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REPORTS

More Radiocarbon Dates from CA-LAN-1, the Tank Site, Topanga Canyon, California

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This paper presents two more radiocarbon dates derived from CA-LAN-1 (also known as the Tank Site), located within the Topanga Cultural Preserve in Topanga State Park. Building upon the first date (published in this journal in 2015), the new dates derived from the collections held at the Phoebe Hearst Museum confirm the age of the early component at the site yet suggest the existence of probable bioturbation that has potentially obscured the age of the presumably younger "Topanga III" component. Specific information on the contexts of these dates, their conventional and calibrated ages, and a discussion of their significance relative to the rest of the site deposit and to the region as a whole is presented below.

CA-LAN-1, more famously known as the "Tank Site," is considered one of the more important sites in southern California. First discovered by Robert Heizer and Edwin Lemert in 1946, it was excavated on five separate occasions between 1947 and 1960, and ultimately became the first recorded site in Los Angeles County. It was added to the National Register of Historic Places in 2015 (Green 2013). One outcome of the National Register nomination process was attainment of the first-ever absolute date from the site (Fitzgerald and Green 2015). A *Mytilus californianus* fragment recovered from the last archaeological excavation conducted by Santa Monica Community College (SMCC) in 1960 yielded a conventional radiocarbon age of 5,880±40, which calibrates to a median age of 6,059 cal B.P. This date confirmed the Milling Stone Horizon (MSH) age of the site. However, this date did not come from the primary site deposit first excavated by U.C. Berkeley in 1947, or from the area jointly excavated by U.C. Berkeley and UCLA in 1948, where the majority of the features and human remains were located (Heizer and Lemert 1947; Treganza 1950; Treganza and Bierman 1958). As described in our first paper (Fitzgerald and Green 2015), those excavations led to the conceptualization of the "Topanga Culture," which was foundational to the genesis of what became known as the Milling Stone Horizon (MSH) as first defined by Wallace (1954, 1955, 1978).

Two new AMS radiocarbon dates derived from materials from the 1947 and 1948 excavations within the primary deposit area of the site are presented here. These dates offer a refinement of the chronostratigraphic structure of LAN-1 and thus help shed new light and value on the existing archaeological collection housed at the Hearst Museum in Berkeley. In addition, because LAN-1 is a type-site for the MSH, a clearer understanding of the temporal relationship between LAN-1 and the other MSH sites in the Santa Monica Mountains and surrounding region is possible.

CA-LAN-1

The Tank Site is located in northern Topanga Canyon, an approximately seven-mile-long north/south trending canyon situated southwest of the San Fernando Valley in Los Angeles County (Fig. 1). Topanga Creek is the primary watercourse in the narrow canyon, and it drains into the Pacific Ocean at Santa Monica Bay. The site is situated on a small, oak-covered knoll 1,371 meters above sea level and approximately 6.5 kilometers from the ocean. It is contained within a 158-acre protected, classified subunit of the larger Topanga State Park, the Topanga Cultural Preserve (Fig. 2). This area of the Santa Monica Mountains can receive upwards of 20 inches of rain annually, producing a lush setting of grassy meadows that transition into dense oak-woodland.

