

EVENTS
CALENDAR

April
April 18: Trail Work Day, 7 a.m., Dreamy Draw Recreation Area. For more information, call Scott Frische at (602) 395-9566.

April 25: Trail Work Day, 7 a.m., South Mountain. For more information, call Scott Frische at (602) 395-9566.

May
May 3: PMPC Annual Meeting and Dinner, 6-9 p.m., Sheriff's Posse Clubhouse. To register, call Leslie Spencer-Snider at (602) 861-9256.

Lookout
Phoenix Mountains Preservation Council
P.O. Box 26121, Phoenix, Arizona 85068-6121
www.phoenixmountains.org

The Phoenix Mountains Preservation Council is dedicated to protecting our Phoenix Mountains Preserves for the future.

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MAIL TO:
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Check here if you wish to receive the PMPC newsletter via e-mail.

MEMBERSHIP CATEGORY *(please circle)*
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(Xtreme Circumstances continued from p. 3)
As dominant plants such as bursage slowly regain their toehold in the desert, other species that are better adapted to disturbance may temporarily fill the breach. In an intact desert, plants such as wire lettuce, snakeweed, desert broom and sweetbush have difficulty inserting themselves. As a result, these plants normally thrive in sites such as wash beds where scouring floods regularly clear space for them. Following the drought's large-scale erasure of plants in desert flats and uplands, however, these short-term pioneers may be able to colonize the newly vacated terrain until a more stable complement of plants returns to take their place.

In the meantime, the brittle, threadbare landscape can be unsettling, even alarming, to many desert lovers. But for McAuliffe, the drought is an especially thrilling chapter in the desert's complex ecological narrative. "I moved to Tucson in 1983 during a big El Niño year," McAuliffe recalls. "There were whole fields of lupine and owl clover. It was a green heaven. I love those great El Niño years. But if we had one of those every year, we wouldn't have the Sonoran Desert. Drought is what the Sonoran Desert deals with over and over and over again. At times, it can be severe. Whatever happens, the scientist side of me is totally amazed."
—A.F.

TO:

Phoenix Mountains Preservation Council, Inc.
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Xtreme Circumstances

Dr. Joe McAuliffe, director of research at the Desert Botanical Garden in Phoenix, delivers a lecture on drought in the desert at the PMPC's annual meeting on Monday evening, May 3. For more information, see the enclosed registration form or call (602) 861-9256.

Back in the summer of 1985, when Joe McAuliffe was a young scientist working in the desert around Tucson, he noticed something peculiar about the plants he was studying. When pressed by hunger, mammals such as rabbits and wood rats would eat just about any plant in sight, even going so far as to nibble on the inner bark of creosote. But the greeny-gray leaves of triangle leaf bursage, which grew in great profusion, were left untouched. To find out why, McAuliffe popped a few leaves into his mouth. "There are only a few really memorable things that I can recall eating 20 years ago, and bursage is one of them," McAuliffe says, laughing. "It's extremely bitter. At least from this mammal's perspective, bursage isn't very good to eat."

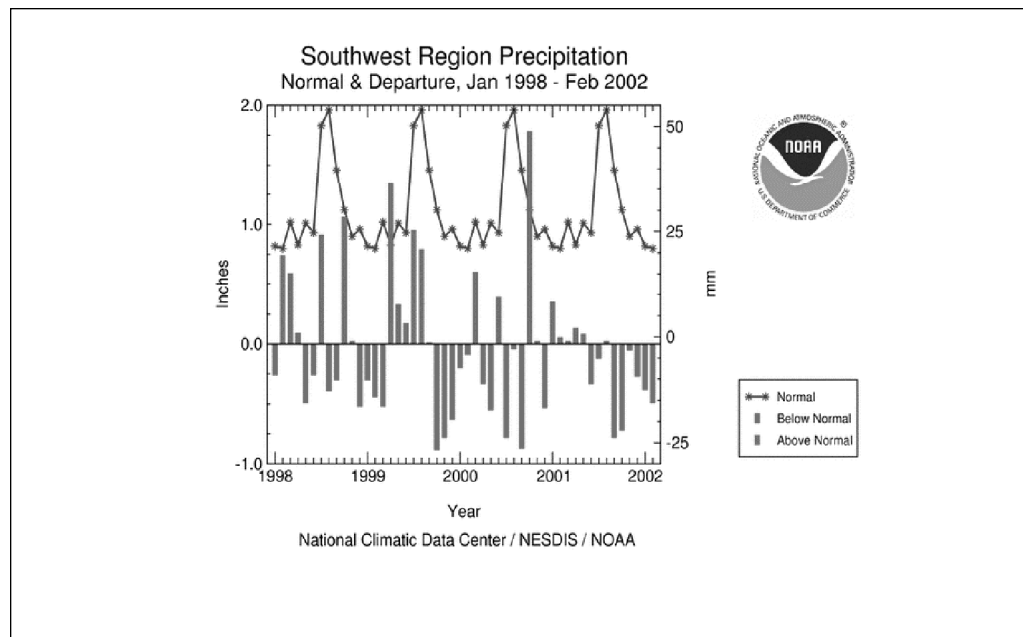
It turns out that good taste is not the only thing that bursage lacks. A member of the genus *Ambrosia*—i.e., the ragweeds—bursage is the bane of desert allergy sufferers. Indeed, nearly everything about the plant seems designed to annoy. Not only do its pale,

