

Mystery of the East Bay rock walls: possible origin

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I've occasionally stumbled on examples of what are known as the East Bay rock walls or Berkeley mystery walls. No one knows who built them or for what purpose; the consensus is they're a few hundred years old. The following excerpts from their short Wikipedia entry (various authors, 2015a) provide a good introduction:

These crude, stone walls are located in the San Francisco Bay Area in California. In places, they are up to a meter high and a meter wide; the walls run in sections anywhere from a few meters to over a half mile long. The rocks used to construct the East Bay Walls are a variety of sizes. Some are basketball-sized rocks, while others are large sandstone boulders weighing a ton or more. Parts of the wall seem to be just piles of rocks, but in other places it appears the walls were carefully constructed. The exact age of the walls is unknown, but they have an old appearance.

The purpose of these walls is still unknown. Since the wall is not continuous and is composed of multiple sections, they could not have been used as a fence. They are not tall enough to have been used as defense mechanisms. The walls' function is unknown as well as the constructors.

The Ohlone Indians have been considered most likely to be the builders, although they were hunter-gatherers and are not known to have built permanent structures.

The East Bay Walls are accessible in several area parks, including Ed R. Levin County Park in Santa Clara County and Mission Peak Regional Preserve in Alameda County.



Figure 1. A splendid example of a rock wall. This is Number 8 in the *Top 10 Mysteries of California*, <http://www.listzomania.com/#!top-10-mysteries-of-california/c16ra> (anonymous, 2015a).

Figs. 2, 4, and 5 show one such wall located in Sierra Vista Open Space Preserve at 37.447 N, 121.882 W, elev. 1,935 ft. This park, located on Sierra Road a few miles east of San Jose, is popular with trail bikers and hikers. It's also relatively new. According to the official website (anonymous, 2015b),

On August 23, 2014, the Open Space Authority opened a new public parking area at the top of Sierra Road that offers visitors direct access to the Preserve as well as free parking (including equestrian parking), 7 days a week, 365 days a year. In addition, two new trails opened. ... The 0.25 mile Kestrel Trail begins at the new parking area and connects the Aquila Loop Trail to the Sierra Vista Trail.

According to historical Google Earth imagery, the Kestrel Trail was constructed between June 2014 and March 2015, yet it was hacked through the rock wall. These walls, then, appear to enjoy no protection as archaeological features.

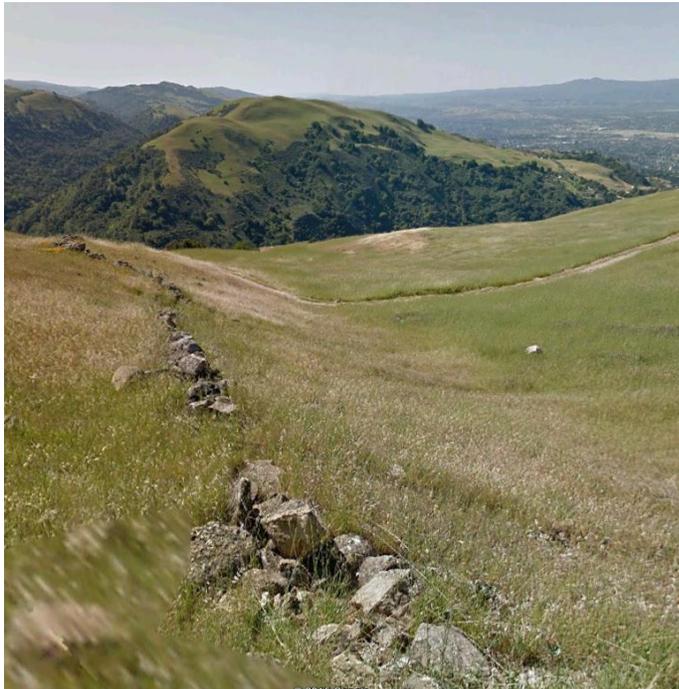


Figure 2. The rock wall (central segment) in Sierra Vista OSP. View is to the south from the Kestrel Trail. Google Earth streetview image dated April 20, 2015. The wall is probably about half its original height. Note the lush growth in the grassy swale to the right.



Figure 3. Location map (base: anonymous, 2015c).

There exists a certain amount of misinformation regarding their extent:

To build a wall over 50 miles long running north to south and up to 20 miles east would have been a massive undertaking and is almost unheard of for hunter gatherer cultures. ... a massive wall, broken today but one would imagine it was unbroken in the past ...

