

Pollen Records of AZ U:1:30 and :31 (ASU):  
An Assessment

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The standard pollen extraction procedure in use at the Palynology Laboratory of the Department of Anthropology was applied to the 24 samples submitted from AZ U:1:30 and :31 (ASU) by J.E. Bruder. Pollen was observed in all the resulting specimens, but only five of the fourteen samples representing the prehistoric horizon produced sufficient pollen to allow profitable analysis. Ms. A.G. Rankin undertook the work of extraction, identification and counting of the pollen. Samples representing the prehistoric horizon were selected to allow evaluation of the archaeological contexts most conducive to palynological research. Judged by these results, it would appear that floor sediment deposits and floor feature fill deposits offer the best prospect for profitable study. Floor contact deposits--and presumably superimposed fill deposits--seem to be much less reliable sources for pollen data.

Samples of the modern horizon were selected to determine whether or not the variability in vegetational characteristics of plots of the research area was paralleled by variability in pollen rain. Results indicate the case, though there is very little direct correspondence between vegetation and pollen rain. Some vegetational characteristics appear to be reflected in the modern pollen rain by pollen type diversity, and others seem to correspond to variations in pollen frequency. There are too few specimens to allow a statistically defensible correlation of any given vegetation pattern with a given

pollen rain in the available data. This seems a profitable line of future research, however.

It should be noted in this regard that the patterns of pollen rain variation observed in these surface samples are not similar to those which have been observed in surface samples from the Desert Scrub ecosystem of Arizona. However, they are not superficially dissimilar from those observed in a study area centered a few kilometers above the confluence of the Salt River and Cherry Creek. The significance of this relationship is quite unevaluable at present, but future identification of surface pollen rain pattern variations in the Sonoran Desert Grassland and its ecotones with the Desert Scrub and the Chaparral ecosystems is indicated. Comprehension of such pattern variations should be extremely valuable in assisting archaeological studies underway in the so-called Arizona Ecotone District.

There is no readily apparent patterned relationship between the surface sample pollen records from U:1:30 and the pollen records representing the horizon of aboriginal occupation. Techniques of statistical analysis (e.g. multi-variant regressions or factor analysis) might be profitable procedures to use in search of such relations but are not justified at present because of the small number of samples analyzed so far. It is clear, however, that the fossil pollen records are far less variable. Partly, this is due to the occurrence of a significantly smaller number of pollen types in the fossil record; partly, it is due to the constraining influence of a greater frequency of Chenopodiaceae (cf. Chenopodiaceae) pollen. The reasons for the distinctions between the surface and the fossil pollen records remain obscure. Differential pollen preservation could be involved, and/or local overrepresentation, or even differential production of pollen expressed as seasonality. Similar distinctions between modern and fossil pollen records of given locations

have been observed elsewhere in the Sonoran Desert Grassland and the Woodland ecosystems of central Arizona, however. It would thus appear that the situation at this site is part of a general pattern and not a peculiarity of the site pollen record.

The fossil pollen records can be placed in a relative temporal series by virtue of associated archaeological data. The oldest samples of the series would be those of the floor sediments, and there is some prospect that the floor of Feature 2 is slightly older than that of Feature 1. The fill of the subfloor pit in Feature 2 should represent the next oldest sample, but not necessarily one which is older or younger than the subfloor pit fill of Feature 1. The floor contact deposit of Feature 2 provides a sample which is probably younger than that of the subfloor pit sampled in that feature, and possibly the most recently deposited specimen of the available series. If placed in relative time sequence, the fossil pollen records reveal a slight, but statistically significant, change in the frequency of arboreal pollen. This is primarily a function of sequential reduction in the frequency of Quercus (oak) pollen, however. Since this pollen was not likely to have been produced locally, the variation involved may have little paleoecological significance.

Change through time is also observed in the frequency of total Compositae pollen and the relative proportions of Ambrosiaceae (cf. low spine) to Tubuliflorae (cf. high spine)

inquiry, but present data will support no reconstructive It should also be noted that no pollen of maize, and no pollen attributable to economically significant taxa, occurs in these fossil records. In view of their direct association with substantial and permanent architecture this is somewhat surprising, since permanency of settlement is normally thought to be a diagnostic of agricultural activity. Again, however, pollen records of this sort are not unique to U:1:31.

Other sites in Desert Scrub and Desert Grassland locations of roughly similar antiquity also lack pollen evidence of agricultural activity, though contemporary pollen records from Hohokam, Mogollon and Anasazi sites contain large quantities of so-called economic pollen.

Overall, further palynological research seems to be both justified and indicated. However, it is clear that the pollen records of these sites will only be truly comprehensible from the perspective of a wider network of surface and fossil pollen records from a number of locations in the Transition Zone and the Ecotone District of central Arizona. It is not very likely that even a large investment in the palynological study of AZ U:1:30 and :31 alone would result in a valid paleoecological reconstruction for the horizon of aboriginal occupancy. The archaeologist responsible for mitigating adverse impacts to the cultural resources of the study area, then, must weigh the benefits of knowledge that might be gained from this research against those that might be gained by allocating presently available funds and energies in other directions. I would suggest that this judgement should be ~~deferred~~<sup>deferred</sup> until the parameters of time and funding have been well established.