Carlsbad Caverns National Park

CANYONS & CAVES

A Newsletter from the Resources Stewardship & Science Division

Issue No. 36 **Spring 2005**

Looking south along a portion of the jagged escarpment edge in the park's designated wilderness. (NPS Photo by Dale Pate)

Edited by Dale L. Pate
Proofreading: Paula Bauer

TABLE OF CONTENTS

All issues (thanks to Kelly Thomas and Bridget Litten) can be downloaded as a PDF file from the park website - **http://www.nps.gov/cave/pub-pdf.htm**

Address: 3225 National Parks Highway, Carlsbad, New Mexico 88220

RESOURCE NEWS

NEW CAVE – One more cave has been documented in the backcountry bringing the total number in the park to 111.

SEASONAL BIOTECH Kristin Dorman-Johnson is back on board until October 1. She will continue working on the Barbary sheep project.

BAT RESEARCHER Nick Hristov will continue his work on the advanced thermal infrared imaging census of Mexican free-tails beginning around April 10, throughout the summer

and into October. Nick is a post-doctoral researcher at Boston University.

SPRING BIRD COUNT MAY 14 – The Spring Bird Count this year will be Saturday, May 14, once again coinciding with International Migratory Bird Day. The count is county-wide and open to anyone who's interesting in help out. Volunteers are needed. Count compiler is Steve West. Call him at 885-3636 to sign up.

DEAD BATS AT THE NATURAL ENTRANCE – Interpretation rangers when opening the natural entrance route for Carlsbad Cavern on the morning of April 5, 2005 found 106 dead Mexican free-tailed bats along the trail in the entrance area. Visitors reported observing gusts of wind throw the bats against the rocks the evening before.

Kathryn Cassingham, Paula Bauer, and Marjorie Head document and collect the dead bats prior to allowing visitors walk down into the natural entrance. (NPS Photo by Mike Fitz)

RESEARCHER INVESTIGATING GIANT SKIPPERS

by Renée West

Giant skippers are a little-known group within the Lepidoptera which have some characteristics like butterflies and some like moths. This small in-between group occurs only in the Western Hemisphere, mostly with very small ranges in the South and West U.S. and northern Mexico. They are very fast flyers (sometimes going over 60 mph!) with drab underwings, making them "extremely difficult to observe except when they alight."* They usually appear at the tail end of a butterfly guide, often without color pictures.

The caterpillars of giant skippers feed only on yuccas, agaves, and manfredas, so they are part of the landscape of Carlsbad Caverns National Park whether or not we're aware of them. The larvae (caterpillars) feed by boring into the roots, stems, and leaves of yuccas and agaves, but the adults do not feed on nectar. As for the adults, they are not nectar feeders. Some don't feed at all, living only to reproduce, while others only visit mud puddles for nutrients.

Two giant skippers—the Carlsbad agave skipper and Viola's bear giant skipper—were first found and scientifically described in CCNP in the 1950s. In the jargon of biology, CCNP is the 'type locality' for each subspecies—and will be forever recognized as such.

Specimens of Viola's bear giant skipper are pinned with their wings open to show the colors on their upper wing surfaces. The average adult male size is 2½ inches while the average adult female size is 3 inches. The female is below: females are always larger, as they need to fly with many eggs inside. Photo courtesy of Nick Grishin.

According to the lepidopterist Robert Michael Pyle, "*Much remains to be learned about the biology and relationships of giant skippers.*"* Dr. Nick Grishin is trying to fill some of those knowledge gaps as part of his broad Lepidoptera research project called Life Histories and Speciation of Texas Lepidoptera, which he has expanded to include CCNP. Grishin is working to describe life cycles, study and photographically document their immature stages, and investigate the parasitic insects associated with them.

In 2004, Grishin found Viola's bear giant skipper and Mary's giant skipper in the park. He reported that the Viola's subspecies (*Megathymus ursus violae*) is still present in the park, but he saw only its larval tents, the cocoon-like structures built by larvae in which they pupate (mature into butterflies). They were found at mid- to higher elevations in the park, on the caterpillar host plant, the Torrey yucca.