The East Bay walls do *not* constitute a single wall extending several miles, let alone 50. They also aren't merely "up to a meter high" (various authors, 2015a): many are 1½ m tall, a fact that will become important when I present a hypothetical origin. And they're not restricted to the San Francisco Bay Area. The online article by Phillips (2015) displays several detailed maps of the distribution of these walls in California. They are clustered not only in the East Bay (e.g., Hayward, Fremont) but also near Weed and Mariposa, on Sutter Buttes and Mt. Shasta, in south San Jose, and in several

other locations.

There's abundant speculation regarding their builders:

- "A heretofore unknown, large scale, and distributed culture"
- Lemurians, survivors of the lost continent of Mu

- Mongolians
- Aliens
- Indians wanting to corral a vast lost herd of bison that had wandered in from Colorado
- U.S. soldiers during World War 2: the walls were meaningless projects to keep them busy
- Migrant Chinese, perhaps castaways from the great Zheng He fleet of the 15th century
- Owners of the Mexican land grants of the early 19th century
- Chinese laborers of the 19th century, who cleared fields to facilitate farming and ranching
- White ranchers of the late 19th century, who used the walls to corral their cattle
- Ohlone Indians, who used them for defense, marking territory, or symbolic purposes

The first six or so theories are good merely for laughs; a few have been advanced by UFO enthusiasts.¹ Farther down the list, we enter the realm of plausibility. Regarding the 15th century Chinese theory, “An early attempt at an explanation came in 1904 when U.C. Berkeley professor John Fryer forwarded the idea that the walls had been built by a group of ancient Chinese explorers that had attempted to settle the area nearly a century before Columbus had sailed on his epic voyage to America” (Phillips, 2013).

The Mexican explanation can be safely dismissed by the fact that “the locations of the walls do not map to any particular known property lines of that era. Descendants of those early settlers claim the walls predated their arrival, and that moss and lichen had already begun to grow in some locations ...” (Phillips, 2013). I would add that cairns would serve a property-marking purpose far more efficiently than walls.

The Ohlone explanation is typically dismissed on account of a lack of other evidence of Ohlone megalithic projects and the purportedly nomadic behavior of the Ohlone.

Perhaps because much of the speculation is fringe science, archaeologists with academic reputations to protect won’t touch the subject. According to Corliss (1985),

Scientists seem to show no interest in the walls. One even stated: “I don’t know of anyone who’s come up with a credible explanation. I think what you’re getting is an indication that there isn’t any academic work in it” [Burrell, 1984].

Hancock (2015), sarcastically, wrote: “Guess old walls are just too boring for academics. No big grants, no archaeological “chairs” — so just ignore them”.

The Sierra Vista wall: a hypothesis for its origin

I like what a thoughtful writer, Jason Colavito (2014), said in summarizing his review of the topic:² “Is it so difficult to think that the native people of California could also pile rocks into a wall?”

These are a few patterns I’ve noted:

- The walls tend to be located where bouldery bedrock outcrops are extensive. Thus, the wall builders did not expend an inordinate amount of labor moving the rocks.
- Based on what I observe from the literature, the walls are located in the grass-covered foothills of northern California. They do *not* appear to be located in valleys, river floodplains, densely wooded canyons, or mountainous areas (e.g., the Sierra Nevada above an elevation of a few thousand feet).

¹ Google “East Bay rock walls” for a sampling.

² Specifically, the topic of the Zheng He fleet visiting California.

- They tend to be oriented upslope–downslope or along ridgecrests.



Figure 4. Rock wall in Sierra Vista OSP. Google Earth image dated November 24, 2015, perspective looking south. Penitencia Creek and Alum Rock Park in the background (upper left corner). Trails are approximately 6 ft wide.

The wall in Sierra Vista OSP extends a few hundred feet straight downslope, as shown in Figs. 2, 4, and 5. Note something else important: the wall runs along the crest of a very gentle, subtle ridge spur about 50 ft from a long, narrow grassy swale. The soil is thicker and moister in such swales, and grass will grow there more densely and longer into the dry season. Deer in the area will thus tend to graze in the grassy swale rather than on the rocky, sparsely vegetated ridge spur.

A hunting blind. This wall, therefore, appears to have been built to serve as a hunting blind. Ohlone hunters kneeled behind the wall on its east side and shot their arrows at a herd of deer grazing in the swale to the west. The wall's length of a few hundred feet meant that the hunters, all the while remaining hidden, could shift their position with the herd as it slowly moved up or down the swale.

