

RADIOCARBON DATES OF DEPOSITS OF PINEY CREEK ALLUVIUM IN SOUTHEASTERN COLORADO

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ABSTRACT

New radiocarbon dates of charcoal from two southeastern Colorado archaeological sites provide clarification of the time span of the Piney Creek Alluvium. The alluvium is part of a sequence of Holocene deposits in eastern Colorado which is very useful in geoarchaeological and geological studies. The time span of the alluvium had not been previously determined by radiocarbon dates. The dates indicate that some of the Piney Creek Alluvium was deposited between approximately A.D. 100 and 1550 B.C. (1850-3500 B.P.).

THE PINEY CREEK ALLUVIUM AND ITS TIME SPAN

Radiocarbon dates and their relationship to the age of a post-Pleistocene alluvial deposit of eastern Colorado are important in geoarchaeological and geological research and cultural-ecological, demographic, and other analyses which depend upon occurrences of cultural remains in discrete contexts. Suggestions for incorporation of geoarchaeological methods of analysis of surficial deposits in research designs of surveys are presented elsewhere (Buckles 1979b).

Scott (1960, 1963, 1965) has defined a sequence of surficial deposits of Quaternary age, the younger of which are broadly applicable to geoarchaeological research on the eastern flank of the Front Range in Colorado. The age and cultural relationship of a post-Pleistocene unit of the sequence, the Piney Creek Alluvium, was originally defined from studies in the Denver area (Hunt 1954). The definition of the unit was greatly amplified by the study of the Kassler Quadrangle, approximately 18 miles south of Denver, by Scott (1963), a geologist with the U.S. Geological Survey, aided by G. Edward Lewis, a paleontologist with the Survey, and Arnold Withers, an archaeologist with the University of Denver. Radiocarbon dates of archaeological sites in deposits of the Kassler Quadrangle and radiocarbon dates of correlative deposits elsewhere in the Southwest were used in assessing the time ranges of the alluvial units of the sequence, which generally have wide distributions on the flanks of the Rocky Mountains. The post-Pleistocene units of the sequence are listed in Table 1 according to their estimated time spans.

Glenn Scott (written communication, July 29, 1974) summarized for the author the presumed time spans of units of the alluvial sequence before two new radiocarbon dates were obtained of two firepits in two separated exposures of the Piney Creek Alluvium. Table 1 represents these time spans as originally predicted and the time span of the Piney Creek Alluvium after getting the two new radiocarbon dates. The estimated span of the Piney Creek Alluvium was not originally based on radiocarbon dates from eastern

TABLE 1. Estimated Time Spans of Post-Pleistocene Alluvial Deposits in Eastern Colorado

Alluvial Unit	Original Estimates	Revised Estimates
Post-Piney Creek	1000-1500 B.P. (A.D. 950-A.D. 450)	Unchanged
Piney Creek	2800-3500 B.P. (850 B.C.-1550 B.C.)	1850-3500 B.P.* (A.D. 100-1550 B.C.)
Pre-Piney Creek	4500-6000 B.P. (2550 B.C.-4050 B.C.)	Unchanged

Colorado (Scott 1963:44) but on its presumed correlation with a dated alluvial deposit in Utah.

SITES IN EASTERN COLORADO CONTRIBUTING TO AN ESTIMATE OF THE TIME SPAN OF THE PINEY CREEK ALLUVIUM

5FN12

A firepit was discovered at site 5FN12 weathering from the wall of an arroyo tributary to Salt Canyon, traversed in part by Colorado Highway 115 and approximately 25 miles southwest of Colorado Springs (Buckles 1974:62-65). Samples of soils from the arroyo wall and pit were inspected by Glenn Scott and he reported (written communication, July 11, 1974) that they "most closely resemble sediment in the Piney Creek Alluvium in both color and texture."

The charcoal from the pit was dated at 2900 ± 90 radiocarbon years ago or 950 B.C. (Isotopes 17908, not MASCA corrected). The plan of the partial pit was circular; it was approximately 35cm deep. The fill contained numerous fragments of burned sandstone, two pieces of debitage, and a polyhedrally shaped core remnant. No artifacts were found elsewhere in the arroyo walls or in the nearby vicinity.

5PW2

An outcrop of sandstone with petroglyphs was exposed partially by the catastrophic floods in the lower Arkansas River drainage in June of 1965. The petroglyphs, their geoarchaeological relationships, and related cultural resources were defined and investigated as site 5PW2 (Buckles 1979a). The soils which had overlain the petroglyphs and still overlie adjoining areas of the rock have been identified by Glenn Scott (written communication, April 12, 1974) as sediments of the Piney Creek Alluvium overlain by a thin mantle of post-Piney Creek Alluvium. Within the Piney Creek Alluvium and adjacent to the area of exposed sandstone was a firepit exposed in section in the wall of sediments. The firepit remnant, shown *in situ* in Plate 1, was approximately 45cm in diameter, 20cm deep, and the fill contained numerous fragments of burned sandstone. No artifacts were discovered in the pit fill or in the wall of sediments.

