# Saved by the Well: The Keystone Cache at CA-ORA-83, the Cogged Stone Site

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*The largest cache of cogged stones ever discovered was unearthed in late 2006, while archaeological grading and monitoring operations were under way at CA-ORA-83, the famed Cogged Stone Site in coastal Orange County, California. This cache, along with other cogged stone caches and individual cogged stones uncovered at the site, has allowed researchers to develop a new cogged stone typology. A comparison of the cogged stone artifact to its nearest relative, the discoidal, as well as a cogged stone regional distribution study, indicates possible clan or group identification. Interestingly this particular cache, which enabled this classification and functional explanation of these enigmatic artifacts, was actually preserved by an oil well and other historic-period disturbances, disturbance which wreaked havoc on the rest of the site. While research is ongoing and cursory, the authors thought it important to bring this information to light as soon as possible.*

## The Site

Site CA-ORA-83 (commonly known as the Cogged Stone Site) consists of a shell midden located on the southeastern tip of Bolsa Chica Mesa in Orange County, California (Figure 1). Historically, the site had been the subject of intensive archaeological investigations that included nine surveys, seven surface collection events, and five excavation programs. The first investigations were conducted in the 1960s by amateur archaeologist Alika Herring and the Pacific Coast Archaeological Society, in conjunction with Professor Hal Eberhart of California State University-Los Angeles (CSULA). In the 1970s cultural resource management firm Archaeological Research, Inc. conducted initial surveys and preliminary test programs. Scientific Resource Surveys, Inc. (SRS) then carried out a multi-staged data recovery program that spanned the next 30 years. From the 1980s onward, archival research and reviews of historical maps and aerial photograph were conducted (Desautels 1982; Desautels and Wiley 1981), in addition to the completion of three research designs (Mason 1987; Wiley 1983, 2003). Additional fieldwork included further site surveys, three supplementary surface collections (Wiley and Mason 1986), and five subsurface excavation programs (Wiley and Mason 1986; Wiley 1995). During this period 21 reports were written by SRS, including 16 agency reports and five formal publications (see bibliography). A series of technical reports are anticipated within a year after completion of the final burial analyses and artifact cataloguing. It is anticipated that these will include a full volume for publication on the cogged stones and cogged stone caches found at Bolsa Chica.

During the 1990-1994 and 1999-2002 investigations on Bolsa Chica Mesa, Scientific Resource Surveys, Inc. hand excavated large volumes of earth that were subsequently water-screened through 1/8- and 1/16-inch mesh screens. The recovered materials were then catalogued and subjected to a series of special studies. Although analyses of the recovered materials are still ongoing, some preliminary conclusions are available for the site. The periods of occupation have

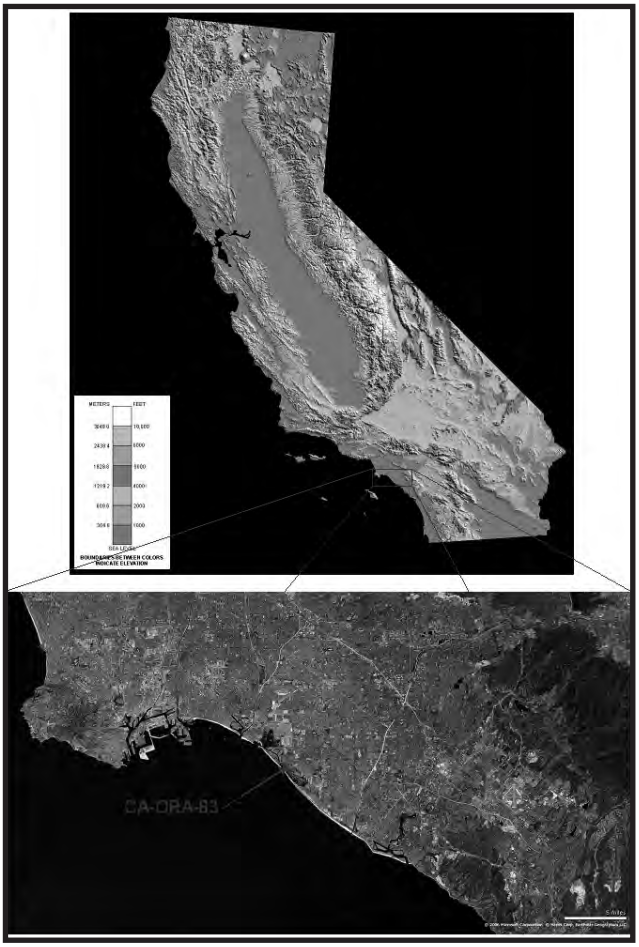


*Figure 1. Location of ORA-83, the Cogged Stone site, Orange County, California.*

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been established, initial information relative to subsistence patterns has been formulated, and preliminary artifact inventories have been compiled which indicate the diversity of activities that occurred at the site. Radiocarbon dating has demonstrated that the Cogged Stone Site was occupied over a 7,700-year period encompassing the entire Millingstone Horizon and Intermediate Horizon, and with additional light occupation reaching into the Late Prehistoric period.

