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# New Evidence for Fremont Adaptive Diversity

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**EXCAVATIONS** in the Sevier Desert of western Utah (Fig. 1) have produced architectural evidence for temporary habitation in small brush, wickiup-type structures between A.D. 1000 and 1100 by people with Fremont material culture. The inventory includes Fremont ceramics, a single corn cob, and projectile points common to, but not exclusive to, Fremont sites (Cottonwood Triangular, Rose Spring Corner-notched, and Desert Side-notched). The site broadens our understanding of Fremont architectural and settlement diversity. Several alternatives for eastern Great Basin Fremont economy are presented in fitting this site into the regional subsistence/settlement pattern(s).

## FREMONT ADAPTIVE DIVERSITY

Archaeologists have understood for many years that horticulturists known as the Fremont occupied the eastern Great Basin and Colorado Plateau. It is also known that Fremont subsistence involved use of hunted and gathered foods as well as agricultural products, but the relative dietary importance of these two food sources has been the subject of debate (Madsen and Lindsay 1977; Nielson 1978; Aikens 1979; Madsen 1979; Marwitt 1979). Madsen (1979, 1982a) attempted to broaden our conception of Fremont adaptive diversity by reviewing the evidence for Fremont hunting and gathering, but this effort was limited to an examination of direct subsistence data found in large habitation sites and some cave/rockshelter sites. Thus, Fremont subsistence diversity

has been documented through excavation, but settlement diversity has not. This is because study has focused on relatively large habitation sites placed in locations suitable for horticulture, even when domesticates may not have been predominant in the diet. Eastern Great Basin examples include: Nephi (Sharrock and Marwitt 1967), Pharo (Marwitt 1968), Median (Marwitt 1970), Evans (Berry 1972; Dodd 1982), Backhoe (Madsen and Lindsay 1977), Nawthis (Metcalf and O'Connell 1979; Jones and Metcalfe 1981), and Clear Creek (Janetski et al. 1985), to name only a few (Fig. 1). These "large" sites may represent more than one adaptive strategy. They yielded a variety of semisubterranean pit structures; surface structures of adobe, stone, or jacal; and storage structures of various types. The sites typically appear to be located on or near streams, floodplains, and alluvial fans favorable to the practice of horticulture.

Excavation data on sites demonstrating *settlement* variability (in addition to direct subsistence information) are necessary to enable understanding of the overall adaptive situation, but such data remain relatively uncommon. To be sure, it is known that the Fremont people were responsible for sites not directly related to the practice of horticulture. Rockshelters such as the Fish Springs caves (Madsen 1982b), higher elevation occupations such as Sparrow Hawk (Janetski 1985), and the Fremont levels in Hogup Cave (Aikens 1970) are examples. These sites corroborate direct subsistence data recovered from the horticultural sites

