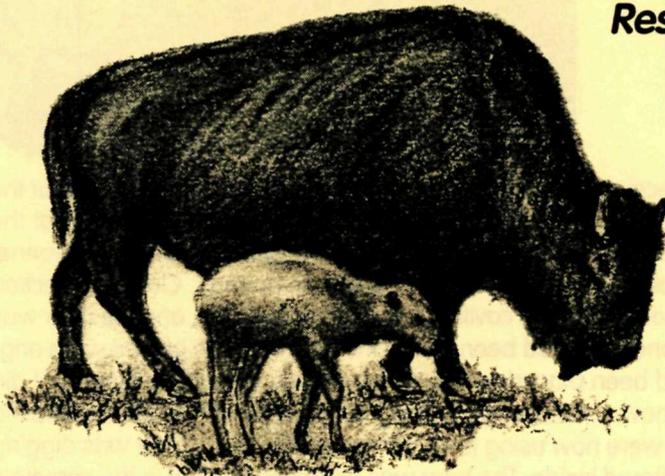


The Buffalo Chip



**Resource Management Newsletter
Yellowstone National Park
Autumn 2002**

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TRICK, OR TREAT?

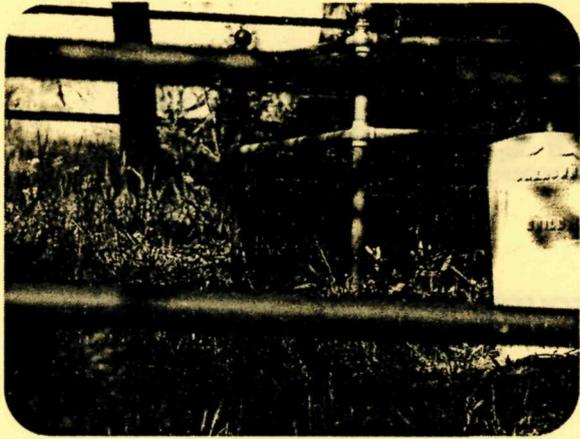
by Kerry Gunther, Travis Wyman, & Susan Chin



Has
Jesse Slauson,
buried in the Fort Yellow-
stone Army Cemetery since
succumbing to typhoid fever in
1912, risen from the grave?

Bear managers say probably
not. See following pages
for details.





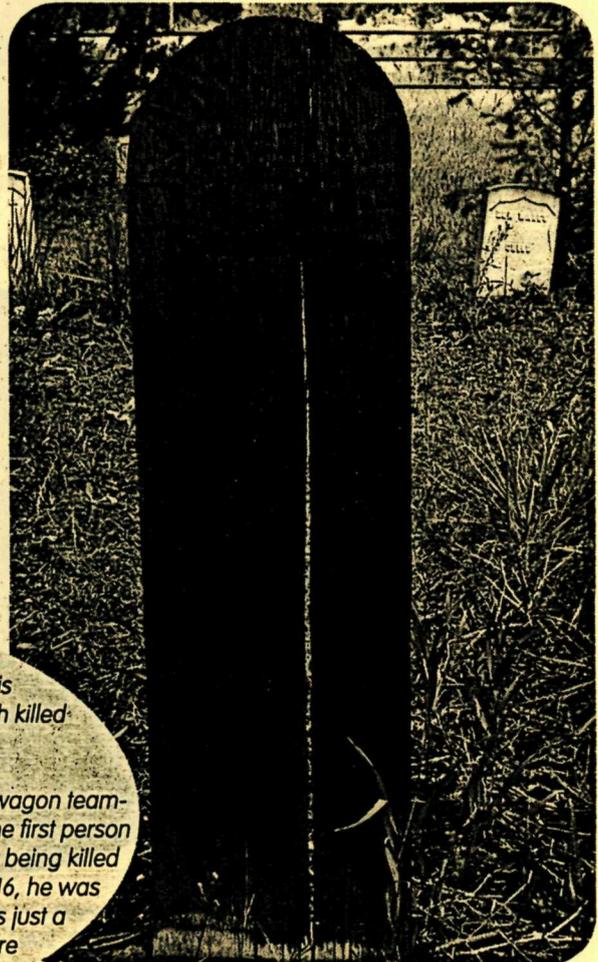
On August 20, the Bear Management Office received a call that a black bear was digging up graves at the Old Fort Yellowstone Army Cemetery near Xanterra's Mammoth Horse Corrals. It was reported that the bear was pulling something out of the graves, possibly bones. Bear Management Office personnel responded to the cemetery and observed a large black bear digging into the grave mounds. Closer inspection revealed that red squirrels had cached limber pine cones in small cavities in the grave mounds, and the bear was digging up the squirrel's middens to consume the cones that had been stored inside. When the graves were originally dug, the extra dirt displaced by the coffins had been placed on top of the graves, creating a mound of dirt over each casket. It appeared that the coffins had now rotted away, causing some of the dirt in the mounds to cave in and creating small cavities that red squirrels were now using to cache cones. The black bear was digging out these small cavities in an effort to eat the cones stored inside. The bear was observed feeding in the cemetery on occasions from late August through September, as the squirrels kept re-filling the cache holes with cones.

All photos and text by YNP Bear Management Office.





Although this year's crop of whitebark pine was a near total failure, there was an abundant crop of limber pine cones. Both whitebark pine and limber pine are present in Yellowstone. Both whitebark pine and limber pine are five-needle pines that produce cones containing large seeds that are eaten by birds and mammals. Due to its abundance and wide distribution throughout the park, whitebark pine is an important food for some wildlife, especially grizzly bears and black bears. In contrast, limber pine is not very abundant in YNP and has a fairly limited distribution. Limber pine is most abundant in the area within and surrounding the Mammoth developed area and campground, where it has also been planted as an ornamental. In years when limber pine produce an abundant cones, ultimately resulting in bear-human conflicts and subsequent management actions. 🐻



Fortunately for Frank Welch, red squirrels did not cache any cones in his grave, saving him the indignity of being both killed and later dug up by bears.

Welch, whose grave marker is seen here, was a wagon teamster who has the unenviable distinction of being the first person in YNP to have been killed by a grizzly bear. After being killed by the bear along the East Entrance Road in 1916, he was buried in the Army Cemetery. His grave was just a short distance from the graves that were being dug up by the black bear.

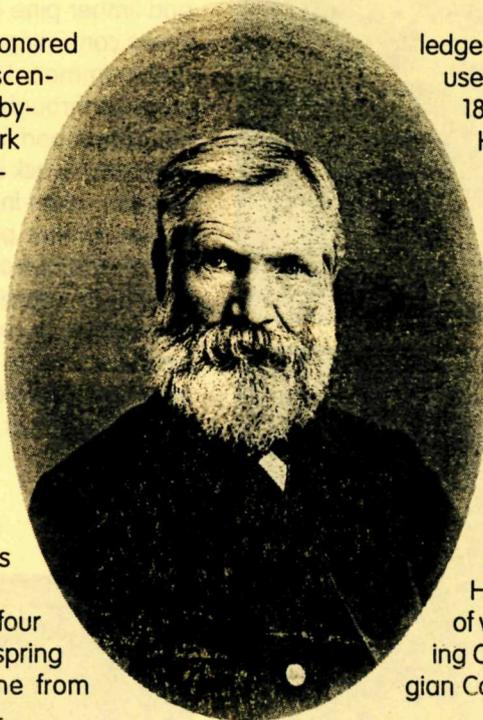
HENDERSONS EXPLORE YELLOWSTONE ROOTS

by Lee Whittlesey

On July 9-11, the park was honored by having three direct descendants and one relative-by-marriage of nineteenth century park interpreter G.L. Henderson (1827-1905) visit Yellowstone. These visitors were (James) Dean Henderson and his son Jim Henderson of Whidbey Island, Washington; Kathy Lynn Henderson of Fullerton, California; and Dean's wife Muriel. None of the four had ever previously visited the park. Kathy Lynn is the great-granddaughter, and Dean the great-grandson of George Legg Henderson, the man who was familiarly known in his own day as "G.L."

G.L. Henderson, his son and four daughters, and their numerous offspring were associated with Yellowstone from 1882 through 1914. G.L. was Yellowstone's premier tour guide, interpreter, place-name giver, and writer during that period, as well as owner of the Henderson/Lyall store at Mammoth that eventually became today's Mammoth Hamilton Store. His son Walter and daughter Helen built and operated the old Cottage Hotel while his daughters Jennie and Barbara were early post-mistresses in Yellowstone. Daughter Mary Henderson married Henry Klamer and the two of them owned and ran Old Faithful's Klamer store, which is today's lower Hamilton Store.

