

Home above the Range

Pairs of aplomado falcons are nesting in the Southwest again, showing off their incredible hunting and flying skills.

By W. Grainger Hunt, Tom J. Cade, and Angel B. Montoya

A small flock of red-winged blackbirds is flying fast, with the wind, when a larger bird launches upward and picks out a target from the moving group. Bird chases bird, one hunter, one prey. In level flight the hunter turns on a burst of speed—firing up its afterburners, so to speak—and closes the gap on the prey. The blackbird looks like a goner, as if somehow the wind had shifted against it or some unseen force were pulling the smaller bird toward its antagonist. Just in time, the blackbird takes evasive action, by jinking and diving for cover.

But the hunter has an unusually long tail, a strong rudder that gives it agility as well as speed. Another pursuer might respond to the blackbird's darts and evasions with a wide, banking turn before returning to the chase; instead, this hunter abruptly reverses direction and follows closely as the blackbird makes a mad, twisting, zigzag dash for a bush. Not a second too soon, the prey dives into the bush, while the hunter shoots past and climbs steeply, looking down over its shoulder at the missed prize.

Many hunting birds, including the peregrine falcon and others, give up if their intended prey reaches cover. Incredibly, though, this hunter seems to be in two places at once. As it rises and circles, a second hunter—its wingman, so to speak—plunges into the bush and flushes out the hiding blackbird. The flying chase begins anew.

In fact, there are two hunters: a breeding pair of falcons known as aplomados (*Falco femoralis*) that work together, anticipating each other's next move. Observ-

ing a single aplomado or a cooperative hunting pair in flight is a wondrous experience. The lofty bird-on-bird chases feature thrilling, split-second escapes, astonishing aerial acrobatics, and often, in the end, a successful kill. Like the gyrfalcon and the merlin, the aplomado can suddenly accelerate in level flight. And, if the prey tries to escape by flying upward, the aplomado can follow it, climbing at a steeper angle than even the gyrfalcon. Again and again it may climb above its prey, harassing it with repeated raking passes. And unlike the far-ranging flights of the gyrfalcon or the peregrine, the aplomado's proclivity for tight turns often keeps the entire sequence within sight of the human observer [see illustration on pages 52 and 53].

Not many people have heard of the aplomado falcon, let alone seen it in action. Its slow-blooming reputation has long been eclipsed by such legendary bird hunters as the gyrfalcon, the merlin, and the peregrine. As falcons go, the aplomado is about average in size, weighing in at just under a pound; smaller than both the peregrine and the gyrfalcon, and larger than the merlin. Compared to those birds, the aplomado's most unusual characteristic is its long tail. But it is no peacock plume. The tail is reminiscent of the tails of the largely insectivorous kestrels and hobbies or, to cite other hunting birds, of the tails of accipiters—hawks known for their sharp turns—such as the Cooper's hawk. And even the name *aplomado*, a Spanish word meaning "lead-colored," distinguishes only





Adult aplomado perches next to a raven's nest that it has commandeered on an abandoned windmill, in the Mexican state of Chihuahua. Falcons do not build their own nests.

the bird's gray back, and ignores the beautiful cinnamon-orange markings on its head and belly.

Early naturalists did admire the aplomado's colorful markings and yellow-rimmed eyes. Yet, these "admirers" hardly countered the bird's relative anonymity by also describing it as rather phlegmatic and an unexciting predator. According to their descriptions, the aplomado would perch quietly for long periods in trees or on fence posts; or, it would follow grass fires to catch escaping grasshoppers and other small prey flushed out ahead of the conflagration. Had any of them seen the bird in hunting mode?

Only the ornithologist and artist Andrew Jackson Grayson, traveling in Mexico in the 1860s, seems to have observed aplomado falcons closely enough to fathom their true nature. He watched them chase doves and other medium-size birds—and came away impressed by their spectacular flying and hunting tactics. He thought them not unlike the sharp-shinned hawk, another accipiter. Grayson was right; the assumption that the aplomado is an unremarkable hunter is as far from the truth as a newborn tundra peregrine is from its future wintering grounds in Argentina.

