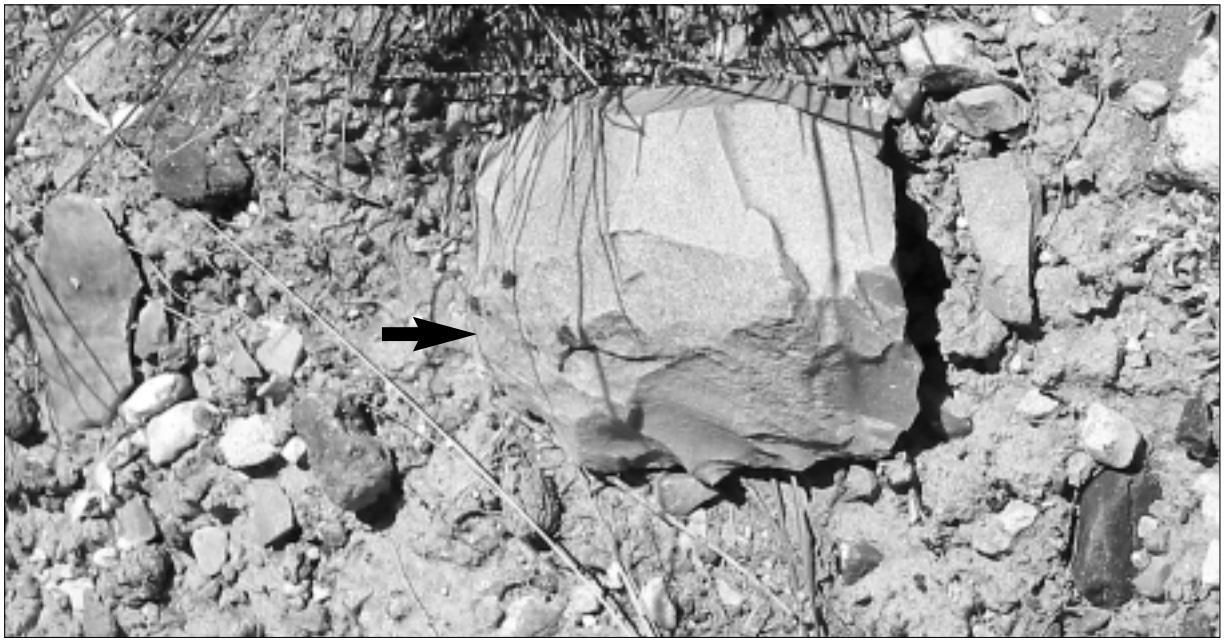
really old news

richard anderson

elk refuge yields hints of ancient ways of life



RICHARD ANDERSON

The large quartzite cobble above shows the obvious signs of having been "worked" by an an ancient flint-knapper. Archeologists may be able to date the abandoned biface by using lichen, the dark gray spots on the left of the rock.

On a low, wind-swept ridge with a panoramic view of a wide river valley and towering peaks to the west, a man sits on a flat rock, busily chipping away at a quartzite cobble, crafting a razor-sharp stone blade. From the cool, shady valley behind and below him comes the sounds of children playing, and men and women working and socializing around a campfire. He takes another few well-aimed strikes at the stone, but the smell of cooking bison meat reaches him, and he decides to leave the stone for later.

An undetermined number of years later – 400? 1,000? – Ken Cannon, an archaeologist with the National Park Service's Midwest Archaeological Center at the University of Nebraska in Lincoln, admires the same view over what we now call the National Elk Refuge and Grand Teton National Park and points out the ancient litter. He explains how his wife, Molly, also an archaeologist, may be able to use lichen that have grown on the stone chips and unfinished tools to date the artifacts.

Lichen grows at a constant rate, though that rate is distinct for each location. If Molly can figure out the rate at which the lichen grow here in the far northern reaches of the elk refuge, she can make an estimate at how long ago the unfinished tool – called a "biface" in archaeology – was abandoned.

That's just one method the Cannons will use to help fill in the story of ancient human habitation in Jackson Hole. Cannon thinks he's already on to one important detail: "People said bison were not a big part of the pre-contact economy," Cannon said. But a bonanza of bison bones recovered on the site suggest otherwise.

The Cannons and a crew of a dozen volunteers from the nonprofit Earthwatch Institute spent four weeks in June and July camped out near the Goetz Site. The site was originally discovered in 1971 when Elk Refuge workers trying to increase the flow of water from a spring began to uncover bones. The refuge contacted archaeologist Charlie Love of Western Wyoming College, who at that time was doing a survey of archaeological sites in Jackson Hole, and Love in turn contacted Dr. George Frison of the University of Wyoming Department of Anthropology. Frison brought a field team to the site and recovered bones and "lithic artifacts" – quartzite chips, hammer stones and bifaces – but, Cannon said, no analysis or write up was ever done on the finds.

