

PALEOBOTANY OF THE PALEOCENE ST. STEPHENS SITE, BERKELEY COUNTY, SOUTH CAROLINA

MELCHIOR\*, Robert, Dept. of Geology, Bemidji State University, Bemidji, MN 56601-2699 U.S.A.

Plant fossils including silicified wood, amber and a diverse suite of palynomorphs were recovered from beds of the Rhems and Williamsburg Formations of the Black Mingo group. The Rhems beds are Danian in age and the Williamsburg is Thanetian. Both formations constitute prograding delta sequences. The palynomorph assemblage was recovered from the Rhems Formation and consists of 112 species of pollen and spores of angiosperms, gymnosperms and cryptogams as well as 32 species of fungal spores. Silicified wood represents 10 taxa and the amber is suggestive of two but precise stratigraphic position of these latter fossils is uncertain.

An analysis of the ranges of palynomorph taxa within the Rhems Formation yields three assemblages. An assemblage concentrated in the lower, pro-delta beds of the unit is felt to represent a coastal community, a group concentrated in the upper delta-front and topset beds is representative of an inland assemblage and a third group ranges throughout the section. The coastal assemblage is dominated by palms with gymnosperms also being abundant. The inland assemblage consists primarily of a diverse array of dicots associated with the Normapolles group. The long ranging assemblage is associated with both the above groups in about equal numbers. A habitat mosaic consisting of xeric to mesic and hydric elements within the coastal and inland community zones is inferred. Analysis using the modern affinities of the palynomorphs suggests a subtropical, summer dry climate near its meteorological boundary with the tropical zone such as that found in parts of coastal southeast Asia today.

Wood taxa from the site include specimens assignable to Podocarpoxylo, Myrica, Fagaceoxylo, Magnoliaoxylo, Ulmium, Liquidambar, Nyssoxylo, the Olacaceae, Apocynaceae and possibly the Icacinaceae. Calculated "V" values and anatomical details of these woods correlate well with the habitat mosaic and paleoclimatic implications suggested by the palynomorphs.

Infra-red spectra of the ambers suggest affinities of these fossils with the Caesalpiaceae and the Araucariaceae. Pollen that might be attributable to these groups includes Margocolporites, Rhoipites, and Classopollis (Pagiophyllum).

The fungal palynomorphs are both abundant and diverse in some samples from the site. These fossils include both hyphae and conidia in place in the silicified wood and dispersed spores.