The terrestrial version of a weir. An alternate possibility is that the wall served as the terrestrial equivalent of a weir for concentrating a herd. A few well-positioned hunters, perhaps youths, could have hidden on the low hill to the west. Given a signal, they could have flushed the herd against the wall. The adult deer would have been able to jump the wall, but not the confused fawns, which could then be clubbed, speared, or caught. Perhaps a few of the adult deer could also have been speared as they jumped the wall at a preselected location where the men were waiting. Native Americans constructed weirs in

rivers to concentrate migrating salmon, and it would have been a short conceptual leap to apply this technique to deer (and possibly elk or bear?).

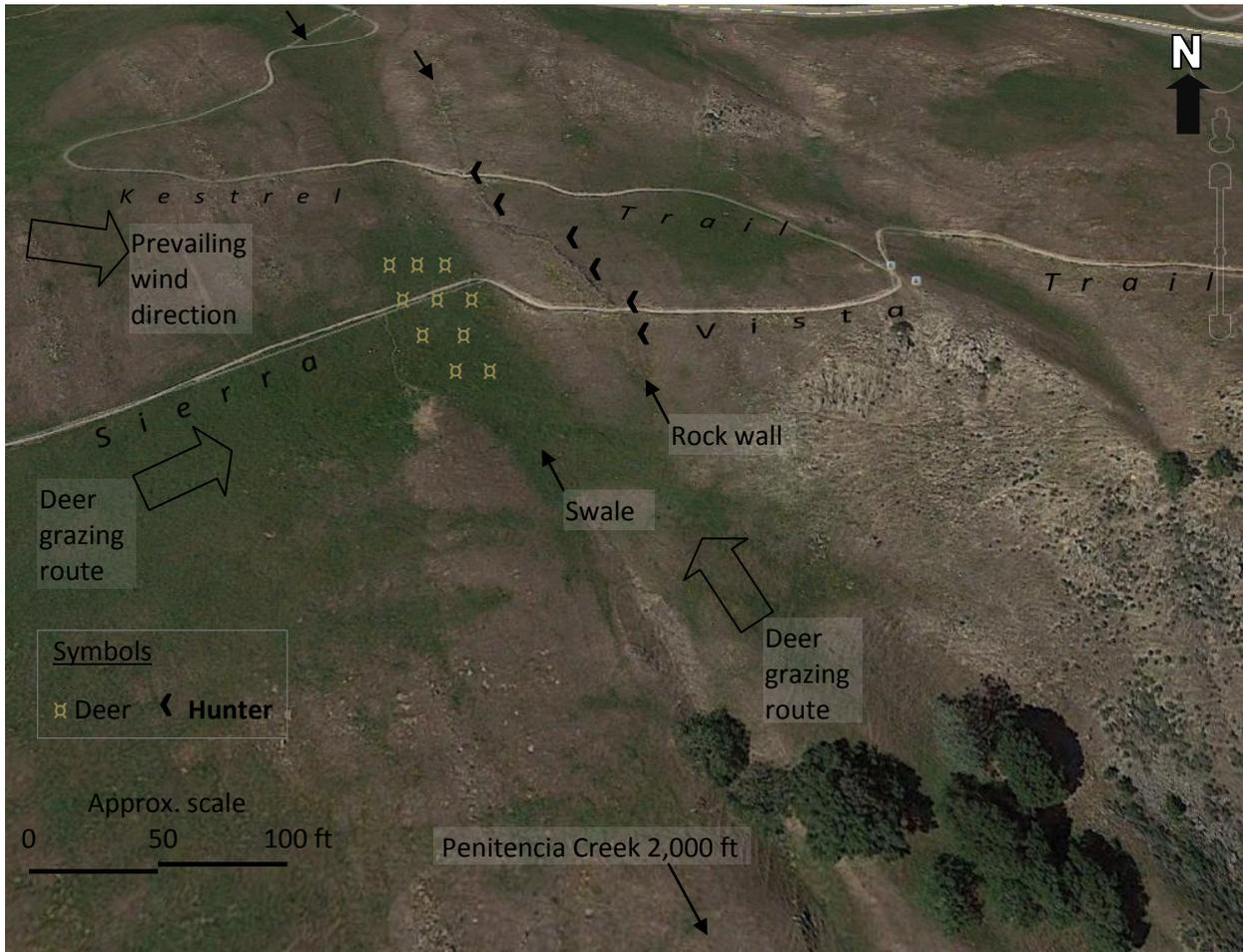


Figure 5. Hypothetical hunting plan of the Ohlone using the Sierra Vista rock wall. Google Earth image dated November 24, 2015, perspective looking north. The trails are of recent origin. (Or are they? The Sierra Vista Trail is a sensible, contour-hugging trail that is decades old and might be ancient.)