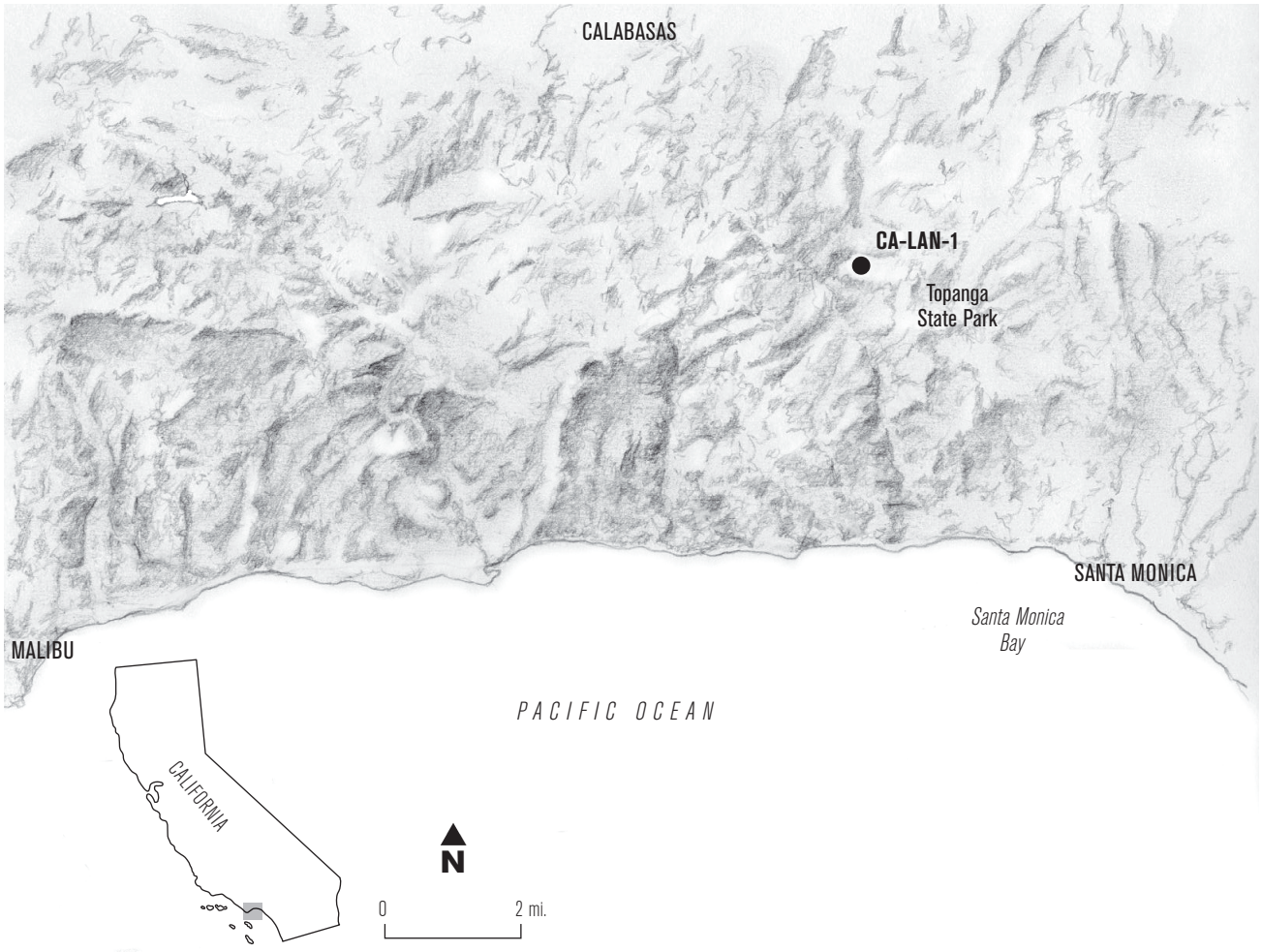

Figure 1. Map showing location of Topanga State Park and CA-LAN-1.

LAN-1 was first discovered and excavated in 1946, and it became known as the "Tank Site" because of the large metal water tank that is situated directly on top of a portion of the archaeological deposit. LAN-1 covers approximately 70,450 square meters and varies in depth from 30 cm. to roughly 120 cm., with an average depth of 80 cm. (Mealey et. al 2009). The archaeologically-rich site had five thousand cubic feet of soil (141.53 cubic meters) excavated periodically during five separate excavation projects from 1946 to 1961. Nearly four tons of artifacts, mostly stone tools, were recovered in the first full season of work in 1947 (Treganza and Malamud 1950:131).

Chronology and Site Stratigraphy of CA-LAN-1

The chronological framework for LAN-1 prior to 2015 was based solely on the stratigraphy, the composition and condition of the assemblage (e.g., patination etc.), as well as the informed guesses of Robert Heizer, Adan Treganza, and their co-authors Constance Malamud and Agnes Bierman. Together they had correctly suspected that the lower component of LAN-1 was "relatively ancient" (Heizer and Lemert 1947:21). The stratigraphy of the site as reported is modest, with three layers as described below:

> The topmost 5 inches are in the main, less compact and more granular than the lower layers. This top 5 inches, constituting our A profile, may have been partly built up by vegetation processes. Directly beneath (6 in. to 18 in.) is a zone of artifact concentration surrounded by a mottled adobe like soil. This second soil type (B) continues to a depth of 48 inches, where it gradually merges into a friable layer containing charcoal and occasional inclusions of shell. This third layer is mound like and may well constitute a distinct soil horizon, C. [Treganza and Bierman 1958:130].