The four Henderson descendants spent one full day in the park library with me, examining materials about the Henderson family. They looked at the park's original Cottage Hotel



Portrait of G.L. Henderson by F.J. Haynes. YNP archives.



Today's Hendersons pose with Lee Whittlesey at the Roosevelt Arch, 2002. NPS photo.

ledger, which the Henderson daughters used for penmanship exercises in the 1880s, and examined copies of G.L. Henderson's 1885 newspaper entitled YELLOWSTONE PARK MANUAL AND GUIDE. "I've been looking for you guys for 25 years," I told them, and we all had a good laugh at opening a sealed, twenty-year-old letter I had attempted to send them back in 1982—a letter that had been returned to me as undeliverable.

We then went on a walking tour of the numerous sites at Mammoth Hot Springs that G.L. Henderson knew and loved, many of which were named by him, including Cupid Spring, Admiration Point, Stygian Caves, and the River Styx. "Standing in a place where I knew [the ancestral Hendersons] had been, and seeing things they had seen, was my favorite part of the entire trip," said Kathy Henderson.

These descendants provided the park with a great deal of new genealogical information on G.L. Henderson and his family for the park library's biography file. In particular, they were able to provide information on G.L.'s first wife, Jeanette Ann Thomas, about whom we formerly knew little. They also provided the park with a portrait photo of Walter Henderson (son of G.L.) and a group portrait of G.L.'s daughters. This material represents very important Yellowstone history. Thanks to the modern-day Hendersons for sharing it! 🐾

ROCKY MOUNTAIN RESTORATION

by Alice K. Wondrak

When I found myself with some time on my hands in Boulder, Colorado a couple of months ago, I decided to go see what our friends at Rocky Mountain National Park were up to. There, biologists Karl Cordova (formerly of Yellowstone) and Ryan Monello kindly squired me around for a few hours, talked to me about landscape restoration and elk management, and showed me some sites of interest. We'll save the elk for next time—for now, I'll tell you about our first stop, which was the former Hidden Valley ski area, located along Trail Ridge Road.

History

Like other national parks, Rocky Mountain has a history of wintertime recreation in the form of snowplay; primarily sledding and skiing. With steep vertical slopes climbing from 9,300 to 11,200 feet, the terrain at Hidden Valley lends itself nicely to such activity, and in the 1930s a couple of Olympic skiers claimed Rocky Mountain as their training facility. In 1954, as new ski resorts were springing up all over Colorado's western slope, often under the direction of former members of the Army's 10th Mountain Division who had trained there, machinations unbeknownst to us today resulted in the development of Hidden Valley as a bonafide ski area, complete with rope tows and poma-lifts, warming huts, and a parking lot built to accommodate 500 cars. Hidden Valley Creek, which runs through the site, was diverted into a 400 foot long, 48 inch high steel culvert, run underground in order to prevent possible flooding of the new buildings.

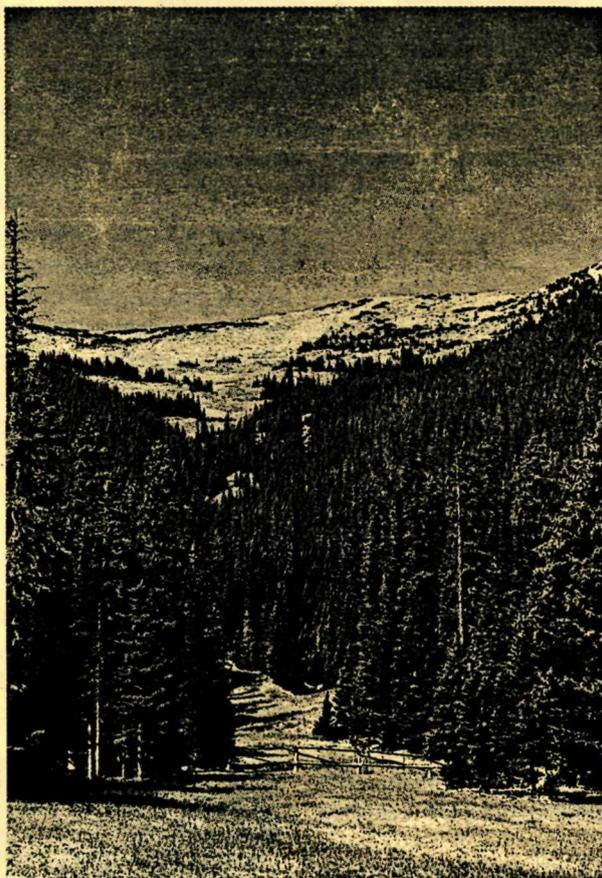
In the late 1950s, more structures joined those

already existing, and with the installation of a chair lift in the 1970s, Hidden Valley officially became the steepest ski area in the state, based on vertical relief rise-over-run-with the highest accident rate. Patrons of the ski area bought daily or seasonal passes from its concessioner, the Estes Valley Parks & Recreation District, which was responsible for the infrastructure at Hidden Valley—no NPS funds were ever used in the area's

development. In the 1980s, the concessioner introduced snowmaking equipment; underground pipes were run from Hidden Valley Creek to a 100,000 gallon tank buried beneath a nearby skating rink. With maintenance costs rising, the major operations at Hidden Valley, including the chair lift, were shut down. People still made it up to the top of the ridge pretty easily, however; a bus would take them from the base of Hidden Valley to the road that bisected the main ski run. There, the bus drove through a Quonset hut and its passengers debarked and got in line for the rope tow that still pulled skiers to the top. Then they skied down, right over the roof of the hut toward the ski area base.

By 1992, Hidden Valley Ski Area closed its operation, and NPS managers decided to encourage the development of an

alternative ski area site outside the park and return Hidden Valley to a more natural condition. Apart from the facility's being kind of an anachronism under today's NPS natural resource management policies, then-superintendent (now Deputy Director) Randy Jones had another reason for wanting to change the kind of use visitors enjoyed at Hidden Valley: the changing face of



One of the runs that gave Hidden Valley its reputation. It ran from the bottom, seen here, to very top of the ridge. Author photo.

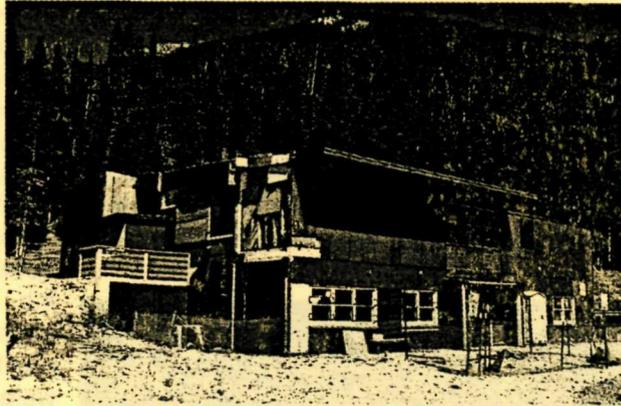
the NPS visitor. Rocky Mountain National Park is experiencing increased visitation by ethnically diverse communities, and in light of social science research showing the importance of extended family and group activities within these segments of the population (and in concert with section 8.2 of the 2001 NPS Management Policies), Jones realized that at Hidden Valley the park not only had an opportunity to restore a disturbed landscape but also to change use patterns through redevelopment in order to better serve the expanded needs of local communities.

Redevelopment (Phase II)

Hence, the redevelopment of Hidden Valley, (which will actually be Phase II of the Hidden Valley project, expected to take between two and 2½ years to complete), will include a group picnic area featuring three or four pavilions holding four picnic tables each. The tables will be located on the site of the old skating rink. Beneath the skating rink, the 100,000 gallon tank previously used for snowmaking will be removed, along with the underground pipe that diverted water to it from Hidden Valley Creek. The creek itself will be liberated from its steel culvert and directed into a new stream channel designed to meander and include drops in elevation that will serve both ecological and aesthetic purposes. The creek is home to the threatened Greenback cutthroat trout (*Oncorhynchus clarki stomias*), which cannot negotiate the section currently flowing through the culvert.

