A RESILIENT MIX OF WILDLIFE AND CATTLE RANCHERS

SHARE THE BRAZILIAN REALM CALLED THE PANTANAL

By Susan McGrath Photographs by Joel Sartore

The hair-trigger jaws of a caiman wait for bigger fish. Heavy rains from November to March swell the Paraguay River and tributaries, inundating the Pantanal—one of Earth's largest wetlands-most of which lies in Brazil.









he cowhands who make their living in the Pantanal wetland have an unparalleled lexicon for mud. Plain old mud is just *lama*—or *barro* or *lodo*—as it is anywhere else in Brazil. But here in the Pantanal, the bare mud where cattle gather around a gate has its own name: *maiadô*. And so does deeply hoof-pocked mud with sharp ridges between the pocks: That's *brocotó*. Even the season that gives rise to all this mud has its own Pantanal name. The *cheia*, they call it, the "full," when this whole grand wetland floods knee-deep—hip-deep, waist-deep—with water.

The mud that underlies Beatriz Rondon's ranch, the Santa Sophia, is high in clay, and though her land rolls out like a glorious tallgrass prairie in the dry



season, it turns into a diabolical, hoof-sucking bog called *brejo* in the full. Dawn finds our horses postholing through it, withers deep in gray-brown water. There are no cattle in sight, only jabiru storks and wood storks and roseate spoonbills and snail kites and, idling at the water's surface among chartreuse grasses, the ubiquitous crocodilians called caimans. My mare stumbles over one but, unlike me, shows no alarm, and the caiman simply glides away with a sidelong stare.

It's a tendon-wrenching, arduous ride, and before the parrots are done squawking the morning news from their roosts in the palms, mare and I are streaming sweat and plastered in mud—a gluey gray slurry for which no one offers a name. Midafternoon we rein up at an elevated ribbon of forest. A pungent stink



"I can't stand outsiders telling me what to do. But we have to go forward. The Pantanal is changing under our feet."

Few cattle roam the Rio
Negro Ranch, where onetime
cowboy Hélio Martins now spots
wildlife for ecotourists. Once
692,000 acres, the ranch has been
subdivided several times among
heirs. Conservation International
bought 19,000 acres in 1999, then
removed most cattle and built a
research center to study species
like jaguars and giant river otters.
Ranchers increasingly take in
ecotourists to supplement their
income from cattle.





Rain begins saturating the ground about November, and gradually the water starts to rise. The Paraguay River and tributaries swell and overflow, so that in January, February, and March—in a really full year—only the winding gallery forests called cordilheiras and the round, hummocky forests called capões and the earth that humans have scraped into dikes and mounds are dry land. The rest is damp or muddy or wet or flooded in various degrees. Wading birds, caimans, fish, and semiaquatic mammals like tapirs and capybaras disperse across the flooded land. Animals that like to keep their feet dry iaguars, ocelots, crab-eating foxes, deer (and often cattle)—crowd into the narrow forests and make do till the waters subside.

In the dry season, roughly May through September, the water withdraws into its riverbeds and shrinks into rounded, puddle-like ponds called *baías*, and the whole marsh is transformed into a tawny savanna. Wading birds throng the shrinking baías and sloughs, gorging on stranded fish. When the seasonal ponds dry up and the last fish are gone, the birds retreat to the forested rivers and streams.

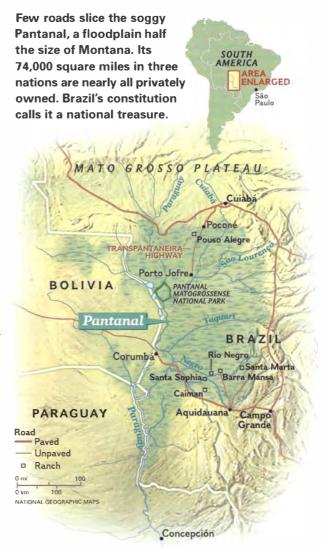
It's an improbably soggy place for ranching. But since the late 19th century the Pantanal has been given over to immense cattle ranches, called *fazendas* in Brazil, so lightly placed on the land-scape they look more like wildlife refuges than ranches. It's a style of cattle ranching imposed by the sharp extremes of the wet and dry seasons—and that serendipitously has protected this extraordinary ecosystem.

