

THE STORY OF THE SAGUARO

by
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curator of small animals

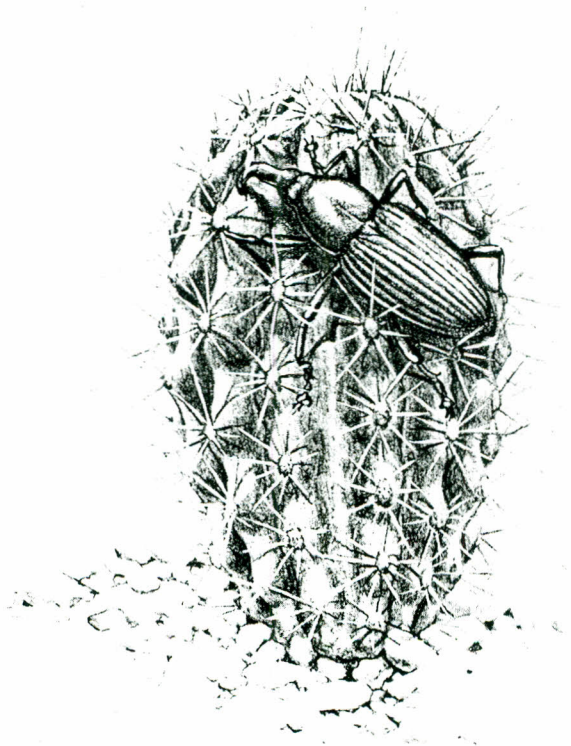
The giant cactus known as the saguaro is the single most dominant plant of the Sonoran Desert and is widely recognized as the symbol of Arizona. For this reason—and because we are located in the lushest saguaro forest in the world—the Desert Museum several years ago decided to gather together and publish in one-volume the entire life history of this remarkable cactus—from the improbable germination of a very tiny seed through its growth to giant stature—a life span of some 200 years.

This book, "The Story of the Saguaro," will also explore the plant's great importance to many of the Sonoran Desert animals who depend on it for habitat and for food, as well as the saguaro's relationship to other plants living in close association with it. And finally, man's use—and destruction—of the saguaro must also be a part of this fascinating story.

Beginning with Chapter One, we will print in succeeding issues the complete book, chapter by chapter. The book was written by Merritt S. Keasey III, the Desert Museum's Curator of Small Animals, with knowledge and information supplied by the entire Desert Museum curatorial staff and consultants from the University of Arizona. Desert Museum artists have supplied the accompanying illustrations.

ANIMALS and BIRDS, such as this curve billed thrasher help to distribute saguaro seeds.





CACTUS WEEVILS OFTEN burrow into small saguaros to feed—often times within a few weeks the soft interior has been completely eaten and all that remains is a hollow shell.

CHAPTER ONE: SEEDS AND SEEDLINGS

A single seed of a saguaro is a tiny thing, no larger than the letter "o" of this print. Yet this small speck of material is the genesis of a cactus which may eventually reach a height of more than 40 feet and a weight of several tons.

However, before this seed can begin to grow as a seedling, the seed must survive. And there are many things which threaten the seed before it has a chance to germinate (sprout). In fact, of the many thousands of seeds produced each year by one giant cactus, scientists estimate that only one out of every 1,000 will germinate. And even after germination, many of these seedlings will quickly die—only a very small percentage continue to live and grow, even for a short time.

So, although an average saguaro may produce millions of seeds during its lifetime, chances are that only one of these may ever become a mature plant. In the following paragraphs we will see why this is so.

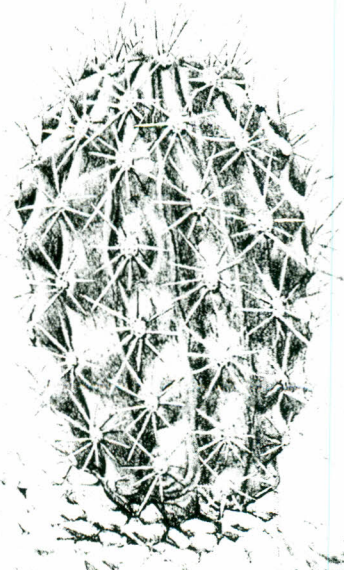
As soon as the ripe saguaro fruits begin to split open, the contents are often quickly eaten. The red, juicy pulp and the seeds inside are a welcome supply of food and moisture for many creatures. The birds are usually the

first to get the fruit while it still clings to the top of the saguaro, high above the ground. Even birds such as flycatchers (who otherwise feed only upon insects) will dine upon the ripe saguaro fruit. And, in some areas of the saguaro forest, the fruit is harvested by Papago Indians, who use it for many purposes.