No records indicate that French or Spanish falconers of the sixteenth and seventeenth centuries knew of a bird by the name aplomado. But they did train a small falcon, known to the French as *alethe* and to the Spanish as *aletto*, that came from the New

World. Early conquistadors and explorers had encountered the bird in Mexico and Central and South America, recognized its abilities, and brought it back to European falconry centers in France, Spain, and Portugal. In a famous popular treatise, *La Fauconnerie*, first published in 1598, the aristocrat Charles d'Arcussia wrote of hunting gray partridges with the New World falcon. He favorably compared the alethe to the gyrfalcon and goshawk, for its direct flights from the falconer's glove. D'Arcussia also referred to the bird as "high-mettled" and full of spirit.

In 1995 James W. Nelson, a falconer from Kennewick, Washington, studied those historical descriptions of behavior and appearance. He had, at that point, also carefully studied the hunting behavior of wild aplomados. The alethe, the aletto, and the aplomado, he declared, were one and the same.

Back in 1976, a young graduate student in biology, Dean P. Keddy-Hector, then at Oklahoma State University in Stillwater, made the first attempt to scientifically study the behavior and ecology of the aplomado species. He drove down the coast of eastern Mexico to look for them, not being certain that there were any falcons left to study. At the time, Mexican farmers were still dusting their crops with the chemical pesticide DDT—the bane of falcon reproduction because it thins their eggshells. By then, the destruction of the aplomados' natural habi-

tat had already driven them from the United States, though the birds had lived in the southwest until the early 1900s [see map on this page]. Early naturalists had spotted them fairly often in parts of southern and western Texas, southwestern New Mexico, and southeastern Arizona. But heavy livestock grazing and fewer natural fires had turned grasslands into scrublands. Wet savannas, moreover, had been converted to cropland. The last sighting of aplomado nesting pairs in the U.S. was in the 1950s.

But Keddy-Hector did find aplomados in Mexico. They stood out brightly against the blue sky in the coastal state of Veracruz, perched above the rich grasslands in the tops of lone acacia trees. They laid their eggs in the abandoned nests of other large birds and in bromeliads, or air plants [see photograph on opposite page]. And, like all tropical falcons, they ate insects.

Keddy-Hector showed, however, that insects make up only a small part of the aplomado diet—appetizers, you might say, though still important to young, inexperienced falcons learning to hunt. The staff of life for aplomados proved to be other birds: a myriad of resident and migratory species passing through the falcon territories. The aplomados could catch these prey from standing starts in treetop perches. And, once in the air, they could easily close a quarter-mile gap in pursuit of, say, a passing flock of doves.

Hunting is not the only chance for aplomados to show off their talent for stupendous flying. They are fiercely territorial and seek to drive away any large bird that enters their turf. Highest on their list of undesirables are other aplomados; nests are therefore widely spaced across the landscape, usually miles apart. Other species singled out for special disdain are hawks, owls, and ravens—and for good reason. The low trees of the savanna offer little protection from such predators for aplomado nestlings. The best strategy for parent aplomados, then, is to attack on sight, giving the territory itself a hostile reputation. Whenever they attack, the aplo-

ados also steal any prey the intruders may be carrying, giving them yet another reason to stay away.

By the late 1970s, the loss of breeding aplomados in the U.S. had stirred enough regret among conservationists that they began taking action. Eggshell thinning caused by DDT in eastern Mexico was also detected by Keddy-Hector, attracting more attention. People began wondering whether the aplomado in Mexico might be going the way the peregrine had two decades earlier: total loss of breeding pairs in the eastern U.S. The Peregrine Fund, an organization founded in 1970 by one of us (Cade), was already restoring peregrines to their native habitat by releasing captive-bred young. So it was a small step to suggest that aplomados might benefit from similar intervention.

With the cooperation of the Mexican government, John Langford, a biologist at the Chihuahuan Desert Research Institute in Alpine, Texas, and his coworkers brought eight young aplomados from Mexico back to Texas. There, in 1982, the first captive-born hatchling emerged. In 1990 more birds from Mexico were bred, in order to enrich the genetics of the original seed population. After fits and starts with artificial insemination, rearing methods, and pilot releases, more than fifty young aplomados were being raised and seemed ready for release. Conservationists were finally in a position to make the first large-scale attempt at restoring the species to nature. But where?

