

# Old Pueblo

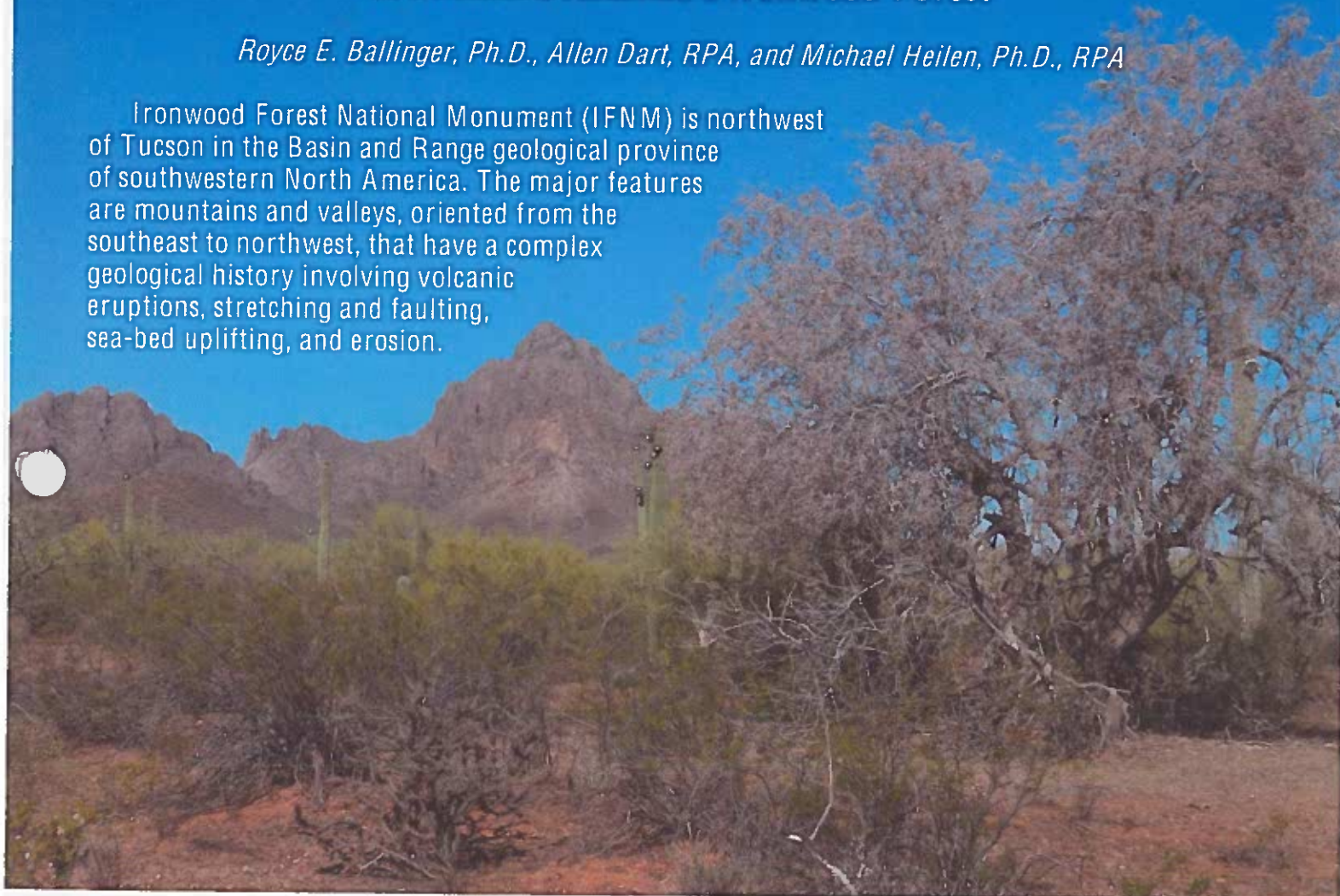
# Archaeology

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## Natural History, Archaeology, and Cultures of Southern Arizona's Ironwood Forest

*Royce E. Ballinger, Ph.D., Allen Dart, RPA, and Michael Heilen, Ph.D., RPA*

Ironwood Forest National Monument (IFNM) is northwest of Tucson in the Basin and Range geological province of southwestern North America. The major features are mountains and valleys, oriented from the southeast to northwest, that have a complex geological history involving volcanic eruptions, stretching and faulting, sea-bed uplifting, and erosion.



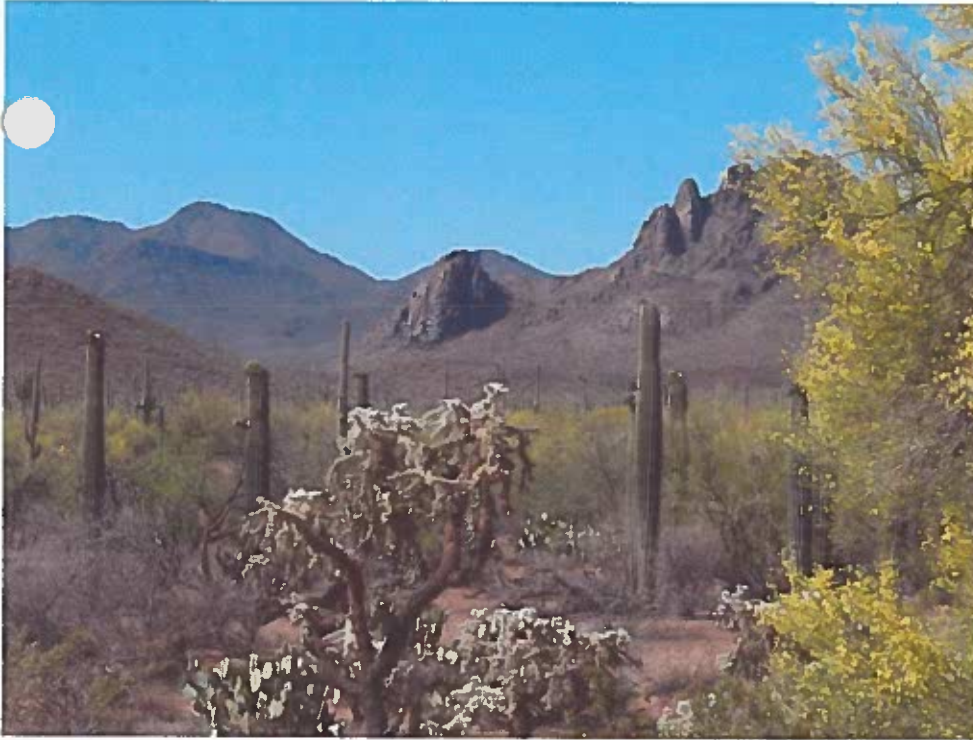
*One of Ironwood Forest National Monument's namesakes, a desert ironwood tree on the right, in full bloom, competes with the geological beauty of Ragged Top Mountain in the center background; photograph by Royce E. Ballinger*

The perimeter of IFNM contains 189,000 acres including 60,000 acres of Arizona State Trust lands and private in-holdings. It was created by Presidential proclamation (#7320) in June 2000 and is managed by the Bureau of Land Management (BLM) as part of the National Conservation Lands System created in 2009. This system complements the National Park and National Wildlife Refuge Systems to conserve about 28 million acres of public lands for future generations to enjoy the natural and cultural values they contain.

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<sup>1</sup> Issue no. 1 for the 2013 membership year. Due to production difficulties this issue was not actually published until 2015.