"*The population is very heavily parasitized by Tachinidae [a large family of flies that are parasitoids on other insects], and*

all six checked larval tents contained parasitoids that killed the larvae," said Grishin, of the University of Texas Southwestern Medical Center at Dallas. "*I want to give it some time for parasitoid numbers to decrease, so I do not plan to do any more work in the park before next January*."

A female Viola's bear giant skipper resting with only her drab underwings showing. Photo courtesy of Nick Grishin.

Grishin has identified the tachinid fly that is the parasitoid as *Acantholespesia comstocki*, which is another addition to our park's growing list of known insects.

As for Mary's giant skipper (*Agathymus mariae mariae*), it is very common in the park where its larval host plant *Agave lechuguilla* grows. Grishin said, "*In some areas as many as 10% of lechuguilla plants are inhabited by A. mariae larvae. Populations of this species in the park are doing very well and no parasites were detected.*"

The type locality for the Carlsbad agave skipper (*Agathymus neumoegeni carlsbadensis*) is "*at the end of the Yucca Trail*." Grishin did not visit the area in 2004, but may in future years.

Stay tuned for more news of our giant skippers in future years.

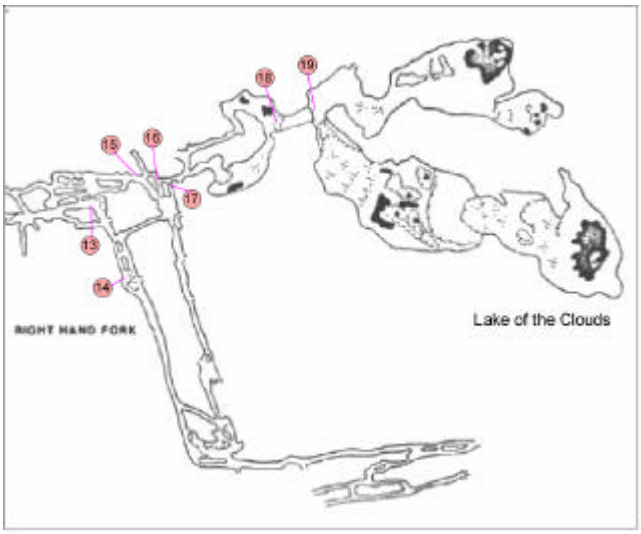
* Pyle, Robert Michael. 1981. The Audubon Society Field Guide to North American Butterflies. Alfred A. Knopf, New York.

CARLSBAD CAVERN STRUCTURES OFF THE PAVED TRAIL

by Paul Burger

All photos are NPS photos

With the help of funding from the NPS Cooperative Conservation Initiative and the work of dedicated volunteers, we have started the long process of removing or replacing old, deteriorating structures in off the paved trail areas of Carlsbad Cavern. Approved through the compliance process in 2004, 19 structures (not including the more complex wooden bridges in Left Hand Tunnel) were identified and evaluated for removal or replacement with materials that would be less susceptible to deterioration. Wooden and galvanized steel ladders have been shedding material that has the potential to negatively affect invertebrate populations and leaves oxidized metal in the cave.



A map of the east end of Left-Hand Tunnel showing the location of structures that are mentioned in this article. The numbering system is based on a 2004 compliance document.

We have begun with the structures near the junction between Right-Hand Fork and the main trail down Left-Hand Tunnel. We started by removing an old chain-link fence bridge (13) and three ladders (15-16) that had been laid down on the ground to make travel easier. The ladders were replaced with a handline. A wooden 2" x 4" (17) used as a brace to hold trail material in place was not replaced yet. We also removed a large amount of old wood and other materials from under the bridge, though there is more cleanup to be done.

The chain link bridge (13) before and after.

The bigger challenge was removing the "Erector set" bridge leading into Right-Hand Fork (14). This metal bridge had supports wedged into delicate aragonite bolted to two large metal deck pieces. It took quite a bit of effort to disassemble

and move to the main trail without causing any additional damage to the cave (or the volunteers).

The "erector set" bridge (#14) before and after from opposite views. Note the supports jammed into the aragonite.