For continued winter use, the NPS will construct berms directing sleds away from the new picnic pavilions. It is hoped that these will improve overall safety, as ambulance runs from Hidden Valley to Estes Park are not uncommon occurrences under the current landscape scheme. In order to figure out how to situate the berms as well as the new warming hut/ranger station, an on-the-ground model was used to simulate wind direction and resultant patterns of snow loading, complete with potato flakes representing snow. The warming hut and other facilities will be constructed out of recycled materials and salvage from a lodge-type

building that was demolished in 2001 and from the last existing structure at Hidden Valley, also scheduled for demolition. The proposed road base will be made from pulverized asphalt from the existing parking lot.



New structures will be made from materials salvaged from this structure following its demolition. Author photo.

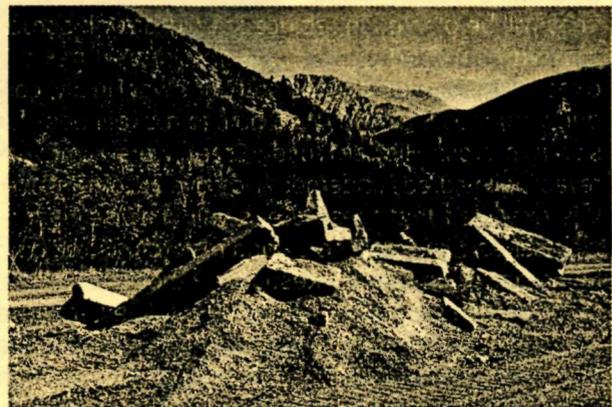
Wetland restoration

As for the 500-car parking lot, it has already been reduced to piles of rubble, and will become a 134-car lot (up from the 100 cars the NPS wanted in deference to the Estes Park community, still enthusiastic wintertime users of Hidden Valley). The original parking lot was situated atop a wetland that the park plans to restore. The access road will be pushed as far as possible to the uphill side of the wetland, which park employees are currently trying

to map in terms of elevation. As fill material is excavated, cones and pipes around the old lot identify sites where ground water level is being monitored to help employees determine the average low and high water elevations of the area. Unfortunately, the recent years of drought are making it difficult to get accurate readings. But employees are also looking at soil and vegetation to give them clues about where the wetland should be delineated by digging exploratory pits in search of native soil.

Restoration (Phase I)

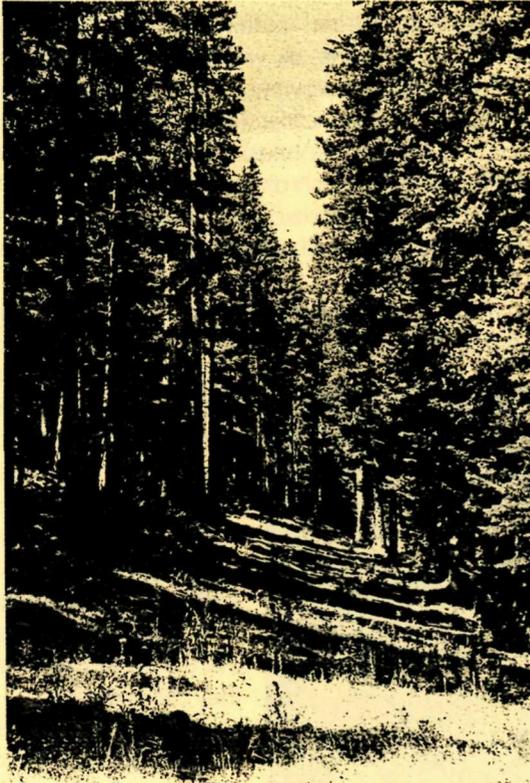
Phase I of the Hidden Valley project involved upland restoration of the former tow rope, poma-lift, and chair lift lines and the roads used to maintain them, and has been in progress for the last three years.



Remnants of the old 500-car parking lot, to be restored to its former wetland state. Author photo.

Workers removed 120 tons of concrete from the old tow lift supports, and used excavators and backhoes to restore the natural contour to areas that had been flattened to serve as a cut-and-fill road. Native plants that

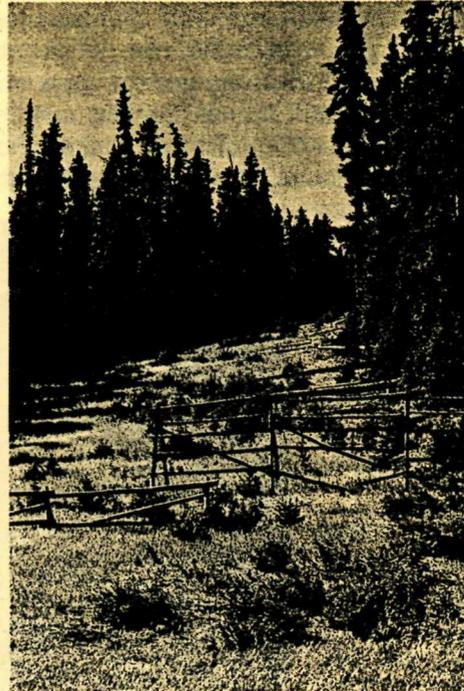
tion of visitor use and enjoyment will remain, but in more sustainable fashion. Winter visitors will find safer sledding runs and a more natural-looking landscape through which to snowshoe, snowboard, cross-country, telemark, and yes, even downhill ski. A few hardy souls haven't let the removal of the chair and rope lifts stop them from accessing the top of the ridge overlooking Hidden Valley and enjoying the thrill ride down-it just takes a little longer to get there now! 🐾



Restored cut-and-fill road. Author photo.

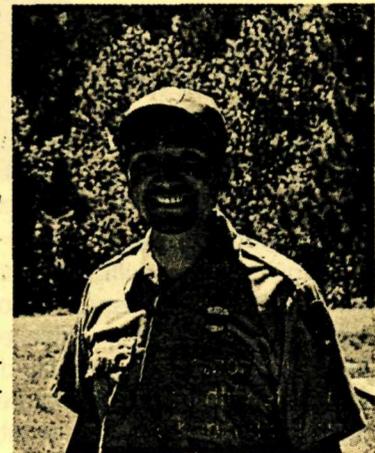
were growing on the road bed were removed prior to excavation and placed in a nursery; after the contour was restored, they were replanted. Employees are using a biodegradable plastic net made with straw and coconut fiber to control erosion as the stage is set for a 100-200 year natural restoration of the area. No trees will be planted to replace the old-growth spruce that was removed to make the ski slopes; trees are already filling in the spaces on their own. Finally, corduroy bridges that had been built to make it easy for skiers to cross Hidden Valley Creek were removed, revealing the areas underneath to have become sterile. It is expected that these areas will likewise restore themselves with time. The upland restoration was paid for, in part, with Natural Resource Protection Projects funds; Phase II will be funded through line item construction and fee demo monies.

Although Hidden Valley may look quite different in the future than it did in the old days (old-timers keep grinningly telling Cordova not to do too much at Hidden Valley because the ski area's "coming back"), its tradi-



Native spruce trees have already begun to reclaim some of Hidden Valley's former ski slopes. Author photo.

Personal post script: For those of you who know Karl, he sends his greetings and the news that he and his wife, Shannon, have a brand-new baby boy. Ben Cordova was born on the Fourth of July. Congratulations, Karl and Shannon!



*Karl Cordova.
Author photo.*

SONG OF THE TRILOBITE: TERROR OF THE YELLOWSTONE

by Julia Fitzke

Imagine a world with no trees, no terrestrial inhabitants, not even soil; only rock and water. Vast marine seas cover what we now know as Yellowstone. The surface of the earth is a relatively uneventful place, but beneath the Cambrian oceans, life is exploding.