*A general landscape view illustrating the wildness of Ironwood Forest National Monument; photograph by Royce E. Ballinger*

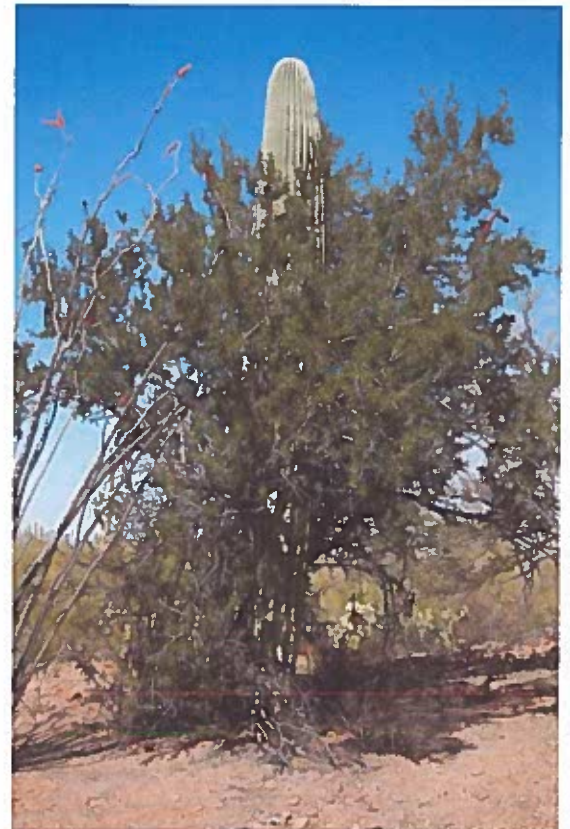
There are eight mountain ranges (Roskrige, Pan Quemado, Waterman, Silver Bell, Ragged Top, Samaniego Hills, West Silver Bell, and Sawtooth) and two large valleys (Avra and Aguirre) with elevations from 1,559 to 4,195 feet. The area has undergone increasing aridity, higher temperature, and a changing set of plants and animals over the past 13,000 to 20,000 years. Near the end of the Pleistocene, the environment was relatively moist with many streams and marshy areas within a grassland and pine-oak woodland. The now extinct megafauna included mammoths, giant bison, American horses, tapirs, dire wolves, and large jaguars, among other large mammals that were the staple of the Paleoindians. By 8,000 to 10,000 years ago this rel-

atively lush vegetation was gradually replaced by more arid-adapted plants and animals as the megafauna became extinct.

IFNM is situated in the northeastern most part of the Sonoran Desert that is dominated by cacti and leguminous trees. The great diversity of plant life compared to other North American deserts owes to the biseasonal pattern of rainfall (total annual average of about 10 inches, equally divided between winter and summer rains) and the subtropical climate of relatively rare winter freezes. Two of the five subdivisions of the Sonoran Desert are present. About 55 per cent of IFNM consists of the Arizona Upland subdivision with the remainder comprising the Lower Colorado River subdivision. Almost 600 different taxa of plants have been recorded in IFNM including one endangered species, Nichol's Turk's head cactus. Another plant of the four o'clock family, Mexican devil's claw, occurs on Ragged Top and nowhere else in the United States. It is 232 miles north of its nearest locality in Sonora, Mexico.

The Colorado River subdivision is an extension of the flood plains and flats that surround the Colorado River. Today it is dominated by grasses, mesquite trees, various bushes (the creosotebush being the most iconic), a few cacti, and a plethora of wildflowers in years of abundant rainfall. The Arizona Uplands have a greater variety of plant species.

The namesake plant, desert ironwood occurs abundantly on the slopes and bajadas of desert mountains, although this tree is more common in the drainages of the drier flatland habitats farther west. Studies have revealed its keystone role in IFNM with over 500 species of plants and animals dependent on this tree, which is long-lived (to 800 years or more) and slow-growing. Its dense wood will not float in water and has been harvested for charcoal and carvings.



*Desert ironwood tree as nurse plant to a saguaro; photograph by Robert Ashbaugh*



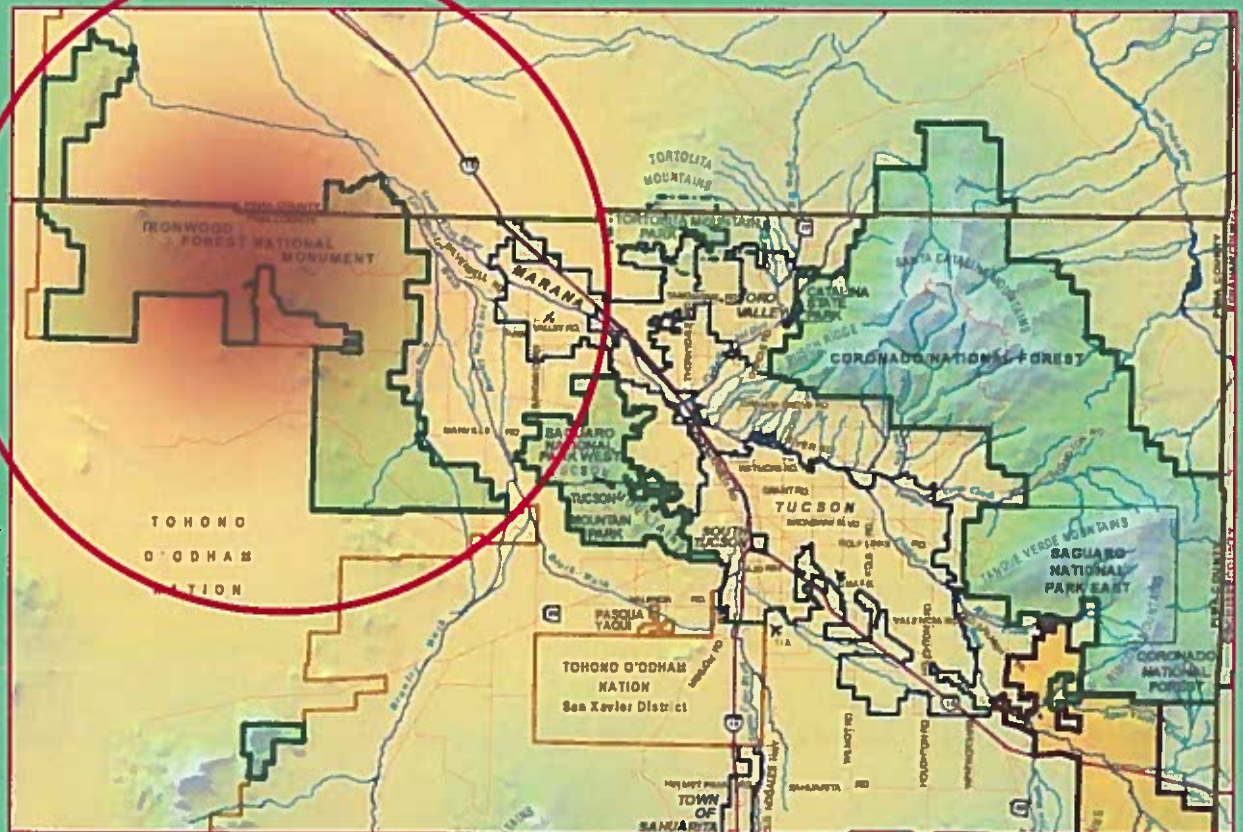
Native peoples ate its beans and used its wood in a variety of ways as do many animals from insects to birds and mammals. It provides nesting sites and shelter for birds as well as forage and browse for deer and bighorn sheep. Its roots harbor symbiotic nitrogen-fixing bacteria that enrich the soil and its cover serves as a nurse plant for seedlings of many plants and cactuses. During its month-long bloom near the end of spring, the flowers are a favorite of bees, bugs, and beetles that in turn are eaten by birds and lizards that are then eaten by snakes and mammals, etc.

Other prominent plants of the Arizona Uplands include two species of palo verde: blue palo verde along washes and major drainages and foothill palo verde on bajadas and mountain slopes. These trees are short-lived (100-150 years) and fast-growing with soft wood useful only as firewood, but the beans are edible and consumed by many animals and people. The iconic saguaro is a prominent feature of the Uplands. These cacti reach to 40-50 feet in height with 20-30 arms over their 200+ year lifespan. Flowering in late spring, the saguaro feeds many pollinators including the endangered lesser long-nosed bat and results in fruits that are eaten by numerous animals including native peoples in early summer. The internal woody ribs were used extensively for construction well into the American Pioneer period. Many plants, too numerous to detail here, occur that were variously used by native cultures for food, fiber, drink, medicine, personal items (e.g., soap, tools), in ceremonies, etc.

