

# Archaeology of the Ironwood Forest National Monument and the surrounding Tucson Basin

*An introduction for teachers and parents of  
young children. Includes games and activities.*



## **Friends of Ironwood Forest**

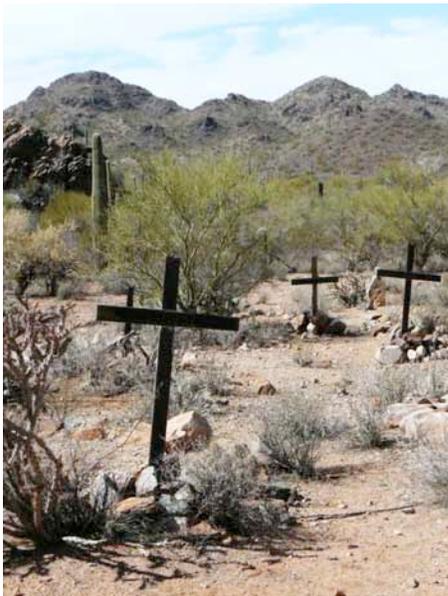
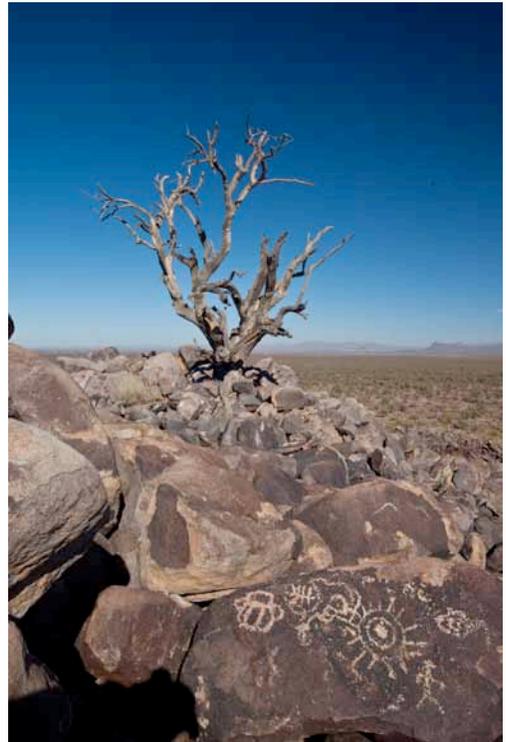
*F*riends of Ironwood Forest is a local non-profit organization that works for the permanent protection of the biological, geological, archeological, and historical resources and values for which the Ironwood Forest National Monument was established. The Friends provide critical volunteer labor for projects on the Monument, and with the Bureau of Land Management and many other partners, work to increase community awareness through education, public outreach, and advocacy.

**738 N. 5<sup>th</sup> Ave. Ste. 114, Tucson, AZ 85705 [www.ironwoodforest.org](http://www.ironwoodforest.org) 520.628.2092**

## About Ironwood Forest National Monument

*An* incredible landscape recognized for its rugged scenery, biological diversity and cultural legacy located 25 miles northwest of Tucson. These 129,000 acres contain several desert mountain ranges including the Silver Bell, Sawtooth, and Waterman ranges, and the iconic Ragged Top Mountain. The Monument contains a significant system of cultural and historic sites covering a 5,000-year period. It is also the Monument home to threatened and endangered species; including Nichols Turk's head cactus, lesser long-nosed bat, and desert tortoise.

The Monument protects the highest density of Ironwood trees recorded in the Sonoran Desert, an enormously important protector of species diversity. Ironwood trees are some of the longest living plants in the Sonoran Desert, living up to 1,200 years. They are extremely slow growing and are one of the largest desert plants, reaching heights up to 45 feet. Ironwood trees play a critical role in the lives of over 640 other species of plants and animals in the Sonoran Desert. Ironwood trees are recognized as a keystone species, enriching ecosystem function in a unique and significant manner through their activities. Their removal initiates changes in ecosystem structure and often loss of diversity. Ironwood trees act as "nurse" plants, sheltering and nurturing a wide variety of other plants including the stately Saguaro cacti.



