



CANYONS & CAVES

A Newsletter from the Resources Stewardship & Science Division

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Partial solar eclipse photographed from the park on Monday, June 10, 2002. (NPS Photo by Tom Bemis)

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<http://www.nps.gov/cave/pub-pdf.htm> Thanks to Kelly Thomas and Bridget Eisfeldt all issues can be downloaded as a PDF file from the park website. <http://www.caver.net/> Once there, go to the Canyons & Caves icon. Bill Bentley has placed all issues on his personal website and can also be downloaded as PDF files.

RESOURCE NEWS

CAVE RESEARCH FOUNDATION (CRF) – Led by Area Manager, Barbi Barker, CRF members donated over 1200 hours to the park in 2001. Many of these volunteer hours have been spent in Carlsbad Cavern on restoration, survey, inventory and exploration efforts in Carlsbad Cavern. Over many years CRF members have volunteered tens of thousands of hours helping document, restore and conserve caves of the park. Working mostly on holiday weekends, during a weeklong restoration camp in the summer, and occasionally other weekends, CRF continues to work in the park in 2002.

This past Memorial Day Weekend saw Brian Alger, Barbe Barker, Sonya Boyd, Tim Boyd, Frank Everitt, Kevin Justus, Tim Kohtz Lois Lyles, Pam Massey, Greg McCarty, Jennie McDonough, William Payne, Georganne Payne, Karen Perry, Damon Worrell, and Jimmie Worrell restoring



From top to bottom: Frank Everitt, Sonya Boyd and Barbe Barker clean flowstone around the new walkways in Lower Cave during the Memorial Day Weekend, 2002.

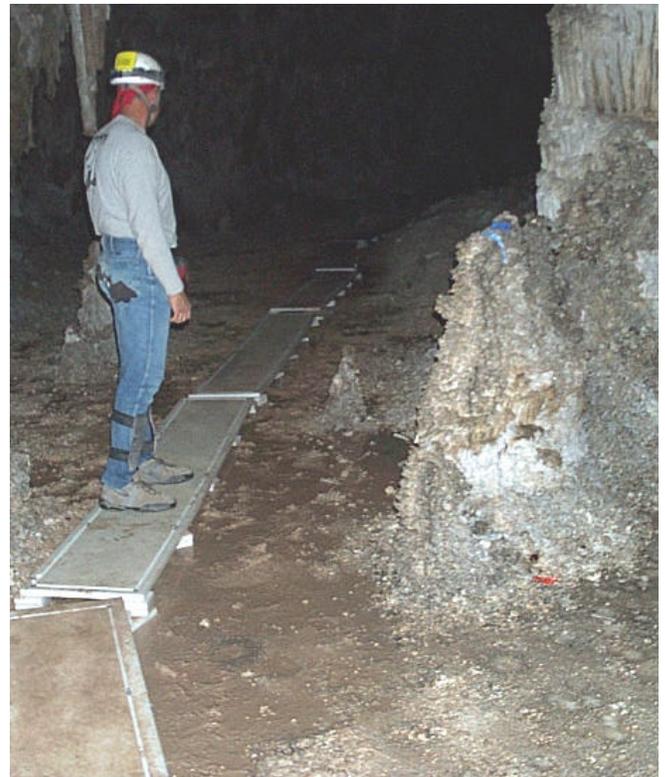
flowstone areas in Lower Cave and the Dome Room, surveying in Left-Hand Tunnel and doing an inventory of features in Secondary Stream Passage.



Lois Lyles and Tim Boyd inventory mineral features in Secondary Stream Passage over the Memorial Day Weekend, 2002.

If you see any CRF members that have worked at Carlsbad Cavern, tell them thanks. They have done a great job helping to conserve and protect one of the world's most spectacular caves.

LOWER CAVE WALKWAYS COMPLETED – The Lower Cave walkways project has been successfully completed. Designed to keep visitor and employee's feet out of wet areas, numerous sections of walkways spanning a total length of over 100 feet have been installed. Leader for the project was Jason Richards.



Jimmie Worrell inspects Lower Cave walkways.

All photos in Resource News are NPS Photos by Dale Pate.

NEW CARLSBAD CAVERNS NP POSTCARD - On June 7, 2002 at the entrance to Carlsbad Cavern, the U.S. Postal Service held a First Day of Issue ceremony for a new postcard honoring Carlsbad Caverns National Park. Gale Norton, Secretary of the Interior, was on hand for the ceremony.



The new postcard released by the US Postal Service on June 7, 2002.



Dignitaries unveil the new postcard during a ceremony at the entrance to Carlsbad Cavern. From left to right: Mick Holm, Gale Norton, Eric Martinez, and Jay Jenkins.

While at the park, Secretary Norton, her husband John Hughes and a staff member, Reid Schuster, took the time to view the Big Room and go on off-trail trips to the Hall of the White Giant and Lower Cave.



Returning from the Hall of the White Giant in Carlsbad Cavern, Secretary Norton easily negotiates Matlock's Pinch.