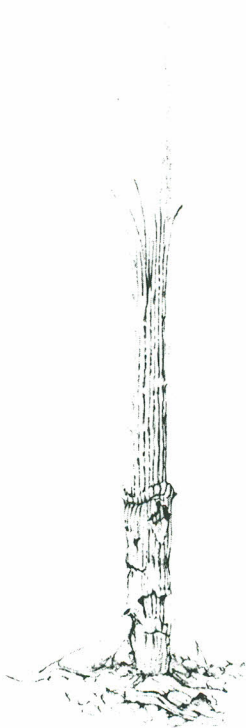
Many of the saguaro fruits fall to the ground and are then eaten by other animals. Even such tiny creatures as the harvester ants carry many seeds off to their underground burrows, storing them there for future use. If swallowed whole, a saguaro seed may pass through the digestive tract of an animal, uncrushed and unharmed. But, eaten or not, many seeds end up in a location where germination is impossible—some fall onto bare ground where they perish from lack of moisture and excessive heat; others become buried too deeply to germinate.

A saguaro seed demands several conditions in order to sprout. It must receive just the right amount of moisture, the proper temperature and adequate light. Some saguaro seeds may lie dormant for as long as three years, but whenever conditions are correct, the seed will begin to grow, usually within 48 hours. A seed which is buried at approximately one-eighth of an inch below the surface will have the best chance for continued growth because it receives the proper combination of light and protection at this depth. If deeper or shallower, the seed may die. There are many things which can quickly destroy a seedling saguaro. A small animal may eat it, or a larger one trample it. A heavy rainstorm may wash it away, or the lack of rain over a long period may dry it up. Temperatures below freezing for too long a period will also destroy it.

Saguaro seedlings which start to grow out on the open desert floor, exposed to the full rays of the sun, soon perish. The only ones with any chance of survival are those which begin their growth in the protective shelter of a plant or a rock. One or more young saguaros are often found growing beneath the overhanging branches of a mesquite, ironwood, paloverde or bursage. These trees and shrubs are referred to as "nurse plants," for they



THIS YOUNG SAGUARO stands about three inches high and is actually about three years old.



WHY DO SAGUAROS FALL APART? Perhaps it is too much moisture—or a drastic structural change—or freezing temperatures for more than 48 hours—or a bacterial disease that led to a weakened state.

years, for the growth rate continues to increase from germination throughout the plants life. Since the saguaro's growth is dependent upon temperature and moisture conditions, its growth will vary in different locations, and from year to year.

The tip of a young saguaro continues to grow each year, and for many years it will remain a single stem, even after it has begun to bear fruit. Arms develop much later. At the height of approximately eight feet the first flower buds appear around its crown—some 45 to 55 years since the little seedling first broke through the ground. The nurse plant which gave it shelter may long since have died, but the saguaro no longer needs this protection. It has now become a mature plant, capable of producing seeds. *S*

provide shade and protection. Other smaller plants, which are also using the nurse plant for shelter, provide further cover for the saguaro seedling, and help to hold the soil together; this prevents the tiny seedling from being washed away.

Rabbits, ground squirrels, wood rats and cactus mice all eat young cacti, and only the most protected seedlings escape detection by these small mammals. No matter how well hidden however, many small saguaros do not escape the larvae of the cactus weevil. The female weevil lays a single egg in the skin of a small saguaro. Upon hatching, the larva burrows into the soft interior and begins to feed. Within a few weeks there is nothing left of the saguaro but a hollow shell. The larva then pupates, later hatching into an adult weevil. (However, only the very small saguaro plants—usually less than two inches in height—are destroyed.)

A study by the University of Arizona and the U.S. Department of Agriculture of transplanted saguaro seedlings revealed that up to 13 per cent were destroyed by the larvae of this insect in some of the test plots. Later studies show that larvae of the longhorned cactus beetle also feed upon young saguaros.

Once established, a saguaro seedling grows very slowly. A young plant may take as long as five years to reach the height of just one inch. This does not mean, however, that it will be only two inches tall at the end of 10