### How to use this guide

This guide is a very basic introduction to the study of archaeology for young people, ages 6 to 16. It exposes students to several ways to better understand the things people in the past left behind, and thus the people themselves.

Historic Timeline & Study of the Stratigraphic Periods  
Classroom & Home Activities  
Pottery and Shell Designs & Symbols  
References & Recommended Reading

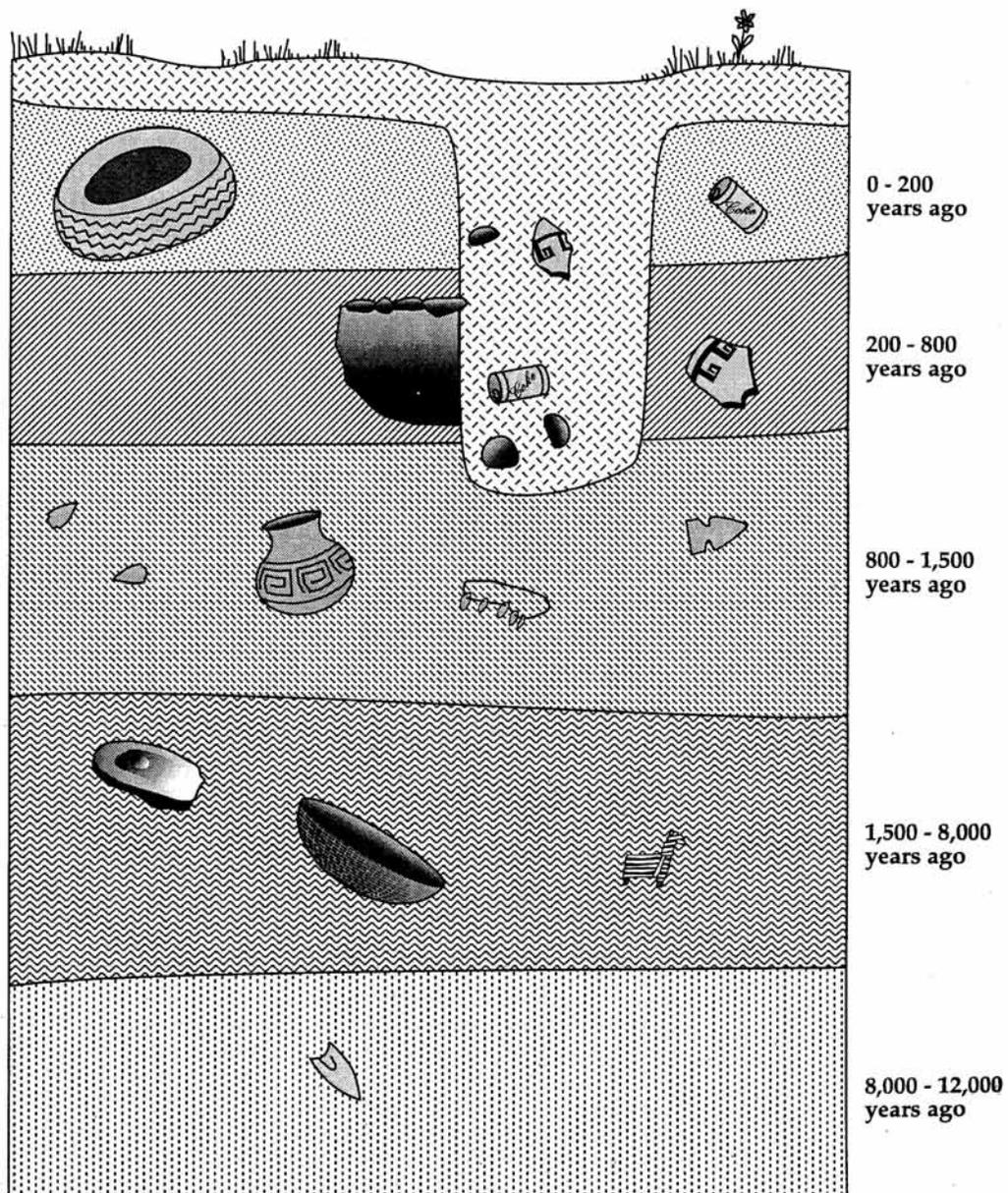
Special thanks to Beth DeWitt, with the Arizona State Museum, for her assistance with this project.