SLAUGHTER CANYON CAVE RESEARCH – **Victor Polyak and Yemane Asmeron** from the University of New Mexico have an ongoing study to reconstruct the paleoclimate record for the Holocene and late Pleistocene for the Southwest from previously broken speleothems. A broken piece of the flowstone cap recovered from the guano

trench area of Slaughter Canyon Cave yielded a date of 210,000 years old. This indicates that the guano below the flowstone cap is older than 210,000 years. A recovered piece of broken drapery from the cave was dated as being older than 450,000 years old.

Gary Morgan from the New Mexico Museum of Natural History recently excavated two areas in Slaughter Canyon Cave, obtaining literally thousands of bat bones from the extinct bat *Tadarida constantinei*. This species is only known from deposits in Slaughter Canyon Cave. Dr. Morgan will reevaluate the taxonomic status of this species, if possible determine the age of the guano deposits and how the deposit formed. Bones of other animals were also recovered from one of the excavation sites. This included bones of a turtle or tortoise and possibly bones of an antelope.



Rick Toomey and Gary Morgan plan out the excavation on an exposed face in a trench left over from the guano mining days.



Excavation begins: From left, Glenda Dawson, Gary Morgan, Carol Belski and Patty Dawes.

INVERTEBRATE NEWS – SAVING CENTIPEDES – Kudos to several park staff for overcoming their fears and saving invertebrate lives. In a truly startling incident in late June, Chuck Barat (Chief of the Resources Stewardship & Science Division) was bitten by a desert centipede on his ankle—while sitting at his desk in his office. Second-hand reports (Amelia Tully and Kendra Mayes) revealed much consternation in the vicinity, but ultimately the animal's life was spared and Dave Roemer took her outside. [Species identification was hampered by the victim's skewed eyewitness report of a centipede “four feet long, with 600 legs”...]

Stacey Haynie reports that earlier she saved a centipede from a high visitor use area, interpreted it to visitors, and released it into the vegetation. Bravo!

ADIOS TO JASON RICHARDS – Jason recently accepted a transfer to the Stewardship Education & Visitor Services Division at Carlsbad Cavern. Recent accomplishments in Jason's 10-year stint in the Cave Resources Office include the replacement of the Lechuguilla Cave culvert and airlock and the completion of the Lower Cave walkways. We will miss Jason's expertise in construction activities and wish him well in his new work environs.

PARTIAL SOLAR ECLIPSE – A partial solar eclipse was visible from the park in the late afternoon, June 10, 2002. The cover photo was shot by Tom Bemis at approximately 7:30pm (about the time the bats started flying) by projecting the image from a 3" refractor telescope using a 25mm lens onto a white piece of paper and photographing the projected image with a digital camera. It was then adjusted for brightness and contrast. The small dark spot in the lower right is a sunspot.

NATIVE USES OF DESERT PLANTS

by Emily Buehler

Evidence suggests that the desert scrub-type plant communities typical of the Chihuahuan Desert today have been in the park since about 6000 BC. Radiocarbon dating, packrat middens and relict plant communities point toward occasional returns to cooler and moister conditions, but generally the climate has shown an increasing trend toward aridity. (Van Devender 1980:367; Haecker 1994:5)

Native Americans are thought to have been in New Mexico 12,000 to 14,000 years ago. It is not known when they first entered within today's park boundaries, but a hearth in a cave in the Guadalupe Mountains was dated at 5432 +/- 300 years BC. (Haecker 1994:5; Howard 1935). The lack of evidence of any permanent settlement suggests that the Indians using the park were hunters and gatherers, who used the resources intermittently and moved with the seasonal availability of food.

One of the best-documented books on uses of Chihuahuan Desert plants is about the Apache, who used the park into historic times. The book, written by Castetter and Opler (1936), is entitled *The Ethnobiology of the Chiricahua and Mescalero Apache: A. The Use of Plants for Foods,*

Beverages and Narcotics. Castetter talked with the Apaches, went out into the field with them, and gathered plants that were later identified (Castetter and Opler 1936:3). To illustrate the reverent way in which the Apaches thought of their world, Castetter commented, “The Apache, whether he is praying, or hunting, or acting the craftsman, is not dealing with dumb animals and inanimate plants as the white man would have it, but is concerned with natural objects which know well his intentions, how to thwart the impious and to reward the deserving. These animals and plants are thought to be willing to help the Apache and give of their seeds, fruit, hide, or meat—providing they are approached in the correct manner, with proper attention to rules and ritual which have existed from the time ‘the earth was new’” (Castetter and Opler 1936:16).

One of the most valuable plants used was the agave, harvested when the plant grew an immature flower stalk. A stick that had been flattened at one end was used to slide under the plant and cut the root. Then the leaves were cut off and the remaining crown was baked in a mescal pit for several days, then pounded and dried (Castetter and Opler 1936:35-36). This process is explained in detail in other park literature (“Fire Cracked Rock Middens and Plant Cooking” and “Stone Piles are for Hot Rock Cooking”). The Mescal Roast is a yearly public activity at the New Mexico Living Desert Zoo and Botanical Garden State Park. That agave was an extremely important food source for the Apaches was demonstrated by the huge amounts gathered. In December 1869, Lt. Howard B. Cushing led a punitive military expedition against the Mescalero Apache, and destroyed an estimated 15,000 lbs. of prepared mescal and 15,000 lbs. of jerked meat found in an Apache camp that the soldiers had overtaken in what is presently Guadalupe Mountains National Park (Cushing 1870).

