WORKADAY WINDMILLER: ANOTHER LOOK AT EARLY HORIZON LIFEWAYS IN CENTRAL CALIFORNIA

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Due to the suite of mortuary-related traits that defines the Windmiller culture, most previous archaeological work has emphasized how Windmiller people died rather than how they lived. Other, more mundane aspects of Windmiller lifeways, such as lithic technology and subsistence, have remained largely unknown due to the early excavation dates of most Windmiller components. Recent excavations at CA-CCO-548 add to our understanding of these aspects of Windmiller lifeways and may shed some light on antecedent cultures.

Despite the fact that Windmiller as an archaeological culture is defined largely by burial associations (Heizer 1949; Lillard et al. 1939; Ragir 1972), this paper will concentrate on other aspects of Windmiller lifeways. The new data presented here come from the Marsh Creek site (CCO-548), where California State Parks, UC Davis, Far Western Anthropological Research Group, Inc., and others have recently excavated (Figure 1). A significant aspect of this investigation is that, in contrast to most previous Windmiller excavations, it has concentrated largely on midden rather than burial-related material. This paper represents a preliminary presentation of currently available data (obsidian sourcing, faunal remains, and paleobotanical remains). Where possible, we compare findings from Marsh Creek to data from the nearby Los Vaqueros Reservoir area (Meyer and Rosenthal 1997). These two project areas complement each other well because Los Vaqueros has components dating from ca. 9000 B.P. to the late prehistoric, but lacks Windmiller-age (ca. 4000-2000 B.P.) deposits.

Windmiller was just one of several distinctive archaeological cultures (Figure 2) that came after a much more widespread and homogeneous Millingstone or Lower Archaic culture found throughout California from ca. 10,000 B.P. until ca. 5000-3000 B.P. (and even later in southern California). This era can be thought of as the end of generalized, and often highly mobile, Early Holocene lifeways and the beginning of more specialized and intensive California hunter-gatherer-fishers known from ethnographic times. In a lot of ways, this is the point in California prehistory when the plot thickens.

Although the label "Early Horizon" is an artifact of the often reworked and sometimes discredited Central California Taxonomic System (Beardsley 1954; Moratto 1984), it is useful for describing the

