Seasonality And Site Function At Dead Man's Cave (CA-TEH-290)

Greg Greenway

Dead Man's Cave (CA-Teh-290) is a large rockshelter located in Mill Creek canyon, within ethnographic Yahi Yana territory. Principal occupation at the site occurred during the past 2000 years. The site's deep midden deposit contains an assemblage characterized by a variety of artifacts, large faunal collection, and organic material in the upper levels. Focusing on dental increment and macro-botanical data, this paper describes seasonality and site function within the context of hypothesized Yahi Yana settlement and subsistence models.

Settlement-subsistence models for the southern Cascade Mountain Foothill region of northern California are based on inferred seasonal movements in response to changing resource availability. If these movements occurred, then site location and seasonality data should reflect both site type and function. Macro-botanical and dental increment data from Dead Man's Cave (CA-Teh-290) were used to examine the implications of two regional models. These data indicate that the site was occupied during spring and fall months, and possibly some of the summer. These data support common elements of these models, but also challenge some critical components as well.

Site Description

CA-Teh-290 is a large rockshelter located in the southern Cascade Mountain foothills approximately 40 air miles east of Red Bluff, California. Waterman recorded *Xayu* (Dead Man's Cave) as Ishi's name for the site during a visit to Mill Creek in 1914 (Baumhoff 1957). Located at 1200 foot in elevation, CA-Teh-290 is a large double-chambered rockshelter situated in a cliff face about 20 meters above Mill Creek. The rockshelter is nearly 30 meters in length at its opening and twenty meters wide in the largest chamber. Midden in the larger chamber is nearly 3 meters deep in part of the excavated area (280cm).

The rockshelter's immediate environment is the riparian community along Mill Creek (alder, willow, bay, cottonwood, big leaf maple, grape, etc.). Blue oak woodland–grassland plant community borders the riparian zone, predominated by blue oak, gray pine, buckeye, mountain mahogany, juniper, canyon live oak, *ceanothus* and grasses.

Direct access to the rockshelter is up a steep slope from the edge of Mill Creek. Access from the downstream side is difficult, requiring wading through swift and chest high water even in the summer. Upstream access is possible along the creek's terrace, but only during low water months. Access from the south side of the creek is also possible during low water months. Because of access limitations, it is unlikely that the rockshelter was used during high water months unless occupants were prepared for extended stays.

Previous Archaeological Research

The first test excavations at CA-Teh-290 were by California State University, Sacramento (CSUS) in 1973 as part of a summer field school. Six contiguous 1.5 by 1.5 meter units (Figure 1) were established at the southern edge of the larger chamber, forming a trench extending from deep inside the shelter to out past the drip line. The principal research objective of this investigation was to help establish chronological controls for the entire known sequence in the southern Cascade Mountain foothill region (Greenway 1982). Based on known vandal collections, it was felt that the deep deposit contained data from all known periods, and it was hoped that these remains would be culturally stratified as well. Initial test excavations were slowed by the nature of the deposit, organic remains, and the variety and quantity of cultural material present.

Greg Greenway, Mendocino National Forest, 825 N. Humboldt Ave., Willows, CA

Proceedings of the Society for California Archaeology, Volume 17, 2004, pp 123-132