But, agave provided more than just the crown. Another food that came from the agave was the flower stalk, which was harvested before the flowers opened, then roasted, peeled and the interior was eaten (Castetter and Opler 1936:38). Agave flowers could be boiled and eaten, or left on the stalk for the seeds to mature which were then collected and ground into flour. Agave leaves provided fibers for a variety of uses: bowstring, cradle, thread, snare, rope, mats and shoes. (Cornett 1995:9)

Sotol was another plant whose crown could be cooked in the same way as the agave, then eaten immediately or pounded and dried for later use. However, this was not as palatable as the agave. Again, the flower stalk could be picked before the flowers opened, peeled, cut up and boiled, then eaten as a vegetable. (Castetter and Opler 1936:38)

The yucca was a very versatile plant. The buds or flowers were eaten raw or boiled, and the fruit could be picked while green, allowed to ripen, and then, roasted, peeled, seeded and the pulp ground into a cake and dried. Tender central leaves could be cooked and eaten, while older leaves could be utilized for their fibers. The roots contain saponin and the suds they produce were used for washing hair and to make the hair grow (Dunmire and Tierney 1995:126). As with the agave and sotol, the crown could be cooked and eaten, and

the flower stalk could be roasted, peeled and eaten. Different species were favored for different uses (Castetter and Opler 1936:38-39; Dunmire and Tierney 1995:125-126).

Cholla was another versatile plant. Buds could be eaten in stews or dried. Dethorned joints and fruits could be eaten and are available on the plant year-round. Cholla as a food is a good source of calcium. (Dunmire and Tierney 1995:142). Stem ash was used as a dressing on burns (Moerman; 1999: cholla; Bean and Saubel 1972).

Creosote is a pungent plant whose uses were primarily medicinal. Leaves could be dried and powdered and used on cuts and burns as an antiseptic. Indians with respiratory problems were treated by drinking a tea made from leaves and stems or breathing the vapors in a sweat house. (Cornett 1995:15)

Juniper berries could be eaten raw, stewed, or made into tea. It could also be used as gravy when berries were roasted in a pan and water was added. A tea was made of leaf sprigs, and wood was used as fuel or in construction. (Dunmire and Tierney 1995:106-107; Castetter and Opler 1936:45)

Wild onion was used in soups and stews or eaten raw, but not when hunting deer. (Dunmire and Tierney 1995:164) The Apache thought that deer were sensitive to certain foods—hunters had to hunt on an empty stomach or the deer would not reveal himself to the hunter. (Castetter and Opler 1936:18)

This tendency to attach personality traits to natural things in his environment can be seen in this example of Apache life, which also shows he is not without a sense of humor. If while walking, he accidentally steps on a spider he will say “so-and-so killed you,” giving the name of someone he doesn’t like, in case the other spiders decide to retaliate. In historic times a frequent comment was “Washington did it!” (Castetter and Opler 1936:18)

Fourwing saltbush was used by Native Americans in several ways. The seeds could be ground and cooked, the greens could be eaten cooked or raw, and ashes of burned saltbush could be used as leavening for bread. (Dunmire and Tierney 1995:130) Saltbush is in the Goosefoot family—the remains of this plant were identified in a sample taken from a mesal pit in the park, for ethnobotanical analysis. (Cummings and Puseman 1994:6)

Beargrass was one of the preferred plants whose leaves were used in making baskets. Indians at the Isleta Pueblo report that flour was once made from the seeds, and the fruits were also eaten. The flower stalk of the beargrass was not eaten since it contains saponin, a substance used to make soap suds. (Dunmire and Tierney 1995:127-128)

The beautiful ocotillo was used both as a medicinal plant and as food. The cough of an older person was treated with root tea. Pain and swelling could be treated with the juice of several branches which had been peeled and roasted. A good drink was made of the red flowers mixed with water. Best of all, the seeds were ground and formed into cakes when water

was added. These cakes were a good protein source at 29% protein. (Cornett 1995:29)

These plants are but a sample of the many plants of the Chihuahuan Desert that the Native Americans found useful for survival. We are amazed by the ingenuity of these early people in “getting the most value” out of the plants in their environment.

As with any native plant, you should do your own research before trying to eat or use any of these plants. Please also remember that collecting plants on the park is prohibited.

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INFRASTRUCTURE REMOVAL CONTINUES

by Dale Pate

The General Management Plan for Carlsbad Caverns National Park acknowledges that park infrastructure built directly on top of Carlsbad Cavern may be negatively impacting the resource that the park was created for. The plan also called for an Infiltration Study to be conducted (which was completed in 1997) and using information from this study to develop a “*future development concept plan.*” This plan would “*develop ways to reduce or eliminate damage to resources,*” and also stated that “*Actions to protect Carlsbad Cavern from surface facilities and activities could range from technological measures to the removal of certain facilities from above the cavern.*” While a draft Environmental Assessment (The Carlsbad Cavern Protection Plan) addressing the future of various portions of the infrastructure over the cave nears completion and is being readied for public review, there have been several management actions taken to begin this process of eliminating unneeded and unwanted structures from above the cave.