Numerous lines of evidence support either hypothesis:

- The swale is about 50 ft wide, which tends to concentrate the herd, and the rock wall is about 50 ft from the swale, which provides an optimal distance for targeting prey with a bow and arrow. It is close enough for accuracy but not too close that the prey would be spooked by the hunters.
- The wall is downwind from the swale for obvious reasons: the hunters didn't want the deer to be alerted by the scent of humans.
- There's no natural cover for hunters here — no brush, trees, or large boulders, and hunters would need some type of blind to maintain the element of surprise.
- The top of the wall is at about eye level with a kneeling man, and originally it likely was tall enough to hide a crouching or hunched-over man.
- The Ohlone were *not* primarily nomadic: they tended to live in well-established villages and built well-constructed huts.
- The wall height is constant over a substantial horizontal distance, which lends itself to hiding hunters who are targeting a slowly moving herd, but not other purposes. A corral? No: the wall

doesn't form an enclosure. A territorial marker? Unlikely: a tall cairn (rock tower) or several skulls set atop a row of pikes would be far easier to erect and more impressive. A defensive perimeter? No: why at this nondescript location rather than at an important pass? And why a short wall that your enemies could just walk around or hop over? A clearing for a maize or vegetable garden? No: the Ohlone did not plant crops, and no one — Ohlone, Mexican, or Chinese — would climb 1,500 ft up a hillside far from the fertile soil of the valley floor to plant a tiny garden where it can't be irrigated and guarded from hungry deer,³ nor would anyone stack rocks into a neat wall to clear a field rather than just toss them randomly out of the way.

Someone (anonymous, 2016) writing for the *San Jose Mercury News* confidently wrote “The walls were used mainly to clear land of scattered rocks to facilitate the movement of grazing livestock, such as cattle, and, at times, to guide the movement of the animals or to corral them.” And we have this bit of data: “A recent testing of lichen growing on the rocks ... places them in the 1850–1880 period. Modern experts’ best guess is they contained the cattle of post-Gold Rush European immigrants ...” (Hervieux, 2016). I don't think so. When ranchers drive their cattle, they have cowboys do it, you know, those guys on horse-back carrying a lasso. And when they want to corral their cattle, they don't do it up in the hills: they do it at a road or rail spur, where they then drive the cattle up a ramp onto a cattle car. The nearest local rail line in the 1880s was 5 miles away down in San Jose and Milpitas. When the ranchers of the 1880s built a corral, they presumably used redwood lumber or barbed wire, materials available to them in abundance but not to the Native Americans. I'd bet that when lichen chronology is performed on more walls, many of them will be much older than 1850–1880.

An investment of a few days' effort by a few Ohlone bow hunters to build the Sierra Vista wall could have resulted in a several-fold increase in deer-hunting success for as long as the wall stood (essentially forever), the native group resided in a village nearby (years or generations), and the deer showed up in this particular location, which might have been daily over a span of a week or month year after year.

There's a much larger grassy swale 800 ft to the west: possibly a better location for a hunting blind? No: the deer there would be much more widely spaced and difficult to hit. There are other narrow grassy swales 1,000 ft to the north; these are located far from a perennial source of water, Penitencia Creek, which the deer would rely on during drought years and the dry months of approximately June–November.



Figure 6. Ishi, demonstrating the kneeling stance. Plate 31 in Pope (1918).

Finally, there is this discussion by Heizer and Elsasser (1980, p. 117):

The arrow shot from a California Indian bow was probably not very effective against game at a distance of over 200 feet. But there were many stratagems that permitted a bow hunter to release an arrow at a much closer range. Ishi, for example, was accustomed to crouch behind a low wall of piled-up boulders erected along a deer trail and to shoot the deer when it passed.

Ishi was the last member of the Yahi, a northern California group. Widely acclaimed as the “last wild Indian” in America, Ishi (Fig. 6), at the age

³ The crops would be like candy to them.

of 50, emerged from the wild in 1911 near Mt. Lassen (various authors, 2015b). Saxton Pope accompanied Ishi on hunting excursions before Ishi died of tuberculosis in 1916. Pope (1918, p. 126) reported that

In hunting deer, Ishi used the method of ambush. ... Upon our trip into Tehama County with Ishi, he showed us old deer trails near which curious small piles of rock were located at intervals hardly exceeding ten yards. These he indicated as ancient spots of ambush. They were just large enough to shield a man in a crouching position. The moss and lichen on them spoke of considerable age. One would hardly notice them in boulder country, but the evidence of crude masonry was apparent ... In approaching game, Ishi would rather skirt an entire mountain than come up on [the deer from] the wind[ward] side. His observance of this rule was almost an obsession.

