

Figure S1: (A) Heat map (blue) of observed $\log(A_L:BA)$ vs $\log(\text{Height})$ for 9585 plants in the BAAD database (Falster et al. 2015), with fitted values (red points) from a linear mixed effects model with random intercepts for family, genus and species and linear $\log(\text{Height})$ fixed for each species (and a fixed covariate for whether $A_L:BA$ was calculated from sapwood area at DBH, basal sapwood area, basal area alone or basal area at DBH alone). $\log(\text{Height})$ explained 28.7% of the total variance in $\log(A_L:BA)$ after controlling for how $A_L:BA$ was calculated. (B) Histogram of within-species scaling slopes of $\log(A_L:BA)$ with $\log(\text{Height})$. Median slope = -0.089, IQ Range = [-0.40,0.27].

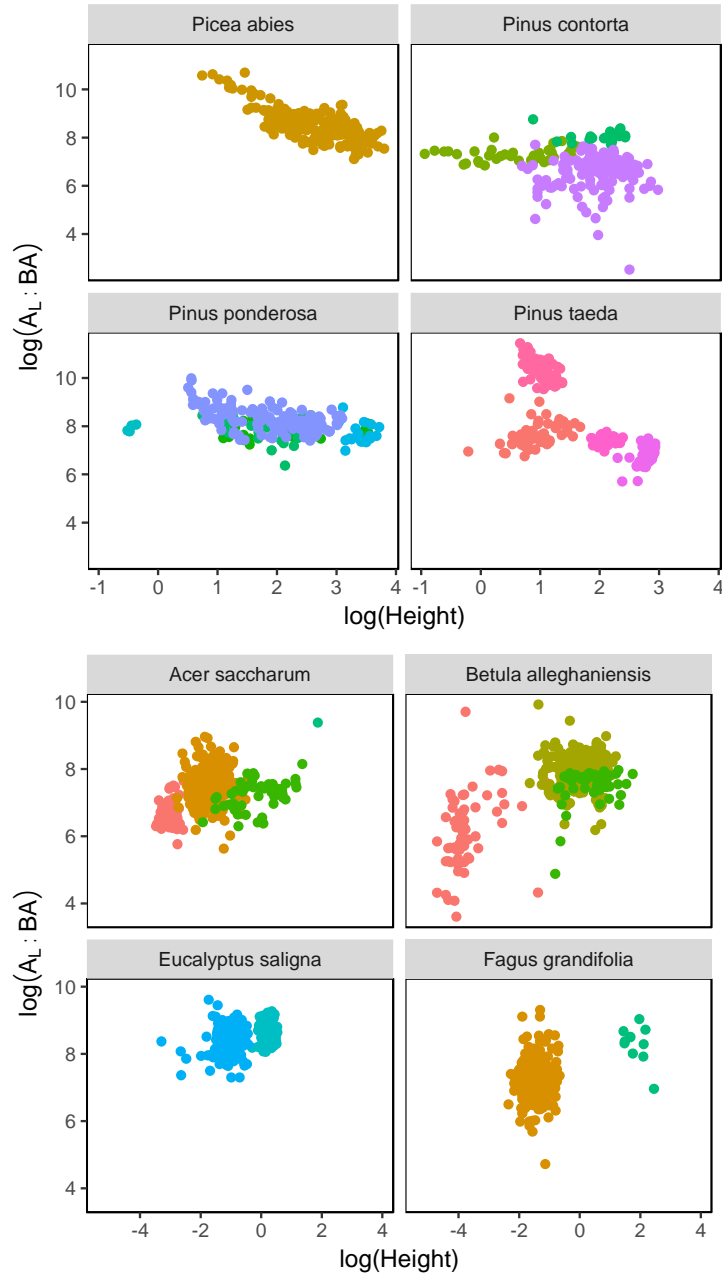


Figure S2: The relationship between $\log(A_L:BA)$ and $\log(\text{Height})$ for the four most common gymnosperm species (top four panels) and four most common angiosperm species (bottom four panels) in the BAAD database (Falster et al. 2015). Colors indicate different studies. Based on these within-species patterns of allocation as a function of tree size, we concluded that a linear functional form was likely to capture the (often weak) relationships of $\log(A_L:BA)$ with $\log(\text{Height})$.