

Museum Concludes Ice Age Fossil Excavation in Snowmass Village

DENVER – July 7, 2011 – The Denver Museum of Nature & Science has completed its **largest-ever fossil excavation project** at Ziegler Reservoir near Snowmass Village. The preserved series of Ice Age fossil ecosystems is one of **the most significant fossil discoveries ever made in Colorado**. Below is a summary of activities related to the **seven-week endeavor**, which yielded a **treasure trove** of Ice Age fossils.

PARTNERS

The Snowmastodon Project™ is coordinated by the Museum and involves collaboration with the **Snowmass Water and Sanitation District** and the **Town of Snowmass Village**. Additional partners include the **U.S. Geological Survey**, **Aspen Community Foundation**, **Colorado Mountain College**, and **Snowmass Tourism**.

FOSSIL FINDS

In total, **4,826 bones** were pulled from the site in 2011, including

- **74 large specimens in plaster jackets**
- **49 tusks** (29 upper jaw tusks and 20 lower jaw tusks)
- 34 mandibles (jaws)
- **23 skulls**
- 20 pelvises
- 82 loose teeth

Additionally, crews recovered

- **125 logs** and numerous samples of peat, wood, leaves, and rocks

26 different vertebrate animals from the site have been identified, and the number of Ice Age species will grow as work continues at the Museum.

7 large mammals:

- American mastodon, parts of at least 30 individuals; most prevalent large animal at the site
- giant bison, parts of at least 10 individuals
- ground sloth, parts of at least 4 individuals
- Columbian mammoth, parts of at least 3 individuals
- deer, parts of at least 3 individuals
- horse, based on a single ankle bone
- camel, based on a single tooth

19 types of smaller animals:

- otter
- muskrat
- vole
- mink or weasel
- chipmunk
- bat
- rabbit
- beaver, known from distinctly chewed sticks
- mouse
- salamander
- frog, 4 species
- lizard, 2 species
- snake
- fish
- bird, numerous species

DIG DETAILS

Crews worked tirelessly, averaging 10-hour days, 7 days per week in the field. They worked through rain, hail, and snow in the spring and battled warm temperatures in June.

- 51 days in 2011, May 14–July 3, 2011
- 18 days in 2010, October 29–November 15, 2010
- **69 total days of fossil excavation**
- 7,000 yards/**8,000 tons of dirt** were moved by shovel in 2011
- an average crew size of 40 to 50 people worked at the site each day in 2011
- **231 different people** (staff, volunteers, interns, scientists, etc.) worked on the site in 2011
- the effort involved 2,870 days of work in 2011, totaling **28,700 hours**

LOCAL VOLUNTEERS AND STUDENTS

15 local educators from the Roaring Fork Valley worked side-by-side with renowned scientists and other Museum staff doing the actual work of the excavation. The volunteer program aimed to give educators real-world experience with the science happening right in their own backyard so they can inspire their students and neighbors with their knowledge and personal experiences from working on the fossil dig.

6 students from Colorado Mountain College also participated by excavating fossils using shovels, pick axes, trowels, and brushes; screening sediments to look for bone fragments and other material; applying plaster “jackets” to fossils in the field; and washing and cataloging fossils.

SCIENTISTS

55 scientists were onsite to begin intense scientific investigation about the origin of the Ice Age lake and its history. This included most of the scientific team of **37 experts from 18 institutions** in the United States, Canada, Spain, and England, who are involved in the project and whose work will make the most of the site’s scientific potential, as well as several other affiliated scientists.

Their onsite activities included collecting cores of sediment from the ancient lake bed totaling 56 meters in length, studying the sediment that fills the ancient lake, making high-resolution scans of the fossils in place, and collecting more than **1,100 samples for analysis**.

COMMUNITY OUTREACH

6,000 local elementary students (grades preK–6) experienced “**Time Scene Investigation: Snowmass Village,**” a tech-savvy assembly program developed and delivered by the Museum. This interactive program allowed students to learn more about the Ice Age fossil discoveries through top-notch professional science educators, specimens from the Museum collections, props, and multimedia presentations.

400 local middle and high school students experienced “**Mammoth of a Find: Live Broadcast from the Dig Site.**” This 45-minute live broadcast connected Museum scientists from the Ice Age fossil dig site directly with students via satellite for a two-way interactive experience. Scientists shared new discoveries, demonstrated field research techniques, and answered questions to give students a window into science careers.

1,600 people attended the **Ice Age Spectacular in Snowmass Village**. The two-day event, hosted by the Museum in partnership with Snowmass Tourism, allowed participants to see real fossils discovered less than a mile away; watch live broadcasts of Museum scientists at the dig site; play Ice Age games, puzzles, and crafts; meet Snowy the mascot; and enjoy activities for the whole family.

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800 people attended various local presentations by Kirk Johnson, PhD, the leader of the excavation team and vice president of the Museum's Research and Collections Division, which were hosted by Colorado Mountain College, the Aspen Institute, and other organizations.

