

AN EARLY HOLOCENE/LATE PLEISTOCENE ARCHAEOLOGICAL SITE ON THE OREGON COAST? COMMENTS ON HALL ET AL. (2005)

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In the journal *Radiocarbon*, Hall et al. (2005:383) claim that 35-CS-9, located in Bandon Ocean Wayside State Park on the southern Oregon coast, is one of the few Oregon coast sites “that includes sediments and artifacts dating to the early Holocene and possibly to the late Pleistocene.” Their claim for an early Holocene or late Pleistocene human occupation rests on a single radiocarbon date of $11,000 \pm 140$ BP (12,710–12,680 cal BP) taken from charcoal found at least 20 cm below the nearest artifact. Although Hall et al. compile various kinds of geoarchaeological evidence to support this claim, their case is not convincing. While we applaud aspects of their analyses, the inferences they have drawn are not substantiated by the evidence they present. We agree that 35-CS-9 is a significant site but believe claims for the antiquity of its human use have been exaggerated.

THE EVIDENCE

Site 35-CS-9 was first recorded by Lloyd Collins (1953), and the site was revisited by a series of archaeologists during state-sponsored surveys of Oregon coast state parks: Ross (1976), Minor (1986), Erlandson and Moss (1993), and Tasa et al. (2004). As acknowledged by Hall et al. (2005: 385), it was Jon Erlandson who recommended to Roberta Hall that 35-CS-9 was a promising site to investigate for early occupations. In 2002, Hall and her team excavated two 1 × 2-m test pits at the site. Unit A was excavated to a depth of at least 245 cm, while the depth of Unit B has not been reported. Both pits were excavated in 10-cm-thick arbitrary levels. Below we describe a number of problems with the evidence used to support the claim for an early Holocene or even late Pleistocene occupation at 35-CS-9.

1. Only a single ¹⁴C date falls within the late Pleistocene time period. The material from which this date was obtained is charcoal, but is not further described by Hall et al. Since the conventional radiometric dating technique was reported (not accelerator mass spectrometry, AMS), we assume the date was obtained from a sample that included either a relatively large chunk of charcoal or scattered charcoal obtained from level 21 (235–245 cm below the surface). Having familiarity with Oregon coast sites, we know that buried charcoal is not uncommon in the exposed sediments along Oregon’s shoreline. The charcoal in and of itself does not comprise cultural evidence; it could have resulted from natural fires (Minor 1995; Moss and Erlandson 1998). The sand-rich sediment in which the charcoal was found indicates a period of aeolian deposition, leaving open the possibility that charcoal could have blown in from elsewhere in the larger region.

2. Hall et al. fail to consider Schiffer’s (1986) “old wood problem.” In the case of charcoal, what a ¹⁴C date measures is the age of a plant’s growth, not its use by humans. This is a significant concern in the Pacific Northwest where trees can live for many centuries and driftwood was often gathered by people for use in fires. Even if the charcoal were of cultural origin, it may have been derived from a long-lived tree or driftwood. There is no indication that the charcoal from this sample (or any others from 35-CS-9) was identified by a paleoethnobotanist as to its species or plant part prior to its submission for dating, so we have no more information on its origin. Archaeologists concerned

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about the old wood effect and precise chronologies now typically use only short-lived samples for ^{14}C dating (see Erlandson et al. 1996).

3. Hall et al. (2005:387) admit that this old date is not associated with any cultural material. They unambiguously state, “[t]he oldest ^{14}C charcoal sample lies about 20 cm below the deepest artifact” and then use a deposition rate calculated from their ^{14}C ages to estimate that the artifact dates to 9720 BP. This is problematic because the deposition rate is based on relatively few ^{14}C samples, all of which are on charcoal that may suffer from the problems described above. Hall et al. have not obtained a late Pleistocene or early Holocene ^{14}C date directly associated with cultural materials; they have interpolated an early Holocene age from a late Pleistocene date in a non-cultural context.