The geographic position of ORA-83 was ideal for prehistoric habitation, as the surrounding bays and ocean offered three distinct marine zones providing year-round marine animal and plant resources. Bolsa Chica Mesa also lies within the Orange County "Artesian Basin," an area of extensive groundwater resources containing numerous springs and freshwater seeps. The presence of fresh water was essential for habitation and also attracted terrestrial animals and supported land and marsh vegetation. Preliminary geological studies have shown that the adjacent Palos Verdes peninsula to the north and the San Joaquin Hills to the south could have provided sufficient outcrops of rocks and minerals for the manufacture of stone tools. Lithic material in nodule form could also be found in the various drainage branches of the Santa Ana River. The physiographic setting of this site area clearly would have been attractive to the initial inhabitants of Orange County, since it contained all of the essential elements for subsistence.

The site itself is situated on a mesa underlain by geologic formations containing pockets of black, white, and a variety of red pigments. This formation crops out on the mesa edge and appears to have provided ample pigments for paints required for ceremonial activities. The presence of numerous circular features that appear to be remnants of semi-subterranean structures at the site, special subsurface 'caches' of possible ritual items, exotic materials, and distinct burial and reburial areas, strengthens the interpretation of use of this mesa for ceremonial purposes as well as day-to-day subsistence activities.

## Bolsa Chica Timeline

A cursory analysis of materials recovered from the Cogged Stone Site and the Eberhart Site (ORA-85, also on Bolsa Chica Mesa), the Borchard Site (ORA-365), the Edwards Hill Burial Site (ORA-82), and the Bolsa Processing Facility (ORA-88) on Huntington Beach Mesa, has allowed for compilations and preparation of a timeline or cultural chronology for the Bolsa Chica Region. Collectively, the five sites provide an uninterrupted 8,000-year sequence from approximately 9,000 years to about 1,000 years ago. Seven periods of occupation can be reconstructed from the data from this composite of sites, six of which occur at Bolsa Chica Mesa and are discussed here. The seventh period is the Protohistoric, materials from which are essentially lacking from ORA-83 and ORA-85. All dates are based on uncorrected radiocarbon dates and therefore represent periods of occupation that in all likelihood are chronologically older than the dates imply.

### Period I

The earliest radiocarbon dates from ORA-83 extend back to approximately 9,000 years ago. Initially, Bolsa Chica Mesa appears to have been recognized as a unique area based on the prominence of the cliff face on the horizon and the cropping out of geological veins of multi-colored pigments. Within this time period (IA, IB) the shoreline was several miles distant, and sandy beaches prevailed around the base of the mesa. Large colonies of thick-walled clam were prevalent at the water's edge, including *Tivela* sp., whose remains could be found in quantity on the mesa at this time and were often used for the production of beads. It was also at this time that a bivalve bead industry was established at the Cogged Stone Site. At the present time, nearly 2,000 beads, including 165 preforms and blanks, and numerous micro-lithic cores and drills have been recovered from the site deposits. Several portable, hand-held, bead-shaping tables or planes were also identified within the same deposits, establishing a bivalve clam bead production kit. Evidence of a late Pleistocene flightless auk, *Chendytes lawii*, was also recovered from the deposits. This evidence further suggests that the first period of use of the mesa was at a time transitional between the Pleistocene and Holocene in northern Orange County.

### Period II

At approximately 7500 B.P. an embayment formed around Bolsa Chica Mesa, effectively changing the shoreline and ocean fauna. This resulted in the development of an *Olivella* sp. bead industry that replaced the earlier bivalve clam bead industry. In addition, sea mammals, at least as beached animals, now became available. Exploitation of the pigment veins may have been a normal practice, since two deep areas of the site appear to have been formed by prehistoric excavations. A cemetery area at the western portion of the site consists of delayed and reburial interments represented by extremely fragmented human remains. These interments form a series of concentric circles or arcs, open along the eastern perimeter of the circle, enclosing a dolphin burial. Two female burials contained evidence of what may be a tattooing kit and a pigment preparation kit. The site at this time in all likelihood became a traditional source for pigment collection and preparation. The spiritual significance of the site is exemplified by its use for interring human and other animal burials.

