

Gold Fever Leads to Crystal Findings

OVER A HUNDRED MILES OF MAZE-LIKE PASSAGES LAY HIDDEN BENEATH the ponderosa pine covered Black Hills. Yet, this mysterious crystal landscape sat undiscovered until modern times. The gold rushes of the late 1800s would change this, bringing modern equipment, and explorers with a curiosity for geology to crack open this vast treasure of scientific discoveries.

Save for the occasional fur trapper, European-American presence in the Black Hills remained non-existent until Lt. Colonel George A. Custer’s expedition into the hills in 1874. Upon returning, Custer reported finding gold along French Creek, near present day Custer city. News of the gold spread throughout the east, and prospectors flooded the hills in violation of the Laramie Treaty of 1868 which ceded the Black Hills to the Lakota.

At first, the U.S. army acted to remove the invading prospectors, but the 11,000 new residents of Custer overwhelmed the army’s limited abilities. These prospectors, who lived in tents and shacks, soon found that French Creek offered poor panning. The hopeful gold diggers remained, their population shifting around the hills following reports and rumors of other gold finds. After the first year, only 250 remained in Custer. These pioneers took permanent residence in the area and shifted from gold to timber and ranching.

Following the rumors of gold, Felix Michaud, a French Canadian, traveled with the 1874 gold rush to Custer. As gold fevered died, he took residence in the new town of Custer and ran a livery near Lightning Creek Pass. His sons, Frank and Albert, took up their father’s gold fever and made their way to the Klondike in 1897. Like their father, they found the tales of gold better than reality and soon returned to the Black Hills.

In the spring of 1900, as the Michaud brothers rode from Newcastle up Hell Canyon to their father’s ranch on Lightning Creek, they heard a strange noise. When they investigated they found a strange wind blowing from a hole in the canyon wall. Curious, they continued to Felix Michaud’s ranch only to return a few days later with tools and charges that they used to widen the passage. Inside, they found a cave filled with dazzling calcite crystals that lined passage after passage.

The brothers filed a mining claim on the site and began a process of widening the passageways and constructing navigable paths in the cave. Few could mistake their intention to open their find to the public as a place for tourism.

News of Jewel Cave’s crystal passages reached President



Top: Jewel Cave’s famous nailhead spare glows beneath a caver’s head lamp (NPS Photo). Bottom: A ranger and a family stand outside the newly constructed Ranger Cabin in 1936 (NPS Photo).

Theodore Roosevelt who declared the site a national monument on February 7, 1908, a distinction which preserved the cave for scientific and public interest. Management of the cave and its tours would change hands several times over the years before the National Park Service took over tours, conservation, and the exploration of the cave in 1940.

Letter from the Superintendent

The employees of Jewel Cave National Monument are pleased to welcome you! As a unit of the National Park Service, we invite you to explore the unseen world that lies below.

With more than 150 miles surveyed, Jewel Cave is recognized as the second longest cave in the world. Airflow within its passages indicates a vast area yet to be explored, and exploration continues.

Our variety of cave tours provide opportunities for you to view this pristine cave system and its wide variety of rare formations including calcite crystals, stalactites, stalagmites, draperies, frostwork, flowstone, boxwork, and hydromagnesite balloons. The cave is an important hibernaculum for several species of bats.

Established in 1908, Jewel Cave provides a glimpse into the inner workings of planet earth and by going on a guided cave tour with a Park Ranger, you can experience the wonders of nature for yourself.

Topside, the scenery is spectacular as well and by walking the hiking trails, you will get great views of the Black Hills. Here, you can feel like you’re part of the natural world as you witness the effects of fire on the forest, observe the native wildlife which includes mule deer and elk, and get a sense that you’ve stepped back in time by going on the Historic Cave Tour.

Welcome to Jewel Cave!

Larry Johnson,
Superintendent

151 Miles of Charted Passages

Mile after mile of maze-like corridors make Jewel Cave the second longest cave in the world; but, the survey is far from complete. Volunteer teams continue to enter the cave each month to explore and map out uncharted passages. See the display sign above the visitor center desk to discover the current known length.

Surface Opportunities


Jewel Cave National Monument is more than just an underground resource. Park Rangers offer daily programs covering wildfires, bats, and animal tracks. And with ten miles of trails in or adjacent to the Monument, opportunities abound to experience more than just a cave tour during your visit.

Guided Tours of Jewel Cave

Access to Jewel Cave is only available by our extremely popular ranger guided tours. A wide range of touring options are available to accommodate any level of physical activity or adventurous spirit. Reservations are strongly recommended for all tours at all times of the year.

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National Park Service

U.S. Department of the Interior

Jewel Cave National Monument

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The National Park Service cares for the special places saved by the American people so that all may experience our heritage.

Rules and Regulations

PETS

Do not leave your pet in your vehicle while visiting the cave or for any length of time during the summer. Temperatures can become extreme and cause the death of pets left.

Pets are only permitted in the visitor center parking lot. They are not permitted on any trails or picnic areas. We ask that you abide by these rules to protect your pet and Monument wildlife.

Kennel space is available in the nearby town of Custer

TRAVELING IN THE MONUMENT

Off-road driving or bicycling is prohibited in the monument and on its trails.

Deer frequent Monument roads; be aware of their presence as collisions are common.

UNDEVELOPED CAVES IN THE MONUMENT

Entrance into undeveloped caves within Monument boundaries is not allowed without a special use permit. Untrained, ill-prepared and ill-equipped exploration of caves can damage cave formations and is a major reason for cave-related injuries and deaths. These resources are protected by federal law for future visitors to view in their natural state.

WILDLIFE, PLANTS, ARTIFACTS, AND OTHER NATURAL RESOURCES

Please help keep the Monument in its natural state. Removing or disturbing any natural resources on the surface or in the cave is illegal. Please do not remove artifacts, bones, rocks or cave formations. Each aspect of the cave plays an important role in the Monument’s history.

Wildlife plays a major part in the Monument’s ecosystem. Please do not

disturb wildflowers, plants or wildlife. Feeding of wildlife is not allowed.

Bats are common at Jewel Cave and can be found on the Historic Lantern Tour or in the surrounding forested land. Please do not disturb, any perched bats.

WEAPONS

Federal law allows people who can legally possess firearms under federal, South Dakota, and local laws to possess firearms while visiting Jewel Cave National Monument. However, firearms are not permitted in any monument facilities or cave tours.

Hunting and trapping are not permitted on any part of Jewel Cave National Monument.

Left: A ranger leads a guided trip along the Roof Trail. (NPS Photo).

