

Illustrated Executive Summary

Results of the 2010 Saguaro Census at Saguaro National Park

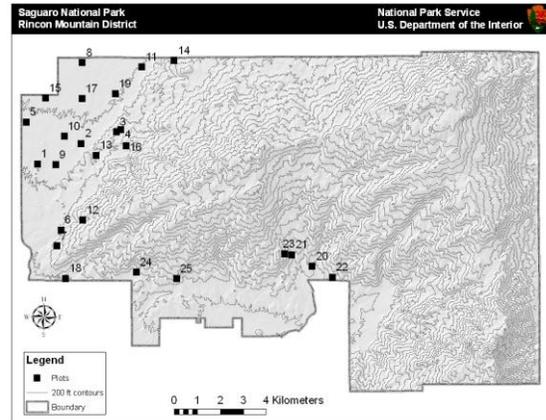
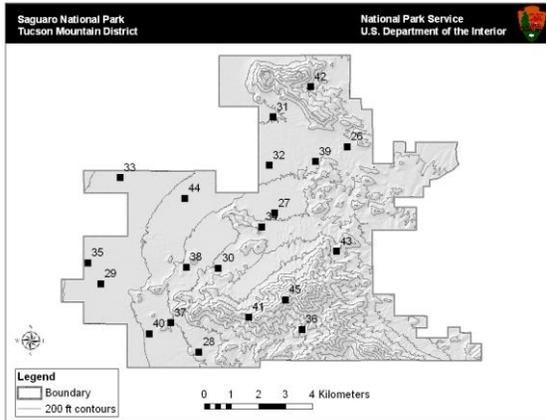
Kara O'Brien, Don E. Swann, and Adam C. Springer
Saguaro National Park, August 2011



Saguaro Census student interns and volunteer citizen scientists, Saguaro National Park

Summary

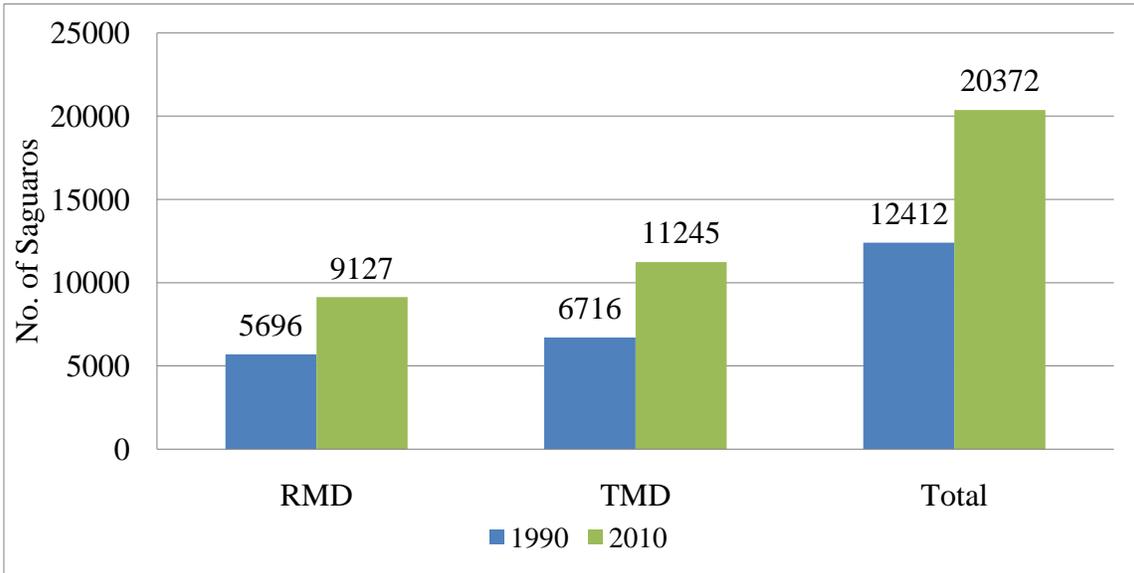
Every 10 years Saguaro National Park monitors the population health of the saguaro cactus (*Carnegiea gigantea*), the park's signature species and Sonoran Desert icon, in a year-long program called the Saguaro Census. In 2010 we measured and counted saguaros and collected other data on bird cavities, arms, and associated plants on 45 plots randomly located in the two districts of the park: the Tucson Mountain District (below, left), west of Tucson, and the Rincon Mountain District, east of Tucson, Arizona (right).



