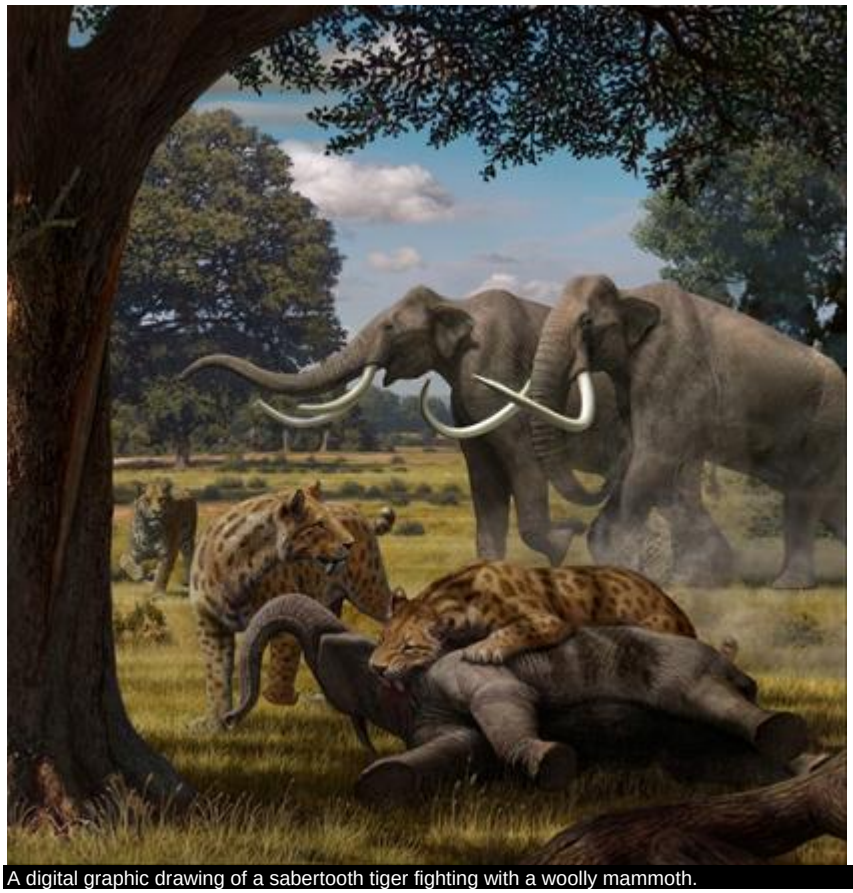
New theory on what killed off the woolly mammoths

Science Fair, USA Today July 2, 2010



A digital graphic drawing of a sabertooth tiger fighting with a woolly mammoth.
CAPTION

By Mauricio Anton, courtesy of Oregon State University

Add another theory to the potential list of why woolly mammoths, giant sloths and the like died out in the Americas 10,000 ago -- humans putting pressure on the ecosystem.

This might sound like one of the other main theories, which goes something like this: humans arrived in the Americas via the Bering land bridge and immediately started slaughtering their way down the land mass, eventually killing off animals such as giant sloths, short faced bears, giant polar bears, the American lion, giant condors, American cheetahs, saber-toothed tigers, dire wolves, camels, mammoths, mastodons and giant beavers.

In total, North America lost 80% of its large herbivore species and 60% of large carnivores during the late Pleistocene -- right around the time humans showed up.

The other popular theory on why we don't worry about teratorns(giant vulture-like birds with up to 20-foot wingspans) attacking our children these days is that the climate changed, resulting in too little food for all of these amazing creatures.

Now, a group of researchers on the West coast are proposing a wrinkle to the human-caused extinction theory. In their model, humans didn't personally kill off these megafauna, but their hunting threw the ecosystem so far out of whack that they died off anyway. Their paper is the cover article in the July 1 edition of the journal *BioScience*.

They posit that the mass extinctions were caused by the addition of a new, exceptionally dangerous predator to the delicately balanced ecosystem already in place. That predator was man, who promptly began competing with existing major predators like American lions and sabertooth tigers, triggering a cascade of competition. The big herbivores both humans and other predators were hunting died off, and then the predators, with nothing left to hunt, went extinct. Humans, who could also rely on plant materials for food, survived the shift.

"When human hunters arrived on the scene, they provided new competition with these carnivores for the same prey," Blaire Van Valkenburgh, UCLA professor of ecology and evolutionary biology and a co-author on the paper, said in a release. "Importantly, humans had some other defenses against predation, such as fire, weapons and living in groups, so they were able to survive."

"In the case of the woolly mammoths and sabertooth tiger, the problems may have begun by adding a predator, in this case humans," William Ripple, a professor of forest ecosystems and society at Oregon State University and lead author on the paper, said in a release.

Recent research looking at the tusk growth rates of North American mammoths seems to show adequate food, which might knock climate-induced habitat decline out of the running as a cause for their die-off.

There are examples of a similar kind of cascade has happened recently. For example, human whale hunting may have led to predatory orca whales turning their attention to other prey, such as seals and sea otters. The decline of the sea otter population may in turn have led to an explosion of sea urchins and the subsequent collapse of kelp forest ecosystems.

By Elizabeth Weise