Jewel Cave National Monument
South Dakota

National Park Service
U.S. Department of the Interior

Welcome!

For the past century Jewel Cave has been the center of science and world class discoveries. It is possibly the largest, longest, and most complex cave in the world. The geologic puzzles and spectacular passages hold many lifetimes of exploration. Although the cave extends hundreds of miles, the current explored area is only within a few square miles.

Geology

Formed around 20-50 million years ago in the Mississippian Pahasapa (Madison) Limestone after the Black Hills uplift around 60 million years ago. Jewel Cave lies under a caprock of Pennsylvanian Minnelusa, which protects the cave from hydrologic erosion. Divided into distinct layers within the Madison, the cave cuts through paleo-filled passages, chert, thick crystals, and dolomite.

Jewel Cave	
Cave Length	146.18 Miles
Cave Depth	632.53 feet
Years of Known Exploration	1900 - present
Visitors per Year	~100,000

Exploration

Cavers regularly explore the furthest reaches of the cave - primarily the southeast corner and the western end. Trips last between sixteen hours and four days. A survey camp was established to allow further exploration in the southeastern corner beyond the restricting Miseries. Through the help of organized volunteers and the Paha Sapa Grotto, Jewel Cave's surveyed length increases a few miles a year.

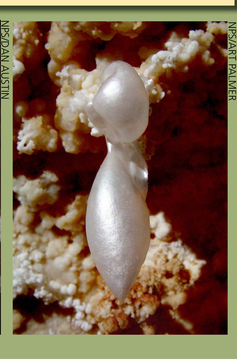
Access

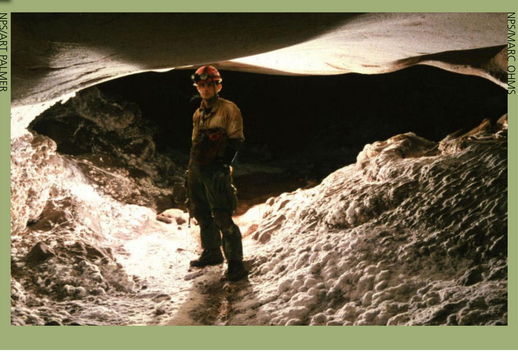
Three tours are available to the general public: a 1/2 mile scenic tour, a 1/2 mile wild caving tour, and a 1/2 mile lantern tour. These tours allow people to see the great diversity of Jewel Cave. Jewel Cave's trip leader program provides additional access to key spots in the cave and prepares people for exploration and survey trips.


