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WASHINGTON STATE DEPARTMENT OF
Natural Resources

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Some Notable Finds of Columbian Mammoths from Washington State

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On March 25, 1998, Governor Gary Locke signed House Bill 1088 into law establishing the Columbian mammoth (*Mammuthus columbi*) as the "official fossil [species] of the State of Washington". This legislation marked the culmination of a four-year effort on the part of students in Mrs. Sara Aebly's second grade class at Windsor Elementary School near Spokane (Barton, 1998). Because of the students' remarkable persistence, Washington now joins several other western states, including Alaska (woolly mammoth) and California (sabre-toothed cat), in having designated Ice Age (Pleistocene) mammals as their official state fossils.

Mammoth fossils are particularly common in Washington, with several hundred finds having been reported in various publications or donated to local, regional, and national museums or collections. Where sufficient data exist to assign them to species, the vast majority have proven to be Columbian mammoths (Barton, 1998). Of the 39 counties in Washington, only heavily forested counties on the west side of the Cascade mountains (for example, Skamania and Wahkiakum) and less populated counties on the east side (for example, Ferry and Pend Oreille) have thus far failed to produce mammoth fossils.

Most of the reported remains from Washington are of single skeletal elements, with molars by far the most common. Tusks are also quite common, though rarely well preserved. More notable or significant mammoth finds are less common. These include sites with multiple skeletal elements (bones and/or teeth) found in direct association with one another, sites that can be well dated (either absolutely as in radiocarbon dating or relatively through stratigraphic association), and sites that represent geographic range extremes for this genus within the state (Barton, 1999).

Columbian Mammoths in North America

Columbian mammoths are one of two species endemic to North America, the other being the imperial mammoth (*M. imperator*). The remaining two species of mammoth found in North America, *M. meridionalis* (*M. hayi*) (southern mammoth) and *M. primigenius* (woolly mammoth), both evolved in the Old World and migrated into North America from Asia by way of the Bering land bridge. Columbian mammoths speciated from imperial mammoths roughly 300,000 to 500,000 years ago and quickly became the dominant mammoth throughout North America. Columbian mammoth remains have been found from Alaska to Florida, and from northern Canada to southern Mexico. In Utah and Colorado, *M. columbi* has been found at elevations greater than 2700 m (8858 ft) (Gillette, 1989), while on the continental shelf off the Atlantic coasts of Canada and the U.S., molars from this species have been recovered from depths of at least 120 m (393 ft) (Cooke and others, 1993; Whitmore and others, 1967).

Columbian mammoths were moderate in size, standing roughly 3.4 m (11 ft) at the shoulders. This made them taller than their contemporary cousins, the woolly mammoth, but

shorter than their immediate predecessors, the imperial mammoth (Madden, 1981). Based on their more southerly geographic distribution, they seem to have been adapted to warmer temperatures than the woolly mammoth and were probably therefore less hairy than *M. primigenius*. They most likely resembled an overly large Asian elephant (*Elephas maximus*) that we see today, only with smaller ears and carrying more massive tusks.

First and Last Mammoths in Washington

The imperial mammoth teeth that have been found in Washington suggest a long presence for mammoths in this state, exceeding at least 300,000 to 400,000 years (Hay, 1927). Additionally, a *M. meridionalis* was found in southeastern Idaho that would allow for the possibility of mammoths in the Pacific Northwest as far back as 1,700,000 yr B.P. (Malde and Powers, 1962). Unfortunately, most Washington mammoth fossils have been recovered without due consideration of their stratigraphic context, so it is difficult to know precisely when *M. columbi* first arrived in the state.

In eastern Washington, the oldest mammoth fossil may be the one recovered from loess of the Palouse Formation near St. John, Whitman County, in 1962 (see site 14 below; Fryxell, 1962). Other early mammoth remains that were found in pre-Wisconsinan-age loess deposits are from Burr Canyon (site 02) and Cheney (site 03). They could be as old or older than the St. John mammoth. In western Washington, Columbian mammoth molars have reportedly been recovered from Whidbey Formation sediments at Scatchet Head on Whidbey Island (Barton, 1992). All of these finds were in stratigraphic contexts that pre-date the last (Wisconsinan) glaciation and therefore suggest a late middle Pleistocene or early late Pleistocene age if not earlier.