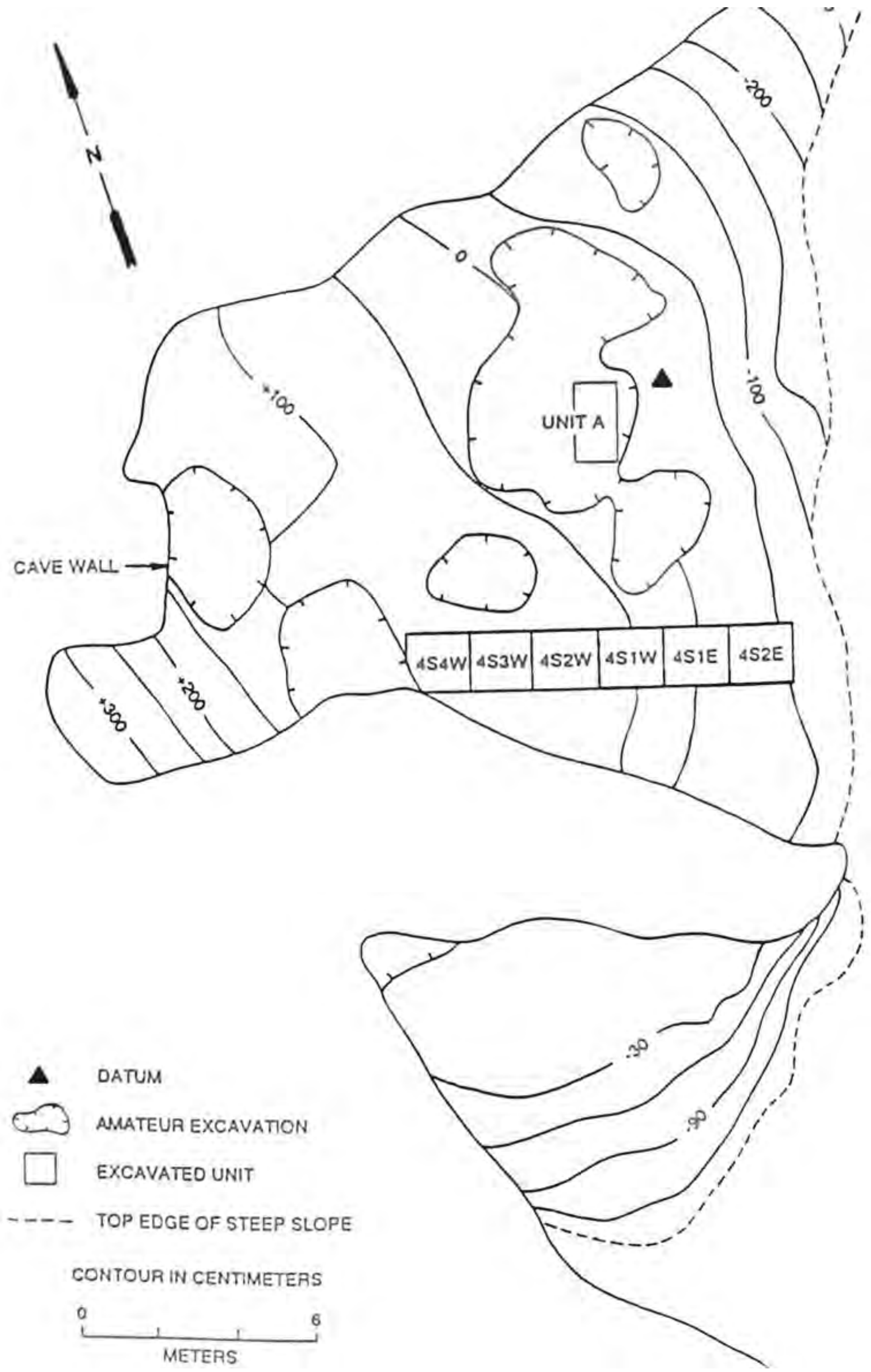

Figure 1: CSU, Sacramento 1973 test excavations at CA-Teh-290.

CSUS returned with another summer field school in 1977. Periodic investigations continued thereafter until all work was completed in 1980. The cultural deposit in the excavated portion of the site ranges from 150 to 280 cm below surface. The upper 100 cm of deposit under the shelter's protected overhang has good to excellent preservation of organic materials (Figure 2). The site is noteworthy for its variety of cultural materials, including a large faunal collection, basketry fragments, cordage, wooden implements, floral remains, flaked stone, ground stone, bone artifacts, and ethno-historic period artifacts.

Vertical stratigraphy and radiocarbon dates[1] from 4S4W, 4S3W, and 4S2W suggest that the 20-100 cm levels are associated with the Dye Creek Complex (ca. A.D. 500 – 1500). The 100-130 levels are a transition between the early Dye Creek and late Kingsley Complex. The 130-150 levels are affiliated with the Kingsley Complex (ca. 500 B.C. – A.D. 500). The top 20 cm has yet to be dated through radiocarbon assay, but Mill Creek Complex (ca. A.D. 1500 – 1845) and Proto-historic occupations are present and often mixed.

