inflorescence: *Anthericum* with simple nodes and pedicels without articulation and *Chlorophyrum* with complex nodes with pedicel articulation. A molecular analysis based on *trnL-F*, *rps* 16 and ITS gives a topology in favour of the fr:it and seed characters, however, the support for the basal nodes are not very strong. Final generic delimitation will still have to await more data. The position of the Ethiopian endemic *Chlorophyrum neghellese* with "complex nodes" nesting within an *Anthericum* clade initiated closer studies of the inflorescence morphology. We conclude that the "complex nodes" of *C. neghellese* are not homologous with those of *Chlorophyrum*, and that *C. neghellese* thus should be recombined to *A. neghellese* (Cufod.) Bjørå & Sésebé-Clouet.

Arctic orchids: Tertiary outsiders? Facts and hypotheses

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Actual presence of several transeonic genera leads to an opinion that some ancient orchids distributed before continental breaks from tropical regions and radiated greatly. The majority of species which now are present in the Extreme North-East of Europe still has extended boreal circumpolar or boreal Eurasian ranges. In spite of the fact that no paleontological facts which could be addressed to their pre-glacial age are available, a comparative analysis of biological characteristics along with global distributions may help to hypothesize their histories. Other evidence could be associated with the mechanisms of post-glacial survival. The support of pre-glacial existence of orchid species in the higher latitudes and their possible conservation in nunataks is a combination of traits like: biceentric distribution of some of them; large gaps between the northernmost occurrences in Fennoscandia and central European part; the co-existence of both other "outlier" species and orchids in unique localities not characteristic for Arctic areas; the length & rhythm discrepancies between orchid phenologies and the growing period in Arctic; the presence of life forms which are common for ancestral, or epiphyte-like tropical orchids; primitive flower structure along with non-specialized pollination mechanisms, or the transition to another pollinator group or selfing; the origin of uncommon Arctic orchids from vast groups still taxonomically rich in tropical regions (Erythroidae, Malaxidiae) or apparently relic oligospecific tribes (Epipogieae, Calypsoeae).

Fruit structure and morphological nature of fruit scales of *Calamus* (Areaceae)

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Fruits of Areaceae - Calamoideae are covered with spiral scales, which homology is under discussion. So, we studied fruits of *Calamus* at different developmental stages. Exocarp is composed of small isodiametric sclereids with hardly thickened and lignified walls and containing tannins in the lumens. Mesocarp is differentiated into peripherel selerenchymatic zone (9-12 layers of sclereid, toward inside their walls gradually become thinner and poorer lignified) and inner parenchymatic zone (17-30 layers of varying in shape cells with thickened unligified walls) with stout vascular bundles in it. Endocarp is represented by one layer of isodiametric cells with hardly thickened (unligified) walls. The scales origin as derivates of outer epidermis and outer mesophyll at the early stages of gynoecium development, and soon the centripetal processes of sclerification and lignification of their cells' walls start. The scales on the fruit surface are peltate, helically arranged, overlapping, originally T-shaped in cross section. They are formed by exocarp, peripheral zone of mesocarp, and peripheral part of the inner zone of mesocarp. Exocarp and selerenchymatic part of mesocarp compose the "head" of the scale and parenchyma forms the "stalk" of the scale. Thus, fruits of *Calamus* could be treated as peculiar syncarpous monospermaous berries covered with scales.