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## Archaeological Evidence of Elk in the Columbia Basin

### Abstract

Traditionally, elk have been considered absent from the Columbia Basin of eastern Washington during post-glacial time. However, elk have frequently been identified in faunal remains associated with Columbia Basin archaeological sites representing early human cultures in this area. Elk remains have been associated with mostly steppe faunas, suggesting elk were at least seasonal residents of the Columbia Basin during the last 10,000 years.

### Introduction

It has commonly been assumed that the North American elk (*Cervus elaphus*) did not occupy the Columbia Basin of eastern Washington and north-central Oregon in post-glacial times. Bailey (1936) noted the absence of elk in the Columbia Basin or Oregon, an area that apparently separated the Rocky Mountain elk (*C. e. nelsoni*) of the Blue Mountains from the Roosevelt elk (*C. e. Roosevelti*) of western Oregon. Dalquest (1948) believed elk were poorly suited for life on the Columbia Plateau of eastern Washington, and that elk were probably never abundant anywhere in eastern Washington. Murie (1951) similarly thought that elk had never occupied the plains of the Columbia nor physiographically similar areas of southern Idaho and eastern Oregon. Bryant and Maser (1982) also noted the absence of elk in the Columbia Basin and other areas of eastern Washington.

These accounts of the apparent absence of elk from eastern Washington in general and the Columbia Basin in particular were based primarily upon the writings of early explorers and settlers. During the late 1800's and early 1900's many wildlife populations were at low levels throughout the western United States (Trefethen 1975), and an assessment of the original distribution of elk based upon these sources must be considered suspect. Indeed, not only elk were recorded as absent from this region, but bison (*Bison bison*) and pronghorn (*Antilocapra americana*) were also thought to have been absent from eastern Washington (Dalquest 1948). However, both of these species are now known to have occurred there prior to the settlement period (Osborne 1953). With the occurrence in recent historical time of elk in the Columbia Basin (Payne *et al.* 1975, Rickard *et al.* 1977), the hypothesized absence of elk from this region should be re-evaluated.

This paper reviews the archaeological evidence for the occurrence of elk in the Columbia Basin. Large amounts of animal skeletal material have been concentrated at sites associated with early human cultures in this area (Gustafson 1972). One limitation in a review such as this is the fact that early investigations were

concerned mainly with cultural artifacts, and faunal remains often lacked systematic treatment (Gustafson 1972, Lyman and Livingston 1983). Recent works have attempted to rectify this situation (Gustafson 1972, Kennedy 1976, Lyman and Livingston 1983), and along with earlier works that included faunal analyses, constitute the primary sources for this paper.

#### **Columbia Basin Environment**

The present climate of the Columbia Basin is arid with warm to hot summers, and cool winters (Franklin and Dyrness 1973). The principal vegetation types at present are shrub-steppe communities dominated by *Artemisia* and *Agropyron*, and grass communities dominated by *Agropyron* and *Festuca* (Daubenmire 1970). The post-glacial environment was, however, marked by climatic variation and associated changes in vegetation. The early post-glacial environment of the Columbia Basin (10,000-7,500 years B.P.) is believed to have been a period of cooler and more moist climate than the present, followed by a period (7,000-4,500 years B.P.) characterized by warmer and drier conditions than the present. An increase in moisture and decrease in temperature seems to have occurred about 4,500 years ago, and led to modern conditions in the Columbia Basin (Antevs 1955, Daugherty 1956). Changes in vegetation in response to these climatic shifts probably occurred; however, recent evidence suggests that this region has not supported extensive forest vegetation in post-glacial times (Gustafson 1972, Mack *et al.* 1976, Lyman and Livingston 1983). Pollen spectra representing the last 9,000 years in the Columbia Basin have been shown to resemble modern pollen spectra, suggesting a principally steppe-like environment (Mack *et al.* 1976). The preponderance of steppe fauna skeletal material found at most of the archaeological sites in the Columbia Basin also suggests primarily steppe vegetation for this region during post-glacial times (Gustafson 1972, Lyman and Livingston 1983).

#### **Archaeological Record**

Elk remains have been recovered from Marmes Rockshelter near the mouth of the Palouse River in Franklin County, Washington (Figure 1). In 7,500-10,000 year-old strata the remains of at least 5 elk were found associated with the remains of deer (*Odocoileus* spp.) and pronghorn (Gustafson 1972). Elk constituted 12.2 percent of the large mammals positively identified at the site, and were evidently an important source of food for the early occupants of the site. In 6,700-7,500 year-old strata elk represented over 16 percent of the large mammals recovered. The proportion of elk in identifiable large mammal remains decreased to approximately 6.5 percent in 4,000-6,700 year-old occupational strata. The remains of pronghorn were most abundant in these strata followed by deer and elk (Gustafson 1972, Kennedy 1976). Elk remains in 600-4,000 year-old strata were less abundant than in earlier strata; however, they still comprised about 2 percent of the large mammal remains.