Animals found in IFNM represent most species that are common in the Sonoran Desert, except no pronghorn have been recorded recently. The desert bighorn sheep in IFNM represent one of the few native herds. Most herds in the Southwest represent reintroduced populations. The Sonoran Desert tortoise is common in IFNM and like the bighorn sheep was a unique and important resource for early people. Six species of poisonous snakes occur in IFNM including five rattlesnakes. The Gila monster, the only poisonous lizard in the United States occurs here. A large number of bird species are present including the white-winged dove that migrates from the south to feed on the saguaro flowers and fruit. An unknown number of invertebrate animals occur, but perhaps none more important than termites that hasten the decay of dead trees, an otherwise slow process in the dry climate.

Clearly, the varied plants and animals provided a wide range of resources for human cultures that developed here over the years as elaborated below.

*Map showing location of the Ironwood Forest National Monument; adapted from Pima County Sonoran Desert Conservation Plan web address shown below*





### Archaeological Cultures Identified in South-Central Arizona *Allen Dart, RPA*

#### Paleoindian, ca. 11,000-8000 BC

The earliest human occupations that have been securely dated by the radiocarbon method in the Southwest were at two southern Arizona sites, Blackwater Draw and Murray Springs, both of which are attributed to the Paleoindian tradition's Clovis culture. The average of the Blackwater Draw dates is 9351 BC, and for Murray Springs, 8935 BC. The Paleoindian era preceded the introduction of pottery in this region by several thousand years and is represented in southern Arizona by two early archaeological cultures, Clovis and San Dieguito.

Clovis people, whose hallmark was a finely made, lanceolate projectile point with fluted (longitudinally channel-flaked) faces, are believed to have hunted large game such as mammoth and bison that became extinct at the end of the last Ice Age, around 8000 BC, as well as relying on foraging. Sites with diagnostic Clovis projectile points, which presumably were used on spears, occur throughout eastern North America and the Great Plains, but are rare west of Arizona's north-south midline. Some of the best-documented and most famous Clovis sites are located in the San Pedro Valley less than 100 miles southeast of Tucson, and some isolated Clovis points have been found in and near the Tucson Basin.

In contrast to the relatively short-lived (ca. 3,000-year-long) Clovis culture, the San Dieguito culture appears to have been an extremely long-lived cultural tradition of lowland deserts that extended from the Pacific Ocean eastward into southern Arizona and from the Great Basin of Utah southward into southern Sonora, and that persisted for several thousand years. The economy of the ancient San Dieguito people seems to have been based more on foraging in harsh desert environments than on hunting, because San Dieguito archaeological sites commonly exhibit simple scraping and chopping tools, but lack projectile points.

#### Archaic, ca. 8000-2100 BC

With the end of the last ice age and the extinction of large game animals, the Paleoindian way of life eventually gave way to a mixed foraging and hunting economy called the Archaic tradition. Archaic people in southern Arizona evidently foraged and hunted, as there are no

*(Continues on page 6)*

## A Procession of Cultures in the Ironwood Forest

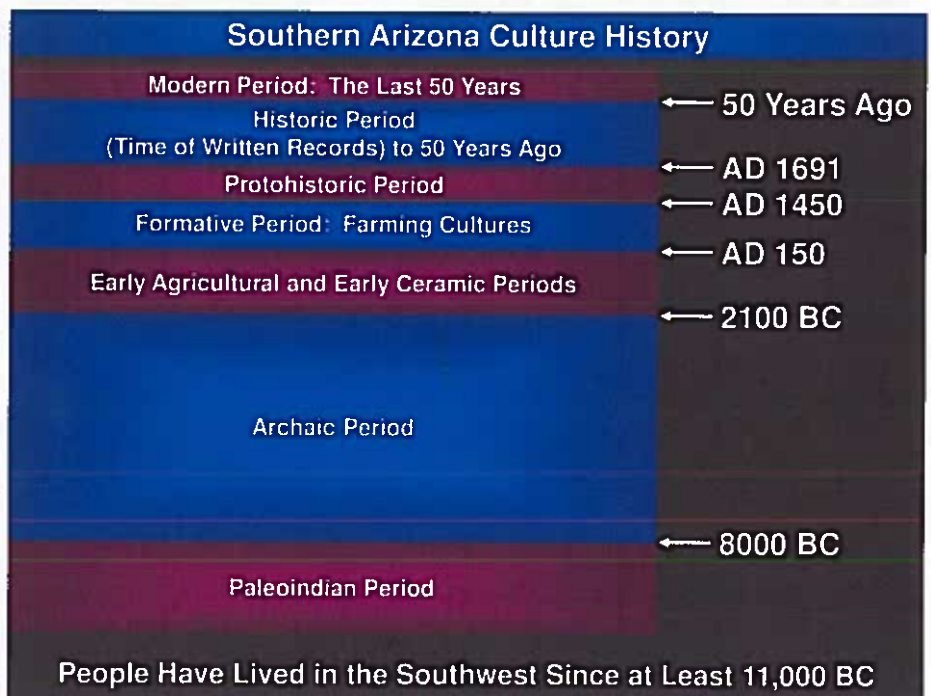
Archaeologists have identified several successive human cultures that have inhabited the Monument area for the past several thousand years. In order to put what is known about the kinds of archaeological sites in the Monument, it is useful to provide some cultural context about the procession of cultures in southern Arizona generally. The major archaeological cultures that have been identified here are, in chronological order, the Paleoindian, Archaic, Early Agricultural, Early Ceramic, and Hohokam, spanning over 12 millennia from approximately 11,000 BC to AD 1450 (see illustration below). Following the collapse of Hohokam culture, the time from about AD 1450 to 1700 is often referred to by archaeologists of this region as the "Protohistoric" period, and the period from 1700 until 50 years ago generally is referred to as the Historic period. The last 50 years is considered the Modern period. Some basic information about each of these culture periods is given in the sidebars on this and the following even-numbered pages.

### Overview of Ironwood Forest-Area Archaeology

The archaeology of Ironwood Forest National Monument is known primarily from one intensive survey and two sample surveys that were conducted to identify cultural resources (archaeological and historical sites) – the Cohn-Cocoraque, Los Robles, and Ironwood Forest National Monument survey.

The Cohn-Cocoraque survey was conducted by Bureau of Land Management archaeologists in the mid-1980s prior to a re-seeding project. It included two separate areas in the western Avra Valley and totaled about 6,170 acres (9.6 square miles).

The largest archaeological survey in the monument so far



*Chronological sequence of southern Arizona archaeological and historical cultures*



has been the Los Robles survey, conducted by Arizona State Museum archaeologists mostly in the northeastern section of the monument, and partly outside of it, in the mid-1980s. The Los Robles survey included one large-block inspection area and several sample-transected areas, and covered about 14,900 acres (about 23.3 square miles).

The Ironwood Forest National Monument sample survey, sponsored by the Bureau of Land Management, sampled 5,185 acres (8.1 square miles) mostly using intensive archaeological-site identification methods, in 19 linear transects each 1 to 4 miles long and in 24 half-mile-square (¼-section) sample quadrats. The BLM sample survey also included judgmental inspections geared toward the identification of rock art locales, and it identified and described 24 such locales. Archaeologists involved in this survey recognized that petroglyphs at Cocoraque Butte, Pan Quemado, and along the northeastern flank of the Sawtooth Mountains generally are located on low-lying, boulder-strewn hills that present superb vistas of the surrounding landscape, and concluded that in some cases, such as in Avra Valley, petroglyphs could identify social or other boundaries. The BLM survey also included some judgmental pedestrian survey, remote sensing and mapping of a Spanish Colonial period visita mission, mapping of modern, undocumented border-crosser sites, and general reconnaissance and site visitation. This survey only covered BLM lands in the Avra Valley, Aguirre Valley, Santa Cruz Flats, and Santa Rosa Valley, but none of the monument's State Trust or private lands.

