

Cottonwoods

Importance

The riparian cottonwood forests of the Sand Creek Massacre National Historic Site are important elements of the cultural landscape and riparian ecosystem, providing shelter, timber, firewood, forage, and wildlife habitat. Cottonwood trees (*Populus deltoids* ssp. *monilifera*) along Big Sandy Creek—living and dead—have cultural and spiritual significance to the Cheyenne and Arapaho beyond their association with the Indian encampments attacked by the US military in 1864. The study of cottonwood trees in the Sand Creek Massacre site has contributed to the site's environmental history and knowledge of current conditions, changes that have occurred over time, and possible causes of those changes.

Status and Trends in Sand Creek

Cottonwood stands along Big Sandy Creek are grouped in three age classes, the earliest dating to approximately 1865-1885 and 1908-1925. Stands are composed of trees of the same age class. It is possible some cottonwood trees were present during the 1864 massacre as seedlings or saplings; three trees have estimated germination dates between 1865 and 1870. The third age class, 1949-1960, has peaks in age distribution starting in 1949 and 1954. There appears to be virtually no cottonwood establishment since 1965 and in a 2006 study only one tree was estimated to be less than 40 years old. Cottonwood groves appeared to be stable and properly functioning in 2005.



Cottonwood trees (*Populus deltoids* ssp. *monilifera*) at Sand Creek Massacre NHS in the fall.



RESOURCE BRIEF



Cottonwoods and floodwaters along Big Sandy Creek. Cottonwood establishment is flood-driven in western North America.

Discussion

The colonization of three age classes of cottonwoods along the creek bed after 1864 is consistent with the prevailing flood-driven model of cottonwood establishment in western North America. Flooding removes competing vegetation, deposits of fresh sediment as seedbed, and temporarily elevates the water table. Trees established by these periodic episodes tend to occur along stream channels. The initiation dates of the three age classes coincide with probable flood events on Big Sandy Creek, though the establishment of the 1910-1925 cluster may also be related to the construction of the nearby Chivington-Brandon Irrigation Canal. The latest age class is dominated by a group of trees established over about 10 years, with peaks in establishment in 1949 and 1954. Very little establishment of cottonwoods has occurred since 1965, which is typical of natural fluctuations in similar riparian ecosystems. However, land use may be a contributing factor and the lack of establishment may be more directly related to heavy grazing, trampling, or mowing in the past several decades.



Cottonwoods have cultural and spiritual significance to the Cheyenne and Arapaho.