The most recent actions have been the removal of the fencing, lights, and barbeque pit from around the tennis courts and the cinder-block walls around all of the Mission 66 apartments. The tennis court was built during the Mission 66 construction phase that added 12 3-bedroom apartments, associated water, sewer and electrical lines to the top of the hill. The Visitor Center was also remodeled during this time. The Mission 66 additions were built in a different time when park management did not realize the impacts that new infrastructure may have on park resources, especially by placing them directly on top of one of the world’s most spectacular cave systems.

The concrete slab for the court is slated for removal at a later date.



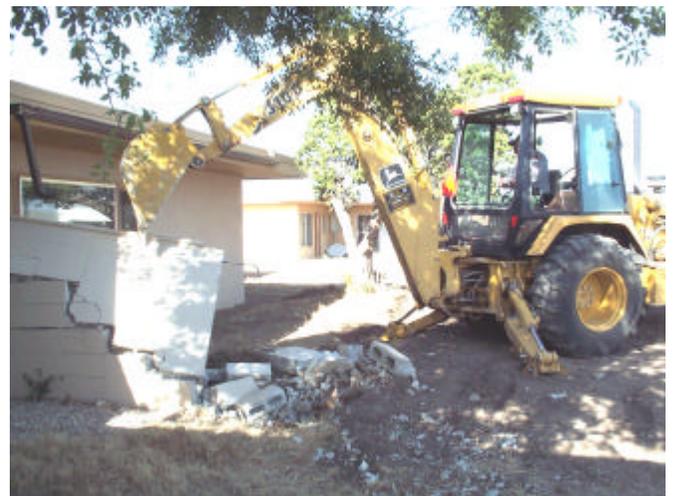
The Tennis Courts in early May 2002. (NPS Photo by Stan Allison)



The Tennis Courts on May 25, 2002. (NPS Photo by Dale Pate)



The removal process completed by June 6, 2002. (NPS Photo by Dale Pate)



Angel Hernandez carefully demolishes a cinder-block wall associated with the Mission 66 apartments. (NPS Photo by Dale Pate)

PESTICIDES AND CARLSBAD CAVERNS NATIONAL PARK

by Renée West

What sets the new synthetic insecticides apart is their enormous biological potency. They have immense power not merely to poison but to enter into the most vital processes of the body and change them in sinister and often deadly ways. Thus... they destroy the very enzymes whose function is to protect the body from harm, they block the oxidation processes from which the body receives its energy, they prevent the normal functioning of various organs, and they may initiate in certain cells the slow and irreversible change that leads to malignancy.

—Rachel Carson, *Silent Spring*, 1962

Rachel Carson saved the bats of Carlsbad Cavern. Walter H. Kittams, park research biologist, saved its caterpillars and moths and lots of other wildlife.

Events such as the cessation of DDT use here in the park, the reassessment of National Park Service pesticide use policies, and the creation of the Environmental Protection Agency were all part of the aftermath of publication of Carson's ground-breaking book *Silent Spring*. So was Kittams' caterpillar study, with its ultimate recommendation to stop trying to control them. And the park's trees—little walnut, desert willow, mescal bean—survive despite the caterpillars.

Starting in 1948, Carlsbad Caverns National Park (CAVE) sprayed the highly toxic insecticides DDT and, later, malathion multiple times each year to kill native insects around the cavern entrance, in nearby Walnut Canyon, and at Rattlesnake Springs. The goal was to stop the “unsightly” defoliation of the trees, however temporary it was. This, despite the concern expressed as early as 1947 in the superintendent's annual report about DDT spraying “in the adjoining cotton fields and its adverse effect on the bat flights.”¹ (Bats and birds pick up pesticides when they eat treated insects.)

By late summer of 1955, dying bats were seen falling out of the sky during bat flight. Dozens of bats turned up dead on the trails that month, along with a crow [probably raven] and a quail. But the park kept spraying: “Two control spray jobs were run in Walnut Canyon this month [August] with good results.”¹

The insects kept coming back despite the spraying: they were developing resistance to the chemical. When DDT didn't seem to be working anymore, the park was advised to use dieldrin, a pesticide about 40 times more toxic to mammals than DDT².

The park stopped spraying (except at Rattlesnake Springs) in 1961. It then embarked on a program of cutting off the branches of caterpillar-infested trees and disposing of them. Coincidentally (or not?), cave swallows began nesting in Carlsbad Cavern in 1966. Our cave swallow colony eats a

huge amount of insects, especially moths. So do our bats, and many other birds and wildlife species, including insects.



Walnut caterpillar (*Datana integerrima*). (Photo borrowed from Auburn University website: www.ag.auburn.edu)

It's mind-boggling to consider how different our park's resources would be now without Rachel Carson's campaign. Forty years ago, in the wake of massive wildlife and livestock deaths around the world, Carson published *Silent Spring* (1962). With this book and her perseverance through subsequent attacks from the pesticide industry and U.S. Department of Agriculture, she triggered large changes in pesticide use in the United States and the world. She was a scientist—graduated *magna cum laude* from Johns Hopkins University with a master's degree in zoology—who had her facts straight and stood behind them.