Combining information from these three big surveys and numerous smaller ones, a total of approximately 20 percent of the 189,000-acre Ironwood Forest National Monument has been surveyed for cultural resources, and over 250 sites have been recorded during those surveys. If site density were fairly uniform throughout the monument these numbers would suggest that the entire IFNM might contain between 1,000 and 1,500 archaeological and historical sites. However, using the results of the BLM sample survey to estimate the number of sites within the monument boundaries, this survey's discovery rate of 1 site per 34 surveyed acres suggests there could be on the order of 5,600 sites on the IFNM. Such estimates are of course influenced by recording methodology and other factors, including representativeness and site size.

The sites that have been identified represent primarily the post-Paleoindian cultures, and are fairly representative of the rural, nonriverine residents of south-central Arizona for the past 10,000 or so years. Here are some breakdowns of observations we made on the 262 sites in the monument for which we could find data.

## Cultures Represented

It is difficult to say that particular sites represent particular archaeological cultures, because we often find that individual sites were used repeatedly through time. Therefore, a single site may contain artifacts, architecture, or other material culture from two or more cultures that occupied it through time. This is reflected in the site database by what we call "multicomponent" sites – those that have evidence of two or more cultural components. Of the 262 sites in our database sample, at least 49 (19%) are multicomponent. With this in mind, we can look at the evidence for the sequential cultures through time represented at the sites.

### Paleoindian?

One of the 262 sites contained a projec-

*Below: Clovis spear point base found about 25 miles east of Ironwood Forest National Monument, with penny for scale; Old Pueblo Archaeology Center photograph by Helga Teiwes*

*Right: Drawing of Clovis point from near Naco, Ariz.; dotted line indicates where the sharp edges at its base were dulled by grinding; from "Common Paleoindian and Archaic Projectile Points of Arizona" by Leon Lorentzen; pp. 137-151 in "Paleoindian and Archaic Sites in Arizona" by Jonathan B. Mabry; Center for Desert Archaeology, Tucson, 1998*



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## Archaeological Cultures (Continued from page 4)

known agriculture or sedentary village sites prior to around 2100 BC. Archaic period archaeological sites are commonly recognized by the presence of ground stone milling tools that would have been used mainly for processing seeds and other plant resources, and by particular styles of projectile points. Pottery, however, is generally absent from Archaic sites.

### Early Agricultural, ca. 2100 BC-AD 150

Beginning by at least 2100 BC, the Early Agricultural period reflects significant culture change. During this period traditional nomadic hunting and foraging gave way to an increasingly sedentary settlement and subsistence pattern manifested in at least semisedentary villages with thick accumulations of organic debris (refuse), pithouses, and bell-shaped storage pits. Southern Arizona Early Agricultural sites typically are located on optimal farmland near the floodplains of perennial or semipermanent streams. Archaeological sites of this period often include traces of maize (corn), a crop that can only be grown by deliberately planting it.

### Early Ceramic, ca. AD 150-650

Agriculture became more intensive as the Early Agricultural period transitioned into the Early Ceramic period. The latter is distinguished from the former mainly by the introduction of ceramics and a shift to more permanent settlements in southern Arizona. During the two cultural phases of the Early Ceramic period – the Agua Caliente (AD 150-550) and Tortolita (AD 550-650) phases – well made plainware and redware pottery, and more substantial dwellings – round and eventually rectangular pithouses – began to be used in the Santa Cruz River valley. This Early Ceramic way of life set the basic pattern for the later “Formative” cultures of the Southwest: the Ancestral Pueblo (Anasazi), Mogollon, Patayan, Sinagua, and, in southern Arizona, the Hohokam.

### Hohokam, ca. AD 650-1450

The Hohokam culture began to develop in the Phoenix area around AD 400-500, but did not become well established in the Tucson area until around 650. The Hohokam lived in sedentary agricultural settlements, constructing earth-covered, wood-and-brush houses built in shallow pits. They produced plain and painted

*(Continues on page 8)*

tile point fragment that the recording archaeologist tentatively identified as a Paleoindian type based on its size and intentional grinding near its base – an attribute normally seen only in southwestern Paleoindian and very early Archaic period sites (see page 5 illustrations). This point, however, was found on a site that also included Archaic and Hohokam artifacts. We might conclude from this singular discovery that Paleoindian sites are either absent or extremely rare in the monument. Experience elsewhere shows, though, that Paleoindian sites are pretty rare and difficult to find in general, and many of those that have been found have been discovered by avocational archaeologists, sort of like finding a needle in a haystack. Archaeological surveys along Brawley Wash, not far from the monument, have found geological deposits that date to the Paleoindian era (the late Pleistocene epoch), so it still would not be too surprising if Paleoindian sites eventually are found in IFNM.

### *Archaic and Early Agricultural*

When archaeologists first began entering their estimated site dates into computer databases in the early 1990s, the Early Agricultural and Early Ceramic culture categories had not been recognized in southern Arizona. It was only starting around 1995 that some archaeologists started identifying the Late Archaic period as the Early Agricultural period, and around that same time it was recognized that there was an Early Ceramic culture that may have preceded what we recognize as the Hohokam pottery-making culture. However, 4 of the 19 Archaic sites in the database are specifically identified as Late Archaic, so some archaeologists would now call these Early Agricultural period sites.



*The two overlapping Early Agricultural period pithouse floors in this photograph were identified in a Tucson archaeological site by the presence of shallow, flat-bottomed pits with postholes along the edges of the floor; photograph by Allen Dart during an EcoPlan Associates archaeology project in 2010*



Nineteen of the 262 sites (7%) are listed as Archaic period sites. Only 4 of these 19 were identified as purely Archaic; the rest also contain Hohokam artifacts. However, another 3 of the 262 are identified in the database as "Preceramic" period, and 16 more are listed as "Native Archaeological Culture" sites, usually because they contain stone artifacts or petroglyphs, but no pottery, suggesting that the Preceramic and Native Archaeological Culture sites also date to the Archaic, Early Agricultural, or possibly the Paleoindian period. Therefore, if we combine the numbers of identified Archaic, Preceramic, and Native Archaeological Culture sites, we come up with 38 of the total 262 sites (15%) that likely date either to the Archaic or Early Agricultural period.

Another hard-to-evaluate set of sites, culture-wise, is the group characterized in the database as "Prehistoric, 12,000BC-AD1500."<sup>2</sup> Fifteen sites fall into in this category. They might represent any of the prehistoric cultures, and in fact records for some of them show that they have Archaic or Hohokam components.

### *Early Ceramic and Hohokam*

It is difficult to determine whether any of the sites that contain pottery were occupied during the Early Ceramic period, because some of the smaller sites that are just scatters of pottery and stone artifacts could have been used by the Hohokam or the Early Ceramic people, or by both (or by Protohistoric period folk, discussed below).

In the site database set, 189 of the 262 sites (72%) contained pottery, indicating they were utilized by Hohokam or people of the Early Ceramic, Protohistoric, or historical O'odham cultures. We can say, though, that 150 of the 262 sites (57%) were actually identified by the recording archaeologists as Hohokam sites because they contained identifiable Hohokam pottery. The fact that 39 sites had ceramics but were not specifically identified as Hohokam sites might be due to their pottery not having been certainly identified as Hohokam pottery by the archaeologists, or because the persons who entered the site records

into the database did not note (or recognize that some of the pottery observed at the sites (and listed in the records) is in fact Hohokam pottery.



*The grinding slicks,  
Or "bedrock metates"  
on this rock surface in the  
Ironwood Forest National Monument  
could have been used by any or all  
of the ancient Native American  
cultures that have occupied  
this part of southern Arizona;  
photograph by Allen Dart*



*Obverse and reverse sides of a San Pedro  
projectile point found at a Late Archaic/Early  
Agricultural site during survey in Ironwood  
Forest National Monument;  
photograph courtesy of Michael Heilen*

<sup>2</sup> The term "prehistoric" is used here to refer to times before decipherable written records were made. Use of the term is not meant to suggest that preliterate societies did not have history because they certainly did, in forms such as oral history.