Testing the hypothesis

Thus, we have ethnographic evidence that boulder walls and/or piles were erected by California Indian bow hunters to ambush deer and that these structures were positioned on the leeward side of routes frequented by deer.

The Ohlone hunting-blind hypothesis looks reasonable when applied to the Sierra Vista rock wall. But it's only one wall. If the idea were to be extended elsewhere and turned into a theory explaining most of the rock walls in California, then scientists would want to submit it to thorough testing. One would need to

1. Survey numerous rock walls.
2. Note each wall's location, elevation, geometry, orientation, and position relative to likely grazing areas. Enter these data (and other data, below) in a GIS.
3. Note the wall construction (e.g., rock type), and assess the age using lichen chronology or ^{14}C .⁴
4. Note the topography, bedrock geology, vegetation, and prevailing wind direction in the vicinity of each wall.
5. Examine the surrounding area for artifacts such as arrowheads. Search for bones, classify them as to species and type, and examine them for tool marks to determine if butchering had occurred near the wall.⁵
6. Perform statistical analyses and test correlations such as distances from grassy swales, clustering of bones, and wall orientation vs. wind direction and topography.
7. Consult with hunters and zoologists regarding the behavior of deer, elk, and bear, and consult with sheepherders and ranchers regarding how they might have used a rock wall to control their herd.
8. Consult with Ohlone elders and experts regarding historic Ohlone hunting practices.
9. Review the literature regarding the Mexican landowner and Chinese laborer hypotheses, evaluate other possible Ohlone motives for constructing walls (e.g., territorial, religious), and discuss the evidence supporting these hypotheses and the Ohlone hunting-blind hypothesis.

Me? I'm not volunteering for such an effort: I'm a geologist, not an archaeologist. And Sierra Vista is too nice a place to work; I'd much rather hike and enjoy the view.

⁴ To perform such ^{14}C dating, one could target a wall near trees and then lift boulders looking for wood — a fallen twig or branch — that had been left underneath.

⁵ Probably indeterminate: scavenging animals would have scattered the bones.

Then again, maybe not

Then again, maybe I'm completely barking up the wrong tree. Jeffrey Fentress is an archaeologist who has been hired by East Bay Regional Parks to record several wall sites within the state.⁶ I corresponded with him in early October 2016. He was kind enough to convey some of his thoughts; here are a few excerpts:

All the accounts available, and there are not a lot, are from European immigrants during the post-Gold Rush period. We know many of the walls were built before the early 1900s because there w[as] a spate of newspaper articles about them around the turn of the 20th century. Portuguese and Swiss farmers made the walls for herding. An Amish family named Matthews made the walls at Ed Levin.⁷ That account is in the park brochure. Europeans built rock walls, houses, corrals in Europe for many thousands of years and simply brought that cultural practice with them to California.

Native Americans made small rock constructions throughout California: hunting blinds, cairns, stone circles, path markers, etc. As you note, there are rock walls/constructions directly around many bedrock mortar sites. I have recorded some of these in the Hayward hills. I think it is possible that some of these small constructions could be remnant hunting blinds or windbreaks made by Indian. But these sites have also been used as natural places to corral sheep and cattle and as camping sites for the last 150+ years.

I have asked Indians from various parts of California (including Ohlones) over the past few years about the rock walls. The common sentiment is "why would we do that?" Some Mono people told me they made hunting blinds, but they were small and localized, nothing like walls extending ... hundreds of feet over open hillsides.

Thanks for the tip about Sierra Vista. Have to check it out.

Thus, perhaps late-19th-century Portuguese immigrant sheepherders built the Sierra Vista wall to sort of corral their sheep. The area certainly would have been a fine place to graze sheep (or cattle). And yet, the Sierra Vista wall is also so ideally positioned for ambushing deer. The mystery just won't quit. I really should quit ruminating on this one wall and get out more and see what that wall at Ed Levin County Park looks like.



Artist's depiction of an Ohlone village. Screenshot captured from www.amahmutsun.org/ of the Amah Mutsun Tribal Band. I find it easy to imagine these people constructing rock walls to enhance their deer-hunting success.

⁶ I found him at <http://nagpra.sfsu.edu/page/contact>, the website of the San Francisco State University NAGPRA Program.

⁷ Ed Levin County Park, near Milpitas, Santa Clara County, California.

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