Manufacture of the famed "cogged stone" began in this period. Several "caches" and hundreds of single cogged stones were located below the surface of ORA-83 during the SRS final data recovery program from 1990 to 2007. It is

postulated that cogged stones were ceremonial talismans, and that the inhabitants cached them below ground, presumably in order to control their power (a theory originally postulated by Dr. Keith Dixon, Professor Emeritus, California State University, Long Beach). A "deconstruction" of the scatter of single cogged stone finds may prove that all cogged stones at this site were originally cached, since the scatters consists of several loose clusters.

Period III

During Period III (approx. 6000-5000 B.P.), the site use changed again, building on the previous notion of site spirituality. Several ceremonial areas have been identified, such as an area with numerous talismans for healing. Artifacts recovered from this locale include various charmstones, a possible rattlesnake talisman, an incised tablet pendent, a 'donut' stone, lithic spheroids, a painted rock, a "singing" rock, and several discoidals. In addition, human burials of extraordinary individuals are present, including four women who may have belonged to a society of undertakers, based on their presumed body strength and unusual characteristic of filed teeth or patterned tooth wear unique to these individuals. Associated with these ceremonial items and special people are what appear to be shallow dance areas, one with a post hole in the approximate center, and multiple small structures that appear to be burial-related, perhaps for body preparation. Contiguous with these structures are one or more human burials. Larger (and proportionately deeper) structures are also present which may have been used for storage of ceremonial regalia for healing and burial activities. Although dating squarely within the Millingstone Horizon, utilitarian objects are present only in small quantities; most functioned as tools for the production of talismans.

Period IV

Use of the Bolsa Chica region for human interments continued in this period, but several are "cached" under thousands of rocks, as at ORA-365, a neighboring site on Huntington Beach Mesa. New types of talismans appeared, including phallic pestles or "spikes," a steatite pelican stone, notched projectile points versus spearheads, and grooved rectangular beads. The structures on Bolsa Chica Mesa increased in size and may have functioned as sweathouses, since both hearths and whole structures from this period are lined with calcium carbonate.

Period V

By 4000 B.P., the western burial area at ORA-83 was abandoned, and dense shell deposits suggest that intense shellfish exploitation occurred on a limited portion of the site. An animal bone concentration included three articulated deer vertebrae. Mortars and pestles were introduced, appearing as a ceremonial pestle, a killed mortar (on ORA-83), and fragmented bowls and pestles on ORA-85 (broken by the plow). Shell whistles and rattles and crystals are also prevalent at ORA-85. Occupation on the mesa essentially shifted to that site and away from ORA-83.

Period VI

During the last period, occupation on Bolsa Chica Mesa again shifted, this time from ORA-83 and ORA-85 to site ORA-86, northeast of ORA-83. Subsurface remains of a single large structure with an indoor lined hearth were identified here. Associated with the structure, at a minimum, was an asphaltum-lined pipe plug and ear spool. Steatite beads were also manufactured here and at Huntington Beach Mesa; ORA-83 has produced only an occasional projectile point or bead dating to this period. The site received minimal use and may have functioned as a retreat area. Use of the site seems to have come full circle and now apparently was a location of personal or small group use, perhaps as a questing/power site.

## Historic Disturbance, Historic Salvation

SRS Phase One work at ORA-83 included a full site survey and a comparison and mapping of historic-period features indicated on a series of 26 aerial photographs ranging in time from 1927 to 1977. Field evidence for any of the historic-period features was recorded and an extensive geophysical survey was conducted in order to locate subsurface anomalies related to the historic-era disturbance. An auger-boring program was then implemented to assess the subsurface character of the site and ground-truth any recorded anomalies.

The early series of aerial photographs show that by 1934, prior to World War II, a deep arroyo with check bridges physically separated the Cogged Stone Site from land to the west. Other significant features at that time included a large complex of historic-era structures approximately 200 ft. north of a concrete reservoir that was located on the bluff edge. The northern portion of the archaeological site was all but destroyed by the construction of this complex. The complex itself was then demolished between 1939 and 1947 as a result of construction of facilities related to the Bolsa Chica Military Reservation. A 1947 aerial photograph shows the World War II bunker, Battery 128. The bunker is located on the land west of the arroyo and separated by about 500 ft. from the center of the archaeological site, as recorded by amateur Alika Herring in 1963. Underground pipes, cables, and pull boxes associated with the bunker are numerous and crisscross the entire archaeological site from east to west. These utilities also heavily impacted ORA-83.

