The Northern Tucson Basin
Archaeological Survey

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In 1981 the inadequacy of existing settlement pattern data from the Tucson Basin left Los Morteros and other nearby sites in a vacuum with regard to their relationship to local and regional patterns of Hohokam settlement and subsistence. Because it seemed unlikely that these sites were isolated occurrences over the landscape, we set out in 1981 to gather comprehensive information on the early environment, settlement patterns, and the kinds, frequencies, and extent of all archaeological phenomena in the Basin. This endeavor would turn out to be of value not only for archaeological research. Because metropolitan Tucson was expanding rapidly into previously undisturbed rural areas, we knew that land-use planners would eventually be using the survey information we were about to gather, to make provisions for cultural resources while residential and commercial land development continued in Pima County long after we were through.

Our earliest effort was focused on the archaeology of the diverse desert lowland basin. The map on page 2 shows how our survey covered the floodplain of the Santa Cruz River, plus adjacent bajadas (piedmont) and more rugged higher terrain of the Tortolita and Tucson mountains. The initial results of our field work, which was funded through a federal planning and inventory grant provided through the Arizona State Parks Board, left no doubt about the richness of the archaeology in the lower Santa Cruz River basin. From the time the survey began in the fall of 1981 through the spring of 1983, crews had walked nearly 100 square miles of land, from Ina Road north to the modern hamlet of Rillito; had found 283 previously unrecorded sites; and had revisited over 30 previously known sites.

These findings as of early 1983 whetted our intellectual appetites to continue the survey northward and outside the Tucson Basin proper. Our desire to move north was further inspired by Tucson archaeologist Henry Wallace, who brought to our attention a 13th-century Hohokam...
"platform mound" site near Marana—a site now called the Marana Platform Mound (for obvious reasons). Platform mounds are large, formally constructed mounds, usually associated with walled-in housing compounds, that apparently served ceremonial or civic functions. The desert east of Marana and the modern farm lands around this town were targeted for our next phase of research.

Later in 1983, with additional funding provided through Arizona State Parks, the Museum's Archaeology Division

The Northern Tucson Basin Survey study area.

Nearly 2,000 archaeological sites, including 4 platform mounds and 3 ballcourt communities, are now known in this 700-square mile area.
began centering its attention on the region around the Marana Mound, which was occupied during the Tanque Verde phase (AD. 1150-1300). During the ensuing year, field crews systematically surveyed 35 square miles around the mound and recorded 147 new sites.

The data we were gathering on Hohokam settlement patterns complemented information being recovered during excavations nearby at sites along the planned course of the Tucson Aqueduct, part of the Central Arizona Project (CAP). Being in the right place at the right time paid off, for we were invited by the U.S. Bureau of Reclamation to participate in the massive federal archaeological study of the CAP route. We were to provide a regional view of Hohokam settlement outside the narrow aqueduct corridor. The major theme of our research now became the investigation of how some important Hohokam Classic period population centers were structured. Our emphasis thus turned to agricultural issues, definition of political units, and the social interaction that must have occurred at a variety of levels among the several Classic period platform mound communities located in the lower Santa Cruz Valley.

From September 1, 1983 through New Year's Day of 1987 our study area burgeoned to nearly 700 square miles. Besides continued survey northeast of the Marana Mound, we selected three other large blocks of land around other platform mounds located along McClellan Wash, Los Robles Wash, and Tom Mix Wash as possible candidates for further 100-percent survey coverage (see map on page 2). The closeness of these mounds to the Tucson Aqueduct's archaeological sites hinted that the information we collected would be relevant to all archaeological studies along the CAP route.

Prior to selecting areas for our intensive "block" surveys, and to obtain a general sense of the site distribution at and away from the targeted platform mounds, our field crews were assigned the task of walking sample "tran-
than 1 percent of the entire complex. on page 1, probably number around 45,000. This map shows less Rock piles in the Marana agricultural complex, like the pile shown between the northern tip of the Tucson Mountains and the Picacho Mountains, was occupied in ancient times by three land use patterns. The lower Santa Cruz River basin, because the Tucson Basin was not broad enough or flat enough to allow canals to be extended from the floodplain out onto the river terraces, and because not all segments of the Santa Cruz flowed continuously. Even though there is sufficient evidence to suggest broad similarities in the foodstuffs grown and used among all Hohokam, the local environments had a direct bearing on crop production. The potential for productive permanent occupations that included villages, farmsteads, agricultural complexes, reservoirs, and numerous small sites used for a host of other activities. Among the latter were food collecting and processing sites, and rock quarries for production of stone tools. By the Classic period many Hohokam site types, particularly the villages of the preceding period, continued to be occupied but had become parts of sprawling platform mound communities.

