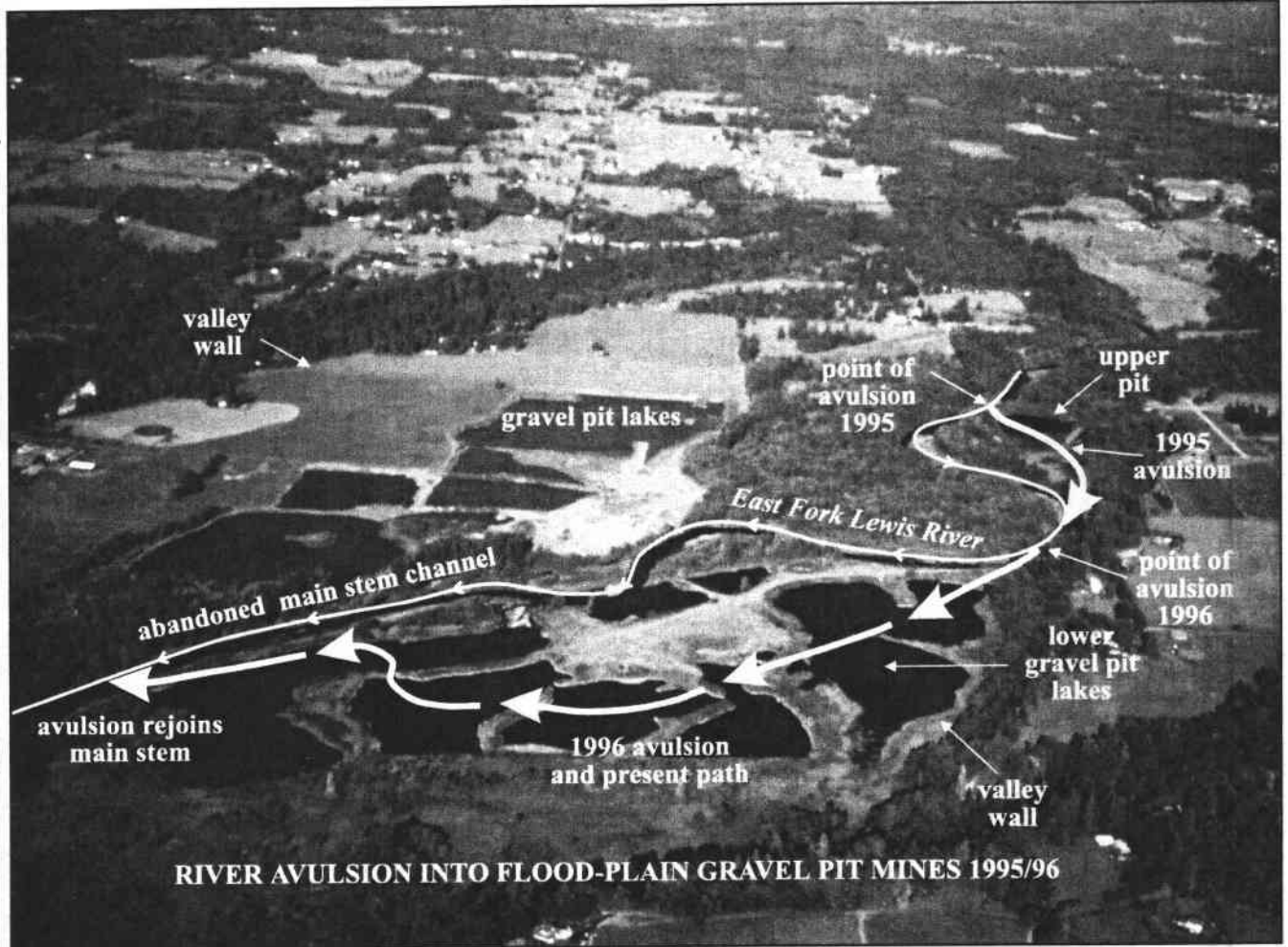


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WASHINGTON STATE DEPARTMENT OF
Natural Resources

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Notes on the new Washington State fossil, *Mammuthus columbi*

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The appearance of a note regarding the new Washington State fossil species in *Washington Geology* (v. 26, no. 1, 1998) leads me to offer some additional observations concerning this species and its discovery in Washington.

