Towards a taxonomic revision of the Thuidiaceae in Africa and the East African Islands

N. Phephu
SANBI, Private Bag X101, Pretoria 0001, South Africa

According to O'Shea (2006) the Thuidiaceae consists of 19 genera and more than 150 species worldwide. Seven genera, namely *Abietinella, Haplocladium, Hylocomiopsis, Pelekium, Rauiella, Thuidiopsis* and *Thuidium*, comprising 29 species, are reported to occur in Africa and the East African Islands. Of these, 22 species occur in the sub-Saharan region. The taxonomy of the Thuidiaceae in Africa lags behind that in other parts of the world. Touw (1976) revised the African Thuidiaceae with emphasis on three major genera (*Thuidium, Pelekium* and *Rauiella*) and drew attention to the large diversity of this poorly studied group. Thuidiaceae is a pleurocarpous family that is generally characterised by regularly 1-3 pinnately branched stems, the presence of paraphyllia, differentiated stem and branch leaves that are ovate-acuminate or triangular-deltoid. The main objective of this study is to address the morphological, anatomical, geographical, and molecular attributes and distinctions within the Thuidiaceae family.

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Does phosphate acquisition constrain the persistence of legumes in the Cape Floristic Region?

S.C. Power, S.B.M. Chimphango, M.D. Cramer, G.A. Verboom
Department of Botany, University of Cape Town, Private Bag X1, Rondebosch 7701, South Africa

★ ***Awarded the Van Staden Prize for best paper by a MSc student***

Members of the Fabaceae are often dominant in early post-fire succession in the Cape Floristic Region (CFR); however, they comprise a small proportion of the late successional floral diversity. We hypothesized that the diminishing legume component of the flora could be due to an inability in acquiring P from largely insoluble forms. We compared biomass accumulation, mycorrhizal colonization and the formation of root specializations for P acquisition (cluster and capillaroid roots) between legumes (*Aspalathus*, *Cyclopia*, *Indigofera*, *Podalyria*) and non-legumes (*Elegia*, *Leucadendron*, *Protea*) from the CFR. The plants were supplied with either 5 or 50 mg kg^{-1} of $CaPO_4$/$FePO_4$ in a glasshouse study. Growth of the legume species responded 52% more to increased P availability than did that of the non-legume species. Shoot: root biomass ratios of legumes averaged 2.2 while those of the non-legumes were 1.2. Legume species exhibited 37% and 25% mycorrhizal colonization at 5 and 50 mg kg^{-1} P, respectively. No mycorrhizae were observed on the non-legumes. There were cluster roots in the *Leucadendron* and *Protea* species and the *Elegia* species had capillaroid roots. However, only *A. nivea* and *A. subtingens* of the legumes had cluster roots, and these comprised a significantly smaller proportion of the root than was the case in the non-legumes. Concomitant with this, legume tissue P concentrations (0.086%) were higher than those of the non-legumes (0.047%). We concluded that although legumes were able to acquire P from sparingly soluble sources, they also required significantly more P than did non-legumes. Thus the diminished availability of P in the late successional environment may explain the lack of persistence of legumes.

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The effects of man-made modifications on plant communities in a wetland setting

M.L. Pretorius, G.J. Bredenkamp
Department of Plant Science, University of Pretoria, Pretoria 0002, South Africa

Wetlands are one of the most threatened habitats in the world, and are generally underestimated in the services they provide. Overexploitation of these resourceful environments, as well as ignorant development and mining, has resulted in a startling 80% of wetland loss in Gauteng. The area of study lies in the Boekenhoutskloof area just north of Cullinan. This area houses the Crocodile River catchment, and is the source of many seasonal and permanent wetlands. The area with its deep, sandy soils and abundant water sources is under constant threat by sand-mining industries and large-scale developers. These land-use practices are known for their detrimental, degrading effects it has on the biodiversity of fluvial environments. Two floodplain type wetlands on the opposite ends of the disturbance continuum were compared in terms of their plant communities. Wetland A represents a pristine environment with relatively no disturbance or human activity, where plant communities were observed to be homogenous and structured. Wetland B is located in an area where extreme modifications of the environment surrounding the wetland, as well as to the wetland itself took place. The communities of these two wetlands are evaluated in terms of their total abundance of species, species richness and Shannon diversity index by running analyses in JUICE 6.5 and PCORD. It is expected that the effects of the anthropological modifications to wetland B will be projected through the combination of plant communities present, and will stand in direct contrast to the community assembly of the pristine wetland A.

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Role of floral scent in promoting the co-occurrence of two pollinating wasps in *Ficus natalensis natalensis* in the KwaZulu-Natal (South Africa)

M. Proffit[a], A. Cornille[a,b], M. Hossaert-McKey[b], S.D. Johnson[a]