The savannas of coastal southern Texas seemed to offer the best chance for re-establishment. The region had included vast savannas at the time of the Spanish settlement in the 1600s. Brush invaded, though, and by the early 1900s, most of southern Texas was either developed as farmland or blanketed in brush. But even with such large-scale loss of habitat, aplomados bred just north of Brownsville, Texas, until the mid-1940s. The final loss of the species in southern Texas coincided with the arrival of DDT in 1947 for cot-



Current and historically known ranges of aplomados in the U.S. and Mexico are plotted above. Colored question marks indicate historical ranges that are not well documented. The small areas in Texas marked as current ranges are regions where aplomados have been reintroduced. The species also occurs in Central and South America.

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ton production. With DDT in their diets, aplomados had little chance of reproducing.

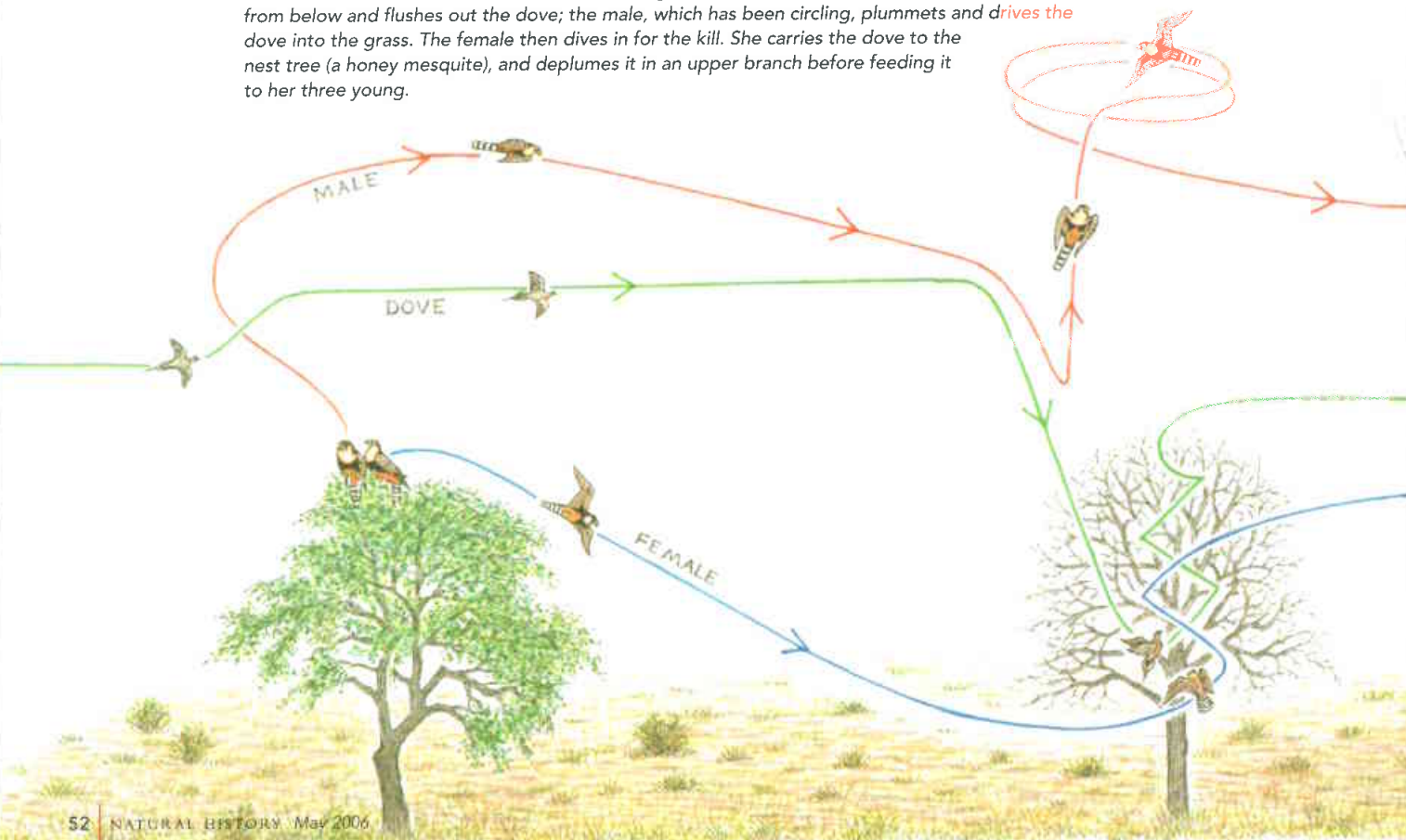
By the early 1990s, though, DDT contamination was in decline, and many species that had been harmed by the pesticide were rapidly recovering in other parts of the U.S. So J. Peter Jenny, Brian D. Mutch, and William R. Heinrich, all biologists with the Peregrine Fund, began looking for pockets of open savanna on the big ranches and wildlife preserves of southern Texas. Most promising were tracts near the Gulf Coast, particularly where grasslands were being improved through controlled burning and other methods of brush removal.