Extensive agricultural activities were conducted before and after the war years, as evinced by plowing patterns

apparent on the aerial photographs from the 1950s through the 1970s and described in 1963 by Cogged Stone collector Alika Herring:

> Unfortunately, no artifacts were found "in situ," all having been brought to the surface as a result of the agricultural operations. These operations will be described, as they have a direct bearing on the manner and location in which the artifacts were found. The first step in the process consisted of loosening the earth with a subsoiler, which penetrated to depths of 18 to 24 inches. This action dislodged the buried artifacts from their original positions, and once loosened, the stones eventually worked their way to the surface during subsequent subsoiling operations. The large clumps of earth left by the subsoiler were further reduced in size by a disc cultivator and finally pulverized by towing a "drag" over the ground, after which the soil was then ready for the planter. These various operations were not only quite severe in their treatment of the artifacts, many of which are badly broken, battered, and scarred, but it was also possible for the dragging operation in particular to displace them considerably in position from their original points of emergence.

Based on the extensive site damage as shown by the Phase One studies, a multi-staged investigatory program was designed to thoroughly investigate the site and locate basal remnants of the midden deposit, if such existed. It was postulated that: 1) if undisturbed remnants of basal strata were located, and 2) if these remnants contained cultural materials and materials suitable for dating, and 3) if the cultural materials included cogged stones; then it would be possible to establish the nature of the relationship between the cogged stone artifacts and the site. The basic concept underlying the SRS approach was to obtain the maximum amount of information on the cogged stones at this site by attempting to locate undisturbed remnants of the midden and then study these remnants in detail. The bias was definitely in favor of disturbance location and thus avoidance.

Almost 15 years later, the Keystone Cache was located during purposeful grading at the site in a setting that belied the previous assumptions. Five major historic-period features surrounded the cache, encroaching up to 12 cm from the cogged stones and including an 8-in.-wide concrete irrigation line 1 m to the west and another 8-in. line 2.5 m to the east, both at the same depth as the cache; a WWII electrical junction poll box (3 m south); and a metal spike tie-down for a post in cement (12 cm west). An 8-in. well (3 m southeast) with footings, derrick, etc. existed at one time, probably covering a footprint 6 m square). In reality, WWII electrical lines, pre- and post-War agricultural water lines, and historic-era oil operations all converged at the exact location of the Keystone Cache. Evidently, agricultural ripping, disking and dragging could not be conducted at this spot due to the multitude of surface and subsurface historic-period features. The concentration of cogged stones was then left nearly intact and not scattered and dispersed throughout the field as had bee done so many times in the past. In that sense the historical disturbance was its salvation.

## THE KEYSTONE CACHE

Prehistoric Feature #84, later to be dubbed the Keystone Cache, was recovered during grading monitoring on September 15, 2006 in the east-central portion of the site at a depth of approximately 30 cm below ground surface (Figure 2a-b). It consisted of 17 cogged stones and one handstone and is thus the largest cogged stone cache yet discovered. The cache was organized in and around a small mound of dirt that encapsulated and was topped by a specific set of cogged stones that were rectangular in cross section and exhibited strong margin grooves. These cogged stones tended to be the smaller ones in the group. This central mound was then surrounded with cogged stones that were trapezoidal in cross section. Only half of this group was grooved on the margins. Many of these are so pronounced in their

*Figure 2. a (top), an overhead view of the Keystone Cache after extensive excavation. b (bottom), an oblique view of the Keystone Cache.*

*Figure 3. Another oblique view of the Keystone Cache. Note the verticality and provenance of the trapezoidal cogged stone atop the center of the cache. The white nick on the margin of this cogged stone is the only damage caused by the grading equipment.*

trapezoidal crosssection that they resemble "Jell-O" molds. Finally, placed atop and in the center of the entire group was one trapezoidal, non-grooved cogged stone (Figure 3). This stone, later cataloged as Item #10, was the only item struck by the road grader. Furthermore, though Item #10 was set on its side, the large road grader did not topple the artifact from its original placement, because approximately three-quarters of the cogged stone was supported and encased on its southern side by a hard, dense, dark-grey mud layer. This layer was pinched or lipped up to the tip of the cogged stone (Figure 4) and provided evidence of how the prehistoric individuals who buried the cache deliberately pressed mud onto and around the cogged stones to hold them in place.