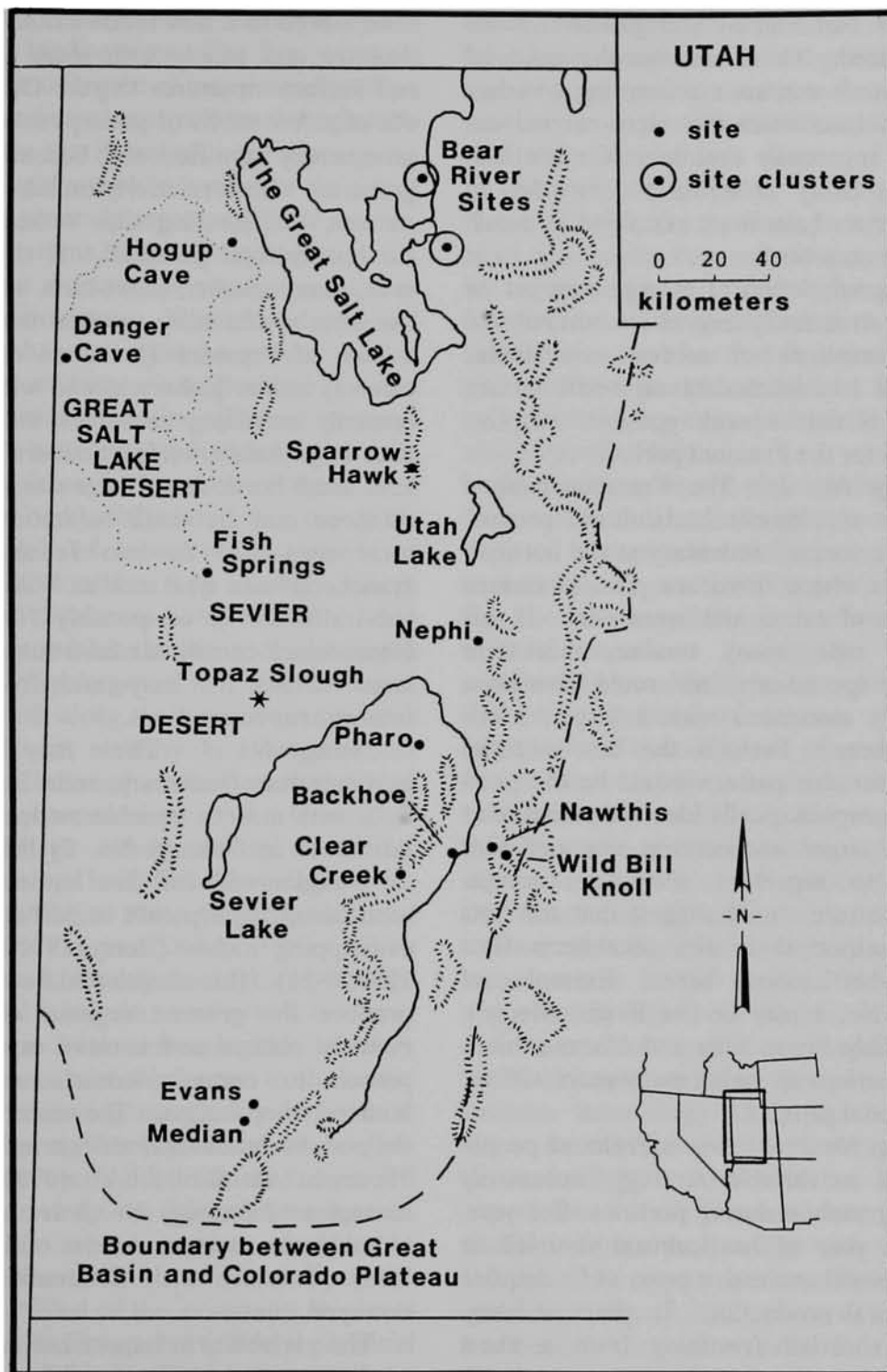


Fig. 1. Map of the study area in western Utah showing sites discussed in the text.

and show that hunted and gathered foods were utilized. There are also thousands of lithic/ceramic scatters representing a variety of Fremont activities that were carried out in areas apparently unsuitable for horticulture (e.g., Berry 1974:73-83). Very few of these scatters have been examined in detail, much less excavated.

The accumulation of a large data set on the most structurally impressive horticultural sites, excavations of a few cave/shelter sites, and locational data on small surface scatters reveal several possible adaptive strategies for the Fremont period.

*Strategy No. 1:* The Fremont foraged locally to supplement horticultural production, but remained sedentary at the horticultural sites where there are pit and surface structures of substantial investment. If this was the case, many smaller, short-term camps or special-use sites would have been logistically associated with a larger, horticultural base. Perhaps the best material referent for this pattern would be the presence of morphologically identical ceramics at both the larger horticultural site and sites thought to represent short-term camps. Such a pattern would suggest that the pots were transported to the short-term sites from a horticultural base. Examples of Strategy No. 1 may be the Evans, Median, and possibly Pharo sites and others exhibiting occupations spanning many years without occupational gaps.

*Strategy No. 2:* Some Fremont people employed a variable strategy, necessarily becoming mobile during portions of a year, during a year of horticultural shortfall or during several successive years of inadequate horticultural production. In years of horticultural shortfall (resulting from a short growing season, inadequate timing of rainfall, flooding, or changes in the base level of streams), groups, or portions of groups, may

have moved to a new locale suitable for horticulture and simply built more pit houses and surface structures there. Or, for periods of a few weeks or perhaps several years, groups may have fissioned, becoming hunter-gatherers with a relatively mobile settlement pattern, and locating sites without concern for horticultural potential. If this was the case, many smaller, short-term and special-use sites would have resulted from the activities of Fremont (in terms of material culture) hunter-gatherers, who were not necessarily collecting resources for transport to a large habitation/horticultural base, but to a small horticultural base site. Examples of these may be small habitation/horticultural sites that fit into Jennings (1978) "rancheria" site type such as Wild Bill Knoll (Metcalf 1984), or possibly Nawthis and Nephi which consist of numerous, often scattered mounds that may result from several, intermittent occupations.