Once the structures were disassembled, we had to get them across the rigged traverse of the pit where the old Troll Town Bridge had been. We used paired slings to rig each piece into the traverse line and were able to smoothly get all of the pieces across without damaging the cave, or dropping any bridge parts down the pit. The first piece took us nearly 45 minutes, but we had it down to fifteen by the last piece.

The most difficult physical job was hauling the heavy pieces over the long, sometimes delicate route back to the underground rest area.

The metal pieces from the structures were cut into smaller pieces and removed from the cave by Angel Hernandez and Noel Carrasco during the annual Save Our Cave Day on April 27.

Moving a ladder across the Troll Town traverse.

There are still two galvanized steel ladders on the route to the Lake of the Clouds that need to be replaced with stainless steel courtesy of a grant from the NPS Cooperative Conservation Initiative. We hope to continue this project this summer and also begin work replacing the old ladders and bridges leading to the Mystery Room and New Mexico Room.

Special thanks to Jay Snow, Abby Snow, Mike Oakley, Isabelle Oakley, and Jessie Bebb for volunteering on their days off to help remove these structures and to Angel Hernandez and Noel Carrasco for cutting the structures up and removing them from the cave.

CCNP TYPE SPECIMENS HAVE MADE BIOLOGICAL HISTORY

by Renée West

When a plant or animal is scientifically named for the very first time, the specimen must go into a museum collection. This first specimen is called the type specimen for the species. And the location it was collected from is called the type locality. The type specimen and locality remain in the records forever as an important part of the scientific story.

Carlsbad Caverns National Park is listed as the type locality for a surprising array of plants and animals, and more examples are becoming known to us all the time. So far as we know, the list includes two giant skippers (butterflies), a cactus, two cave crickets (camel crickets), a woodland snail, and a liverwort (primitive plant).

Recently we found out about two giant skippers (related to butterflies and moths) that have our park as their type locality: Carlsbad agave skipper and Viola's bear giant skipper (see article this issue). The Carlsbad agave skipper is scientifically named *Agathymus neumoegeni carlsbadensis.* It was first named *Agathymus carlsbadensis* by D. Stallings and Turner in 1957, but it has been changed to a subspecies since then. Its type locality is "*at the end of the Yucca Trail*," according to Dr. Nick Grishin.

The Viola's bear giant skipper is now named *Megathymus ursus violae*, but was originally named *Megathymus violae* also by D. Stallings and Turner, also from CCNP in the 1950s. You might guess—correctly—that scientific names in this group are somewhat controversial and fluid.

That taxonomic controversy extends to perhaps our most famous type specimen, the Lee pincushion cactus. Federally listed as Threatened because it is found only in the park, this tiny cactus has been given a number of different names: about six common names and eight scientific. Federally listed under the name *Coryphantha sneedii* var. *leei* in 1979, this special little cactus is now called *Escobaria sneedii* var. *leei* by most botanists, including the New Mexico Rare Plant Technical Council. The name was officially published in 1978 by D.R. Hunt. Publication of two recent books on cactus has done little to clarify the name issue.

Lee pincushion was found by (and named for) Willis T. Lee, the 'famed' geologist sent on the National Geographic expeditions in the 1920s to assess Carlsbad Cavern for national park status. According to the Conservation Management Institute at Virginia Tech, the type specimen for Lee pincushion cactus is at the U.S. National Herbarium (U.S. #72134). The type locality on the label is, "*Rattlesnake Canyon 30 miles southwest of Carlsbad at an elevation of 5500 ft W.T. Lee, 1927.*"

More type specimens came from underground in the National Geographic expeditions: two new cave (or camel) crickets. *Ceuthophilus carlsbadensis* and *C. longipes* "were described as new species by A.N. Caudell in 1924 from specimens collected in Carlsbad Cavern…" (see "Cave Crickets" by Dale Pate in Spring 2000 issue of this newsletter).

Another intriguing type specimen from CCNP is the Guadalupe woodland snail: *Ashmunella carlsbadensis.* This snail apparently was named in 1932 by Henry Pilsbry, a scientist who studied land mollusks. The Guadalupe woodland snail is reportedly more tolerant of dry conditions and lower elevations than others in the Guadalupe Mountains.