Further excavation of the 1 x 1-m unit revealed more of the dense soil variation which was fashioned into a 2-cm-thick layer of hardened dense grey mudpack (Figure 5). Although the edge of the mudpack was easily revealed, in that the soil to the east was a softer, aerated, punky, somewhat friable soil that excavated easily, the top of the mudpack was more difficult to assess in that there were few other soil layers atop it which feathered to its edges.

*Figure 4. The Keystone Cache during excavation to reveal the mudpack layer. Note how the mud was pressed up to the edges of the cogged stones.*

A new excavation methodology, which employed lightly tapping the mudpack layers with a geology hammer, provided an acoustical variation of the normal underlying soil from the interred cogged stones, and allowed prediction of the location of an additional cogged stone or other artifact. Moreover, this methodology facilitated the study of the mud-packing behavior for the first time in the site's history.

To delicately remove the soils overlying the packed-mud layer, a biological dissecting needle, metal awl, and various gages of bamboo knitting needles were utilized. It is important to note that no metal instruments were used to remove the cogged stones from their cached position; rather, the various bamboo knitting needles were used to gently pry the cogged stones from their encasement. The mudpack layer withstood the tapping and, as an added benefit, the tapping gently loosened the mottled overburden soil atop the dark grey packed mud. This was a tremendous aid in helping the mottled, softer, less consolidated soil break off the plane surface of the mudpack layer, with slight assistance of the biological dissection needle and metal awl.

*Figure 5. An oblique view of the mudpack layer during excavation demonstrating the encasement of cogged stones.*

While gingerly prying the mottled, less consolidated, soil atop the mudpack layer, it was observed that the soil actually was laid in alternating layers of orange and brown soil. The deepest area of this soil was recorded at 3 cm, which happened to be in the approximate center of the mudpack layer (Figure 6), and the shallowest of this soil seemed to feather out to the edges of the mudpack layer tapering in the brown soil layer. While studying the color variation of the mottled soil, enough of the dense, grey mudpack layer was uncovered to unveil that it was not just a mudpack *layer* but rather something more unique and telling of the purpose of the Keystone Cache: the grey "mudpack" *layer* was actually a concave mud basin.

*Figure 6. Close-up oblique view of the mudpack layer during excavation.*

Once the mottled soils were removed, the full concavity of the mud basin was revealed, and the nature of the basin was evident. Measuring 2 cm at its eastern edge radiating off of one of the cogged stones, the mud became extremely dense and strong at its center point, with a thickness of 5 cm. Additionally, the deliberate interment of five other cogged stones was evident, in that the prehistoric behavior still displayed the hard mud basin carefully "lipping" up to these cogged stones edges. Moreover, in the case of another cogged stone, 7 cm of the hardened mud basin from the top to bottom encased it completely. Extracting this cogged stone was most difficult, but perhaps this purposeful interment can be explained by the fact that this artifact, which capped the southwestern end of the feature, may have been broken prehistorically and then entombed in the dense mud basin. This proposition is posited herein because of the fact that it was not the highest point of the feature and the fact that although it was securely entombed completely in the mud basin, the piece was broken (Figure 7). In addition, not all the pieces of this artifact were recovered from the encapsulated soil or surrounding areas.

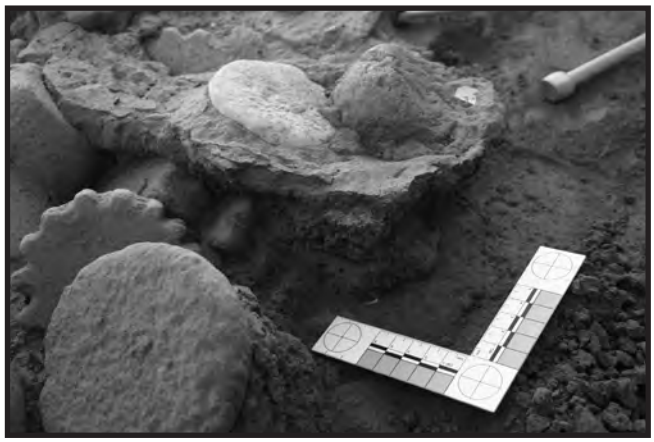

*Figure 7. Broken cogged stone (right) encased in the mudpack layer.*

Finally, during SRS ethnographic studies for the Bolsa Chica Archaeological Project, a Luiseño Elder had told SRS staff that the Luiseño would come to the beaches of Bolsa Chica when the grunion would run and collect the small oil-rich fish and use it to make ochre. They would grind up pigment and then grind the fish whole with a handstone and utilize the oily residue as a binder for the pigment. Protein residue analysis is still to be conducted on these artifacts, but underneath the mottled orange/brown soil slightly embedded atop the grey mud basin was a small fish otolith (approximately the size of a grunion). Most of the Keystone cogged stones exhibit residues of either orange ochre, white calcium carbonate, asphaltum, and/or a combination thereof. In addition to the 17 cogged stones, one handstone was recovered from the cache. Also, one of the cogged stones was bowl-shaped and appears under low-power binocular microscopic inspection to be coated in a substance resembling dried blood. Interestingly, in our previous collections from ORA-83, any antisera returned from cogged stones or charms were human, while the handstones have all have had fish antisera.