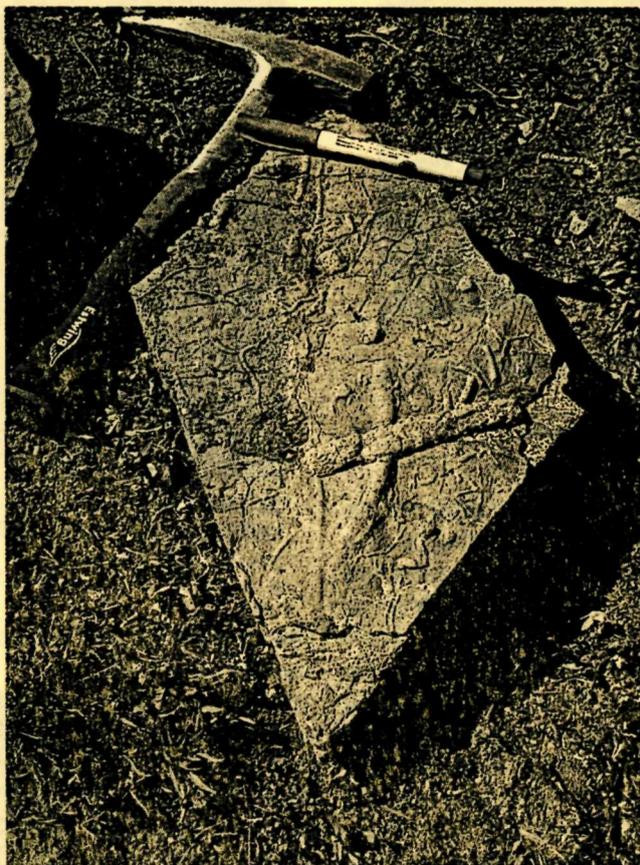
During the Cambrian era, from approximately 570 million years ago (mya) to 500 mya, all life was confined to the seas. Vertebrate animals were only beginning to evolve, and did not diversify until the Ordovician Period (500-440 mya). If the Cambrian had a "charismatic paleofauna," it was undoubtedly the trilobite, one of the most successful and prolific groups of animals ever to evolve. Occupying the ancient seas for more than 350 million years, they were pioneers in certain anatomic structures and feeding behavior.

Trilobita is a class of marine arthropod that ranged from the Early Cambrian (570 mya) to the Permian era (280 mya, just before the rise of the dinosaurs). Its body form was characterized by a tri-lobate ovoid exoskeleton, comprised of axial and side regions and divided transversely into the cephalon (head), thorax (middle) and pygidium (tail). Trilobites were members of the "Cambrian Explosion," a term used to describe the relatively sudden appearance of complex multicellular life possessing "hard parts" such as the phosphatic or calcified exoskeleton. In addition to exoskeletons, trilobites also developed the first compound eyes, composed of radially arranged units allowing for a "wide-angle" field of vision. With advancements in vision come other advantages, such as being able to visually locate prey.

Yes, prey. Certain trilobite families evolved complex mouth structures as well as morphologic variations that facilitated crawling and swimming, allowing them to become the earliest-known predators. These specially-adapted trilobites were able to catch soft-bodied organisms such as worms. With an enormous variety of specialized structures, well over 1,500 genera of trilobites are recognized. Several thousand species are known.

In 1878, two topographic features in Yellowstone were named for these fossils by William Henry Holmes of the Hayden expedition. Trilobite Point and Trilobite Lake lie just to the northeast of Mt. Holmes (formerly Mt. Madison) in the park's northwest region. Although these features bear the name "Trilobite," very little is known about the Cambrian sediments they may contain.

On June 21, 1915, Charles Doolittle Walcott, considered by many to be one of America's most influential and insightful natural scientists, arrived in Yellowstone as a member of Alfred Hague's USGS expedition. Walcott played major roles in the creation of several scientific and research organizations, including the Carnegie Institution of Washington and the National Advisory Committee on Aeronautics (which became NASA). He also served as the



Fossilized casts of worms (Trilobite prey)! NPS photo.

Secretary of the Smithsonian and Director of the USGS and was also elected president of the National Academy of Sciences and first vice president of the National Research Council. Walcott is perhaps best known, however, for his fossil discoveries—most notably, the Burgess Shale Fauna; a 540 million year old invertebrate fossil assemblage in Yoho Provincial Park, British

old invertebrate fossil assemblage in Yoho Provincial Park, British Columbia in 1909. It was his passion for fossils that led him to Yellowstone.

During his three months in the field, Walcott collected more than five tons of geologic and paleontologic specimens, some of which were exhibited at the National Museum in Washington D.C. Of particular interest were the Cambrian trilobites identified near Mount Holmes. Walcott would later use the trilobites from Yellowstone, along with related trilobites of the same age from different regions, to establish speciation theories for this class of early arthropods. Eighty-seven years after Walcott collected the first Yellowstone trilobites (i.e., this August), a multi-disciplinary team set up camp near Trilobite Point to conduct a systematic fossil inventory of the Wolsey Shale, Meagher Limestone, and Park Shale formations.

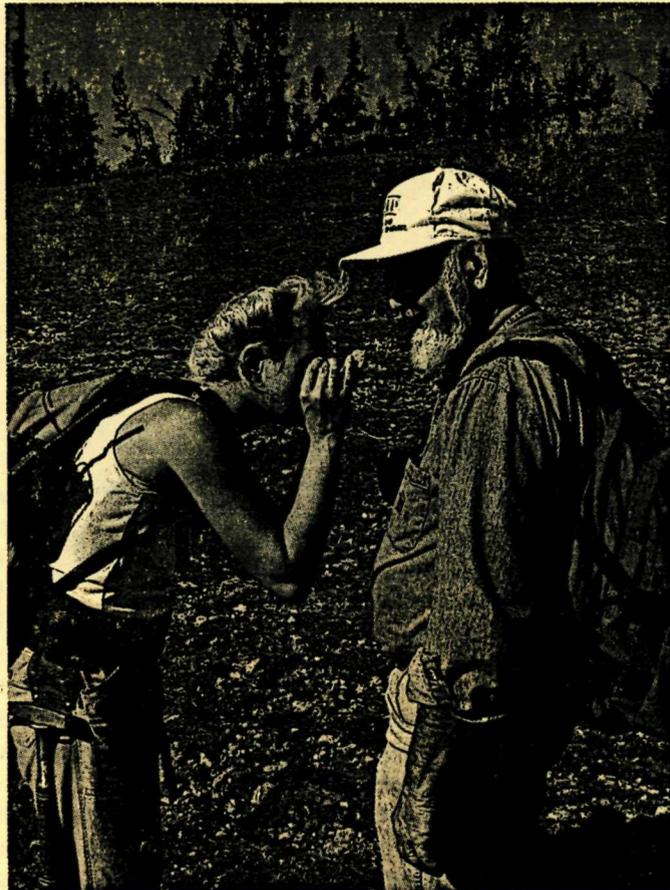
Members of the Trilobite Inventory were Arvid Aase, paleontologist and expert on middle Cambrian trilobites of Fossil Butte National Monument; Anton Gerasiminko, international volunteer and visiting Russian geologist also at Fossil Butte National Monument; and Ellis Yochelson, paleontologist emeritus and research associate at the Smithsonian's National Museum of Natural History. Mr. Yochelson is an expert on fossil Gastropods and an authority on C. D. Walcott, and his transcription of Walcott's 1915 field diaries allowed the team to have a better understanding of the area Walcott surveyed. Brian Sparks, Director of the Yellow-

stone Gateway Museum in Livingston, Montana and local trilobite expert, also accompanied the group, along with Diane Smith, local science writer and author of "Letters from Yellowstone," who will produce material for popular science magazines about this inventory

and its history. The party was also joined by local author Doug Peacock and his son Colin. YNP staff joining the survey included archeologist Ann Rodman; Ben Dorsey of the Spatial Analysis Center; Jim Peaco from Interpretation; Sue Consolo Murphy, Cultural Resources Branch Chief, and Elaine Hale of Cultural Resources, and geopaleontologist contractor Julia Fitzke. Ranger Brian Helms cleared the trail to Trilobite Point, located an appropriate campsite used as base camp and guided the party into and out of the backcountry study area, and employees from the park's corral operations packed the party's camp and equipment into the remote location.

Arvid Aase found the Wolsey Shale and Meagher Limestone within 20 minutes of our arrival at base camp, when his voice echoed from 305 vertical feet above, "We've got trilobites." Brian Helms had placed our camp directly below one of the most fossiliferous exposures in the study area!

On the following day, our party split into two groups. The first group headed west. The second group remained closer to camp and surveyed possible fossil-bearing units near Trilobite Lake. Group 1 identified eleven fossil localities from the Wolsey Shale, Meagher Limestone, and Park Shale formations. The Wolsey shale, the oldest stratigraphic unit investigated, produced a number of small inarticulate brachiopods and pieces of disarticulated Agnostid and Ptycoperid trilobites. One of the sites located within the Park Shale Formation (which is slightly younger than the Wolsey Shale) yielded



Ellis Yochelson and Julia Fitzke share a peek at a fossil recovered in the field. NPS photo.

inarticulate brachiopods. This was a significant discovery, because previous investigations of the Park Shale had produced no fossils. The specimens collected included three genera of trilobite (Agnostids, Ptycoperids, and Crepacephalids); a variety of inarticulate

brachiopods; sponge spicules (fossil cniderians); crinoid fragments (ancient echinoderms); and hyoliths (problematic gastropods). Several varieties of trace fossil (i.e., worm burrows and trackways), approximately 1.5 cm in diameter, were also identified and collected. Meanwhile, Group 2 traced sedimentary units to the north and west of camp, identifying and field checking the placement of the Tertiary intrusion or "andesitic sill." They verified that other sections of the Wolsey, Meagher, and Park formations were too inaccessible, and probably too altered by the igneous intrusion to be of any use to our inventory.