4. As indicated in their Table 5 (Hall et al. 2005:392), a single piece of lithic debitage was recovered from level 19 (215–225 cm below the surface). As indicated in their Table 2 (Hall et al. 2005:388), this item was found in a stratum that is 63% sand.³ In such a matrix, there may have been considerable post-depositional movement of lithic artifacts through the sediments (Gifford-Gonzalez et al. 1985; Villa 1982). In such sandy deposits, erosion, deflation, and pedoturbation are some of the site formation processes at work (Mayer 2002). Figure 1 shows the vertical distributions of the formed lithic tools and the lithic debitage as reported in Tables 4 and 5 by Hall et al. (2005:391–2). Assessing the vertical distribution of the 23 excavated formed lithic tools, 21 (91%) tools were found at depths between 60 and 135 cm below the surface, i.e. above or within level 10. Only 2 tools were found deeper in the deposit, both in level 15 (173–185 cm below the surface), and this is at least 50 cm above the position of the 11,000 BP ^{14}C date. Turning to the vertical distribution of the 1239 pieces of lithic debitage, 98% are found between level 2 (depth unspecified) and level 14 (165–175 cm). The density of debitage then trails off substantially as shown in Figure 1. We suspect that lithic debitage has moved both up and down through the sediments at 35-CS-9 for reasons outlined below.

5. As presented in Tables 4 and 5 by Hall et al. (2005:391–2), and as illustrated in Figure 1, the density of lithic debitage peaks in levels 6 to 9, and these levels contain 74% of the artifacts. These levels, which extend from a depth of 83 to 125 cm, appear to represent the main cultural component at 35-CS-9. These levels are associated with dates of 2600 ± 40 BP (2760–2740 cal BP) and 2970 ± 70 BP (3250–3000 cal BP; Hall et al. 2005:386) and occur near the bottom 10 cm of stratum 2Ab1 and also within stratum 2Ab2 as defined by Hall et al. (2005:388–389). Stratum 2Ab1 is 68% sand, 19% silt, and 14% clay. With the relatively high proportion of sand, lithic debitage could easily move vertically through the profile in this stratum. Stratum 2Ab2 is 41% silt, 37% sand, and 22% clay, and this clearly indicates soil development, as Hall et al. recognize. Yet in soils such as these, bioturbation can be a significant factor (Erlandson 1984). On this stretch of Oregon coast, burrowing by pocket gophers, mountain beavers, and other rodents (e.g. *Thomomys bulbivorus*, *Aplodontia rufa*, *Otospermophilus beecheyi*) is a common occurrence.

6. The composition of the underlying stratum 2Bwb1 is nearly identical (40% silt, 38% sand, 22% clay) to that of stratum 2Ab2, albeit a bit lighter in Munsell soil color. Again, this stratum would appear to have accumulated at a time of some soil development. Stratum 2Bwb1 extends to 167 cm, encompassing levels 10 to 13. These levels contain 13% of the debitage concentrated in the upper levels of the stratum. These artifacts may represent a separate occupation associated with the 2 ^{14}C dates from these levels: 5820 ± 40 BP (6590–6570 cal BP) and 5900 ± 80 BP (6780–6650 cal BP). If so, this would represent a rare middle Holocene occupation on the Oregon coast. However, in light of the preponderance of cultural material in the overlying stratum, and the precipitous drop-off noted in Stratum 2Bwb1 (refer to Figure 1), it is just as likely that the cultural materials recovered

³We have rounded the percentages of sand, clay, and silt reported by Hall et al. (2005:388) to the nearest whole numbers.

