

# THE MAKING OF A SOUTHWEST DESERT ICON

Cycles of coexistence with wolves shaped the legendary versatility of Arizona's coyotes

Story and photos by Alexander V. Badyaev

It is a sound familiar to everyone in Tucson. A fire engine negotiating a busy intersection in afternoon traffic sounds its siren momentarily and suddenly, in response to it, the hills around explode with coyote howls. The howls seem to come from everywhere — from parking lots, playgrounds, backyards. For a few minutes the wave of howls rolls through the foothills, then it stops as suddenly as it erupted, the afternoon's peace restored.

Rivaling packs of urban coyotes, having re-established their territorial claims for the coming night, continue their invisible descent into the town below. The city is meticulously subdivided among the packs, with every roadkill-rich busy street, restaurant dumpster and barbecue grill carefully mapped and marked. Such a wealth of resources is at constant risk of takeover, and the offspring of local coyotes delay their natal dispersal for years, joining parents and even grandparents to form the largest possible packs — up to 12-15 animals in some parts of Tucson — to defend prized territories.

Adult male coyote hunts in Sonoran desert near Tucson.

Like all canids, the coyote originated in North America 10-12 million years ago, but it is the only member of the family that has never left the continent. It stayed behind when ancestral wolves left North America for Eurasia via the Bering Strait to return, thousands of years later, in the shape of new wolf and fox species. It was then when the coyote learned to live side by side with the most fearsome, largest and numerous canid of all times — the dire wolf. In due time, it also watched the wolf's extinction after its prey of mammoth began to decline in North America's grasslands.

Next, the coyote endured a massive colonization of the continent by gray wolves, coming in waves over newly formed glacial sheets from Eurasia. And a short time later it would similarly witness the complete extirpation of these wolves by newly arriving modern humans.

The coyote would persist long enough to see the cycle repeat itself when humans, struggling to reinstate ecological balance, reintroduced gray wolves to part of their former range. These repeated cycles of coexistence with wolves shaped coyotes' legendary social flexibility and biological adaptability. More than 8 million now live in all habitats, from the deserts of the West to the swamps of the Deep South and the dense coniferous forests of the Northeast — and all major metropolitan areas in between. Still, the coyote remains the icon of America's rugged Wild West and is inextricably linked in the popular imagination with the deserts of the Southwest.

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Ecologically, the coyote is a "mesopredator," stuck in the middle of the main trio of North American canids with the smaller red fox on the bottom and larger grey wolf on the top. When either of these brackets moves, the coyote expands its hunting repertoire. Over evolutionary time, such mesopredators become quite versatile, and their opportunistic habits give them the reputation of tricksters in fairytales and legends. In European folklore, the red fox — a mesopredator in European ecosystems — is an undisputed trickster. In North America, it is most definitely coyote.

The coyote's response to waves of wolf migration, extinction, recolonization and extirpation has been particularly pronounced. After the dire wolf extinction, coyotes got physically bigger and developed larger skulls and stronger bite force, and for a time they occupied a part of the wolf's former niche. When gray wolves returned to the continent, they pushed coyotes back to their smaller prey niche and sizes. Then came the gray wolf's extirpation, and coyotes once again took advantage of newly available opportunities, starting to hunt ungulates and nearly tripling their geographical range in less than a century. In some newly established populations in the Northeast, up to 90 percent of coyote prey items are deer, a stark contrast to rodent-subsisting western coyotes.

Changes in the coyote's prey base and hunting style require major adjustments in social structure — rodent hunting is a solitary affair, while defending large carrion or



Juvenile coyote investigates a saguaro skeleton.

bringing down a deer requires cooperation. So these cycles of the wolf's coming and going strongly affected coyotes' social systems as well, and they now encompass every combination seen in canids. All this training in morphological and social versatility prepared the coyote well for dealing with its greatest enemy — humans.

No other North American species has experienced such consistent, well-orchestrated and long-term persecution as the coyote. And no species has so spectacularly defied it. From millions of dollars spent every year on daily helicopter aerial hunts, to open hunting seasons with no bag limits, to sharpshooters and trappers in the downtowns of large American cities, to 21st-century state legislatures busily reinstating archaic bounty systems, coyotes are persecuted with a determination unmatched in any other species. One ingredient that these animal control programs do not have enough of, however, is biological expertise, and indiscriminate killing in combination with the coyote's

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unusual social flexibility is now creating an extraordinarily adaptive and intelligent predator that has learned to live off humans in their own habitat.

Only a single dominant pair breeds in each coyote pack, no matter how large, and there is a strong hierarchy of territorial and dominance interactions. Such hierarchies are important when hunting requires complex coordination, because initiation of attacks, long travel routes and territorial negotiations with neighbors are the prerogatives of a few older dominant individuals. According to animal control departments, a typical complaint about coyotes (a killed pet, a slaughtered lamb or a barbecue brazenly stolen from a backyard) results in the destruction of several adult animals in the vicinity before the correct culprit, often the best at hiding from humans and avoiding traps, is identified. This forces coyotes to be able to "restart" their packs and social families from different starting points.

And restart they do: Juveniles previously suppressed by older animals initiate breeding, newly mated pairs split from packs and form their own bands of juveniles. Instead of large packs of diverse-aged animals provisioning food and babysitting for a single brood of the dominant pair, juvenile pairs become overwhelmed with a constant need for food from many growing pups of their own. Sheep and neighborhood pets — easy and abundant prey — pay the price. All the while the coyote learns to use human habitat without being seen.

The coyote seems to be the only species, aside from park rangers, that knows the exact location of national park boundaries. In Yellowstone National Park, for example, many elk, deer and wolves have lost their

lives for stepping over the unmarked boundaries where protected park territory merges seamlessly into wilderness lands — and where numerous hunting outfitters camp during hunting seasons. The coyote makes no such mistake. The same animals that trot along car lines in broad daylight at the park entrances and gift stores, begging for handouts from open car windows, all but disappear outside of the park. They are numerous there, just invisible, becoming strictly nocturnal and extremely suspicious of any human.

A recent study in Los Angeles compared the patterns of neighborhood use by urban coyote packs and those of 29 human street gangs. The scientists found that city use by the gangs and the packs was identical in relation to large landscape features, such

as interstate highways, overpasses and large shopping malls, as well as in relation to their territorial neighbors. Where gangs used graffiti to mark territorial boundaries and conflict areas, the packs had raised-leg urination posts and piles of feces. Such areas, however, frequently overlapped.

The species that got its first lessons in social skills by sharing mammoth remains with North America's most fearsome prehistoric predators and whose survival strategies were subsequently honed by millennia of life-and-death coexistence with gray wolves is definitely here to stay.

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Female coyote howls during November rains in Tucson. Howls play a central role in long-distance communication among coyote packs and are prevalent during the fall mating season.