On August 29 and 30, Group 1 returned to the Wolsey Shale site identified by Arvid 305 feet above camp. Approximately 60 vertical centimeters of the Wolsey were quarried and investigated for fossils. This is accomplished by selecting a bed or layer of rock that appears to have fossils preserved in place. Once a bed has been selected, the blocks of shale are split into thinner sheets using a chisel or pocket knife.

The quality of fossil preservation is determined by the depositional environment during burial. If disarticulated fragments of fossils are found with coarse-grained sediment, it is reasonable to assume the depositional environment was fairly high energy—thus, your chances of finding a complete specimen from these beds will be slim. However, layers of rock above or below this high-energy unit may preserve a different depositional environment. Layers are investigated systematically, by identifying low-energy units that are more likely to preserve complete or nearly complete specimens. Several such low energy units were identified from this site.

Five fully complete specimens of Ptycopterid trilobite were collected, along with fragmented assemblies preserving complete head and tail sections of Agnostid

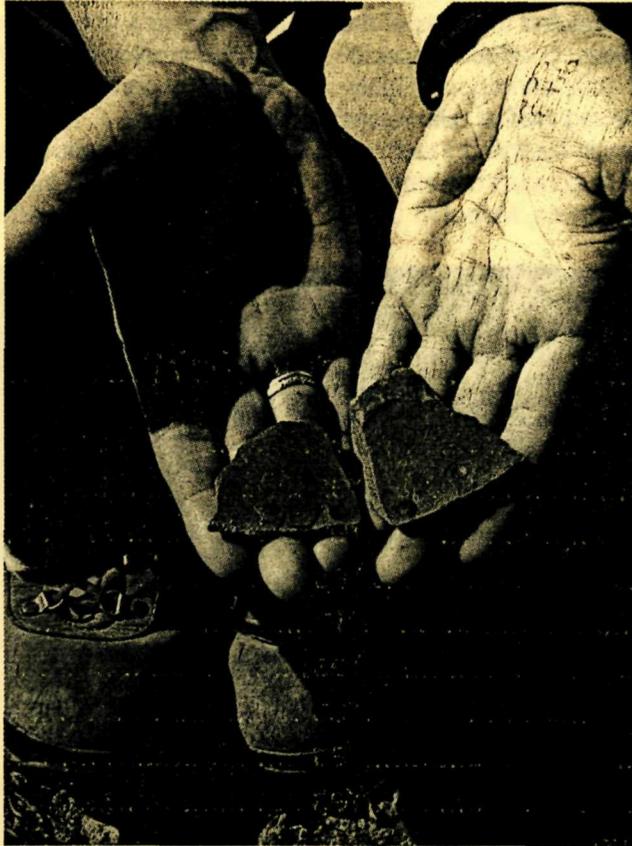
and Ptycopterid trilobites which can be diagnostic in determining species. Mollusks known as hyoliths were also identified from these units, one rare individual was found still possessing what is believed to be its mouth part, called the operculum. Small trackways and other trace fossils were also identified from this location before the group was chased off the mountainside in the afternoon by threatening skies. Arvid and Julia set

up a makeshift lab in the wall tent to examine the fossils collected during the inventory thus far and to discuss the significance of each location.

On the final day of fieldwork, a small group set out to find additional exposures of the Wolsey and Park Shales, while the rest returned to the quarry site in the Wolsey above camp. The small group traced the entire Cambrian section beginning with the Flathead Sandstone (the oldest sedimentary rock unit in the park), continuing up through the Wolsey, the Meagher and to the Park Shale. An exposure of Park Shale 150 feet thick was identified to the southeast. Arvid believes this location to be the best exposure of the Park Shale he has ever seen. More importantly,

two complete heads and one tail of Agnostid trilobite were found near the top of this exposure, and inarticulate brachiopods of fairly large size were collected from the lower section.

Clearly, sedimentary rocks of the Cambrian period in Yellowstone have a lot more to offer on a paleontologic level than was previously believed, and beg further investigation. This particular inventory was made possible by funds provided by the Yellowstone Park Foundation and a cooperative effort with Fossil Butte National Monument and the Department of Paleobiology, National Museum of Natural History at the Smithsonian. 🐛

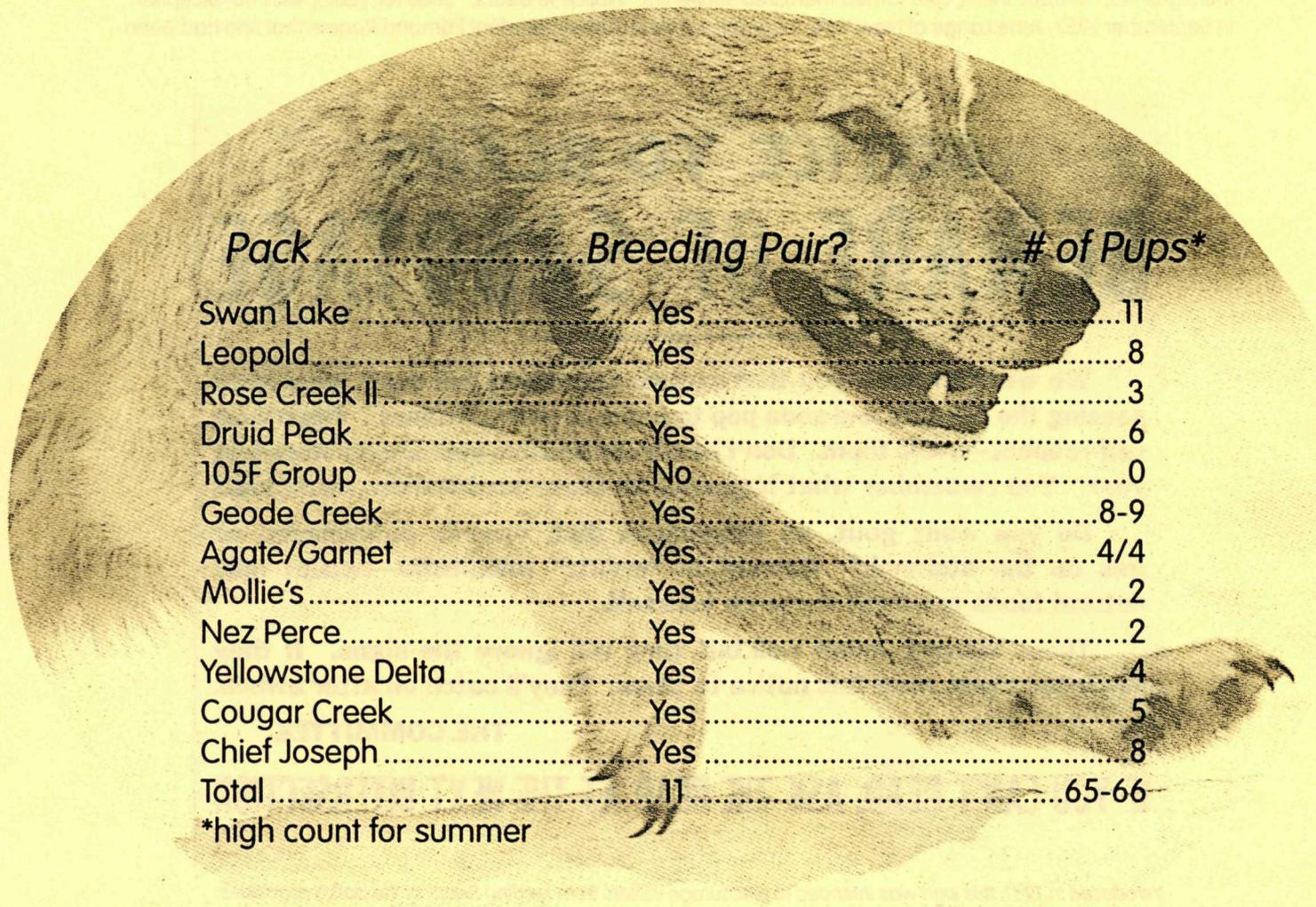


A three-dimensional Brachiopod fossil. NPS photo.



