

## SCIENTIFIC AMERICAN FRONTIERS PROGRAM #1508 "The Secret Canyon"

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Sites Everywhere  
Living in the Sky  
A Day with Waldo

ALAN ALDA Hello and welcome to Scientific American Frontiers. I'm Alan Alda. This week -- a rare treat. And I mean so rare that it's simply unique. We're going back in time to a place where Native Americans lived a thousand years ago, and which has remained almost untouched right up until the present day. Who'd have thought, in a country containing nearly 300 million people, that there would be even a square inch of land that wasn't thoroughly examined?

ALAN ALDA (NARRATION) But in a remote corner of Utah, it seems there's an entire canyon that contains the remains of ancient settlements that have never been explored.

ALAN ALDA So in this program, we're doing the exploring. In television's first detailed look at the site, we'll go into the canyon with the archeologists as they begin to assess what they're dealing with. We'll see the priceless finds they've already stumbled across -- sometimes literally. And we'll try to work out who these ancient people were. That's all coming up in tonight's episode, The Secret Canyon.

### SITES EVERYWHERE

ALAN ALDA (NARRATION) Native Americans called this plateau Tavaputs -- "sunrise". Our crew is cautiously picking its way down a cattle trail from the Tavaputs plateau, into a deep canyon. It'll take about an hour to drop down the thousand feet into the valley below. We've come to a remote corner of eastern Utah, to a rugged country of high plateaus and deep canyons. Our destination -- Range Creek canyon. Our guide in the canyon will be Duncan Metcalfe, an archaeologist from the University of Utah. In 2002 Range Creek was bought from a cattle rancher by the federal government and the state of Utah, but that doesn't mean the public has free access. As we'll see, figuring out how to preserve and protect what's inside the gate is going to be a major challenge. It's fair to say that, for the number and state of preservation of its archaeological sites, Range Creek may be unique in North America.

DUNCAN METCALFE This is our third year of work in Range Creek. The first year we only spent 7 days in here and recorded 77 sites. That's a phenomenal rate. I've been working in archeology for about 25 years, and I've seen perhaps half a dozen sites that I knew were absolutely undisturbed -- half a dozen. Here so far we've seen over 200. You can stop anyplace inside this ranch and point to archeological sites. So down at the end of this sort of view there's this large rock ridge coming down. If you look up about half way you'll see a stick pointing up, and it's actually got some adobe around it. That's an eroded granary. If you look over at this ridge line, which is the north confluence of Bear Creek, and what's called Waldo's Rock or Locomotive Rock, there's 8 sites on the south side of it, and right at the back, on the other side, there's one of these remote granaries.

ALAN ALDA (NARRATION) Archaeologists call the people who lived here in the canyon the Fremont. Of all the ancient peoples of America, the Fremont are among the most enigmatic. Why did they build houses in such inconvenient places? This circular space is the remains of a pit house on the summit of a rock pinnacle. Why did they put their granaries, used for storing food, in such inaccessible sites? Why did they paint, and draw and carve on rock faces everywhere? And why did they suddenly stop doing all these things around 1300 A.D.? With the canyon's treasure trove of undisturbed sites, archaeologists might finally get to answer those questions.

DUNCAN METCALFE There aren't holes in the pit houses, we don't find beer cans on them, there's no bullet holes on the rock art panels, they haven't been chalked, there's not historic graffiti on them. They're absolutely pristine.

ALAN ALDA (NARRATION) The water of Range Creek itself would have been the first attraction of the canyon. The Fremont, who lived throughout what's now Utah, depended on a combination of hunting and gathering, and agriculture. Corn was their most important crop. First domesticated in Mexico 5,000 years ago, it had gradually spread north. We know the Fremont started growing corn in a big way about 1500 years ago, when village settlements began to appear. In Range Creek, it seems the storage of corn became a major preoccupation.

DUNCAN METCALFE If you look up at that large block of stone, that sort of monolith by itself, about center and half way up it, on a small shelf, you'll see the remains of, looks like a 2-bin -- I actually think it's a 3-bin -- granary. This is one of the easiest ones. It's not real far up and it's not real far down from the top. You can just imagine the amount of work that went into constructing them. They're made out of mud and stone. All the mud had to have come out of Range Creek, which is on the other side of the valley floor from here -- it may have been a little bit different a thousand years ago. All the stone, all the mud, had to be carried up

to that location to build that, as well as the timbers that are used in its construction.