A graduate student from the Royal Botanic Garden Edinburgh, Daniela Schill, brought another CCNP type specimen to our attention. Her project was on the liverwort genus *Mannia* on a worldwide scale. (Liverworts are primitive terrestrial plants.) She told us that CCNP is "the original locality and is still the only known locality" for the species *Mannia paradoxa*. Her study was aimed at providing information about the status of this taxon, "*as it is not clear if it is a genuine endemic or belongs to a more widespread taxon*."

Alas those questions remain unanswered, as Schill arrived during our long dry spell (2003) and saw no liverworts in the park. They only photosynthesize when they have enough moisture and survive being dried out by going dormant—shrinking until they are essentially invisible.

Type specimens are important in our understanding of the natural world around us. They represent the first individuals of an unknown species found and scientifically described. This short article discusses six known species described from Carlsbad Caverns National Park. There are likely other species found in and first described from type specimens from this park. As we learn about them, we will pass that information on.

1939 CAVERNS PARK RANGER TAKES PLUNGE BUT DOESN'T LOSE HIS GRIP

by Bob Hoff

Similar to early caverns explorer Jim White and early caverns photographer Ray V. Davis, Superintendent Thomas Boles genuinely boosted and advocated the caverns. During the nineteen years (1927–1946) that "Colonel" Thomas Boles was in charge here, he chronicled official cavern activities in detailed writing and with photographs in the Superintendent's Monthly Report. His historical record brought the caverns alive then, and brings the caverns alive now. For me, no more interesting story did Boles tell in his Superintendent's Monthly Reports than the January 1939 story of park employee Leslie C. Thompson.

First employed at the caverns in 1932, carpenter Thompson became park ranger Thompson in April 1938. Just nine months later, on January 25, 1939, he unwittingly plunged himself into the history of the caverns for all time. Let us turn to Boles official account from the Superintendent's Monthly Report*:*

Leslie C. Thompson (NPS Photo)

<u>January 1939</u>

900 <u>Believe It Or Not:</u> After spending the full day with Robert L. Ripley and viewing the hundreds of "Believe it or Not" in his home on BION Island, I was astonished on January 25 to find that we had a local "Believe it or Not" in the Carlsbad Caverns National Park which in my opinion exceeded any of those on exhibition in Mr. Ripley's 26-room house.

On January 25 Ranger Leslie Thompson, assigned to elevator duty, brought the elevator to the surface about 12:30 to bring down the tourists who were in the lobby of the elevator tower at that time. Thompson closed the elevator door and stepped to the next room and during his absence Electrician Carpenter took the elevator on a special trip in the Cavern in order that Auditor Marlow Glenn and Chief Clerk VanKirk might get into the Cavern before the tourist party.

Thompson returned to the elevator door and although the indicator showed that the elevator was at the bottom, nevertheless he automatically reached for his key and unlocked the door and opened it a couple of inches. He then stepped to one side and hung up the key and stepped back in front of the door and requested the tourists to have their elevator tickets ready. At the same time he reached behind him and opened the door and stepped back into the shaftway which is 754 feet deep.

For nearly 100 feet he fell head-first but had presence of mind to clasp his arms around the five elevator cables which caused his body to reverse itself so that he clasped his legs as well as his arms around the cables, which had been recently tarred

over with rust preventive and were quite sticky. After sliding 25 or 30 feet he brought himself to a full stop 125 feet below the surface and called to the people at the top that he was all right and to come down in the other elevator and get him.

After blocking the elevator door open so that the Pacific elevator could not be moved until the rescue had been effected, Handyman Bob Miller and Ranger Hieb took the other car and pulled Thompson into the other elevator and brought him to the surface none the worse for wear except slightly skinned fingers and a thoroughly greased uniform.

While the tourists waiting to go down on the elevator were shocked to see Thompson fall backwards in the shaft, they were even more astonished when he appeared in the doorway of the other elevator just a few minutes later none the worse for wear and probably the coolest one of the outfit.

I attribute this miraculous escape to Thompson's cat-like activity and his cool hand under all circumstances. He had worked for many months in this elevator shaft and though falling head down he knew just which way to reach to grasp the cables and realized at once that it was the cables and not the beams which must be grasped.