The Cold Springs site (McNary Sites in Figure 1), located near the McNary Reservoir, was occupied 5,000-7,000 years B.P. by people that apparently relied upon fishing, hunting, and gathering in order of importance (Shiner 1954). The large mammal remains recovered at this site were mainly those of deer, elk, and mountain sheep (*Ovis canadensis*), although relative quantities were not reported.

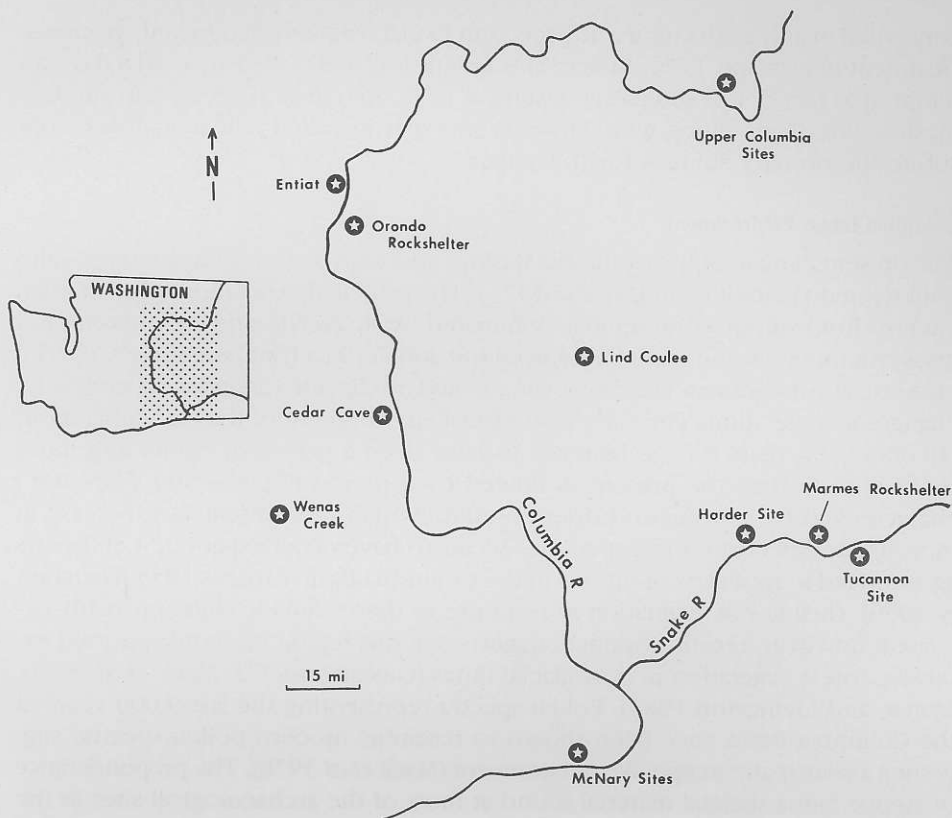


Figure 1. Location of sites mentioned in the text.

The Tucannon site (Figure 1), occupied approximately 2,500-4,000 years B.P., contained the remains of pronghorn, deer, and elk in order of abundance (Nelson *et al.* 1968, Kennedy 1976). Elk comprised approximately 10 percent of the large mammal remains recovered. Elk remains while not quantified were also noted at Wenas Creek, a 1,000-4,000 year-old site near the present city of Yakima, Washington (Figure 1) (Warren 1968). This site is near the east slope of the Washington Cascades where the occurrence of elk prior to historical introductions has been questioned (Pautzke *et al.* 1939, Dalquest 1948, Bryant and Maser 1982).

Elk remains, including teeth, mandible fragments, and a variety of post-cranial elements, were fairly abundant at the Harder site along the lower Snake River (Figure 1) (Kenaston 1966). This site was probably occupied between 187 and 687 A.D. by people that depended heavily upon hunting bison and elk.

Gunkel (1961) reported on elk remains from 2 sites in the Rocky Reach Reservoir region. At the 300-2,000 year-old Entiat site (Figure 1) the remains of deer, elk, and mountain sheep were identified. Elk remains, including a molariform tooth, were also recovered from the Orondo Rockshelter (Figure 1), a site occupied about 2,000 years ago (Gunkel 1961).

Collier *et al.* (1942) excavated a number of sites in the upper Columbia region between Grand Coulee Dam and the Canadian border (Upper Columbia Sites in Figure 1). These sites, occupied about 200-300 years ago, contained an unspecified number of elk bones, and several elk hides. Additionally, many elk teeth were recovered, and essentially all of them (222 of 223) were found at the southernmost sites near Grand Coulee Dam.