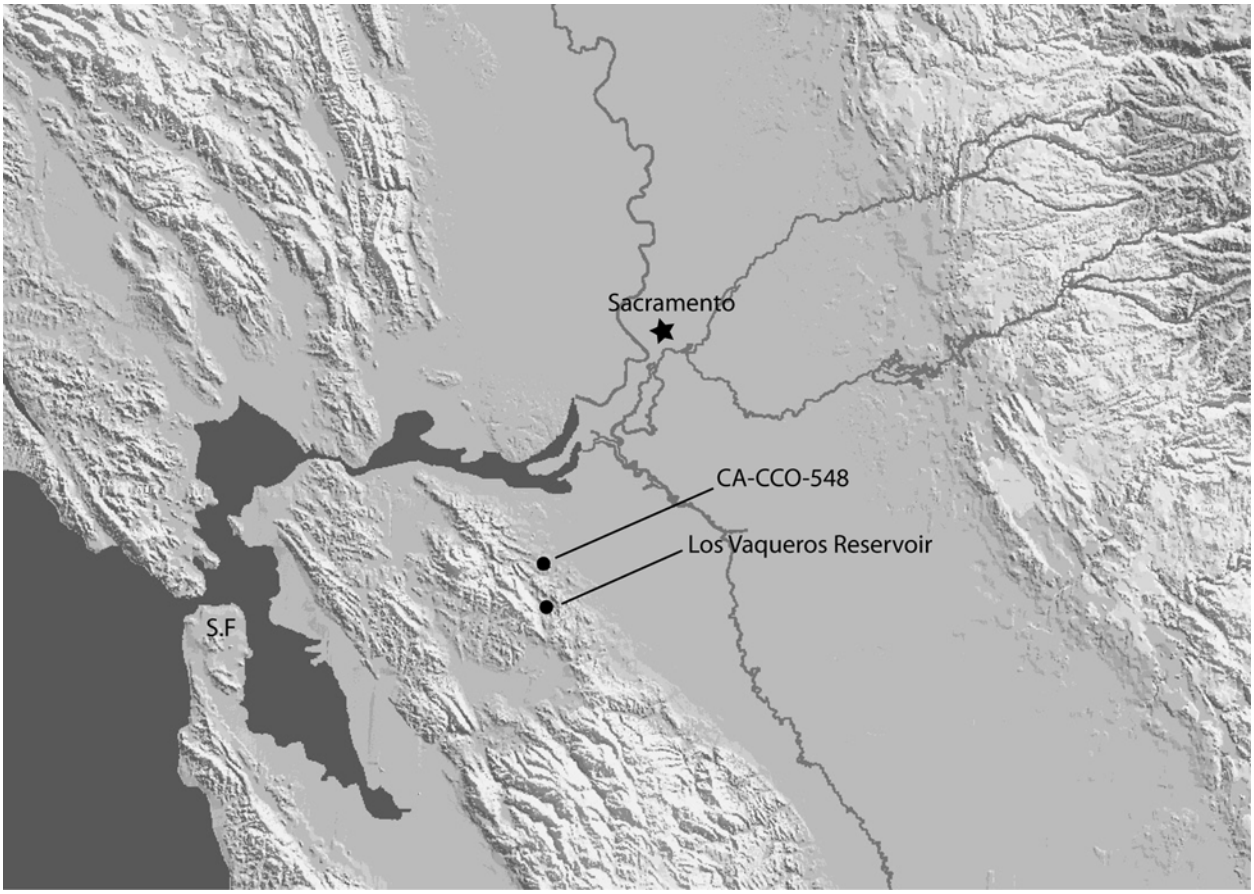

Figure 1. Location of CCO-548 and Los Vaqueros Reservoir.

cultural changes that occurred in specific areas at around 4000 B.P. While we now know there is nothing particularly "early" about the Early Horizon when compared to Lower Archaic and paleoindian occupations, it does seem to represent an early example of specialization and economic intensification that didn't reach the rest of California until after ca. 2500 B.P.

When compared to the Early Holocene archaeological record of California, Early Horizon cultures were different in that: 1) they included regionally distinctive cultures distinguished by burial practices, ornaments, and projectile point styles; 2) they exhibited more extensive long-distance trade of exotic materials such as beads and obsidian; and 3) they had adaptations that were less mobile and more specialized than previous cultures, probably representing the first intensive acorn economies in the state. Some of the preliminary data from CCO-548 underscore these patterns.

The portion of the CCO-548 deposit excavated by UC Davis and California State Parks has two temporal components separated by 50 cm of more-or-less sterile sediment (Figure 3). The upper (Windmiller-age) component, from 0 to 120 cm below the surface (cmbs), dates from about 4000 to 3000 cal B.P. The lower component, from 190 to 280 cmbs, dates to about 6500 cal B.P. The Windmiller component features a dense, dark brown midden with large amounts of faunal remains, charcoal, lithics, and fire-cracked rock throughout, including at least two burned rock features. The lower component deposit is sparser but also includes faunal bone, charcoal, lithics, and fire-cracked rock. The excavation sample from the upper component was about 10 m^3, while the lower component sample was about 6 m^3. A variety of screening methods were employed, including 1/4-in. and 1/8-in. dry and wet screening, and 1/16-in. wet screening with flotation of column samples.