ALAN ALDA (NARRATION) So far the archaeologists have identified 38 granaries, many completely inaccessible, but some not so hard to reach. Take "Lost Cow" granary — so called because the rancher ran across it while checking a side canyon for a missing cow.

RENEE BARLOW It's right down here.

KEVIN JONES Oh I see it.

ALAN ALDA (NARRATION) Lost Cow granary is a puzzle. It's not completely hidden, and not very inaccessible. So it's not the best protection for your corn while you're away hunting, for example. But it is high enough up to avoid flash floods, and built solidly enough to be rat-proof.

RENEE BARLOW This structure is made of adobe and undressed stone in layers, so they've got different courses coming all the way up with adobe pressed in between. And then at the top there's a series of timbers that come -- we've got at least six in this one -- they come across, and then across the other way to form a rectangle, and then there are stone slabs underneath, and adobe pressed, and then a rectangular opening, with a lid.

ALAN ALDA (NARRATION) It's still about half full — of what we won't know until it's excavated. And they're going to radiocarbon date its timbers, because the leading theory is that the high, inaccessible granaries were built when times were hard, towards the end of the Fremont occupation here. So lower granaries would date from earlier, easier days. This theory of "higher-later" could apply not just to granaries, but whole villages.

KEVIN JONES There are some villages way up high, 900 to 1,000 feet above the valley floor, on precipices, on cliff edges, clearly a place where it would be difficult to live -- you're 1,000 feet above your water and your fields -- and also a difficult place to get to, but also dangerous. Not a great place to raise children, probably, not a good place to have grandma scrambling around and risking her life. So clearly when people are moving into a situation like that, the thing that worries them, I think, is greater than their fear of falling off the cliff, or having to climb up and down these cliffs. And what we're interested in is finding out what that might be.

ALAN ALDA (NARRATION) In our next story, we're going to hike up the canyon sides, to see what one of the high level Fremont villages can show us. LIVING IN THE SKY

ALAN ALDA (NARRATION) A nine hundred-foot climb is usually the kind of mission that graduate students get assigned, and sure enough Joel Boomgarden and Shannon Arnold are students from Duncan Metcalfe's lab at the University of Utah. They stop first just below the top, to revisit a cave the rancher pointed out on their first survey. It was typical of the Fremont to be flexible. They were hunters and farmers, they used deep caves and shallow rock shelters, they built houses. This cave contains what archaeologists call a cyst, and it used to contain other things too.

JOEL BOOMGARDEN This is the remains of a storage cyst. This box right here comes around the back. There's another one of the vertical slabs. You can actually see the mud, packed in the crack over here still -- keep the varmints out. When we first came up here in 2002, there was a pretty big chunk of pottery up here. It was the neck of a vessel and part of the body. It's since disappeared.

ALAN ALDA (NARRATION) Whoever took the pottery missed this block of sandstone, used for shaping wooden shafts, and fortunately did not vandalize the mysterious lines cut into the wall. The cave is a good candidate for excavation. A couple of feet of sand has flaked down from the roof over the last thousand years, covering what undoubtedly was a floor -- with whatever may be sitting on it. Joel and Shannon continue their climb to the top. It's not the canyon rim, but a thin, knife-edge of rock within the canyon, that contains a cave the archaeologists refer to as the "deluxe apartment in the sky." The cave was not a casual or temporary shelter. The Fremont put a lot of work into it -- a wall in front, a floor inside.

JOEL BOOMGARDEN There's different colors of mud packed in here. I can see at least 5 different colors of mud, so either they couldn't get all the mud in at once, or it looks like they're just patching up, making repairs to it at different times, and they're just using different colors of mud. This site looks definitely defensive. There's no other reason to haul stuff way up here.

ALAN ALDA (NARRATION) Defensive -- perhaps. Inside there's a beautifully preserved storage bin, now empty. You can see the maker's finger marks in the adobe. As with all the sites in the canyon, the cave has not yet been excavated, or even systematically surveyed. The Fremont really did live up here -- there's a corn grinding-stone outside, and corn cobs everywhere.

JOEL BOOMGARDEN There's actually more corn right here.