Captive aplomados were first released on a substantial scale in 1993, via a technique invented by European falconers called hacking. Groups of fledgling aplomados were placed in protective, ventilated boxes on the tops of wooden towers. Attendants covertly placed food in the boxes, then, after a few weeks, opened the boxes so the birds could fledge on their own. Soon the young aplomados were exploring their environs and returning to the tower for food.

As they did so, however, a potent predator emerged: the great horned owl, a species that had benefited from the centuries-long invasion of thorny brush. New release areas had to be carefully screened for owls—ideally, as far from brushy areas as possible. Maturing aplomados posed another, unexpected threat to the newly released young. Once the older falcons learned to be self-sufficient, they dispersed into the landscape, only to return the following year to defend territories close to the hacking towers. There they became aggressive toward the young falcons being released. Workers thus had to prospect constantly for new release sites.

In May 1995, the first wild, productive breeding pair was discovered in southern Texas; since then at least two centers of breeding have emerged. Twenty-six breeding pairs now nest in the vicinity of the Laguna Atascosa Wildlife Refuge near Brownsville, and thirteen more pairs nest on Matagorda Island north of Corpus Christi [see map on preceding page]. Both areas make ideal habitats for foraging aplomados—the landscapes are vast, open, replete with birdlife, and moderately free of owls. Biologists are cautiously optimistic about the growing aplomado

Cooperative hunting sequence, similar to one observed in the central Mexican state of San Luis Potosí, is depicted as it unfolds, from left to right, in the schematic diagram. A male aplomado—perched with his mate in an acacia tree—tries to intercept a passing dove, but the dove evades him. The male chases the dove until it takes refuge in a dead acacia. The female enters the tree from below and flushes out the dove; the male, which has been circling, plummets and drives the dove into the grass. The female then dives in for the kill. She carries the dove to the nest tree (a honey mesquite), and deplumes it in an upper branch before feeding it to her three young.



population. And as visitors to Laguna Atascosa know, southern Texas has become a place to watch aplomados in action.

In the 1970s and 1980s, people had come to think that regions farther west, such as the desert grasslands of Texas, New Mexico, and Arizona, were devoid of nesting aplomados. But rare sightings of lone falcons suggested the possibility of a population in nearby Mexico. One of us (Montoya) became so curious that, in 1992, he and two other biologists—Robert Tafanelli, then at New Mexico State University in Las Cruces, and Manuel Bujanda, now at the University of Chihuahua, Mexico—began exploring the back roads of the Mexican state of Chihuahua. One day, as they were traveling through an immense grassland with a scattering of tall yuccas, they happened upon a pair of aplomados perched on adjoining fence posts, preening nonchalantly in the sunshine. During the next few years, Montoya, Tafanelli, and Bujanda discovered nearly forty pairs scattered among the cattle ranches of the region.

Why did aplomados persist in Chihuahua, when they had vanished from the U.S., only a few hundred miles away? The answer has largely to do with the history of ranching. In the U.S., by the 1870s, the railroad had connected the grasslands of southern New Mexico with the markets of the East, altering the economics of cattle production. A sea of fertile grasses, once largely inaccessible to livestock, was opened up as trains carried equipment for drilling wells and building windmills, earthen dams, and watering tanks. The supply of grassland seemed