## Archaeological Cultures (Continued from page 6)

pottery, along with numerous other crafts of shell, stone, and clay. Their decorated pottery usually has red-painted designs on a buff colored or light brown background, so is called red-on-buff and red-on-brown ware. Unlike their predecessors and successors, the Hohokam typically cremated their dead instead of laying the bodies into graves.

In the Phoenix area, the Hohokam constructed extensive irrigation canal systems along the Salt and Gila rivers. Along the Salt River alone, archaeologists have identified at least 200 miles of Hohokam canals, and some estimates go as high as 600 miles just along that river. Canal systems were not quite that extensive along the Gila River, and irrigation works of a more limited extent were used along the Santa Cruz River at least from Marana southward to Tubac, and westward into what is now the Tohono O'odham Reservation.

A salient feature of the larger Hohokam villages between about AD 800 and 1100 was the so-called ballcourt, which looks very much like an oval, earthen-embanked sports stadium ranging from 20 to 80 m long. Some Hohokam ballcourts that have been excavated exhibit a carefully prepared, mud-plastered floor and banked-up sides. Although they are called ballcourts, their actual function is debated. Some archaeologists suggest they could have also been used during rituals, for public ceremonies, singing performances, oratory, and even as the focus of feast days and trade fairs. Whatever public events they were used for, events focused on the ballcourts probably drew crowds from near and far, so were ideal venues for exchange of goods, reconnecting with friends and relatives, meeting new people, and finding mates.

Some major changes took place in the Hohokam culture starting around AD 1100. Many large Tucson-area villages that had been occupied previously were abandoned or moved, and populations became concentrated into fewer, but larger, centralized communities. Architectural styles changed too, with mud-walled, above-ground houses becoming common. Other changes include more use of upland environmental zones away from the rivers for agriculture, the addition of inhumation to cremation as a method for disposing of the dead, erection of mud-wall village compounds, a drastic reduction in the number of ballcourts, and the rise of a differ-

*(Continues on page 10)*



*A "trincheras" site in Ironwood Forest National Monument exhibits massive stone terraces (trincheras), most of which appear to have been constructed for placement of houses on the terrace tops, rather than for agricultural production or defense. There are stone-foundation houses on many of the terraces at this site, and some petroglyphs among the trincheras; photograph by Allen Dart*

In other words, there are some problems with the information in the database that we examined. Archaeological ceramic analyst Stephanie Whittlesey graciously examined ceramic artifacts from the BLM sample survey and had a suspicion that some of the plainwares were potentially Early Ceramic, but found had no hard evidence to support this. The ceramics she analyzed as part of the sample survey were predominately Hohokam or were post-AD 1700 O'odham sherds. However, around 10 percent of the sherds were unidentified plainware that could not be attributed to any particular Native American culture.

The ceramic data, when viewed per discovery location, suggest the most intensive Hohokam use of the IFNM involving ceramic artifacts occurred between AD 950 and 1450. Sherds identifiable to the AD 750-1150 period suggest increasing use during that time span. Nearly all sherds that could be identified to the AD 1150-1450 period were of styles believed to be most common during the earlier half of that period, suggesting that use of the IFNM for activities involving ceramic artifacts peaked between 1150 and 1300.

### *Protohistoric*

Protohistoric sites in the database are characterized as either "Prehistoric-Historic transition, AD1500-1700" sites or simply "Protohistoric" sites. These two categories combined account for only 11 of the 262 sites (4%).





## Historic

Fifty of the 262 sites in the database set have post-1700 Historic period components. Most of these are interpreted as Euro-American sites, but 8 of the 50 were concluded to be O'odham sites or at least to have had O'odham components in addition to Euro-American components. None of the sites in the database set are identified as Apache sites, but that may be because Apaches left very little material culture that archaeologists can recognize as Apache materials.



*Metal fork fragment found at a site discovered during sample survey near Mission Santa Ana de Cuiquiburitac; photograph courtesy of Michael Heilen*

## Kinds of Archaeological Sites

Most of the sites found in the monument are simply scatters of archaeological artifacts, with no visible evidence of structures or other relatively permanent human-made features. It is usually difficult to interpret the function of these sites. Some of the ones with hundreds or thousands of scattered artifacts likely represent settlements where people spent a lot of time, whereas many of the smaller artifact scatters may represent short-term or specialized uses, such as hunting or gathering of desert resources. With this in mind here is the basic breakdown of archaeological site types we found in the database set:

## Prehistoric and Protohistoric Sites

*Artifacts Only: Scatters of Pottery, Flaked Stone, and/or Ground Stone Artifacts, and Sometimes Shell Ornaments (104 Sites Total).* Two of these sites are interpreted as flaked stone quarry sites, where people selected rocks (usually cobbles) suitable for making projectile points and other flaked stone artifacts.



*Examples of scrapers found during sample survey at many sites in the Ironwood Forest National Monument; photograph courtesy of Michael Heilen*



## Archaeological Cultures (Continued from page 8)

ent form of public architecture, the platform mound. These latter mounds were one- to three-story-high buildings that were filled in with earth and had structures built on their tops, similar to the ancient low, terraced pyramids in what is now Mexico.

### Protohistoric

By AD 1450 Arizona's Hohokam population had decreased dramatically. During the subsequent Protohistoric period, which spanned from about AD 1450 until the time of the earliest Spanish *entradas* into southern Arizona in the 1690s, there was a significant change in material culture throughout the region. The O'odham (Piman) peoples of the Santa Cruz and San Pedro River valleys built less substantial dwellings than their Hohokam predecessors, and apparently did not add painted designs to their pottery. These and other major differences between the Hohokam and the Protohistoric period people have led archaeologists to debate whether the Hohokam were genetically ancestral to the Sobaipuri, or whether the latter represent a separate people who migrated into southern Arizona from northern Mexico post-1450 following the Hohokam population decline.

### Historic

During their first exploratory expeditions into this region in the 1690s, Spanish military men and clergy found people who spoke the O'odham (Piman) language living in numerous villages of as many as a hundred or more people. Many of these villages were at or near sites still occupied today. This "protohistoric" period evidently was also when the first Apachean groups entered what is now southern Arizona, as there is not much firm archaeological evidence for Apache presence before 1450. However, Apachean peoples are noted in the records of the 1690s Spanish visits.

The introduction of Europeans and Christianity changed native ways of life profoundly. Livestock, wheat, and other domesticates were added to the economy. Diseases introduced by Europeans wiped out entire Indian communities and the native settlements of Sonora and Arizona were reorganized with a new focus on mission communities. Fortified *presidios* were established by the Spanish at strategic places. Although they were built and manned partly for

(Concludes on page 12)

Others, where there are relatively few artifacts, may be places where people gathered and/or processed wild desert resources, had temporary camps, or perhaps practiced farming. However, if there are large numbers of artifacts or if the artifacts occur in dense concentrations, such sites might be interpreted as habitation (residential) sites. Artifact-scatter sites are some of the most difficult for archaeologists to try to determine function.

*Habitation Sites (18 Sites Total).* We include in this category sites that the original recording archaeologists interpreted as villages, field houses, or sites with structures; plus sites for which the records say that they contain trash mounds (which are usually indicative of in-place habitation). Two of these archaeological sites are *trincheras* villages in which residential structures were built on large, human-made hillside terraces.

*Rock Features with Artifacts (66 Sites).* One of these sites is interpreted as a flaked stone quarry with possible rock circles and alignments. The rock features at the other sites in this category and the next one listed (rock features with no artifacts) variously include rock piles or concentrations (which could represent either rock-filled hearths/roasting pits, or agricultural features), rock circles, and rock alignments. If a site was described as having artifacts and fire-cracked or fire-affected rock we assumed it once had a rock feature so included it in this category.