Courtesy Dr. Joe McAuliffe



Recent surveys of vegetation in Organ Pipe National Monument have revealed a mass die-off of bursage, as depicted in this photo from March 2003.

inconspicuous flowers lack the showiness of many other spring blooms, but they also give rise to fruits with pesky burrs that stick to passing animals, including the socks of unwary hikers. So when McAuliffe recently *(Xtreme Circumstances continued p. 2)*



In recent years, the Southwest has received average to below-average precipitation, including the extremely dry year of 2002.

documented entire hillsides covered with dead bursage on study plots in Organ Pipe National Monument, even some die-hard desert lovers barely took notice.

But McAuliffe and his colleagues are paying very close attention to what has become an unprecedented research opportunity. Currently, Arizona is six years into a drought that rivals the severity of a record dry spell that hit the state from the late 1890s through 1904. Plants in the Sonoran Desert are adapted to survive a succession of dry years, McAuliffe points out, if spikes of abundant rainfall, known as El Niño years, periodically replenish the moisture bank that extends up to three feet deep into the soil. "A good El Niño rain can recharge soil at deeper levels," he says. "It's enough to keep things like creosote bush going for many years. If you don't have those kinds of recharge events, eventually plants will be hurting. And that's what's happening now in some places."

The most recent episode of soaking rains came in 1997-98. It was followed by several years of average to below-average rainfall, including the extraordinarily dry year of 2002 during which

most of the Sonoran Desert received less than half of its average annual precipitation. Parts of the Mojave Desert, McAuliffe notes, were even drier, receiving less than one-half inch of precipitation. The response of the deserts was swift. "In early 2003," McAuliffe says, "you started to see a lot of dead and dying plants."

McAuliffe and his colleagues have staked out more than 20 sites in the Sonoran Desert in Arizona and the Mojave Desert in California and Nevada and are monitoring changes caused by the prolonged drought. Among the most dramatic is the wholesale die-off of bursage, one of the most abundant shrubs in the desert. So widespread is their mortality in some places that "it's like having the [ecological] slate wiped clean," McAuliffe says.

How the deserts might rebound is anyone's guess. Most long-term studies of the Sonoran Desert were carried out by the ecologist Forrest Shreve in the first half of the 20th century. Although his work, which spanned nearly four decades, is much respected by scientists today, it provides little more than a snapshot of the full range of desert conditions. That's because Shreve's observations were all recorded during an interval of average to above-average rainfall. McAuliffe points out that Shreve moved to Tucson in 1910, when the desert was five years

into an extremely wet period that followed the severe turn-of-century drought. Shreve died in 1950, just missing a significant dry spell that hit the desert a few years later. "Shreve never even writes about dead plants," McAuliffe observes.

Although he is exploring new scientific terrain, McAuliffe has some hunches about what the future might hold. In the short term, he says, the desert may exhibit some botanical contradictions, including big flushes of wildflower displays in the spring that are surrounded by huge swaths of dead and dying creosote and bursage. He speculates that annual plants may benefit from the surplus soil moisture that normally would have been tapped by live desert shrubs.

Even if a wet cycle follows the current drought, as it did after 1904, regeneration of many species of desert plants may be stalled for years to come. The reason? A dearth of bursage. From his research in the 1980s, for example, McAuliffe learned that the lowly bursage plays nurse to everything from budding hedgehog and pincushion cactus to palo verde trees and creosote bushes. "My nickname for triangle leaf bursage is Mother of the Desert," he observes.

The unpalatability of bursage leaves allows the plant to develop into dense mounds that, in some places, cover the desert floor. Here, tender new plants find shade from the desiccating sun. Just as important, they gain protection from grazers. McAuliffe's research in the 1980s, for example, revealed that nearly all palo verde seedlings that sprout out in the open on desert flats following the summer monsoons are eaten by rabbits in the plants' first few months of life. Those that survive find cover beneath the tangled, woody canopy of bursage. "When they think of nurse plants, most people think of palo verde trees and saguaros," McAuliffe says. "Well, where do plants like palo verdes start in these big flat areas below mountains? Almost all start below bursage."

