Excavations at the Dune Site, Santa Rosa Island, California

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Santa Rosa Island, off the California coast near Santa Barbara, is a most unusual early human site. Here Dwarf mammoth (*Mammuthus exilis*), questionable stone tools, and fire-reddened soil features have been found in possible association. One of these occurrences, the Woolley site near Wreck Canyon, may be among the earliest evidence of man in North America (Berger 1980).

Second largest of the Northern Channel Islands, Santa Rosa is 23 kilometers long and 16 kilometers wide, with the highest peak 475 meters above sea level. Stands of oak, pine, and ironwood grow on the slopes and canyons, while thick grasses cover the flatter areas of the island. Recent excavations in a dune blowout, the Dune site (Figure 1) on the east end of Santa Rosa, attempted to document the association of man and mammoth on the island. This report summarizes these excavations and some of the earlier work on the problem of man and mammoth on Santa Rosa.

The association of charred mammoth bone and fire features suggested that some of the fire features may have been hearths. Beginning in the 1940s, Phil Orr excavated several fire features apparently containing mammoth bone. Some of these excavations, or quarries, were described in Orr's monograph (1968). Quarry 1 contained fire-reddened soil and burned mammoth bones. Charcoal at the same level was dated at 12,000±250 B.P. (Orr 1968:74). On the surface of Quarry 2 were a number of chipped stones and a broken stone with pholad borings. Though the Quarry 2 mammoth bones had been charred, no fire-reddened soil was in contact with the bones (Orr 1968:58, 74). Quarry 10 consisted of burned mammoth bones in a pit-like depression 2.4 to 3.0 meters wide and 1.8 meters deep. The charred bone was radiocarbon dated at 29,750 years B.P. (Orr 1968:75). Quarry 12 contained a partially burned mandible, charred vertebrae, a tusk, and a pelvis (Orr 1968:74, 83). Dated on associated charcoal at 11,800 years B.P., Quarry 14 contained the skull, mandible, thorax, and right foreleg of a mammoth (Orr 1968:84). Quarry 15 contained charred and uncharred mammoth bones, and though stone tools were found on the surface of the site, none were found *in situ* (Orr 1968:75, 84).

Found only recently near Wreck Canyon, the Woolley site has been partially excavated. Here several possible stone tools and mammoth bones were found *in situ* with fire-reddened soil. Associated charcoal has been dated at more than 40,000 years B.P. (Berger 1980). Subsequent excavations at this site failed to yield additional artifacts or the outline of a fire pit (Wendorf 1983:167).

Because of the hypothesis that many of the Santa Rosa fire features may have been hearths, several fire features were examined in detail. When compared with the effects of recent forest fires, many of the Pleistocene fire features appeared to be almost identical to natural fire features. Broadly speaking, the Pleistocene fire features were likely caused by natural forest fires on the island and were not hearths (Wendorf 1982:173-180). Though it was not possible to examine the features and quarries described by Orr (1968), it is

probable that these features were caused by natural fires. In this case the mammoth bone may have been charred by burning tree roots or timber.

The Dune site, on the other hand, is not associated with fire features, but consists of weathered mammoth bone fragments in surface association with stone tools. Today, the bone fragments are unidentifiable, having been eroded by high winds. In the 1960s, when the site was discovered, tusks and other elements were clearly visible. The site is in a blown-out area between less deflated dunes, and the immediate area is littered with shell and artifacts. The east side of the blowout is bordered by a small dune that is covered with a dark midden layer of organic debris and artifacts.

It is possible that a large dune formerly covered the deflated area containing the mammoth bone. The stone tools might then have dropped to the mammoth bone level as the dune was deflated. It was hypothesized that a high degree of wind polish on the artifacts would indicate that they had dropped to the mammoth bone layer as the dune was deflated. The Dune site was gridded along an east-to-west axis on which the bone concentrations were plotted (Figure 2). Three bone concentrations were noted, and two were mapped in detail. In area 2, few artifacts were found among the mammoth bone fragments. Instead, the artifacts seemed to circle the concentration of bone. Most of the artifacts had been heavily wind polished. A one-by-three meter trench was excavated in area 2 to a depth of 50 centimeters. No artifacts or bone were found in the trench beneath the surface. In profile, the trench was largely uniform with occasional iron stains.

Area 3 was excavated to a depth of 30 centimeters, but no artifacts or bone were found more than 4 centimeters below the surface. Among the artifacts found in area 3 were a crescent-shaped tool in grid 3A and a projectile-point fragment in grid 4A (Figure 3). Both the crescent-shaped artifact and the projectile point had been heavily wind polished. Also found in area 3 and heavily wind polished were five flakes and a scraper.

The crescent-shaped artifact (Figure 4) is more crudely flaked and larger than other crescents. The convex edge is battered and is thicker than the opposite edge. Crescents have been found in the San Dieguito assemblage of southern California, dated at about 6500 B.C. (Wallace 1978:27).

Were the Santa Rosa mammoths hunted by early humans? Most of the evidence for mammoth hunting on Santa Rosa can be attributed to accident or natural phenomena. For example, the surface association of bone and artifacts at the Dune site could have been caused by the deflation of a large dune. At the Woolley site, the crude artifacts may be naturally flaked cobbles, and the fired soil may have been caused by a burned tree. Additionally, the several quarry sites described by Orr may have been caused by natural fires.

Until the Woolley site has been completely examined, the final interpretation of it should remain open. However, if the island mammoth was not hunted by early humans, why did the mammoth become extinct on Santa Rosa at the end of the Pleistocene? Could similar forces have been at work on both the island and the mainland, leading to the extinction of Pleistocene megafauna? The possible association of man and mammoth on Santa Rosa Island pertains to more than the problem of early humankind in the Americas and should be further investigated.

Figure 1: Outline of Santa Rosa Island, California, showing location of the Dune site and the Woolley site.

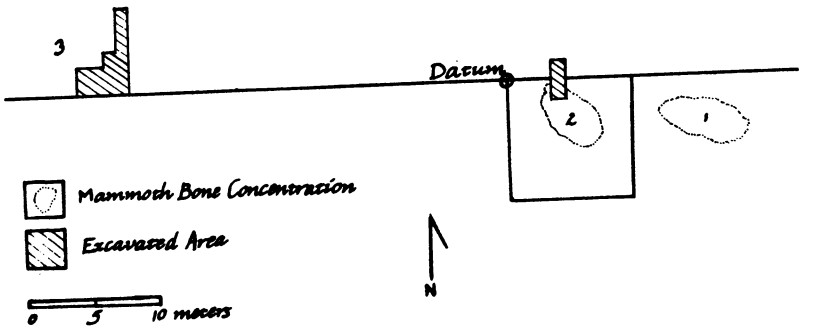

Figure 2: Mammoth bone concentrations at the Dune site, Santa Rosa Island.

Figure 3: Bone and artifact scatter in Area 3, the Dune site, Santa Rosa Island.

Figure 4: Crescent-like artifact from Area 3, the Dune site, Santa Rosa Island.

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