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The Mount Holly Mammoth, History Since Discovery

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The Mount Holly specimen, comprising two tusks, at least one tooth (molar), and an unknown number of bones, was reportedly discovered in the summer of 1848¹ by railway workmen east of the Summit Station along the Rutland and Burlington Railroad (Thompson 1853). Agassiz (Adams 1850) reported that the specimen was found “under erratic boulders,” and Warren (1855: 162–163) stated “the deposit in which it was situated was said to be gravel, and portions of the skeleton were said to have been found beneath a large boulder [sic]; but no accurate account of its geological situation could be obtained.” Thompson (1853: 15), however, states that at least some of the remains were found at the base of a bog “resting upon gravel, which separated it from the rock below.”

According to Thompson (1853), the directors of the railroad intended for the remains to be given to the museum at the University of Vermont (what is now the Perkins Museum of Geology). But, before the remains were accessioned in to the museum, Samuel Henshaw, promoter of the railroad, gave portions of them to Louis Agassiz of the (then) Lawrence Scientific School of Harvard College (Adams 1850), and to retired Harvard Professor John C. Warren (Warren 1852: 142) for study and examination. Agassiz received, at minimum, the two tusks and the molar (Adams 1850; Gibbes 1850). What portions were given to Warren is unclear, though he states that “some vertebrae and ribs” were found (1852: 142). This is the only specific mention of skeletal elements

¹ Thompson (1853: 15) reports that the specimen was recovered “in the latter part of the summer of 1848”; however, Agassiz discussed the specimen on August 15, 1849 (Adams 1850: 100) stating that they had been recovered “a few weeks ago.” It is unclear why this discrepancy exists. One possible explanation is that the molar and one of the tusks were encountered in late summer 1848, and that the rest of the remains were encountered the following year. This explanation accommodates Thompson’s accounting that “the workmen found...a huge tooth...[and] soon afterwards, one of the tusks was found...about 80 feet from the place of the tooth...[s]ubsequently the other tusk and several of the bones of the animal were found near the same place.”

recovered at Mount Holly, and thus it is likely that Warren was given these bones. Agassiz identified them (Adams 1850) as belonging to an extinct species of elephant (*Elaphus sp.*), and Warren (1852), being one of the foremost authorities on Pleistocene proboscideans at that time, identified them as mammoth (*Mammuthus primigenius* Blumenbach [originally *Elaphus*]). Agassiz, speaking at the annual meeting of the *Association for the Advancement of Science* shortly after discovery of the specimen, expressed his “intention to examine the very place where [the remains] were found” (Adams 1850: 100), and he apparently visited at some point (Smith and Rann 1886: 28). It is unclear whether additional remains were recovered by Agassiz during that visit.

The tooth given to Agassiz in 1849 is described as “in an excellent state of preservation, and weigh[ing] eight pounds, and the length of its grinding surface is about eight inches” (Thompson 1853: 15). Of the two tusks Agassiz obtained, both of which were “somewhat decayed” and one of which was “badly broken” (Thompson 1853: 15). Thompson (1853) was able to record measurements of nearly the entirety of “the most perfect tusk,” indicating that it was more or less intact and whole at the time of discovery. Measurements of the tusk as recorded by Thompson match, more or less, those given for a tusk reportedly from the Mount Holly specimen held in the former State Cabinet (Perkins 1910: 8). This is believed to be the same as that currently in the collections of the Perkins Geology Museum at the University of Vermont (Figure 1), on long-term loan to the Mount Holly Community Historical Museum (Nexon 2007). No measurements were given for the “badly broken” tusk, suggesting that this element was likely fragmentary and in poor condition.

At some point prior to 1865, Agassiz returned the tusk considered to be in good condition as well as a cast of the molar to Vermont (Hager 1865). The original molar had been given to Warren for illustration and description in the second edition of his *The Mastodon Giganteus of North America* (1855). Warren died in 1856, and the Mount Holly material that he reported in his possession in 1852 and 1855 remained in his private collection. J. P. Morgan purchased the Warren collection in 1906, primarily to obtain what became known as the Warren Mastodon from Newburgh, New York, and he subsequently donated the collection in its entirety to the American Museum of Natural History (AMNH). The tooth, vertebrae, and ribs remained at the AMNH in New York until 1920 when Walter Granger determined that the tooth should have been returned to Harvard, as originally agreed upon by Agassiz and Warren, nearly 75 years earlier (Henshaw 1920). Granger arranged to have the tooth returned in July 1920, and he included an assortment of related elephant bones so that “the first true elephant found in a fossil state in the Northern American States might be kept together” (Henshaw 1920: 7). The tooth and mammoth remains hold the curious distinction of being the first recorded specimens in the Museum of Comparative Zoology, despite the fact that they were accessioned into the collections 60+ years *after* construction began on the museum (Henshaw 1920).

Recent History and Current Location

As discussed above, one of the Mount Holly tusks and a plaster cast of the molar made their way from the State Cabinet to the Perkins Geology Museum at the University of Vermont. They

remained on display there until 2006, when an agreement was made to place them on long-term loan to the Mount Holly Community Historical Museum (Nexon 2007). Shortly after the extension of this loan, town officials petitioned the Vermont State legislature to designate the Mount Holly mammoth tooth and tusk as the official *State Terrestrial Fossil*. The original bill (H.188 [2013]) did not leave committee, but the H.589 was amended to include the designation, and this bill was signed into law on May 5th, 2014 (Sec. 15a 1V.S.A. § 509). It is presently unclear if the law refers solely to the plaster cast of the Mount Holly molar, or if it extends to the actual specimen from which the cast was obtained.

The Mount Holly molar, and presumably the vertebrae and ribs mentioned by Warren (1852) are currently housed in the Paleontology Department of the MCZ at Harvard University. Tonya Largy, research assistant in the Zooarchaeology Laboratory at Harvard's Peabody Museum of Archaeology and Ethnology describes the Mount Holly material as a collection of bones, including those of mammoth and mastodon, but not including the molar (Largy, pers. comm. 2014). Subsequent investigation revealed that the molar, as of May 2014, is on display in the "Harvard Mastodons" exhibit. If Largy's description is correct, it seems likely that skeletal remains have become comingled with the original Mount Holly specimen, given that none of the primary source documents indicate the presence of an additional mastodon (let alone another mammoth) from the site. Examination of the remains by a qualified paleontologist, zoologist, or zooarchaeologist should allow distinction of mammoth and mastodon remains; however, it may not be possible to determine if the remains represent one or more individuals of either species.

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