YNP WOLF PUP COUNT, AUGUST 2002

by Deb Guernsey



Pack.....	Breeding Pair?.....	# of Pups*
Swan Lake.....	Yes.....	11
Leopold.....	Yes.....	8
Rose Creek II.....	Yes.....	3
Druid Peak.....	Yes.....	6
105F Group.....	No.....	0
Geode Creek.....	Yes.....	8-9
Agate/Garnet.....	Yes.....	4/4
Mollie's.....	Yes.....	2
Nez Perce.....	Yes.....	2
Yellowstone Delta.....	Yes.....	4
Cougar Creek.....	Yes.....	5
Chief Joseph.....	Yes.....	8
Total.....	11.....	65-66

*high count for summer



NOTICE TO BEARS

by Alice K. Wondrak

This funny little sign seems to have developed a life of its own around YCR lately, and I thought people might like to know the story behind it, which I discovered in my recent research on the history of bears and people in Yellowstone.

"Notice to Bears" first appeared in 1951, and was posted along Yellowstone's roadsides in hopes that it would discourage visitors from feeding bears. Historically, the use of humor in bear warnings had tended to backfire, because the medium proved more engaging than the message. Tourists were usually more inspired to own the signs than to obey them, and turned them into souvenirs. "Notice to Bears," used for years, was no exception. In September 1957, June Lange of New York, New York wrote to Superintendent Edmund Rogers that she had been

NOTICE TO BEARS BEWARE OF SABOTAGE

We want to warn you that certain humans in this park have been passing the biscuits and soda pop to some of your brothers. Keep your self-respect—avoid them. Don't be pauperized like your uncles were last year. You remember what happened to those panhandlers, don't you?

Do you want gout, an unbalanced diet, vitamin deficiencies, or gas on the stomach? Beware of "ersatz" foodstuffs—accept only natural foods and hunt these up yourself.

These visitors mean well but they will ignore the signs. If they come too close, read this notice to them. They'll catch on after awhile.

THE COMMITTEE.

IF YOU CAN'T READ, ASK THE BEAR AT THE NEXT INTERSECTION

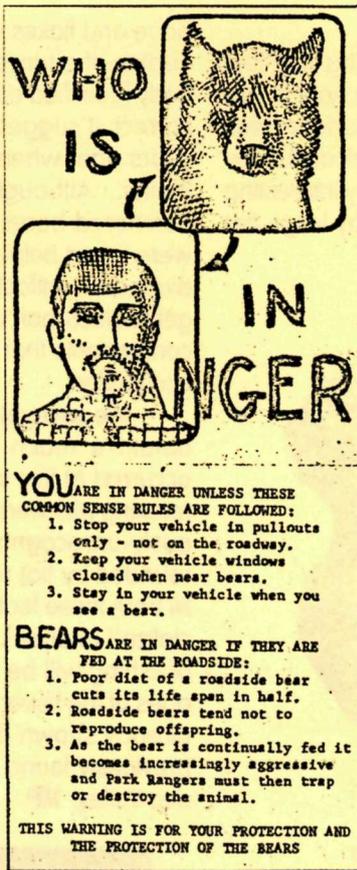
*Introduced in 1951, this sign was intended to discourage visitors from feeding bears at the park's roadsides.
YNP Bear Management Office.*

"very much amused by your sign concerning the fact that the public should not feed the bears. Would it be possible to secure one of those that read "Bears Beware" etc.?" Acting Chief Ranger Frank Sylvester was not amused—he responded to Lange's collector's impulse with a resounding "no."

In 1951, the text of "Notice to Bears" was sent to cartoonist Chic Young (of "Blondie" fame). In the Sunday comics, Young had recently depicted lesser-known characters "Colonel Potterby and the Duchess" in the act of befriending a roadside beggar bear. Concerned citizen William Wandall brought the strip to the attention of Superintendent Rogers, and in response, NPS Wildlife Division chief Victor Cahalane contacted Young personally. In his

letter, Cahalane conceded that Young could not "be expected to know that our rangers are getting prematurely gray over the chances that tourists take with the supposedly tame but actually wild and powerful bears," and suggested the following as a way that Young could mitigate any damage done: "How about giving your public a cartoon which will show some aspect of the real relationship between people and park bears? Following is the text of one of the signs we have posted in Yellowstone...it may lead to an idea." He then reproduced the text of "Notice to Bears" as evidence of the "real relationship" between people and bears in Yellowstone. Young's response, if any, is not known.

"Notice to Bears" seems to have disappeared in the late 1950s, but almost got new life in 1970. In the previous year, the park introduced an unusual anti-feeding flyer focusing on ways that roadside feeding could be hazardous to bears. In addition to explaining how people should



"Who is in Danger," 1969, made questionable claims in its anti-feeding zeal. YNP Bear Management Office.

behave in a bear jam, "Who is in Danger" curiously (i.e., falsely) claimed that "poor diet of a roadside bear cuts its life span in half," and that "roadside bears tend not to reproduce offspring." Seeking to maximize its circulation, the park's Assistant Superintendent for Special Services also provided this artwork to the Continental Oil Company (Conoco) for reproduction in its map of the park.

Conoco, however, rejected the rather heavy-handed "Who is in Danger," proposing instead to resurrect "Notice to Bears." Company officials suggested that "Notice to Bears" communicated a similar message, and that its humorous approach might prove more effective with visitors.

Based on past experience with comic warnings about dangerous bears, park administrators would have been wise to be skeptical. It may or may not have been a coincidence that the 1970 version of the park's Bear Management Policy dictated that all bear-related literature found to be outdated after annual evaluations should be not merely discarded, but incinerated! 🐻

SUMMER ARCHEOLOGY ROUNDUP

by Ann Johnson

Salvage Excavations at site 24YE353 The site was identified by occasional small flakes on the surface and in eroded areas, and by the fire-cracked rock eroding out of the edges of the terrace. On the terrace there were several piles of flakes, where someone had apparently collected artifacts and discarded the ones they did not wish to take away with them. This illegal activity explains why the archeologists found no large flakes or tools on the surface.

Fishnet Weight

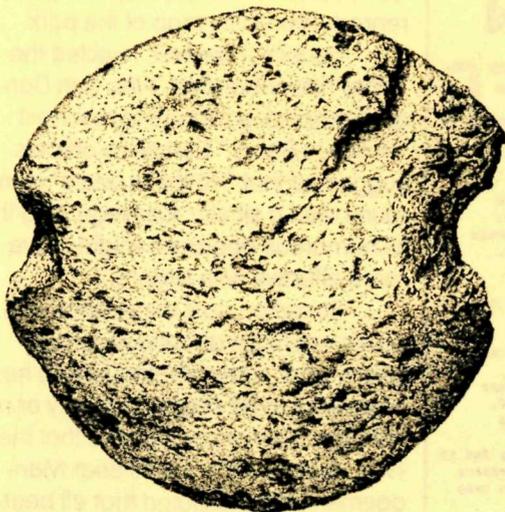
A very large net weight was found eroding out of the bank. This granite river cobble has two distinct notches on opposite sides. Its size appears to be related to fishing in the Yellowstone River current. This was an exciting discovery, as evidence of prehistoric fishing is very rare in Yellowstone. Archeological Inventory of the Yellowstone River from Fishing Bridge to Reese

Creek found fish net weights only at this site.

Prior to the start of fieldwork, we had hoped to find roasting pits because they often contain excellent information about foods and food processing. Two eroding roasting pits were salvaged from the bank in 1989 and radiocarbon dated to between A.D. 600 and 900. The earlier fieldwork recovered large amounts of cactus spines, seeds, and pads, and two fish vertebrae identified as belonging to suckers. The 1989 fieldwork was very limited, and while we expected to find the A.D. 600-900 campsite, we also hoped there would be deeper occupations at this location, because each site we had tested farther up the Yellowstone River had been used by more than one group. One site had seven distinct camping events. However, the earliest cultural material was McKean, with a maximum age of 3500 B.C.

