

## COLUMNAR CACTI IN SERI INDIAN CULTURE

RICHARD S. FELGER

Arizona-Sonora Desert Museum<sup>1</sup>

MARY BECK MOSER

Summer Institute of Linguistics  
University of North Dakota<sup>2</sup>

### ABSTRACT

Six species of columnar cacti (Family Cactaceae, Tribe Cereeae) are native to the Seri region of western Sonora, Mexico. Different parts of these cacti were variously employed for food, caulking pitch, games, house-building, medicine, sealing pottery vessels, tattooing, and wine. Four large-fruited species were of major economic significance in traditional Seri culture. These are cardón (*Pachycereus pringlei*), organ-pipe (*Lemaireocereus thurberi*), pitahaya agria (*Machaerocereus gummosus*), and sahuaro (*Carnegiea gigantea*). The fruit is a favorite food and is still harvested. The fruit of certain species was dried and stored for future use, as were the seeds, which have a high oil and protein content. The seeds were ground and variously prepared. Traditionally the fruit of organ-pipe and sahuaro was used almost exclusively for wine-making. A relatively extensive vocabulary is associated with the columnar cacti. Certain species, particularly senita (*Lophocereus schottii*), are prominent in traditional Seri religion and mythology. The time of cactus fruit harvest was a joyous occasion.

### INTRODUCTION

Columnar cacti (Family Cactaceae, Tribe Cereeae) are dominant features of the natural desert landscape in the Seri region of the central Gulf coast of Sonora, Mexico, and its adjacent islands (Figure 1). The six species native to this region are:

*Carnegiea gigantea*, sahuaro

*Lemaireocereus thurberi*, pitahaya dulce, organ-pipe

*Lophocereus schottii*, senita

*Machaerocereus gummosus*, pitahaya agria

*Pachycereus pringlei*, cardón or sahueso

*Rathbunia alamosensis*, sina

Native use of columnar cacti in the American Southwest is reviewed by Castetter and Bell (1937). Some aspects of the role of columnar cacti in Seri culture are reported by McGee (1898). Reports with brief mention of the use of columnar cacti in the American Southwest and the Seri region are numerous. For further information on columnar cacti in the Sonoran Desert

<sup>1</sup>P.O. Box 5607, Tucson, Arizona 85703

<sup>2</sup>Grand Forks, North Dakota 58201

see Benson (1969), Shreve and Wiggins (1964), Standley (1924), and others. The present work results from our ongoing investigations of Seri ethnobotany (Felger and Moser 1970, 1971, 1973, in press).

Although many aspects of the utilization of columnar cacti are no longer practiced by the Seri, e.g., wine-making, second harvest, etc., we generally use the ethnographic present in this paper. However, in certain cases where the practice is definitely discontinued we use the past tense.

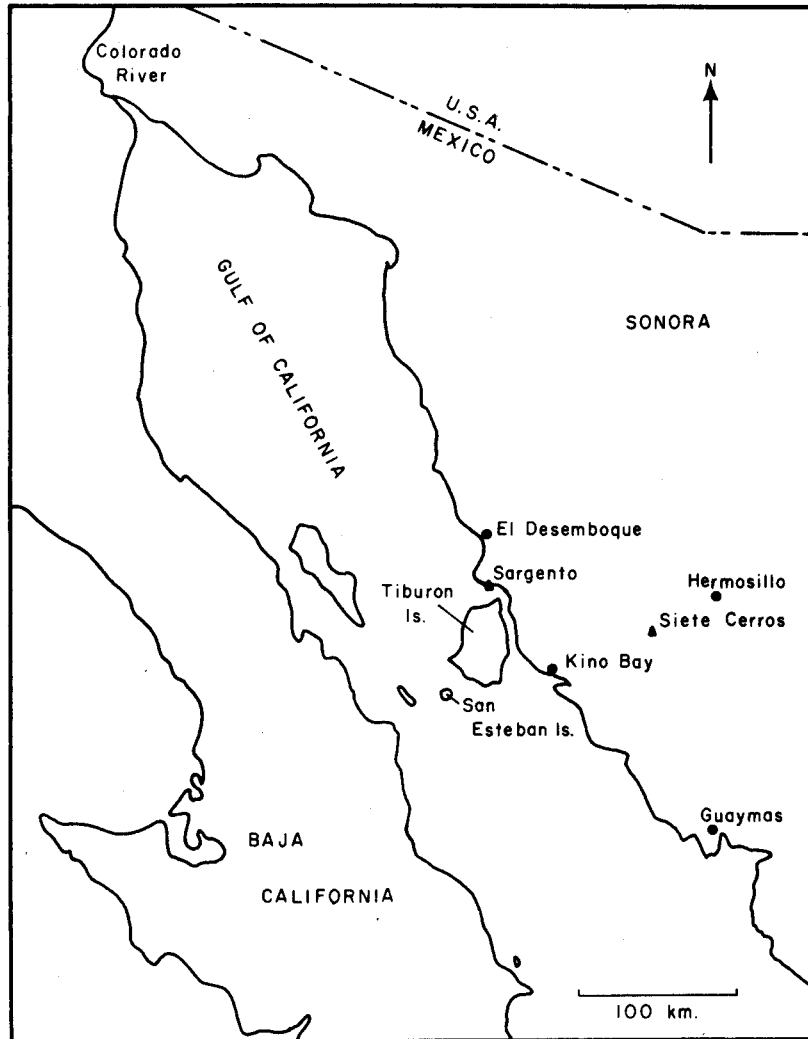


Figure 1. Map of Seri region.

## FRUIT HARVEST

The large-fruited species, i.e., cardón, organ-pipe, pitahaya agria, and sahuaro, provide one of the major resources harvested by the Seri. Nutritionally cardón is more important than the other species. McGee (1898:206) thought that cactus fruit was probably the most important Seri plant crop. Senita fruit is infrequently harvested, primarily because of its small size, and sina fruit is not harvested. Thus the following discussion primarily concerns the four large-fruited species.