As wetlands all over the world have been degraded and destroyed, the Pantanal, its abundant wildlife, and its distinctive ranching culture have survived into the present relatively intact, insulated by the annual floods and the near-feudal distribution of land. Fiefdoms of half a million acres were once common and still exist today. Bia Rondon doesn't think Santa Sophia's more than 85,000 acres is much to boast of; her grandfather's ranch, Fazenda Rio Negro, once sprawled over 692,000 acres.

"You need a lot of land to raise cattle if threequarters of it is going to be underwater three months out of every year," one Pantaneiro explained. "And you won't bother undertaking extensive alterations—roads and dikes and buildings. The full season's just going to wash them away, if not this year, surely the next. The man of the Pantanal learned early on that he couldn't fight the full."

But the insulation of the full may no longer provide sufficient protection. Industrial soybean and cotton plantations increasingly dominate the highlands north and east of the Pantanal, drizzling damaging sediment and herbicides and fertilizers downstream into the floodplain. Their owners and the multinational corporations they supply exert relentless pressure on the governments of Brazil, Paraguay, and Bolivia to deepen the Paraguay River for oceangoing tankers and to build an all-season highway to speed their goods to market. These big infrastructure projects, many believe, would be catastrophic for the fragile hydraulics of the Pantanal.

Beef prices have fallen as cattle ranching expands elsewhere in Brazil, pulling the Pantanal



standard of living down with them. And the grand old ranches are being whittled away by what Brazilians wryly call "familial agrarian reform"—divided among heirs with every passing generation until the individual slivers are too small to provide a living. Too small, that is, unless you clear the forests on elevated ground. The incentive to clear is high: The more all-season pasture you own, the more cattle you can graze year-round. But it's a blow to the wildlife that looks to these forests for food and shelter, and in the long term it's a cause of erosion that could lead to permanent flooding.

Even ecotourism, which now supplements the income of many ranchers, is seen as a mixed blessing: outsiders encroaching on what has felt like a private world. "You can't go 15 miles anymore without running across somebody," an old hand groused to me.

Many Pantaneiros feel their way of life is under siege. "We've been good stewards," says Bia Rondon. "People come from all over the world to see our wildlife. But a way of life we've taken for granted can no longer be taken for granted. Ranching works for nature in the Pantanal. We have to find a way to make ranching keep working for the Pantaneiros. Otherwise the Pantanal as we know it will not survive."

hat does it take to ranch cattle during the Pantanal full? "It's hard work, grueling work. Your feet are wet every day—day after day," says a seasoned cowhand who started wrangling at 13. "But your spirit would die if you weren't out in the open with the long, beautiful view."

Before the regenerating waters arrive, fazenda owners send as much as a third of their stock to market, or risk losing them to starvation or drowning. From the most remote ranches, cattle drives can take nearly a month to reach the nearest earthen highway, where the herds are loaded onto trucks. Tending the cattle left on the land during the full season falls to men who think of themselves as "amphibious cowboys."

It's a lousy day to be messing with cattle the morning I head out with the men on a ranch called Santa Marta. There's an intermittent drizzle. Overnight the temperature had swan-dived 30 notches to 65°F as a cold front swept through. But twice a week, full season or dry, the Santa Marta hands round up as many of the ranch's

3,000 or so cattle as they can muster, give them salt, treat wounds, and mark any new calves. It being the height of the full, Santa Marta is mostly underwater—clear, sweet-smelling, teacolored water. It streams across the pastures and obliterates the tracks, drowns the fences, and swallows up the gates. The ponds are underwater and so are the creeks, and even the rivers are just faster water flowing through the slower, flower-filled water.