ALAN ALDA (NARRATION) In fact there was a whole village up on this rock pinnacle, probably including grandma and the kids. There are the remains of half a dozen houses -- like this circle of stones from a pit house, perched right next to

a thousand-foot drop. It was clearly very important to be here, but whether it was to fight off invaders or maybe to be closer to the gods, right now we don't know. Back in the lab in Salt Lake City, Joel and Shannon are beginning what will be the endless task of sorting and cataloging the Range Creek materials. Eventually there are going to be millions of pieces. They've literally not yet scratched the surface, but they've stumbled across some great finds. These corn cobs are very healthy looking, so when they're dated we'll know times were good then. A corn cob still on its drying stick. A beautifully preserved cedar digging stick, used for planting. Rope made with as yet unidentified fibers. The base of a basket, made with the characteristic Fremont technique. A raw material cache — dried grass and cedar bark. All this is around a thousand years or more old. Pottery — the red ware probably came from the Anasazi people to the south; plain gray, painted and incised styles are Fremont. A beautiful and unique spade, made of cottonwood. It's too soft to dig with, but maybe it was a trowel for adobe. Many stone blades and arrowheads, some showing expert work. And a priceless set of arrows, made from reeds, carefully bound with sinew to prevent splitting, with detachable greasewood foreshafts that remained stuck in the victim — animal or human. So far the archaeologists have spent three short summer seasons in the canyon. Winter always gets below freezing — one reason the Fremont's stocks of corn in their granaries must have been so vital. Today, Joel and Shannon are working in a village that had about a dozen pit houses, like this. The village is just 30 feet above the valley floor — safe from flash floods, but certainly not as defensible as the apartment in the sky. The site is simply littered with artifacts — broken pottery, arrowheads, personal jewelry perhaps. Who knows what treasures -- and what insights into the Fremont people -- lie underground? So far they've surveyed only 5% of the canyon's area, and have about 300 significant sites — granaries, pit houses, caves, rock art panels. At that rate there'll be a staggering and unprecedented 6,000 sites here. So how are they going to handle it? Slowly, says Duncan Metcalfe. In Range Creek, as well as deluxe apartments, we have the luxury of time.

DUNCAN METCALFE There are lots of things that have to be excavated today, because if we don't, they'll be bulldozed tomorrow. This isn't one of those cases. This is a case where we can literally say, let's think about this, let's think about excavating over the next 20 years -- 10 sites, very, very carefully. At the end of 10 years, someone else might come in and say, gee, you know, I've got a couple of research questions I think I could address by doing some further excavation. Good -- maybe another 5 sites. But preserve the vast majority of them for when we have... There'll be techniques that archeologists will have to employ that I can't even imagine, you know. It's not changing as fast as genetics research, but it is changing, and we need to preserve the basic library for the folks in the future.

ALAN ALDA (NARRATION) One of the most tantalizing things about the Fremont is their rock art. They created it everywhere they lived, and the canyon is no

exception, with 50 sites discovered so far. In some cases it's obvious what the artist was showing — animals, like snakes, or bighorn sheep from the hunt. There are symbols we understand — like the sun — and symbols we don't. They showed themselves often, sometimes richly dressed -- in ceremonial ways, perhaps -- with deer antler headdresses, or elaborate necklaces, belts and sashes. It's possible these pictures show leaders or shamans, from the time when corn growing was at its peak. Evidence from Fremont sites elsewhere shows that high-ranking men consumed the most corn, probably from ritual drinking of corn beer. Whatever the art depicts, it all came to a crashing halt 700 years ago.

DUNCAN METCALFE At about 1300 A.D. there's a change. People stop building relatively substantial structures, they stop making very fine pottery, there's a change in basketry. It looks like a pretty firm break. So is that a group of people coming in and displacing the Fremont, replacing them? Or is it farming becomes absolutely untenable in this region, and people stopped farming, and returned to hunting and gathering, which they'd been doing 1300 years earlier? Which of those two things happened at 1300?

ALAN ALDA (NARRATION) What happened at 1300 is one of the biggest questions in American archaeology. Sudden change was widespread, societies collapsed — including most famously the pueblo-building Anasazi people. The promise of Range Creek canyon is that, with its thousands of undisturbed sites, we can come to understand those momentous events.

#### A DAY WITH WALDO

ALAN ALDA (NARRATION) Range Creek canyon widens out a little at its southern end. This is where the buildings are for the ranch that the Wilcox family ran here. Waldo Wilcox left in 2001, when he sold the canyon to the government. The family had lived here since 1951...