Word of this incident was called to me at my office in Carlsbad but it was so unbelievable that I gave it no publicity until after I had driven out to the Cavern and made inspection of the locals and had a talk with Ranger Thompson, who is free to admit that his Guardian Angel was on duty that day, and he feels that from now on he is living on "borrowed time".

Report of the incident has been made to Robert L. Ripley for addition to his "Believe it or Not" collection.

The above report suggests that the rescuers saved Leslie Thompson without a hitch. Recently, 85-year old Jim White, Jr. who was 19 years old at the time of the accident and knew the rescuers personally told me that he recalls them saying they had a difficult time getting Thompson to release the elevator cables at first. That sounds logical to me. I do not blame ranger Thompson for not wanting to lose his grip.

Just for the record, Leslie Thompson, who was 45 years old when he fell into the shaft in 1939, died of a heart attack on July 29, 1953 at Rattlesnake Springs at the age of 59.

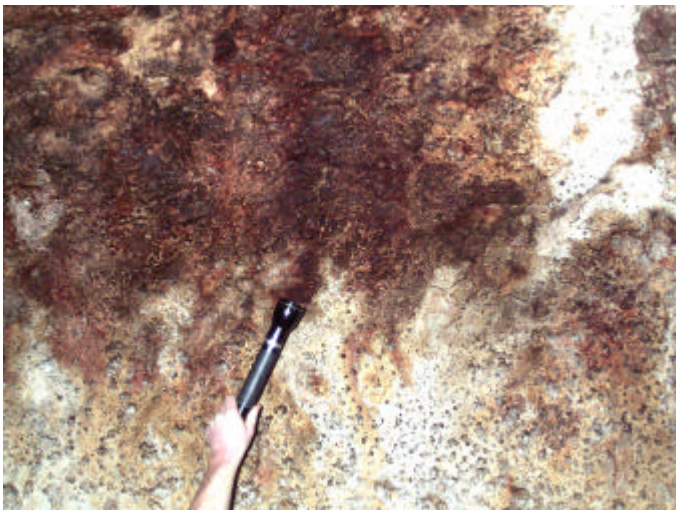
RESOURCE QUESTIONS & ANSWERS

Got resource or science questions about the park? Send them to us and we will try to answer a few in each issue.

From Mike Fitz – What is the black stuff on the ceiling in the Underground Concessions Area in Carlsbad Cavern?

Answer by Dale Pate – The rumor mill for many years has suggested the black coating on the ceiling along the edge of the Underground Concessions area was the results of a grease or trash fire in the underground lunchroom a long time ago. To be more comprehensive, the area in question also includes the restroom/pump room and elevator areas. While a fire would have put lots of black smoke and soot into the whole area and probably left black staining on the ceiling, there is no record of a big fire and there was never any cooking done in the lunchroom area. Nevertheless, there appears to be some pretty interesting things happening in the area.

In some places along the walls adjacent to the Underground Concessions area and even on the higher ceiling above the old underground lunchroom where the Main Corridor connects into the Big Room, there are at times areas of pink, red, purple, and other colors that tend to appear and disappear and even change colors. Some of these appear to grade into the darker black areas that have been there for a long time.



This 2002 photo shows red and purple "growths" on the wall where the Secondary Stream Passage connects into the Underground Concessions area. (NPS Photo by Dale Pate)

The black we see does not appear to look like the manganese coatings we see in other portions of the cave, so a good assumption is that the black coating is possibly a different substance and derived in some other manner. To help us understand this phenomenon better, we have contracted with a microbiologist, Dr. Hazel Barton from Northern Kentucky University. We have not received a report from Dr. Barton yet, but we do expect one soon.

So to answer the original question, we don't know what the black stuff is, but we do have ongoing research on it and will hopefully soon know more.

From Mike Fitz – What protection measures are in place for Lechuguilla Cave in the event that it is eventually extended northward beyond the park's boundary? What can the park do to protect the cave if the current dig in Big Manhole Cave on BLM managed lands breaks through into passage and eventually connects to Lechuguilla?

