intercontinental disjunctions. The northern hemisphere *Ampelopsis* is most closely related to the South American *Cissus striata* complex and the African *Rhoicissus*.

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**The demise of *Peucedanum* (Apiaceae) in Africa**

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A new classification for 61 African species hitherto treated as *Peucedanum* is presented. Two monotypic genera, *Afroligusticum* and *Cynorhiza*, are expanded, while a third, *Erythroselinum*, is reduced to *Lefebvrea*, to which in addition, eight species previously in *Peucedanum* have been allocated. Three new genera, *Afrosciadium* P.J.D. Winter *gen. nov.* (18 spp.), *Nanobubon* A.R. Magee *gen. nov.* (2 spp.), and *Notobubon* B-E van Wyk *gen. nov.* (12 spp.) have been proposed, and all six genera will be discussed, with implications for the future taxonomy of these groups. As part of an ongoing study of these genera, the three that occur widely in the rest of Africa though are absent from the Cape Floristic Region, are currently under revision. The southern African representatives of *Lefebvrea* (1 sp.), *Afroligusticum* (2 spp.) and *Afrosciadium* (4 spp.) are discussed i.t.o. distinguishing features and biogeographical aspects. Distribution maps are presented for each taxon. Species delimitation in a group of 3 closely related *Afrosciadium* spp. is addressed.

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**A risk assessment method to determine the impact of the herbal medicinal trade**

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Over-exploitation of plants for the traditional medicine trade has become a deterministic factor in the extinction risks to certain species, especially species that are in high demand and are important to the livelihoods of rural communities. Notable declines in abundance and extent of occurrence have occurred. The aim was to design a risk assessment model to evaluate the impact of the medicinal plant trade by incorporating trade and biological variables correlated with harvesting risks to predict the most threatened species. The method explored the use of a multivariate methodology for assessing extinction risks and assigning species to various hierarchies of risk and conservation priority. Hierarchical and non-hierarchical cluster analysis methods were found to be effective in assigning species to clusters of similar risk and conservation priority. From a list of 392 'ethnospecies' recorded in Johannesburg *muti* shops and the Faraday market, a short-list of 87 higher-risk species was identified using four to five trade variables. From this list, 31 species were identified as having higher conservation priorities following the inclusion of seven biological variables in the model. These species would thus be candidates for further research, protection and Red Listing.

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**Experimental evidence for a shift from wind to insect pollination in the sedges (Cyperaceae)**

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★ Awarded the prize for best overall oral presentation by a Young Botanist
★ Awarded the prize for best oral botanical presentation by a MSc/Honours student

The shift from wind to insect pollination was a key transition in the early evolution of flowering plants. Several lineages have subsequently reverted to wind pollination, in association with loss of floral attractants (bright colour, floral scent) and rewards (nectar). Here we present the first experimental evidence for a switch back to insect pollination in one of these wind-pollinated lineages, the family Cyperaceae. We focused on *Cyperus obtusiflorus* var. *obtusiflorus* in the KwaZulu-Natal coastal grasslands. Gametophytic self-incompatibility was demonstrated using a controlled hand-pollination experiment. Flowers from which insects, but not wind, were excluded showed a significant 98% reduction in seed set compared to open pollinated controls, indicating that insect pollination was more important than wind pollination. Bees, beetles and flies visited the white, scented inflorescences of *C. o.* var. *obtusiflorus* more often than the brown, unscented inflorescences of the co-flowering, wind-pollinated *Pycreus oakfortensis* (nested within *Cyperus*). Colour was more important than scent in attracting insects to artificial inflorescences: white artificial inflorescences attracted more insects than brown ones, but those mimicking the scent of *C. o.* var. *obtusiflorus* with a blend of ocimene, linalool, benzyl alcohol and phenylethyl alcohol were no more attractive than unscented controls. In a wind tunnel, wind transported pollen of *P. oakfortensis* more effectively than pollen of *C. o.* var. *obtusiflorus*. Thus, there appears to be a tradeoff between effectiveness of insect pollination and effectiveness of wind pollination in these sedges.

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**The physiological importance of small leaf sizes in the Mediterranean-type ecosystem vegetation of the Cape Floristic Region**

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Numerous "Fynbos" species of the Cape Floristic Region (CFR) have particularly fine, narrow leaves. Rates of transpiration and heat loss are partially dependent on boundary layer conductance, which is determined by leaf shape, size, surface modifications and wind speed. We expected narrow-leaved species with higher boundary layer conductance to transpire faster at low temperatures than broad-leaved species, whereas at higher temperatures we expected transpiration to be limited by stomatal conductance. Furthermore the rate of heat loss may be constrained by thicker boundary layers in broad-leaved species at high temperatures. Leaf gas exchange characteristics at various temperatures were correlated with boundary layer thickness and leaf area for 14 CFR Proteaceae species using phylogenetically independent contrasts. Water loss decreased significantly with increasing leaf size, and thus boundary layer thickness, at both 12° and 30 °C. At 30 °C, narrow leaves with thin boundary layers had leaf temperatures 3.4 °C lower than those of broad leaves. Such a small variation in leaf temperature is unlikely to alter temperature-dependent physiological processes. We conclude that the small boundary layer associated with narrows leaves enables higher transpiration rates when water is plentiful. This may be a particularly important strategy for Mediterranean ecosystem species that take up most of their nutrients in the wet winter months from nutrient-poor soils. We suggest that narrow leaves are an adaptation for nutrient uptake during winter, although they may also have the benefit of improved coupling of leaf to ambient temperature during the summer drought period.

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