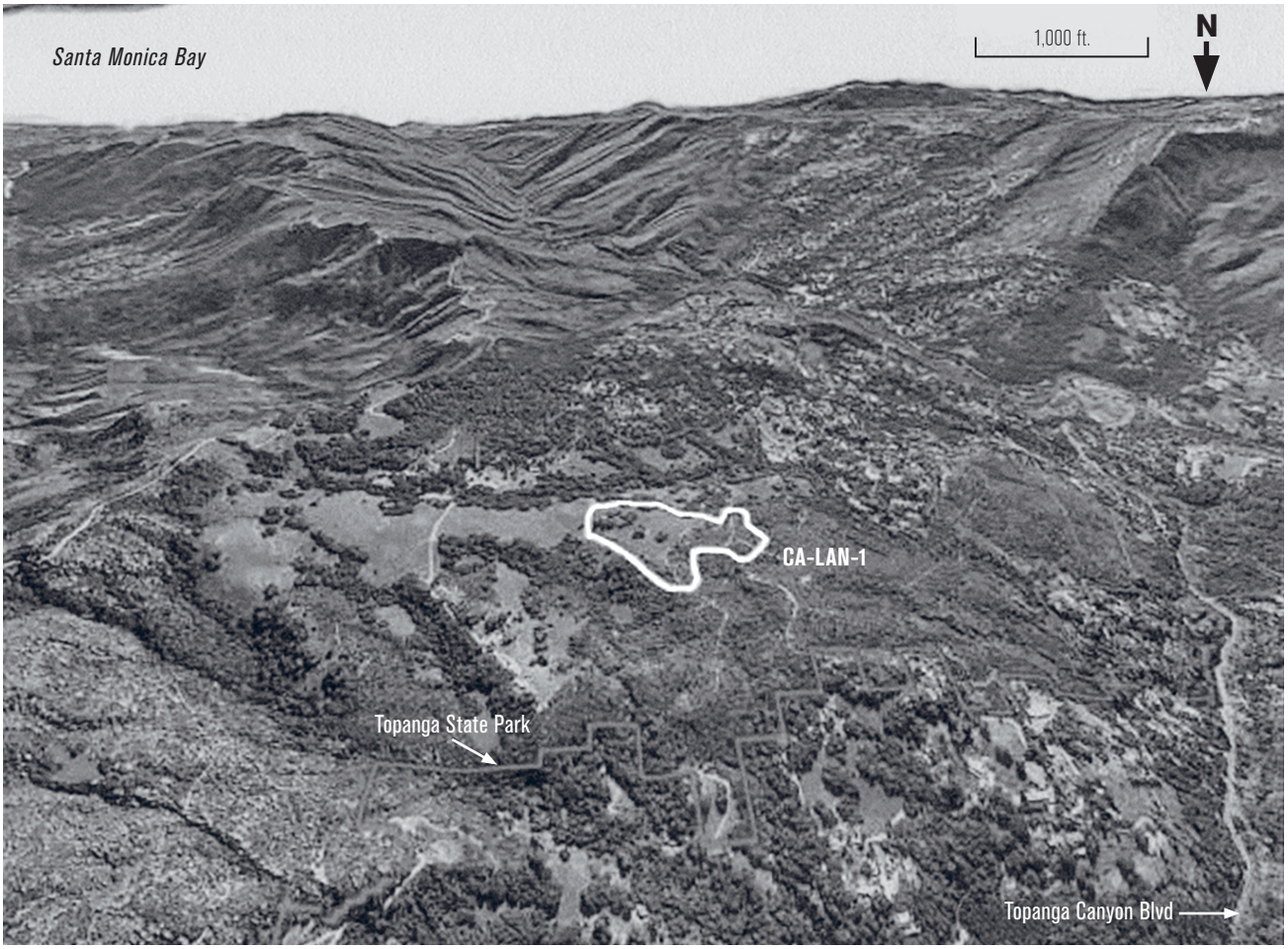

Figure 2. Map showing boundary of CA-LAN-1 within Topanga State Park.

Despite lacking the advantage of radiocarbon dates, Treganza and Bierman (1958) suggested two phases of occupation at the site, with a pre-5,000 B.P. date for the lower component and a circa 5,000–3,000 B.P. range for the upper portion of the deposit. These estimates were in part formed based on Treganza and Bierman's 1948 excavations at the nearby CA-LAN-2, where they seemingly confirmed "the suspected stratigraphy in the Tank Site…[and to their minds]…define Phase II of the Topanga Culture" (Treganza and Bierman 1958:46). Based on a comparison of the two sites, they proposed two phases at LAN-1:

> Phase I is characterized by large percussion-flaked blades and points…from the surface to 60 inches in depth with the greatest frequency below 18 inches (with) no similar type points…found in Lan-2. Phase II projectile points are smaller, varied in type and are pressured flaked. These points are confined to the upper 18 inches of the Tank Site and are exclusive to Lan-2 [Treganza and Bierman 1958:72].