## Archaeology (ark-e-ology)

is the study of the **things people in the past left behind**. These things can be arrowheads; stone axes and scrapers; pieces of pottery; bone tools; parts of their homes such as pit houses, pueblos, and cavalry forts; religious items like crosses and stone figurines; and more recently car tires, soda bottles, dolls and baseballs. Usually, but not always, the deeper in the ground you find something, the older it is.

Your job as an Archaeologist is to look at the thing you found, decide what it is using information from where you found it and what you learned about it in school, identify what you think it was used for, and place it on the timeline above.

### Stratigraphic Section



# Characteristics of Each Stratigraphic Section of the Timeline

## 0 – 200 Years Ago – Modern Period

### Environment

- same as today

### Living Patterns

- **early on**, Spanish lived in fortified outposts called “presidios” and built adobe brick structures to house and protect themselves and their churches
- the O’odham continue to live in rancheros and large permanent villages
- the Apache lived in small, highly mobile bands and used brush structures for shelter
- farming continues in irrigated fields and Spanish introduce wheat, barley, chili, sweet potatoes and other fruits and vegetables as well as cattle, sheep and horses
- wild game is hunted and wild plants gathered but not as the main source of food for their diet
- **after statehood**, most people continue to settle around the modern city of Tucson, which grows in size and complexity with streets, highways, shopping centers etc.
- modern suburbs such as Silverbell, Continental, and Oro Valley grow as population grows
- Native Americans settle into villages and rancheros on reservations set aside for them by the federal government, with the Tohono O’odham reservation created in 1916 and the Pascua Yaqui reservation in 1964

### Technology

- **early on**, Spanish brought metal tools and weapons, complex and refined and glazed pottery and cloth as well as new techniques for mining and farming
- native populations continue to produce their own stone tools and pottery but begin adopting Spanish tools and goods
- introduction of the railroad in 1880 brings tools and goods from all over the world
- **after statehood**, modern industrial and technological capabilities grow in Tucson
- mining continues to rely on specialized technologies, and new technologies related to defense and optics emerge
- the automobile replaces the horse as the main source of transportation, and the 4G iPhone arrives at local stores

## **200 – 800 Years Ago – Classic Period**

### **Environment**

- droughts and flooding cause decrease in the Hohokam population

### **Living Patterns**

- people live in concentrated, aboveground adobe compounds within fairly large communities
- houses made of adobe and other construction materials
- dry, floodwater and irrigation farming to raise food is practiced
- small game is hunted and some wild plants such as Saguaro fruit is gathered but not as primary sources of diet

### **Technology**

- large earthen platform mounds are built
- refined pottery made, some undecorated and some decorated with images of people, animals, and symbols
- rock terraces (trincheros) and check dams built to control erosion and water flow for irrigation
- stone hoes used to help work the land

## **800 – 1,500 Years Ago – Early Ceramic Period**

### **Environment**

- same as today

### **Living Patterns**

- large, multiseason pit houses with extended families and friends living in courtyard clusters
- farming to raise food to feed the larger population is becoming wide spread
- hunting small game such as rabbits and gathering a wide variety of wild plants as they become seasonally available continue to be important sources of food

### **Technology**

- bows and arrows with small arrowheads are the primary hunting tools
- crude but sturdy pottery, some undecorated and some decorated with images of people, animals, and symbols, and stone plates for ceremonial uses called “palettes” are made of local material
- irrigation canals to carry water to planted fields appear

## **1,500 – 8,000 Years Ago – Archaic Period**

### **Environment**

- temperatures gradually rise from the relatively cool, wet climate of the Paleoindian Period to the warmer, drier climate of today

### **Living Patterns**

- small, highly mobile bands of family groups
- houses continue to be made with brush and earthen materials but become more substantial and less mobile by being built partially below ground in “pits”
- some families start to live in small villages and farming communities
- hunting large and small animals (but no longer the mammoth) and gathering available wild plants for food
- beginning to grow some plants for food