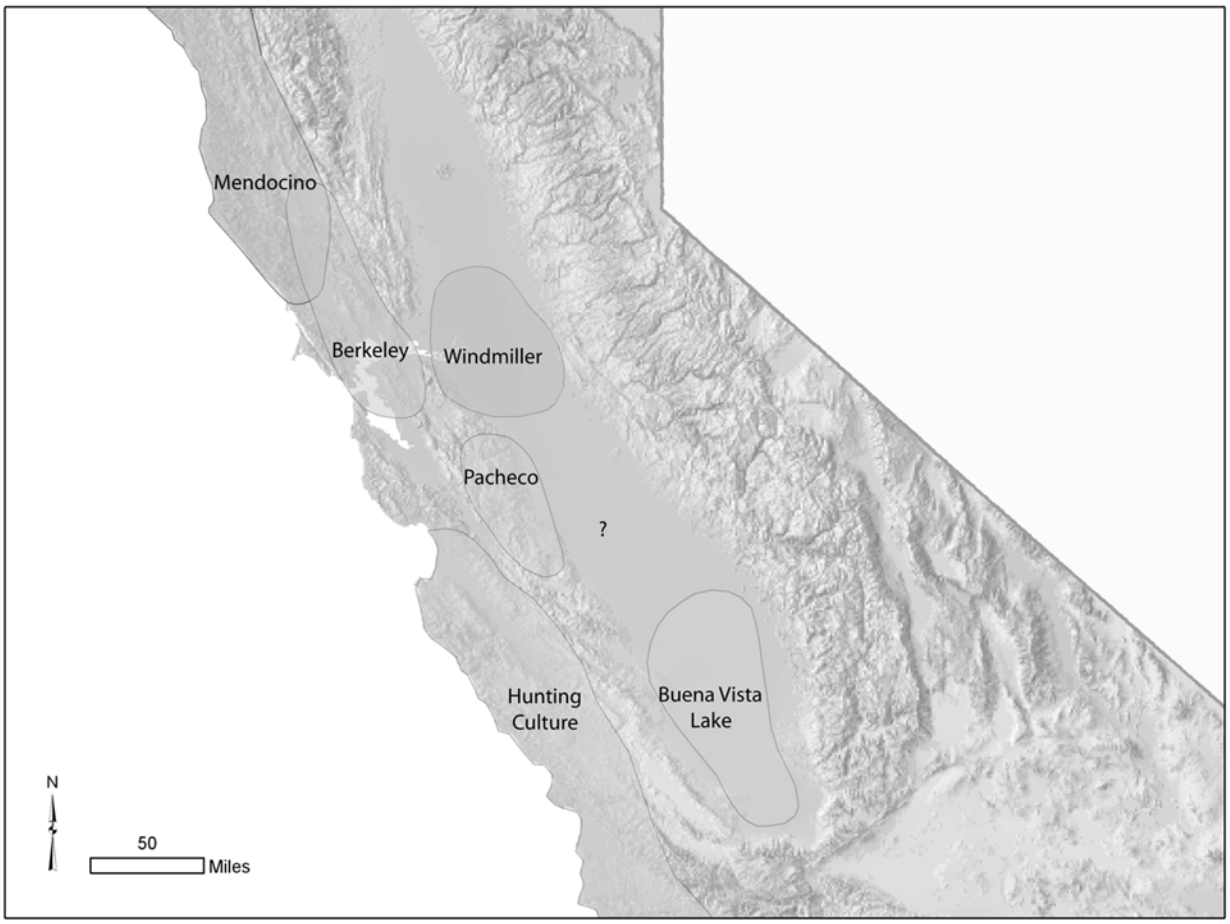

Figure 2. Distinctive regional archaeological cultures, ca. 4000 B.P.

Preliminary obsidian sourcing data include 125 flakes and tools sourced using the LA-ICP-MS method (see Speakman and Neff 2005 for an in-depth discussion and examples of this technique). North Coast Ranges sources represented include Napa, Annadel, and Borax Lake, while eastern Sierran sources include Bodie Hills, Casa Diablo, and Mt. Hicks. As a measure of long-distance trade, the percent of eastern Sierran obsidian was plotted for the two Marsh Creek components as well as for components from Los Vaqueros Reservoir (Figure 4).

Bouey and Basgall (1984) previously examined obsidian use in the Central Valley in relation to production at Napa and the eastern Sierra. Their analysis showed that Windmiller-age sites in the valley had the most eastern obsidian, and then, as time went on, eastern obsidian dropped off and Napa became dominant. By adding the earlier components at CCO-548 and Los Vaqueros, we can now fill in the early end of the pattern and show that Windmiller was in fact the peak in trade in eastern obsidian, with both earlier and later intervals characterized by more local procurement.