Hiking on the Cave

	Length	Conditions	Description
Roof Trail	0.25 miles (30 minutes)	Moderate inclines	Explore the relationship between the surface and subsurface resources of Jewel Cave National Monument by walking this self-guided trail. The trail begins at the covered patio area outside the visitor center lobby and returns to the north end of the visitor center. Downloadable audio guides of the trail available at www.nps.gov/jeca
Canyons Trail	3.5 miles (2 - 4 hours)	Moderate to steep inclines	Become part of the backyard in Jewel Cave. Explore the surface resources and geologic features of the Monument. The trail begins at the covered patio outside the visitor center lobby and winds its way down Lithograph Canyon. Turning right at the fence, enter Hell Canyon and stroll along a combination of unpaved roads and meadows to a sign that leads to the Historical Entrance of Jewel Cave.
Hell Canyon Trail	5.5 miles (2 - 4 hours)	Easy to fairly strenuous inclines	Follow along limestone cliffs with outstanding views of Hell Canyon and the surrounding area. From Jewel Cave, the trail head is approximately one mile west of the Monument visitor center entrance on the northside of Highway 16. The trail begins just west of the parking area, and the first 1/2 mile climbs at a steep pitch. From there, grades are level to easy. The last two miles follow a two-track road along the bottom of Hell Canyon.

The map shows the layout of Jewel Cave National Monument. Key features include:
- **Trails:** Hell Canyon Trail, Canyons Trail, and Roof Trail.
- **Visitor Center:** Located near the center, with a green box highlighting 'Scenic, Discovery and Wild Cave Tours'.
- **Historic Area:** Labeled 'Historic Area (summer only)' and 'Historic Lantern Tour'.
- **Geography:** The monument is situated between the Black Hills National Forest to the west and south, and Lithograph Canyon to the east. Hell Canyon is located to the south.
- **Infrastructure:** Highway 16 runs along the eastern and southern edges. A road leads 'To Newcastle, Wyo.' to the west.
- **Legend:** Includes symbols for Information (question mark), Parking (P), Picnic area (table and chairs), Restrooms (toilet), Ranger Cabin (cabin), and Wheelchair accessible (wheelchair).
- **Scale:** A scale bar shows distances in kilometers (0 to 0.5) and miles (0 to 0.5). A north arrow is also present.

THINGS TO REMEMBER

- Always inform someone of your whereabouts and hiking plans.
- Have water with you at all times when on trails.
- Eat before hiking or carry snacks with you.
- Pack out your trash and if trash is found along the trail, please pick it up.
- Natural features must remain undisturbed.
- Please do not pick the wildflowers.
- Stay on designated trails and do not cut switchbacks.
- Watch for poison ivy, rocks and other hazards along the trail.
- In summer, check your body and clothing frequently for ticks.
- Cell service is not available and nonexistent at the monument. Do not rely on cell phones or GPS.
- Be aware of frequent thunderstorms during summer afternoons.

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Surface Programs

ALTHOUGH OFTEN FORGOTTEN, THE SURFACE of Jewel Cave also provides a unique, experience within the Black Hills. A guided hike along the Monument’s trails, or a chance to speak one-on-one with a Park Ranger on the visitor center’s patio, will awaken a deeper understanding of the ponderosa forest, and the blossoming prairie landscape of the Jasper Fire area. Guided ranger programs are offered throughout the summer months.

GUIDED ROOF TRAIL HIKES
A forty minute guided hike along the Roof trail departs daily. Guides discuss the native flora, fauna, forestry, and the interconnection between the cave and surface.

Volunteer Opportunities

NUMEROUS VOLUNTEER OPPORTUNITIES are available at Jewel Cave for all walks of life and age groups. Help keep the Monuments surface clean by assisting resource management with invasive plant removal, lint cleaning and cave restoration. Groups are welcome to participate.

Experienced cavers also contribute many volunteer hours to Jewel Cave as they assist with surveying, exploration, and

GUIDED CANYONS TRAIL HIKES
A three hour guided hike along the 3.5 mile Canyons Trail departs daily. Visitors should bring a light snack and extra water. Hike the two canyons to Jewel Cave’s historic entrance and learn about the native flora, fauna, and important roles the canyons play in the development of cave formations deep beneath the surface.

PATIO TALKS
Join a Park Ranger on the visitor center patio for an interactive demonstration. Patio talks occur throughout the summer days with topics ranging from caving techniques to fire-fighting.

resource management activities.

To learn more about the volunteer opportunities go to nps.gov/jeca and click on Support Your Park. Volunteer opportunities are available on a requested basis. Plans are strongly advised to be made at least thirty days in advance. Interested groups or individuals can contact Jewel Cave’s volunteer coordinator, at (605) 673-8300.



Boy Scout Troop 62 of Colorado volunteer at the monument restoring the Historic Area of the Cave by removing accumulated candle wax, lint, and other litter (NPS Photo).

Great Days to Visit the Cave

NATIONAL TRAILS DAY®
On June 4, 2011 join the National Park Service and outdoor enthusiasts across the country in participating with the American Hiking Society’s 19th annual National Trails Day ®. Help celebrate America’s 200, 000 miles of trails by hiking at Jewel Cave. Immerse yourself within the scenery. Listen, as rangers tell the story of Jewel Cave’s unique surface environment on a variety of ranger guided trail hikes. Times will be determined closer to date. No pre-registration is required for the events.

NATIONAL PUBLIC LANDS DAY
September 24, 2011: help celebrate service and recreation on public lands by being a part of the 170,000 people who will make a difference at more than 2,300 public land sites. At Jewel Cave, a variety of volunteer assistance is appreciated. By helping remove invasive plants, maintain hiking trails, or assist with cave restoration, volunteers on National Public Lands Day can help the National Park Service in the preservation of their cave. To learn more about what you can do in your area visit www.publiclandsday.org.

Schedule of Summer Surface Programs		
Activity	Times	Descriptions
Patio Talk	11:00 am, 1:00 p.m. and 3:00 p.m.	Join a park ranger in a thirty minute interactive discussion on the surface and cave environment.
Roof Trail	2:00 p.m.	Learn the surface and cave connections as a park ranger guides you on the easy quarter mile trail.
Canyons Trail	10:30 p.m.	Hike with a park ranger through the country learning about the surface and subsurface.
Patio talks and surface hikes offered from early June through late August. Availability may change depending on weather and extenuating circumstances. Off-season programs may also be available. Speak with a ranger to discover what is offered today!		