Southern Cascade Chronology

Baumhoff (1955; 1957) was the first to offer a two-part cultural-temporal framework for the Southern Cascade Mountains based on excavations at Kingsley Cave (CA-Teh-01) in 1952, and Payne Cave (CA-Teh-193) in 1956 (Baumhoff 1955; 1957). Baumhoff's framework included an early Kingsley Complex and a late, Proto-historic Mill Creek Complex. Johnson (1973; Johnson and Theodoratus 1984) has refined Baumhoff's sequence by postulating a five-phase cultural-temporal framework (Table 1) based on additional excavations, radiocarbon dating, and comparison to other assemblages. Johnson's framework is still used in the region, and continues to be refined with additional research (Johnston 1975; Greenway 1982; Wiant 1981).

Settlement-Subsistence Models

Two settlement-subsistence models (Table 2) have been postulated for the southern Cascade Mountain foothill region of northeastern California (Johnson 1978; 2003; Wiant 1981). These models can be summarized by the following characteristics:

- Settlement largely tied to seasonally available resources
- Include foothill to mountain summer transhumance
- Differ in resource emphases (deer vs. salmon)
- Static – little temporal differentiation

Ethnographic—Foothill Model

Johnson's (1978; 2003) model is referred to here as the Ethnographic-Foothill Model; it is based on ethnographic information (Sapir and Spier 1943) and archaeological research (Johnson 1973; 2003; Johnson and Theodoratus 1984). A summary of the model is described below and included in Table 2.

> *Fall to Winter*. Winter villages, occupied from late September to late May/early June, are located in the foothills below 3000 feet in elevation. In late September to early November, families left winter villages for a few days to stay at small, nearby campsites

Table 1: Cultural temporal periods in the Southern Cascade foothills (after Johnson 1973; 2003; Johnson and Theodoratus 1984; Greenway 1982; Wiant 1981)

Proto-Historic Period (ca. 1845-1911) Ethnographic Yana	**Mill Creek Complex (ca. A.D. 1500 — 1845)**	**Dye Creek Complex (ca. A.D. 500 — 1500)**	**Kingsley Complex (ca. 500 B.C. to A.D. 500)**	**Deadman Complex (ca.1500 B.C. to 500 B.C.)**
Glass trade beads, square iron nail harpoon toggles, glass scrapers, and many other traits. Period of concealment.	Clamshell disk beads, whole spire-lopped *Olivella* shell beads, *Glycymeris* shell beads, magnesite cylinders, and twined basketry; ground stone implements include hopper mortar and flat -ended pestle, slab metate and mano. Projectile points include small serrated forms, small triangular, and types similar to the DSN. Other characteristics include pitted boulder petroglyphs, tightly flexed burials, small single-family structures 3-4 m diameter of brush, deerskin, or bark, and perhaps larger earth-covered ceremonial structures.	Rectangular and barrel *Olivella* shell beads, large circular *Haliotis* ornaments, perforated freshwater clamshell ornaments, and deer ulna bone artifacts. Ground stone implements include the hopper mortar and flat-ended pestle, and slab metate and mano. Projectile points include medium to large sized corner-notched, sid-notched, and serrated forms, and styles similar to the Gunther Barbed series projectile points.	Metate and shaped rectangular hand stone, and hopper mortar and flat-ended pestle. Large stemmed and corner-notched projectile, mostly of basalt, characterize the period. Other traits include scoop *Olivella* shell beads, spatulate bone tools, possible multi-family structures and tight-flexed burials, some with rock cairns.	Large disk-shaped *Haliotis* shell beads, large triangular *Haliotis* pendants, and scoop *Olivella* shell beads. Metate and mano are well represented but no known use of hopper mortars and pestles. Projectile points include large side-notched and stemmed forms. Most flaked stone tools are made from basalt.

Figure 2: Teh-290, closeup of organic layers.

to gather acorns. These acorns were transported to winter villages for processing and storage. Acorns were also gathered from trees near the villages. Deer were also hunted from winter villages in the fall through spring months. Salmon were also taken during the fall. These villages held the greatest aggregation of population among all site types.

Spring. Small family groups dispersed to campsites to collect bulbs, greens, and small seeds (grasses and others) as they ripened. The mano and milling stone are typically found at these small sites. Spring run salmon were also taken during this period.

By the onset of hot, summer weather (June), few seeds remained and bulbs had dried out.

Summer. Because of poor subsistence resources in the foothills during the summer months, populations moved to higher elevations where bulbs, grasses, and nuts were plentiful and migrated deer could be hunted. Other resources, such as Kelly Mountain obsidian and basalt quarries, were also available.