*The dates are not MASCA corrected and are considered in years before the present in conformity with the conventional use of A.D. 1950 as the "present."

A radiocarbon date of 1850 ± 100 radiocarbon years ago or A.D. 100 (Isotopes 7907, not MASCA corrected) was acquired from charcoal of the firepit. This date has significance for predicting a later part of the time extent of the Piney Creek Alluvium and for establishing a relative date of the rock art of the flood exposed sandstone as greater than 1850 radiocarbon years ago. Description and discussion of significances of the rock art and other cultural resources of the site is presented elsewhere (Buckles 1979a).

CONCLUSIONS

The time of deposition of the Piney Creek Alluvium is predicted to have been between approximately 3500 radiocarbon years ago (estimated by Scott, written communication, July 29, 1974) and 1850 radiocarbon years

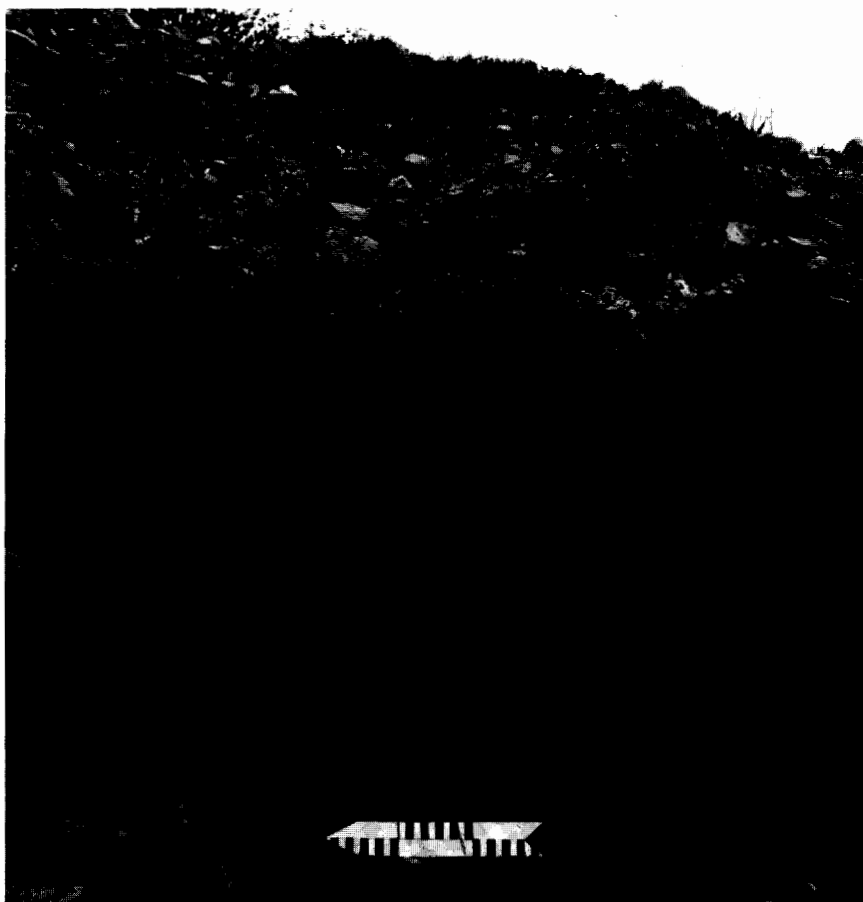


PLATE 1. Firepit exposed in an arroyo wall at site 5PW2. The pit is within a deposit of the Piney Creek Alluvium. The overlying stratum with coarse sandstone fragments is a deposit of post-Piney Creek Alluvium. The scale is in centimeters.

ago, as inferred from the age of the firepit at 5PW2. The latter date is acceptable to Scott as a date within the upper part of the Piney Creek Alluvium (written communication, August 12, 1974). He notes that erosion as well as deposition occupied this time span and that the 2800-year date was used only because no material had been dated from the upper part of the alluvium. The radiocarbon age of the charcoal from 5FN12 is within the span of the Piney Creek Alluvium originally predicted by Scott.

The establishment of a more accurate and larger span for the Piney Creek Alluvium will be useful in identifying ages of cultural materials associated with the alluvium or in other deposits which can be dated relative to the alluvium. It is hoped that this paper will stimulate others in dating distinctive deposits and in using such cultural material and geologic deposit associates to greater extents.

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Glenn Scott was asked to share authorship of an article on the dates and their significances, but declined due to the press of work. He urged that the dates and their meanings be published. I regret that the information has taken so long to appear in print. His aid in identifying the sediments of the two sites and his suggestions regarding this article, most of which were used, are greatly appreciated. My wife, Nancy, aided in many ways, including finding the firepit dated at 5PW2 and typing the manuscript.