New excavations in 1966 at LAN-2 by Johnson (1966) provided four charcoal radiocarbon dates of 2,450±150, 2,440±200, 2,700±150, and 2,600±240 rcy B.P., which secured the dating of LAN-2 and putatively the upper 18 inches of LAN-1. Johnson proposed three phases for the Topanga Culture (I, II, III) on the basis of those dates. Only phase III, the latest phase, had associated absolute dates. Modern calibration of the dates places them between 2,755–2,359, and 3,059–2,541 cal B.P. at 1 σ.

New Dates

California State Park archaeologists visited the campus of U.C. Berkeley in January of 2017 to review the archaeological collections from LAN-1 kept at the Phoebe Hearst Museum. Two small shell fragments were selected for AMS radiocarbon dating, one of clam (*Saxidomus nuttalli*) and the other of mussel (*Mytilus californianus*). The results of the AMS dating are presented in Table 1.

Table 1

NEW RADIOCARBON DATES FROM CA-LAN-1

Lab Designation	Sample #	Marine ReservoirΔ Used	Conventional Radiocarbon Age	2 σ Calibrated Result	Median Probability	Material Tested
Beta-457228	LAN-1-1-91320	225 ± 35	6,430 ± 30	6,745–6,540 cal B.P.	6,650 cal B.P.	*Mytilus* shell
Beta-457254	LAN-1-177680	225 ± 35	6,280 ± 30	6,595–6,380 cal B.P.	6,470 cal B.P.	*Saxidomus* shell

