A PRESERVATIONAL CONTEXT FOR CONIFEROPHYTES AND OTHER UPPER PALEOZOIC PERMINERALIZED PLANTS IN MARINE ENVIRONMENTS FROM NORTH CENTRAL TEXAS

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The discovery that well preserved permineralized coniferophytes and other terrestrial plants are present in dysoxic offshore marine sediments provides a new data base for examination of the origins of upland/water stressed Permian floras. Initial systematic analyses indicate the plant component in the marine shales contains a large number of new taxa that represent new genera, new families, new suborders and possibly even new orders. Recently described examples of these include *Sergeia, Millaya, Vallitheca,* and *Suavitas.*

The majority of the plant debris recovered consists of isolated seeds, petioles, stems, wood segments, and roots that are not directly useful in phylogenetic reconstruction or evolutionary analysis. Such plant remains are, however, of value in taphonomic analysis and contribute to understanding the biological and geological constraints that must be considered in reconstructing the preservational conditions during transgressive-regressive events.

In the Jacksboro, Texas region (Finis Shales; Stephanian-L.Virgilian), we have discovered that the best preserved and most diverse terrestrial assemblage occurs in dysoxic marine shales that were deposited during transgression. This unique set of localities corresponds to a river valley and channel in a flood plain with remnant hills. Based on channel sediment thickness, hill height was probably only a few 10's of meters above the flood plain. We postulate that the vegetation, such as coniferophytes, inhabited well-drained hills and valley slopes. During marine transgression these vegetated highlands eventually became islands and were eroded by waves and currents, contributing plant organs such as roots, reproductive organs, etc. Plant debris was transported only a short distance before sinking into the relatively deeper, flooded valley channel bottom which contained dysoxic water/sediments. Earlier in the transgression and throughout almost all of the regression phase, most of the marine waters were either too oxygen rich and bioturbated, or anoxic and distant from source areas, to preserve plant fossils. It was primarily during optimal conditions of maximum plant debris input combined with nearness of an inner-shelf channel that contained dysoxic marine waters, that plant assemblages from nearby hills were permineralized. More typically, debris from water-stressed vegetation had to float for longer distances (middle/outer shelf areas) before sinking into dysoxic marine bottom waters and being preserved. Unlike the proposed Finis-Jacksboro scenario, most Upper Carboniferous cycles in the midcontinent probably had less well defined channels near source areas.