

few species where accurate abundance and distribution over time exist will also be presented.

doi:10.1016/j.sajb.2007.02.106

### Aerial or substrate salinity: Does it matter?

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The effect of saline spray and saline irrigation on the growth and chemical composition of two varieties of *Di-delta carnososa* (an indigenous West coast daisy) was studied. Variety *tomentosa* is largely littoral, and variety *carnososa* mainly distributed inland. Plants were grown under greenhouse conditions and subjected to nine treatments that resulted from the combination of three levels of saline spray, and three of saline irrigation: 0, 10 and 90% seawater were used. Growth was reduced at high salinity, but stimulated at 10% sea water concentrations. There were variations in element concentrations with treatments. However, for these plants, aerial or root applied salinity made very little difference overall, and are not sufficient on their own to explain distribution patterns.

doi:10.1016/j.sajb.2007.02.107

### Bark anatomical descriptions of *Lannea schweinfurthii* var. *stuhlmannii* (Engl.) Kokwaro

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Bark samples of *Lannea schweinfurthii* were collected, provided that they displayed a mature bark pattern. Bark samples were taken at breast height from mainly vertical boles in South Africa. Incisions were made up to cambium or just beyond it. The harvested bark samples were immediately fixed and preserved in formalin-acetic acid-alcohol (FAA, Johansen 1940) contained in numbered bottles. Bark samples were collected from at least three individuals per natural stand, to assess variation and consistency of bark characters. After bark samples were fixed for at least 48 h in FAA, standard procedures for wood anatomy were used to prepare bark slides for the light microscope. Anatomical features were studied in transverse, radial and tangential section. Care was taken to make tangential sections in the portion before the dilatation zone. In this study, the DELTA computer

programme was used for taxonomic descriptions. This was one species of the 29 species representing ten genera of the southern African Anacardiaceae. The conclusion arrived at was that bark anatomical descriptions of *Lannea schweinfurthii* can be employed successfully to separate the species from the rest in the family.

doi:10.1016/j.sajb.2007.02.108

### *Ophiostoma* species from *Protea* infructescences: Four way interactions between plants, fungi, mites and beetles

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Species of *Ophiostoma* include some of the world's best known fungal pathogens of trees. Most members are vectored by arthropods. One of the most unusual niches in which *Ophiostoma* species have been found is within the infructescences of *Protea* species in South Africa. Recent molecular phylogenetic reconstructions on *Ophiostoma* s.l. suggested that the three *Ophiostoma* spp. specifically found in *Protea* infructescences, form a strongly supported monophyletic lineage within *Ophiostoma* s.s. In this study, new collections of *Ophiostoma* from *Protea* infructescences were subjected to molecular phylogenetic reconstructions based on large subunit, ITS and beta-tubulin sequence data. Using these techniques, at least five undescribed species of *Ophiostoma* have been identified from these plants. Intriguingly, our results also suggest a polyphyletic origin for the *Protea*-associated *Ophiostoma* spp. This indicates multiple invasions of this unusual niche, by these fungi. Our results also revealed the first case of an *Ophiostoma* sp. jumping hosts between a native *Protea* sp. and the non-native tree genus *Eucalyptus*. The second aim of this study was to identify putative vectors of the *Ophiostoma* spp. inhabiting *Protea* infructescences using both molecular and direct isolation methods. The presence of reproductive propagules of *Ophiostoma* spp. was confirmed on four *Protea*-associated mite species (*Oodinychus* sp., two *Tarsonemus* spp. and *Proctolaelaps vandenbergi*) at high frequencies. The *Oodinychus* sp. mite showed significantly higher reproductive rates when fed exclusively on *Ophiostoma splendens* than when it was fed on various other fungi. This suggests a mutualistic association between the *Oodinychus* sp. and *O. splendens*. Long distance dispersal of these mites was restricted to vectored dispersal via *Protea*-infructescence inhabiting beetles (e.g. *Genuchus hottentottus*). Mites collected from