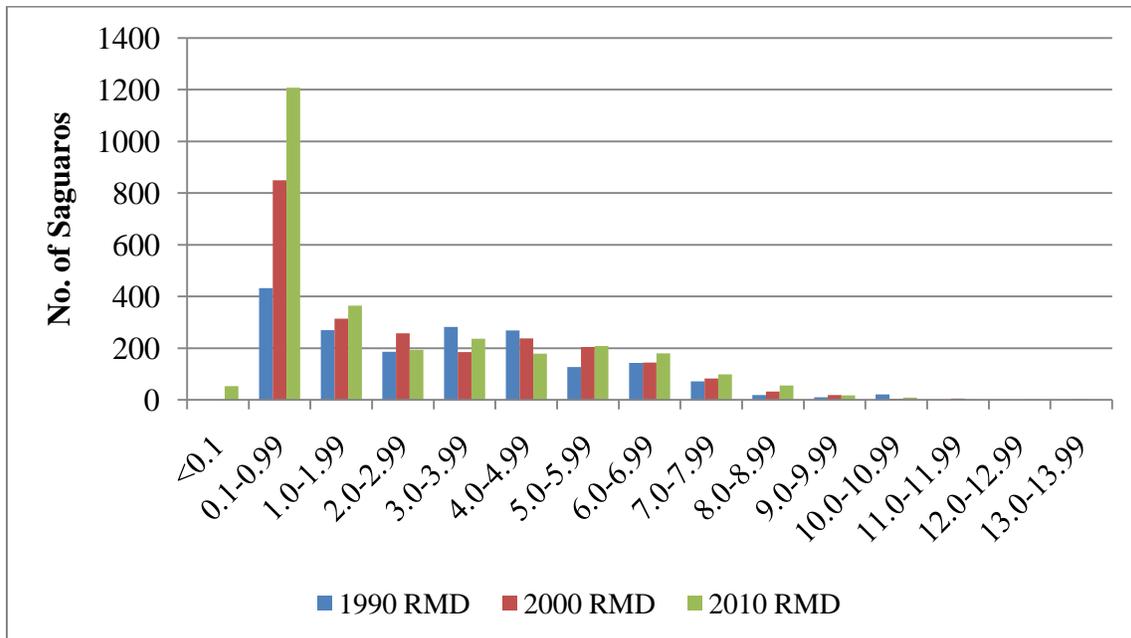
The 2010 Saguaro Census was a “Citizen Science” project involving over 300 volunteers who donated over 3,000 hours of their time to the park. They were recruited, trained, and led in the field by Kimberly Diamond, a Student Conservation intern (below, center) and other student interns including Tara Bigger (right) and University of Arizona students Kara O’Brien, Adam Springer, and others.



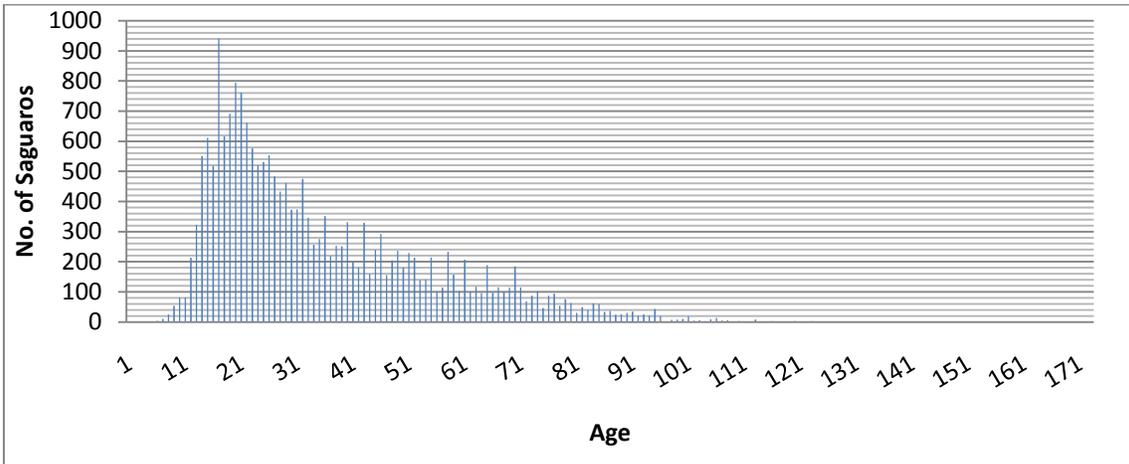
During the 2010 Census we observed many more saguaros than in 1990 or 2000. In the Rincon Mountain District (RMD on chart below), we counted 60.0% more saguaros in 2010 than in 1990 and 40.7% more than in 2000. In the Tucson Mountain District (TMD), we counted 67.4% more saguaros than 1990 and 10.3% more than in 2000. We estimate that Saguaro National Park has approximately 1,896,030 saguaros, compared to 1,624,821 in 2000 and 1,145,784 in 1990.