Subsistence data from CCO-548 are particularly important because they represent the only Windmiller component excavated using modern recovery methods (e.g., 1/8-in. wet screening and flotation analysis). Faunal analysis is only partially complete at this point, and a large portion of the 1/8-in. screened fraction and the fish bone is still being analyzed, but a small portion of the terrestrial vertebrate fauna can be presented (Table 1). Judging by the current summary of identified taxa, ground squirrel (*Spermophilus beecheyi*) figures prominently in both the upper and lower component from CCO-548. While some of this bone might be intrusive, between 8 and 15 percent of the ground squirrel bone is

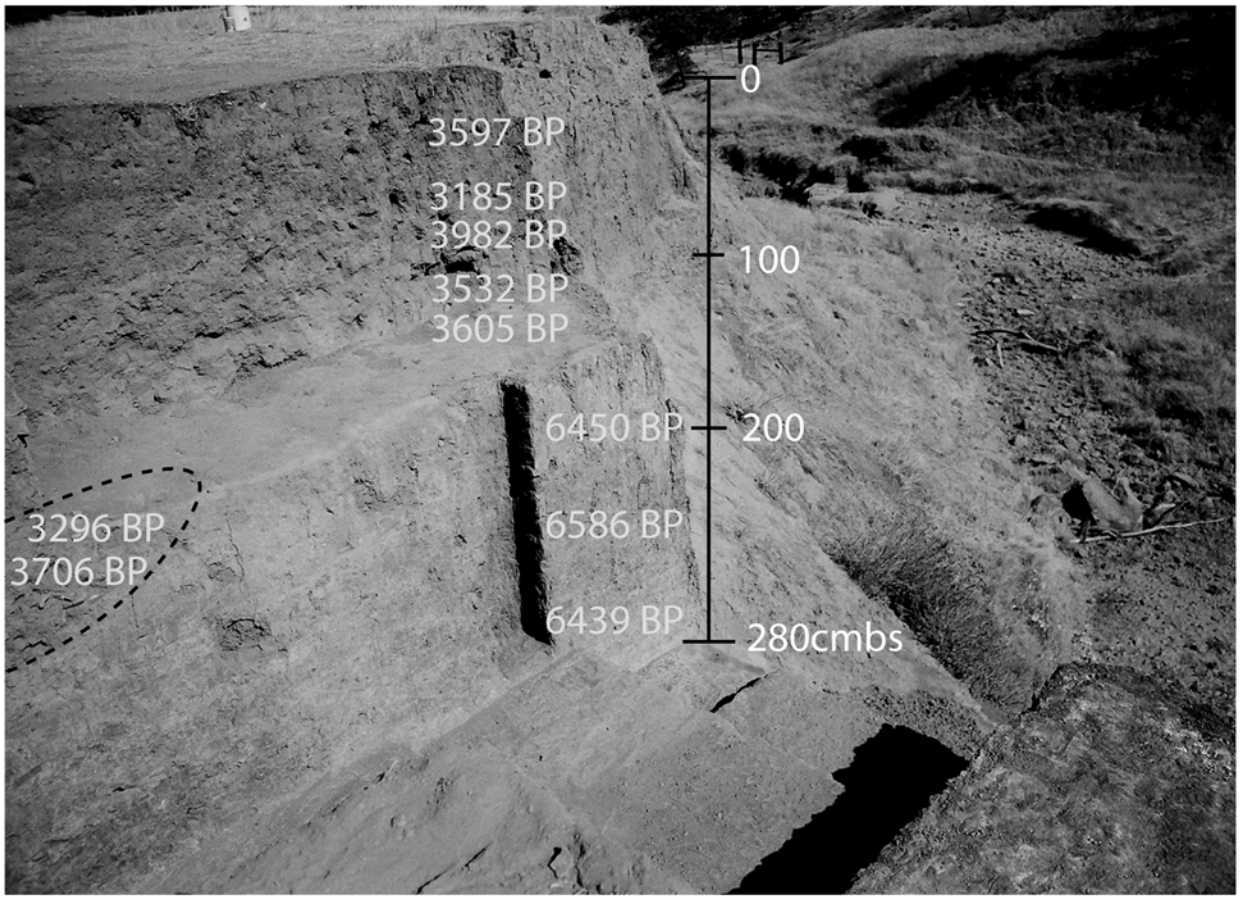

Figure 3. Stratigraphic profile from CCO-548 with radiocarbon dates superimposed.

burned. Furthermore, ethnographic information suggests California groups had no qualms about eating ground squirrel and other small mammals (e.g., see Garth 1953; Gayton 1948; Kroeber 1925).

