I Think Mining: Infomine Blog
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Mining archaeology for present meaning: San Nicolas Island and the impact of climate change
By Jack Caldwell

At lunch yesterday, the topic was the role of archaeology in mining. We noted the need to clear a prospective mine site for archaeological evidence before disturbing the earth. I was told there are eight archaeologists full-time at work on the Galore Creek Mine project. As the sushi arrived, one at our table remarked that archaeological evidence is being used to sort out aboriginal claims to areas being fought over by exploration and mining teams. The anthropologist at the table remarked that only archaeology can open the answer-window to current anthropological issues that bedevil mining.
So today I settled down to reading *Life on the Dunes - Fishing, Ritual, and Daily Life at Two Late Period Sites on Vizcaino Point - Archaeological Testing at CA-SNI-39 and CA-SNI-162, San Nicolas Island, California*. The authors include Brian Fagan whose writings on the Royal Mountain King Mine in California are a model of what a pre-mining archaeology survey can reveal. Other authors are Donn Grenda, David Maxwell (who gave me the book), Angela Keller, and Richard Ciolek-Torello. San Nicolas is one of the Channel Islands off the coast of Southern California; it lies about 120 km southwest of Los Angeles. The archaeology described in the book was not undertaken as a precursor to mining. Rather work was undertaken because the absence of humans on the island has lead to a massive incursion of sea lions who lumber over old human occupation sites and mess things up: technically the process is called bioturbation.
The story of human habitation of the Channel Islands, and in particular San Nicolas, is well told in this volume. The first inhabitants arrived some 10,000 years ago. A single Mytilus shell dated at 8,400 B.P. attests to humans on San Nicolas. About 5,000 years ago something dramatic happened on the adjacent mainland: the mortar and pestle were introduced, acorn eating began, spear-throwing hunters arrived, and folk began to go to the islands to gather marine resources. About 3,000 years ago, social systems became more complex, trade expanded, and art arrived in the form of soapstone bowls, shell beads, figurines, and ritual cremations. Much like you find at Laguna Beach today.
The Spanish arrived in the mid 1500s. In 1602 a certain Vizcaino named the island for his favorite saint. Nothing much happened on the island, however, until the British arrived in 1811, and targeted sea otters and Nicolenos. Captain George Nidever took the last remaining island inhabitant, Juana Maria, to Santa Barbara to die in 1853. She spoke Takic, which indicates that she was one of a "relatively recent" group of people to come into Southern California. Some time later the U.S. Navy took over the island and control it today. They sponsored the archaeological work described in the book.
Life on the island cannot have been easy. There are but three fresh water springs, nothing much in the way of animals to hunt, precious little vegetation, and varying marine resources as the climate changed, water temperatures rose and fell, and sea levels rose after the last ice-age. This brief abstract summarizes living conditions:
We unearthed a fishing camp with an associated smokehouse complex, the manufacture

of abolone-shell fishhooks, plant procesing, fiber working and basket making, shell-bead making and stone tool production, as well as subsistence activities including fishing, marine-mammal and shore-bird hunting, and shell-fish collection.

People lived, worshiped, and died on the island. The book tells of excavating sweat-houses and graves where ritual breakage and tossing of valuable artifacts occurred. Some 1,500 skeletons have been unearthed.

As lunch wound down, we reflected on climate change, global warming, carbon credits, and the coming weekend activities. This book once again reminds us of the long time span of events, the huge climatic changes that have occurred naturally(?), the adaptations that humans make to environmental change, and the way in which we can affect, of fail to effect, change. So I end this piece with this extended abstract from a news report I read this week; it captures and emphasizes the ephemeral nature of it all.

In the Proceedings of the National Academy of Sciences, the international team lays out its theory that the mass extinctions in North America were caused by one or more extraterrestrial objects - comets or meteorites - that exploded over the Earth or slammed into it, triggering catastrophic climate change. The scientists believe that evidence for these extraterrestrial impacts is hidden in a dark layer of dirt sometimes called a black mat. Found in more than 50 sites around North America, this puzzling slice of geological history is a mere three centimeters deep and filled with carbon, which lends the layer its dark color. This black mat has been found in archaeological digs in Canada and California, Arizona and South Carolina - even in a research site in Belgium. The formation of this layer dates back 12,900 years and coincides with the abrupt cooling of the Younger Dryas period, sometimes called the "Big Freeze." This coincidence intrigued the researchers, led by Richard Firestone of Lawrence Berkeley National Laboratory, who thought that the black mat might be related to the mass extinctions. So the researchers studied black mat sediment samples from 10 archaeological sites dating back to the Clovis people, the first human inhabitants of the New World. Researchers conducted geochemical analysis of the samples to determine their makeup and also ran carbon dating tests to determine the age of the samples. Directly beneath the black mat, researchers found high concentrations of magnetic grains containing iridium, charcoal, soot, carbon spherules, glass-like carbon containing nanodiamonds and fullerenes packed with extraterrestrial helium - all of which are evidence for an extraterrestrial impact and the raging wildfires that might have followed. Schultz, professor of geological sciences at Brown and an impact specialist, said the most provocative evidence for an extraterrestrial impact was the discovery of nanodiamonds, microscopic bits of diamond formed only from the kind of intense pressure you'd get from a comet or meteorite slamming into the Earth.