Depositional Origin of the Upper Jurassic-Lower Cretaceous Buckhorn Conglomerate

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The Lower Cretaceous Buckhorn Conglomerate in Utah and western Colorado was deposited during early development of the Cordilleran forelandbasin system. Field work conducted during 2008-09 in the northern Uinta Basin indicates that the Buckhorn Conglomerate consists of conglomerate, sandstone, and minor mudstone, that was deposited by gravelly, braided-fluvial systems. The thickness of the unit progressively decreases from 115 ft near Dinosaur, Colorado to 0 ft along a 15-mile wide axis that is roughly perpendicular to observed E-NE paleoflow orientations. In places where the Buckhorn is thin, the unit rests directly on a mature paleosol developed at the top of the underlying Jurassic Morrison Formation. Where the unit is thick, this paleosol is absent. In addition, outcrop gamma ray logs of the Buckhorn were used to correlate the unit into the subsurface.

The outcrop and subsurface data interpreted as part of my research indicate that the Buckhorn Conglomerate occupies a 15-20 mile-wide, NE-SW trending fairway in the northern Uinta basin. The observed geometry and distribution of the unit is consistent with the interpretation of Currie (1998) that suggested that the Buckhorn Conglomerate filled a NE trending paloevalley cut into the Morrison Formation. The SE margin of this valley can be traced to the southwest across the Uinta Basin towards outcrops of the Buckhorn Conglomerate on the San Rafael Swell. Future work will focus on documenting the surface/subsurface distribution of the Buckhorn Conglomerate in the southern Uinta Basin, and determining the depositional age of the unit by analyzing detrital sampled zircons.