### **Technology**

- use spears, spears with throwers (atlatls) and darts to hunt game
- medium-sized arrowheads and spear points appear with corner- and side-notched flakes making them lighter in weight but sharp and effective for hunting
- stone axes for hunting and stone grinders for processing grains begin to appear

## **8,000 – 12,000 Years Ago – Paleoindian Period**

### **Environment**

- cooler, wetter climate than today’s, with marshes, and grasslands rather than desert

### **Living Patterns**

- small, highly mobile bands of family groups
- houses probably “tents” made of brush, earth and animal skins
- hunted “big game” animals like mammoth and bison, smaller game such as rabbits and deer, and gathered available wild plants for primary source of food supplies

### **Technology**

- throwing spears with large, finely-worked spearpoints

### **Sources:**

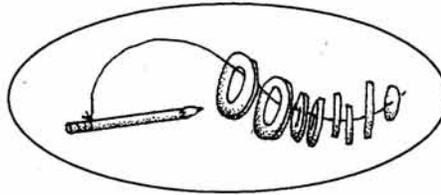
2001. History Summary of Pima County, Sonoran Desert Conservation Plan.

1994. Intrigue of the Past. Discovering Archaeology in Arizona. U.S. Department of the Interior, Bureau of Land Management, Heritage Education Program.

# Classroom and Home Activities

In the following pages are examples of games and activities that young people from the past participated in or made from the materials they found all around them. These were chosen because they can be made from materials found in today's classrooms and homes.

## Gourd Ring Toss Game



### Materials

**Plastic lids** - 10 to 15 lids - 2", 3", and 4" in diameter and any diameters in between. (Obtain them from cheese, butter, frosting, syrup, etc. containers.) The plastic lids are used in place of gourds for convenience.

**Scissors** - scissors with a sharp point such as cuticle or toenail scissors

**Cardboard**  
**Pencil** - 6" to 8" long, sharpened  
**String** - 18" in length  
**Ball point pen**



1. Cut two cardboard circles, one 2" in diameter and one 3" in diameter to use as patterns.



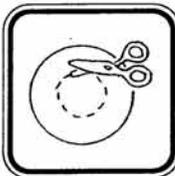
4. Tie the string at the eraser end of the pencil.



2. Trace around the 2" cardboard circle pattern in the center of all but one of the plastic lids, with the ball point pen.



5. Cut around the 3" circle pattern on the spare lid. Cut out and then punch a hole in the center of the circle. Thread the string end through the hole and knot it.



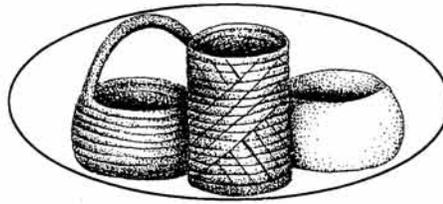
3. Use the cuticle or toenail scissors to cut out the circles traced on each of the lids. Be careful when punching the tip of the scissors through the plastic to begin cutting.



6. Thread the pencil through the plastic rings, beginning with the smallest and ending with the largest. Hold the eraser end of the pencil, toss the string in the air and spear the rings with the pencil.

### NOTES:

# Coiling a Small Pot



## Materials

**AARDVARK® gray clay cone .06** - It is not necessary to knead this clay. (Other types of clay may also be used.)

**Masking tape** - Tape the wax paper square to a flat surface. Run the tape completely across the top and the bottom of the square.

**Sandwich bag** - Place an 8 oz. piece of clay in the bag. Close the bag after each removal of clay.

**Wooden spoon** - 3 5/8" craft size

**Small bowl** - cover just the bottom with water

**Smooth rounded stone** - or halves of *L'eggs® egg*

**Corrugated cardboard** - cut a 5" by 7" square

**Wax paper** - cut a 12" by 14" square

**Toothpicks**

This pot may be taken to a ceramic shop and fired in a kiln at cone .06. Allow it to dry about a week before firing.



1. Shape and roll a small amount of clay into a ball about 2" in diameter.



4. Dip fingers into the water. Run the water around the edge of the clay base and/or score/scratch with a toothpick. Coil the clay rope on the inside of the edge. Press the ends together.



2. Flatten the ball of clay between the fingers forming a round patty about 1/2" thick. This is the base of the pot. Place it on the cardboard square.