4,720 people visited the Ice Age Discovery Center, a 2,000-square-foot space in Snowmass Mall that features photos, videos, touch casts of mammoth and mastodon teeth, a wooden half-scale model of the discovery mammoth Snowy, plus related crafts and activities for children. The center is open daily from 10 a.m. to 5 p.m. through Sunday, September 19.

NATIONAL MEDIA

The *New York Times* featured the fossil find on the front page of the science section on Tuesday, July 5.

The **National Geographic Society** plans to feature the Ice Age fossil finds in *National Geographic* magazine and in a NOVA-National Geographic special on PBS—both to be released in the next year.

FUNDING

Three organizations—the **Museum, Town of Snowmass Village**, and **Snowmass Water and Sanitation District**—continue to work together to raise funds and cover the immediate cost of activities related to the Ice Age fossil excavation, scientific research, preservation, documentation, and associated educational and community outreach from the October 2010 discovery through the end of 2011. This fund, known as the Snowmastodon Fund, is being collected by the Aspen Community Foundation.

More than 50% of the targeted \$1.03 million for the Snowmastodon Fund has been raised. Major supporters include

- \$100,000, The Crown Family and the Aspen Skiing Company Family Fund
- \$100,000, Mr. Monty Cleworth
- \$55,000, National Geographic Society
- \$25,000, Mr. and Mrs. William D. Armstrong
- \$25,000, The Fred A. and Barbara M. Erb Family Foundation
- \$10,000, Butler Family Fund
- \$10,000, Mr. and Mrs. Charles Hazelrigg
- \$10,000, National Science Foundation
- \$10,000, Mr. and Mrs. Michael Smith

NEXT STEPS

At the site: Construction on Ziegler Reservoir resumes as planned this week **and Museum representatives will remain onsite** throughout the summer to monitor the site and recover any additional fossils that are uncovered while construction crews excavate clay to build the dam.

At the Museum: After fossils are removed from the ground, they are placed in a process chain designed to maximize their preservation. Due to the moisture content of the bones, which were buried in wet silt and peat for tens of thousands of years, the bones are very fragile and will disintegrate if allowed to dry out too fast. It can take many months for the fossils to properly dry. Some of the fossil bones required a plaster of paris jacket to remove them from the ground and protect them during transport to Denver. In the Museum fossil preparation lab, the jackets are removed, the fossils are cleaned, and the slow drying process begins.

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LONG-TERM PLANS

Long-term plans have not been finalized. The Museum is still in the very early stages of analyzing the fossils and has yet to create a long-term plan. The Town of Snowmass Village Ice Age Discovery Committee, the “Tusk Force,” is building a separate long-term strategic plan to capitalize on the educational and economic development opportunities this discovery offers to the Town of Snowmass Village and the Roaring Fork Valley.

EVENTS AND ACTIVITIES IN DENVER

Family Event: Ice Age Spectacular

Saturday, July 23, and Sunday, July 24

8 a.m.–noon (members only), 1–5 p.m. (open to all visitors)

FREE with admission

Celebrate the exciting discoveries and view fossils from the Ice Age site—on display for the first time at the Museum. Play games, make crafts, and check out the interactive show “Time Scene Investigation: Snowmass Village.”

Fossil Preparation in Prehistoric Journey

Ongoing

FREE with admission

Watch as fossils from the site are prepared by staff and volunteers in the Schlessman Family Preparation Laboratory, near the exit of Prehistoric Journey. Also in the area, get the latest news from the dig site and visit the Mammoth Discoveries cart, which features

- photos, video, and interpretive information about the Snowmass Village discoveries
- a volunteer facilitator to answer visitor questions
- real tusk fragments from Snowmass Village to touch
- peat samples from Snowmass Village
- touchable mammoth and mastodon teeth
- mammoth bone fragments

Evening Lecture: Snow, Mud, and Mastodons

Thursday, September 8

7 p.m., \$12 for members/\$15 for nonmembers

They battled snow, sleet, rain, heat, and massive amounts of mud to pull thousands of Ice Age fossils out of the ground. Now Kirk Johnson and Ian Miller, PhDs, will share all the latest “dirt” as they offer updates on the new discoveries, show off some of the spectacular finds, and explain what this project means to science and to Colorado.

Exhibition: Mammoths & Mastodons: Titans of the Ice Age

Coming in Spring 2013

The Museum will host a touring exhibition from the Field Museum, featuring video installations, hands-on interactive displays, life-size models, fossil tusks and skulls—and even touchable teeth. The exhibition features a 42,000-year-old intact baby mammoth named Lyuba. Discovered in 2007 by a Siberian reindeer herder and his sons, Lyuba is by far the best-preserved mammoth specimen ever discovered.

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About the Denver Museum of Nature & Science

The Denver Museum of Nature & Science is the Rocky Mountain Region's leading resource for informal science education. A variety of engaging exhibits, discussions, and activities help Museum visitors celebrate and understand the natural wonders of Colorado, Earth, and the universe. The Museum is located at 2001 Colorado Blvd., Denver, CO, 80205. To learn more about the Museum, check www.dmns.org, or call 303-370-6000.

Many of the Museum's educational programs and exhibits are made possible in part by generous funding from the citizens of the seven-county metro area through the Scientific & Cultural Facilities District.