(Xtreme Circumstances continued p. 5)

News Briefs

Spring Trek Raises Money for South Mountain Preserve

A week of cool, cloudy weather that brought rain to the desert cleared just in time for the PMPC's 28th annual Spring in the Mountains celebration, held this year on March 6 in South Mountain Preserve.

Hikers, bikers and horseback riders gathered for guided tours of the desert led by Wendy Hodgson of the Desert Botanical Garden, ASU biologist John Alcock, Tice Supplee of the Audubon Society and the South Mountain ranger staff. Participants were treated to tales from the wild by Arizona's own popular children's-book author Conrad Storad.

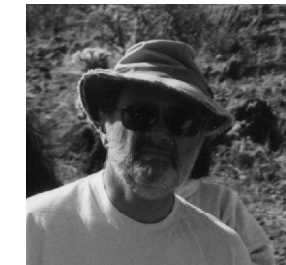
The event raised more than \$1,200 for rehabilitation of trails in South Mountain. Thank you to our raffle and silent auction donors: British artist Joyce Salthouse, Phoenix potter Ken Gometz, the Bike Barn, Pointe South Resort, Changing Hands Bookstore and PMPC member Laura Watson. Our early-bird volunteers also appreciated a generous donation of muffins from Marie Callender's, Chandler.

The PMPC would like to extend a special thanks to Spring in the Mountains sponsor Robert Richter of Robert's Catering, Chandler, who served up a hearty gourmet breakfast to a pack of hungry desert rats. Thank you, Robert!

A Call for Seeds!

The PMPC is asking members to collect seeds from the native plants in their back yards for revegetating damaged areas of our Phoenix Mountain Preserves. Please sort seeds by species and drop them into envelopes with the names of the enclosed species clearly marked. Mail to: Seed Savers, C/O Phoenix Mountains Preservation Council, Box 26121, Phoenix, AZ 85068-6121.

Volunteer Salute



David Nelson

A few years ago, when David Nelson was working in the North Mountains with the PMPC's volunteer trail crew, a mountain biker sped past their work site, nearly plowing into some of the crew members. After the dust settled, recalls PMPC Vice President Leslie Spencer-Snyder, Nelson wondered out loud, "Wouldn't it be nice to have some kind of caution sign that would warn people of trail work ahead?"

This past year, Nelson got his wish. Spencer-Snyder, along with Phoenix ranger Paul Paonessa, designed a portable trail sign that is now posted at every work site. Lightweight and collapsible for easy backpacking into the desert, the neon-yellow sign can be easily opened like an umbrella into a small teepee-like form warning of trail work ahead. And with the clever addition of pockets, the trail teepee does double duty as a kiosk, dispensing PMPC brochures and other information about the Phoenix Mountains to curious passersby.

Unfortunately, Nelson never got a chance to test run the device. Two years ago this spring, he died of a heart attack while scuba diving off the coast of Florida. As a memorial, his widow, Jane Nelson, donated funds to purchase the sign along with tools for the volunteer trail crew. For David, who was part of a dedicated nucleus of five trail workers in the North Mountains since the mid-1990s, "the trail project was something he loved and would have wanted to support. It was so much a part of him," Jane says.

David developed his passion for the Sonoran Desert relatively late in life. As a boy, he spent hours combing the wood lots and farm fields around Chicago. Jane still has a shoebox filled with arrowheads and a tomahawk head that he collected on his rambles. Later, Jane introduced him to sailing as well as skiing when they lived abroad in Italy during the 1970s. After they moved to Arizona in 1980, David joined a hiking club at work and discovered what would become a lifelong passion for the desert as well as a commitment to land-conservation issues. At one PMPC meeting, he met long-time board member L.V. Yates, whose enthusiasm and great knowledge of the desert made a deep impression. The two became hiking and camping partners, trekking throughout Arizona but spending most of their off hours in the state's canyon country.

In time, David began to participate in active conservation work. When Lake Pleasant was scheduled to be expanded in 1991, for example, he and Jane obtained permits to rescue some of the plants from flooding. Today, a saguaro that was transplanted from the site stands eight feet tall in their front yard and a relocated mesquite sapling is now a full-grown shade tree.

But David's real passion, Jane says, was working out in the desert with others to help conserve some of the beautiful places that he had come to treasure. One of her favorite photos of David depicts him in a worn work hat and hiking boots looking up at a desert mountain.

Even after he died, she says, David continued to be of service to the natural world that so inspired him. In a final fitting tribute, Jane and her two children spread David's ashes on one of his favorite hiking trails in Sedona. "He's now become a part of the plants and the trees that he loved."—A.F.