With sunset light on the jagged Kofa Mountains, teddy bear chollas and ocotillos flourish at Kofa National Wildlife Refuge. The mountains and refuge, named for the King of Arizona gold mine, are near the northern edge of the Sonoran Desert. JACK DYKINGA

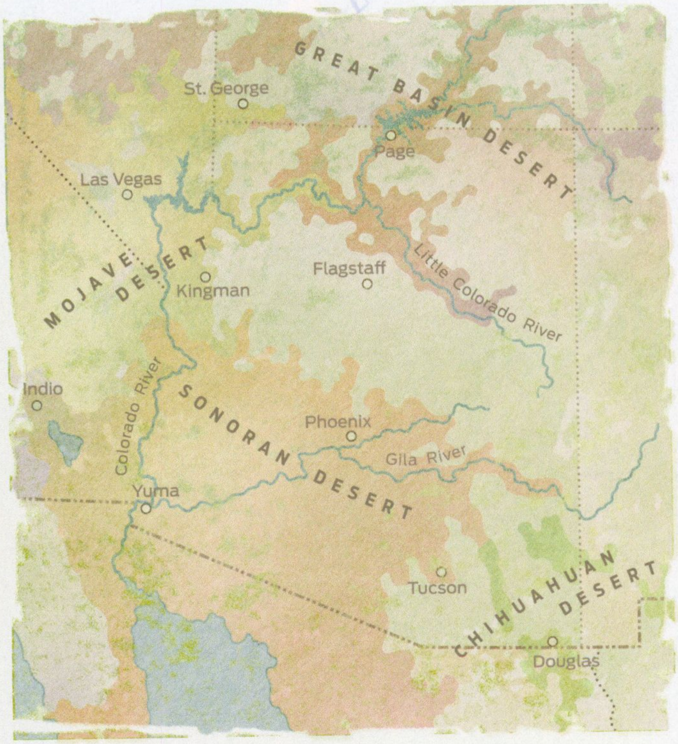
IT'S LIKE AN OVEN OUT THERE

The desert is a hot and desolate wasteland. That's the stereotype, anyway. The truth is, the desert is home to some of the most remarkable ecosystems in the world. And it's not just one desert. Arizona is home to all four of North America's major deserts. **A Portfolio Edited by Jeff Kida ≡ Text by Kathy Montgomery**

ON A MAP, North America's four major deserts seem to swirl around Arizona's center like a dust devil. In the west, the Mojave Desert straddles the Great Basin Desert (which sweeps across the north) and the Sonoran Desert (which blankets much of the south). On the other end, the Chihuahuan Desert stretches a fingertip into the southeastern corner of the state.

Arizona is the only state in the nation that embraces all four deserts. Or not. Some argue that Arizona's portion of the Great Basin is really semi-desert, and that the state's Chihuahuan Desert is instead intermediate savannah. Meanwhile, others question whether our most iconic saguaro forests even qualify as desert at all.

To some degree, deserts confound classification. What the various definitions have in common is that deserts are dry. As Osvaldo Sala, the director of Arizona State University's Global Drylands Center, explains, a desert is a place where the demand for water exceeds supply. Yet deserts are amorphous. On State Route 89 near Congress, a saguaro and a Joshua tree, signature species of two different deserts, stand side by side, identifying and defying both.



What's beyond debate: These arid lands contain some of the most remarkable ecosystems in the world.

MOJAVE DESERT

Rainfall in the U.S. moves on a continuum from west to east, Sala says. The West Coast gets winter rain. Farther east, it rains only in the summer. Arizona's deserts reflect that pattern.

As Arizona's westernmost desert, the Mojave gets most of its rainfall in winter. It's also the driest and the hottest. Death Valley in California holds the record for the highest temperature ever recorded in the U.S. — 134 degrees. And Lake Havasu City, also in the Mojave, owns the Arizona record for heat: 128 degrees, in 1994.

Extreme heat and little rain mean sparse, low shrubs — mostly creosote, mixed with Mojave sage and woolly bursage. But in a spring following a "wet" winter, the desert overflows with colorful annuals like Mojave indigobushes, paperflowers and brittlebushes. The desert's signature species, the Joshua tree, grows along the Mojave's borders, defining its boundaries.

GREAT BASIN DESERT

Explorer John C. Fremont gave the country's largest desert its name, imagining the arid region as one enormous basin.

The Great Basin Desert is a high, cold desert. In Arizona, it gets much of its moisture as snow when plants lie dormant. Few species thrive. Expanses filled with a dozen varieties of sagebrush give the desert a feeling of vastness and desolation. Remote and undeveloped, it's the domain of loners, pronghorns, prairie dogs and raptors, although sego lilies and blooming prickly pear cactuses add color in late spring.

CHIHUAHUAN DESERT

In Arizona's southeast corner, the Chihuahuan Desert gets most of its rain in the summer, although winter rains produce annual displays of tansymustard, peppergrass and popcorn flowers.

Relatively high rainfall, calcium-rich soils and low winter temperatures create ideal conditions for the grasses and yuccas that give this desert its distinctive

MAP BY **KEVIN KIBSEY**

look. Creosote dominates the lowlands, as do low woollygrass and American tarwort, a defining species. At higher elevations, grasses dotted with soaptree yuccas, their 15-foot stalks crowned with creamy flowers, cover the classic Southeastern Arizona landscape.

Grasshoppers *clackity-clack* through the savannah in abundance. Scaled quail scratch out grassy ground nests, their feathery "hats" as slender and white as Q-tips, while ringtails prowl the boulders.

SONORAN DESERT

Although two-thirds of the Sonoran Desert lies in Mexico, to much of the world, it's synonymous with Arizona, complete with coyote and roadrunner. According to Marie Long of the Arizona-Sonora Desert Museum, it was Forrest Shreve, a botanist, who defined the desert in the mid-20th century. Shreve subdivided the desert into sections. Two fall within Arizona: the Lower Colorado River Valley and the Arizona Upland.

Dominated by creosote, the Lower Colorado River Valley section includes the region along Interstate 10 between Phoenix and Tucson. Saguaro National Park contains classic Arizona Upland: iconic landscapes with arm-waving ocotillos, feathery paloverdes, mesquite and ironwood trees, and a wide variety of cactuses, including prickly pear, barrel and many types of cholla.

Forests thick with eerily anthropomorphic saguaro cactuses can look as crowded and expressive as Times Square on New Year's Eve. The enormous cactuses, found only in this desert, house Gila woodpeckers, purple martins and sparrow-sized elf owls, the smallest owls in the world. Spring ignites colorful eruptions of Mexican goldpoppies, globemallows and lupines.

One of Shreve's Mexican subdivisions was reclassified as thornscrub because of its higher rainfall and taller trees and cactuses. Long believes Arizona Upland might be next.

Charles Bowden, who wrote poetically about Arizona's deserts over his long career, cared little for these distinctions.

"Arizona's four deserts will not answer to the names we paste on them," he wrote in *Arizona Highways* in 2006. "It is always the same whether swamp or desert — it is life humming a song we cannot quite sing and it always has just what it needs."

The arms of a Joshua tree punctuate a view of a nearby saguaro cactus in the Date Creek Mountains near Wickenburg. Joshua trees are mostly found in the Mojave Desert, but a handful, including this one, grow in northern sections of the Sonoran Desert. PAUL GILL