Carson's book and media appearances prompted an examination of the heavy *unregulated* pesticide use that eventually led to (among many other things) much more restrictive policies in national parks, and to our current system of integrated pest management (IPM) with regional and Washington office oversight. Protections we take for granted today—like pesticide label requirements—weren't available in 1962. But pesticides were widely available and were sprayed by government agencies from airplanes onto homes, ponds, livestock, and wildlife all over the country. It was a world headed for chemical disaster.

In a review of Carson's life, author Peter Matthiessen wrote: “*Silent Spring*...gored corporate oxen all over the country. Even before publication, Carson was violently assailed by threats of lawsuits and derision, including suggestions that this meticulous scientist was a ‘hysterical woman’ unqualified to write such a book... A huge counterattack was organized and led by Monsanto, Velsicol, American-Cyanamid—indeed the whole chemical industry—duly supported by the Agriculture Department as well as the more cautious in the media...

“...In their ugly campaign to reduce a brave scientist's protest to a matter of public relations, the chemical interests had only increased public awareness. *Silent Spring* became a runaway best seller, with international reverberations.”³

President John F. Kennedy called attention to the book in public and appointed a special committee to look into it. Their report completely validated Carson's conclusions. The environmental movement began to grow in the 1960s, with the first Earth Day ceremonies and the passage of the National Environmental Policy Act in 1969. CAVE had a park Environmental Awareness Committee from 1969 into the 1970s. In 1970, Secretary Walter J. Hickel issued the "Department of the Interior Responsibilities and Policy on Pesticides" that included, for the first time, a 'Prohibited List' and 'Restricted List' of pesticides for agencies. The Prohibited List included DDT and dieldrin. The policy also encouraged consideration of non-chemical techniques (the beginnings of IPM) and prohibited degradation of water quality.

Also in 1970, the Environmental Protection Agency (EPA) was established "in response to the growing public demand for cleaner water, air and land. Prior to the establishment of the EPA, the national government was not structured to make a coordinated attack on the pollutants which harm human health and degrade the environment."⁴

At CAVE, the assault on walnut caterpillars (Walnut Canyon) and tent caterpillars (Rattlesnake Springs) began in June of 1948 with "DDT spray" and "DDT dusting by airplane."¹ The 1951 records show that the spray used was DDT and fuel oil, a highly toxic mixture.² By 1954, the park had increased the concentration of DDT in the mix to 12.5%, even though the superintendent's report said: "It is noted, however, for whatever it may be worth, that in the surrounding area where no control work has been done, mortality among the Black Walnut [sic] trees appears to be low."¹

In August of 1955, with dying bats falling from the sky, the park called in researchers. Hundreds more dead and living bats were studied for rabies, but rabies was found not to be the culprit.

In 1957, in just one treatment, the park sprayed 1,200 gallons of 12% DDT on Walnut Canyon and 400 gallons on Rattlesnake Springs. The next year, despite the fact that trees were not dying from defoliation by the caterpillars, the park was still dissatisfied with the caterpillars' presence. A government entomologist reported to the park and region: "With reinfestations always possible, the control of walnut caterpillars becomes a seemingly never ending effort. It appears what is needed is a long residual insecticide. Dieldrin would be good."¹ (It doesn't appear from the records that dieldrin was ever applied here before being banned in 1970.) In 1958 and 1959, the park sprayed DDT several times each year. Then CAVE phased in the use of malathion: "DDT was not used because of the toxic effect on the ladybug beetles that control the aphids. The DDT resistant aphids seem to be the most serious pest at this writing."¹

The park continued spraying (malathion and/or DDT), but less of it. A gradual shift was taking place to "controlling the Walnut caterpillars...without the use of insecticides."¹ But the more important shift in thinking—that of actually

valuing the native caterpillars for their role in the ecosystem—was still several years down the line.

In September, 1964, the superintendent was able to report that, "no more than nine bats were collected from the vicinity of the cavern entrance during the summer. This lack of 'die-off' in contrast to recent years may relate to the fact that there has been no reported crop spraying in this vicinity this summer."¹ It doesn't appear that during all the years of the reports, the park ever made a connection with its *own* DDT spraying and the bat deaths, only with outside agricultural spraying.

In 1970, Walter Kittams initiated a study of the problem, saying, "In view of current Service policy that insect control is to be practiced only under specified conditions, study should establish the present effect of walnut caterpillar control and its influence on the canyon environment."¹ His 1971 final report found that "in adjacent sectors having control and no control, patterns were similar for egg and larva development and numbers per tree. Manual control...had little effect in reducing insect infestations..."⁵

Kittams further recommended "cessation of artificial control...to allow return to natural conditions," and suggested a public information program to "develop public appreciation of the role of the walnut caterpillar in the ecosystem."⁵

The park stopped its efforts at controlling caterpillars, and apparently there was no outcry from the public. No further mention of the beauty of Walnut Canyon or Rattlesnake Springs appears in the superintendents' annual reports. For the most part, caterpillars and the subsequent moths are being allowed to live their lives in our ecosystems, feeding themselves and in turn becoming food for other wildlife.