*Strategy No. 3:* There may have been horticulturists (sedentary, as in Strategy No. 1, or with a more variable settlement adaptation, as in Strategy No. 2) living in the same region with full-time hunter-gatherers, each occupying separate or perhaps partially overlapping niches (Berry 1974:77; Simms 1979:20-21). This case should be expected to produce the greatest regional diversity in material culture and a more expedient approach to ceramic manufacture at the hunter-gatherer sites. The material culture defined by traditional categories would be "Fremont" in all of the above cases. Clear examples of Strategy No. 3 are not known, although the western deserts of Utah are a likely place for such a situation to have occurred.

The variability in importance and stability of Fremont horticulture exhibits some regional patterning. The clearest examples of Strategy No. 1 are along the southern por-

tions of the eastern Great Basin rim at the Evans and Median sites. The Evans site represents the only case of major superposition and change in material culture through time reported for the Fremont area. Sites to the north, along the middle section of the Great Basin rim, generally represent either shorter-term occupations, fluctuations in group size, or recurrent sedentary occupations separated by occupational gaps. Hunted and gathered foods may have comprised a greater portion of the diet at some sites (Backhoe?), while at some favorable locations (Pharo?) Strategy No. 1 may have occurred most of the time. Sites in this region such as Nawthis and Nephi can be spatially large, but this could be the result of recurrent occupations of various sizes rather than a single, large occupation (Sammons-Lohse 1981). These sites do not exhibit the depth of occupation seen in the large sites to the south. Farther north along the Wasatch Front, even less settlement stability and evidence for horticulture is found at the Bear River sites along the eastern shores of the Great Salt Lake, although structures of substantial investment were built there as well (Pendergast 1961; Aikens 1966, 1967; Shields and Dalley 1968; Fry and Dalley 1979). While urbanization has surely destroyed some large horticultural sites in northern Utah precluding them from archaeological investigation, there is probably some truth in the claim for increasing marginality of horticulture in the northern parts of the region (Marwitt 1970). All of the sites discussed above occur along the fringe of the eastern Great Basin where streams capable of supporting horticulture emanate from the mountains. West of the mountains, in places like the Sevier Desert, horticultural potential decreases and this is a likely place to expect more pluralism in adaptive strategies (Strategies No. 2 and No. 3).

The development of these alternative adaptive strategies and recognition of the regional pattern discussed above results from past work in the Fremont area indicating that there was a high degree of adaptive diversity across space as well as through time. Despite the tendency to excavate the most spectacular Fremont sites, usually seen as representing a "sedentary" agricultural pattern, many Fremont scholars probably subscribe to the view that Fremont horticulture was "marginal," and that the settlement and subsistence pattern potentially was variable (Marwitt 1980).

Horticulture was a characteristic of the Fremont period, but it frequently could have been an intermittent activity, and probably a recurrent one, practiced by groups of varying size who may have had to move horticultural locations frequently, or who switched back and forth between horticulture and hunter-gatherer economies. This does not preclude the existence of groups using horticulture as the dominant source of subsistence. Examples such as Nawthis, possibly even yielding evidence for water diversion (Metcalf and Larrabee 1985), and the Evans site, as well as others, are clear evidence that horticulturally based economies were present in the region. However, as suggested by the above discussion, this pattern cannot be applied consistently to the entire Fremont region or time period. It has become increasingly likely that clear evidence for alternative settlement types would come to light. Such evidence would be expected to include Fremont material culture found at campsites, possibly with structures, left by what appear to have been hunter-gatherers. One missing piece of the puzzle has been the lack of evidence for temporary structures at small hunting and gathering campsites dating to the Fremont time period. Without such evidence, we are left with the

impression that forays away from horticulture sites were very brief, that the Fremont people lived only in caves, or that they simply "slept out" when away from their pit houses.