Become a Jr. Ranger

Using activity booklets designed especially for them, Junior Rangers are between 5 to 12, and explore their parks and monuments. The booklets introduce park stories and direct Junior Rangers to points of interest that might otherwise go unnoticed. A Junior Ranger is a learner. They learn more about a nation’s history, their own cultural heritage and the natural world. The learning is informal and fun as Junior Rangers discover both the Monument and what they can do to help conserve the resource for future visitors. When they have completed their activity booklets and ranger programs, children are sworn in as Junior Rangers and can earn a patch, badge or certificate. Speak to a ranger at the Visitor Center desk to get started on becoming a Junior Ranger today.



Pee Wee Ranger

A Pee Wee Ranger explores, learns and protects all national parks and monuments. This program is geared for three and four year olds. Upon receiving a Pee Wee Ranger booklet the Pee Wee Ranger with the help of their parents uses crayons, creativity and knowledge of Jewel Cave to complete it. Those completing the booklet earn a Pee Wee Ranger certificate and patch.



The Scout-Ranger Program

Jewel Cave welcomes Scout troops from across the nation to participate in our Scout Ranger program. This program gives troops the unique chance to take an active role in their monument by working alongside resource management to protect the fragile cave environment. Activity booklets, and ranger guided tours round out their day giving Scouts the chance to learn about careers in cave and environmental sciences with the National Park Service, and the heritage of the Monument, all while earning Jewel Cave’s Scout Ranger patch.



BIRDS OF PREY PRESENTATIONS
At 1:00 PM on June 25 and July 30, 2011 Wildlife Experiences, Inc., a non-profit organization dedicated to improving the lives of animals and people through wildlife education, raptor rehabilitation and avian conservation programs, will hold a Birds of Prey program on the Monument’s visitor center patio. These ever popular talks introduce families to owls, falcons, and buzzards. Speak with avian specialists and learn about avian conservation efforts. See www.wildlife-experiences.org to learn more.

The Fight Against Invasive Species Continues

JEWEL CAVE IS ONE OF THE MANY PUBLIC LAND SITES struggling to prevent some of America’s 5,000 invasive plants from spreading across its 1,275 acres of landscape. These plants compete against native plants depriving them of nutrients and sunlight. Left unattended, the lush tapestry of native grasses that flourish in the Monument would become a monoculture of invasive plants.

Perhaps the most common invasive species on the Monument is Canada thistle, which immigrants introduced to North American soils in contaminated crop seeds in the 1700s. Now spread throughout North American, this thistle covers over ninety acres of the Monument’s land.

Preserving Jewel Cave is not as easy as spraying pesticides and moving onto the next affected area. There is a cave to protect and “everything we do on the surface has the potential to affect the cave,” according to the physical science technical Rene Ohms. To combat the plants, a three-member vegetation crew uses an Integrated Pest Management approach which combines chemical, mechanical, and biological controls.

Among those approaches is the use of pesticide. According to the physical science technical Lee-Gray Boze, “Jewel Cave is in a karst environment causing ground water to quickly seep into the cave through permeable layers.” Use of pesticides can affect cave formations and water quality can cause the cave to be in an unnatural state.

In 2007, an environmental assessment was completed which established pesticides use zones based on the known geology and hydrology of the cave environment. Results showed pesticides could be used on half of the Monument. To verify pesticides are not seeping into the cave, Resource Management collects and tests water samples from the cave.

Each fall, Jewel Cave’s vegetation crew and a specialized Exotic Plant Management Team based out ofTheodore Roosevelt National Park team up to spray areas that need intensive work. In 2010, the Resource Management tested using acetic acid, in limited quantities, on Canada thistle. Using acetic acid in a few areas will, according to Ohms, “allow us to test it out first before expanding. It kills everything in the area where it is sprayed and has never been tested in a karst environment before. However, the acetic acid breaks down very easily and, almost immediately, will turn into carbon dioxide and water. It is not expected to hav eany effect on qater quality in the cave.” The results will be seen during the summer of 2011.

When Canada thistle grows above permeable layers of rock,



Jewel Cave’s vegetation crew fights Canada thistle by cutting the seed heads off the plants before they spread (NPS Photo).

where water seeps into the cave, other techniques must be used. In “no-pesticide treatment zones” of areas larger than 500 Canada thistle plants the biological control technique is used. Ohms states, “Insects such as gallflies and weevils, will be introduced into the environment in the spring and fall.” In smaller areas where insects cannot be supported by the Canada thistle, the vegetation crews’ primary technique of hand pulling and cutting is used. Devin McGinty, a member of the vegetation crew, explained, “Canada thistle’s seed head is cut then bagged so that the possible 5,000 seeds in the seed head do not spread.” Then the rest of the plant is pulled. “Stressing the root system for future growth,” he adds. This is an ongoing challenge because about 200 out of 800 Canada thistle sites are treated with this method each year.

“Our staffing is limited which is why volunteering is encouraged,” said Ohms. The vegetation crew all agreed volunteering alongside them will make progress go twice as fast. Seeds from invasive plants often migrate everyday from visitors walking on trails, driving on the highway and visiting the visitor center, having the seeds fall onto the ground. Although, fighting invasive plants is a never ending battle, Ohms believes “Jewel Cave is doing its’ best to eliminate small sites and maintain large ones to keep the cave in the most natural environment possible.”

Top: Invasive thistle species plague disturbed soils in the monument (NPS Photo). Middle: Houndstongue’s sticky burs travel on the cloths of unsuspecting hikers (NPS Photo). Bottom: The dried seedpods of last year’s black henbane line common hiking trails (NPS Photo).



White-nose Syndrome Moves West, Threatens Hibernating Bats

SINCE JANUARY OF 2007, WHITE-NOSE SYNDROME HAS SWEEPED WEST across the country, decimating bat populations and appearing in bat colonies as far west as St. Louis. The white fungus, *Geomyces destructans*, covers the muzzles of hibernating bats. This irritating fungus wakes up bats from hibernation too early, causing them to burn their fat reserves before the winter ends. Bat species that hibernate in caves and mine shafts are most at risk, as this fungus thrives in cool, humid environments. While there is little known about this fungus and the resulting White-nose syndrome (WNS), it appears that it is spread by bats and potentially humans as well.

With mortality rates as high as 90%, WNS is an unprecedented phenomenon. Biologists believe that the potential to spread this fungus into caves that serve as hibernation sites is too high of a risk to take. As a result, caves throughout the country have been closed to the public. All of the caves within the Black Hills National Forest are officially closed for one year, in an effort to prevent the potential spread of the disease. The U.S. Forest Service hopes that during this closure, scientists will work to better understand the cause, spread, and management of WNS.