## NOTES ON CA-ORA-83 COGGED STONES AND CACHE ANALYSIS

Although analysis on this cache, as well as other cogged stone caches and individual cogged stones recovered from the site, is still in progress, there are some strong trends emerging. The quantity and in situ recovery of cogged stones found during recent research at ORA-83 have allowed for a more robust analysis and interpretation of these enigmatic artifacts.

### Typology

In the past, cogged stone typologies revolved around these morphological aspects: the presence of grooves, whether the grooves could be seen from a plan-view of the object, and whether the object was perforated (see Eberhart 1961). These aspects also separated cogged stones from their nearest cousins the discoidals. However, such typologies are extremely limited.

A simple scattergram (Figure 8) indicates that there is a correlation between the circumference of a cogged stone and the quantity of grooves. Cogged stones tend to cluster in circumference between 220 and 350 mm which bind the number of grooves on the upper end if the grooves ground into the side are to have any appreciable depth; on average between 11 and 17 grooves. However, of the 47 cogged stones studied thus far, 34 percent (n=16) have no grooves on their margins at all. Thus, there seems to be a much more powerful argument for the importance not of the number of grooves, but of their presence/absence.

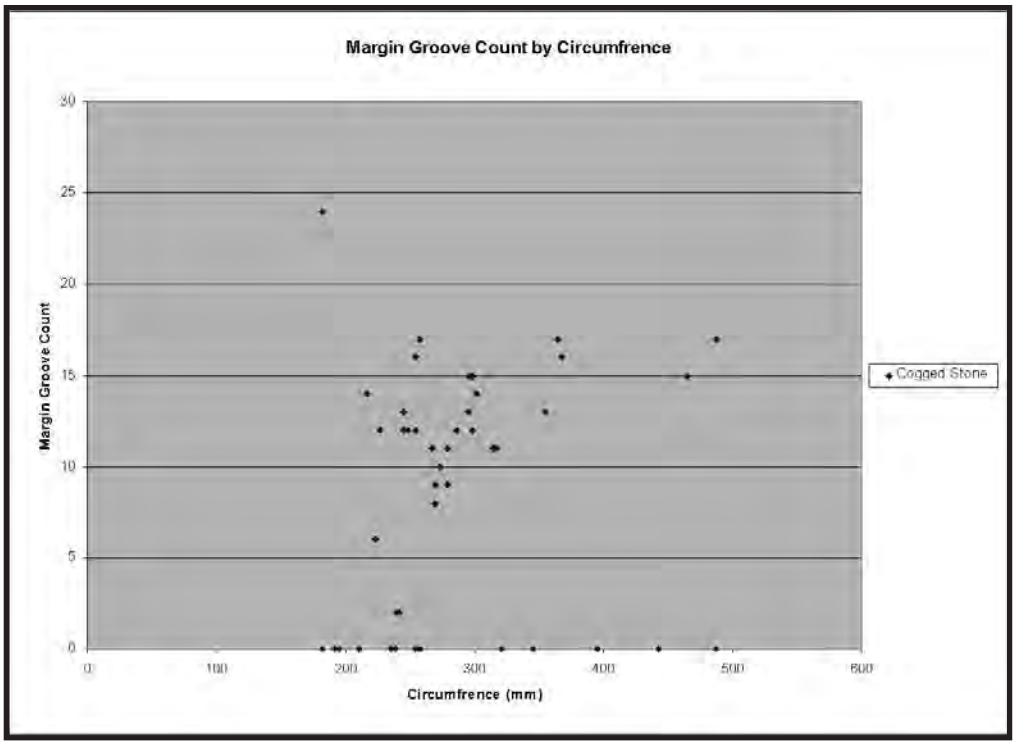


*Figure 8. Scattergram of margin groove count by cogged stone circumference.*

Cogged stones are defined as much by their material, cross section, and manufacture as they are by modifications to their margins. Cogged stones have long been known to have been made of vesicular basalt, tuff, and andesite, most likely from the El Modena Formation (Miocene volcanics) which outcrops in various locations around the Orange County area. However, the cogged stones recently unearthed have also included tonolite, rhyolite, diorite, talc schist, sandstone, and most interestingly, calcium carbonate concretions native to the site. These materials stand in contrast to the granites, metavolcanics, and metasedementary rocks of the cogged stones' nearest cousins, the discoidals (see collection from ORA-64: Macko et al. 1998).