Moth of walnut caterpillar (*Datana integerrima*). (Photo borrowed from Auburn University website: www.ag.auburn.edu)

But DDT is still in use in some parts of the world. DDT and its breakdown products (like DDE) are still in soil, air, and water. Those of us who lived in the 1950s and 60s have it stored in our tissues. Ken Geluso and others studied the DDT content of the bats at Carlsbad Cavern in the 1970s and 80s. They documented that young bats did indeed have pesticide residues stored in their fat that would be lethal when they metabolize fat during migration.⁶

In spite of our past disasters and current knowledge, pesticide use keeps climbing, but theoretically using less toxic chemicals. In 1960, the U.S. produced 638 million pounds of synthetic pesticides.² According to the National Coalition Against the Misuse of Pesticides, we produce pesticides today at a rate thousands of times faster.⁷

“True, the damage being done by poison chemicals today is far worse than it was when she wrote the book,” wrote Matthiessen¹. “Yet one shudders to imagine how much more impoverished our habitat would be had *Silent Spring* not sounded the alarm.”

For now, thanks to the efforts of Carson and Kittams and many others, bats and birds still fly at Carlsbad Caverns. Caterpillars, moths, and mosquitoes still feed them. The web of life carries on, as best it can. And we keep trying to learn from past mistakes.

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¹Carlsbad Caverns NP archived records; various documents from 1948 to 1998.

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³www.time.com/time/time100/scientist/profile/carson.html [Time 100, People of the Century]

⁴www.epa.org [Environmental Protection Agency]

⁵Kittams, Walter H. 1971. Final report: Effect of controlling walnut caterpillar. Park archives.

⁶McCracken, Dr. Gary F. 1986. “Why are we losing our Mexican free-tailed bats?” *Bat Conservation International* magazine at: www.batcon.org/batmag.

⁷www.uneco.org/silent_spring.html [United Eco-Action]

Thanks to:

Emily Buehler (CAVE Cultural Resources) for finding and compiling scattered records of the park’s history of pesticide use.

Susan Berg (former Biology Branch volunteer) for compiling and categorizing the Superintendent’s Annual Reports entries on natural resources.

Mark Bremer (former CAVE civil engineer) for continuing to question all our pesticide use in the 21st century.

Jerry McCrea (Intermountain Region integrated pest management coordinator) for keeping us informed about ongoing trends in pesticide use and alternatives.

A SENSATIONALIST, AN EARTHQUAKE, AND “MISSING TOURISTS:” SOME 1930S CAVERNS’ PUBLICITY

by Bob Hoff

On June 7, 2002, the U.S. Postal Service unveiled its 23-cent Carlsbad Caverns stamp postal card at the Natural Entrance. Secretary of Interior Gale Norton and CAVE Superintendent Mick Holm joined others to introduce the card. Caverns’ publicity will soar as millions of these beautiful cavern stamp cards pass through countless hands, heading to worldwide destinations. However, not all caverns’ publicity has been as positive.



Horace Albright, former National Park Service director Horace Albright, and Tom Boles, Caverns superintendent from 1927 to 1946, in a 1936 photo. Boles always enjoyed photo opportunities and positive publicity. After resigning from the NPS, Albright, one of the service’s “founding fathers,” served as an executive for a local potash mining operation.

In his February 1930 *Superintendent’s Monthly Report (SMR)*, Tom Boles noted, “... *Dr. Frank Ernest Nicholson of New York arrived at the Cavern with 14 assistants to “explore” new rooms and write his experiences for the New York Times and its newspaper connections. The size of the party was cumbersome and at my request was reduced to four persons.*”

Boles took them into “*into the long room...over the Elephant’s Ear in the Queen’s Chamber*” and “*they spent several hours searching out the remote sections of this room, which prior to that time had not been entered.*”

Boles reported that “*These stories have been wired each evening to the New York Times... relayed to 55 other newspapers throughout the United States, and ... the Cavern story has probably been read by close to TWENTY MILLION each morning. This publicity is especially valuable to us... presenting the Cavern to people who to date knew little if anything of its existence.*” Boles appreciated that “*So far these stories have been free from sensationalism...*”

In the March 1930 *SMR*, Boles attitude changed. He reported “*Dr. Frank Ernest Nicholson continued his investigations under the supposed auspices of the New York Times, and although he was inclined to elaborate on his findings, his articles were of general interest, and brought the Cavern to the attention of millions of people in the north and east who knew little or nothing of the Cavern.*”

Boles referred to a precautionary procedure for assisting Nicholson: "Either the Superintendent, or one of the rangers, was with the Nicholson party at all times underground, so that we could see for ourselves what he found, and also to insure his 'amateur' explorers from getting lost. 'Getting lost' is always a big stunt for a sensationalist, and we wished to guard against this."

Boles reported that the "law" laid down by the Washington D.C. Office and imposed by the "local force" had "prevented this party from experiencing any hairbreadth escapes, except those as existed in their imagination."