Fall. Populations that had moved to the higher elevations in the summer returned to winter villages in September to gather acorns. Salmon were also taken in the fall. Deer were again hunted after they returned to their winter foothill habitats.

Alternative Model—Acorn and Salmon

Wiant (1981) postulated a slightly different model, one that emphasizes acorn and salmon over all other available resources. Site type and function are similar to many of those in the Ethnographic-Foothill model. Although both models share the primacy of the acorn in the early fall, salmon is the second highest ranked resource priority during the fall and spring, even to the exclusion of other available resources. This priority differentiates the Alternative Model from the Ethnographic-Foothill Model. Wiant (1981) suggests

Season	Ethnographic - Foothill Model[1]	Alternative Model (Acorn/Salmon)[2]
	Primary Foothill Resources: Acorn, Deer, Salmon, Bulbs, Seeds	**Primary Foothill Resources: Acorn, Salmon, Bulbs, Seeds**
Winter	Villages below 3000 feet elevation; occupied from late September to possibly as long as late May/early June. Major winter resources consisted of (stored acorns; dried salmon); deer were hunted.	Villages below 4000 ft. occupied after acorns and salmon procured (stored acorns; dried salmon; dried deer); hunted deer.
Spring	Small family groups dispersed to temporary campsites to collect seeds, bulbs, greens; to hunt deer; fish for salmon (spring run)	Temporary campsites (collected bulbs, seeds); some deer hunting, but salmon fishing top priority in late spring
Summer	Population moved to higher elevations following deer migration and after all vegetal resources exhausted. Higher elevations: hunted deer, and gathered bulbs, seeds	Movement to higher elevations (waterfowl, small mammals, bulbs, seeds); deer secondary resource because they may not have migrated in great numbers to higher elevations in the summer due to limited habitat; instead may have spent summers in northern Sacramento Valley riparian forests, returning to winter range in the foothills in fall.
Fall	Temporary campsites beginning in September for acorn gathering; pine nuts; fall run of salmon; hunted deer; all resources moved to winter village	Acorn gathering campsites in September; salmon fishing top priority after acorn; deer; resources moved to winter village

Table 2: Settlement-subsistence models for the Southern Cascade foothills.
[1] After Johnson 1978; 2003; Sapir and Spier 1943.
[2] After Wiant (1981).

that the following factors support his salmon-priority argument: the ability to store acorns for up to 3 years; less reliance on deer since their numbers were much smaller than historical populations and fewer animals migrated to higher elevations during the summer because of habitat limitations (~10% of historic period numbers); and the greater importance of salmon in the diet given their quantities and available caloric value. Wiant (1981) suggests that waterfowl, fish, bulbs and seeds were the principal summer resources collected at higher elevations, with deer and small mammals of secondary importance.

Seasonality Data

Seasonality data were obtained from macro-botanical remains and dental increment readings from specimens recovered from unit 4S4W.

Dating 4S4W Deposits

Cultural deposits in 4S4W can be dated using radiocarbon assays obtained from three adjacent units whose stratigraphy is roughly comparable based on trench profiles. The following radiocarbon dates from 4S4W, 4S3W, and 4S2W were used for temporal control: (1) a conventional radiocarbon date of 740 ± 50 B.P (calibrated date of A.D. 1210 to 1305 at 2 sigma) from the 20-30 cm level in unit 4S2W (Dye Creek Complex); (2) a conventional radiocarbon date of 1380 ± 135 B.P (calibrated date of A.D. 410-900 at 2 sigma) (Late Kingsley to Dye Creek) from the 50-60 cm level of 4S4W; (3) a conventional radiocarbon date of 1425 ± 90 B.P. (calibrated date of A.D. 430-780 at 2 sigma) from 110-120 cm level in 4S3W (late Kingsley – early Dye Creek complexes); and (4) a conventional radiocarbon date of 1650 ± 80 B.P. (calibrated date of A.D. 230-600 at 2 sigma) from the 120-130 level of 4S4W (late Kingsley to early Dye Creek). These dates suggest that the 20-100 cm levels are affiliated with the Dye Creek Complex (ca. A.D. 500-1500); levels 100-130 equate to the transition between the Dye Creek and Kingsley complexes; and levels 130-150 cm appear to date to the Kingsley Complex (ca. 500 B.C.—A.D. 500).