NPS/DAN AUSTIN

NPS Caver next to frostwork at Rambling Loft


NPS/DAN AUSTIN


NPS/ART PALMER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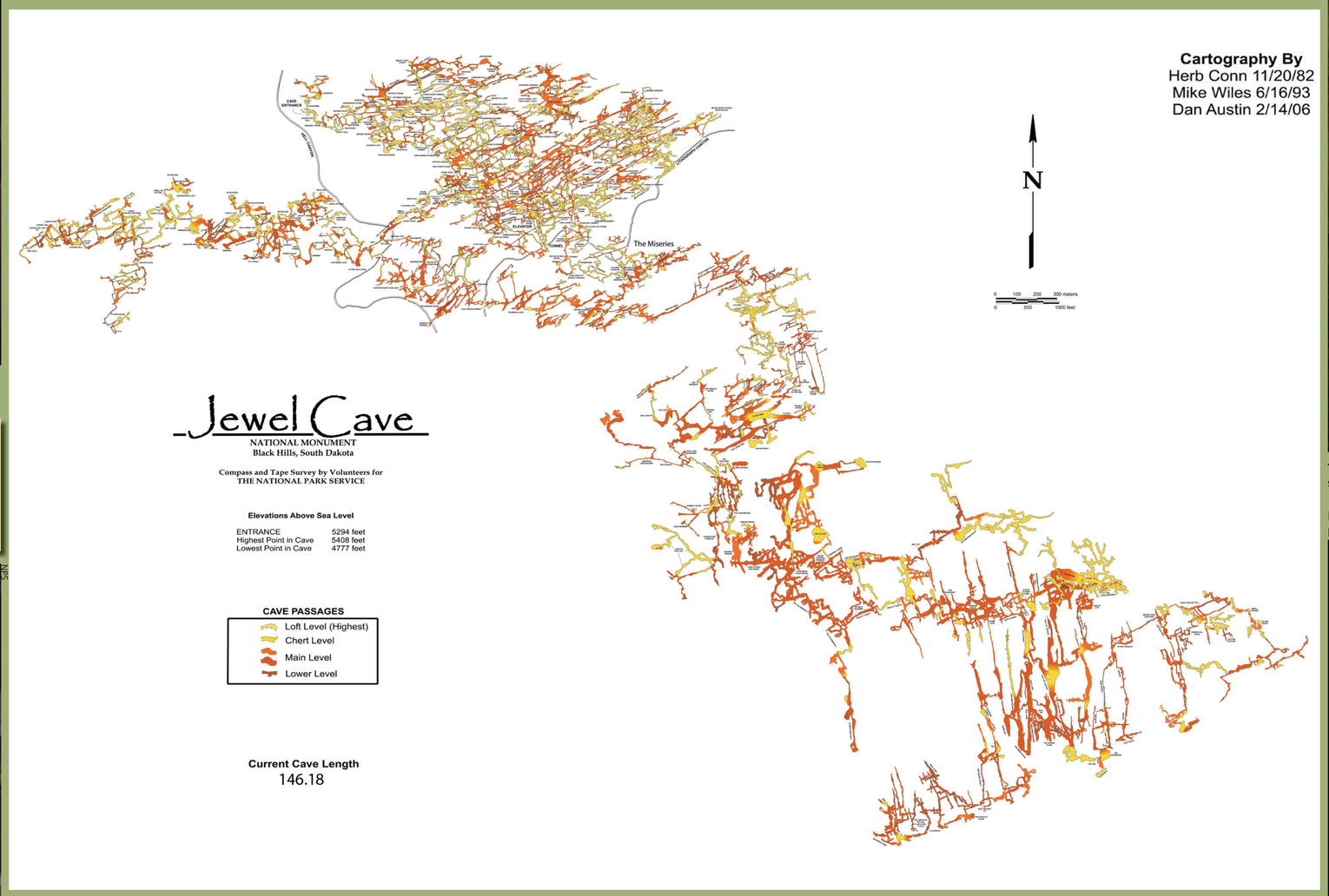


NPS/DAN AUSTIN

Top: Cavers travel through the loft section of Jewel Cave. Flagging tape marks special areas protected for their intrinsic value.

Bottom: The jewels of Jewel Cave, Dogtooth Spar calcite crystals, line many passages.


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Speleothems

The unique setting and speleogenesis of Jewel Cave results in many extraordinary speleothems. Calcite spar covers nearly every wall. Rare hydro-magnesite balloons line passages and conulite baths rest gently in ancient chambers.


NPS


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Thermal and barometric changes in the cave are measured at points to extrapolate the volume of air flow based on weather changes. Current air flow research indicates that the total volume of the cave exceeds 7 billion cubic feet - only around 2% has been discovered so far.


ANDREAS FETSCH

Top Right: Gypsum flowers along lip and breccia

Left: Thermal imaging of human temperature during lantern tour

Bottom Right: Water samples being collected at Big Duh

Far Right: Ultra-sonic anemometer measuring wind speed and volume in historic section of Jewel

Research


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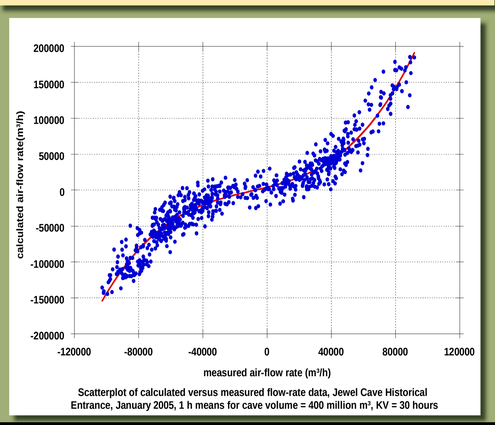
Through cooperation with international universities, research institutions, and other federal agencies, Jewel Cave National Monument continues to pursue ground breaking research in karst science. Further research in the park includes an intensive geologic investigation into the faulting patterns and a paleontological flood study to correlate the role of large scale floods with the current speleogenetic model.



Scatterplot of calculated versus measured flow-rate data, Jewel Cave Historical Entrance, January 2005, 1 h means for cave volume = 400 million m³, KV = 30 hours

Contact Information

Jewel Cave National Monument

11149 US 16
Building B12
Custer, SD 57730

ph 605-673-2288
fax 605-673-8301
jeca_interpretation@nps.gov

For further information see http://www.nps.gov/jeca