Years later, Cannon read about the site. One of the bison bones found had ended up at Western Wyoming College in Rock Springs, and in 1999, Cannon traveled to examine it. He said radio-carbon dating showed the animal had died about 800 years ago, and it appeared that perhaps four individuals had been involved in the kill, suggesting a highly organized effort to harvest and process bison that previously had gone unrecognized.

Cannon wrote some grant proposals and won funding from Earthwatch, which helps pay for such expeditions and supplies volunteer labor, from high school students to retirees from across the U.S. and around the globe. Additional funding came from the U.S Fish & Wildlife Service, the National Park Service and private donations. Patagonia pitched in some gear. In the summer of 2001, Cannon was ready to begin exploring the Goetz site.

> *"People have been here at least 9,000 years, perhaps longer. The archaeology is well preserved. The site is really exciting ... it has a lot going for it. It's a place people have been coming to for a long time."*

"There's a lot more going here," he said as he drove the bumpy double-track from the main Refuge Road to the remote site where public access is generally forbidden. "People have been here at least 9,000 years, perhaps longer. The archaeology is well preserved. The site is really exciting ... it has a lot going for it. It's a place people have been coming to for a long time."

It's easy to see why: The valley has water and raw materials, is fairly well sheltered, and attracts wildlife. Cannon said that during their month at the site, he and his team had seen moose, deer, elk and coyote pass through, drawn by the cool water of the spring.

"And there's really good organic preservation," Cannon said. "We've found lots of bone. It's rare in Jackson Hole. It's pretty pristine back here."

Cannon's work is about more than uncovering bones and stones. "My interest is in how the landscape has changed since deglaciation."

The last period of major glaciation in Western Wyoming ended about 15,000 years ago. By then, the Pinedale Ice Sheet had pretty much retreated to reveal the Jackson Hole valley. While other scientists have a fairly good understanding of the ancient climate, the record of the community of mammals that made their lives here is considerably sketchier.

"If we can understand this site, we can understand the mammal community prior to [Anglo-European] contact," Cannon said. And if we can understand how communities adjusted to climate change, we can use that to inform how we will manage wildlife and wildlands in the future.

For example, when the boundaries of Yellowstone and Grand Teton national parks, the national forests and the National Elk Refuge were drawn, it was felt that, based on known animal migration routes, there would be plenty of room for the animals to live and thrive. But, Cannon said, as the climate and landscape change – whether naturally or as a result of human pollution or habitation – the systems we have set up may not be big enough for species and ecosystems to survive.

"The historical record hasn't been a major part of that debate," Cannon said. "Ecologists usually have about 10 years of data to look at. We can provide 100 times that."

Cannon and company aren't ready to draw any conclusions yet, however. Good science means collecting the data first, and Cannon's data collection has been scrupulous. About a hundred yards up the little draw from where the team has set up its camp, small groups of three or four bend over shallow excavations one meter square and 30 centimeters or so deep.

"What we're looking at here is a 1,900-year-old barbeque," he said, peering into one pit. "Hearths are central locations where people gathered and did work."

At the bottom of the hole is a jumble of things that look like stones, but Cannon points out butchering tools and rocks that have been cleanly split by the intense heat of a campfire. Other fragments are broken and charred bits of animal bone. Laboratory experiments may be able to identify from what animal they came. For

Continued next page …

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couple blazing trails in creating volunteer foundation

COURTESY PHOTO

Trailblazer Foundation co-founder Chris Coates (center) has visited Cambodia three times.

A school in Cambodia. Power tools for woodworkers in Fiji. Artificial limbs for landmine victims.

Teton County residents Chris and Scott Coats have been volunteers for various causes, nationally and abroad, for most of their lives: rebuilding houses in Appalachia, mission work in Mexico, teaching in Kosovo. But they've realized they can't save the world alone, so they've started the Trailblazer Foundation.

The couple hopes to raise enough money through the foundation to engage in several projects throughout Southeast Asia simultaneously. And in order to ensure the money raised is not misused, the couple is planning to travel halfway across the world to see that the projects are done right.

Although they've spent much of the last several years on volunteer projects around the world, the couple embarked on many of their trips alone, representing no one but themselves. Scott said they were concerned about how much donor money went to administrative costs with large volunteer organizations; if it was just two people, the money designated for actual projects and volunteer work stretched farther.

In 2001-'02, the Coatses traveled to Fiji, Western Samoa and New Zealand, spending three months in each location performing volunteer work, such as planting trees in deforested areas and acting as live-in caregivers to mentally challenged adults. After nine months of this, the couple had what Chris describes as "a brief respite" in Cambodia before a final three-month stint volunteering in Kosovo and Estonia, working in an orphanage and at a youth camp.

"We fell in love with the area and the people," Chris said of Cambodia. "But we saw a desperate need. That's where we wanted to return."

They did return, in 2003, and found that the remote Bontuk Village in the Angkor Thom District was in desperate need of a school. They learned that $24,000, about the price of a new Honda Civic in America, would build a four-classroom school that could serve over 300 students. The Coatses realized that as a result of the genocide and subsequent collapse in infrastructure under the Khmer Rouge, Cambodian youths lack the educational opportunities they need to progress, not only as individuals, but collectively as a country.