The paleobotanical data from CCO-548 are currently more complete and provide an interesting comparison with similar data from Los Vaqueros Reservoir. Wohlgemuth (1997) used the proportion of acorns among all large seeds as an index of acorn intensification. If this index is plotted for the CCO-548 components as well as those from Los Vaqueros, the Windmiller component from CCO-548 stands out as particularly rich in acorn remains (Figure 5). This supports the hypothesis that Early Horizon adaptations may represent the first acorn-intensive economies in California (cf. Mostin Phase; White et al. 2002; Wohlgemuth 2004).

The small seeds provide another interesting pattern likely related to dietary specialization through time. When richness (number of taxa) and evenness[1] (proportional representation of taxa) are plotted through time (Figure 6), it is clear that while the number of small seed types exploited increased through time, the take was increasingly dominated by a small number of taxa. In other words, the trend is one of increasing diet breadth and increasing dietary specialization through time. The position of the Windmiller component from CCO-548 in this progression puts it right at the transition from less specialized to more specialized small seed procurement.

Overall, the Windmiller component at CCO-548 looks like earlier generalized adaptations of the Early Holocene in some aspects, and like later, more specialized economies of the Late Holocene in others. Looking beyond the unique mortuary complex that defines the Windmiller culture, we find a dynamic engine of precocious economic intensification. In many ways, Windmiller and other