5. Roll out a second rope of clay. Run water over the top of the first coil and form a second coil. Make sure that the coils do not connect on the same side. The completed pot is about 2" high and 3" in diameter.



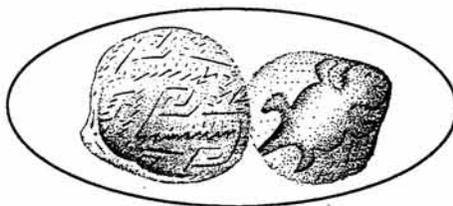
3. Roll a chunk of clay into rope-like thickness to a length that will fit around the clay base. Roll the clay out on the waxpaper from the middle to the ends using both hands.



6. Use a toothpick to engrave designs on the coils or smooth out the coils using the stone or *L'eggs® egg* on the inside of the pot and patting and smoothing the coils on the outside with the wooden spoon. Be sure the coils are bonded together on the inside and outside of the pot before it is fired.

## NOTES:

# Etching Shell



## Materials

Shells - with smooth surfaces  
(The insides of shells may also be used.)  
Vinegar  
Soapy water  
Acetone or nail polish remover  
Paper towels

Pencil  
Dark colored nail polish  
Plastic cup  
Toothbrush  
Clear nail polish - Place over penciled name or initials if more than one person's shell is being etched.



1. Draw a design with a pencil on the smooth surface of the shell.



4. Remove the shell from the vinegar when the desired depth of etching is reached. Rinse the shell in soapy water to remove the effects of the vinegar.



2. Brush colored nail polish on the whole drawing for a positive design or around the drawing for a negative design.



5. Take a paper towel or a rag dipped in nail polish remover or acetone and rub off the nail polish.



3. When the nail polish is dry, place the shell in a plastic cup. Cover the shell with vinegar. Leave the shell in the vinegar over night or until the desired depth of etching is reached. (Watch closely so that the shell does not get "eaten" through.)

