across different sized individuals of 14 species over a 1 year period. Negative values indicate that total leaf mass on the plant declined year-upon-year, as more leaves were shed than were replaced by new growth. (*Suspect this is better appendix material, but an interesting plot to stare at.)*

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**Figure 4b.** Leaf area for the 14 study species across their lifetimes. Grey boxes indicate ages at which a species is no longer present in the community. Lines indicate means. (*Lizzy: I also have data on leaf area for 1 month old seedlings. Not sure if this would add anything beyond squishing the rest of the data into a small portion of the figures.)*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| species | | maximum RA (based on leaf area) | | lifespan (years) | | age at maturity (years) | | embryo + endosperm weight (mg) | | maximum height (mm) | | LMA | | wood density | |
| BAER | | 0.66 | | 40 | | 7.0 | | 24.06 | | 2790 | | 0.0224 | | 0.59 | |
| BOLE | | 1.52 | | 9 | | 1.4 | | 2.10 | | 770 | | 0.0159 | | 0.86 | |
| COER | | 0.79 | | 12 | | 2.4 | | 0.69 | | 990 | | 0.0206 | | 0.79 | |
| EPMI | | 0.91 | | 40 | | 2.4 | | 0.02 | | 1370 | | 0.0122 | | 0.73 | |
| GRBU | | 1.23 | | 30 | | 5.0 | | 26.70 | | 1365 | | 0.0146 | | 0.73 | |
| GRSP | | 1.37 | | 20 | | 2.4 | | 13.48 | | 1000 | | 0.0169 | | 0.74 | |
| HATE | | 0.62 | | 40 | | 7.0 | | 8.18 | | 3005 | | 0.0516 | | 0.57 | |
| HEPU | | 1.06 | | 20 | | 1.4 | | 0.30 | | 703 | | 0.0205 | | 0.83 | |
| LEES | | 0.98 | | 40 | | 2.4 | | 0.81 | | 985 | | 0.0129 | | 0.79 | |
| PELA | | 0.62 | | 40 | | 9.0 | | 14.39 | | 2140 | | 0.0203 | | 0.67 | |
| PEPU | | 0.30 | | 40 | | 7.0 | | 2.21 | | 2010 | | 0.0297 | | 0.66 | |
| PHPH | | 1.00 | | 30 | | 2.4 | | 1.71 | | 1630 | | 0.0174 | | 0.85 | |
| PILI | | 1.26 | | 7 | | 1.4 | | 0.72 | | 542 | | 0.0086 | | 0.84 | |
| PUTU | | 1.29 | | 30 | | 2.4 | | 1.27 | | 1420 | | 0.0101 | | 0.89 | |

**Table 1.** Species means for maximum RA and a collection of demographic and functional traits. Lifespan is the approximate age at which each species disappears from the community through mortality. 40 years is indicated as the maximum age of climax species, due to the high probability that are killed by fire by this age. Age at maturity is the site age at which the majority of individuals of a species begin reproducing. Embryo-endosperm weight, LMA, and wood density are all measured on a collection of other individuals at nearby locations. Maximum height is the height of the tallest individual in this study.

EXTRA FIGURES – not necessarily in manuscript



**Extra figure.** Plots of changes in yearly shoot leaf area growth as plants age.

Figure EXTRA. RV curves