One obvious difference between the two regions concerns land use patterns. The lower Santa Cruz River basin, between the northern tip of the Tucson Mountains and the Picacho Mountains, was occupied in ancient times by three interrelated and cohesive Hohokam communities: the Marana, McClellan Wash, and Los Robles Wash settlements. By AD. 1000 these communities had developed substantial

**WHAT HAVE WE LEARNED FROM THIS WORK?**

Prior to the State Museum's surveys in the northern Tucson Basin, the perception of Hohokam culture had been strongly shaped by archaeological materials and research in the so-called Hohokam "core" or "heartland" centered on the lower Salt and Gila rivers. The term "Hohokam periphery," theretofore given to the geographically immense remainder of Hohokam territory, had carried an implication of lesser cultural complexity. The results of the Northern Tucson Basin Survey were instrumental in redefining our view of this fundamental "core versus periphery" concept. Our research indicates that the Hohokam living on and near the middle and lower Santa Cruz River were every bit as sophisticated as their "core area" counterparts. While subtle differences persisted in types and classes of material culture, by and large the two regions shared the same cultural traits and development until at least the beginning of the 14th century.

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The Hohokam platform mound communities that arose in the 12th century were—like the pre-AD. 1100 Hohokam "ballcourt" communities—archaeological site clusters that seem to have been organized around locations with platform mounds and other large architectural features. The Classic period platform mounds and the so-called Hohokam ballcourts that predated the platform mounds both are of sufficient size to suggest they were built by organized labor forces. Further, the ballcourt and platform mound sites are thought to have had some administrative function over expansive areas. For instance, sites with these "public" architectural features may have housed governing bodies or perhaps single individuals who had sufficient status to influence politics, religion, social activities, commerce, and resource use over specific territories.

On page 3, the map on the left illustrates how during the Preclassic era the Hohokam sites of the lower Santa Cruz Basin were clustered in the localities of Los Robles Wash, McClellan Wash, on the bajada of the Tortolita Mountains, and near present-day Rillito. In most instances we have found a dozen or more sites distributed around each large village containing a Hohokam ballcourt (see map). By AD. 1150 many Preclassic villages continued to be occupied but had become incorporated into the much larger site clusters that made up sprawling Classic period platform mound communities, as shown in the lower right map on page 3. One of the overriding characteristics of this new (Classic period) organization was the use of previously unoccupied lands for both habitation and farming.

The Hohokam relied heavily on cultivated crops but the techniques used for farming set the Santa Cruz River basin apart from the Hohokam "core" area. In the broad, flat valleys of the Salt and Gila rivers the Hohokam relied on extensive canal systems running from flowing rivers to irrigated tracts of land. This was not possible on a large scale along the Santa Cruz River, because the Tucson Basin was not broad enough or flat enough to allow canals to be extended from the floodplain out onto the river terraces, and because not all segments of the Santa Cruz flowed continuously. Even though there is sufficient evidence to suggest broad similarities in the foodstuffs grown and used among all Hohokam, the local environments had a direct bearing on crop production.
Archeological Consulting Services, Ltd. (Tempe). ACS is working on archaeological projects in the Tucson, Toltec, Scottsdale, Sun City West, and Verde Valley areas of southern Arizona. In a project for the Santa Fe Pacific Pipeline Co., Archaic period pits filled with fire-cracked rock and charcoal have been found north of Tucson, and Hohokam structures of the Colonial or Sedentary period are being excavated at a location near Toltec.

Where the Pima Freeway crosses the Salt River Pima-Maricopa Reservation near Scottsdale, Hohokam canals that may predate AD. 750 are being studied for DeLeuw, Cather & Company (highway design consultants). Previous tests revealed canal deposits more than 2 m deep.