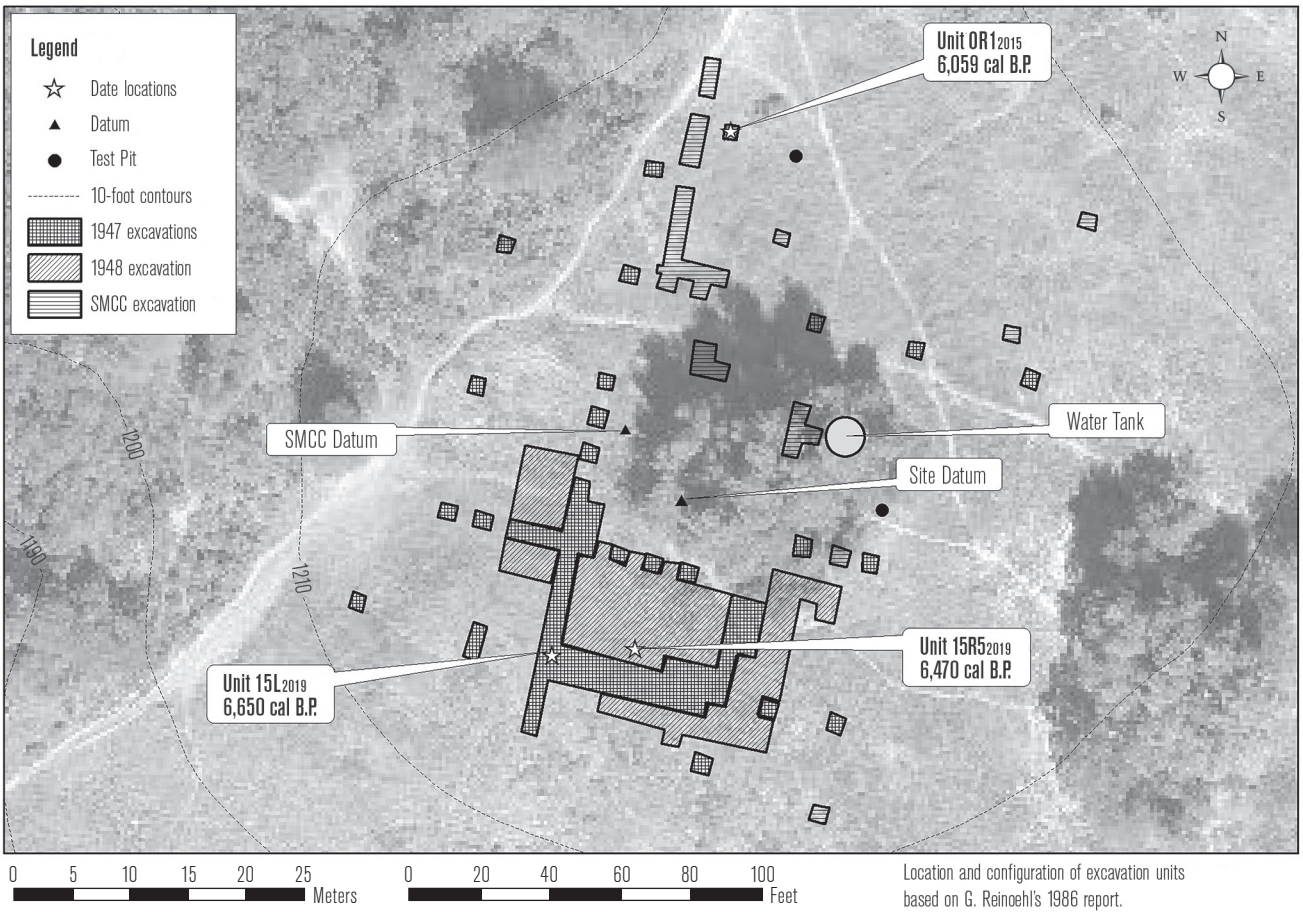

Figure 3. Map showing excavation blocs with locations of new and first radiocarbon dates from CA-LAN-1.

All dates were calibrated using Calib 7.0 (Stuiver and Reimer 1993). These faunal remains were selected for analysis because they were recovered in the central portion of the deposit originally excavated by Treganza and his students in 1947 and 1948. The clam shell was excavated from the 18–24 in. (circa 46–61 cm.) level from unit 15L1 in 1947, while the mussel shell was recovered in the 6–12 in. level (circa 15–30 cm.) of unit 16R5 in 1948. (Fig. 3). These two levels represent the top and middle portion of what was defined as "layer B" of the deposit in which the majority of the assemblage was recovered. In fact, between the two full seasons of work the 6–12 in. level produced 1,810 artifacts, the majority being handstones (n=349) and scraper planes/scrapers (n=800; Fitzgerald and Green 2015:327).

DISCUSSION

These new dates provide further confirmation that LAN-1 falls squarely within the MSH period of southern California prehistory. The ages of both of the newly dated shell fragments are older by four to five centuries than the first AMS shell date of 6,059 cal B.P. recovered by Santa Monica Community College from a unit located near

Table 2

RADIOCARBON DATES FROM SELECTED MSH SITES NEAR CA-LAN-1

Site No.	Conventional Radiocarbon Age	2 σ Calibrated Result with Median Probability	Material Dated	Reference
CA-VEN-1	6,960 ± 100	7,008 (7,260) 7,451	*Haliotis* sp.	Breschini, et al. 1996; Foster 1989
CA-VEN-1	6,780 ± 80	6,850 (7,066) 7,258	*Haliotis* sp.	Dallas 2001
CA-VEN-1	6,800 ± 70	6,894 (7,088) 7,258	*Mytilus californianus*	Dallas 2001
CA-VEN-1	7,650 ± 90	7,680 (7,882) 8,060	*Haliotis* sp.	Dallas 2001
CA-VEN-1	6,890 ± 90	6,963 (7,187) 7,394	*Mytilus californianus*	Dallas 2001
CA-VEN-1	6,780 ± 110	7,466 (7,636) 7,831	*Quercus* sp.	Dallas 2004
CA-VEN-1	6,590 ± 40	6,692 (6,834) 6,974	Shell	Dallas 2004
CA-VEN-1	8,010 ± 110	7,993 (8,244) 8,471	Shell	Dallas 2004
CA-VEN-1	8,400 ± 40	8,519 (8,669) 8,885	Shell	Dallas 2004
CA-LAN-92	7,460 ± 80	7,551 (7,704) 7,894	*Haliotis* sp.	Dallas and Mealey 1995
CA-LAN-92	7,760 ± 60	7,855 (7,996) 8,153	Clam	Dallas and Mealey 1995
CA-LAN-92	7,380 ± 80	7,466 (7,628) 7,806	*Haliotis* sp.	Dallas and Mealey 1995
CA-LAN-267	6,310 ± 100	6,283 (6,514) 6,743	*Mytilus californianus*	King 1967; Singer and Atwood 1989
CA-LAN-267	6,870 ± 100	6,922 (7,163) 7,393	*Hinnites multirugosus*	King 1967; Singer and Atwood 1989
CA-LAN-267	6,960 ± 100	7,008 (7,260) 7,451	*Haliotis* sp.	King 1967; Singer and Atwood 1989
CA-LAN-958	6,540 ± 70	6,589 (6,779) 6,980	*Hinnites* sp.	Porcasi and Porcasi 2002
CA-LAN-958	7630 ± 70	7,685 (7,864) 8,010	*Haliotis* sp.	Porcasi and Porcasi 2002

