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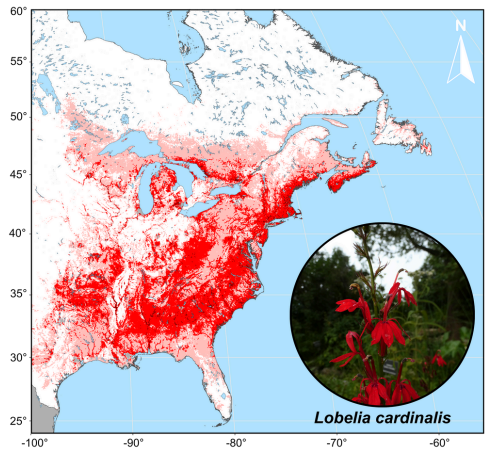
Highlighted Articles for May 2025

Karst tiankengs: Natural laboratories for plant adaptation in a changing climate

This study explores how the unique environment of karst tiankengs—giant sinkholes in South China—influences the evolution and traits of plants in tribe Laureae, a species-rich group in Lauraceae, and a dominant group in these ecosystems. **Using genomic and paleoclimate analyses, Dai et al. trace how historical events such as the uplift of the Qinghai-Tibet Plateau shaped plant dispersal and evolution.** By comparing plants inside and outside tiankengs, the authors find that environmental factors—particularly colder microclimates—rather than phylogenetic relationships, drive significant differences in leaf traits, such as smaller leaf length-to-width ratios. **Their adaptations suggest that tiankengs act as storehouses of plant species, preserving biodiversity amid climate change, underscoring an urgent need to protect these fragile karst habitats, which provide invaluable insights into plant resilience and adaptation in isolated environments.**

Yuxin Dai et al. 2025. Phylogenetic relationships versus environmental impacts on the distribution and traits of Laureae (Lauraceae) species within and outside karst tiankengs. *American Journal of Botany* https://doi.org/10.1002/ajb2.70032

A surprisingly weak association between the distribution of the cardinal flower and its only known pollinator, the ruby-throated hummingbird

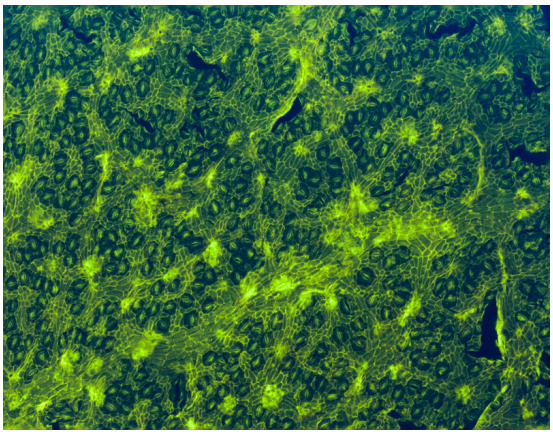


Matthew Coffey and Andrew Simons. 2025.The spatial distribution of a hummingbird-pollinated plant is not strongly influenced by hummingbird abundance. *American Journal of Botany* https://doi.org/10.1002/ajb2.70034

When the mating success of a plant depends on one or a few pollinators, the location and abundance of those pollinators may be a strong determinant of where the plant species can occur. The only known pollinator of *Lobelia cardinalis* (the cardinal flower) in eastern North America is the ruby-throated hummingbird (*Archilochus colubris*)—the sole hummingbird species present in the region. **In this study, Coffey and Simons found that while *L. cardinalis* occurs in areas where *Archilochus colubris* is also present, local hummingbird abundance, sourced from eBird models, had relatively low importance in the predicted species distribution model for the plant.** Although flowering timing coincides with peak local hummingbird abundance, and *L. cardinalis* occurs in regions of higher abundance compared to congenerics, other habitat features such as the presence of nearby water bodies and woodland areas were more important spatial predictors. **Thus, these results suggest that the local magnitude of hummingbird abundance is surprisingly not a strong predictor of optimal habitat space for *L. cardinalis,* highlighting the importance of deeper investigations into the role of plant-pollinator mutualisms in driving spatial distributions.**

An endangered tropical tree species found in the Borneo fossil record

Wang et al. report the discovery of Plio-Pleistocene leaves from Brunei Darussalam of the endangered giant dipterocarp species *Dryobalanops rappa*, which is still extant in the rapidly disappearing peat swamps of northern Borneo. The leaves preserve in situ cuticles, allowing a comprehensive analysis of microscopic and macroscopic characters supporting the identification. **The finding represents a rare paleobotanical record from the Asian wet tropics and the first fossil evidence of any living endangered tropical tree species, highlighting how paleobotanical records can inform conservation efforts by revealing the antiquity of threatened species and their associated ecosystems.**



Teng-Xiang Wang et al. 2025. Fossils of an endangered, endemic, giant dipterocarp species open a historical portal into Borneo's vanishing rainforests. *American Journal of Botany* https://doi.org/10.1002/ajb2.70036

It is time to return plant morphology to the Ecology portfolio

Jitka Klimešová et al. 2025. Morphological knowledge in plant ecology and why it matters. *American Journal of Botany* https://doi.org/10.1002/ajb2.70043

Trait-based ecology, inspired by the seminal work of Mark Westoby in 1998, uses well-defined and easy-to-measure morphological traits as a proxy for function. The most common traits used for this purpose are acquisitive traits of leaves and fine roots. After a quarter century of functional ecology research, this restricted focus on a few easily measurable traits has provided important insights for ecologists, allowing them to make broad comparisons across ecosystems or continents, and freeing them from the "burden" of dealing with the diversity of whole-plant growth forms. However, this reductionistic approach, which has facilitated unprecedented large synthetic studies of plant form and function in response to challenges of resource availability, has at the same time sidelined functionally relevant information that requires morphological knowledge that is not captured by these widely adopted traits. **In this *On the Nature of Things* essay, Klimešová et al. contend that the absence of a broader spectrum of morphological data has likely substantially hindered our understanding of plant function in multiple areas, including clonal multiplication, resprouting ability, and plant phenology.**