Macro-Botanical Sample

Only larger nut/nutshells, bulb filaments, and berry pits, recovered using 1/8-inch mesh from unit 4S4W, were used in this study. Most of the specimens had already been sorted and catalogued, and their weights were used as recorded. Some catalogued bags contained mixed specimens, and these were sorted into respective categories, identified when possible, and weighed.

Organic preservation to one-meter depth at CA-Teh-290 is good to excellent. Specimens below one meter, unless carbonized, are considered to be from disturbed contexts. Reliance on only larger macro-botanical specimens, however, poses some constraints on inferences about seasonality and subsistence that need to be acknowledged. Small seeds from annual grasses and herbs, particularly those dispersed in late spring through summer months, are not recovered with 1/8-inch mesh. It is therefore recognized that inferences about spring or summer occupation, or dietary composition, based on this limited sample should be used cautiously.

Another methodological issue involves differentiating between cultural and non-cultural plant remains where rodent populations have been active in cultural deposits. Given the nature of organic preservation in the rockshelter's upper levels, some traditional methods used to differentiate between cultural and non-cultural deposits would be less effective (e.g., burned vs. non-burned). Virtually all identified nutshells, berry pits, and bulb(s) filaments have charred and un-charred specimens in the sample. Attempts to limit the effect of possible rodent contamination in the sample were made, and obvious rodent associated caches, gnawed specimens, and material from disturbed contexts such as nests or tunnels were excluded where known. But since this study is focusing on seasonality rather than diet, rodent effects on "cultural deposits" may be of lesser importance. Although the majority of the macro-botanical sample is considered to be cultural, it is acknowledged that rodents have affected the distribution of specimens to an unknown degree throughout the deposit. The nature of these natural effects is currently being examined and will be described in a later paper.

Macro-botanical Data

Macro-botanical nut/berry/bulb identifications are listed in Table 3. Some attachment disks are included in the acorn nut/nutshell category. In contrast, pinecone fragments were sorted and catalogued separately. All macro-botanical remains are from deposits dated within the past 1500 years.

Table 3: Plant remains from Unit 4S4W, CA-Teh-290 (weight in grams).

Level	Acorn Nutshells	Pine Nutshells	Buckeye Nutshell Hulls	Manzanita Pit	*Brodiaea* Filaments	Bay Nutshell	Juniper Berry Pit	*Marah* sp.	Grape Pit	Unknown	Pine Cone Fragments	Modern	Total
0-10	129.1	47.2	5.1	1.3	2.0	-	-	1.8	-	0.7	11.8	2.9	201.9
10-20	133.8	39.3	14.1	1.3	0.7	5.7	-	-	-	0.1	10.7	0.1	205.8
20-30	472.8	136.0	70.2	28.7	4.7	9.3	-	0.4	0.1	1.6	23.9	0.8	748.5
30-40	359.0	103.2	66.0	24.0	-	0.2	2.0	0.1	0.6	1.9	19.1	-	576.1
40-50	302.5	214.6	48.5	7.5	7.3	1.5	-	-	0.3	8.5	-	16.1	606.8
50-60	12.7	60.6	3.6	1.9	3.8	0.1	-	-	0.1	-	2.6	-	85.4
60-70	11.3	55.2	1.2	1.3	0.6	0.3	0.4	0.2	0.1	-	-	0.7	71.3
70-80	5.8	17.5	1.4	-	0.8	1.3	0.4	0.5	-	-	1.7	-	29.4
80-90	0.1	19.5	0.1	-	-	0.2	-	-	-	-	-	-	19.9
90-100	0.7	4.4	-	-	0.1	0.1	0.2	-	-	0.1	-	-	5.6
100-110	-	-	-	-	-	-	-	-	-	-	-	-	0.0
110-120	-	17.2	-	-	-	-	-	-	-	-	-	-	17.2
120-130	-	1.3	-	-	-	-	-	-	-	0.1	-	-	1.4
130-140	-	-	-	-	-	-	-	-	0.1	-	-	-	0.1
140-150	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1427.8	716.0	210.2	66.0	20.0	18.7	3.0	3.0	1.3	13.0	69.8	20.6	2569.4