In Sun City, fieldwork has been completed for the Del Webb Corporation at two sites in an area slated for development. One is an early 20th century homestead with a house foundation, hand-dug well, a drilled well with pumphouse, animal pens, and a garden. The other is a trash scatter evidently related to the homestead.

In the Verde River valley a survey of site clusters wherein a total of 70-80 sites are known has begun. The Bureau of Reclamation will use data from this study to assess damage that could result from the sites being inundated after Horseshoe Dam is reconditioned. With 2 of the 5 weeks in the field complete, the crew has recorded about 30 sites and found four "fergoliths" (Hohokam T-shaped stones--see August & October 1991 AIT issues).

Geo-Marine, Inc. (Plano, TX). Three archaeological corridor surveys were done in 1991 for the Army Corps of Engineers's and the Border Patrol's joint War on Drugs effort. In a 48.5-mile-long corridor in the Douglas-Naco area, 33 archaeological sites were identified including late Mogollon settlements, locations of lithic reduction and resource processing, and historic homesteads, defensive positions, trash deposits, and a limited activity locus. In a 7-mile corridor near Nogales, 9 undated lithic scatters and 1 historic limited activity area were found. And in a 48-mile-long corridor on the Tohono O'odham Reservation between the Bañoquivari and La Lesna mountains, 42 sites of the Archaic, Formative, and Historic periods have been identified. These include locations used prehistorically for habitation (one settlement site contains trash mounds and a reservoir) and for resource processing, and historic sites used for habitation as well as limited activities such as saguaro fruit gathering. In the near future the Tohono O'odham corridor will be extended westward to the Ajo Mountains, and test excavations will be conducted at sites in the Douglas-Naco area.

Dames & Moore (Phoenix). A report is nearing completion on the archaeological excavations done in 1989 in the area of Phoenix's second Chinatown. Occupied from the 1880s through the 1930s, this area is now the site of the America West Sports Arena. On a related subject, D&M recently completed a "historic context" document that the State Historic Preservation Office (SHPO) will utilize to identify, evaluate, and establish preservation priorities for archaeological sites of Chinese occupations in Arizona. A similar historic context report now being prepared for the SHPO concerns cultural properties associated with mining of gold and silver in Arizona; anyone with information about gold or silver mining properties that may warrant preservation is asked to call Melissa Keane at Dames & Moore in Phoenix at (602) 371-1110.

More recently, D&M recorded four Hohokam sites during a survey of terraces above the Agua Fria River north of Phoenix. This area of very high archaeological site density is less than a mile from the major Casa de los Piedras site. The newly recorded sites include a campsite, an extensive habitation area (possibly a pithouse village), a smaller habitation site indicated by several rock-lined features interpreted as stone-foundation jaeal (pole-and-brush) structures, and a less easily interpretable site containing various rock features. These survey findings contribute to the impression that the Agua Fria drainage witnessed substantial development during the early Formative era when people were first settling down into sedentary villages.

Desert Archaeology, Inc. (Tucson). The third and final phase of fieldwork on the Roosevelt Community Development project northeast of Roosevelt Lake ended in June. This project for the Bureau of Reclamation focused on three major site complexes—Griffin Wash, Pyramid Point, and Meddler Point—and on an early ceramic period component of the Eagle Ridge site. Preliminary data suggest that the Pyramid and Meddler "platform mounds" functioned in two very different manners. The much larger Meddler mound may have been mostly involved in public ceremonies, whereas the Pyramid mound was a tower apparently associated with homes of important persons. Nearly 19 person-years were expended on all three field stages of the Roosevelt Community Development study; analyses of the project data are expected to take three years and result in seven published volumes.

In May, testing for the City of Tucson at the intersection of Church Avenue and Alameda Street revealed walls, still standing as much as a meter high, from at least 6 rooms that evidently date from AD. 1860 to 1928. Also
found there was a prehistoric Hohokam horizon that included a depression at first thought to be a pithouse but which was eventually determined to be just a refilled pit. Another test for the City in June, where a pipeline will be laid near 12th Avenue and Interstate 19, identified three Rincon phase Hohokam houses. The City will sponsor excavation of these features before construction.

