longer lifespan, and also reduces nutrient demand through slower leaf turnover. Currently much interest is directed to a complex of trade-offs in stem construction, including conductivity, embolism resistance, wood density, pace of height growth, and persistence of tall stems over time. Low wood density is also correlated with larger leaves and twigs, for unclear reasons. Through informal collaboration, datasets for these traits are developing towards world coverage and towards thousands or tens of thousands of species. So models about how costs, benefits and competitiveness of a trait vary along physical-geography gradients are increasingly able to be applied to explaining the major world patterns of vegetation. Also, the evolution of the present-day spread of a trait can be mapped with increasing resolution onto the phylogenetic history of seed plants. Still, most ecological traits vary widely across species within sites. In other words, the traits must express different styles of making a living among coexisting species, at least as much as adaptation to different environments.

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Papers

Nitrogen-limitation causes differential allocation of growth in C_3 and C_4 subspecies of *Alloteropsis semialata*

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The greater photosynthetic nitrogen use efficiency (PNUE) of C_4 compared with C_3 plants may explain the relative success of C_4 grasses in nutrient poor environments. This study compared the responses in photosynthetic parameters, leaf nitrogen and biomass allocation between C_4 *Alloteropsis semialata* subsp. *semialata* and C_3 *A. semialata* subsp. *ecklonianа* supplied soil nitrogen at a range of levels. These were chosen to represent nitrogen mineralization rates in nutrient rich and poor savannah soils. Subspecies were grown separately in pots and supplied three levels of nitrogen 0, 3.5 and 7 g m^{-2} yr^{-1}. Photosynthesis was assessed after 12 weeks by means of A/Ci curves and the leaf nitrogen content assayed. After 23 weeks the plants were harvested, leaf areas determined and the dry biomass of plant components was measured. Results confirm that the higher PNUE of C_4 plants allowed them to accumulate more biomass than C_3 plants at the high nitrogen level, despite smaller leaf areas. This was due to higher photosynthetic rates and a lower SLA and LAR. The greater productivity of C_4 plants enabled them to invest more in storage and reproductive structures than in leaves when compared to the C_3 plants. In contrast the C_3 plants invested biomass in less efficient and nitrogen demanding leaves and bigger root systems. The C_3 subspecies produced more tillers than the C_4 plants, possibly indicating a predominance for vegetative reproduction. PNUE and photosynthetic rates were not significantly affected by low nitrogen in either subspecies and the major response was an increase in the biomass allocation to roots. This altered root:shoot ratio was accompanied by a lowered allocation to reproductive structures in the C_4 subspecies, but an unaltered allocation to leaves. In contrast, leaf allocation of the C_3 subspecies was decreased at low nitrogen supply and may have important implications for whole plant carbon assimilation.

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Bioactivity of novel compounds from *Croton steenkampianus*

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Six compounds (three flavonoids, two diterpenes and one indane) were isolated from *Croton steenkampianus* and characterized. Three of the compounds are novel (the diterpenes and the indane) while the others were previously isolated. Their cytotoxicity on vero cells was investigated and they were found to be non-toxic. All the compounds showed antioxidant activity and promising antimalarial and antibacterial activity *in vitro*. The indane inhibited reverse transcriptase at a concentration of 50 μg/ml, indicating potential anti-HIV activity.

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When my species of concern is of "Least Concern": Difficulties in obtaining useful data for red listing, with some case studies from the Orchidaceae

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Red listing can be a frustrating and contentious process for the taxonomic experts and botanists concerned with the conservation of our biodiversity. Those with extensive field experience often have an intuitive sense about which category of threat a species belongs to, but are sometimes surprised when this is not reflected in the official Red Data List. This is mostly due to the misconception that Red Lists are a prioritization tool for conservation, causing experts' reluctance to label any