DEPOSITIONAL ENVIRONMENTS, PALEOECOLOGY, AND BIOSTRATIGRAPHY OF ARIKAREEAN BOZEMAN GROUP STRATA WEST OF THE CONTINENTAL DIVIDE IN MONTANA

by
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Late Oligocene to early Miocene (Arikareean) non-marine strata exposed in the Blackfoot, Flint Creek, Deer Lodge, and Divide intermontane basins of western Montana are collectively called the "Cabbage Patch beds" and are referred to the upper Renova Formation of the Bozeman Group. Cabbage Patch sediments, composed mostly of aeolian derived tuffaceous material, were deposited in fluviatile, lacustrine, and paludal environments. Steams were medium-to-large in size, low in velocity, shallow, and principally aggrading. Numerous thin lacustrine intervals occur in the Flint Creek and Deer Lodge basins, and data suggest the lakes were small-to-large, shallow, and ephemeral. Bedded gypsum and gypsum cement in lacustrine strata at the top of the Cabbage Patch sequence in the Flint Creek Basin indicate periods of dryness. Paludal deposits are rich with plant fragments and locally contain thin lignites.

Fossils in the Cabbage Patch beds are abundant and varied: invertebrate and vertebrate fossils are mainly found in fine-grained fluviatile overbank, lacustrine, and lacustrine delta fill deposits; logs, branches, and other larger pieces of wood are found in fluviatile channel deposits; leaves, wood, fusain, and other plant fragments are common in paludal deposits; and root traces and burrows are very common in all fluviatile deposits.

The Cabbage Patch beds have been satisfactorily subdivided biostratigraphically into lower, middle, and upper parts by the content of the mammalian fossil assemblages found in each part. Where mammalian fossils are abundant, referral to the respective part can be easily made by using the various aplodontid and geomyid rodents. Correlations can be made with Arikareean strata in Wyoming, Nebraska, South Dakota, and Oregon.