Boiling stones

The excavation revealed a distinct living floor (the ground's surface at the time the site was occupied). This surface, at 30-40 cm below the modern surface, was covered with a scattering of fire-cracked rock and stone artifacts. There were also hearths and a very interesting feature of fire-cracked rock surrounded by large flat



Fishnet weight. Drawing by Tah Madsen, 2002.

river cobbles. The rock may have been heated in the hearths and used in stone boiling for cooking food. In this technique, hot rocks were dropped into a skin container filled with liquid, which would be heated by the rocks. The water boiled quickly, and rocks were removed as they cooled. After several heating/cooling episodes, the rock would begin to crumble and break into smaller pieces. To avoid having too many "crumbs" in the soup, rocks may have been discarded after several cycles. The adjacent river provided an unending supply of new rocks suitable for heating.

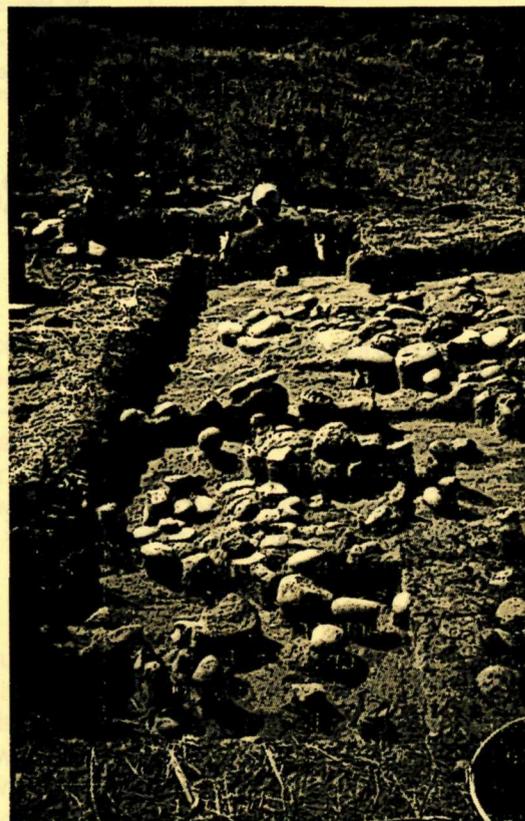
Cultural identification of who occupied this camp and created the living floor is unclear at this time. There appears to have been compressed stratigraphy as projectile points representing Avonlea (A.D. 200-900), Pelican Lake (A.D. 200-1000 B.C.) and McKean (1000-3500 B.C.) were found from 0-40 cm below the surface without vertical separation. When the artifact analysis is complete and we have radiocarbon dates from the hearths, it may be possible to clarify the ages of the various activities that took place here.

Geographic ties

Below the living floor at 30-40 cm, a thick sterile zone extended to 70 cm, where another campsite with

bone and flakes was encountered. The base and mid-section of a lanceolate obsidian point has been tentatively identified as a Haskett point. If this identification is correct, it suggests ties west and into Idaho at 10,000 years ago, when Folsom peoples were on the Great Plains. Although three more occupations with butchered bone, stone flakes, and fire-cracked rock were found below the 70 cm occupation, no additional diagnostic artifacts were found. We expect to be able to get radiocarbon dates for at least some of these lower components that will allow us to establish the dates of occupation.

We excavated a large horizontal area in order to obtain a much better picture of the activities that occurred at this site. We were disappointed additional roasting pits were not found, but intrigued by the previously-unrecognized feature of fire-cracked rock surrounded by flat river cobbles. We recovered the entire fill from these features and will be sending it off for specialized analyses, where we hope additional evidence of fishing will be found. While we do not yet know the ages of the lower components, the artifacts found have already shown that this site is clearly older than any previously found on the Yellowstone River below Hayden Valley. 



Crew excavating fire-cracked rock living floor, 2002. NPS photo.

VEGETATING ON THE GRIZZLY'S FUTURE

by Darren Ireland and Alice Wondrak

Before leaving Yellowstone for a far, far colder place (Antarctica, where he will study Weddell seals with MSU professor Bob Garrott), Darren Ireland stopped in to talk about what he's been doing all summer. As part of a GYCC-funded study called "Effects of Wildfire on Grizzly Bear Vegetal Foods in the Greater Yellowstone Ecosystem," a joint project between YNP's Bear Management Office (BMO) and the USGS-BRD's Interagency Grizzly Bear Study Team (IGBST), Darren and the BMO's Lori Roberts have been resurveying vegetation plots first established by the Study Team in the 1970s, looking for effects and changes caused by the 1988 fires.

Background

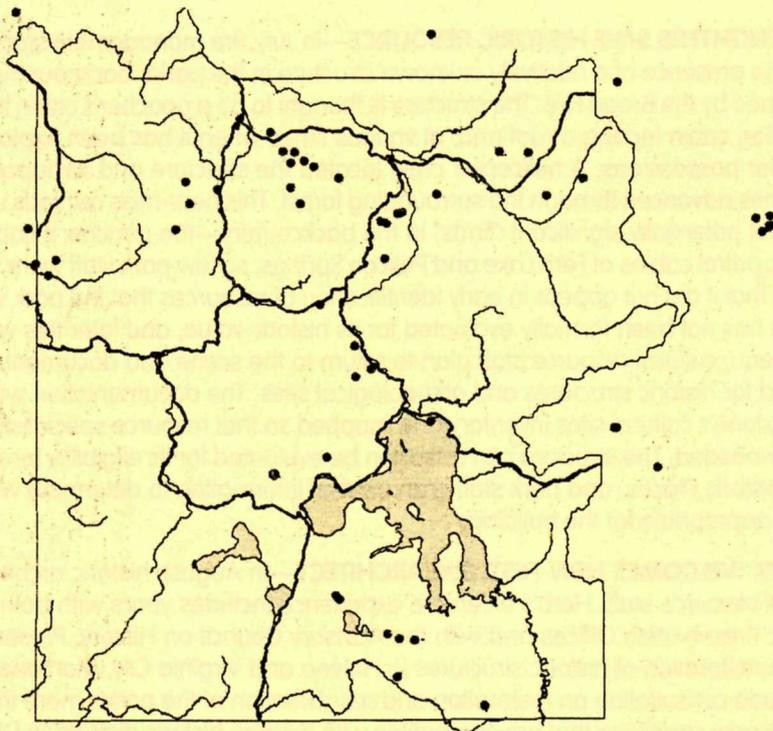
Soon after it began radio-locating grizzlies in the 1970s, the study team began sending vegetation analysis crews out to survey the vegetation at those locations in order to learn what foods had brought bears there. By 1989, the IGBST had compiled a database of thousands of these sites, and in that year sent crews back to 470 of those recorded prior to 1988, with the goal of determining levels of fire intensity and the overall effects on grizzly bear vegetal foods at those sites. Darren and Lori's goal this summer was similar—to see what kinds of effects, 12 years later, the 1988 fires have had in terms of increasing or decreasing numbers and quantities of high quality foods, and to take note of vegetation type changes.

What they did

This summer, Darren and Lori revisited 40-45 of the 470 sites that the IGBST surveyed in 1989, including areas near the West Entrance, Crandall Creek, the south boundary, Hayden Valley, Antelope Creek, Blacktail Plateau, and the East Entrance (see right). They walked approximately 187 miles in the course of completing the surveys, sometimes to remote areas that required overnight stays. At the sites, they used the IGBST's old data

forms showing slope and aspect, UTM, and verbal description to ensure that they were surveying the same plots, then used a 10 meter tape measure to lay out north, south, east, and west axes. They then laid a 20x50 centimeter frame of PVC pipe (called a Dobemeyer plot) along those axes ten different times, at uniformly-spaced intervals.

In the spaces within those frames, they estimated the percent cover of grasses, forbs, and shrubs, and measured their average height. They also identified the plants growing inside each framed space, paying special attention to those that were grizzly bear foods. Typical foods might include yampa roots (a member of the carrot family), fireweed (bears eat the flower heads), cow parsnip, dandelions, goatsbeard, whortleberries, strawberries, and grasses, sedges, and forbs like caryx and calamagrostis. For those, they did a separate estimate of cover percentage, and recorded their phenology (stage in life cycle—e.g., flowering/post-flowering). Darren and Lori then identified all plant species within a 30 meter radius of the site center, assigned the area a



2002 postfire vegetation survey areas.

cover and habitat type using established keys, recorded the slope and aspect, forest cover type, basal area factor (forest density), distance to forest or non-forest cover, and distance to the edge of the burn.

Results

The first thing Darren points out about their results is that there are too few of them for any definitive conclusions to be drawn yet; the relatively small number of sites visited, and landscape diversity among those sites makes it difficult to extrapolate the results. This initial phase may be most useful for determining how the rest of the project process will work in the future.