*Rock Feature(s) with No Artifacts (5 Sites).* Rock feature types are described above.

*Artifacts with Rock Features and Other Features or Items (14 Sites).* The other features/items include terraces and berms, clearings in the surface gravel (desert pavement), trail segments, petroglyphs, prominent depressions in the ground, a roughly



Cave entrance at a site discovered in the Sawtooth Mountains during sample survey; photograph courtesy of Michael Heilen



circular rock-filled depression, a limestone quarry, an ash stain, and human cremations or cremated bones.

***Artifacts with Other Features (14 Sites).*** One of these is interpreted as a flaked stone quarry with 3 mortar holes, 1 rock alignment, and at least 2 petroglyphs. Features at the other sites include retaining walls or terraces, boulder enclosures, cleared areas, possible camp shelters, cremated bone, petroglyphs, bedrock metates, possible structures, trail segments, rockshelters and caves, a possible canal, a large bermed depression that might



*Above: Some petroglyphs in the northern part of Ironwood Forest National Monument*

*Left: Petroglyphs on different-colored boulders, at a site in the southern part the monument*

*Below: Also in the southern part of the monument, this petroglyph motif is called a "pipette."*

*All of the glyphs shown here are attributed to the Hohokam culture.*

*Top photograph by Tom Herrick; center and bottom ones by Allen Dart*

be a ballcourt or reservoir, and another depression of unknown function.

***Rockshelters with Artifacts (2 sites).*** These are in addition to the ones in the category above.

***Petroglyphs (14 sites other than some of the ones described above, which contain just a few petroglyphs apiece).*** More than 1,400 petroglyphs have been recorded at sites in the monument. The glyphs





## Archaeological Cultures (Continued from page 10)

protection against Apaches and as outposts to prevent French or Russian settlement, presidios also helped the Spanish keep the usually friendly O'odham Indians in check.

Early 18th century Spanish colonial mission and military protection programs made possible an influx of Spanish colonists. This eventually brought an end to the strung-out pattern of Indian villages along the length of the Santa Cruz River. The Tucson Basin became dominated by inhabitants of Spanish and Mexican descent who survived mainly by farming, ranching, mining, and trade. Apaches began raiding extensively, causing abandonment of the San Pedro Valley by the O'odham in the 1690s, and by 1830 were a major threat to Mexican settlements throughout what is now southern Arizona. When this area became part of the U.S. in 1854, Spanish and later Mexican settlements were well established, and ranching and mining had replaced much of the traditional Native American agricultural and subsistence base.

The land in the IFNM did not come into possession of the United States until 1854, as part of the Gadsden Purchase, from Mexico, of the portion of Arizona south of the Gila River. This transaction ended Spanish and Mexican dominance in the region. However, most of Arizona didn't even officially become a U.S. territory until 1863, during the Civil War.

Ranching and mining dominated Arizona's territorial economy and brought in Euro-Americans in search of gold, silver, and other minerals. The Apache wars ended in the 1880s, and the coming of the railroad to Tucson in 1880 brought with it a more commercially oriented, Euro-American-dominated economy. The San Xavier Indian Reservation along the Santa Cruz River was established for the Papago (Tohono O'odham) Indians in 1874.

Arizona became a state on Valentine's Day, 1912. The "Big Reservation" that encompasses most of the Tohono O'odham Nation's lands today was created in 1916 and 1917. Since then, federal and state programs have brought improvements in transportation, education, and agriculture. Copper mining, military bases, and related industries have become major economic forces, but farming and ranching have remained important in the Santa Cruz Valley.

date primarily to the Archaic and Hohokam periods but there are some early O'odham glyphs too.

### *Protohistoric Talus Pits Site*

One site contains pits dug into a rocky volcanic talus slope, associated with O'odham pottery and ground stone artifacts. This site is tentatively interpreted as a human burial site based on ethnographic accounts of Piman Indian burials.

### *Historic Sites*

***Spanish Colonial Mission.*** A unique site in the monument is the ruin of Mission Santa Ana del Cuiquiburitac, a *visita* or "satellite" mission to one of the larger *cabeceras*, or "head" missions, in southern Arizona. This Santa Ana visita structure was constructed of stone footings with sun-dried adobe brick walls. Only the stone footings remain. According to the Arizona State Museum site record, the mission church was built in 1810-1811 by Father Juan Bautista Llorens, and the village associated with the church probably was first occupied in the 1790s and abandoned before the 1850s. Archaeologists were directed to this site by Tohono O'odham Indians living at Sil Nakya village, who knew the mission site as "Santan."

***Homestead and Ranching Sites.*** One historical archaeological site includes a ranch house with associated corral, outhouse, water tank, and agricultural fields. It dates to the early 1900s and probably was a homestead. Other homestead or ranching sites include a structure with scattered artifacts including Tohono O'odham pottery (which was used by many Euro-Americans in the late 1800s and early 1900s in this area), and a dismantled cattle watering tank with scattered historical artifacts.



*All that is left of Santa Ana del Cuiquiburitac, a Spanish Colonial mission "visita" in the monument, is a rubble mound with traces of its stone foundation; photograph by Butch Farabee*



**Towns.** The historic mining towns of Silver Bell and Sasco are in or partly in Ironwood Forest National Monument. They were hubs around which a lot of the other historic sites in and near the monument were placed.

**Cemetery.** The historic Silver Bell Cemetery in the monument probably was associated with the second Silver Bell townsite, the cemetery's south section contains 50 or more graves, and the north section has 33. Most of the graves are marked by rock piles and wooden crosses but there are also a crypt, a marble cross, and an elaborate metal marker. Dates on two crosses read 1909 and 1930.

**Railroad.** Some segments of the old grade for the historic Arizona Southern Railroad (also known as the Industry Railroad) are still traceable through the monument. The main line and spurs extended about 22 miles from Red Rock to serve Silver Bell and the Sasco Smelter from 1904-1933. The tracks were removed many years ago.

**Roads and Trails.** Five of the recorded archaeological sites in the monument are historic roads or trails used by vehicles. They include Silver Bell Road and Avra Valley Road, both established more than 100 years ago. Some of the recorded dirt road segments are associated with historical artifact scatters.

**Mining Sites.** Six of the recorded archaeological sites in the 262-site sample are mines or mine-related sites.

**Gas Pipeline.** El Paso Natural Gas Line no. 1100 passes through the monument. It was constructed in the 1930s.



*A grave in the historic Silver Bell Cemetery; photograph by Butch Farabee*



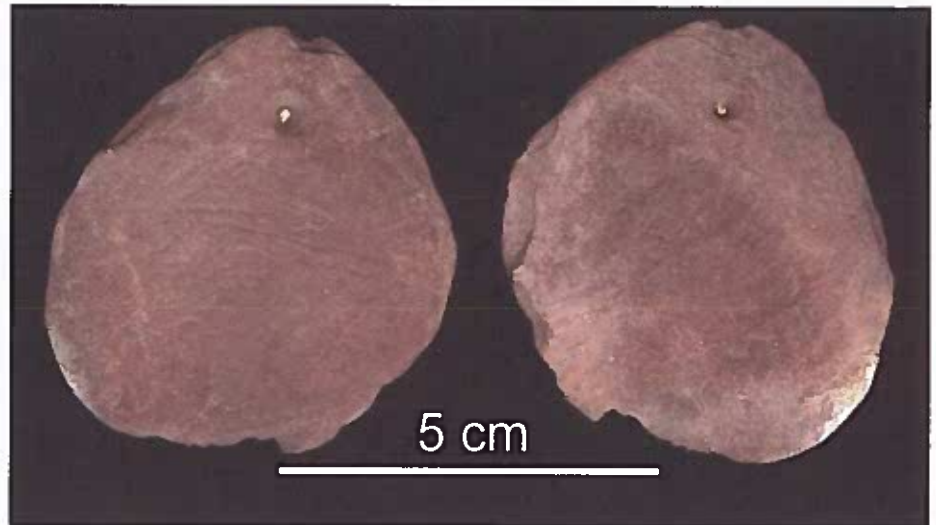
## Cultural Heritage and Continuity in the Ironwood Forest National Monument

*Michael Heilen, Ph.D.*

Archaeological investigation has shown that the lands within and around the Ironwood Forest National Monument (IFNM) were intensively and repeatedly used by numerous groups for thousands of years. For many, lands within IFNM were part of their homeland, their community, their sustenance, their history, and their way of life. The large number of petroglyphs in the IFNM, in multiple distinctive locations, likely attest to the importance of specific places and landmarks within the IFNM as well as the establishment of social boundaries and territories and the connections between people, the land, and its resources. A number of places within the IFNM were persistently used by Hohokam over multiple consecutive phases of the Ceramic period, suggesting long-term continuity in land use in some key areas of the IFNM. Some of these same places continued to be used during the Historic period by O'odham, suggesting their sustained importance to indigenous populations.