### THE TOPAZ SLOUGH SITE

A site that significantly expands our understanding of Fremont architectural and settlement variability was located in the course of the Intermountain Power Project in the Sevier Desert of western Utah (Fig. 2). The Topaz Slough site (42MD742) yielded evidence for temporary habitation in a brush wickiup-type structure(s) associated with numerous Fremont ceramics in a settlement locale very different from those chosen for the pursuit of horticulture.

This site is located on a broad, dry plain near the west edge of the Sevier Desert at an elevation of 1,394 m. A greasewood (*Sarcobatus vermiculatus*) and saltbush (*Atriplex canescens*) vegetation association extends for several kilometers in all directions. The site is situated in sand dunes bordering the west edge of an ancient river bed. This river bed has probably not been a river per se during the Holocene, but at times became a brackish slough containing various types of wetland floristic associations during periods of increased effective moisture (Currey and James 1982:342). Dated sedimentological, macrofossil, and pollen data from natural and cultural contexts in the area (Coulam 1984; Gilbert/Commonwealth 1984; Madsen 1984; Simms and Isgreen 1984) show that the Fremont was one such moist period, and suggest that wetland flora were present near the site and in other parts of the Sevier Desert during its occupation.

Evidence of occupation occurs in areas where dune erosion has exposed about 35 (1-3 m. in diameter) concentrations of firecracked rock, chipped stone, Fremont

ceramics, ash stains, and grinding implements (Fig. 2).

The site was excavated by natural stratigraphic levels (Trench 1), and also explored with a backhoe (Trenches 2-10). The stratigraphy and related analyses were reported in Simms and Isgreen (1984). Of interest here are Structures 1 and 2 and the refuse area superimposed on Structure 1. Figures 3 and 4 illustrate the plan of Structure 1, the profile through it, and the refuse area.

Structure 1 was a roughly circular (4.5-5 m. north to south) depression scooped out of natural dune deposits. Stratigraphy suggests that the actual size of the structure was between 2 and 3 m. in diameter, not encompassing the entire depression. A small, off-center hearth was found in the structure. A stratum of roof fall, centered in the depression and pinching out at the edges, consisted of a mixture of partially burned small twigs from brush including greasewood (*Sarcobatus vermiculatus*) and some type of *Atriplex*, together with pieces from larger plants 2 to 3 cm. in diameter, either *Populus* (probably cottonwood, *Populus fremontii*), or willow (*Salix*) (Carol Weins, personal communication 1984). The concentration of burned material near the center of the depression, thinning out toward the edges, suggests that the structure was roofed. Also, sand and silt laminae deposited by wind alternating with ponding occurred above the floor. These were deposited when the depression was screened or enclosed, and are not the result of the dune moving over an open, unprotected depression. The most probable interpretation for Structure 1 is that it was wickiup-like with a light superstructure of willow or cottonwood covered by brush from xeric shrubs. The latter were the most common plants in the area according to pollen and macrofossil remains (Madsen 1984; Coulam 1984).