Office of Cultural Resource Management, Arizona State University (Tempe). The third field season of the Roosevelt Platform Mound Study, sponsored by the Bureau of Reclamation in conjunction with modifications to Roosevelt Dam, is winding up. Five Hohokam/Salado platform mounds were excavated during this project. Three—Pillar Mound, Pinto Point Mound, and Cline Terrace Mound—are strikingly similar in their organization of internal space within the mound's compound. The backs of these mounds had high shear walls, but their fronts were characterized by elevated open areas, and the main entrance in the compound wall was near the front of the mound. Yet a robust wall connecting the edge of the mound to the main entrance always prevented direct access to the front of the mound. To gain access to the mound's front, a counterclockwise route had to be followed from the main entrance around the back of the mound. At all three mounds the counterclockwise route ended in a walled, ground-level courtyard in front of the open area on the mound. The pairing of the open area on the mound and the ground-level courtyard at the end of the counterclockwise route suggests that these mounds were associated with formal performance arenas, each with its own stage and audience area. Interestingly, counterclockwise circuits are depicted in prehistoric ceremonial contexts and from the oral traditions of Puebloan and Piman groups.

Pima County Department of Transportation (Tucson). Pima County recently sponsored archaeological sample surveys that covered 3 square miles to help plan where a new regional landfill is to be built. Conducted by SWCA, Inc., the surveys were in three areas south and southeast of Tucson. One archaeological rock cluster, 1 roasting pit, and 1 historic dump were recorded in the survey area south of Tucson near the ASARCO Mission Mine. Prehistoric sites identified in an area southeast of Tucson's airport include 2 probable settlements and 9 agricultural areas characterized by numerous rock piles and artifact scatters. In the third area surveyed, near Rita Road west of the County Fairgrounds, 2 isolated rock features and 4 small artifact scatters (some associated with rock features) were found.

To plan for the widening of Sabino Canyon Road in northeastern Tucson, Pima County contracted Cultural & Environmental Systems, Inc., to conduct archaeological testing north of Cloud Road where Sabino Canyon Rd. crosses or abuts two previously recorded sites. The only cultural feature identified in test trenches was a large roasting pit. As this newsletter was going to press the County was planning to have the roasting pit excavated to recover archaeological information.

Statistical Research, Inc. (Tucson). SRI has been busy on work for the Pima County Department of Transportation (PCDOT), Army Corps of Engineers (ACOE), and U.S. Bureau of Reclamation (USBR). For PCDOT, archaeological testing was recently completed in a Tucson landfill within the historic San Agustin Mission complex. No significant archaeological features were found there even though remnants of several important historic features were immediately adjacent to the project area.

To help the ACOE plan for bank stabilization projects in Tucson, testing was conducted along the Rillito River at 1 large Hohokam hamlet at the confluence of the Rillito and Santa Cruz rivers; 2 Hohokam hamlets or farmsteads; 4 Hohokam resource procurement and processing sites; and at 1 historic site near Fort Lowell—the original location of the Mormon settlement of Binghamton. In another ACOE project archaeological testing was done at the 49ers site in the eastern Tucson Basin along Tanque Verde Creek. Remains of historic homesteads were found in an area where the ACOE will build a large earthen dike, and excavations in the core of the site revealed an early Classic period housing compound.

In Phase 1 of a 4-year excavation project in the lower Verde River for the USBR, 19 sites near Horseshoe Dam
were investigated. Most of the work in this project focused on a settlement of up to 60 houses that may date from ca. AD. 300 to 1100 (Pioneer-Sedentary periods). Other sites studied included Hohokam field houses, farmsteads, hamlets, resource collecting and processing sites, and a large agricultural field site with at least 250 rock piles, many rock alignments, four field houses, and several petroglyph boulders. Three small, late Hohokam settlements exhibit houses within walled compounds that are similar to the small Roosevelt and Gila phase compounds of the Tonto Basin except for differing masonry style. This project's Phase 2 begins in September.

Reports are nearing completion for the USBR's Roosevelt Rural Sites Study, a two-year investigation of 29 small settlements and agricultural sites in upland areas of the Tonto National Forest around Roosevelt Lake. This study complements the investigation of large riverine communities in Arizona State University's Roosevelt Platform Mound Study, and provides means of testing ideas about how settlement and subsistence systems developed in the Tonto Basin. Regional dendroclimatological, agricultural, and soil survey data are being used to determine how large a population the Tonto Basin could have supported in ancient times. Preliminary results suggest that prehistoric populations there were too small to support complex sociopolitical systems and that rural upland settlements were not economically tied to the larger platform mound complexes that arose after AD. 1300. In fact, it seems that most of the upland areas were abandoned after 1300 and the communities closer to the river were smaller and denser than previously thought.

