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Highlighted Articles for November 2025

Native Hawai'ian blueberries originated from Northeast Asia

Geographic isolation, a well-understood geological history, and high levels of biodiversity and endemism make the Hawai'ian Islands an unparalleled stage for evolutionary studies examining the mechanisms driving plant diversification and adaptation in island systems. **Becker et al. investigated the geographic origin of Hawai'ian blueberries ('ōhelo), which grow on most of the archipelago's major islands, with phylogenetic and biogeographic analyses of an extensive high-throughput DNA sequence dataset of 'ōhelo and putative mainland relatives.** They found that Hawai'i's blueberries most likely came from Northeast Asia, a rare area of origin for the Hawai'ian flora. They infer that the lineage arrived first to the oldest island of Kaua'i ca. 5–7 million years ago, close to the time of its emergence from the sea. In addition, they infer a later dispersal of blueberries from Hawai'i to the islands of Southeastern Polynesia, where they hybridized with a distant relative. They also suggest a subsequent rare back-dispersal from the islands to a mainland continental region, in this case western North America. **Based on the long period of existence of 'ōhelo in the islands, field observations, and ongoing study of museum specimens, the researchers propose that there could be six times as many 'ōhelo species as the three currently recognized.**

*[Image: An 'ōhelo plant (*Vaccinium reticulatum*) growing on Hawai'i Island. Photo by Anna Becker.]*

Anna Becker et al. 2025. The spatiotemporal origin of Polynesian blueberries (*Vaccinium*). *American Journal of Botany* https://doi.org/10.1002/ajb2.70113

Not so clumsy after all: chafer beetles are effective pollinators of a rare African orchid

Steven Johnson et al. 2025. Floral specialization for beetle pollination and its implications for pollen dispersal in an African orchid. *American Journal of Botany* https://doi.org/10.1002/ajb2.70117

Fruit chafer beetles are usually considered clumsy and inefficient pollinators. Their role as pollen vectors is poorly documented, and they have only rarely been recorded as pollinators of orchids. **Johnson et al. investigated the pollination system of a rare South African *Disa* orchid, which flowers only after fire, and has unusual upward-facing, bowl-shaped flowers in a platform-like arrangement.** The flowers have a strong fruity scent that the authors characterized chemically. They also found that dilute nectar is secreted as a film on the surface of the purple tips of the petals, and that this nectar is consumed by the chafer beetles. The beetles transfer pollen packages (pollinaria) in *Disa*, and by color-labeling pollen with histochemicals, they were able to track pollen movement within the population. Surprisingly, given that beetles have not been considered to be precise pollinators, a substantial percentage of the pollen that the beetles remove from flowers is exported to stigmas on other plants of the same species. **This provides strong evidence of floral specialization for beetle pollination in *Disa*, and demonstrates that beetles can be highly effective pollinators.**

[Image: Flowers of the African orchid D. elegans *are adapted for pollination by chafer beetles.]*

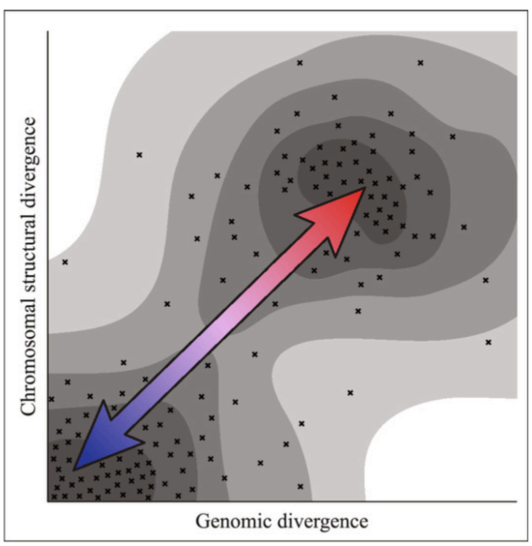
Swaying saguaros: nondestructive testing to assess and monitor cactus stem biomechanical properties

Efforts to predict the response of tall columnar cacti to extreme events, such as wind, require description of material and dynamic properties, including flexural stiffness and resonance frequencies. However, most methods to derive these parameters typically involve destructive testing. **Moore presents a new approach for biomechanical characterization based on nondestructive ambient vibration sensing and modal analysis of seismic data.** Using a lightweight seismometer temporarily mounted to saguaro stems, the author was able to retrieve key material and dynamic properties, for example, describing the change in overall stiffness with stem height across the sample population, and quantifying the variability in stiffness with height for a single stem. Monitoring of resonance frequencies over time also provided insights into how these biomechanical properties changed with environmental conditions. **Thus, this non-destructive methodology could be particularly useful for detecting changing mass or tissue stiffness through diurnal cycles or in response to extreme events.**

[*Image: A seismometer is shown measuring the ambient resonance of a single-stem saguaro cactus in the Tucson Mountains in Arizona. The seismometer is a white box ~15 cm across, sitting on a mounting frame strapped to the cactus. This provides a new nondestructive technique for biomechanical characterization that can be applied in-situ on living cacti. The monitoring of resonance properties over time may also provide valuable information on changing structural properties and/or cactus weight.*

Jeffrey Moore. 2025. In situ ambient vibration modal analysis of saguaro cacti *(Carnegiea gigantea)*. *American Journal of Botany* https://doi.org/10.1002/ajb2.70116

Exploring plant evolution across the polyploid continuum



Alex Twyford et al. 2025. The polyploid continuum and the landscape of polyploid genomic variation. *American Journal of Botany* https://doi.org/10.1002/ajb2.70121

Polyploidy (whole genome duplication) is widespread in plants and is known to be a major driver of genome evolution. **In this review article, Twyford et al. explore the concept of the "polyploid continuum," in which polyploids occupy a position along a spectrum defined by how their genomes originate, pair, and interact through time.** Unlike the binary classification of autopolyploids and allopolyploids, the polyploid continuum provides a more flexible framework for evolutionary analyses, capturing the dynamic nature of polyploid genomes as they undergo changes in sequence and structure after duplication. **As high-quality polyploid plant genomes become available, the polyploid continuum will provide an evolutionary framework for identifying general principles of polyploid genome evolution relevant to wild plants and many major crops.**

[Image: Illustration of the dynamic nature of polyploid genomes, where genotypes (crosses) vary in multiple aspects of their genome sequence, and may transition between the classically recognized alternative endpoints characteristic of autopolyploids (blue) and allopolyploids (red).]