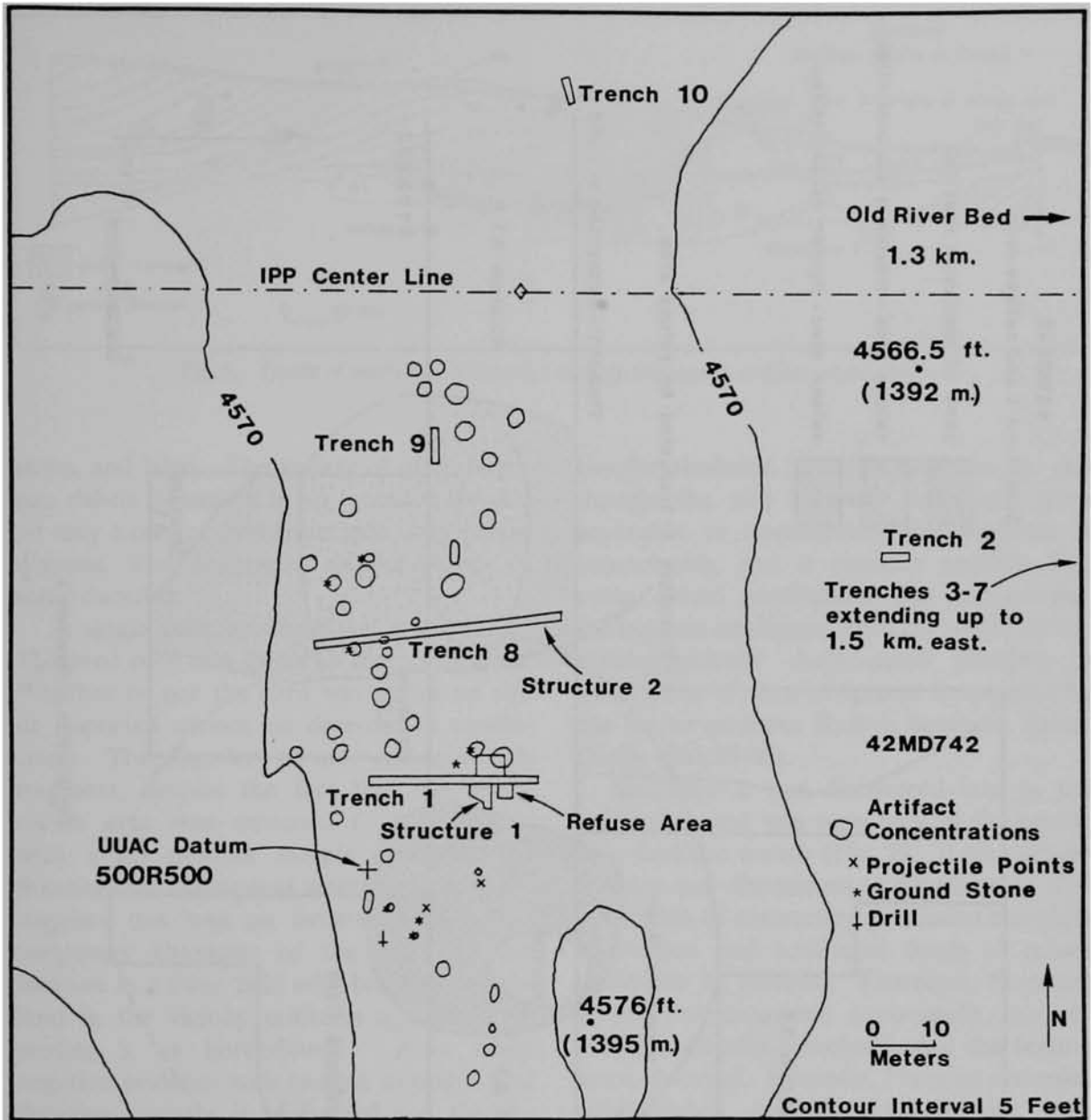


Fig. 2. Map of the Topaz Slough site.

A radiocarbon sample of associated chunks of wood charcoal (possibly from the same branch) from the roofing material of Structure 1 yielded an age of  $870 \pm 80$  B.P.: A.D. 1080 (BETA-8015). This date marks the peak of the Fremont period and is commensurate with the Sevier Gray ceramics found on the floor and in the fill.

Structure 1 was truncated by an aboriginally excavated refuse area to the east containing hearth debris, Sevier Gray potsherds (several with repair holes), chipped

surate with the Sevier Gray ceramics found on the floor and in the fill.