Osborne (1957) reported on 3 other excavations in the vicinity of the McNary Reservoir (McNary Sites in Figure 1) that were apparently used up to historic times. A culture dependent upon hunting deer and elk, fishing, and gathering was suggested by artifacts and faunal remains found at site 45-BN-53 (Shiner 1954, Osborne 1957). Elk remains at Berrian's Island, another recent site in the McNary region, used both for habitation and burials, included antler digging-stick tools, 10 elk canines, 1 elk incisor, and some long bones (Shiner 1954, Osborne 1957). At the Wallula site, which was contemporaneous with Berrian's Island, elk bones were reported as numerous, and elk antler wedges were also fairly common (Shiner 1954).

Elk appear to have been used by early inhabitants of the Columbia Basin during all of the major climatic periods spanning approximately 10,000 years (Table 1). Table 1 includes sites where only a few elk remains were found which provides further support for the hypothesis that elk have inhabited the Columbia Basin in the past.

TABLE 1. Summary of elk remains from Columbia Basin archaeological sites shown in Fig. 1.

Site	Age (yrs. B.P.)	Comments	Reference
Marmes Rockshelter	7500-10000	numerous bones	Gustafson (1972)
Lind Coulee	8000-9000	1 elk vertebra	Daugherty (1956)
Marmes Rockshelter	6700-7500	numerous bones	Gustafson (1972)
Cold Springs <sup>1</sup>	5000-7000	bones	Shiner (1954)
Marmes Rockshelter	4000-6700	numerous bones	Gustafson (1972)
Cedar Cave	4000	elk hair	Swanson (1956)
Tucannon Site	2500-4000	numerous bones	Nelson <i>et al.</i> (1968)
Wenas Creek	1000-4000	bones	Warren (1968)
Marmes Rockshelter	600-4000	numerous bones	Gustafson (1972)
Harder Site	1000-2000	numerous bones	Kenaston (1966)
Entiat	300-2000	bones	Gunkel (1961)
Orondo Rockshelter	2000	bones, tooth	Gunkel (1961)
Upper Columbia Sites	200-300	bones, teeth, hides	Collier <i>et al.</i> (1942)
45-BN-53 <sup>1</sup>	2000-recent	bones	Osborne (1957)
Berrian's Island <sup>1</sup>	2000-recent	teeth, bones	Osborne (1957)
Wallula Site <sup>1</sup>	2000-recent	numerous bones	Osborne (1957)

<sup>1</sup>McNary Sites in Figure 1.

### Discussion

Marmes Rockshelter, one of few sites with strata representing all major climatic periods, has been used to infer changes in relative abundance of elk as related to climate (Gustafson 1972, Kennedy 1976). Both the overall proportion of elk remains, and the proportion of elk relative to pronghorn declined about 6,700 years ago (Gustafson 1972, Kennedy 1976). These phenomena correlate with the

hypothesized period of increased aridity in the Columbia Basin beginning about 7,000 years ago (Antevs 1955, Gustafson 1972, Kennedy 1976).

The major problem with interpreting the archaeological data concerns whether the elk skeletal material is indicative of the occurrence of elk in the vicinity of the occupational sites or whether it may have been carried in from surrounding forested regions. The preponderance of steppe fauna found at nearly all Columbia Basin sites studied suggests a cultural reliance upon local species (Gustafson 1972, Lyman and Livingston 1983). Elk remains have generally been associated with those of deer, bison, pronghorn, and sometimes mountain sheep (Osborne 1957, Gunkel 1961, Gustafson 1972, Lyman and Livingston 1983), species which could have been obtained in the Columbia Basin. Few species representing more mesic, forested regions have been identified at these sites. It would seem unlikely that prehistoric people would travel great distances to hunt elk without also bringing back evidence of other species. Long hunting treks also seem unlikely when local game could be obtained. The presence of cranial bones, distal long bones, vertebrae, and bones of the feet at many sites likewise argues against long distance transport of elk carcasses, as these elements probably were not carried far (Osborne 1953, Gustafson 1972). As previously noted, Collier *et al.* (1942) reported on Columbia River sites from Grand Coulee Dam north to the Canadian border, yet elk teeth and hides were more common in sites in the Columbia Basin than at more northerly sites where extensive forest vegetation was present.

The hypothesis that elk were not present in the Columbia Basin is not supported by the archaeological record. While no real measure of abundance can be made, the frequency of elk remains in Columbia Basin archaeological sites suggests elk were fairly common in this region (Gustafson 1972). It is not known if elk were year-round residents of the region, but they were at least seasonally available to early hunters. The presence of elk cannot simply be attributed to the occurrence of a different environment from the present, as elk were apparently present in both mesic and xeric steppes in the past. It is interesting to note that with the increase of elk in forested regions near the Columbia Basin in recent time, elk have begun to colonize areas of the basin where a vestige of original vegetation still exists (Rickard *et al.* 1977).

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