Lands within the IFNM continued to be important centers of community for O'odham into the Historic period and remain important to their descendants today. As noted earlier, the Spanish established a visita at the O'odham community of Cuiquiburitac, located in the Aguirre Valley. The settlement was occupied by the Kohatk, members of an O'odham dialect group with a unique history and background among O'odham who were known for their exceptional pottery, fine basketry, fierce warriors, and their distinctive subsistence and settlement pattern. The Kohatk lived for part of the year in the Aguirre and Santa Rosa valleys but maintained connections with many other O'odham communities, often

*(Concludes on page 16)*



*Obverse and reverse sides of a drilled stone pendant found at a Late Archaic/Early Agricultural site during survey in Ironwood Forest National Monument; photograph courtesy of Michael Heilen*

**Campsites.** Four of the recorded archaeological sites evidently were campsites. One of them includes an artifact scatter with possible tent-platform rock alignments. At another were found two possibly historic campfire rings, a wooden post, a pull-key can, and a metal can lid. Yet another one is interpreted as an O'odham cactus-fruit-gathering camp.

**Artifact Scatters.** Like the prehistoric sites, most of the historical archaeological sites in the monument are simply scatters of artifacts. Sixteen sites of this type have been recorded. Some are evidently trash dumps. One of the artifact scatters is associated with ax-cut tree stumps, another with rock piles.

## Importance of Ironwood Forest National Monument for Scientific Research

As can be judged from the above summary of cultural resources, there are many different kinds of archaeological sites in the IFNM. They represent thousands of years of land use by multiple cultural groups. There are sites where people harvested and processed cactus fruits, legumes, and other desert foods; harvested trees for their wood; collected raw materials; made stone tools; found shelter; camped; built dwellings; planted crops; mined the earth for metal and minerals; watered or fed livestock; pecked images into stone; held ceremonies; or buried and commemorated the dead.

Part of the reason for the long-term and diverse use of the monument is the environmental resources that it had to offer. Within the IFNM can be found economically important plants and animals, shelter, arable land, stone, minerals, metals, and wood, and sources of water. Hills and ridges in the IFNM offer expansive views, allowing people to monitor the surrounding landscape. Resources available in the IFNM were important to sustaining Native American households and communities for



many generations as well as to supporting ranching and mining activities in more recent times.

Although the archaeological survey results suggest that Paleoindian materials are rare or absent in the IFNM, some environmental contexts in the monument show good potential for containing Paleoindian deposits. Given the rarity of such finds, in general, and the importance of Paleoindian sites to understanding fundamental questions about issues such as the peopling of the Americas, megafaunal extinctions, and adaptations to late Pleistocene environmental conditions, any Paleoindian sites lurking in the monument would likely provide important information on this fascinating period. Some sites within the IFNM are also likely to provide important information on environmental change during the late Pleistocene and Holocene epochs.

Hunting of small and large game, foraging for wild plants, and the collection and processing of stone for tools were likely important activities in the IFNM during the Archaic period. Such activities continued to be important as people began to incorporate farming into their subsistence economies during the Early Agricultural period as well as in subsequent periods. Geoarchaeological studies suggest that alluvial soils on the western side of the Avra Valley had excellent agricultural potential that could sustain long-term, recurrent use as farmland. Archaeological investigations have demonstrated the establishment of Early Agricultural settlements in the Tucson Basin southeast of the IFNM, whereas other sites in the region have shown a wide range of variability in how agriculture was incorporated into existing foraging strategies during the Late Archaic/Early Agricultural period. Sites with Middle Archaic or Late Archaic/Early Agricultural components in the IFNM can provide important information about how agriculture was incorporated into existing foraging lifeways as it came to be adopted, and the ways in which farming affected social organization, population movement, subsistence and settlement patterns during the Late Archaic/Early Agricultural period.

As people incorporated farming, ceramic containers, storage, and more sedentary settlement patterns into their economies and lifeways during the subsequent Early Ceramic and Hohokam periods, substantial settlements and communities emerged in the IFNM and adjoining areas. For example, in the northeastern portion of the IFNM, the Arizona State Museum's Northern Tucson Basin Survey documented the Cerro Prieto trincheras site and a unique Hohokam community referred by archaeologists as Los Robles Community. That community became prominent during the Hohokam Colonial period (AD 750-950), with the creation of a ballcourt village. During the subsequent Sedentary period (AD 950-1100), the community continued to grow and expanded its use of upland areas in the IFNM. By the Classic period (AD 1100-1450) the ballcourt was replaced with a platform mound as the community focal point, and a large trincheras village, Cerro Prieto, was established.

One of the largest and most complex trincheras sites in the United States, Cerro Prieto includes house foundations, waffle gardens, check dams, trail systems, petroglyphs, rock walls, talus pit features, and a stone quarry used in the production of agave knives, suggesting its use for a variety of residential, ceremonial, and agricultural functions. Cerro Prieto and the Los Robles Community were positioned to provide strategic access to arable land, water resources, diverse plant, animal, and stone resources in the mountains and foothills of the IFNM, and corridors of travel that connected communities in different valleys through trade and exchange.



*A site with trincheras features and petroglyphs documented during sample survey of Ironwood Forest National Monument; photograph by Ned Gaines*



## Cultural Heritage and Continuity

(Continued from page 14)

traveling to distant places in the surrounding region. Today, the southern and western sides of the IFNM are bordered by the Tohono O'odham Nation and places on the monument, like Cuiquiburitac, are part of the Nation's shared history and cultural landscape.

The lands of the IFNM also formed an important part of the history of ranching in the southwestern United States and northern Mexico. For example, a pioneering ranching family of Hispanic descent, the Aguirre Family, established one of the major ranches near Red Rock in the late nineteenth century, supplying beef to the Silver Bell mining town. Multiple other ranches were established in and around the monument, resulting in establishment of charcos (earthen reservoirs), corrals, and other ranching features in many areas of the monument.

Historically, areas of the IFNM were ranched by a number of local families whose histories are intimately intertwined with the history of the Southwest, and whose activities had a lasting and direct impact on the IFNM archaeological landscape. Ranching continues to be an important land use today with deep roots in Hispanic, Native American, and Euroamerican traditions. Ranches include Cocoraque Butte, Agua Blanca, Agua Dulce, Willock, Gee, La Osa, Wooden, and Agua Blanca ranches.

The history of mining in the IFNM and its relationship to patterns of resource exploitation and the expansion of the American West is another important component of the cultural heritage of the monument. As such, historical mining holds a crucial position in the political economy and demography of the American West, and mining sites in the IFNM form part of our national history.

Further to the south, survey in the Avra and Altar valleys has revealed the presence of other substantial villages and trincheras sites located near the IFNM. Hohokam communities also have been identified through survey in the Santa Cruz Flats along the north side of the IFNM. Interestingly, ceramic artifacts documented during sample survey of the IFNM suggest increasing use of the IFNM during the Sedentary and Classic periods, use that peaked during the same time that Cerro Prieto and other trincheras sites were established in the area of the monument. Sites in the IFNM are part of these emerging communities located within and around the IFNM and help us to understand community organization and function as well as how use of the IFNM changed as communities grew and new agricultural and foraging strategies were implemented to support them. How these communities interacted with each other and established access or control over different resources in the IFNM are additional important questions that the resources in the IFNM can help answer.