The fruit is a favorite food and is still harvested each summer and fall. Each fruit contains numerous small black seeds, called *iks*, embedded in juicy sweet pulp (For a description of Seri phonemes, see Moser and Moser 1965). The seeds are high in oil and protein content (Felger and Moser 1973; Greene 1936). "The pulp consists of thick juicy funiculi that are . . . entangled in a crowded mass" (Buxbaum 1950-55:191). The fleshy pulp provided a major sugar source in traditional times. Writing about sahuaro, Greene (1936:311) states that ". . . the fruit of the cactus compares favorably with common sources of sugar." The pulp, along with the seeds, may be eaten fresh, or variously prepared and stored.

Pitahaya agria bears flowers and fruit in summer and fall. The other species flower in spring and early summer. The fruit, usually produced in prodigious quantity, generally ripens at the height of the dry season, shortly before the onset of the short summer monsoon. It is a time of very hot weather. The moon during which columnar cactus fruit begins to ripen, called *imâm imâm üSSaaX* 'its-fruit its-ripeness moon', corresponds closely to the month of June. The phrase *imâm imâm* implies giant cactus fruit.

As soon as the first budding is visible, a few buds are brought into camp. It is a welcome sign that fruit is soon to follow. A mother cautions her first-born never to touch any columnar cactus buds lest his life be shortened. This is a life-time taboo.

The arrival of the first ripe fruit brought into camp is also a joyful occasion. Bits of pulp from this first fruit collection are dabbed on the cheeks and the tip of the nose to bring good luck. Entire families prepare to go into the desert to harvest the fruit, although traditionally women are the principal gatherers.

When a girl is 9 to 10 years old, she is ready to help gather fruit. She is told not to eat any of the first fruit she collects. If she does, she is said to be *innool kím* 'arm swallower'. This means that she has "swallowed" her right arm and will therefore be lazy in gathering throughout her lifetime. So her first fruit is given to her sister and her sister's husband; or if she has no married sister, then it is for her family. The next fruit she gathers is given to some elderly woman. Finally, she may eat fruit from her third gathering trip.

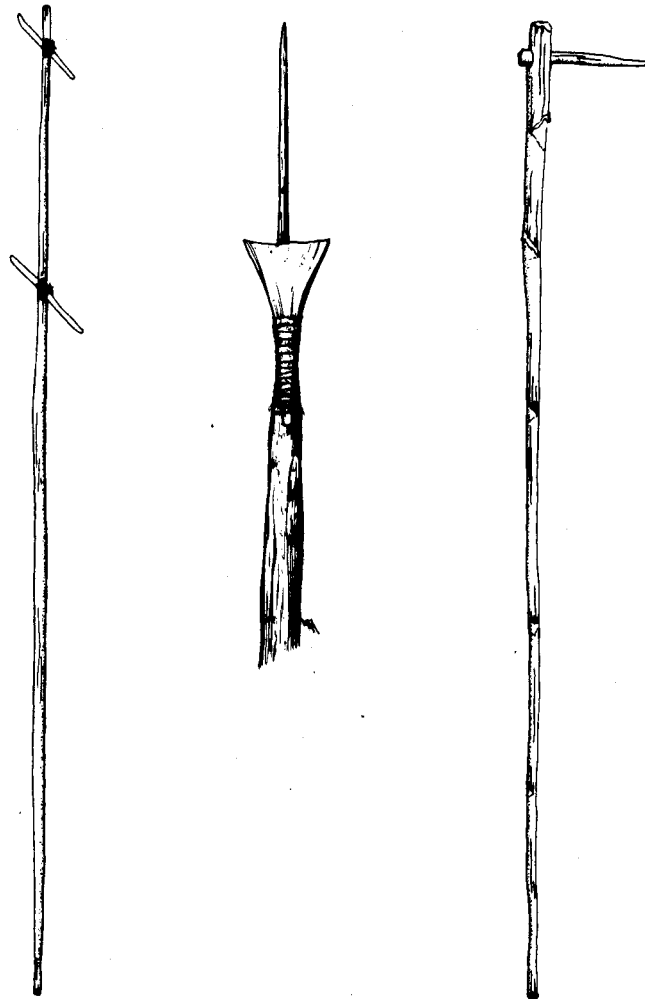


Figure 2. Models of cactus fruit-gathering poles, El Desemboque, ca. 1960. Pole for sahuaro fruit, left; organ-pipe, center; and pitahaya agria, right. Drawings on left and right by Francis Runyan, and center by Lucretia Brezeale Hamilton.

Fruit of cardón, organ-pipe, pitahaya agria and sahuaro are harvested with poles (Figure 2). The names and special construction of these poles are detailed below; the general term is *ʔéʔʔe imám iʔapók* 'plant its-fruit pry-off'. These poles are made from *Xoxif*, the dry woody ribs of dead cardón, organ-pipe, or sahuaro. Gathering poles may also be fashioned from reed grass (*Phragmites communis*), ocotillo (*Fouquieria splendens*), or the flowering stalks of century plant (*Agave spp.*).

Fruit gathering provides an opportunity for boys to display their skill at knocking off cactus fruit with improvised poles. Holding the pole with one hand, a boy tries to pry the fruit loose and catch it with his other hand. This is done only with cardón or sahuaro fruit, since the others are too spiny. If the unharvested fruit has already burst open, the boy pokes at it and tries to catch the falling juicy pulp in his mouth.

A man carries fruit back to camp in a 20 liter (5 gallon) can (formerly in a large-mouthed pottery olla) on a pole over his shoulder, hobo-style. This method of transport is called *kóoXXoop*. It differs from the more common method of transport that uses a carrying yoke.

