

Resolving Meramecian and Early Chesterian (Middle Mississippian-Upper Mississippian) Stratigraphic Nomenclature in the Southern Ozark Region

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Currently, stratigraphic nomenclature for Meramecian through lower Chesterian strata of the Ozark Region of northeastern Oklahoma, northwestern Arkansas, southwestern Missouri and southeastern Kansas is based upon competing stratigraphic schemes. These are derived not only from local regional outcrops within the Ozark Region, but also from exposures in the Mississippi Valley of eastern Missouri, Illinois and Iowa. In Arkansas, the Moorefield Formation unconformably overlies the Boone Formation and unconformably underlies the Chesterian Batesville Sandstone and Hindsville Limestone. The Moorefield is truncated westward from Batesville, Arkansas and is absent in western Arkansas. The Oklahoma “Moorefield” is lithologically dissimilar to the Arkansas Moorefield but is, at least in part, stratigraphically equivalent. In northwestern Arkansas the remnants of the Oklahoma “Moorefield” appear to thin and pinchout across what is believed to be a Mississippian paleotopographic high that may have separated Oklahoma “Moorefield” deposition from that of the Arkansas Moorefield. In far northeastern Oklahoma (Ottawa County, Oklahoma) this same interval has a unique classification scheme based on outcrops near the Pitcher tri-state Mining District. The relationship from Ottawa County, Oklahoma to Mayes County, Oklahoma has also yet to be clarified. Geologists working the subsurface of Kansas and Oklahoma have historically employed various nomenclatures from the Mississippi Valley and Mayes County, Oklahoma, even though the lithologies greatly vary from the type regions. Conodont biostratigraphy is herein being used to resolve these stratigraphic problems by delineating chronostratigraphic and lithostratigraphic relationships between strata within the southern Ozark region and ultimately constructing a sequence stratigraphic framework that more accurately represents the depositional and tectonic evolution of the area during the Middle to Late Mississippian.