the top of the knoll (Unit OR, Fig. 3) at a much greater depth of 72–74 in. Besides being older, these two dates also suggest some possible bioturbational or historical-era impacts on the site. The older date on the mussel shell from the 6–12 in. level is nearly 200 years older than the date on the clam shell, which came from the 18–24 in. level. Yet, at 2 σ (when a single generic reservoir calibration of 225 ± 35 is applied to both samples), the two dates do overlap. The difference between them may be due to the vagaries between the ocean habitats of the two shell species (open ocean and estuarine, respectively).

The 6,650-year-old mussel date is problematic in that it does not correspond with Johnson's proposal that the upper-most portions of LAN-1 contain the "Topanga III" component. Either the mussel shell position is not *in situ* due to bioturbation or the upper deposit at LAN-1 lacks a Late Holocene component. Regardless, the gap between the oldest date of Topanga III and LAN-1 remains at least 3,000 years. The full, conclusive chronological range of the occupation at LAN-1 remains unknown. Younger and possibly older dates may still be forthcoming, yet from the current data it seems likely that the primary deposit of LAN-1 does not extend past 7,000 cal B.P.

It is noteworthy that these two new ^{14}C dates are still younger than those from many of the MSH sites in the Santa Monica Mountains and adjacent areas. A summary of the radiocarbon dates from some of the MSH sites in the surrounding area is presented in Table 2. The oldest date from VEN-1 (circa 8,600 cal B.P.) in nearby Leo Carrillo State Park is still two millennia older than the oldest date at LAN-1 in Topanga State Park. Elsewhere in southern California, MSH sites found to the north in Santa Barbara County and those to the south in the San Diego area are significantly older (Erlandson 1991, 1994; Kowta 1969; Rosenthal and Fitzgerald 2012). Curiously, the oldest manifestations of MSH complexes are located north of Pt. Conception, where there are at least five MSH sites that date in excess of 9,000 years (Fitzgerald and Porcasi 2003; Greenwood 1972; Jones et al. 2004; Jones et al. 2002; Rosenthal and Fitzgerald 2012).

Research Value of Existing Collections

LAN-1 is the type-site for the Topanga Culture, a local expression of the MSH. It is a unique archaeological manifestation. Therefore, the collections associated with it contain evidence that provides insight into a very

distinct prehistoric lifeway in southern California and that can be viewed, studied, and compared to other sites and collections. As summarized by Sullivan and Childs:

> Collections by their very nature are samples, and what is curated directly affects the character of the preserved archaeological record. Explanation of variability in the archeological record is the main focus of archaeological research. Preservation of a representative sample of archaeological resources in curated collections can ensure persistence of this variability and allow future archaeologists to study variability and its causes [2003:109].

California State Park researchers enjoy the added luxury in studying LAN-1 that comes from the fact that the site was first explored and excavated by some of the foremost luminaries in California archaeology, including Robert Heizer and Adan Treganza. The published reports of the prior excavations, even without the technological advances of today, pass the test of time and retain valuable information (Green 2013). Another luxury is that those original collections are managed, maintained, and remain accessible at the curatorial facilities at which they are housed: the Fowler Museum at U.C.L.A. and the Phoebe Hearst Museum at U.C. Berkeley. This allows researchers to continue to study and analyze the site while preserving the remaining cultural deposit *in situ*.

CONCLUSIONS

LAN-1 continues to be relevant to the broader regional prehistory of southern California through its curated collections, which are housed at the Fowler and Phoebe Hearst museums. These artifact collections represent a vast and mostly untapped opportunity for researchers to extract meaningful data that can address chronology, adaptation, culture, funerary practices, mobility, diet, trade, and optimization of California's prehistoric cultures. The new information from LAN-1 also allows for a more accurate interpretation of the resource. Modern archaeometric techniques provide a means of generating data sets that were not possible in the past, and they are minimally destructive, if at all, to the existing collections. We hope that this paper and our previous paper on LAN-1 provide encouragement and stimulus to other researchers to revisit old collections as a means of advancing our understanding of California prehistory.

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