So far, the Black Hills remain WNS free. Because the bats in the



White nose syndrome threatens the well-being of over 600 Townsend big-eared bats who hibernate through the winter in the Historic Lantern Tour route of Jewel Cave. (NPS Photo)

Black Hills do not migrate very far from this region and bats seldom cross the Great Plains from the east, there is less risk of a bat to bat transmission spreading the fungus here. There is, however, a risk of spreading the fungus by using gear used for caving in areas where WNS is prevalent in non-WNS caves.

Rooms near Jewel Cave’s Historic Entrance serve as the largest hibernacula for Townsend’s big-eared bats in the Black Hills. If WNS were to appear here, it would devastate the bat populations of the Black Hills.

The Monument requires cavers entering the cave to acquire permit. These permits have very specific guidelines that cavers must follow. One requirement, is the regular washing of caving gear inbetween every trip into undeveloped areas of the cave and the disinfecting of gear taken into WNS caves. The U.S. fish and wildlife Service suggests that caver’s scrub all dirt and ebris from gear then submerge all gear in a 10% solution of bleach to destroy the fungus.

The resource management team at Jewel Cave remains vigilant, yet optimistic, that WNS will stay out of the Black Hills.

Jewel Cave Trip Report 2010

ALTHOUGH JEWEL CAVE ACHIEVED its status as the second longest cave in the world many years ago, the approach of the 150th mile of surveyed passage was an accomplishment early in 2010. Dan Austin, lead cartographer for Jewel Cave, recalled the lead up to the historic survey: “we sent out an announcement that the 150th mile was imminent, and we thought it would be nice to have not just one team make it. It ended up being sixteen cavers split into three teams – probably, the most cavers in the cave in the same day. So no one team surveyed the 150th mile.”

“It’s hard to get someone from Arkansas to come up for just a day trip,” says Kelly Mathis, a survey leader who recently returned to the Black Hills to explore Jewel Cave. “Typically Jewel Cave’s been explored by people living here and got involved, or lived here and came back to explore.”

Completed on February 27, 2010, the 150th mile survey was different. Volunteers from Colorado, Kansas, New Mexico, Utah, and the local community heeded the call. The split teams made way through the cave with one team in the Cloudy Sky Room, another in the Hobgoblin’s Ballroom, and the third team traveling through the miseries to the Ant Farm. By the close of the day, the three teams amassed 3032.65 feet of passageway tipping Jewel Cave over the 150th mile mark.

As each survey team completes their trip reports, Resource Management puts their survey data into computers and the map of the cave grows. Completing the puzzle pieces of the cave opens up new areas, and the discovery of new short cuts can open once challenging areas for easy exploration.

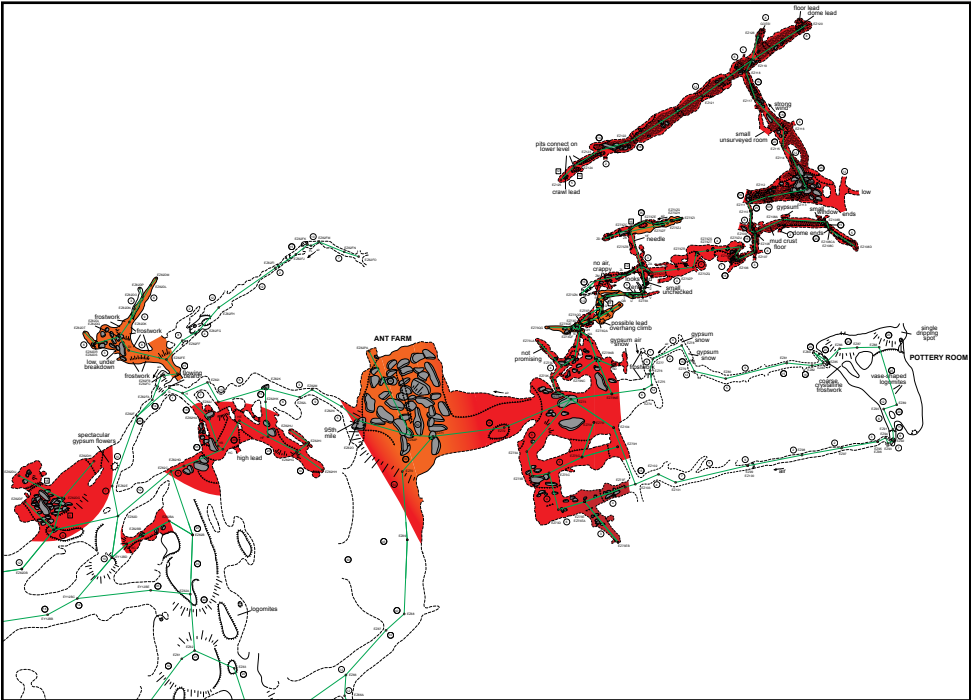
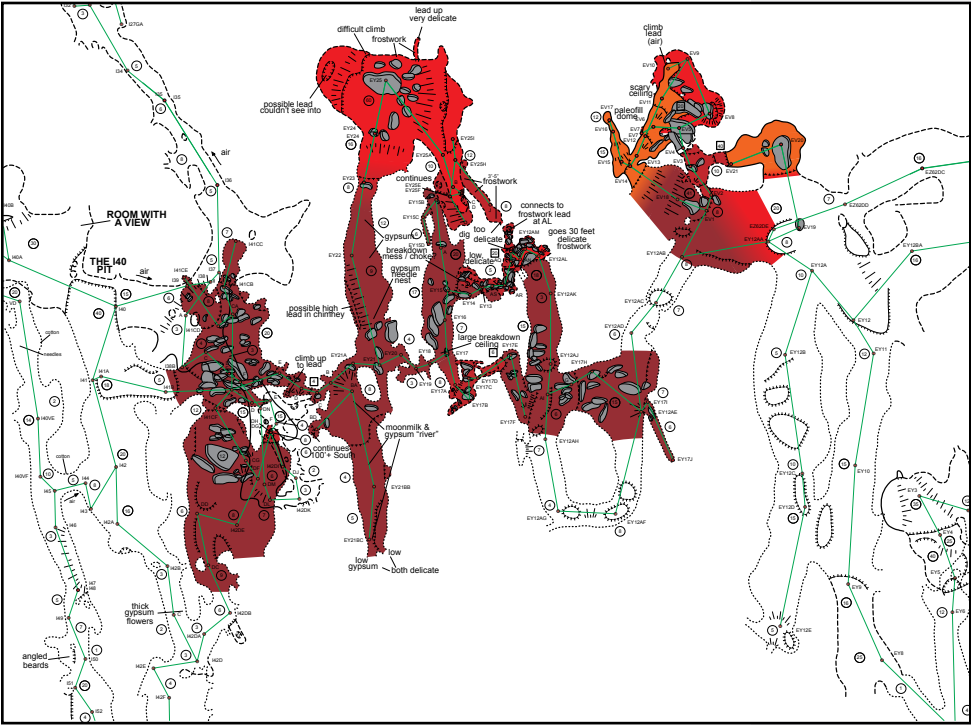
Such is the case with the Ant Farm area, which can be found in the southeastern portion of the cave along the route to Jewel Cave’s base camp. Uptil last year, travel to the Ant Farm was a multi-day trip that required surveyors to go south to the base camp and then loop northwards. The trail to the base camp comes close to the Ant Farm at the I40 pit, which surveyors scurt around on their way to camp.

