

NASA researchers search for meteorite fragments in a zeppelin

May 8 2012, By Matt Weiser

It's not every day that NASA descends on your backyard, hunting for clues to extraterrestrial life.

But that is the drama unfolding in and around the community of Lotus, Calif., along the South Fork of the American River in El Dorado County. Scientists from [NASA](#) and the [Search for Extraterrestrial Intelligence](#) Institute are hunting for pieces of a [meteorite](#) that plunged to Earth on April 22.

The [SETI Institute](#), based in Mountain View, Calif., is the same nonprofit that has spent decades searching for radio signals from outer space in hopes of locating other advanced life forms.

Last week, the scientists flew over the [Sierra Nevada](#) foothill region in a chartered zeppelin, hoping to spot craters, burn marks or other signs of falling space particles.

The meteorite did not arrive quietly early on that Sunday morning. Residents throughout the Sierra Nevada, from Lassen to Kernville, reported hearing explosive sounds as it burned up in the atmosphere. Many also saw a bright white streak in the sky.

The track of that streak ended around Marshall Gold Discovery State Historic Park in Coloma, where pieces of the meteorite were found in the parking lot. It was here, in 1848, that gold was discovered in the American River's South Fork, touching off the legendary Gold Rush that

transformed California and the West.

In honor of the location, scientists have dubbed it the Sutter's Mill Meteorite. They estimate it must have been about the size of a minivan, and weighed around 150,000 pounds, before it broke up.

The new treasure is still mineral in nature, but actually far more valuable.

Treasure hunters scouring the El Dorado hills are reportedly paying \$1,000 per gram for meteorite chunks to feed a collectibles market. As of Thursday, actual gold was trading at a relatively affordable \$53 per gram.

Which helps explain why the scientists did not hesitate to charter Eureka, which is the only zeppelin in North America and conveniently co-located with the NASA Ames Research Center at Moffett Field near San Jose, Calif.

A zeppelin is a rigid-hulled version of a blimp. Operated by Airship Adventures, Eureka provides a slow-moving, low-altitude, stable platform to search for meteorite chunks. It is mounted with a gyro-stabilized, high-resolution video camera that can pick out a golf ball in the dirt from 1,500 feet.

The zeppelin arrived at Sacramento's McClellan Airfield around noon last week on Thursday, and soon took off again to begin patrolling the meteorite's path.

A zeppelin has never been used to look for meteorite chunks before. "It's a gamble," said Gregory Schmidt, deputy director of the NASA Lunar Science Institute, who was part of the search effort. "But for a once-in-a-lifetime (meteorite) fall like this, we think it's worth it."

Scientists say the meteorite is probably the most significant event of its kind since the late 1960s. That is because it likely is composed of carbonaceous chondrite, the earliest solid material to form in our solar system more than four and a half billion years ago, before the planets formed.

This means the fragments littering the Gold Country may contain carbon, amino acids, sugars and even evidence of water that are the very "building blocks of life," said Brad Bailey, a staff scientist at the Lunar Science Institute.

These basic components eventually combined over eons to produce water, oxygen, algae, plants and animals. Amino acids, for instance, are the basic elements of our own human DNA. Among other things, the scientists are hoping to understand how these elements produced life on Earth.

"The possibility is that the building blocks of life were created in the stars and delivered to Earth in meteorites," said Bailey. "They smacked down and provided all the ingredients for life to start."

Rather than hunting meteorites, Eugina de Haas hunted down the NASA experts on Sunday. Her family owns 160 acres in the Lotus area. She and her husband, Alvin, are both longtime civil servants who retired from the Eldorado National Forest. They were more interested in helping science than in making money on a space rock, she said.

She eventually found the researchers dining at the Sierra Nevada House Restaurant in Coloma. She invited them out to poke around her family's land. They pretty much dropped everything to do so, since some property owners have posted "no trespassing" signs to keep out the [treasure hunters](#).

That first day, they found a 17-gram chunk of meteor formed in a gracefully curved boomerang shape. Dubbed "SM12", it is only about 5 centimeters long, slightly shiny with an odd bumpy texture, and nearly as black as deep space.

"It's just a wonderful thing to feel like you're helping something more than yourself," said de Haas, 57. "The money sounded good, but I'm so glad NASA came and looked on my land. I feel like I've given back to my country. It might sound corny, but I do."

That piece is already being analyzed at the NASA Ames lab.

The NASA scientists took photos of de Haas and her 1-year-old grandchild with the meteor chunk shortly after finding it on her property, which has been in her husband's family for three generations.

"They cried, so I think it was very important to them. It made me cry. It's just a neat thing to add to the history of our property."

Scientists say it is important to locate the meteorite pieces quickly because they will soon begin to degrade.

Qing-zhu Yin, a University of California-Davis geology professor, is among those hoping to locate samples. One foothill resident has already donated a meteorite particle to the university for study.

Yin's lab at the university is one of the few in the nation equipped to study meteorites. This will include using a diamond saw to cut a cross-section of the material for examination in a microscope, then conducting chemical analysis to determine its makeup.

Additional tests will analyze the material for its oxygen isotope composition and its cosmogenic nuclide content. The former will

determine whether the material is, in fact, carbonaceous chondrite. The latter will tell scientists how long the material has been zooming through space.

Scientists will likely probe these samples for decades in search of clues about the universe and life itself. The last major carbonaceous chondrite find occurred in Australia in 1969 - the same year Americans first landed on the moon - and scientists have been learning from those samples ever since.

"This material is unique. It's capturing the very first moments of planet formation," Yin said. "It is, perhaps, one of the most primitive objects you would ever hope to find."

(c)2012 The Sacramento Bee (Sacramento, Calif.)

Distributed by MCT Information Services

Citation: NASA researchers search for meteorite fragments in a zeppelin (2012, May 8) retrieved 24 June 2024 from <https://phys.org/news/2012-05-nasa-meteorite-fragments-zeppelin.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--