Unlike mastodons, which were *not* elephants, mammoths (genus *Mammuthus*) were large, specialized elephants common to the Pleistocene epoch. This genus first evolved in the early Pliocene (4.0 to 5.0 Ma) of Africa, and by the early Pleistocene (ca. 1.7 Ma), mammoths had spread throughout Asia and into North America (Shoshani and Tassy, 1996; Webb and others, 1989).

The Columbian mammoth was first recognized as a distinct species by H. Falconer in 1857 from subfossil specimens recovered near Darien, Georgia, and housed in the collections of the British Museum of Natural History. Falconer argued that these new finds from North America were morphologically distinct from the two previously known species of mammoth (*M. meridionalis*, the "southern mammoth", and *M. primigenius*, the "woolly mammoth") and constituted a new species, which he named *Elephas [M.] columbi*. Since then, there have been a great many more finds of Falconer's 'new' mammoth, including many from Washington State. We know much more about this species than Falconer could learn from the few specimens available to him at the time (Falconer, 1857).

Because of their noteworthy size and taphonomic rigor, mammoth remains (mostly molars) are probably the most commonly reported vertebrate subfossils in this state. Of the two species of mammoth found in Washington—*M. imperator* and *M. columbi*—Columbian mammoths are by far the most common. Many finds from this state have previously been referred to as woolly mammoths, but thus far none has been substantiated as *M. primigenius* when analyzed by modern methods. In the Puget Lowland, of 31 previously reported finds that could be analyzed to the species level, 27 (or 87 percent) proved to be from Columbian mammoths (Barton, 1992).

In western Washington, mammoth finds are heavily concentrated in the central and northern Puget Lowland, though a few are reported from the outer Pacific coastal zone and from the lower Columbia River subprovince. The earliest mammoth finds recovered from western Washington were discovered at Scatchet Head on Whidbey Island around 1860 (Lawson, 1874), but these are thought to have been destroyed in the San Francisco earthquake and firestorm of 1906 before they could be satisfactorily referred to species. Another specimen from the same locality, apparently recovered some time in the 1880s, is currently part of the University of California, Berkeley, paleontology collections, and this specimen is clearly from a Columbian mammoth.

In eastern Washington, virtually all of the mammoth finds are from the Columbian Basin. Here the earliest find of a Columbian mammoth may be that of a partial mandible (jaw) and molar recovered along the Walla Walla River in 1870 and now part of the collections of the University of Oregon. Other early

mammoth finds were made on the Copelin Ranch along Hangman Creek, Spokane County, in 1876. These finds, later identified as from *M. columbi*, were reportedly shipped to New York and Chicago, where they became part of the Cope Collection of the American Museum of Natural History and the Chicago Academy of Science Collections in the Field Museum of Natural History (Hay, 1927).

What little we know of the diet of mammoths in general and Columbian mammoths in particular is derived from three sources. As mammoths were elephants, it is assumed that the dietary preferences of the two remaining genera of elephants, *Elephas* and *Loxodonta*, give some indication of the diet of mammoths (Eltringham, 1982). Secondly, our Russian colleagues have analyzed the pollen and spore contents of the gastrointestinal tracts from several of the frozen *M. primigenius* carcasses from Siberia (Ukrainseva, 1993). Finally, pollen and initial (presence/absence only) macrobotanic analysis has been carried out on desiccated dung boluses recovered from some of the dry caves of the Colorado Plateau—boluses most likely from Columbian mammoths (Hansen, 1980). All of these analyses suggest that mammoths were obligate herbivores with a dietary preference for graminoids (grasses and sedges), *Artemisia* and chenopods (herbs), and meadow-bog mosses, ferns, and aquatic plants. In some instances, these data suggest a diet of as much as 95 percent grasses and sedges.

Evidence for the presence of pine (either cones or needles) in their diet is minimal, and it is unlikely that pine ever constituted more than 1 percent of a Columbia mammoth's chosen diet. At such low levels of consumption, it is more likely that any pine in their diet was accidentally ingested while they foraged for grasses and sedges across meadows and around the edges of bogs and ponds.

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