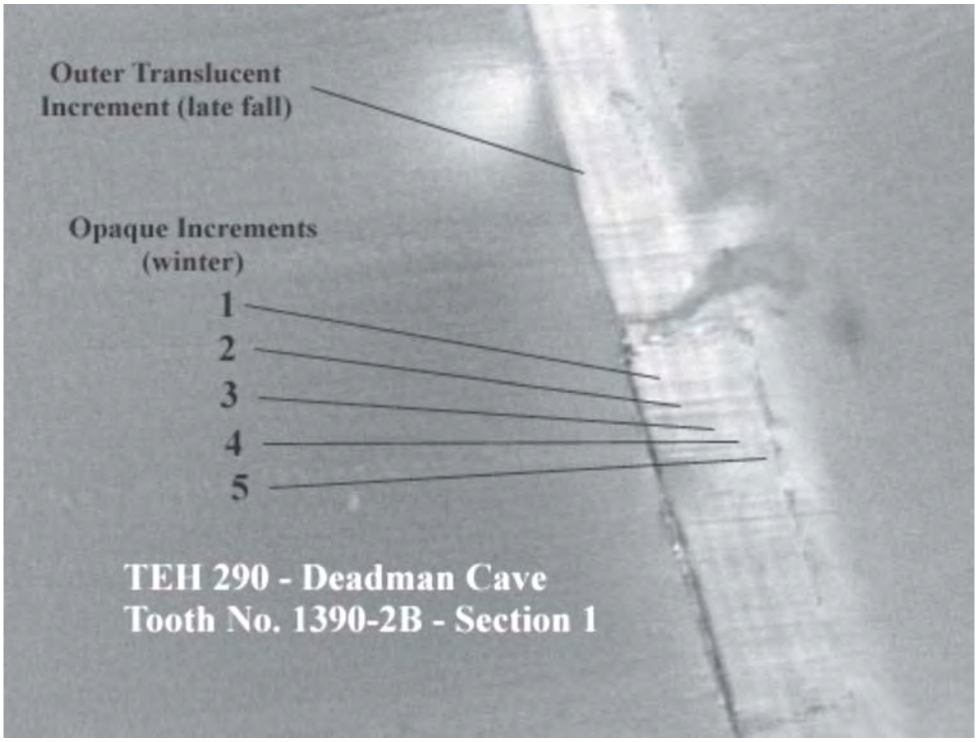

Figure 3: Thin-section deer tooth showing cementum bands.

Table 4: Unit 4S4W dental increment data indicating season of death.

Level	Sept-Nov	May-June	May-Aug	Spring-Fall	Indeterminate	Total
0-10	1	1	-	-	-	2
10-20	-	1	-	-	-	1
20-30	-	1	-	-	-	1
30-40	-	-	-	-	-	-
40-50	-	1	-	-	-	1
50-60	-	2	1	-	-	3
60-70	-	-	-	-	-	-
70-80	-	2	-	-	-	2
80-90	-	-	-	-	-	-
90-100	-	1	-	-	-	1
100-110	3	-	-	-	-	3
110-120	-	-	-	-	-	-
120-130	1	-	-	-	-	1
130-140	-	-	-	-	-	-
140-150	1	-	-	-	-	1
Total	6	9	1	0	0	16

The relative frequency of identified specimens from unit 4S4W is: acorn nutshell/nut (1428 g.) (*Quercus sp.),* pine nutshell/nut (716 g.) (*Pinus sp.*), buckeye nutshell (210 g.) (*Aesculus californica*), manzanita berry pit (66 g.) (*Arctostaphylos sp.), Brodiaea sp*. bulb filaments (20 g.), bay nutshell (18 g.) (*Umbellularia californica*), juniper berry pits (3.0 g.) (*Juniperus sp.*), wild cucumber nutshell (3.0 g.) (*Marah sp.*), and wild grape pits (1.3 g.) (*Vitis californica*). All identified species are currently located near the rockshelter, either on the surrounding canyon slopes or within the riparian corridor along Mill Creek.

Dental Increment Study

Dental increment readings from deer teeth (*Odocoileus hemionus*) recovered in unit 4S4W also provide seasonality data. Dental increment analysis (Lieberman 1994; O'Brien, personal communication 2002) examines the alternating translucent and opaque cementum bands observed on a thin-section from mammal teeth to indicate the approximate age and probable season at the time of the animal's death (Figure 3). The type and relative thickness of the outer increment, translucent for fall and opaque for winter, fixes the animal's age and season of death; interpretations of relative thickness are based on known samples (O'Brien, personal communication 2002). The tooth sample from unit 4S4W is believed to be from different animals. Christopher J. O'Brien performed dental increment analysis.