Boles decided that "There was nothing of scientific value to the expedition, as they carried neither compass, aneroid, or tape line," but he allowed that "it is a fact that they entered several chambers heretofore unknown, as proven by the undisturbed dust on the floor."

He concluded that "Although Nicholson's stories seem elaborate and unreal, especially to the local community, still I believe that any person visiting the Cavern after reading his stories, would NOT be disappointed in his visit, but several have already told me that their trip exceeded their expectations."

Boles appreciated "the friendship that the New York Times has always shown toward the National Park Service and its officers, and for that reason the latitude allowed Nicholson was a courtesy to the Times, rather than to Nicholson." Boles added, "But I believe it best that from now on our explorations be conducted by our own forces, with the possible inclusion of credited representatives of say the National Geographic Society, whose early explorations brought the Carlsbad Caverns its first worldwide publicity."

In Bole's mind, the positive publicity potential of the Nicholson expedition had fallen short.

Seventeen months later in August 1931, Boles met another challenge, contending with a publicity event larger than Frank Nicholson—a nearby earthquake. In the 8/31 SMR:

"Another event which resulted at first in much unfavorable and later most favorable publicity for the Carlsbad Caverns was the Texas earthquake on August 16th which seemed to center at Valentine, Texas, about 200 miles south of Carlsbad, and the shocks were perceptible in all directions for a distance of several hundred miles. The shock at 5:40 A.M. was of moderate strength in Carlsbad and was readily identified by the Superintendent of III intensity, a guess which was later confirmed by the Observatory at Denver. Within a few minutes after the quake I received several telephone calls asking my opinion as to the possible damage to the Cavern, and I unhesitatingly replied that there was probably none, recalling the results of the Tokyo earthquake in 1925 which destroyed the city but was not even felt in the coal mines. However, I went to the cave early the next morning and made a hurried inspection and satisfied myself. I took it upon myself to personally conduct the 821 visitors

on their underground trip that day, and as a matter of fact, I doubt if but few even thought about the quake after they had been in the Cavern for an hour and became interested in the Cavern itself. I at once issued press bulletins to the effect that the "Carlsbad Cavern was one of the safest places in the world during cyclones and earthquakes" and this statement seemed generally accepted throughout the southwest."

Four years later, another publicity threat emerged. In the June 1935 SMR, Boles lamented,

"Lost Tourists: An incident which will seriously affect New Mexico travel for a long time was the disappearance on May 23 of four tourists (Mr. and Mrs. George Lorus and Mr. and Mrs. Albert Heberer of Illinois) whose whereabouts have not been known since the above date. When last seen they were leaving Socorro, New Mexico, having left Albuquerque enroute to Carlsbad Cavern. Forged travelers checks belonging to Mr. Lorus have shown up in several places and his car was found abandoned in Dallas, Texas. An extensive search has been personally directed by Governor Tingley at an expense of approximately \$500 per day but, other than the charred contents of one suitcase, nothing has been found. \$1,000 reward is offered for the finding of the bodies; however, at the time of the disappearance the New Mexico rivers were at flood stage and it is quite likely that these four tourists were killed and the bodies weighted down somewhere in the upper Rio Grande."

This unfortunate incident came at a most inopportune time, just after the State had completed an extensive publicity campaign in many out of state newspapers; and even now it is the chief subject of discussion throughout the state and it is quite evident that tourists are being routed either around the State of New Mexico or else through on the shortest routes.

Three events—A *National Enquirer*-like reporter, an earthquake, and lost tourists—fell far short of the type of publicity we prefer at Carlsbad Cavern's National Park, publicity like we received at the June 7, 2002 stamp ceremony.

CAVE EXPLORATION, SURVEY, INVENTORY, AND CARTOGRAPHY UPDATES *by Stan Allison*

LECHUGUILLA CAVE

In 2001, following the completion of the new culvert and airlock system, there were three survey expeditions into Lechuguilla Cave. The first two were reported on in Canyons & Caves No. 23 on page 2. The last survey, inventory and exploration expedition into the cave for 2001 was by the Lechuguilla Exploration And Research Network (LEARN) on December 15-22. Expedition leader Mark

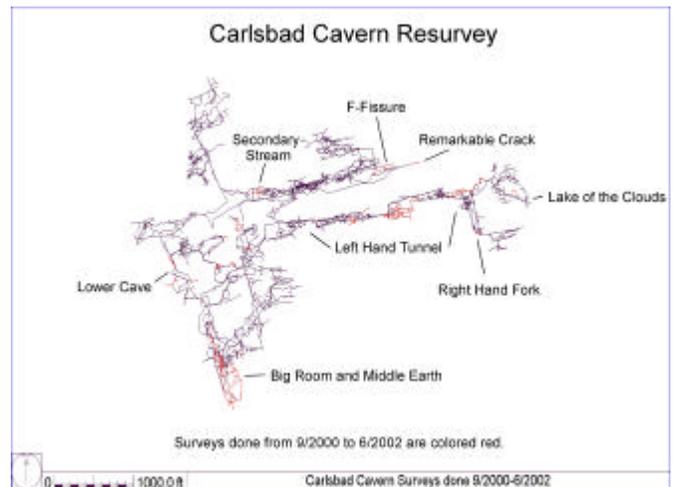
Andrich coordinated the work of ten cavers. A group of three camped in the Far East at Grand Guadalupe Junction Camp while seven cavers camped in the Southwest Branch at Big Sky Camp. The Far East crew resurveyed 4,612 feet of cave with bad sketches and some loops that did not close well. In addition they performed 90 feet of new survey. Southwest Branch teams resurveyed approximately 1,000 feet of passages that included re-sketches of the Big Sky area and Hoodoo Hall. These teams also added about 500 feet of new survey. Much of the new survey was accomplished in the High Hopes area in a climbing lead. Inventory was performed along with all of the new survey on this expedition. By the end of 2001, the length of Lechuguilla Cave stood at 106.97 miles (172.15 kilometers). All teams performing surveys (resurvey and new survey) in park caves are now required to be collecting inventory data at the same time. This keeps the backlog of un-inventoried passages from increasing and does not slow down survey teams because the speed of the sketcher is still the limiting factor.