Kelly Mathis led a camp trip to base camp last November. His priority on the trip: make a connection from the Ant Farm to the bottom of the I40 pit. Traveling north from base camp into the Ant Farm, Mathis surveyed west of the room until he found himself on the bottom of the I40 pit looking up at the trail to base camp. The new junction, a critical find, opened the Ant Farm for day trips.

Mathis’s interest in the Ant Farm took him back there in the spring of 2010. “Just five or six trips to mop-up everything. The 150th mile survey didn’t find anything that went anywhere. It was decent cave, but it only went a hundred to two hundred feet, no side leads that went anywhere,” Mathis says of his pre-trip thoughts. But after his first survey, he changed his mind, “I’m thinking we could be here a while. We only got one lead done. Every trip since then has been working the second lead. Just about a half mile of cave off one lead and there are more leads off that. We thought it would be a wrap-up, but so far

it’s been keeping everyone busy”

On the opposite side of the map, Austin leads a survey into Coyote Flats, a short spur, just before the western most edge of the cave that turns sharply south. This is an interesting turn for the western wing of the cave, which tends to jut far outwards with little north or south variation. This constraint, according to Austin is because the area “is constrained by faults or some geographic anomaly that doesn’t allow the cave to cross into more productive limestone.”



Top: The discovery of the I40 connection (shaded areas), cut travel to the Ant Farm allowing easier day trips to the area. Bottom: Initially believed to be an area to “mop up” with just a few trips, new leads branching north-east of the Ant Farm continue to excite. Right: Explorers pack gear into the Western Motiff (NPS Photo).

“The nature of the west,” says Austin, “is very difficult. There are no water refill spots except for an hour from the entrance so the west makes for much more demanding day trips.”

“The team aimed”, says Austin, “for leads as far south as you can go. I found a ledge going south – a big tube going straight down that led into a lot of maze passages with a lot of air movement.”

“Coyote Flats,” says Austin, “is under a ridge but it’s difficult to know where it will go because it’s all jumbled up – unlike other areas, such as Main Cave or out east, where the passages line up and are very linear, Coyote Flats is pushing south over a fault or geologic anomaly. Because of this, it has a different feel and different orientation than before. Once we cross it there will be a whole new section of cave.”

A lot more cave exists in each of these surveyed areas, and both Mathis, Austin, and the Jewel Cave’s fifty other volunteer surveyors plan more trips into the cave over 2010 and into 2011. Until all the branches of their areas are thoroughly mapped, explorers will be found, compass in hand, back in the cave.



Jewel Cave is Going Green

IN 1908 PRESIDENT THEODORE ROOSEVELT CREATED JEWEL CAVE National Monument when he set aside Jewel Cave to be preserved for its scientific research opportunities. In recognition of this vision, Jewel Cave National Monument began an effort in 2010 to evaluate its current practices, and revise them to better promote sustainable environment practices within the monument.

The newly created Environmental Management Team is looking at all of the Monument’s divisions to see where they can create greener practices. “It is important for Jewel Cave National Monument to go green so that we can reduce our impact to the environment, conserve natural resources, and set an example of sustainability,” says Rene Ohms, a member of the Environmental Management Team. Each division plays a part in this conservation effort, the Resource Management division began evaluating LED lights in the cave, the Maintenance division began an overhaul of the vehicle fleet, and the Interpretation division focused on increasing the use of recycled paper in publications and reducing oil use on the Historic Lantern Tour by incorporating light-emitting-diode (LED) lanterns.

The Resource Management division began experimenting with an LED lighting system in the cave to see if modern LED lights could replace the older lighting system.

The current cave lighting on the Scenic Tour route uses 108 incandescent and 14 mercury vapor lights. These lights are inefficient and heat the Scenic Tour passages, causing an increase in the cave’s temperature. The Resource Management staff hopes that a newer lighting system will solve this problem. The key advantage of an LED-based system is its lower energy usage, lower heat output, and wider spectrum of visible light.

Like other lighting devices, LED performance is temperature dependent. Most manufacturers publish ratings of LEDs for an operating temperature of 25°C – 16°C warmer than Jewel Cave’s ambient temperature. These temperatures concern the Environmental Management Team since If used in temperatures above or below their operating temperature, LED lights could fail.

To test the lights effect on the cave temperatures, this past year, staff placed several panels of LED lights along the Scenic Tour route. The staff evaluated the lights on their aesthetic impact, sustained light output, heat output, total energy use, and ability to handle the humid and cool cave environment before moving forward with updating the entire lighting system.

The maintenance division replaced some of their six-wheeled gasoline powered John Deere Gators with two electric powered golf carts. A fuel efficient Cheverlot HHR also replaced the Monument’s Ford Taurus. These cleaner vehicles help the Monument to reduce its carbon foot print on the environment. A carbon footprint is the total amount of greenhouse gas emissions caused by an organization; it is expressed in terms of carbon dioxide emitted. By reducing the Monument’s use of carbon dioxide via alternative fuels (electricity) and more efficient vehicles (Cheverlot HHR), the overall gasoline usage at the Monument has

dropped.

This paper is yet another example of the Monument’s focus on enacting better environmental practices. This paper, and future editions of this paper use recycled newsprint with biodegradable ink.

With these new policies, Jewel Cave leads the way, setting an example to surrounding agencies and the public in the creation of sustainable environmental practices.

Explore the Wilderness of Jewel Cave

LEAVE THE STAIRS AND RAILS BEHIND AND experience Jewel Cave’s wilderness. Take one the most challenging public tours offered by the National Park Service. The Wild Caving Tour takes visitors into the undeveloped sections of the cave, passing by some of the world’s rarest cave formations, while learning safe, low-impact caving techniques.

Throughout the tour, participants see a variety of formations including various forms of calcite crystal, frostwork, flowstone, boxwork, gypsum needles and rare hydromagnesite balloons.

Anyone having claustrophobia (fear of tight spaces) or acrophobia (fear of heights) should not attempt this tour. Participants must be over 16 or older and provide proof of age. A parent or legal guardian must sign a waiver of responsibility the day of the tour for any minor participating.