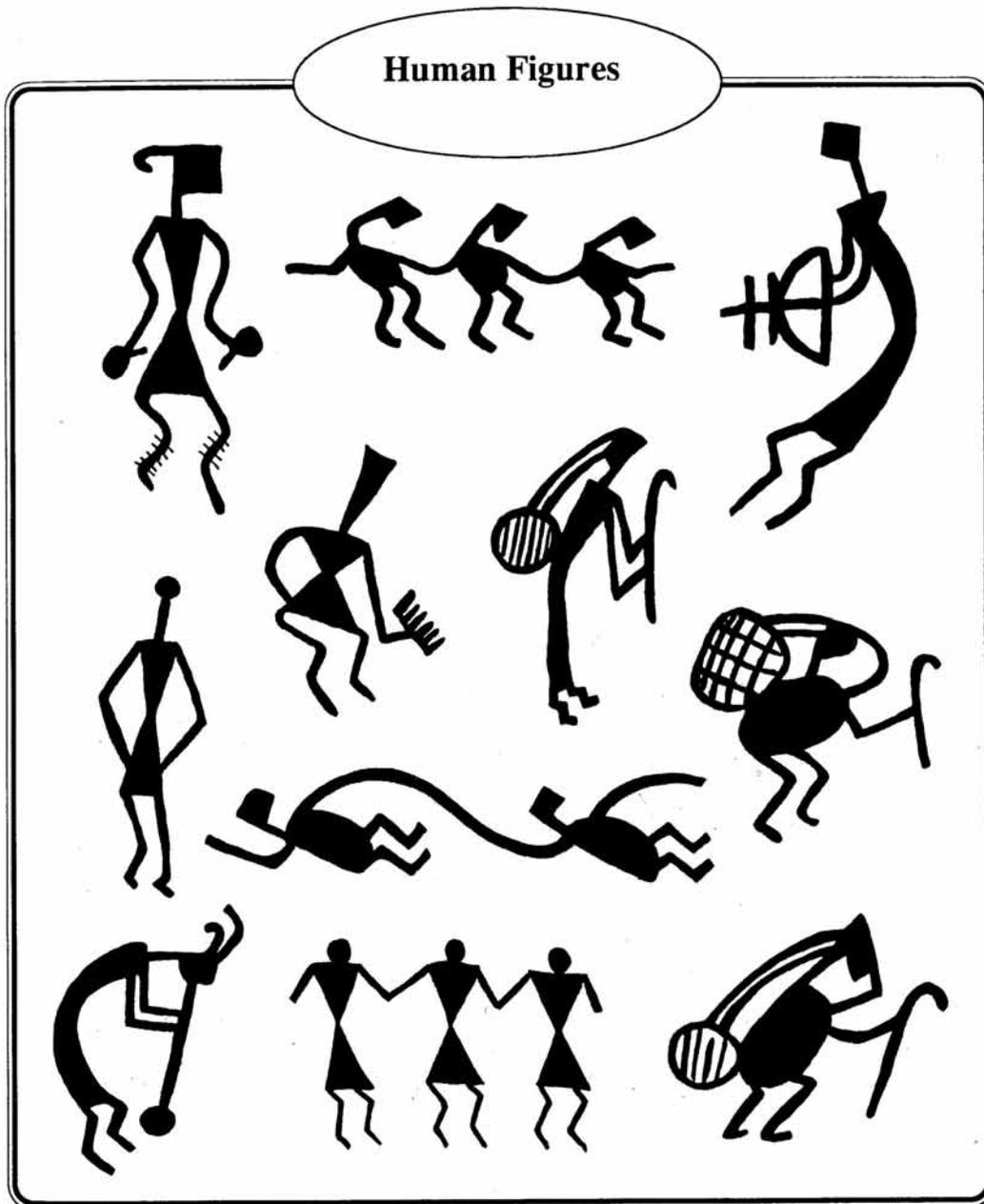


6. Dip an old toothbrush in acetone and scrub out the nail polish remaining in the grooves of the shell. Rinse the shell in soapy water.

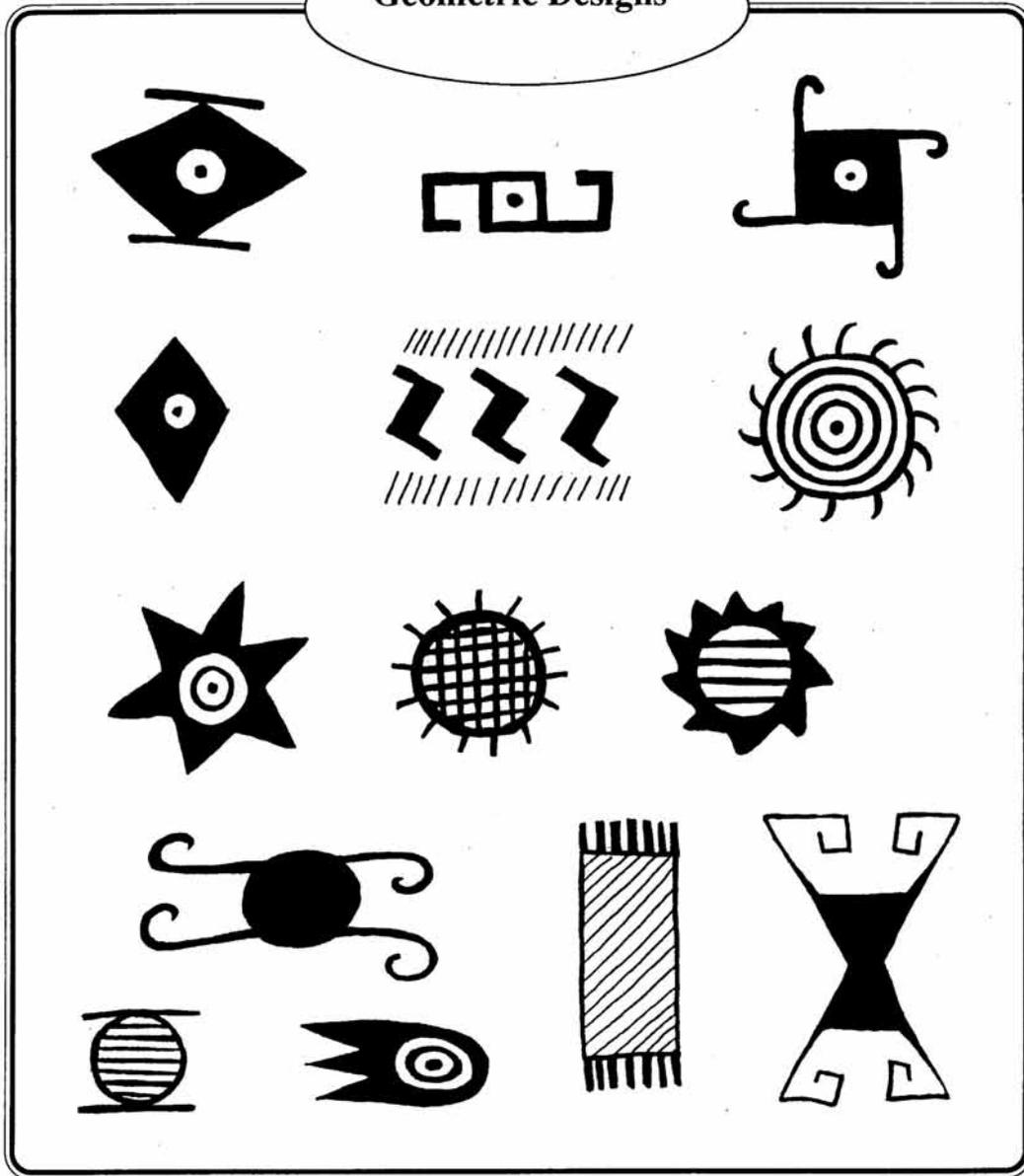
NOTES:

## Pottery and Shell Designs and Symbols

In the following pages are examples of designs and symbols young people from the past would have placed on their shells and pottery to convey a concept or tell a story. These were chosen because they represent common images and characters used by peoples of the southwest.

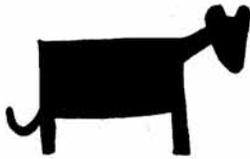
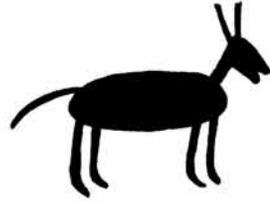
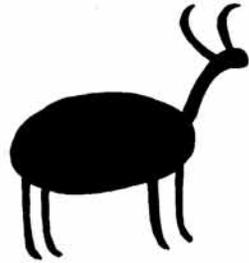
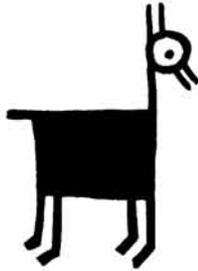


Geometric Designs



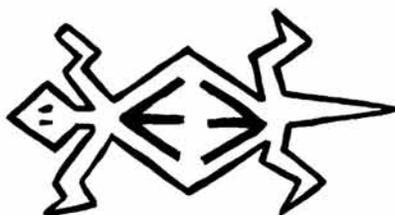
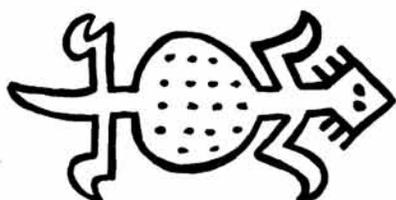
NOTES:

Mammals



NOTES:

Tortoise, Lizards,  
and Horned Lizards



NOTES:

# References

- Adovasio, J. M.**  
1977  
*Basketry Technology: A Guide to Identification and Analysis.* Aldine, Chicago.
- Bartlett, John Russell**  
1856  
*Personal Narrative of Explorations and Incidents in Texas, New Mexico, California, Sonora, Chihuahua, etc.* New York.
- Castetter, Edward F.,  
and Willis H. Bell**  
1942  
*Pima and Papago Indian Agriculture.* University of Arizona Press, Tucson.
- Castetter, Edward F.,  
and Ruth M. Underhill**  
1935  
*The Ethnobiology of the Papago Indians.* University of New Mexico Bulletin No. 275. University of New Mexico, Albuquerque.
- DiPeso, Charles C.**  
1951  
*The Babocomari Village Site on the Babocomari River, Southeastern Arizona.* Amerind Foundation Papers No. 5. Amerind Foundation, Dragoon, Arizona.
- Gladwin, Harold S., Emil W. Haury,  
E. B. Sayles, and Nora Gladwin**  
1965  
*Excavations at Snaketown: Material Culture.* University of Arizona Press, Tucson.
- Grant, Campbell**  
1967  
*Rock Art of the American Indian.* Promontory Press, New York.
- Gregonis, Linda M.,  
and Karl J. Reinhard**  
1979  
*Hohokam Indians of the Tucson Basin.* University of Arizona Press, Tucson.
- Haury, Emil W.**  
1975  
*The Stratigraphy and Archaeology of Ventana Cave.* University of Arizona Press, Tucson.
- 1976  
*The Hohokam, Desert Farmers & Craftsmen: Excavations at Snaketown 1964-1965.* University of Arizona Press, Tucson.
- Keen, Myra A.**  
1984  
*Seashells of Tropical West America. 2nd edition.* Stanford University Press Stanford.
- Kissell, Mary Lois**  
1972  
*Basketry of the Papago and Pima Indians.* Rio Grande Press, Glorieta, N.M. (Originally published in 1916 by the American Museum of Natural History, New York.)
- Masse, W. Bruce**  
1982  
"Hohokam Ceramic Art: Regionalism and the Imprint of Societal Change."  
*Southwest Ceramics: A Comparative Review.* School of American Research Advanced Seminar, edited by Albert H. Schroeder. Arizona Archaeologist No 15. Arizona Archaeological Society, Phoenix.
- Mielke, Judy**  
1993  
*Native Plants for Southwestern Landscapes.* University of Texas Press, Austin.

- Morris, Percy A.**  
1966  
*A Field Guide to Pacific Coast Shells Including Shells of Hawaii and the Gulf of California.* 2nd edition. Peterson Field Guide Series. Houghton Mifflin., Boston.
- Nabhan, Gary Paul**  
1985  
*Gathering The Desert.* University of Arizona Press, Tucson.
- Russell, Frank**  
1975  
*The Pima Indians.* University of Arizona Press, Tucson.  
(Originally published as part of the Twenty-sixth Annual Report of the Bureau of American Ethnology, 1904-1905.)
- Schaafsma, Polly**  
1980  
*Indian Rock Art of the Southwest.* School of American Research, Santa Fe and University of New Mexico Press, Albuquerque.
- Shepard, Anna O.**  
1976  
*Ceramics for the Archaeologist.* Publication No. 609. Carnegie Institute of Washington, Washington, D.C.
- Spier, Leslie**  
1978  
*Yuman Tribes of the Gila River.* Dover Publications, New York.  
(Originally published in the United States in 1933.)
- Underhill, Ruth**  
1941  
*The Papago Indians of Arizona and Their Relatives the Pima.* United States Department of the Interior, Bureau of Indian Affairs, Washington, D.C.

#### CHILDREN'S READING LIST

- Brandenberg, Aiki**  
1976  
*Corn is Maize: The Gift of the Indians.* Harper Collins, New York.
- Bret, Jan**  
1988  
*The First Dog.* Harcourt Brace Jovanovich, San Diego.
- Baylor, Byrd**  
1969  
*Before You Came This Way.* Dutton, New York.
- 1972  
*When Clay Sings.* Macmillan, New York.
- 1975  
*The Desert Is Theirs.* Charles Scribner's Sons, New York.
- 1976  
*And It is Still That Way.* Charles Scribner's Sons, New York.
- 1978  
*The Way to Start a Day.* Charles Scribner's Sons, New York.
- 1981  
*A God on Every Mountain Top.* Charles Scribner's Sons, New York.
- Houk, Rose**  
1992  
*Hohokam.* Southwest Parks and Monuments Association, Tucson.
- Stokes, Michael,  
and William Lee Stokes**  
1980  
*Messages On Stone.* Starstone, Salt Lake City, Utah.

#### NOTES:

Presented by The Friends of Ironwood Forest at BioBlitz Saguaro National Park 2011.  
[www.ironwoodforest.org](http://www.ironwoodforest.org).



**Friends of  
Ironwood Forest**