We know more precisely when the last Columbian mammoths roamed Washington because their remains, or associated botanical finds, have been dated by radiocarbon analysis. Based on current data from the Puget Lowland, the last mammoths were gone by 15,000 to 17,000 yr B.P., although most of our well-dated sites from this subprovince date to between 20,000 and 22,000 yr B.P. (see sites 11 and 12 below; Barton, 1992). In eastern Washington, Columbian mammoths were still present as late as 11,000 to 13,000 yr B.P. (see sites 01, 16, 17, and 18 below; Waitt, 1980).

As far as we know, Columbian mammoths were obligate herbivores with a dietary preference for grasses, sedges, sages, mosses, ferns, and aquatic plants (Barton, 1998). In both eastern and western Washington, they seem to have been driven from the state by rapidly changing climatic conditions and deteriorating habitat, rather than having been hunted out by Paleoindians, as was once believed. In the Puget Lowland, mammoths were physically blocked from what had previously been their seasonal grasslands range by rapidly advancing lobes of the Vashon glaciation by 15,000 yr B.P. In eastern Washington,

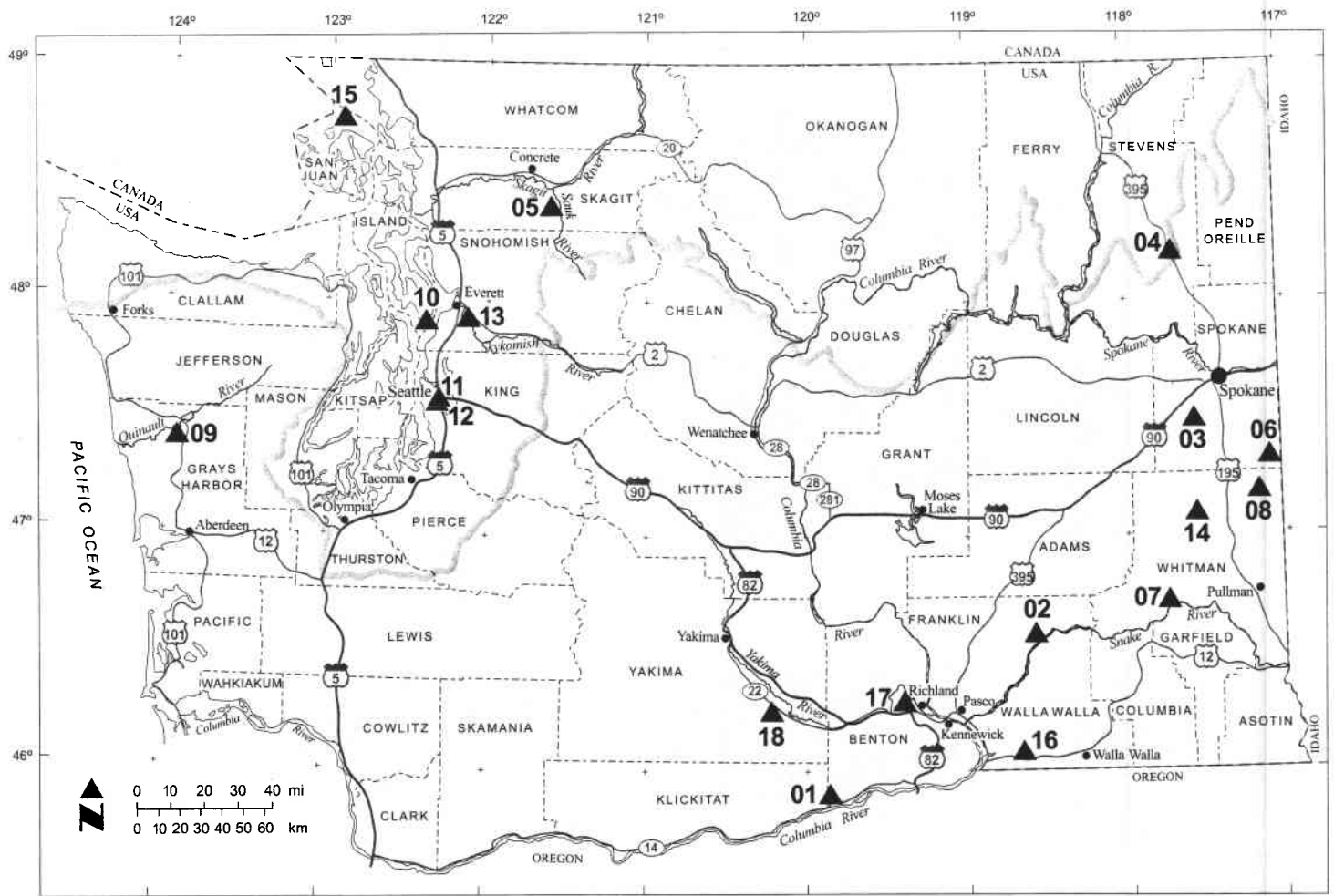


Figure 1. Distribution of Columbian mammoth sites discussed in this article. In western Washington, mammoths are commonly found in sediments of the Olympia nonglacial interval (20,000–60,000 yr B.P.); in eastern Washington, most mammoths are found in the later part of the Touchet Formation (11,000–20,000 yr B.P.). The shaded line suggests the maximum extent of the Cordilleran ice sheet at the Wisconsin late glacial maximum (c. 15,000–20,000 yr B.P.). Many finds in western Washington are north of this line; most finds in eastern Washington are well south of the line.

mammoths were eventually driven from the state by the increasing temperatures of the late post-glacial/early Holocene climatic warming at about 11,000 yr B.P.

Some Notable Washington State Columbian Mammoth Sites

The list that follows gives each mammoth find a site number (Fig. 1), a name (based on geographic location), the name of the finder or first reporter in *italics*, the county in which it is located [in brackets], and a brief description of the remains.

