Preliminary Pollen Studies

Near Payson, AZ

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A suite of eight pollen samples was submitted representing archaeological contexts at sites AZ 0:11:2 (ASU)
A.E. Dittert, Jr. These were specifically selected as the smallest possible series that would allow testing of three useful hypotheses and, at the same time, shed significant light upon the question of recovery of adequate pollen for analysis.

The three hypothesis tested were:

(A)
given locus provide statistically distinctive pollen records;

(B)
tistically similar pollen records; and

(C)
provide statistically similar pollen records exclusive of pollen data which might refer to the cultural function of the sampling context.

At AZ 0:11:2 two samples were selected from among sediment samples representing the horizon of occupancy. The two were collected from different quadrants on the floor of Feature 1, which is a domiciliary structure. Both samples had been collected at floor contact underneath rocks which had fallen on the floor in an early phase of the decay of the structure. Ostensibly, they represent sediment deposited just subsequent to occupancy of the domicile but not necessarily subsequent to the period of site abandonment. At AZ 0:11:4, which is separate from 0:11:2 only by a few tens of meters, 6 samples were collected in association with an ostensible pit storage feature. Two were samples of floor deposit collected in different quadrants of the feature; the other four were collected in stratigraphic order from the sediments superimposed upon the floor. Available ceramic evidence indicates that the features of the two sites are contemporary within a 75-100 year span of time centering on A.D. 1100.

The two pairs of floor samples from AZ 0:11:2 and AZ 0:11:4 each provide an independent test of hypothesis (B).
true the members of a pair of samples representing the same stratigraphic horizon should be statistically similar. Utilizing the binomial confidence interval test, it is demonstrable that the hypothesis is indicated true in both cases. A more complex multivariate test should be performed when more samples become available, however.

The four samples stratigraphically superimposed upon the floor of the storage structure, and the two floor samples, provide a test of hypothesis (A).
the floor samples should be statistically distinct from that of the uppermost stratigraphic sample, which is most disjunct in time, and may be distinct from that of any other sample in the stratigraphic series. Using the binomial confidence interval test, it is demonstrable that floor sample 1-71 is not distinct from the uppermost

stratified sample, while floor sample 1-65 is statistically distinct from the uppermost stratified sample. This is true even though the two floor samples are not statistically distinct from one another, and even though none of the other stratified samples are statistically distinct from sample 1-65.

Interpretation of these data is not clearly evident and more--and more sophisticated--tests of the hypothesis should be run. My personal assessment, however, is that the pollen statistical distinction between the highest stratified sample and sample 1-65 indicates that a significant temporal difference separated the deposition of these two samples. The statistical similarity between the other floor sample (1-71)
difference separating these two samples is not so great. And the statistical similarity of the two floor samples indicates that though true temporal separation may occur, it is not sufficiently great to be reflected in the pollen statistics of the spectra taken as wholes. Thus I would suggest that sample 1-65 is a true floor sample, representing the horizon of construction of the floor of the storage feature, while the other samples all represent the relatively younger horizon of in-filling of the feature. It would appear that in-filling was quite rapid over the first 20 cm of deposition but slowed to the degree of pollen-statistical identification by the period of deposition of the youngest sample. It may be noted that floor sample 1-65 does not contain quantities of maize pollen such as occur in the other samples. This is consistant with the diagnosis of sample 1-65 as a sample of the construction horizon and the relegation of floor sample 1-71 to the in-filling horizon.

A test of hypothesis (C)
both pollen records from 0:11:2 with those of the floor of the storage feature at 0:11:4. Ostensibly, these pollen records should be contemporary since the same forms of temporally significant artifacts are associated with the features of the two sites. Comparison indicates no statistical similarity, nor does any similarity of the 0:11:2 record exist with any of the stratified samples at 0:11:4. Though hypothesis (A) has not been clearly confirmed from these data the conclusion reached in the prior paragraph is that this hypothesis remains tenable. By extension it may be suggested that it seems most unlikely that the occupancy date of 0:11:2 and the construction date of Feature 1 at 0:11:4 are coincident. It would appear that the domicile was occupied--and even had been abandoned--some time prior to the construction of the storage feature at 0:11:4. Considering the relationship of the pollen records of the in-filling horizon to those of the floor of the storage unit, I think it may be seriously suggested that the storage unit may have been constructed and in-filled some centuries subsequent to the abandonment of AZ 0:11:2.