The tour is not for the faint of heart. The tour lasts 3-4 hours and is extremely strenuous. All participants should be in excellent physical health and be able to fit through a 8.5” by 24” crawl space before beginning the tour. Participants climb a 30 foot nearly vertical wall with the assistance of a hand line, chimney

between cave walls and crawl through tight passages.

The Monument provides hard hats and head lamps for each participant on the Wild Caving Tour. Participants must provide the following: sturdy, above ankle, rubber-soled, lug-soled boots; long pants or coveralls; a long-sleeved shirt; gloves; knee and elbow pads; a change of clothing, shoes; and a plastic bag for carrying soiled cloths and boots from the visitor center after the tour. Clean clothes and shoes must be brought to the visitor center when you check in before the tour. Clothing and footwear will be permanently stained by black manganese deposits encountered during the tour.

Reservations are required and can be made over the phone up to 28 days in advance. Tour size is limited to a minimum of 2 visitors and maximum of 5 visitors. The tour ticket must be paid for at the time you make the reservation. Tours may be canceled due to the lack of the required number of participants. For more information about this tour call the visitor center at 1-605-673-8300.



Rare hydromagnesite balloons are seen covering some of the passages on the Wild Caving Tour (NPS Photo).

Guided Cave Tours

Scenic Tour

As Jewel Cave’s most popular tour, the Scenic Tour route provides an opportunity to visit chambers decorated with calcite crystals and other speleothems as you walk along a paved trail with electric lighting. This moderately strenuous tour lasts 1 hour and 20 minutes. The tour enters and leaves the cave by an elevator inside the Visitor Center.

The scenic tour route involves walking up and down 723 stair steps along a 1/2 mile loop (equivalent to 40 flights of stairs). See the “jewels” of Jewel Cave - calcite crystals, called dogtooth and nailhead spar. Also see boxwork, cave popcorn, flowstone, stalactites, stalagmites, draperies, and cave bacon.

Historic Lantern Tour

Step back 70 years into the past. The Historic Lantern Tour is a 1940s-style adventure that gives a sense of what it was like to tour the cave in earlier days. Visitors enter and leave through the historic entrance and view the cave from an unpaved trail. Lanterns carried by each visitor light the way on this trip.

The tour route is approximately 1/2 mile long, and includes steep wooden steps, navigating uneven rocky terrain, bending and stooping. This tour is considered strenuous. The tour lasts approximately 1-3/4 hours. Participants must be at least 6 years old.

Discovery Tour

This 20-minute talk is an introduction the heritage of Jewel Cave. Participants view one large room of the cave. This easy cave tour enters and exits the cave by elevator in the Visitor Center, and involves walking up and down fifteen stair steps. The Discovery Tour is handicapped accessible.

Visitors on the Discovery Tour see two types of calcite crystal, as well as manganese and paleofill, which are not cave formations, but are important to the geology of Jewel Cave. Guides discuss the cave’s discovery, exploration, and the ongoing efforts to protect this valuable resource.

Wild Caving Tour

A 3 to 4 hour caving adventure into the undeveloped sections of the cave. See our brochure or the “Explore the Wilderness of Jewel Cave” article for full details.

Your Cave Tour Fees at Work

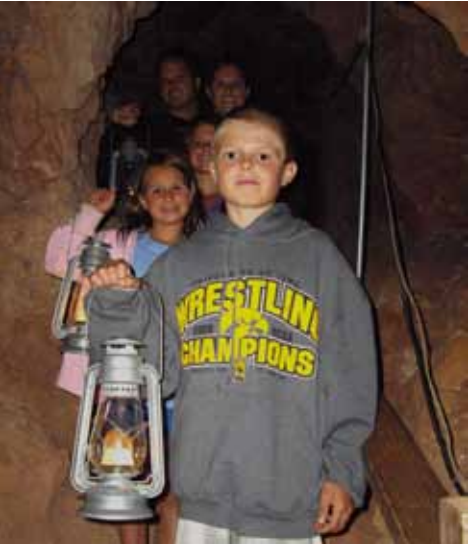
RECREATIONAL FEES STARTED WITHIN THE NATIONAL PARK Service in 1996. The effort was made to allow park sites the ability to collect fees for tours and visitor services. The added revenue assisted with decreased funding issues. Fifteen years later, the program continues at many sites and has enhanced the quality of visitor experiences and improved resource protection.

Jewel Cave National Monument collects fees for its interpretive cave tours throughout the year. Many visitors perceive these fees as entrance fees to the Monument, similar to fees being collected at other park sites. However, the Discovery Tour is the only “entrance” fee. All other cave tours are considered expanded amenity fees. The difference is that entrance fees typically do not involve staff time, whereas expanded amenity fees include services.

Fee funds are often used toward visitor-related deferred maintenance projects, such as the upgrading of restrooms, paving roads, building trails, and repairing infrastructure. In 2010, the National Park Service spent between \$80 to 100 million dollars of fee revenue toward various projects. Each site that collects fees is required to have a recreational fee spending plan that provides guidance toward the use of revenue. Rather than carry large balances, planned projects draw down fee funds to more reasonable levels.

The Monument is excited for the use of its fee funds over the next two years. First, several interpretive panels are being planned for installation in the fall or early winter of 2011. The placement locations of nearly twenty panels consist of the Roof Trail, Historic Cabin Area, visitor center patio, and parking lot. Second, the visitor center will witness new displays and exhibits in 2012. The initial planning process begins in 2011, with installation planned for the following year. Both projects are geared toward provoking visitors into even more connections with the heritage stories of the Monument.

Each year, fee funds routinely pay the salaries of visitor use assistants (fee collectors) at the Monument. Cave technicians with the resource division are also funded from fee monies. In general, 80 percent of all fee revenue stays within the Monument for use toward projects and staff salaries. At times, visitors inquire about ticket prices and free access to public lands. Granted, the observation is warranted. Yet, without fee funds coming into the Monument, many visitor services would not be available.



Top: Sawicki squeezes through the Brain Drain on the Wild Caving Tour (NPS Photo).

Above: Lanterns light the way into the cave on the Historic Lantern Tour (Photo Lydia Austin).



Above: Visitors on the Scenic and Discovery Tours begin with a visit to the Target Room (NPS Photo).

Tour Reservations

VISITORS ARE STRONGLY recommended to make reservations when planning their visit to Jewel Cave. Tours often fill ahead of time throughout the year. Calling ahead for a reservation allows visitors to plan their day around their tour time, rather than waiting for the next available tour.