When a man is walking through the desert alone and sees ripe cactus fruit, he may cut a branch of a straight-stemmed bush, such as *Cordia parvifolia*, and string the fruit bead-like onto the stick for carrying back to camp. Or he may cut a stem of *Jatropha cuneata*, remove the bark, tear a long strand from the center portion of the flexible stem and string the fruit on it. The ends of the strand are tied together to form a loop. Fruit carried in this manner is called *ʔapápl* 'thing strung'.

Traditionally a woman carries the fruit in a shallow basket on her head. If she has fruit of either organ-pipe or pitahaya agria from which the spines have not been removed, she is called *kaʔikWs* 'make thorny'. If she has removed the spines, or if she has peeled the fruit and has only the pulp in her basket, as is often the case with cardón or sahuaro fruit, then she and the load of fruit are called *kéolim*. Any juice that collected in the basket she would promptly drink. Today women carry the fruit in plastic or metal buckets.

If a woman is out in the desert and finds fruit but has no container in which to carry it, she will make a pocket by tucking some fullness of her skirt into the skirt waist-band in front and carry the fruit in it. She is then known as *isXamónni kókkim* 'outer-area-of-stomach put-in'.

Columnar cactus fruit that has dried on the plant is called *iXXoox* and is occasionally harvested.

## WINE

Wine, called *imám ʔamáax* 'its-fruit wine', is made from the fruit of cardón, organ-pipe, pitahaya agria, or sahuaro. Fruit from pitahaya agria produces the strongest wine.

The Seri state that before the 1920's when they started commercial fishing (with its concomitant cultural changes), the fruit of organ-pipe and sahuaro was used almost exclusively for wine-making. Every several days a new batch of wine was made. During the period when cactus fruit was ripe, family groups moved from camp to camp along the coast. Deer, sea turtle (*Chelonia*), and mullet were plentiful during the summer months, and one person said, "That's why we didn't have to eat the fruit" (i.e., organ-pipe and sahuaro).

Wine made with water is called *imám ?amáaX ?aX kk<sup>w</sup>áap* 'its-fruit wine water be-standing-with'. To make it, mashed fruit pulp is placed in a basket and water added. The mixture is then poured into a pottery olla and placed in the sun. Fermentation occurs in several days. A scum which forms on the wine is removed and the wine poured into another olla. It is then ready for drinking. Further fermentation results in a sour wine, so it must be consumed quickly. It is apparently rather low in alcoholic content, since the people say that a person can consume a great deal of it.

Wine made without water is called *imám ?amáaX ?aX k<sup>w</sup>imáp* 'its-fruit wine water not-be-standing-with'. Kneaded fruit pulp is placed in an olla and left for several days. It forms its own juice which becomes a strong wine. This wine does not sour as does the other. It is said that one can consume only a moderate amount of it, presumably because of its relatively high alcoholic content.

Once an olla had been used for wine-making, it was not used as a water container. It was stuck into bushes or otherwise put aside until needed again.

### LEGENDS

The "boot" found in cardón and sahuaro is woody callus tissue lining a nest-hole made in the stem by a woodpecker. The boot and the woody ribs (vascular bundles) remain after the plant dies and the fleshy parts of the stem decay. The boot is called *Xkátnix* and is used to carry and store certain foods. Little girls use the boot for storing their dolls. The following Seri legend concerns the cactus boot.

A mountain lion was looking for something to eat. He came to a cave in which some cottontails were hiding. He grabbed one, held it down with his paw, and said, "This cottontail's back is yellow." The cottontail said, "My back is yellow because I kill large male mountain lions and carry them on my back." Then he said to the other cottontails, "Bring out the lion's head over there. I'll eat some of it, and then I'll go out and look for more lion tracks." From inside the cave the cottontails rolled out a cactus boot. When the lion heard the raspy sound of the dry rolling boot, he released the rabbit and fled. The cottontails ran the opposite way and into a thicket. Then the cottontail that had fooled the lion said to the others, "Let me get way in the back. It is because I fooled him that we got away."

The appearance of the star *kéetto* announces the coming fruit. It is described as a large red star first seen in late October before dawn. When a person has observed the star, he will say to the others, *imám ki? kóon ki? ?apX Xóop* 'fruit the carrier the outside stand' i.e., "The bringer of fruit came out."

The following June, when this star is seen directly overhead, it is a sign that the fruit is ripe. The Seri say that to see this star, a person must sit facing the east and look directly overhead. This action is called *kéetto k?ayá?xix kWXómmaaXkix* 'kéetto windpipe stretched-out-to'.

Sometimes the fruit appears to be ripe, but upon being opened, it is found to be green. This unripe fruit is called *Xtamóosni yakóaal* 'tortoise ordered'. The star *kéetto* has fooled the tortoise (*Gopherus agassizi*) into thinking the fruit is ready to eat.

When fruit ripens out of season, it is called *kéetto yakáasso* 'kéetto predicted'. The star predicted that it would ripen at that out-of-season time.

### CARDÓN, SAHUESO

*Pachycereus pringlei* (Watson) Britton & Rose  
(*Cereus pringlei* Watson)

*Xáasx*

This is the largest cactus in the Sonoran desert, and one of the most striking features of the landscape in the Gulf of California region. It is common throughout most of Baja California, the Sonora coast from Guaymas northward to Puerto Lobos and on most of the islands in the Gulf including Islas Tiburón and San Esteban. It flowers in spring, usually April and early May, and the fruit ripens in early summer.

Upon ripening the fruit usually splits open, as does the sahuaro fruit, to reveal the pulp which is commonly bright pinkish-red. The individual seeds are several times larger than sahuaro and organ-pipe seeds. Cardón seeds contain 22.59 percent protein, 32.06 percent crude fat, and only 0.95 percent starch (Felger and Moser 1973).