01 Artesian Coulee/Dead Canyon – *Newcomb* [Benton Co.]: Post-cranial mammoth remains recovered from a blowout within the Touchet Formation. A ^{14}C date on these bones produced an anomalously young date of 4905 ± 140 yr B.P. [GX-1457]. They were relatively dated by stratigraphic association to between 11,000 and 13,000 yr B.P. (Newcomb, 1971; Newcomb and Repenning, 1970; Waite, 1980).

02 Burr Canyon – *Strahorn/Bryan* [Franklin Co.]: Most of the skeleton of a very aged Columbian mammoth collected by a soil survey crew of the U.S. Bureau of Soils in 1923 and forwarded to the U.S. National Museum/Smithsonian Institution in Washington, D.C. This mammoth was reportedly recovered from loess deposits in the Palouse Forma-

tion, and therefore is probably older (perhaps much older) than 32,000 yr B.P. This find must certainly be older than the mammoths recovered from the flood deposits of the Touchet Formation, which date between 11,000 and 32,000 yr B.P. (Bryan, 1927; Hay, 1927).

03 Cheney – *Freeman* [Spokane Co.]: Well-preserved teeth and badly decayed bones of an early Columbian mammoth reportedly found in 1926 by a farmer plowing his fields near Cheney. At least one of the molars, a lower fifth (?M₅), was sent to the University of Chicago collections. The bones were found in an older loess deposit directly above a “well weathered” pre-Wisconsinan-age till, suggesting a relative date of mid- to early late Pleistocene. (Freeman, 1926; Hay, 1927).

04 Chewelah – *Lewis/Hay* [Stevens Co.]: A single upper right sixth molar (RM⁶) collected in 1920 near Chewelah by workmen of the Magnetite Company. Found at roughly 48°15'N, this molar is currently the northernmost reported mammoth find from eastern Washington. All other reported mammoth fossils from eastern Washington have been recovered from unglaciated lands south of the last glacial Cordilleran ice sheet margins. The ‘Chewelah’ mammoth may have been found at such a northerly latitude because it pre- or post-dates the last glacial maximum or because it occupied unglaciated lands between the Colville