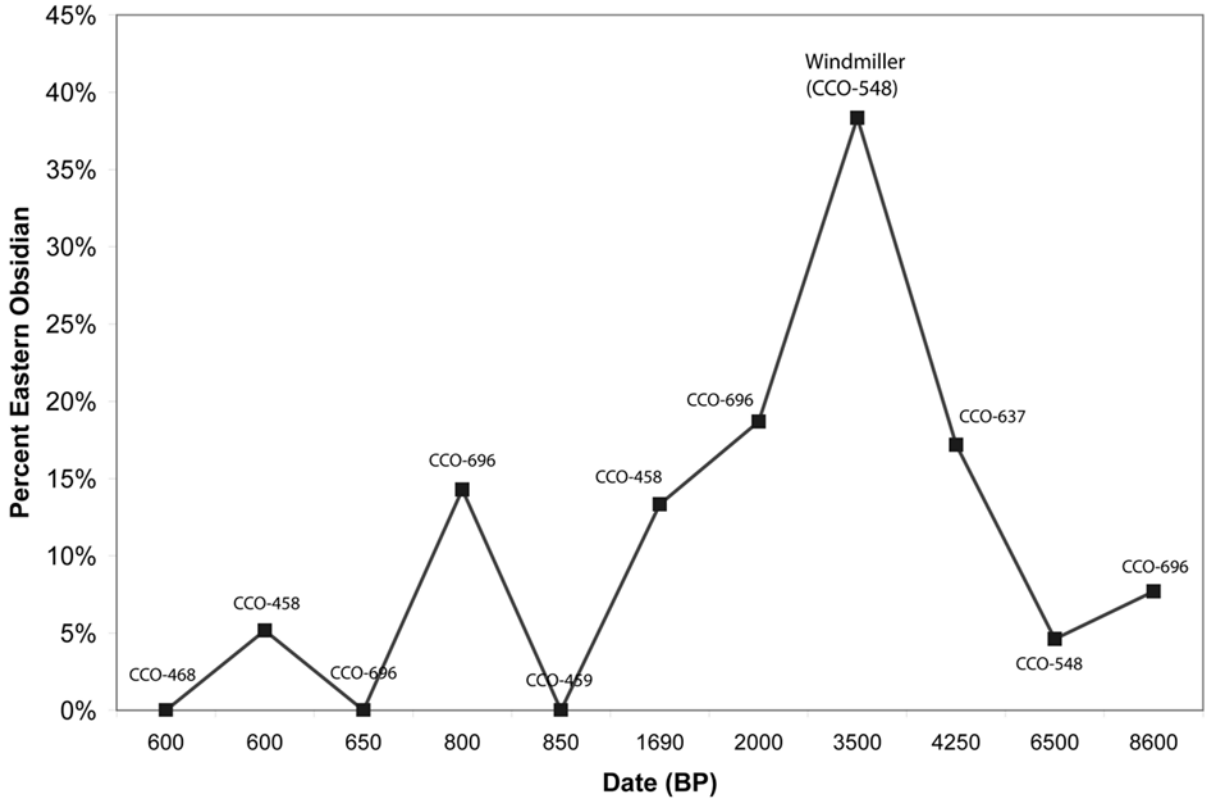

Figure 4: Percent of eastern Sierran obsidian in regional assemblages.

Table 1: Preliminary Faunal Identifications from CCO-548.

COMPONENT	GROUP	NISP	PERCENT
Windmiller	squirrel	216	72
Windmiller	canid	37	12
Windmiller	lagomorph	35	12
Windmiller	artiodactyl	11	4
Windmiller	gopher	2	1
Lower Archaic	squirrel	114	47
Lower Archaic	gopher	82	34
Lower Archaic	lagomorph	26	11
Lower Archaic	artiodactyl	9	4
Lower Archaic	vole	6	2
Lower Archaic	canid	5	2