The Seri recognize three kinds of cardón distinguished only by the fruit. Spine length on the fruit is variable, and may be correlated with geographic and environmental conditions. The fruit pulp may be variously colored, although an individual plant will bear fruit of only one color. The Seri report the following four types of fruit classified according to color:

white fruit, *k<sup>w</sup>imáaXp* 'with whiteness'.

light yellow-orange fruit, *k<sup>w</sup>imásool* 'with yellowness'.

pinkish-white fruit, *pti?ikkootax ano kk<sup>w</sup>áaptim* 'together-with in standing'.

red fruit, *k?éel* 'red'.

Plants with red fruit are most common. The three kinds of cardón are:

*Xkókni* fruit small, without spines, rather bitter, edible but seldom eaten, always red.

*Xaasx kíkWs* 'cardón with-spines', fruit normal sized, very spiny, good eating, all four colors.

*Xaasx imíkWs* 'cardón without-spines', fruit normal sized, not spiny, good eating, all four colors.

Toward the end of the "cool" season, probably in April, cardón buds will sometimes drop off. The falling of the buds is said to be caused by *?ant kóoppool* 'land black', i.e., dark patches, caused by winds, which "come in" over the land and cause the buds to fall. Among the columnar cacti, this occurs only with cardón, which is the earliest flowering of the six species. It also happens with fruit of *Xpáasni* or wild fig (*Ficus petiolaris palmeri*). Not all of the buds and fruit fall, nor does it happen every year. Such buds or fruit of any tree, including cactus, which fall prematurely are called *káaktax*.

A cardón with young fruit is called *kíaXXa* 'with belly'. This is an old Seri word meaning 'to be pregnant'. The small, new fruit of *kíaXXa* is called *i?iyáXXa* 'its offspring'.

The fruit-gathering pole specific for cardón and sahuaro (Figure 2) is called *?akosáa*. The Big Dipper in the Ursa Major constellation is also called *?akosáa*. Two sticks of creosotebush (*Larrea divaricata*), each on the order of 10 cm in length, are tied transversely to one end of the pole at acute angles. The top stick is called *i?aktiffa*. The bottom one, tied about 30-40 cm lower, is called *i?a?íikheet* 'made a child', i.e., child of the upper stick. With the cross pieces tied in such a manner, the fruit can be dislodged by being either pushed up or pulled down.

*Adornment.* Juice of cardón fruit, mixed with charcoal, was used in tattooing.

*Food.* The fruit of cardón, organ-pipe, pitahaya dulce, and sahuaro is generally prepared in a similar manner. Fruit preparation is discussed in detail for cardón since it is more extensively utilized than the other species. Each cardón stem may bear numerous ripe fruit, so a woman places her basket on the ground while collecting a number of fruit. She then sits in front of the pile of fruit, opens each one with a worn bone awl or knife, squeezes the pulp into the basket and throws away the peel. Thus she returns to camp with a basketful of pulp. However, she may bring back the entire fruit. Certain individual cardón consistently produce large fruit, year after year, and are specifically sought at harvest time.

The fruit is eaten fresh or it may be preserved. Pulp from ripe fruit is mixed with some pulp of unripe fruit. The mixture is then mashed and kneaded and the juice is poured off into a pottery olla. The mashed fruit forms a sticky mixture. It is patted into flat, round cakes and dried. When the Seri are camped by a playa (dry lake), the sticky mixture is poured directly

onto the hardpan surface and left overnight to dry. It is then scraped or lifted up, broken into chunks and stored in an olla. It will not spoil as long as it remains completely dry. This dry mixture of the green and ripe fruit is called *?anáix* 'grabbed handful'. To prepare *?anáix* for eating, water is added and the fruit is cooked and then mashed. It is then called *?áiSx* 'pulp'.

*?áiSx k?éet* 'pulp red' is fresh ripe fruit cooked and mashed. Made into fist-sized balls, it may be stored for later use.

*?áiSx kóoXp* 'pulp white' is made from the seeds. The seeds are separated from the fleshy pulp by hitting the pulp onto the *ikóask* strainer (see Moser 1973). The seeds fall through and the pulp remains in the strainer. The fresh seeds are cooked in water, mashed and salted. *?áiSx kóoXp* is eaten only when food is scarce, as it is said to be not very tasty.

Seri mothers mash the seedless pulp, add salt and feed it to their children. This seedless pulp is called *imám innaax* 'its-fruit its-flesh'.

Toasted cardón seeds are ground on a metate and the resulting mash is called *?áiXXa*. Since the seeds are oily no additional fat or oil is needed to make a tasty dish. Seeds remaining at the bottom of an olla during wine-making are saved to make *?áiXXa*.

In October, 1973, *Konkai Mayóor* (María Antonia Colosio) prepared some *?áiXXa* for us. She toasted cardón seeds in a stainless steel pan on the Mosers' stove at El Desemboque. She frequently tested the seeds with her hand until she was sure they were sufficiently heated. She then ground the toasted seeds on a metate into a sticky, dark gray paste. This she made into balls about 5 cm or so in diameter and shook them in her cupped hands. The surface was then shiny with oil. Traditionally the Seri ate *?áiXXa* with salt. It tastes somewhat like sesame butter; however, we think it tastes even better. Salting it strongly enhances the flavor.

*Konkai Mayóor* remembers that her Papago grandmother prepared cardón-seed paste in this manner. During traditional times, after the fruit season passed and fresh cactus fruit was no longer available, the Seri relied heavily on cardón seeds for food.

*Xnois kóinim* 'eelgrass-seeds mix' is made by grinding cardón seeds with eelgrass seeds (*Zostera marina*). The cardón seeds, with their high oil content, are said to impart a good flavor to the eelgrass seed. Eelgrass seed contains 13.2 percent protein, 50.9 percent starch, and only 1.01 percent crude fat (Felger and Moser 1973). The eelgrass seed compliments the low starch content of the cardón seed, the cardón seed compliments the low oil content of the eelgrass seed, and the combined high protein contents makes for an extremely nutritious food.