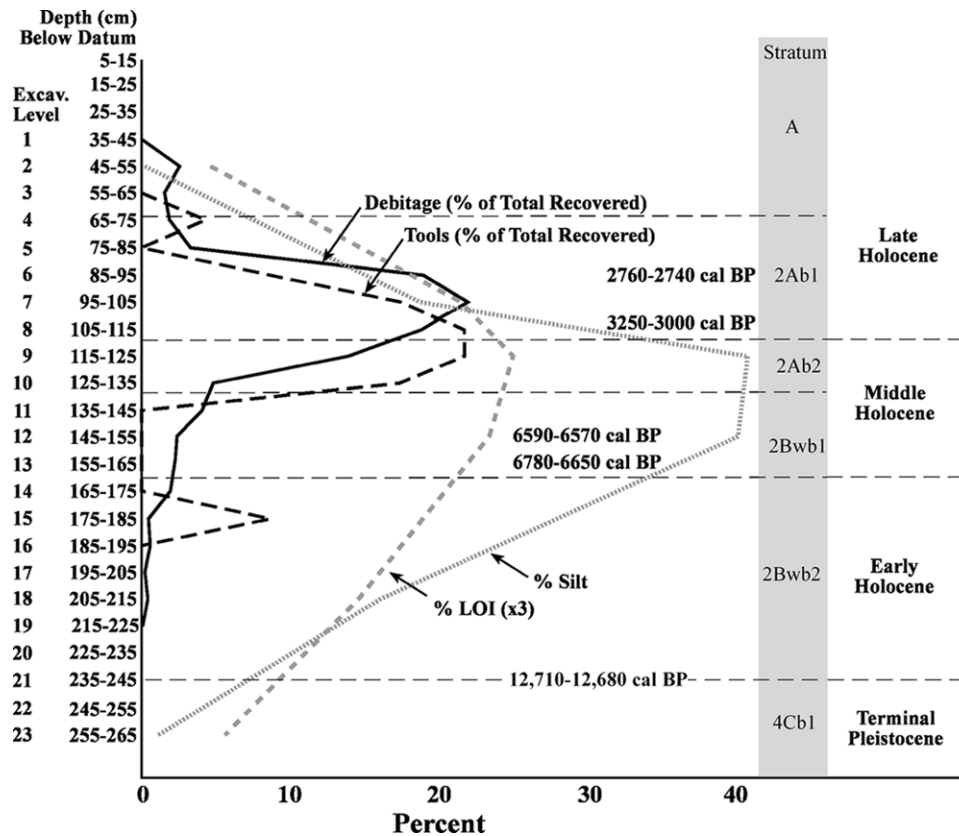


Figure 1 Relationships between the vertical distribution of artifacts, strata, and ¹⁴C dates in archaeological site 35-CS-9 located on the southern Oregon coast.

from Stratum 2Bwb1 have simply been displaced downward from the site’s Late Holocene occupation.

7. While Hall et al. (2005:386) mention that a hearth was found at a depth of 175 cm in Stratum 2Bwb2 in Unit A, the hearth is not described or ¹⁴C dated. This may be the best evidence for occupation during the Middle Holocene, but burned rock associated with hearth or rock oven features can also be moved downward through soil profiles by bioturbation (Erlandson and Rockwell 1987; Johnson 1989). Only 2 artifacts, and less than 2% of the site’s debitage, were recovered from Stratum 2Bwb2.

8. Beneath 167 cm and extending to a depth of 287 cm, the proportion of sand in the strata sampled by Hall et al. (2005:388–9) ranges from 63% to 95%. Only 2 formed tools and 22 pieces of debitage occur between levels 15 and 19 (173–225 cm). This artifact density is quite low and could easily result from items moving down through the sandy sediments. A deposit of extremely gravelly sand occurs at a depth of 287–350 cm, with cemented sandstone at 350–360 cm. Below 175 cm, the evidence for human occupation is uncertain.

SUMMARY ASSESSMENT

With the evidence presented, it is clear that 35-CS-9 contains a Late Holocene cultural component dating between about 3000 and 2600 BP. In addition, it may contain a Middle Holocene component if cultural materials from the hearth yield a date of that age. At this time, however, we do not believe there is convincing evidence for an Early Holocene or a Late Pleistocene occupation of the site. Hall et al. (2005:387) state:

Because it is possible that deposition differed, or that the lithic piece had been displaced downwards, we do not make a specific claim about the antiquity of cultural materials at 35-CS-9, but we suggest that these tantalizing data, and thus the site as a whole, should be considered to date to the early Holocene. Because sediments of late Pleistocene age are clearly present, this site could hold cultural deposits of that era as well.

Although the authors are somewhat cautious in the statement quoted above, the Oregon State University news release of their discovery dated January 24, 2006, states that the site “appears to be about 10,000 years old” and that their study has just been published in the journal *Radiocarbon*. With the evidence presented in Hall et al. (2005), these claims for an Early Holocene or even Late Pleistocene occupation of archaeological site 35-CS-9 need further substantiation.

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