WALDO WILCOX C'mon, Sarah.

ALAN ALDA (NARRATION) ...when Waldo's dad, Budge, moved down from the neighboring Tavaputs plateau. Here's Budge Wilcox with his pack mules. Here's Don, Waldo's brother, at Lost Cow granary. Although there's been ranching in the canyon since the 1880s, there was no road access until just before the Wilcoxes arrived. That's what preserved the canyon's historic remains — that and the respectful attitude of the Wilcox family, especially towards the many burials in the canyon.

WALDO WILCOX I believe in treating people the way I want to be treated, and when I die I don't want somebody digging me up and picking the gold out of my

teeth. And my dad told me, when we come here, that we own the land, but we don't own the dead people that's there. Leave them where you find them.

ALAN ALDA (NARRATION) We invited Waldo to take a ride and point out some of his discoveries. After 50 years of hunting, and chasing lost cows, he knows the historic sites better than anyone.

WALDO WILCOX We're going to go up the little canyon here, and out on top up by the Fortress. I want to go right up over the top there.

ALAN ALDA (NARRATION) Waldo climbed onto this spectacular rock pinnacle one day when he was out hunting. His dogs had chased a mountain lion all the way up to the top.

WALDO WILCOX Right there's the way you get up. There's that pile of rocks.

ALAN ALDA (NARRATION) The lion got the better of the dogs, but Waldo made a discovery — rocks piled up at the access points, seemingly either as barriers or as missiles to bombard invaders with. That's why he calls it the Fortress. There was a village perched up here — maybe the most precariously sited in the canyon. You can see the telltale stone circles of collapsed pit houses.

WALDO WILCOX That's a big old pit house right there. Probably the governor lived there. Stay just underneath, and there's some granaries right here somewhere. OK, there's one of the granaries right there.

ALAN ALDA (NARRATION) Was this complex defensive, built to protect precious corn supplies as agriculture began to fail? Was it to fight off foreign invaders? Or was it perhaps a religious colony? One day archaeologists may be able to tell us. Next we head across to an enormous rock painting that Waldo had seen only from below.

WALDO WILCOX See that yellow and white shield? And a man of some kind, just to the right of it.

ALAN ALDA (NARRATION) There's also a suicidally positioned house.

WALDO WILCOX Down below there's some poles from a house. That'd be a pit house right there. I didn't know that house was there, where they lived. That's the first time I've seen that.

ALAN ALDA (NARRATION) Next, an apparently unreachable granary, again with what's probably house remains.

WALDO WILCOX See the granary? That's a good one there. Nobody's ever been in there. I'll bet on that.

ALAN ALDA (NARRATION) It's really only from this vantage point that you can appreciate how precarious and dangerous the Fremont houses and villages were. Whatever drove these people up the cliffs and onto the rock pinnacles must have been a powerful force. Waldo's been fascinated for 50 years.

WALDO WILCOX I don't know if you enjoyed it, but I sure as hell did.

ALAN ALDA (NARRATION) In his time in the canyon, Waldo got to know a lot of Fremont rock art. He's taking us to one of his favorite examples.

WALDO WILCOX Some of them's hunting scenes, and other ones are probably something to do with their religion. I think they was a religious people -- very religious. It's right over in them rocks right there.

ALAN ALDA (NARRATION) Here, close to the creek, the Fremont used a rock overhang as a shelter, and it's now a sad site. A second road connected into the canyon in 1961, and it soon had consequences that Waldo regrets.

WALDO WILCOX This is what's left of a pit house. They piled these rocks up to protect themselves from the wind. But it's been all dug out. People's been looking for pottery and stuff here. And it's so close to the gate that it's been destroyed. I seen it for the first time in 1941, and the bottom was all smooth, and that's one way you can tell if they've... anybody's been there looting it, because they leave it uneven.

ALAN ALDA (NARRATION) On the overhang above the looted house, ghostly figures of the people who lived here — not vandalized, but slowly fading into the rock face.

WALDO WILCOX What they painted it for I don't know, and I don't know that anybody'll ever know, but they left it for us to look at anyway. And I hope it can be protected.

ALAN ALDA (NARRATION) Preserve it, and solve its mysteries — the twin challenges that lie ahead for Range Creek canyon.