Seri women enjoy a poem (below) concerning the mixing of the cardón and eelgrass seeds for *Xnois kóinim*. The shiny black cardón seeds and the drab "gray" eelgrass seeds are chiding each other.

*ʔé ʔi ntᵏʷánim*

*ʔanso intóoskl ʔant So kómmóii*

*mé mos ʔé ʔi ntᵏʷánim*

*ʔanso intóopool ʔant So kómmóii*

You weren't mixed with me,  
you're just drab there where you are.

You, also, you weren't mixed with me,  
you're just so black there where you are.

According to Seri oral history, a group of Seri known as *Xáasx it kóosoot kiʔiSSiitam* 'cardón trunk slender its-land-area', i.e., the people of the place of thin-trunked cardóns, were inveterate cardón seed eaters. It is said that they would mourn when the fruit season ended. They are said to be the only people who ate cardón fruit before it was ripe and traditionally practiced the second harvest (see McGee 1898). It is remembered that only cardón seeds were utilized for second harvest.

The flowers are occasionally eaten fresh. Only the upper portion is eaten, i.e., the succulent perianth segments, stamens, and stigma and style.

**Medicine.** Slabs of stem tissue with the spines removed, are heated in ashes, wrapped in cloth and placed on aching parts of the body as a poultice (Felger and Moser, in press).

**Religion and Beliefs.** On the occurrence of a miscarriage or the birth of a still-born infant, the remains are wrapped in pieces of cloth, usually placed in a box, and then placed on a platform of brush in the limbs of a cardón (Griffen 1959). According to traditional belief, if the remains are buried in the ground, the mother will be burying all her future children with it. This elevated burial is called *SiX ʔakX kʷíiʔ kólla ʔapáXkim* 'thing somewhere not-be high put', i.e., the dead thing placed high (Moser 1970).

The placenta of a newborn infant was traditionally buried at the base of a cardón or sahuaro. This insures a long and healthy life for the baby (Moser 1970). The cactus served to mark the place of burial. In later years one would visit the site of his placenta burial to place green branches of any plant on it for good luck.

Placing juice from a barrel cactus (*Ferocactus wislizenii*, *siml*) on a cardón is said to bring rain "for certain." Luck may be sought from the spirit of the cardón. The supplicant marks four crosses on the bark and asks for the help desired. Each year brings a renewal of nature, and the first evidence of fruiting portends good fortune. Cardón buds, for instance, are used as good luck charms.

**Utilitarian.** The dry woody ribs are used for house walls and as cactus fruit-gathering poles. Elderly and blind persons may use the ribs for canes, and the dancer in the puberty fiesta may steady himself with a cardón pole.

## ORGAN-PIPE CACTUS, PITAHAYA DULCE

*Lemaireocereus thurberi* (Engelm.) Br. & R.  
(*Cereus thurberi* Engelm.)

*óol*

Organ-pipe is common on Isla Tiburón and the mainland in the Seri region from near sea level to peak elevation. On Isla San Esteban it is rare. Peak flowering occurs in early summer before the onset of the summer rains. Time of flowering and fruiting tends to occur over a longer span of time than for cardón and sahuaro. Fully ripe fruit generally splits open, revealing the fleshy red pulp in which the seeds are imbedded. According to the Seri, there is an area north of Pozo Coyote where certain of the organ-pipes flower and fruit twice each year. This biannual pattern is called *kéexam*.

**Food.** The *óol* fruit gathering pole is called *ʔaktáappa* (Figure 2). It is a pole about 4 m long to the end of which is fastened a spatula-shaped piece of wood, *ʔakóipx* 'right-angled', made of mesquite wood (*Prosopis glandulosa torreyana*). McGee (1898:230, Figure 36) pictures two *ʔakóipx* which he thought to be awls. Extending beyond the *ʔakóipx* is a wire or sharp-pointed strip of metal to spear the fruit. This point, formerly made of a piece of creosotebush wood, is called *ʔaktáappa it iʔiip* 'ʔaktáappa on its-standing'.

The general term for organ-pipe fruit is *ool imám* 'organ-pipe its-fruit'. The term *káaʔaatax* is specific for the unpicked spiny fruit which has not yet split open. Each organ-pipe stem bears only a few fruit. As the woman walks around the cactus with her basket on her head she pierces one or two of the fruit. Then as she lowers the pole to retrieve the fruit, she takes the fruit off the spike and rips open the skin of the fruit with the metal point and tosses the opened fruit up into her basket.

When organ-pipe fruit is scarce, the gatherer listens for the calls of the white-winged dove, for where the doves are there will be fruit.

Fruit which has burst open, but is not fully red, is called *kmássiix* and is said to be the best tasting. The skin of the fruit is edible, which is not the case with other species. The seeds are not mashed or ground for food. The petals are also eaten.

The fruit can be preserved by drying. The woody ribs, called *ool ittaaxk* 'organ-pipe its-bones', are criss-crossed on the ground for drying the fruit. The fruit is peeled and sliced in thin sections and placed on the organ-pipe ribs to dry. It may take quite a few days for the fruit to dry, for humidity is often high at this time of year. During the drying process the fruit slices are frequently turned over. The dry fruit, *imám ʔapásx* 'its-fruit spread-out-to-dry', can be kept well past the fruiting season. Water is added to the dried fruit and it is either cooked or eaten raw.

Prior to the 1920's, organ-pipe and sahuaro fruit was seldom eaten since it was used almost exclusively for wine-making. Since fruit nearest camp was harvested first, if older children wanted to eat the sweet fruit they had to go far from camp; little children seldom ate it unless their mothers prepared some especially for them.

The smell of organ-pipe fruit, called *óol inkáakkaas* (an archaic word), is pleasing to the Seri. The odor is usually not strong. However, the Seri say that the organ-pipe growing near Pozo Peña (about 25 km north of Bahía Kino) produces fruit which has a strong yet pleasant odor.