The other reason for caution is that making determinations for "good" or "bad" is not so simple as it might seem; changes resulting from the fires have had good effects in some places, not so good effects in others, and conditions are, naturally, in flux. For instance, in areas where there were once spruce tree stands that have not regenerated, conditions for grizzly bear vegetal foods have sometimes improved, because lush meadows have replaced tree cover. On the other hand, some former lodgepole pine stands that hosted a diverse array of undergrowth are currently at thick

regeneration stages that preclude the growth of many plant foods. And in some cases, former spruce stands that were located near lodgepole stands are now regenerating with lodgepole, changing habitat type. What we see in the end is a changing fire mosaic, with the results for grizzly bear vegetal foods depending on tree types and their current stages, which will naturally change, as well as on fluctuating levels of soil moisture.

Of special concern, of course, is the state of whitebark pine in Yellowstone. In 1988, the park lost an estimated 28% of its whitebark to the fires, and some suggest that what just might help in terms of benefiting the park and its grizzlies is more fire. In this case, what might seem counter-intuitive is really a question of scale and intensity. Prescribed burns of low intensity are thought to be good for whitebark, in that they reduce competition by removing lesser-stage spruce and other trees. It is also thought that Clark's nutcrackers may cache whitebark seeds in newly-burned areas, thus indicating that burning may help facilitate seed-spreading. Future phases of this study may prove instructive in regard to this management question. It would be ideal, Darren observes, if all 470 sites could be revisited. 🐿

...NEWS BRIEFS...

FIREFIIGHTERS SAVE HISTORIC RESOURCE—In July, fire management staff, alerted by cultural resource specialists to the presence of a relatively unknown structure in the park's backcountry, saved an historic structure from being burned by the Broad Fire. The structure is thought to be a poacher's cabin built early in the park's history; it is a simple log cabin lacking a roof and, at various times when it has been explored, has contained a saddle and other minor possessions. A helicopter crew located the structure and wrapped it in fire-resistant material before the flames advanced through the surrounding forest. This near-miss reminds us all of the value of sharing information about potentially significant "finds" in the backcountry—the poacher's cabin was nearly lost because, unlike historic patrol cabins at Fern Lake and Pelican Springs, so few park staff were aware of its presence and precise location that it did not appear in early identification of resources that the park wanted firefighters to protect. The structure has not been formally evaluated for its historic value, and later this year, when it's safer to access the Mirror Plateau, cultural resource staff plan to return to the scene and document the site following standard procedures used for historic structures and archeological sites. The documentation will result in the site's being added to Yellowstone's cultural sites inventory and mapped so that resource specialists can alert others to its presence whenever needed. The structure can also then be evaluated for its eligibility for potential listing on the National Register of Historic Places, and park staff can use that information to determine what, if any, future management actions are appropriate for the building.

PARK WELCOMES NEW HISTORIC ARCHITECT—In August, historic architect Herb Dawson joined the park's cultural resource staff. Herb's extensive experience includes years with both the Montana and Wyoming State Historic Preservation Offices and with the Advisory Council on Historic Preservation. Recently, he has been involved with restoration of historic structures in Helena and Virginia City, Montana. His responsibilities in Yellowstone will include consultation on restoration and rehabilitation of the park's more than 950 historic structures, and helping plan new structures that are compatible with existing historic districts at Old Faithful, Mammoth Hot Springs, Roosevelt, Fishing Bridge, and elsewhere. Please join us in welcoming Herb to Yellowstone, and feel free to call him at 344-2157 to talk about projects affecting historic structures.

EXTENSION APPROVED FOR FINAL WINTER USE SEIS—The National Park Service (NPS) announced August 2 that it has reached an agreement for an extension to complete the final Supplemental Environmental Impact Statement (SEIS) for Winter Use in Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr., Memorial Parkway. Under the terms of a settlement agreement, a Record of Decision (ROD) was to be finalized by November 15, 2002, with a final rule published by December 15, 2002. With the approved extension, the ROD will now be finalized on March 21, 2003. The proposed rule would place no limits on snowmobile numbers in the three-park area for the winter of 2002-2003. However, there will be some changes in effect for the winter season of 2002-2003. In Grand Teton, snowmobile use will be eliminated on the Teton Park Road and in the Potholes area, and snowplane use will not be allowed on the frozen surface of Jackson Lake. In Yellowstone, certain routes that have been open to snowmobiles will be designated for snowcoach-only use. These include: Firehole Canyon Drive, Fountain Flat Road, Virginia Cascades Drive, North Canyon Rim Drive, Riverside Drive, Lake Butte Overlook Drive, and the road segment from Canyon Junction to Washburn Hot Springs Overlook on the Grand Loop Road. Specific hours of operation for snowmobile and snowcoach use in the three-park area will be 8:00 a.m. to 9:00 p.m.

TWO ROAD PROJECT FONSI SIGNED—On August 7, Yellowstone Superintendent Suzanne Lewis and Intermountain Regional Director Karen Wade signed a Finding of No Significant Impact (FONSI) for each of two proposed road projects within Yellowstone National Park. The Tower Junction to Canyon Junction Road Improvement project proposes to resurface, restore, rehabilitate, and reconstruct 18.4 miles of the Grand Loop Road between Canyon Junction and Tower Junction and to widen the road from its existing 19-22 feet to a 24-foot paved top width. Curve widening and guardrail offsets will increase the proposed paved width by up to an additional five and one half feet. The Canyon Junction to Fishing Bridge Junction Road Rehabilitation project proposes to resurface, restore, and rehabilitate 15.7 miles of the Grand Loop Road between Canyon Junction and Fishing Bridge Junction to its existing 24-foot paved top width. The existing alignment will be followed. Copies of the Finding of No Significant Impact for either of these projects may be obtained by writing: Planning Office, P.O. 168, Yellowstone National Park, Wyoming 82190, or they may be viewed online at: www.nps.gov/yell/technical/planning/index.htm.

BEAR INJURIES—On the evening of August 30, a man camping alone was awakened when a bear bit him in the buttocks. It is unclear if the bear was a grizzly or black bear. The victim did not see what species of bear bit him, and although Bear Management Office (BMO) personnel investigated the scene the following morning, due to heavy rains they could not determine the species of bear involved. It appears that the hiker had followed all backcountry camping safety precautions. BMO personnel posted all trails with campground closures and bear warning signs. On September 2, at Columbine Creek three miles northeast of campsite 5E4, two off-trail hikers encountered a female grizzly with three cubs-of-the-year. One hiker was bitten on the leg, receiving two four-inch lacerations to his calf and a broken fibula. The sow then charged the second hiker, who sprayed her with bear spray, and the bear left.

LAKE TROUT NEWS—As of October 9, 11,025 lake trout had been removed from Yellowstone Lake this year over the course of 15,000 100-m net nights of gillnet time. YCR staff have received over 100 calls for more information in response to the press release that went out encouraging people to help remove lake trout.

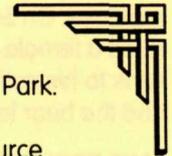
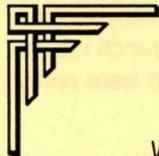
STEAMBOAT GEYSER ERUPTS AGAIN—On Friday, September 13, 2002 at about 10:20 PM Steamboat Geyser erupted. Witnesses reported that the water phase lasted a little over an hour with a column at least 300-ft high. It had an impressive steam phase well into the next morning. A Norris Interpreter, Laura Douris, saw it while returning from barricade closure and alerted others in the area. At least 15 people, including Superintendent Suzanne Lewis, got to see it! Unfortunately there are no pictures because of darkness.

INTERAGENCY SCIENCE CONFERENCE—The Interagency Science Conference was held on September 11. Talks included discussions on air quality, bear foods, pathogenic amoebae, and more. Turnout of park staff included the Planning Office, YCR, Law Enforcement, Finance, Backcountry Office, and Fire Cache. 🐾

The Buffalo Chip
Yellowstone Center for Resources
P.O. Box 168
Yellowstone National Park, WY 82190

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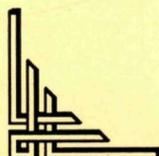
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We welcome submissions of articles or drawings relating to natural and cultural resource
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The Buffalo Chip
Yellowstone Center for Resources
P.O. Box 168
Yellowstone National Park, Wyoming 82190

Managing Editor
Roger J. Anderson

Layout
Alice K. Wondrak

Editing
Tami Blackford
Mary Ann Franke
Alice K. Wondrak



Cover illustration by Marsha Karle