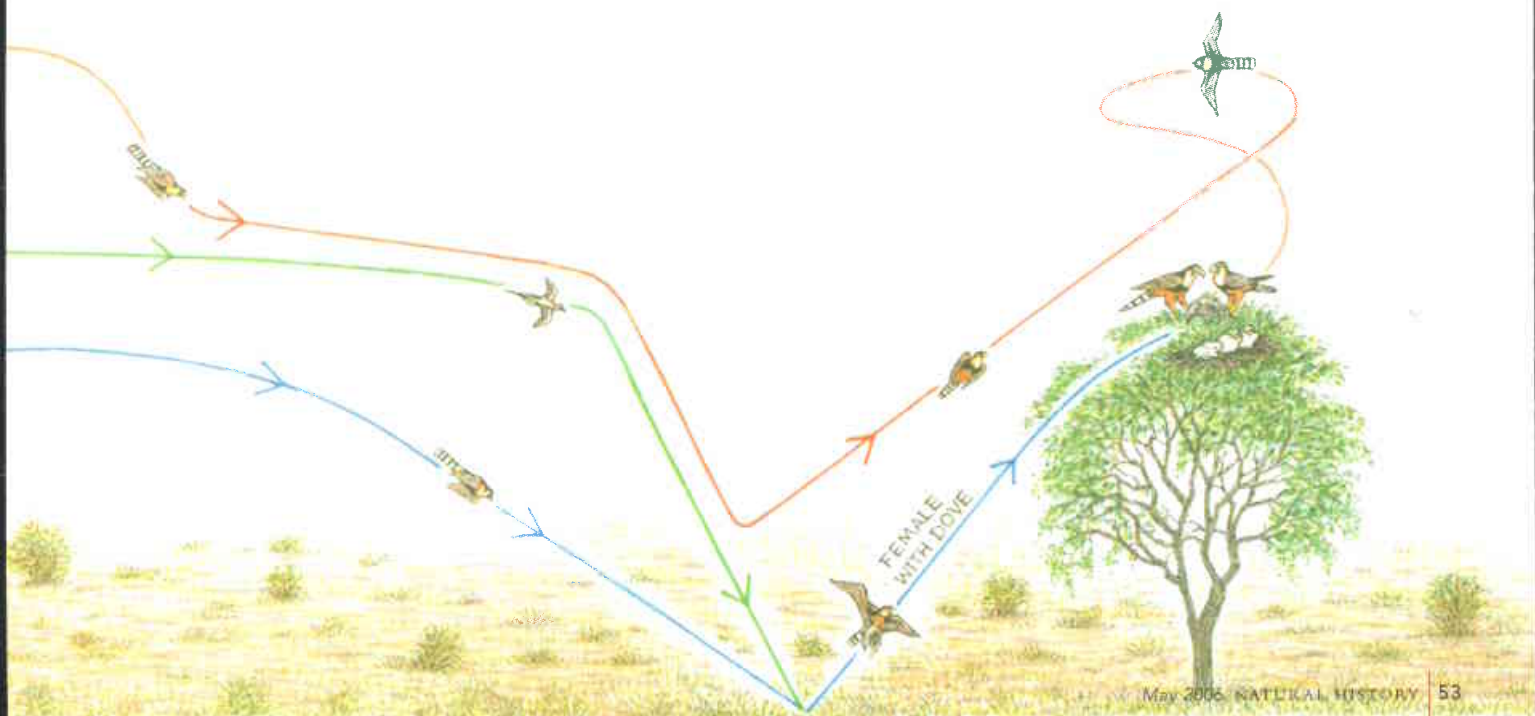
limitless, and entrepreneurs showed little interest in long-term sustainability. But the cattle caused massive erosion. Woody plants such as creosote bush and mesquite moved in, smothering the open grasslands.

Desert savannas in Mexico were affected far less extensively than their counterparts in the U.S., in part because the development of man-made water sources for livestock in Mexico was so long delayed. Groups of hostile Apaches on the Mexican side of the border in the late 1800s also made remote ranching risky and unprofitable. The Mexican Revolution of 1910 further retarded the development of the region.

The persistence of suitable habitat for nesting aplomados in Chihuahua also owes much to the long-established ranching families who managed their lands with care through long cycles of wetness and drought. Enrique Baeza, the owner of a 100,000-acre ranch called the Tinaja Verde, in eastern Chihuahua, belongs to such a family, and he knows the aplomado well. To him, nesting aplomados show how well he is caring for his ranch:

My dad wanted to pass this ranch on to his kids, and that's what I want to do for mine. The advice Dad gave me was to graze as if [drought conditions] next year will be worse than this one. That's what we do. We graze year round, but we graze lightly—it's a tradition with us. Aplomados are a thermometer for what we're doing.