- Cave tour tickets can be purchased up to seven days in advance. Wild Caving Tour participants and Groups 10 or larger can reserve tickets up to 28 days in advance.
- To purchase tickets over the phone, you must speak directly with a ticket sales staff member and have a major credit card ready during the call.

- Staff are available for phone reservations at (605) 673-8300 between 8:30 a.m. to 4:00 p.m. Mountain Time.
- No messages or voice mail will be taken for the purpose of making a reservation.
- Please plan ahead when making reservations. All reserved tickets must be picked up at least 30 minutes prior to tour time.
- Monument staff are not authorized to call outside the U.S.
- Teachers are encouraged to call the Visitor Center to inquire about program information.
- Educational groups may qualify for an academic fee waiver.



Delicate draperies and flowstone decorate the walls along the Scenic Tour (Photo Caroline Hartmann).

Cave Tour Safety

MONUMENT STAFF ENDEAVOUR TO INSURE ALL tours are conducted in a safe manner that protects both the visitor and the resource.

- All cave tours are ranger-guided and require a minimum of 2 participants.
- The following items are NOT allowed on any cave tours: food, gum, candy, drinks, tobacco products, tripods, walking sticks, weapons, pets, and backpack baby carriers.
- The Scenic and Historic Lantern Tours are considered moderately strenuous. These tours are not recommended for anyone with heart, respiratory, or lower joint conditions.
- Dimensions of all items (purses, handbags, cameras, etc.) carried on the Scenic and Discovery Tours must be less than 10” by 6” by 5”. Items carried on the

- Historic Lantern tour must be smaller than a deck of cards.
- The cave temperature is 49°F (9°C). A light jacket, sweater, or sweatshirt is recommended.
 - Low-heeled, closed-toe, rubber soled shoes are highly recommended on the Scenic and Discovery Tours.
 - Close-toed shoes are required for the Historic Lantern Tour.
 - Flash photography is allowed on the Scenic tour and Discovery Tours only. Photographers are asked to be respectful of their fellow visitors and avoid blinding flashes, or delaying the tour group.
 - Service dogs trained to mitigate the effects of a disability are allowed on the Scenic and Discovery Tours.

Cave Tour Fees		
Tours	Fees	Tour Lengths
Scenic Tour	\$8 - Adults \$4 - Youth (6 -16) Free - Children (0 - 5)	1 hour and 20 minutes
Historic Lantern Tour	\$8 - Adults \$4 - Youth (6 - 16) Minimum Age - 6	1 hour and 45 minutes
Discovery Tour	\$4 - Adults Free - Youth (6 - 16) Free - Children (0 - 5)	20 minutes
Wild Caving Tour	\$27 - Adults Minimum Age - 16	3 - 4 hours
Interagency Access Pass	Free	Valid for pass holder and 3 persons on the Discovery Tour Only.
Interagency Senior Pass	\$10	Other cave tour fees are half price for the pass holder only.
Interagency Annual Pass	\$80	Valid for pass holder and 3 persons on the Discovery Tour Only.

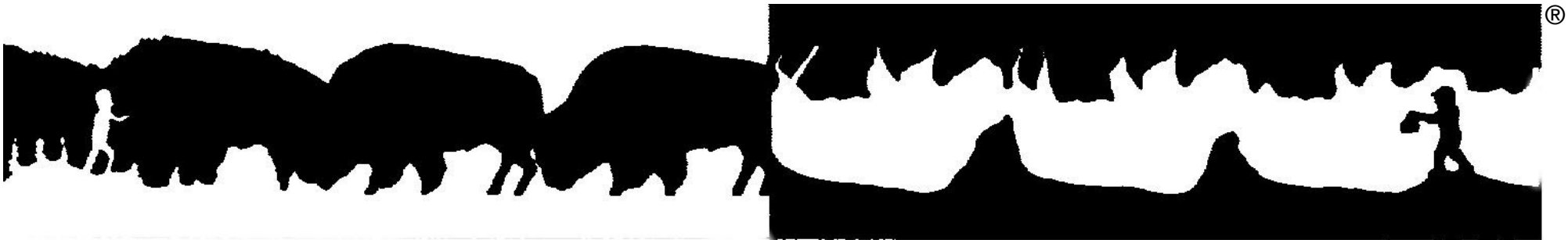
Cave Tour Program Schedule			
Spring Tours : April 11 - May 8		Visitor Center Hrs. 8:30 a.m. to 4:30 p.m.	
Scenic Tour	10:00 a.m.	12: 40 p.m.	2:40 p.m.
Discovery Tour	11:35 a.m.	1:35 p.m.	3:35 p.m.
Late Spring Tours : May 9 - May 27		Visitor Center Hrs. 8:30 a.m. to 4:30 p.m.	
Scenic Tour	9:20 a.m. 10:00 a.m.	11:20 a.m. 12: 40 p.m.	2:00 p.m. 2:40 p.m.
Discovery Tour	11:35 a.m.	1:35 p.m.	3:35 p.m.
Early Summer Tours : May 28 - June 4		Visitor Center Hrs. 8:30 a.m. to 5:30 p.m.	
Scenic Tour	9:20 a.m. 10:00 a.m. 10:40 a.m.	11:20 a.m. 12: 40 p.m. 2:00 p.m.	2:40 p.m. 3:00 p.m. 3:40 p.m.
Discovery Tour	11:35 a.m. 1:35 p.m.	3:35 p.m.	4:25 p.m.
Summer Tours : June 5 - August 20		Visitor Center Hrs. 8 a.m. to 7 p.m.	
Scenic Tour	9:20 a.m. 10:00 a.m. 10:20 a.m. 10:40 a.m. 11:00 a.m. 11:20 a.m. 12:00 p.m.	12:20 p.m. 12:40 p.m. 1:00 p.m. 1:20 p.m. 2:00 p.m. 2:20 p.m. 2:40 p.m.	3:00 p.m. 3:20 p.m. 4:00 p.m. 4:20 p.m. 4:40 p.m. 5:00 p.m. 5:20 p.m.
Historic Lantern Tour Beginning June 12	9:45 a.m. 10:45 a.m.	12: 45 p.m. 1:45 p.m.	3:30 p.m. 4: 30 p.m.
Discovery Tour	9:35 a.m. 11: 35 a.m.	1:35 p.m. 3:35 p.m.	6:05 p.m.
Wild Caving Tour Beginning June 12	12:30 PM daily, except for Tuesdays and Fridays. Call ahead for reservations.		
Late Summer Tours : August 21 - September 10		Visitor Center Hrs. 8:30 a.m. to 5:30 p.m.	
Scenic Tour	9:20 a.m. 10:00 a.m. 10:40 a.m.	11:20 a.m. 12: 40 p.m. 1:20 p.m.	2:00 p.m. 2:40 p.m. 3:00 p.m. 3:40 p.m.
Historic Lantern Tour Until August 27	9:45 a.m. 10:45 a.m.	12: 45 p.m. 1:45 p.m.	3:30 p.m.
Discovery Tour	9:35 a.m. 11: 35 a.m.	1:35 p.m. 4:25 p.m.	
Wild Caving Tour Starting August 28	12:30 p.m. daily, except for Tuesdays and Fridays. 11:30 a.m. three days a week. Call Ahead for Reservations		
Early Fall Tours : September 11 - October 10		Vistor Center Hrs. 8:30 a.m. to 4:30 p.m.	
Scenic Tour	9:20 a.m. 10:00 a.m.	11:20 a.m. 12: 40 p.m.	2:00 p.m. 2:40 p.m.
Discovery Tour	11:35 a.m.	1: 35 p.m.	3:35 p.m.
Wild Caving Tour	May be offered through out the off-season depending on staff availability. Call ahead for scheduling and reservations.		
Fall Tours : October 10 - 22		Vistor Center Hrs. 8:30 a.m. to 4:30 p.m.	
Scenic Tour	10:00 a.m.	12: 40 p.m.	2:40 p.m.
Discovery Tour	11:35 a.m.	1: 35 p.m.	3:35 p.m.
Winter Tours : October 23 - April 9		Visitor Center Hrs. 8:30 a.m. to 4:30 p.m.	
Scenic Tour	10:00 a.m.	2:00 p.m.	
Discovery Tour	9:05 a.m.	12:45 p.m.	3:45 p.m.
For advance tickets, call 605-673-8300 between 8:30 a.m. and 4:00 p.m. Mountain Time.			
Reservations are strongly recommended at all times of the year as tours often fill several hours in advance. Phone ahead for tour availability as program schedules are subject to change due to emergancy situations, weather conditions, staffing limitations or other extenuating circumstances.			