**Housebuilding.** The dry ribs were often used for the traditional Seri hut, which until very recently was a common construction in the more permanent camps.

**Hunting.** A hunter looked for deer tracks around organ-pipe during the fruit season. If there was evidence of deer in the area, the hunter built small shelters from branches of elephant tree (*Bursera microphylla*), one against each of several organ-pipes. To avoid alerting the deer with the scent of clothing, he hunted in the nude. In this manner, using the various shelters, he killed as many as three or four deer at close range in one night. Both bow and arrow, and later guns, were utilized. This method of hunting is no longer practiced.

Torches made of bundles of dry organ-pipe ribs bound together with strips of *?áat* stems (*Jatropha cuneata*) are carried at night for hunting pelican, mullet, and sea turtle (Figure 3). Such a torch is called *?éeXXoox*. A lantern for night fishing is fashioned from a 20 liter (5 gallon) can. Holes are cut in the sides, and dry organ-pipe wood is fed into the can and burned.

**Medicine.** Fresh slabs of the cactus are heated in coals, wrapped in cloth and placed on aching parts of the body.



**Figure 3.** Hunting torch. Woody ribs of organ-pipe tied with stem strips of *Jatropha cuneata*, 74 cm. El Desemboque, ca. 1960. Drawing by Cathy Moser.

**Play.** Small chunks of the fresh stem with spines removed are thrown in playful group fights.

Cross sections of organ-pipe stems are used to form the circle for the puberty ceremony game, *kamóilkox* (Griffen 1959).

**Religion and Beliefs.** To calm the wind, a person removes the spines from a piece of the stem and slices it into eight small pieces. These pieces are thrown one by one into the sea. At the same time the supplicant asks the wind to calm.

**Signalling.** The dry wood may be used for making fire for smoke signals.

**Utilitarian.** Because of their high oil content the mashed seeds are used to soften deer skins. Dry organ-pipe wood is said to be good for smoking out bees. Pieces of the ribs are used to build up the sides of a basket in order to carry a larger load. This arrangement is called *?éet ?apáakaaX* 'sticks stuck-along-edge'.

Around the turn of the century, when the Seri began making plank boats, they used organ-pipe to make caulking pitch called *?ok<sup>w</sup> inne* 'wood its-mucus'. The dry cactus, apparently consisting mostly of stem cortex and some pith, is crushed. It is then placed in a sea turtle shell (carapace) and pounded until it is almost like powder, after which it is put into a pottery vessel made especially for the purpose (Bowen and Moser 1968). Enough oil from a sea turtle, pelican, or sea lion is added to thoroughly moisten the crushed pulp. The pot is placed on a slow-burning fire of ironwood (*Olneya tesota*), and the mixture cooked for several hours. It is stirred occasionally with a stick, more oil being added as needed. When the mixture attains the consistency of tar it is taken off the fire. The pitch is then ready to be spread along the seams of the boat with a stick flattened at one end.

Pitch can also be made from pitahaya agria or elephant tree (*Bursera microphylla*). Coolidge and Coolidge (1939) refer to a pitch made from the fat of birds and gum from a dead giant cactus.

The first wooden Seri boat is said to have been made by Juan Mata at a camp called *kanóaa kí? an ipáii* 'boat the on its-making' on Isla Tiburón. It was completely covered with this black pitch. These early boats were made of pieces of driftwood. It is said that if one walked the shores of Isla Tiburón, he could collect enough driftwood for a boat. The thicker boards were sawed lengthwise into two thin pieces with saws filed from hoop iron found along the shore. Files for making the saws were obtained on infrequent trading excursions to Hermosillo. The ribs of the boats were made of *Bursera microphylla*, which has a very soft wood, because the Seri nails, fashioned from barbed wire, would not penetrate a hard wood such as mesquite.

The Seri say that these pitch-covered boats looked ugly but were sea worthy, to a degree. They leaked so much that a boy always accompanied the men on turtle hunting expeditions. His job was to bail with the shell of a

small green turtle (*Chelonia mydas*). Balancing himself in the center of the boat and bailing constantly, he sometimes won the men's sympathy and was often given first choice of the turtle meat.

### PITAHAYA AGRIA

*Machaerocereus gummosus* (Englem.) Br. & R. *Sis kkápXi* 'thing-its-fruit sour'  
(*Cereus gummosus* Engelmann) *ooł áXW* 'organ-pipe excrement'

The pitahaya agria is a large sprawling cactus; the stems are often arching and leaning, forming dense thickets of impenetrable spiny tangles. It occurs throughout much of Baja California, Isla San Esteban, Isla Tiburón, and on the coast of Sonora from the vicinity of Desemboque southward nearly to Cerro Prieto at the north end of Bahía Kino. It somewhat resembles *sina* (*Rathbunia alamosensis*), however, their geographic ranges do not overlap and the flowers and fruit are very different.

The fruit is much relished for its sweet but tart flavor. It is about the size of an orange and covered with very sharp and brittle spines. Throughout most of its range the fruit is red, although in the vicinity of Desemboque some plants bear golden-yellow fruit.

Flowering and fruiting generally begin later than the other large-fruited species, and fruiting usually continues well into the fall. Rosa Flores told us that it bears ripe fruit when *kásool ?éekto* (*Pectis papposa*) is in flower. *Pectis papposa* is a hot weather ephemeral; and when there is sufficient soil moisture, such as often occurs with fall hurricane-fringe rains, it may continue flowering through November. In 1971, ripe fruit was collected on pitahaya agria near Desemboque as late as the end of October. In mid-October, 1972, some Seri who had gone to Isla Tiburón gathered pitahaya agria fruit while they were there. In 1973 there was no pitahaya agria harvest. The Seri state there was no fruit (meaning not enough to be worth harvesting) because of the lack of summer rain.

*Food.* The fruit is eaten fresh. If plentiful, it may be dried in the same manner as organ-pipe fruit.