Dental increment data from 4S4W (Table 4) seem to suggest that there are at least two temporally distinctive deer procurement patterns represented at CA-Teh-290: May-June in levels 20-100 cm (Dye Creek Complex) and September-November in levels 100-150 cm (late Kingsley to early Dye Creek complexes). Radiocarbon dates support this diachronic pattern. Most deer were killed in the late spring - early summer months (May-June) during the Dye Creek Complex; if the one overlapping May-Aug reading were also included, 63% are from the late spring – early summer months. The remaining 37% of increment readings are from the September-November months, and most of these are from circa early Dye Creek – late Kingsley transition or Kingsley Complex levels.

These diachronic seasonal patterns also roughly correlate with different climatic conditions. The May – June pattern during Dye Creek Complex times generally correlates with the warmer-dryer climatic interval circa 1500 – 600 years B.P. (Moratto 1981; Moratto, King, and Woolfenden 1978). The earlier September – November kill pattern, associated with the early Dye to late Kingsley complexes, correlates with a cooler – wetter period prior to 1500 years B.P (Moratto 1981; Moratto, King, and Woolfenden 1978).

Correlations between different kill seasons, cultural-temporal periods, and broader climatic conditions may help explain site function. Rockshelter accessibility might be affected during some climatic conditions: warmer – dryer conditions would not affect accessibility in late spring-early summer months, but cooler – moist conditions could affect accessibility in these same months if flows in Mill Creek were higher than present-day. Under this scenario, deer were available in the late spring – early summer months prior to their migration to summer habitats when CA-Teh-290 was also accessible during the warmer – dryer Dye Creek Complex. During the earlier Kingsley Complex, CA-Teh-290 may not have been accessible even if deer were available during the late spring—early summer months, but the rockshelter was accessible during the Sept-November months when animals were returning from summer habitats. These climatic conditions, however, also likely affected deer populations in some manner; if not their relative numbers, then probably their migration patterns. So although provocative, more work is needed before these possible correlations can be better explained.

IMPLICATIONS FOR SETTLEMENT-SUBSISTENCE MODELS IN THE MILL CREEK WATERSHED, SOUTHERN CASCADE MOUNTAIN FOOTHILLS

Seasonality data from this study support many of the site function and resource priorities shared in both models. Some data, however, support the Ethnographic – Foothill model over the Alternative Acorn-Salmon model where critical site function and resource priorities conflict.

Seasonal Indicators, Site Function, and Settlement-Subsistence Models

Seasonal indicators from Dead Man's Cave, and their corresponding implications regarding site function and hypothesized settlement-subsistence models, are summarized below by season.

Spring

Macro-botanical: *Brodiaea* sp. bulbs. Temporary campsites were used to facilitate the collection of bulbs. Both models support this type of activity.

Dental Increment: May — June use (Dye Creek Complex (ca. A.D. 500 – 1500), Mill Creek Complex (ca. A.D. 1500 -1845), and Proto-historic). Use of rockshelter primarily for hunting deer during the May-June months does not support the Alternative Model's salmon fishing priority over all other resources in late spring. Such use and economic focus does support the Ethnographic – Foothill model, depending on the timing of people moving to higher elevations.

Summer

Macro-botanical: wild grape, manzanita berries, and wild cucumber (*Marah* sp.). These are problematic indicators for summer occupation because better summer indicators were not sampled (i.e., soil flotation for small annual seeds) and the identified plants could have been collected in late summer when populations returned to gather acorns. Neither model has residency during summer months. Instead, these data may signal a late summer return from higher elevations in late summer, supporting both models.

Dental Increment: one reading for May – August. This reading is problematic because it overlaps with those for preceding late spring – early summer period.

Fall

Macro-botanical: acorn, pine nut, buckeye nut, bay nut, and juniper berries. Use of CA-Teh-290 as a temporary campsite for the gathering of acorns and other nuts and berries primarily supports the Ethnographic—Foothill Model. Acorn gathering also fits the Alternative Acorn—Salmon Model, but the streamside location would appear to require fishing over the gathering of the other lesser-ranked resources in the fall.