Answer by Dale Pate – Any caves or cave passages located in the park are fairly well protected. If Big Manhole Cave breaks through into a major cave system someday, any portion of it that goes into the park actually belongs to Carlsbad Caverns National Park and would be within NPS designated wilderness. The NPS Management Policies 2001 on page 69 under the heading 6.3.11.2 Caves states:

> *All cave passages located totally within the surface wilderness boundary will be managed as wilderness. Caves that have entrances within wilderness but contain passages that may extend outside the surface wilderness boundary will be managed as wilderness. Caves that may have multiple entrances located both within and exterior to the surface wilderness boundary will be managed consistent with the surface boundary; those portions of the cave within the wilderness boundary will be managed as wilderness.*

As far as land north of the park, there is far less protections there. There is private land, state land, and federal lands administered by the BLM. There could be many competing interests in a newly discovered large cave system and politics could play a significant role and the outcome could be one of many different options

There is a wilderness study area on BLM land north of the park. In fact, Big Manhole lies right on the boundary of that wilderness study area. I have not heard whether BLM has taken any moves to drop that designation or to proceed to make that area a designated wilderness. I have also not heard that any other areas in the US that are designated wilderness have had that designation removed because of commercial interests.

To sum up, the park has no say or direct control on anything found outside the boundary of the park. If something of extreme significance was found there, the park would work with adjacent land stakeholders and appropriate agencies to provide recommendations for the long-term protection of that cave system.

WHAT'S UP WITH THE WEATHER?

by Kelly Fuhrmann

For park employees, I'm sure you are all intimately familiar with the Carlsbad Caverns Weather Records folder on the park's computer network found on the P drive… But just in case you're crazy, busy days do not allow time for you to check out the current and historical weather trends, allow me to give you some virtual tour highlights of the Bat Draw weather station information and get you up to speed on what's been going on with the weather. I'll shed some light on the weather as it was in the past and as it is today. If you have any questions about what I'm revealing, check out the Weather Records folder on the P drive. The numbers don't lie!

The year 2004 was a comeback year in the precipitation category. Let's hear it for rain in 2004! Those monsoon rains sure do come in handy on the sweltering July days. Let's look at the year in review for 2004. The precipitation total for the "precipitation year" (October 1, 2003 – September 30, 2004) made its mark in the record books. The Bat Draw weather station in the park received 20.15 inches of the wet stuff. That amount comes in at #9 on the Top Ten all time high list for precipitation. The highest and lowest ten "precipitation years" are listed below:

Highest	**Lowest**
1. 1947 - 44.77 inches	1. 1998 – 6.08 inches
2. 1987 - 28.83 inches	2. 1964 – 6.50 inches
3. 1958 - 27.59 inches	3. 1953 – 6.62 inches
4. 1978 - 26.64 inches	4. 1967 – 7.32 inches
5. 1984 - 24.86 inches	5. 1951 – 7.37 inches
6. 1986 - 21.78 inches	6. 1969 – 7.51 inches
7. 1966 - 21.44 inches	7. 1939 – 7.60 inches
8. 1974 - 20.26 inches	8. 1957 – 7.63 inches
9. 2004 - 20.15 inches	9. 1952 – 8.60 inches
10. 1981 - 19.68 inches	10. 1990 – 8.63 inches

November of 2004, although not included in the 2004 precipitation year, holds the record for the most precipitation in the month of November (4.5 inches) since record keeping began. July of 2004 (3.96 inches) was the wettest July sine 1990, and September 2004 (5.54 inches) had the most rain during the month since September 1978. The calendar precipitation year (January – December) yielded 24.75 inches of precipitation. As for snow, December (3.3 inches) had the most recorded snowfall since 1989. The past 6 years (1998 – 2003) all fell below the average annual precipitation of 14.79 inches with a combined average of 9.72 inches, yikes! The 1998 annual precipitation year total of 6.08 inches was the lowest year on record. Is the drought over??? Only time will tell.

The recorded high and low temperatures did not break any standing records in 2004. However, December of 2003 deserves mention because it holds the all-time record for the high temperature in the month of December (80°F). Hmmm, maybe the Kyoto Treaty on global warming isn't such a bad idea.

Keep an eye on the sky and your weather database open for the latest climate facts. The next time you see an LE Ranger be sure to thank them for the diligent collection of daily weather observations.