It is believed by the authors that the material from which the cogged stones are made held as much significance to the prehistoric manufacturers of these artifacts as did the shape. Thus, we posit that the stark differentiation between cogged stone and discoidal materials that can be seen in the assemblages at ORA-83 and its sister site ORA-64 may be indicative of group/clan affiliation. Occupants of both locales had ample access to the various material groups but choose separate materials from which to fashion the artifacts that were to become the hallmarks of their sites during the same time period.

Another typological factor is cross section. While both cogged stones and discoidals are circular in plan-view (with some notable exceptions), their cross sections differ. Discoidals typically exhibit a very symmetrical, slightly convex margin, while cogged stones have either a symmetrical, slightly convex margin or a tapered to strongly tapered margin, often resulting in a cogged stone reminiscent of a "Jell-O" mold.

While both cogged stones and discoidals were pecked and ground into shape, only the cogged stones show a pattern of deliberate repair. Many have asphaltum in the breaks, and a few actually have the patched rock still "glued" in place. This contrasts strongly with the discoidals, in which surface polish continues onto the broken surfaces. In other words, no attempt was made to patch or mend the discoidals; instead, the makers continued with the manufacturing process, even polishing into the edges of the breaks (see collection from ORA-64: Macko et al., 1998).

Based on these factors, a unique and preliminary cogged stone typology has been developed. This typology separates cogged stones into five types (Figure 9a-e):

- Trapezoidal – Trapezoidal cross section, sometimes grooved
- "Jell-O" mold – Trapezoidal in cross section, thicker than Trapezoidal, sometimes grooved, ≥70 percent exhibit a pit, pecked offset in the smaller face, while the other ≤30 percent have concave faces