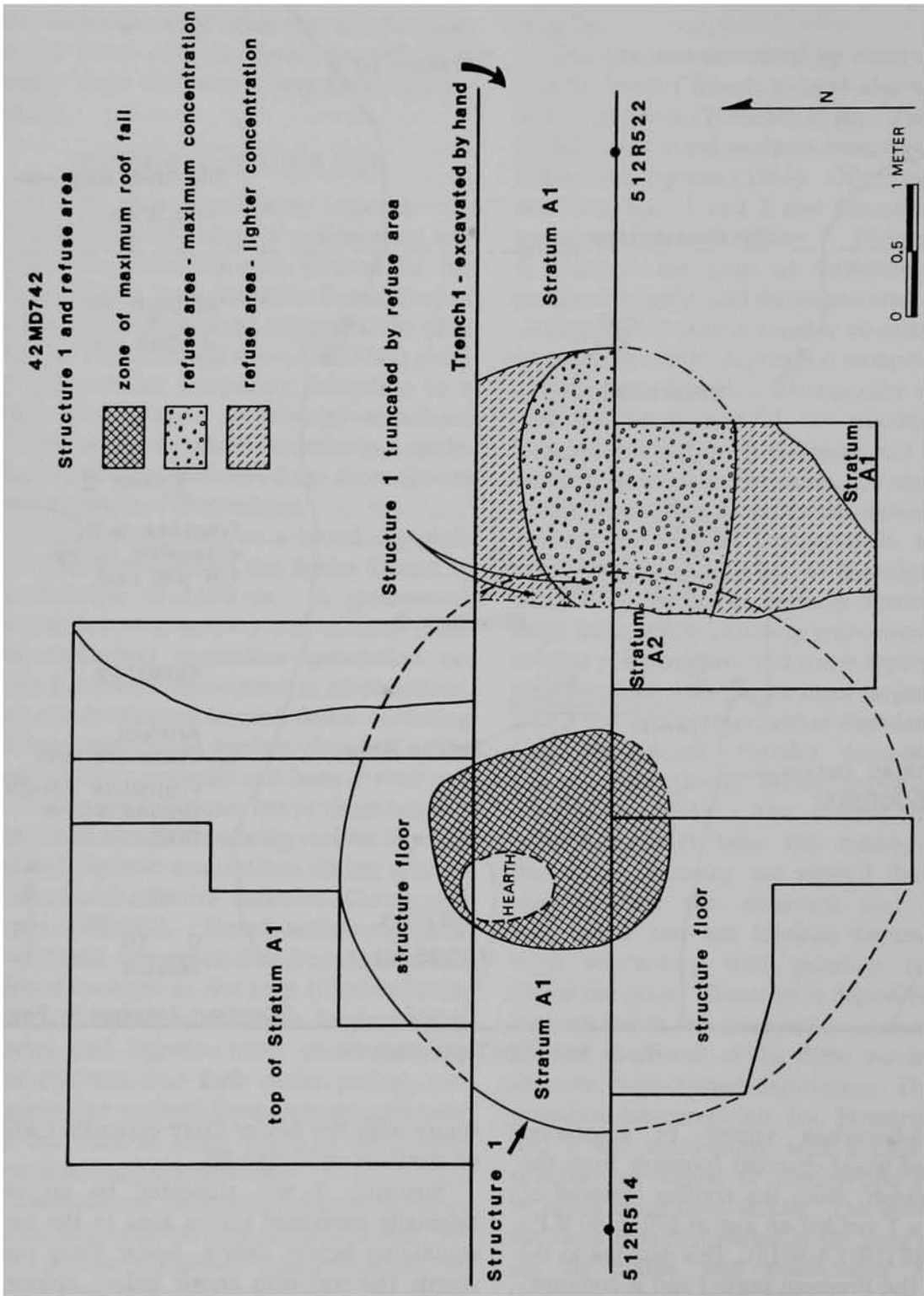


Fig. 3. Plan of Structure 1.



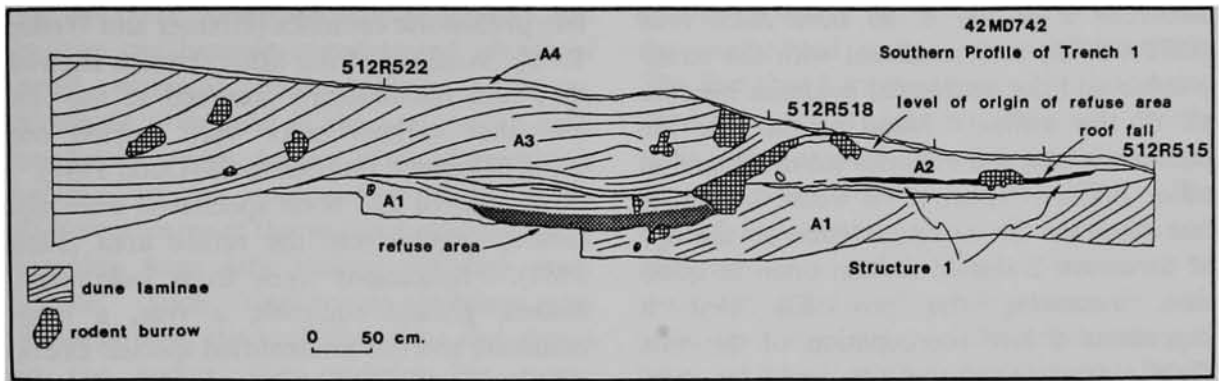


Fig. 4. Profile of south wall of Trench 1 through Structure 1 and the refuse area.

stone, and bone. The variety of often large-size debris deposited in an intentionally dug pit may have resulted from secondary refuse disposal, thus suggesting an occupation of some duration.