The fruit-gathering pole for pitahaya agria (Figure 2) is called *?akoSküf*. It consists of a long pole to the end of which is inserted, transversely, a pointed stick of creosotebush. Today a stout nail serves the same purpose. The gatherer pierces the fruit and uses a twisting motion to pull it off the plant.

*Utilitarian.* *?ok<sup>w</sup> ínnee*, the pitch described for organ-pipe, was occasionally made from pitahaya agria.

### SAHUARO

*Carnegiea gigantea* (Engelm.) Br. & R.  
(*Cereus gigantea* Engelmann)

*moxéppe*

Sahuaro is common on the Sonoran mainland and on Isla Tiburón, but does not occur on Isla San Esteban. Flowering occurs in early summer and the fruit, *moxéppe imám* 'sahuaro its-fruit', ripens shortly before the onset of the short summer monsoon. The fruit is green and spineless on the outside, and when fully ripe usually splits open to reveal succulent red pulp in which numerous shiny black seeds are imbedded. A smaller or stunted sahuaro, also with edible fruit, is called *moxepe Sáak* 'sahuaro small'. It is said to have larger fruit than the common *moxéppe*.

*Food.* The fruit is gathered with the same type of pole used for harvesting cardón fruit. Prior to the 1920's, both sahuaro and organ-pipe fruit were used almost exclusively for wine-making.

*Games.* Sahuaro fruit skins are used in a game called *kakómmaakox* 'stick-throwers'. The participants sit opposite each other, each with three pointed sticks and several fruit skins cut into narrow strips. The game consists of taking turns throwing a stick at the opponent's fruit strips. If a player can pierce one and return it to his side without it dropping from the stick, he gets to continue. The player who gets all of his opponent's strips wins that round. A previously determined number of rounds are played. The men play for large stakes: guns and knives. They become skilled at piercing very narrow strips called *?akómi* 'things pierced'.

Boys use a much wider strip called *?aXS ípł* 'dog its-tongue'. They play to win a bet of a certain number of cactus fruits which the losers have to go into the desert to gather. It is remembered that on one occasion the losers refused to pay their debt. So the winners grabbed them, removed their shirts and tied them to trees, where they left them for a time in the summer heat. Then they released them and considered the debt paid.

*Housebuilding.* The dry woody ribs are sometimes used for making house walls. Spaces between the ribs are filled with mud.

*Medicine.* Rheumatism is treated by heating a slab of sahuaro stem (with the spines removed) in hot coals, wrapping it in a cloth and placing it on the aching part of the body.

*Religion and Beliefs.* To stop rain, one builds a fire against a sahuaro, using desert saltbush (*Atriplex polycarpa*) for fuel. If the participant has enough faith, the rain will stop.

The placenta of a newborn infant is traditionally buried at the base of a giant cactus (see cardón).



*Utilitarian.* As reported by Bowen and Moser (1968), pottery ollas for making wine are sealed from seepage in the following manner. Green branches of creosotebush are packed tightly around the outside of the olla. Dry sahuaro flowers, called *moxéppe ippoolkam* 'sahuaro its-tails' are placed inside and ignited. Juices from the flowers and the creosotebush are said to effectively seal the olla.

Sahuaro ribs sometimes serve as canes for the elderly or blind, and as the steadying pole held by the dancer in the foot drum dance (Kroeber 1931).

### SENITA

*Lophocereus schottii* (Engelm.) Br. & R.      *?asa?kápW* 'fruit chew'  
(*Cereus schottii* Engelm.)      *?é??e is kíssiil* 'plant fruit little'

Senita is widespread in the lowlands on Isla Tiburón and the mainland in the Seri region. Flowering and fruiting occur in hot weather from late spring to fall, although peak flowering and fruiting tend to be in early summer. The Seri report that certain senita plants in two small areas, one near the center of Isla Tiburón and the other on the mainland near Punta Sargento, flower and fruit twice a year (see organ-pipe, above). The small red fruit is spineless.

*Food.* The fruit is eaten fresh, although it is not harvested as a "crop." However, the people of Band IV, who lived in the interior of Isla Tiburón (Moser 1963), consumed considerable quantities of the fruit. Senita is especially common in part of their territory. No pole is needed to collect it. Sometimes a fruit-bearing limb will be cut but not entirely severed, so that it will swing down, allowing fruit in the center of the plant to be more easily picked.

*Housebuilding.* The wood is occasionally used for house walls.

*Play.* Boys play a game called *?asa?kápW pte kxéaatim* 'senita together hitting' in which they cut the thorns off slabs of the cactus and then, choosing sides, throw the slabs at each other, "wanting to hurt."

A section of stem is made into a toy. The fleshy part is removed from the central portion, leaving wheel-like discs at each end (Figure 4). The toy is pushed with a forked stick.

*Religion and Beliefs.* *íkkoor* is a power with spider-like appearance covered with long fine hairs. *íkkoor* causes the senita to have a very powerful spirit. This spirit hovers over the cactus as a "hat" of vapor or fog and is called *Xéélee kíonam* 'fog with-hat', i.e., hat made of fog. According to the Seri origin myth, the senita was one of the first plants to be formed (Ortiz, in press).

Anyone may seek the aid of the spirit of the senita against his enemies. He can place a curse against someone whom he dislikes, or seek help against coming danger; for example, against a curse which he believes someone has

placed on him. However, one knows that he gets involved with the senita at great personal risk. If too frequent use is made of the cactus in placing a curse on someone, the curse might backfire and affect him instead. The person would then be said to be *?é??ee yaróokkoot* 'plant made-crazy'. Also, if one begins to fear the senita while seeking its power, he will become ill.

To place a curse, the person cuts a small hole in a senita stem on the side facing the south wind and puts into it a strand of the enemy's hair or a piece of cloth which has absorbed that person's sweat or saliva. The spirit of the cactus will cause the enemy to become weak and sickly and eventually die.