The thirteen pairs of aplomados nesting at Tinaja Verde are indeed good indicators of the health of the grasslands. They occupy a key node in a food web that includes grasses, seeds, insects, and small



birds. Some of the species in the web, such as the meadowlark, reside in the grasslands year-round; others, such as the chestnut-collared longspur, arrive from northern prairies in fall and depart in spring. Both are important, but the presence of wintering birds is crucial, particularly at the beginning of the aplomado nesting season. That's when the falcons are storing fat to produce and incubate their eggs. Thus, the aplomado also depends on the habitats that nurture the migrants—some from as far away as Alberta, Canada.

Alberto Macías-Duarte, now at the University of Arizona in Tucson, studied the migrants and other factors affecting aplomado ecology at Tinaja Verde and at the neighboring Coyamito Ranch. He examined the impact of bird abundance on falcon breeding success, and showed how both were affected by the severe drought that has gripped the region since 1993. The drought, he suggests, has led to such severe declines in the abundance of prey birds that the falcons must travel extra distances from their nests to forage. That demands more energy, and exposes the young falcons to increased predation by ravens and others.

Releases of aplomados on two cattle ranches in west Texas began in 2002, but they are still in the early stages. Unlike southern Texas, where food is abundant and predation is the central issue, food may be the biggest challenge for aplomados in the desert grasslands. Time will tell whether west Texas, with its vast open lands and vegetation so similar to that of neighboring Chihuahua, will have enough doves, meadowlarks, and other medium-size birds to support a breeding population of aplomado falcons.

In the tall weeds of a derelict landing strip on the far end of Matagorda Island, Texas, two of us (Hunt and Cade) have joined Erin J. Gott and Paul W. Juergens, both biologists for the Peregrine Fund. Gott and Juergens are taking turns peering through a telescope, attempting to identify the band numbers of a pair of aplomados perched on a low shrub. The falcons are trying to decide whether to accept the new nesting platform provided for them, or to lay their eggs in an abandoned nest in a nearby bush. The male glances up and spies a white-tailed hawk casually soaring 400 feet above. Flashing off his low



Aplomado banks into a dive.

perch and climbing effortlessly at a steep angle, the falcon begins to attack the much larger hawk. In a matter of thirty seconds, the falcon is above the hawk; he stoops sideways and down, as the hawk flips over to present its talons. The hawk soars higher. The observers are spellbound.

The hawk and his mate are neighbors of the nesting aplomado pair. We see the female hawk take off from a bush near her nest and join her mate; the two birds soar high over their nesting territory. The male aplomado intensifies his attack on both hawks, flying back and forth from one to the other, executing

shallow, slashing stoops over their backs, sometimes actually hitting them. After several minutes our group begins timing the encounter, which lasts about forty minutes; never once does the little falcon stop attacking or set his wings in a glide or soar. Run-

ning at fifteen to twenty times his resting metabolic rate, he is consuming a huge amount of energy in the continual, rapid beat of his wings. Nothing is more important for survival and reproduction than defending his nest and food supply, and his behavior shows it. According to Juergens, the falcon and hawk pairs fought relentlessly during last year's breeding season, but both still managed to raise their young.

In spite of such tenacity, aplomados have disappeared from much of their former range. That is one reason the U.S. Fish and Wildlife Service listed them as an endangered species in 1986, even though the population in coastal eastern Mexico is extensive. There is little immediate hope for an aplomado comeback in much of the drier ancestral region to the north, because of the large-scale brush invasion. But, as Enrique Baeza has learned, what is good for aplomados is good for cattle ranching. Biologists are pinning their hopes for the species on that fact. The presence of this beautiful falcon is a sign of prosperity, of landscape richness; its reappearance is a sign that things are going well.

If the aplomado makes a full recovery over the long term, breeding aplomados will spread across the Chihuahuan Desert grasslands of northern Mexico and the southwestern U.S. For an increasing number of us, the sight of two adult aplomados perched together on the spike of a tall yucca, looking out across a sea of yellow grasses for the movement of an oriole or longspur, or racing together toward a soaring, absent-minded redbtail, is a reminder of how much our lives and livelihoods are nourished by such natural processes. □



Female aplomado falcon (above), raised as part of a captive-breeding program, takes wing in southern Texas, not far from where she was released into the wild a year earlier. Aplomados often hunt in mating pairs, such as the couple shown on opposite page chasing down a sparrow.