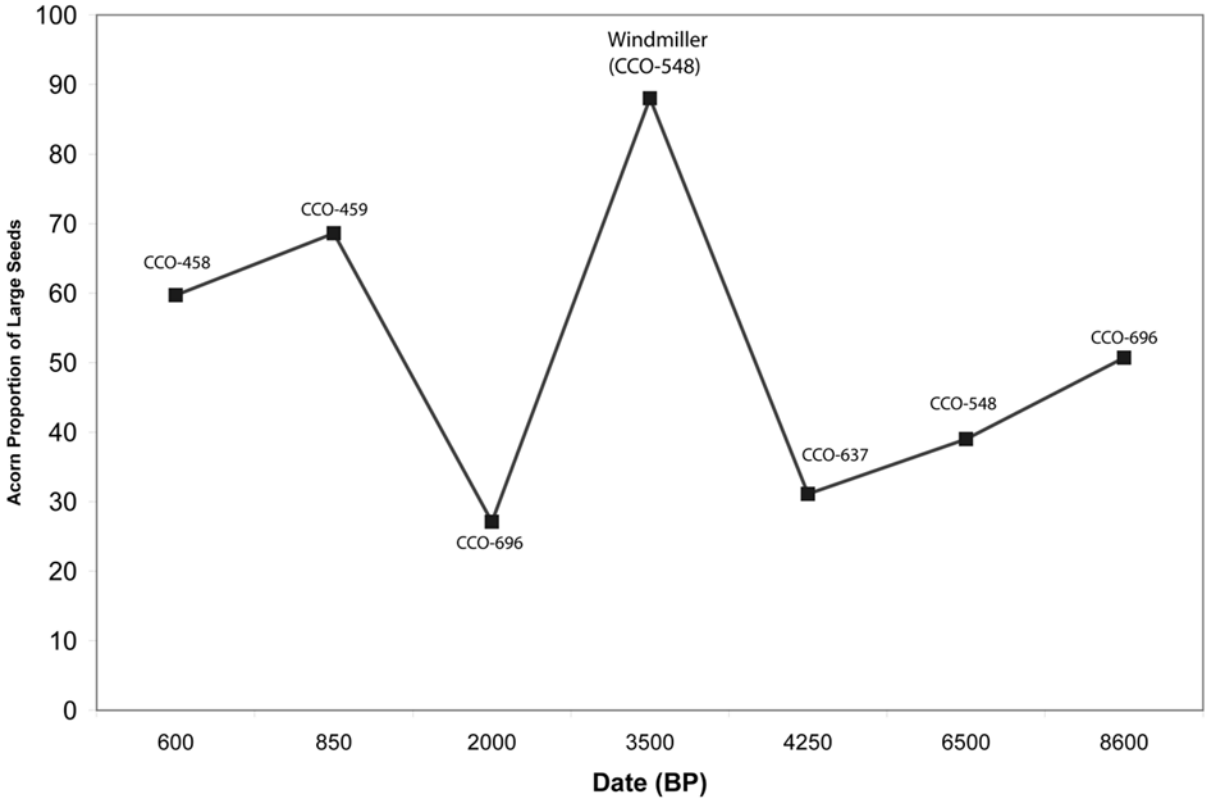

Figure 5: Acorn proportion of large seeds in regional assemblages.

Early Horizon cultures can be seen as the jumping-off point for later developments in California prehistory, and as such, they have a wide significance that extends beyond the central California region.

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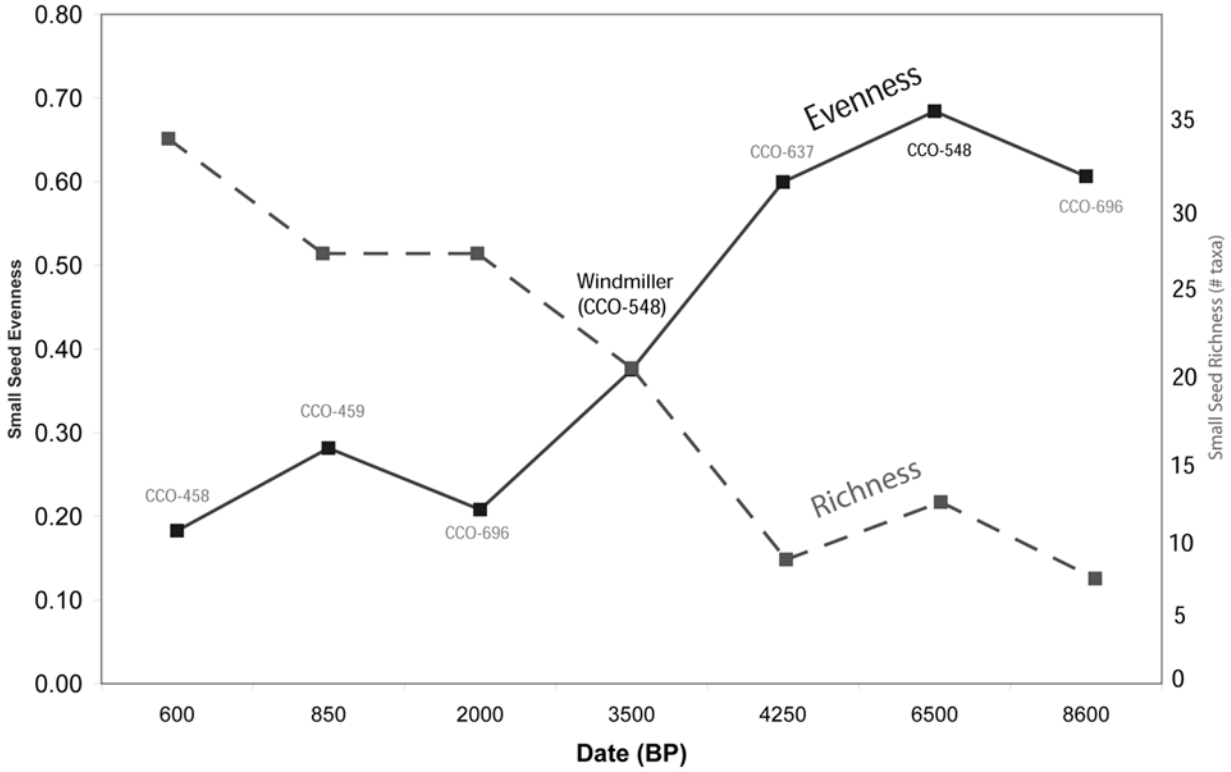

Figure 6: Small seed richness and evenness in regional assemblages.

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NOTE

1. Simpson's evenness: 1/D is calculated as $1/\Sigma pi^2$ where p = proportional abundance of taxon i in the assemblage (Lyman 2008:196).