Should the supplicant suddenly become fearful of the spirit of the senita with which he is dealing, he must mash a small chunk of the plant and mix the juice with any one of the various native paints. This mixture is used to paint crosses on the face and thus avoid sickness that might otherwise affect him. One who so paints his face for this reason is called *?é??ee kkáktim* 'plant user'. People who see the crosses painted on his face may fear that he has been placing a curse on them.

A person who believes he has obtained good results from the spirit of the senita and continues to seek its help is called *?é??e oSiim* 'plant liked-by', i.e., he who is liked by the plant. He may paint his face with the above-mentioned paint to bring good luck to himself and his family.

*?asa?kápW ?éeyolka* 'senita given' is a good luck cache of small twigs and sea shells stuck into a senita by a passersby. Doing this is said to cause the spirit of the senita to influence other people to give him material gifts.

The senita is said to be able to hear a conversation. People sometimes avoid the plant for that reason.

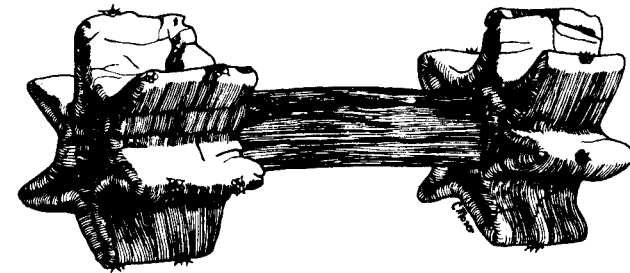


Figure 4. Child's toy. Senita stem, x 1/4. Found ca. 3 km north of El Desemboque, April 1973. Drawing by Cathy Moser.

## SINA

*Rathbunia alamosensis* (Coulter) Br. & R. *Xasáakkoox* 'boa constrictor'  
(*Cereus alamosensis* Coulter)

This plant somewhat resembles pitahaya agria. *Rathbunia* has small tubular, red and diurnal flowers, and more slender and snake-like stems than does the pitahaya agria. *Rathbunia* enters the periphery of the Seri region in the vicinity of Bahía San Carlos, northwest of Guaymas, and at Siete Cerros, between Hermosillo and Bahía Kino. The Seri know of its occurrence at Siete Cerros. They say that the small fruit can be eaten fresh but is bitter and consequently not harvested. The boa constrictor is known to occur as far north and west as the vicinity of Hermosillo and Bahía San Carlos (Lowe 1958).

## ACKNOWLEDGEMENTS

We thank Alexander and Jean Russell for their continuing generosity. Their companionship and hospitality has greatly facilitated the progress of this work. We thank Lucretia Brezeale Hamilton, Cathy Moser, Thomas Bowen, Bernard L. Fontana, and Francis Runyan for the excellent drawings, and C. Shakel for the map. Edward Moser gave generous assistance with the manuscript. We thank Mahina Drees Felger for valuable assistance in preparing the manuscript. We are especially grateful to the Seri, especially Roberto Herrera T., who have taught us the knowledge which is recorded in this paper.

## REFERENCES

- Benson, Lyman  
1969 *The cacti of Arizona*, Third edition. The University of Arizona Press, Tucson.
- Bowen, Thomas and Edward Moser  
1968 Seri pottery. *The Kiva* 33 (3) 89-132.
- Buxbaum, Franz  
1950-55 *Morphology of cacti*. Abbey Garden Press, Pasadena.
- Castetter, Edward F. and Willis H. Bell  
1937 Ethnobiological studies in the American Southwest. IV. The aboriginal utilization of the tall cacti in the American Southwest. *University of New Mexico Bulletin* 307, *Biological Series* 5 (1), Albuquerque.
- Coolidge, Danc and M. R. Coolidge  
1939 *The last of the Seris*. E. P. Dutton, New York.
- Felger, Richard S. and Mary Beck Moser  
1970 Seri use of *Agave* (century plant). *The Kiva* 35 (4) 159-67.  
1971 Seri use of mesquite, *Prosopis glandulosa* var *torreyana*. *The Kiva* 37 (1) 53-60.  
1973 Felgrass (*Zostera marina* L.) in the Gulf of California: Discovery of its nutritional value by the Seri Indians. *Science* 181 (4096) 355-56.  
In press Seri Indian pharmacopoeia. *Economic Botany*.
- Greene, Robert A.  
1936 The composition and uses of the fruit of the giant cactus (*Carnegiea gigantea*) and its products. *Journal of Chemical Education* 13 (7) 309-12.
- Griffen, W. B.  
1959 Notes on Seri Indian culture, Sonora, Mexico. *Monographs of the School of Inter-American Studies* 10.

- Kroeber, A. L.  
1931 The Seri. *Southwest Museum Papers* 6.
- Lowe, Charles H., Jr.  
1959 Contemporary biota of the Sonoran Desert: Problems. In *Arid Lands Colloquia*, pp. 54-74. The University of Arizona, Tucson.
- McGee, W. J.  
1898 The Seri Indians. *Seventeenth Annual Report of the Bureau of American Ethnology*, pp. 1-344.
- Moser, Edward  
1963 Seri bands. *The Kiva* 28 (3) 14-27.  
1973 Seri basketry. *The Kiva* 38 (3-4) 105-40.
- Moser, Mary Beck  
1970 Seri: From conception through infancy. *The Kiva* 35 (4) 201-10.
- Moser, Edward W. and Mary B. Moser  
1965 Consonant vowel balance in Seri (Hokan) syllables. *Linguistics* 16:40-67.
- Ortiz, Alfonso A.  
In press A comparison of six origin myths. *Handbook of North American Indians*.
- Shreve, Forrest and Ira L. Wiggins  
1964 *Vegetation and flora of the Sonoran Desert*. Stanford University Press, Stanford.
- Standley, Paul C.  
1924 Trees and shrubs of Mexico. *Contributions from the United States National Herbarium* 23, Part 4.