Dental Increment: September - November (late Kingsley to early Dye complexes (ca. A.D. 200 – 800); and possibly Mill Creek Complex (ca. A.D. 1500 – 1845) and/or Proto-historic. The procurement of deer in September – November best fits the Ethnographic – Foothill model and seems to argue against the priority of salmon fishing during late Kingsley, and early Dye periods, and possibly Mill Creek and Proto-historic periods.

Winter

There is no evidence that CA-Teh-290 was occupied during the winter. Lack of use during the winter supports both models.

Summary of Findings

Macro-botanical data from CA-Teh-290 support the hypothesized economic focus and site function during spring and fall months shared by both models: temporary campsites for gathering bulbs in the spring and acorns in the fall. The array of fall plant remains other than acorn probably supports the Ethnographic – Foothill model best, given the site's location on Mill Creek.

The late spring – early summer months (May – June) dental increment data do not support the Alternative Model's predicted late spring (May) salmon priority/temporary fishing camp orientation during the Dye Creek Complex (ca. A.D. 500 – 1500), and also during the subsequent Mill Creek Complex (ca. A.D. 1500 – 1845). Nor is the predominance of fishing over deer hunting in the fall supported by September – November dental increment readings during the late Kingsley Complex (pre-A.D. 500). That deer procurement is clearly a priority over fishing at CA-Teh-290 is mirrored in both the faunal collection and artifact assemblage, which exhibit little evidence that fishing[2] was a priority despite the rockshelter's proximity to Mill Creek.

. . . .

Acknowledgements

Erin Dwyer graciously helped with the seed analysis and shared her thoughts about the collection. Christopher J. O'Brien performed the dental increment analysis portion of this study, and also shared his ideas and other research in the region.

Endnotes

[1] The trench profile and radiocarbon dates from 4S2W, 4S3W, and 4S4W suggest excavated levels have stratigraphic comparability between these adjacent units.

[2] There is some evidence that fishing occurred even though there is no evidence in the faunal assemblage. A few bi-pointed, bone, fish gorges and one Proto-historic harpoon toggle (surface) were recovered at the site.

References Cited

Baumhoff, Martin A.
1955 Excavation of Site Teh-1 (Kingsley Cave). *University of California Archaeological Survey Reports 30*:40-73. Berkeley.

1956 An Introduction to Yana Archaeology. *University of California Archaeological Survey Reports 40*:64. Berkeley.

Greenway, Gregory
1982 Projectile Point Variability at Dead Man's Cave (CA-The-290) in the Southern Cascade Mountains of Northeastern California. M.A. Thesis, Department of Anthropology, Sacramento.

Johnson, Jerald J.
1973 Archaeological Investigations in Northeastern California (1939 to 1974). Unpublished manuscript in possession of author.

1978 Yana. In *Handbook of North American Indians, Vol. 8, California*. Robert F. Heizer (editor). Smithsonian Institution, Washington, D.C. pp. 361-369

2003 The Yahi and Southern Yana: An Example of Cultural Conservatism, Genetic Isolation, and An Impoverished Resource Base. Proceedings of the Society for California Archaeology, Volume 16:95-102

Johnson, Jerald J. and Dorothea J. Theodoratus
1983 Cottonwood Creek Project, Shasta and Tehama Counties, California Dutch Gulch Lake, Intensive Cultural Resources Survey. Institute of Archaeology and Cultural Studies, Report No. 1, California State University, Sacramento.

Johnston, James D.
1975 Carbonates: A Chronological Indicator. M.A. Thesis, Department of Anthropology. California State University, Sacramento.

Lieberman, Daniel E.
1994 The Biological Basis for Seasonal Increments in Dental Cementum and Their Application to Archaeological Research. *Journal of Archaeological Science 21*:525-539

Moratto, Michael
1984 *California Archaeology*. Academic Press. New York

Moratto, Michael, Thomas King, and Wallace Woolfenden
1978 Archaeology and California's Climate. *The Journal of California Anthropology 5*(2):147-161

Sapir, Edward and Leslie Spier
1943 Notes on the Culture of the Yana. *University of California Anthropological Records 3*(3)239-298. Berkeley.

Wiant, Wayne C.
1981 Southern Yana Subsistence and Settlement: An Ecological Model. M.A. Thesis, Department of Anthropology. California State University, Sacramento.