About this time, the Coatses decided their volunteer dreams were bigger than two people could fulfill. By starting a foundation, the couple can raise enough money to embark on all the projects they want. More projects can be added at a later date, depending on the success of the foundation. And, best of all, by overseeing the projects themselves, the couple can make sure the money is used for the purposes for which it is intended.

The foundation became an official nonprofit organization in April of 2003. The Coatses are waiting to receive 501 (c) 3 status, which will allow donors to write off gifts to the foundation. Chris Coats said a major goal of the foundation is to be accountable for every donor dollar it receives.

In addition to the Cambodian school project, the Trailblazer Foundation is working to provide artificial limbs to landmine victims in Cambodia, and to train woodworkers in Fiji. Fijian Viliame Gukiciia recently visited Jackson, where the Coatses trained him in the use of power tools.

COURTESY PHOTO

"Please help us build a school!"

The foundation also is trying to set up sponsorship programs, where donors can send a young man or woman to college ($450/year in Cambodia) or subsidize a teacher's salary in an area where wages are so low no one can afford to teach. Trailblazer board member Karin Ralph said she's sponsoring a young man who witnessed his own parents' murder under the Khmer Rouge, then worked 22 hours a day in a rice field before finally taking a job as a motor driver. With Ralph's help, the man had gone back to school.

"You connect with people's lives and become sort of an extended family," Chris Coats said of sponsoring specific individuals and families.

Although the Trailblazer Foundation's current major projects are located in Southeast Asia, Chris and Scott Coats say they would support the right local project. This week, Scott will meet with a representative of the Jackson Hole Music Experience to try and set up a program that provides music scholarships to kids in the valley.

The foundation hopes to raise $150,000 in grants and donations by the end of the year. The Coatses, meanwhile, will travel back to Cambodia in the fall to oversee the building of the school in Bontuk Village. Depending on how much money is raised through the foundation, they hope to stay in Cambodia for up to two years, overseeing the construction of other schools.

For more information, write Trailblazer Foundation, P.O. Box 3694, Jackson, WY 83001, or visit the Foundation's website, www.thetrailblazerfoundation.com.

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instance, blood residue analysis can isolate ancient animal and plant proteins preserved on the old tools.

"So far we've found bear and rabbit on a couple of tools," Cannon said.

Hannah, a volunteer who looks to be about 16, helps make a meticulous map of the meter-square pit, sketching even the tiniest fragment onto a piece of graph paper and labeling each one with a code. Each artifact is removed from the pit, placed in a plastic bag, and similarly labelled.

"The thing about archaeology is we destroy the resource as we collect it," Cannon said. After an excavation, maps like the one Hannah drew are the only records of the site as it was found.

Other pits dot the valley for a couple hundred yards. They are yielding similar artifacts, including hammer stones, bits of charcoal and more bone fragments. But this site is so rich that Cannon doesn't even need to dig for artifacts; on the steep hillside to the southeast, hundreds of little colored flags mark the location of quartzite flakes, stone-age trash left over from tool making.

The extent to which Cannon and archaeologists go to understand what an ancient site looked like hundreds or even thousands of years ago is truly impressive. He described a method to collect and analyse "phytoliths," microscopic silica deposits laid down by plants ages ago. By examining the structure of these "plant-stones," he can draw some conclusions about the ancient plant community.

"One of my questions is, is the amount of sage we see here today the result of not burning, or was there a lot of sage here historically?" Such information will in turn suggest what types of rodents lived in the area.

Yet another amazing technique relies on a device called a magnetometer that can take a photograph of magnetic fields on the ground or even below the surface. Stones with iron in them, for example, have a magnetic polarity that aligns with that of the Earth. If an area has been disturbed, the stones and dirt there will not be so aligned; depending on the pattern of the misalignment, Cannon can tell if the disturbance was due to flowing water, geologic activity or human beings.

Other methods are less subtle. This year, Cannon brought in a backhoe to dig several long, deep trenches across the draw. While the machine obviously will disturb many artifacts, it allows Cannon a much deeper – and therefore more ancient – perspective on the site. In the case of the Goetz site, these trenches are part of the reason for Cannon's excitement, for the deep cross-section of the substrate shows that the layers here have remained very stable since the Pinedale Ice Sheets retreated.

He points to a grayish-purple layer that indicated this retreat. Above this layer, the ancient soils (paleosols) are stable.

"The archaeology there has a lot of integrity," he said. This area, therefore, may continue to yield data going back thousands of years.

At the end of the four weeks, the pits and trenches will be filled back in, Cannon and his team will pack up and restore the site, and he will take his unlikely booty back to the lab to continue to examine and analyse it then the hardest work of archaeology begins: writing grant proposals for next season's filed research.

RICHARD ANDERSON

Archeologist Ken Cannon points to a layer in the soil dating back to the retreat of the Pinedale Ice Sheet 15,000 years ago.