SAGUAROS

Saguaros, emblems of the desert, now claim higher ground



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The saguaro cactus - a tall, handsome, enduring symbol of the Sonoran Desert - is proving to be an upwardly mobile species.

In terms of elevation, that is.

Some saguaros - such as one that's growing under an oak tree at about 4,500 feet in the Catalina Mountains - leave the desert behind and flourish in woodland terrain.

That terrain is well above the species' more typical range at elevations from sea level to 3,500 feet.

While a few saguaros have always taken root in higher ground, scientists are now pondering a question: Are the warming temperatures of recent decades leading to a general upward migration of saguaros and other desert plants?

The short answer: possibly.

"It's a good and important and difficult question," said Jeremy Weiss, a senior research specialist in the department of geosciences at the University of Arizona.

"Saguaros are sensitive to freezing temperatures. If we're seeing changes as to where freezing temperatures occur and how cold they are, we're opening up a potential for saguaros to establish in different areas" - including sites at higher altitude, Weiss said.

CACTI ON THE HEIGHTS

Weiss and other scientists say some saguaros eke out a living at elevations at or near 5,000 feet.

One area where saguaros reach such elevations is on Tanque Verde Ridge in the Rincon Mountains east of Tucson, said Bill Peachey, a Tucson-area geologist and longtime saguaro researcher.

"But things are going to be pretty tough for them during the cold periods at those sites," he said.

Other areas where saguaros seem to push the upper limits of their range are the Hualapai Mountains near Kingman and some canyons in the so-called Front Range of the Catalina Mountains just north of Tucson.

THE LUCK OF LOCATION

Saguaros surviving at the highest altitude make a go of it because their seeds happened to be deposited in favorable, sheltered locations - usually on south-facing slopes that tend to be warmer than those facing north.

The 5-foot-tall saguaro growing at about 4,500 feet near Sycamore Reservoir in the Catalina Mountains is a case in point. It's on a south-facing slope and is sheltered by an oak tree serving as a so-called "nurse plant."

"The canopy of the oak tree is providing a bit of shelter in the case of freezing temperatures," Weiss said. "It will be a bit warmer under that tree. It's like when you take your patio plants and put them under a ramada" for shelter on cold nights.

How might saguaro seeds make their way to elevations above the species' more typical range?

Peachey cited a possible scenario for the saguaro growing under the oak.

"My suspicion," he said, "is that some vertebrate has dropped a seed from a purloined fruit to colonize along that extreme upper-altitude zone. The example of the one under an oak suggests to me a rock or tree squirrel, a bird, or a nectar-feeding bat."

STUDYING SAGUAROS

The scientists said more research is needed before reaching conclusions as to whether saguaros might slowly be "migrating" to higher elevations - and whether warming weather might play a role.

Such research has been under way in recent years.

Weiss and Jonathan Overpeck, co-director of the Institute of the Environment at the UA and an expert on global climate change, presented some findings in a 2005 report called "Is the Sonoran Desert Losing its Cool?"

"Analyses of a new set of regional temperature data show widespread warming trends during winter and spring, decreased frequency of freezing temperatures, lengthening of the freeze-free season, and increased minimum temperatures per winter year in the Sonoran Desert," the report says.

"Given that freezing temperatures strongly influence Sonoran Desert vegetation and that human-dominated global warming is expected to continue at faster rates throughout the 21st century, these results suggest that the overall boundary of the Sonoran Desert may contract in the southeast and expand northward, eastward and upward in elevation, as

well as changes to distributions of plant species within and other characteristics of Sonoran Desert ecosystems," the report concludes.

The authors note that other factors - including fire and variable precipitation - also could affect vegetation changes.

Meanwhile, an intriguing question remains: Where is the highest naturally growing saguaro in Arizona - and what's its elevation?

"It's fun to try and find the very highest saguaro," said Jim Malusa, a Tucson botanist and author. "You could make a hobby of it. Look for dark rocks, facing south - they're natural radiators."

Contact reporter Doug Kreutz at dkreutz@azstarnet.com or at 573-4192.