For 2002, four full-size expeditions (up to 12 individuals in the cave for a week) have been approved for Lechuguilla Cave along with two smaller trips. LEARN has been awarded two of the survey and exploration expeditions. These are scheduled for August 10-18 and October 19-27. Peter Jones, Dan Legnini, and Joel Despain will co-lead an expedition August 18-25. Peter Bosted and John Lyles will co-lead an expedition September 13-20. Steve Reames is leading a series of day trips into the North Rift area to continue work on his quad map for that area which is nearing completion. Jeb Steward will lead a small group of four on a climbing-oriented expedition from September 21-29. The actual drafting of a map for Lechuguilla Cave is divided into separate areas of the cave called quadrangles (quads). Work in the cave is focusing on accomplishing survey and resurvey that will aid in producing completed quadrangle maps of the cave.

Along with volunteers who are working on quad maps of Lechuguilla Cave, the Cave Resources Office has taken a more active role in this entire mapping effort. Paul Burger has produced digital quad maps for the High Hopes, Chicken Little, Underground Atlanta and SeeSaw Canyon areas. Paul Burger and Steve Lester worked together on a digital map of the Deliverance and K2 areas. Paul also digitized the entrance quad of Lechuguilla. Many volunteers are working on updating and drafting their Lechuguilla quads and the goal of producing finished quad maps for Lechuguilla Cave is getting much nearer.

CARLSBAD CAVERN

Three additional miles have been surveyed in Carlsbad Cavern since the last update in the Fall 2000 issue of *Canyons & Caves*. The total survey has grown from 18.53 to 21.59 miles (34.74 kilometers) during this time period. Inventory has been done for approximately 60% of the survey stations. Following is a brief description of the trips that contributed to the Carlsbad Cavern resurvey project.



A computer-generated lineplot showing the extent of the Carlsbad Cavern resurvey.

Erik Niemeyer, Curtis Patillo, Patrick Roberson and Joel Tracy surveyed 329 feet in the MR survey in the Remarkable Crack area November 12, 2000. Dan Montoya, Deb Rivera and Jennie McDonough surveyed 388 feet in the F survey which is in the F-Fissure area April 7, 2001.

Quite a bit of work has been done in the Big Room area by two separate groups. Pat Kambesis and Mike Lace completed their long running project to re-sketch the Big Room. Spending nights in the cave with a laser distometer, they set and sketched 3,874 feet of detailed survey from May 30 to June 3, 2001. Currently Mike is drawing up a pencil version of the Big Room and Pat will digitize the map to make the final map. Kathy Lankford, Dale Lankford, Jimmie Worrell and Kelly Holladay have been working in the Middle Earth area below the Big Room. From March 24-28, 2001 they surveyed 865 feet setting 50 survey points. They set another 55 survey points during March 23-27, 2002 resulting in an additional 865 feet. There are only a few leads left in Middle Earth area so Stan Allison drafted a digital map of the area. Unless anything surprises us and goes to a significant amount of cave, the crew should be able to finish Middle Earth on their next trip.

The largest section of virgin cave discovered in the last few years was found by Walt Olenick, Rae Nadler-Olenick, Vivian Loftin and Jean Krejca. Returning to a tight lead that Walt remembered in the Secondary Stream area, they managed to squeeze through a tight constriction and find an area of cave on the edge of known cave. Over a period of three separate trips in 2001 they managed to survey 714 feet in this area. Some unexplored leads still remain and the group is planning to return soon.

The Cave Research Foundation focused their survey efforts in Lower Cave. A total of 2,422 feet of cave was surveyed during numerous survey trips in Lower Cave since September 2000. The surveyors listed in no particular order were: Erik Niemeyer, John Lyles, Tim Kohtz, Lois Lyles, Jim Kennedy, Julia Germany, Brian Doty, Ken Lakins, Jimmie Worrel, Kelly Holladay, Arron Birenboim, Walt Olenick, Rae Nadler-Olenick, Kevin Glover, Brad Blackburn, Scott Stark, Greg McCarty, Tonia Harper, Bill Gee, Paul Fower, Bill Rook, Marc Italiano and Phyllis

