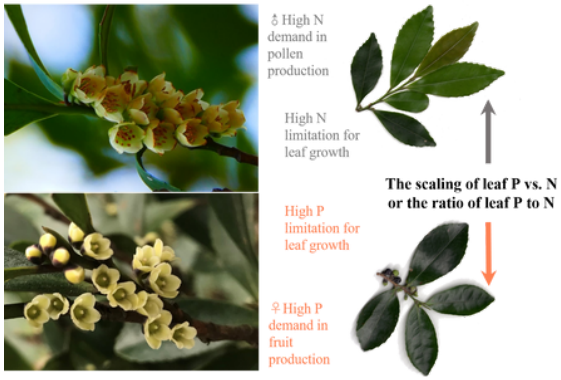
Highlighted Articles for April 2024

Remote-sensing data allows high species-level classification accuracy for northern temperate trees

Florence Blanchard et al.. 2024. Foliar spectra accurately distinguish most temperate tree species and show strong phylogenetic signal. *American Journal of Botany* https://doi.org/10.1002/ajb2.16314

Remote sensing technologies allow for widespread detection of species and functional traits through spectral reflectance of leaves, helping to characterize ecosystem function and change at large scales. However, most studies exploring species identification focus on a limited set of species. **Blanchard et al. used spectral measurements from over 800 trees in a regional tree species pool for identification at the species level, and they explored the contribution of underlying functional and phylogenetic distinctiveness to classification accuracy.** The authors found a high classification accuracy for most species. Although some mistakes were present at higher taxonomic levels, errors were more frequent among closely related species with reflectance showing strong phylogenetic signal. **This study provides encouraging results for the application of remote-sensing data to landscape-level biodiversity assessments and response to global change while providing key insights for advancing our understanding of misclassifications.**

Leaf phosphorus vs. nitrogen in dioecious plants: a hidden dimension of secondary sexual characters

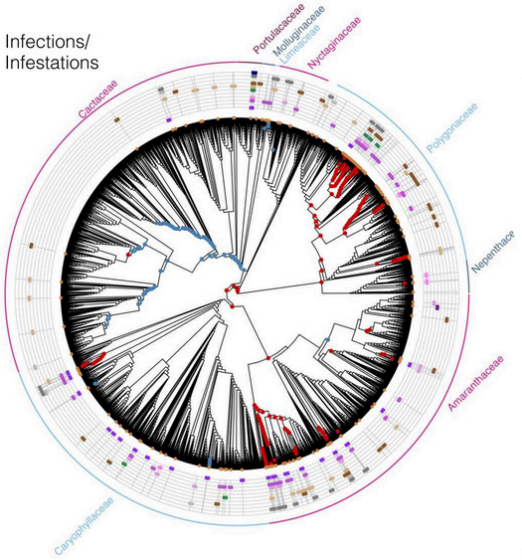


Dong He et al. 2024. Sex-specific scaling of leaf phosphorus vs. nitrogen under unequal reproductive requirements in *Eurya japonica*, a dioecious plant.. https://doi.org/10.1002/ajb2.16311

Sex-specific reproductive resource requirements in dioecious species can result in functional specialization and divergence along multiple avenues including trait means, trait covariance structures, or trait scaling (i.e., the ratio of proportional changes in co-varying traits). Yet, whether trait scaling differs between sexes in dioecious plants, along with its functional significance, remains unclear. Among the convergent scaling relationships for many co-varying traits pertaining to carbon, water, and nutrient economics, **He et al. showed that the scaling for leaf phosphorus (P) vs. nitrogen (N) was steeper in males than in females in the dioecious plant *Eurya japonica*.** The divergent scaling of P vs. N was likely due to P-consuming fruit production resulting in elevated P limitation for female vegetative growth. **This study uncovers a hidden dimension of secondary sex characters with respect to trait scaling in dioecious plants and highlights the link between intersexual divergence in vegetative functions and reproductive resource requirements.**

Proximity to humans is a better predictor of medicinal use than chemistry in the order Caryophyllales

A significant portion of the world's population relies on medicinal plants. The specialized metabolites they produce underpin their medicinal effect and are of interest to pharmaceutical development. Previous studies have identified phylogenetic patterns in both traditional medicinal use and specialized metabolism, suggesting that closely related species with similar metabolites would have similar medicinal use. **Using an approach that combines phylogenetic, metabolic, and global use information, Crum et al. used the plant order Caryophyllales as a case study to explore the link between specialized metabolism and traditional medicinal use.** Surprisingly, rather than the type of medicinal use being correlated with the dominant specialized metabolic pathway, **a species' potential to be seen and interacted with by humans is a better predictor of any type of medicinal use,** with the same groups of commonly occurring plants in Amaranthaceae and Polygonaceae being used in cultures across the globe.



Alex H. Crum et al. 2024. Traditional medicinal use is linked with apparency, not specialized metabolite profiles in the order Caryophyllales. *American Journal of Botany* https://doi.org/10.1002/ajb2.16308