An ancient bathtub ring of mammoth fossils

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The area of eastern Washington sculpted by the mammoth-killing Ice Age floods. Credit: U.S. Geological Survey

Pacific Northwest National Laboratory geologists have put out a call for teeth tusks, femurs and any and all other parts of extinct mammoths left by massive Ice Age floods in southeastern Washington.

The fossils, in some cases whole skeletons of Mammathus columbi, the Columbian mammoth, were deposited in the hillsides of what are now the Yakima, Columbia and Walla Walla valleys in southeastern Washington, where the elephantine corpses came to rest as water receded from the temporary but repeatedly formed ancient Lake Lewis. PNNL geologists are plotting the deposits to reconstruct the high-water

marks of many of the floods, the last of which occurred as recently as 12,000 to 15,000 years ago.

"Now is the perfect time to collect geologic and paleontologic data," said George Last, a senior research scientist at the Department of Energy laboratory in Richland, Wash., whose sideline is researching the ice-age floods. "Winter has eroded the slopes, exposing new evidence. We're interested in researching any known or suspected mammoth find, to collected additional evidence and to improve documentation of those sites."

Last, PNNL intern Kelsey Winsor and colleagues have identified 62 sites of known or suspected fossil finds and have verified and collected additional material and information at eight of them, including two so far this spring. They presented three seasons' worth of fieldwork Saturday during the Geological Society of America regional meeting at Western Washington University.

"We're trying to tease out as much information as we can about each and every mammoth find in the mid-Columbia basin, so that we can better understand the impacts that Ice Age floods may have had on the mammoths and other creatures, and in turn learn more about the history of Ice Age flooding."

Geologists suspect that most of the Ice Age floods in eastern Washington originated from glacial Lake Missoula. The lake formed behind ice that dammed the Clark Fork River. Sometimes the ice dam broke, releasing huge volumes—up to 500 cubic miles—of water in an instant. The dam would slowly reform creating a new Lake Missoula, and the cycle would repeat.

The huge volumes of water swept overland from present-day Spokane to the Tri-Cities, creating a distinct geological region known as the

Channeled Scablands. The only outlet for this tremendous outpouring was a southern ridge-opening called Wallula Gap. But Wallula Gap was too narrow to handle all the massive flow; the water would back up, creating temporary Lake Lewis, then slowly drain through to the Columbia River Gorge—all in a matter of days.

Preliminary results place most mammoth finds in the Lake Lewis area at elevations of 600 to 1,000 feet, which echoes the distribution of boulders that originated from far away—so-called erratics—and rafted in on icebergs. The evidence suggests that these elevations mirror the typical water depths when Lake Lewis and that larger floods and deeper waters, up to 1,200 feet, were exceptions rather than the rule.

Full skeletons found at lower elevations were likely buried soon after death-by-torrent, a hard to imagine wall of water a half-mile high spanning the doomed creature's entire field of vision and approaching as fast as 60 miles an hour. Some fragments may have come from full skeletons churned up and redistributed by later floods, while others may actually have ice-rafted in with erratics.

Source: Pacific Northwest National Laboratory