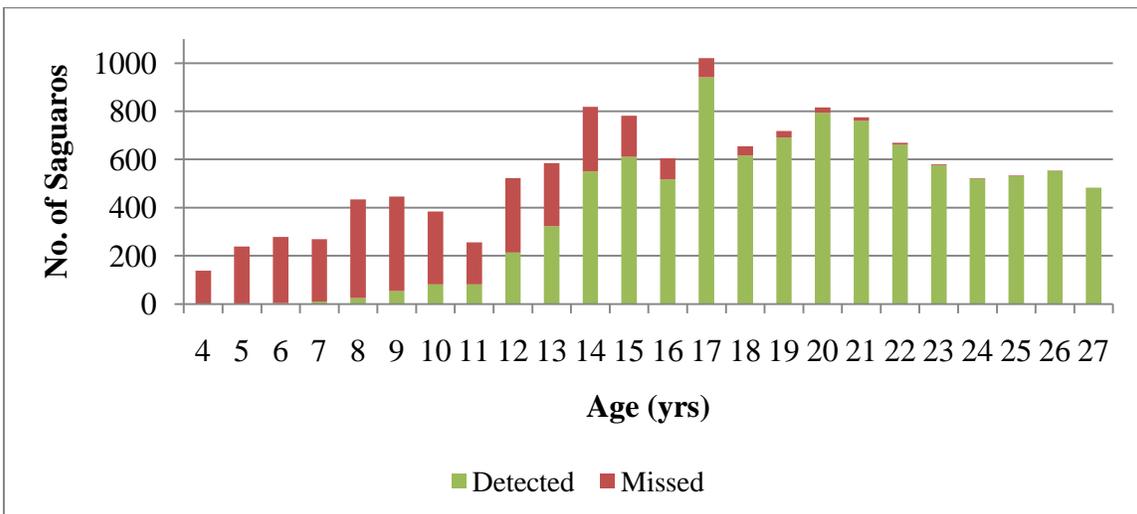
Our results also indicate that the number of small saguaros – those less than 1 meter (about 3 feet) in height – greatly outnumber saguaros of other sizes. As can be seen on the chart for the Rincon Mountain District (below), approximately 62% of all measured saguaros observed were less than 2 meters (about 6 feet) tall.



In what years did most of the saguaros in the park germinate? We know from past studies that saguaros are very slow-growing, especially when they are young. This makes them difficult to observe until they are about 10 years old. However, based on previous studies, we can estimate how old each individual saguaro is, and how many might be present but are too small to see. The chart below indicates that the vast majority of saguaros observed during the 2010 Census are less than 50 years old – good news for the park, if these saguaros continue to survive and grow.

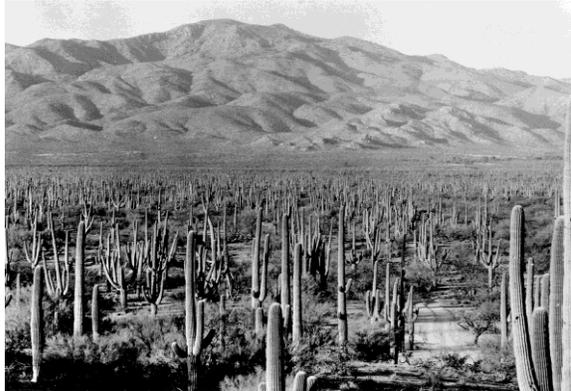


The final chart (below) focuses on the youngest saguaros only, with the green bars being actual saguaros observed, and the red bars representing the number we estimate were present, but did not actually observe. The higher number of saguaros about 15 to 22 years old suggests that conditions were optimal for survival during the late 1980s and early 1990s – which was a very rainy period. However, since 1995, it appears that the number of young survivors has decreased, probably due to drought conditions during the past decade.



Saguaro National Park was established in 1933 to protect the spectacular stand of very large saguaros in the foothills of the Rincon Mountains east of Tucson. By the 1940s, large numbers of these giants were dying, and park managers were very concerned. This decrease continued for several decades, and is still visible on a landscape scale today (below).

1935



1998



However, the Saguaro Census results make clear that many younger saguaros are now growing in the park underneath nurse trees such as palo verdes (right). If current trends continue these saguaros will soon be reaching through their nurse trees and become more visible to park visitors.



With its unusual appearance, deep cultural meanings, and interesting natural history, the saguaro cactus is a revered plant in America's desert. At Saguaro National Park, the saguaro has also developed an interesting ecological and monitoring history. The Saguaro Census is an excellent opportunity to highlight this plant. We hope that the saguaros measured by citizen scientists in 2010 will be re-measured in 2020 by the next generation of park stewards, and that the Census will continue to be relevant long into the future.

This project was funded by the Friends of Saguaro National Park, Western National Parks Association, Tucson Cactus and Succulent Society, and National Park Service. We are grateful for their support as well as to our many volunteers and past saguaro researchers that made the 2010 Saguaro Census possible.