National Park Service
U.S. Department of the Interior

Jewel Cave National Monument
11149 U.S. Hwy 16 Building B-12
Custer, SD 57730

EXPERIENCE YOUR AMERICA™



Black Hills Parks and Forests Association

The Black Hills Parks and Forests Association cooperates with state and federal partner agencies in promoting public understanding, appreciation, and stewardship of the Black Hills natural and cultural heritage through its bookstores in the visitor centers of Jewel Cave National Monument, Wind Cave National Park, Buffalo Gap National Grassland, Custer State Park and Black Hills National Forest.

The association sells books, maps and park-related publications, as well as publishes new books and materials about these significant areas. All profits from the association sales support the education, interpretive, and research activities of these

agencies by printing interpretive publications, funding internship positions, purchasing educational supplies, equipment and assisting with research grants.

Many different types of products are available in the bookstore including Jewel Cave National Monument specific publications. These publications, maps, and items are available at the bookstore, by mail order, or from the association web site www.blackhillsparks.org, fax: 605-745-7021, or e-mail bhpf@blackhillsparks.org. Membership in the Black Hills Parks and Forests Association supports the organization and entitles members to a 15% discount at National Park Service sites. The membership is \$29.95 per year. For more information, call 605-745-7020



JEWEL CAVE: A GIFT FROM THE PAST

At over 150 miles, Jewel Cave is the second longest cave in the world and is known for its extensive display of calcite crystals and other rare formations. Art Palmer tells the geologic story of Jewel Cave in terms anyone can understand, but technical enough to be of interest to professionals. Informative tables, charts, and interesting photography, along with Palmer's easy reading text, make this book a wonderful addition to the library of anyone interested in caves or geology.

\$8.95



IMAGES OF AMERICA: JEWEL CAVE NATIONAL MONUMENT

This is the story of Jewel Cave National Monument as told through the photographs that document its history. Judy Love traces the development of this hidden gem, from its humble beginnings as a small cave operated by two entrepreneurial brothers, to its development in the 1930s by the Civilian Conservation Corps, to the explosion of exploration brought about by area legends Herb and Jann Conn, and finally to current complex surveying methods and meanderings by area adventurers.

\$19.99



THE JEWEL CAVE ADVENTURE

This is the story of how Herb and Jan Conn got involved in the exploration and mapping of Jewel Cave when it was just a "small" cave and the subsequent years of bringing Jewel Cave into the realm of a real world class cave. Even if you've never met them, you will know Herb and Jan after reading this book.

\$11.95



JEWEL CAVE: THE STORY BEHIND THE SCENERY

With 48 pages of text mixed with over 70 photographs, this book joins the ever popular "Story Behind the Scenery" line of books from KC Publications. Karen Rosga tells the story of the cave, the surface resources, and the monument's history. Exciting color photographs by various photographers give the reader a feeling for what is to be found in the cave and on the surface.

\$11.95

South Dakota National Park Neighbors



The Volunteers-In-Parks Program Needs You!

- Anyone can be a VIP
- Perform a variety of jobs to assist in the preservation and protection of your monument.
- Assist at the information desk
- Give guided talks and tours
- Help maintain trails and remove exotic plants
- Contact Bradley Block, Jewel Cave's VIP coordinator, to learn more!
- See volunteer.gov/gov for more information



Mt. Rushmore National Memorial

Mt. Rushmore is located approximately 50 minutes from Jewel Cave. Carved from 1927-1941 by Gutzon Borglum. The memorial depicts the portraits of George Washington, Thomas Jefferson, Theodore Roosevelt and Abraham Lincoln. Today Mount Rushmore is host to almost three million visitors each year from around the world. Over the decades, Mount Rushmore has grown in fame as a symbol of America-a symbol of freedom and a hope. (605) 574-2523 www.nps.gov/moru



Wind Cave National Park

Wind Cave is a 45 minute drive from Jewel Cave. It is one of the world's longest and most complex caves. It is famous for its boxwork, an unusual calcite cave formation resembling honeycomb. The park's surface area contains 28,295 acres of mixed-grass prairie, ponderosa pine forest and related wildlife. Numerous hiking trails offer visitors the opportunity to explore the surface environment of this unique national park. Bison, pronghorn antelope and prairie dogs all make their home here. (605) 745-4600 www.nps.gov/wica



Badlands National Park

Badlands National Park is located approximately 2-1/2 hours from Jewel Cave. The park consists of 244,000 acres of sharply eroded buttes, pinnacles and spires blended with the largest, protected mixed-grass prairie in the United States. Its wilderness area covers 64,000 acres and is the site of the reintroduction of the black-footed ferret, the most endangered land mammal in North America. (605) 433-5361 www.nps.gov/badl