A single corn cob fragment from 10- or 12-rowed corn was found in the refuse area. Whether or not the corn was grown on site or imported cannot be determined conclusively. The discovery of only one small cob fragment, despite the fact that the entire refuse area was screened (1/4-in. mesh), with a 25 percent sample retrieved for flotation and subsequent macrofossil analysis, suggests this was an isolated find. The temporary character of the site and the location in a dune field with brackish marshland in the vicinity militates against interpreting it as horticultural. Also, while negative evidence with respect to pollen and flotation remains is of limited use, the absence of corn pollen and macrofossils from any portion of domesticated plants (with the single exception of the cob fragment) is consistent with the above interpretation. The presence of corn shows that these people had some familiarity with horticulture; they either acquired the corn from people who farmed (Strategy No. 2 or No. 3), or they brought it with them from their habita-

tion/horticultural base (Strategy No. 1). Although the site location does not seem amenable to horticulture, the evidence is inconclusive, and it remains possible that some casual horticulture was carried out. Perhaps an analogous situation would be the ethnographically documented planting of small plots of corn at springs frequented by the hunter-gatherer Kaibab Southern Paiute (Kelly 1964:39-40).

Structure 2 was discovered late in the excavation and was seen only in the profile of a backhoe trench (Fig. 2). It was similar in form and dimensions to Structure 1. The exigencies of contracting precluded complete excavation and additional funds to return could not be secured. Therefore, Structure 2 was not excavated horizontally, and no artifacts directly associated with the feature were observed. However, Fremont ceramics, lithic debris, and fire-cracked rock were found as lag deposits on the modern surface west of Structure 2 (Fig. 2), suggesting that it was contemporaneous with, or slightly *older* than, the Fremont ceramics on the surface. Nevertheless, precise stratigraphic correlation of the Fremont ceramics on the surface with Structure 2 is not possible. A radiocarbon determination on a composite sample of charcoal from the hearth within

Structure 2 of  $290 \pm 50$  B.P.: A.D. 1660 (BETA-8013) is inconsistent with the stratigraphic and the artifactual evidence because all of the artifacts found at the site are consistent with the material culture found at other Fremont sites. This would be a very late date for the artifacts found so the age of Structure 2 should remain open to question, reserving the possibility that it represents a late reoccupation of the site. Only a fraction of the site could be excavated, and other structures may be present as indicated by the superposition of the refuse area on Structure 1.

A total of 403 Fremont potsherds from jars and bowls were found of which 69% are Sevier Gray, 28% Snake Valley Gray, and 3% Snake Valley Black-on-Gray (Dean 1984).

Six projectile points were found. A possible Elko Contracting Stem (fragment), a possible Elko point (fragment), and a Cottonwood Triangular point were found on the surface among the scatters of Fremont ceramics. A Rose-Spring Corner-notched point with an unusual concave base was found in Stratum A3, over the refuse area (Fig. 4). Stratum A3 post-dates the refuse area, which slightly post-dates Structure 1, dated at ca. A.D.  $1080 \pm 80$ . Rose-Spring Corner-notched points are common at Fremont sites, and while this is a late occurrence, it is within the range of other dated occurrences at Fremont sites (Holmer and Weder 1980). A Desert Side-notched point was found in the refuse area, which post-dates ca. A.D. 1080. This is well with the temporal range of this point type. Desert Side-notched points are not common on Fremont sites, although they are more common in western Utah than in other parts of the region (Holmer and Weder 1980). No late prehistoric ceramics were found at the site, although there are other occurrences of Desert Side-notched points on Fremont sites without

late prehistoric ceramics (Holmer and Weder 1980). Analysis of the lithic remains showed that tool manufacture occurred at the site and that various tasks were carried out using flakes and finished tools (Dodd 1984).

