

# Lower Mississippian Burlington Shelf Derived Diachronous Prograding Carbonate Wedges, the Western Flanks of the Ozarks

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The concept of diachronous Lower Mississippian (Osagean) prograding carbonate wedges has been proposed but not yet well documented. This study is based analysis of surface outcrops of the western flanks of the Ozarks (SW Missouri, NW Arkansas, SE Kansas, and NE Oklahoma) and subsurface cores of the adjacent southern Midcontinent basins of southern Kansas and northeastern Oklahoma. The chronostratigraphic basis for the time aspect of this study is based on a new study of conodonts from western flanks of the Ozarks which boasts a virtually complete stratigraphic succession of upper Kinderhookian-basal Visean faunas in the same region from where most of the global zonal species were described.

The Osagean conodont zonal scheme consists of the following zones in stratigraphic order: communis carina Zone, multistriatus Zone, anchoralis-latus Zone, distortus Zone, mehli Zone, bulbosus Zone, aff. texanus zone, varians-linguiformis Zone. Basal Meramecian strata mapped as the uppermost beds of the Boone Formation (Baxter Springs Member) is denoted by the appearance of aff. texanus n.sp. 2. The shelf to basin transect illustrates a general southward progradation during Osagean time locally complicated by structural complications of a northward prograding forebulge. The shallow Burlington Shelf (Burlington and Keokuk formations) grades basinward into the moderately deeper shelf facies (Pierson Limestone) and further distal into the deep shelf and shallow basin (Reeds Spring Formation). Textural changes that occur in this transect include crinoid packstone-grainstone dominated shallow Burlington Shelf that grades into a more carbonate mud-supported wackestone-packstone dominated mid-shelf Pierson Limestone and mud-dominated mudstone-wackestone Reeds Spring Formation. Diagenetic chert occurs in all carbonate facies but is more abundant in the mudstone facies of the Reeds Spring Formation.

This study represents the first well documented Mississippian diachronous prograding wedges in North America.