SWCA Environmental Consultants (Tucson). Subsurface testing recently completed at the new Kartchner Caverns State Park, south of Benson, revealed no substantial archaeological features. However, surface artifacts provide evidence that the entire project area was utilized by Paleoindian, Archaic, and ceramic-period peoples for collecting stones and chipping them into artifacts. Archaeological materials collected include the base of a Paleoindian projectile point that may be of the Clovis type.

In archaeological testing at Sky Harbor Airport in Phoenix, three pithouses of unknown age were revealed along with a segment of the prehistoric Canal Salado. This canal was part of an extensive prehistoric irrigation system drawn from the north side of the Salt River near the Hohokam site of Pueblo Grande.

Acknowledgments. Map on page 2 is from The Marana Community in the Hohokam World by Suzanne K. Fish, Paul R. Fish, and John H. Madsen (University of Arizona Press, 1992); illustrations on pages 1, 3, and 4 are courtesy of Madsen. Rick Ahlstrom, Simon Bruder, Richard Ciolek-Torrello, Alan Ferg, Margie Green, David Jacobs, Rick Martynec, Linda Mayro, and Kim Savage also contributed material for this issue. Carol Richardson and Jean Reid mailed the April newsletter. Archaeology in Tucson is printed by AlphaGraphics, 7306 N. Oracle, Tucson.

Northern Tucson Basin (Continued from p. 4) farming in our study area seems as great as in the river valleys of the "core" area, even if the greatest emphasis here was not on growing maize. Though floodplain irrigation was tenuous, the narrow basins and gently sloping piedmonts in the Marana area of the Santa Cruz Valley afforded opportunities for the Hohokam to diversify their farming strategies. This addition of different techniques may have ensured fairly reliable returns of traditional crops like maize, but also of more unusual ones, like agave. Such opportunities were not so forthcoming in the broad valleys of the Phoenix Basin. To offset losses from unpredictable irrigation systems along the lower Santa Cruz River, the Hohokam here turned to specialized crops that thrived on land that would be considered marginal for more traditional crops like maize or cotton.

Of all the discoveries made during our survey, perhaps the most important was the identification of extensive agave plantations like the one illustrated on page 4. Adapted to low and unpredictable rainfall, agave is the perfect food and fiber plant to supplement crops that need more predictable moisture. The discovery of thousands of acres of rock piles, checkdams, and roasting pits in agriculturally marginal areas in the Marana and McClellan Wash platform mound communities led us to conduct peripheral studies of the rock pile field phenomenon (see page 1 photo). Abundant bits of charred agave in roasting pits within the massive rock pile fields were clues that these field complexes were used for agave cultivation. The presence in the fields of specialized stone tool assemblages—particular forms of scrapers, and knives of tabular andesite like that shown on page 3—provided additional evidence. And finally, studies of agave farming practices among historic and modern peoples in Mexico supported this conclusion.

Of course, our field experiences during the Northern Tucson Basin Survey reminded us once again that archaeological survey crews don't always hold up so well during the sizzling summers that southern Arizona offers us. As a matter of fact, sometimes the university field school students (not to mention us former students) who worked on these surveys had a tendency to get downright sullen after being out in the sun perhaps a little too long. So, we learned that, like the Hohokam of yore, we do what we can to cope with the world we live in.

"HEAT EXHAUSTION"
In the June and July
and hot August sun
Crew members mumble
This ain't much fun
Two hours to get here,
and three hours back
I drank all my water
I lost my dang hat
You expect me to crawl
on the hot desert ground
So you can publish your reports
When I'm no longer around
Well take your dang pot sherds
and take your dang stone!
I'm dreaming of winter
Just leave me alone

J. H. Madsen
Picacho, AZ
August 1986, 2 PM, 109°
Roasting pits similar to the one shown here were used by ancient southern Arizonans to cook the hearts of agave plants. The Hohokam of the Tucson area maintained extensive fields for cultivating agave for food and textiles (see page 1 article). Drawing by Janice Johnson was provided courtesy of the Pimería Alta Historical Society, Nogales, AZ.

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