A total of 123 bone specimens were obtained, mostly from the refuse area (Juell 1984). Specimens were from jackrabbits, snakes, ground squirrels, a vole, a large mammal, and two unidentified species. Breakage patterns and carbonization suggest human use of the jackrabbits, the large mammal, and possibly the snakes as well (Juell 1984).

Comparison of pollen and macrofossil samples from natural and cultural deposits suggests that the content of the cultural samples can, for the most part, be explained by natural deposition (Coulam 1984). However, both hearths and the refuse area contained large quantities of seeds and plant parts from some type of Chenopodiaceae, perhaps some species of *Atriplex*, judging from some of the better preserved macrofossils. While this may indicate subsistence use of the edible seeds, it is possible that *Sarcobatus* (greasewood) and *Atriplex* (salt-bush) dominated the landscape as they do today and were used as firewood (both are Chenopodiaceae and are the genera identified in the roof-fall of Structure 1). In the case of either function, if the seeds are *Atriplex* then late fall through midwinter occupation is indicated because *Atriplex* can retain its seeds well into, and occasionally through, the winter (Simms 1985).

The hearth contents indicate late fall through winter occupation, but hearths should only be expected to document the terminus of an occupation, not its entirety (Simms n.d.). The location of this site would also have been attractive during the summer and/or fall. Sand dunes trap moisture and promote plant growth (depend-

ing on dune succession characteristics) and in turn can become concentrated islands of small mammal and reptilian resources. Similarly, a wetland in the area would have produced a high density of small mammals relative to the surrounding shrub plain. Different parts of the wetland produce seeds ripening from late summer through early winter. Such dune/marsh situations also typically yield the earliest greens and shoots in the spring, but evidence for spring habitation is difficult to glean from the archaeological record.

### DISCUSSION

The most probable interpretation is that this site results from a multi-activity habitation in a temporary structure(s) in a dune field, with a varied wetland habitat in the vicinity, possibly in the ancient river bed directly east of the site. It could represent use of the western portions of the Sevier Desert by people from a larger, horticultural site to the east, either in the course of a successful crop year or during a period of crop shortfall when the adaptive strategy switched to a hunter-gatherer subsistence focus and a greater degree of settlement mobility. The morphological similarity of the ceramics to those from larger, horticultural Fremont sites known to the east (e.g., Nephi [Sharrock and Marwitt 1967] and Pharo [Marwitt 1968]) and the corn cob fragment appear to support this interpretation (Strategy No. 1 or No. 2), but the subject warrants further investigation. Whether the occupants of the site were employing Strategy No. 1 or No. 2 is difficult to determine, but may be approachable through a regional study comparing ceramic morphology between short-term habitation and larger habitation/horticultural sites. Alternatively, the site may have been created by full-time

hunter-gatherers in the course of their seasonal round using "Fremont" ceramics. The fact that hunter-gatherers in this region used ceramics is clear from the late prehistoric archaeological and ethnographic records for southwest Utah (e.g., Kelly 1964). The use of ceramics by late prehistoric hunter-gatherers may reflect a more stable, or at least repetitive settlement pattern in contrast to a relatively mobile settlement pattern as found in the central Great Basin. However, the late prehistoric hunter-gatherers in western Utah used more expedient, "crude" ceramics, compared to the Fremont ceramics found at this site. This fact tends to contradict an interpretation of the site as being the product of full-time hunter-gatherers (Strategy No. 3). Demonstration of the presence of Strategy No. 3 must await documentation of a Fremont period hunter-gatherer site with late prehistoric brownware ceramics or crude Fremont graywares.

In addition to documenting an open, short-term Fremont camp, the Topaz Slough site provides the first evidence for Fremont occupation of small, temporary brush structures. As discussed previously, evidence for Fremont adaptive diversity is available but remains implicit in general discussions. The discovery of "Fremont wickiups" should come as no great surprise, and can be used to identify some of the behavioral patterns that tend to be glossed over in the routine use of archaeological categories such as "Fremont." Debate over whether or not Topaz Slough is a "true" Fremont site is irrelevant to gaining an understanding of the behavior of the time. The Fremont label need not imply a farming economy or a particular "people." Fremont is an archaeological culture, a stereotype: it is the *variability* in Fremont settlement, subsistence, and combinations of material remains

that reveals the behavior characteristic of its creators.

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