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Miller, Halsey, W., Jr
1962, pp. 93. https://doi.org/10.56577/FFC-13.93

in:

Mogollon Rim Region (East-Central Arizona), Weber, R. H.; Peirce, H. W.; [eds.], New Mexico Geological Society 13 th Annual Fall Field Conference Guidebook, 175 p. https://doi.org/10.56577/FFC-13

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CRETACEOUS ROCKS OF THE MOGOLLON RIM AREA IN ARIZONA

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INTRODUCTION

This article is based on a review of the literature made in preparation for field work, mainly stratigraphic-paleontologic, to be conducted later. Therefore, no original data or conclusions are presented at this time.

CRETACEOUS ROCKS IN NORTHERN ARIZONA

Lower Cretaceous rocks are confined to the southeastern corner of Arizona, but Upper Cretaceous rocks are rather well distributed on both sides of the Mogollon Rim.

The Upper Cretaceous rocks of northern Arizona consist of the basal, mainly non-marine, Dakota Sandstone, the marine Mancos Shale, and the mainly non-marine Mesaverde Formation. The sequence presents an excellent example of marine encroachment, followed by regression. Encroachment began at least as early as the Cenomanian Stage (see Table 1), and regression, in Arizona, was not complete before the middle of the Santonian Stage, and perhaps even later.

Table 1.
STAGES OF UPPER CRETACEOUS TIME

European Stages
Maestrictian
Campanian
Santonian
Coniacian
Turonian
Cenomanian

The Upper Cretaceous sea entered Arizona from the north and east, spreading southward. Basal marine rocks accordingly are younger toward the south (Repenning and Page, 1956, p. 259). As the seaway encroached southward, the rocks units tended to lose the lithologic distinctiveness that characterizes outcrops in the Black Mesa area. South of the Mogollon Rim are partly marine Upper Cretaceous sequences that undoubtedly form portions of the southernmost extension of Upper Cretaceous marine transgression. However, these southern remnants cannot be identified lithologically with the northern formations, although they were deposited in Mancos time.

MARINE UPPER CRETACEOUS ROCKS SOUTH OF THE MOGOLLON RIM

Marine Upper Cretaceous rocks are exposed in two basins south of the Mogollon Rim. C. P. Ross (1925) discussed the section in the Deer Creek Coal Basin near the Aravaipa-Stanley mining district. Ross described a section 1,000 to 1,500 feet in thickness consisting of sandstones, shales, and volcanic rocks. Marine fossils were found low in the section, and the species present were identified by T. W. Stanton as:

Exogyra sp. related to **E. laeviuscula** Roemer
Trigonarca sp., **T. depressa** (White)?
Callista (Dosiniopsis?) n. sp.
Glauconia coalvillensis (Meek)
Turritella sp.

These probably indicate an Upper Turonian Age for the basal portion of the section. The upper portion of the section contains volcanics, which later interpretations indicate may be Tertiary in age (Courtright, 1958).

The Pinkard Formation, described by Lindgren (1905) from exposures in the Clifton-Morenci mining district 75 miles east of the Deer Creek Basin, consists of several hundred feet of sandstone and shale. Marine fossils from a locality south of Morenci were identified by T. W. Stanton as:

Mactra sp. related to **M. warreneana** Meek and Hayden
Corbula sp.
Cardium sp.
Astarte? sp.
Cyrena? sp.
Turritella sp.
Dentalium sp.
Glauconia coalvillensis Meek
Pugnellus fusiformis Meek

This assemblage is related faunally to that of the Deer Creek Coal Basin, and similarly suggests an Upper Turonian Age.

So far the picture fits well. We can imagine the marine transgression beginning in Cenomanian time in the northernmost portions, and extending southward to the Deer Creek Coal Basin by Upper Turonian time.

The Cretaceous rocks of the Mogollon Rim near Show Low should then perhaps be of Middle and Upper Turonian Age. So far, however, fossils from the rocks of this area consist of nothing more than poorly preserved pelecypods and gastropods that do not permit specific age assignment.

CENOMANIAN OR TURONIAN AMMONITES FROM THE MESAVERDE FORMATION

Young (1957) described species of **Metoicoceras, Calycoceras, Dernveganoceras(?)**, and **Exogyra columbella** Meek from the Mesaverde Formation near St. Johns, Arizona. The assemblage contains elements of both Cenomanian and Lower Turonian Ages. This is a surprisingly "old" age for the Mesaverde Formation, and may indicate that the Mesaverde is progressively older southward, merges with the Dakota Sandstone and pinches out the Mancos Shale in the region of the Mogollon Rim. Thus, the Cretaceous rocks south of the Rim would not be exact lithologic equivalents of those north of the Rim.

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