Data on the Protohistoric period is limited, but a number of sites in the IFNM have been documented as having Protohistoric ceramics. These indicate continued use of the IFNM during a little-known period when drastic changes were occurring throughout southern Arizona in demography, subsistence, settlement, and social interactions. Interestingly, Protohistoric ceramic artifacts are concentrated in a few areas of the monument, and post-1700 O'odham pottery was found in these same areas, suggesting some continuity in Native American land use from the Protohistoric into the Historic periods. Given the limited knowledge of the Protohistoric period, any information that can be gleaned from these sites is likely to be important.

Spanish documents suggest that an O'odham village named Santa Catarina obtained its water from a spring near Cerro Prieto during the Historic period, although the specific location of the village has yet to be confirmed. Another O'odham settlement was present at Cuiquiburitac, in the Aguirre Valley, that came to be recognized as a Spanish *visita* during the early nineteenth century. Sites with O'odham pottery are also concentrated in several other areas of the monument, suggesting the possibility of additional O'odham settlements within or near the IFNM. O'odham sites are important to understanding the nature and effects of European colonization on indigenous communities, interactions among O'odham and other Native American

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**Ironwood Forest  
National Monument**





groups, and the ways in which O'odham communities accommodated and resisted sweeping changes in land use, demography, economy, and religion during the Historic period.

Historic period mining in the Silver Bell Mining District began at least as early as 1865 with copper mining at the Old Boot Mine. Mining camps and the town of Silver Bell were established to support mining operations, as was the construction of a smelter at Sasco and a railroad segment of the Arizona Southern Railroad for transporting ore from Silver Bell mines to Sasco and providing passenger service between the town of Silver Bell and Red Rock. Mining also occurred in the Sawtooth Mountains, Waterman Mountains, and Roskrige Mountains. Historic period mines and mining camps, like those found in the IFNM, are an important focus of historical archaeology. The study of such sites can illuminate relationships between ethnic groups, economic classes, and regional patterns of settlement and resource exploitation.

By the 1880s, ranching had become a booming industry in southern Arizona, greatly facilitated by development of the Southern Pacific Railroad and expansion of the national railroading industry. Despite the importance of ranching to southwestern history, little archaeological research has been devoted to investigations of historical ranches in southern Arizona. Historic period ranches and ranching facilities like those found in the IFNM are an important lens through which to view economic, political, and social conditions of frontier living.

Altogether, sites in the IFNM contribute to an understanding of how settlement and use of these areas varied through time with changes in cultural systems and environment, how communities formed and interacted, the role of agriculture in desert ecosystems, the role of trincheras sites in Classic period social interactions, O'odham settlement and land use, and the ways that ranching and mining transformed the environment, cultural landscapes, and indigenous lifeways. Many specific questions can be asked with regard to establishing the details of prehistoric and historical use of the IFNM and surrounding areas.

At the same time, resources in the IFNM can help answer fundamental anthropological questions. These include questions about the origins of agriculture and settled lifeways; their role in economic systems, social organization, and the formation of complex societies; culture contact between indigenous and colonizing populations; commodification of land and resources; and the political ecology of ranching and mining. As such, resources in the IFNM form an important link to not only the specifics of our local and regional history, but also to a more general understanding of the human condition and the world we live in.



*Petroglyph panel in IFNM featuring spiral motif,  
photograph by Ned Gaines*



## Cultural Resource Management Today

Clearly, the IFNM has been a land of many uses, and as a national monument will continue to be used for multiple purposes. Lands within the IFNM at different points in time have been part of a variety of distinctive cultural landscapes, including foraging and farming landscapes, landscapes of Spanish missionization and colonial interactions, ranching landscapes, and mining landscapes. For thousands of years, cultural activities have transformed the physical environment of the IFNM, creating archaeological sites and features and inscribing the activities of people on the land. It should come as no surprise, therefore, that the monument is recognized with three separate entries in the National Register of Historic Places, our nation's foremost listing of important historic properties: The Los Robles Archaeological District, the Cocoraque Butte Archaeological District, and the Mission Santa Ana del Cuiquiburitac archaeological site all are included in the National Register.



*This petroglyph panel, documented during the sample survey, features a large anthropomorphic figure and grid-pattern glyphs, and vandalism with the initials "ISP"; photograph by Ned Gaines*

The scientific and heritage values associated with cultural resources in the IFNM need to be considered in planning how the IFNM is used. As it is used for recreation and other purposes, we need to be especially careful to respect and protect archaeological sites in the IFNM and the cultural heritage they represent. Unauthorized collection of artifacts, digging at archaeological sites, and adding initials to petroglyph panels on the IFNM can cause irreparable harm to these important sites and landscapes, destroying evidence of the past and diminishing our ability to understand how these lands have been used over centuries and millennia. As noted, many of the sites on the IFNM consist of scatters of artifacts and human-made features.

Our best advice is to enjoy what you see and take pictures and notes if you like, but leave things as you find them. This will allow their scientific and heritage values to remain intact and for others to enjoy the resources of the IFNM as you have.

Our best advice is to enjoy what you see and take pictures and notes if you like, but leave things as you find them. This will allow their scientific and heritage values to remain intact and for others to enjoy the resources of the IFNM as you have.

### What's in a Name?

The overwhelming majority of the archaeological sites in the monument are identified only by field survey numbers assigned by the archaeological surveyors and by formal archaeological site numbers assigned by either the Arizona State Museum or the BLM. We found interesting, and sometimes amusing, the names that are recorded for a few of the sites.

Some are named after locally prominent geographic or human-created features, for example: Cerro Prieto, Cocoraque Butte Complex, Pan Quemado, and Waterman, named after hills in the monument; Silver Bell Cemetery; Silver Bell Wash site; Silver Bell Road; Avra Valley Road; El Tiro (near El Tiro Gliderport), and Times Mirror Microwave (on a hill that has a microwave antenna).

At least one site apiece was named after a revered person, a local individual, and a company: Mission Santa Ana del Cuiquiburitac (named for St. Anne); Casa de Cohn (named after a BLM leaseholder); and Arizona Southern Railroad Company Railroad Grade.

Some sites apparently were named after items found at each: Inscription Hill, a site with many



petroglyphs; Piedras Azules ('blue rocks'); Chauffer, for a site where a historic Arizona Chauffeur's license plate was found; El Tenedor, a historic site that included a metal dinnerware fork; La Garza ('the heron'); the Old Boot Mine; and a slew of sites named after a favorite reptile: La Tortuga; La Tortuga Primera; La Tortuga Grande; Arroyo de Las Tortugas; San Francisco de Las Tortugas. The Indian Hill Petroglyphs site and the Hog Farm Ballcourt site are among the few names reflecting something found on the site itself plus information about the location. (The Hog Farm site is just outside of the monument.)

Finally, some of the more unusual site names may give us more insight into the minds of the namers than anything that was actually found at or near the sites. These include Camp Malpais ('badlands camp'); Cerro Retiro ('retired hill'); El Cubo ('the cube'); El Diente ('the tooth'); Pescadero ('fish dealer'); Cindy's Hill; Mammoth Sands; Old Water; Quemado Quarry; Singing Stone; Sullivan; and Little Blondie. We'll leave the reasons for these site names to your imagination. Figuring out their meaning might be rather like trying to interpret the meanings of petroglyphs – very hard to do with confidence, unless you could ask the original petroglyph artist, or the original site namegiver.

Ironwood Forest National Monument is administered by the U.S. Bureau of Land Management. For more information visit [http://www.blm.gov/az/st/en/prog/blm\\_special\\_areas/natmon/ironwood.html](http://www.blm.gov/az/st/en/prog/blm_special_areas/natmon/ironwood.html) call 520-258-7200, or check out Dr. Ballinger's book that is highlighted on this issue's last page.



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