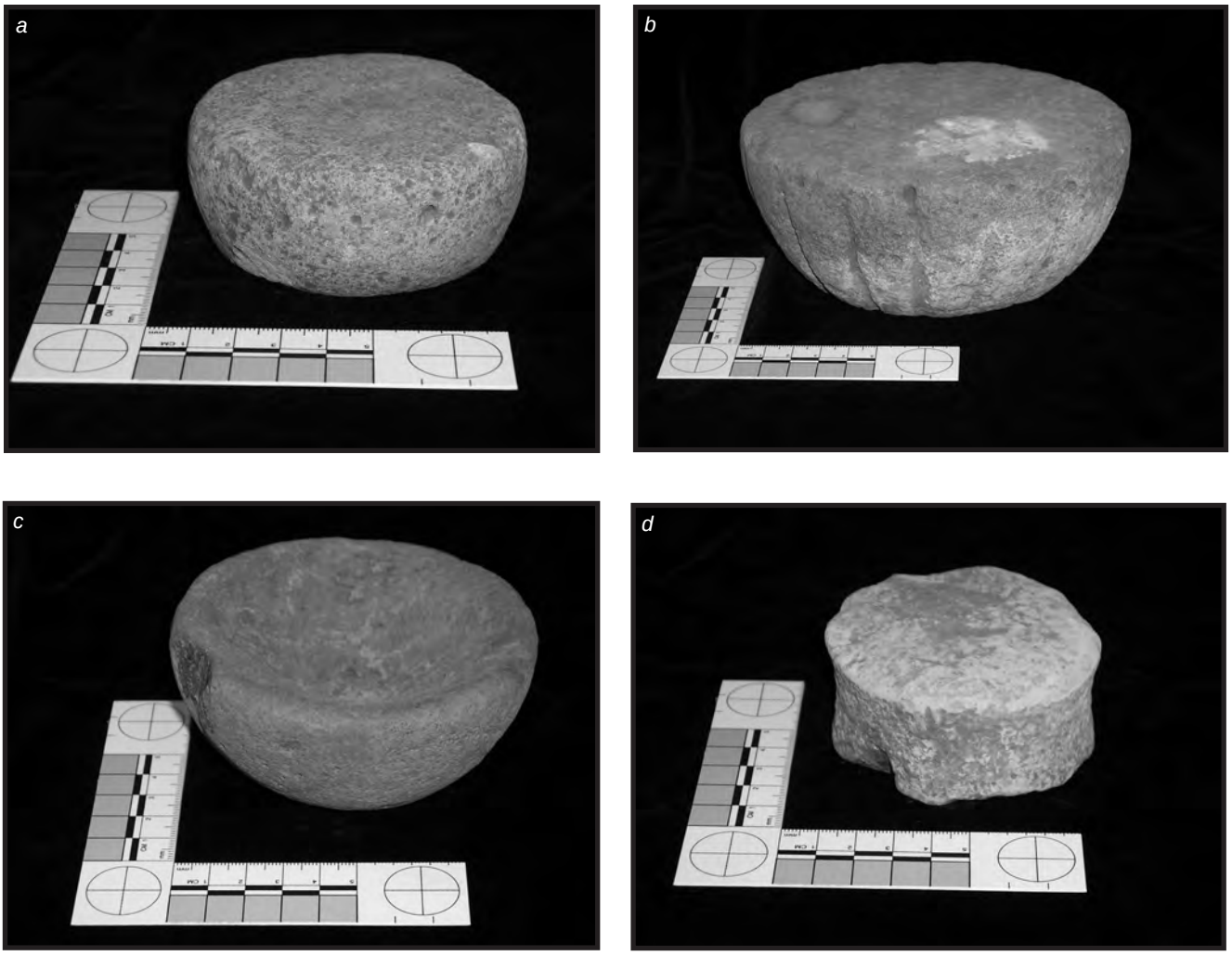


*Figure 9. Examples of cogged stone types: a. trapezoidal b. Jell-O mold c. bowl d. top knot/spool e. rectangular.*

- Bowl – Trapezoidal in cross section, no grooves, all have a pit, pecked offset in the smaller face
- Top Knot/Spool – cross section is that of a top knot or thread spool, no grooves, never made of the more frequent vesicular basalt
- Rectangular – Rectangular in cross section, almost always grooved, sometimes with pits or perforations

These five types can be grouped into two major categories based on shared or similar attributes as well as implied meaning from their locations within caches. The first is the Rectangular group and the second encompasses all other types. Some interesting observations about these groups include the fact that the larger the cogged stone, the more likely it will have a "Jell-O" mold or trapezoidal cross section.

Caching Correlates

The typology offered here is supported by the grouping pattern found within the Keystone Cache and four other caches from the site. There is a distinct spatial separation between Rectangular cogged stones and the others. Rectangular group members are located in the center of the caches, surrounded by members of the other types. There is always a trapezoidal and/or Jell-O mold atop all the other cogged stones in the features. Approximately 50 percent or more of all Jell-O molds have white pigment residue on their larger faces. This is the only consistent painting/paint residue pattern among the cogged stones. One Jell-O mold is always upside down in each cache. None of the three or more caches contain any odd-shaped cogged stones (such as those that are star-shaped).

While the significance and meaning of these caching characteristics can be debated, what is evident is the consistency of the patterns observed. At a minimum, these patterns can help us properly associate and type these objects with greater fidelity than ever before.

## Conclusions

The Cogged Stone Site, ORA-83, has undergone extensive scientific investigation for several years. Only recently, and despite over a century of intensive disturbance, was the single largest cache of cogged stones revealed. In fact, historic disturbances, unlike the rest of the site, may have been the only reason that this particular cache was preserved.

The Keystone Cache and her sister caches from ORA-83 have shed new light on a unique artifact type in southern California. A new cogged stone typology has been developed, based on the spatial arrangement and recurring patterning of cogged stones within caches. Grooved or cogged margins need not the cogged stone make—raw material, cross section, and salvage efforts also play an important role in typological assignment and separation from their nearest artifactual relative, the discoidal.

Encapsulating objects and caches of potential ceremonial or religious significance with mud slurries now seems to have been an established pattern during the occupation of the site, as witnessed by this cache as well as other caches of ceremonial objects from the region dating to this time period (see Desautels et al. 2005).

The consistent use of red/orange ochre, white calcium carbonate pigments, and black asphaltum interestingly correlates with the use of these same colors by the Luiseño and Juaneño to this day (see Applegate 1979).

A handstone in line with Jell-O mold and trapezoidal type cogged stones on the perimeter of the Keystone cache can arguably associate this ubiquitous artifact type with the non-rectangular cross-sectioned types of cogged stones.

There is clearly much more to do with this fascinating material. We have but scratched the surface with this presentation but thought it important enough to get this information out to the community quickly, rough spots and all.

## Acknowledgements

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