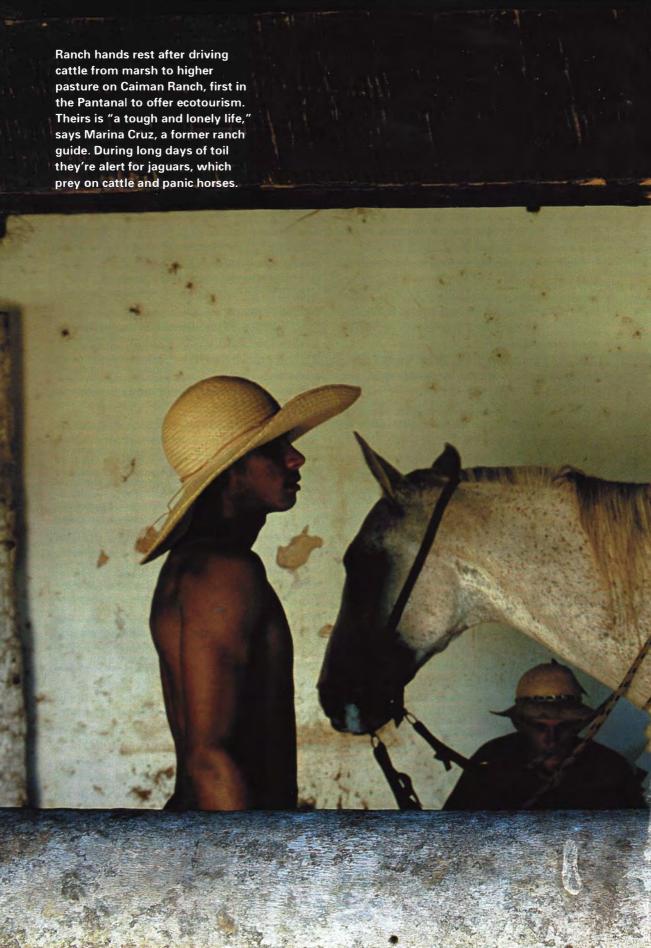
"It's all one water now," the cowboys say, though they can't resist pointing out inundated landmarks as we ride through them. I'd settle for seeing my own stirrups, struggling to lift a sodden boot wreathed in marshy greenery.

Santa Marta—at nearly 15,000 acres a modest ranch by Pantanal standards—belongs to the family of Ladislau da Rosa Lopes, a rancher known to all as Lau. Short, slim but barrel-chested, Lau, 53, is not much for talking, but he's quick with a warming smile. I'd heard it said that a "Pantaneiro is a conservationist by temperament and by love of the Pantanal." That, unabashedly, is Lau. We were never out with the cattle that he didn't make sure I noticed the natives: a marsh deer, a Muscovy duck and ducklings, a pair of hyacinth macaws crossing the sky. "We like to see our wild beasts roaming free," he says.

Lau's ranch is no treacherous brejo patch, like Bia's, but a firm-bottom floodplain called *vazante*—a vast, slowly moving sheet of water during the full, crowded with water lettuce, water lily, water hyacinth, and by the looks of it most of the other 250 water plants of the Pantanal. Strips of forest run through it like ancient hedgerows bordering a greensward. On a hot day the sloe-eyed zebu cattle would be grazing in this watery salad alongside the wildlife. In this morning's dismal weather they're hunkered down in the forests.

Six cowhands fan out across the vazante in pairs. Lau leads a packhorse piled with gunny-sacks of salt, occasionally lifting his corkscrewed cow-horn trumpet and giving a mournful blast to summon the herd. "I treat my cattle gently, so they stay very tame," he says as we ride. "I don't let the cowboys lasso them for kicks, and I don't let the dogs chase them."

Anticipating their salt rations, a couple hundred zebu are already waiting when Lau and I arrive at a high patch of green mud on the edge of a forest. Before long we hear men whoop from





a forest to the east, and a small herd of cattle trots down into the marsh. More whoops, and another slow river of cattle moves in from the west. Now a cascade from the south, and the sound of hundreds of scimitar-horned beasts slowly surging through the water is as thunderous as Iguaçu Falls.

While the well-mannered zebu take their turns at the salt troughs, the riders drift silently through the lowing herd, stalking a waifish calf, a creature so slight, so light on its hooves, it looks like a marionette. Whap! Lassos drop over its head. The men spring from their saddles, and two of them tumble the calf to the mud. One pins it with a knee, slides a long knife from the scabbard at the small of his back, and slices two scarlet notches in a white velvet ear, to mark it as belonging to Lau. He wipes the bloody blade clean on the calf's snowy flank. The second man swabs the bleeding notches and the lingering umbilical cord with a disinfectant. A third jabs a vermicide into the calf's neck, then they're up and on to the next.

Six more calves and the job is finished, man and beast coated in mud. This afternoon they'll repeat the morning's performance at the upstream roundup. Tonight eight pairs of boots will be propped by the ranch house stove to dry. This being the Pantanal, the boots won't actually *dry* until the dry season arrives.

au's house and corral at Santa Marta occupy the center of a hundred-acre island of high ground. There is no electricity. Two big tables, four benches, a couple of wire porch chairs, and some beds are the only furniture. The kitchen, roofed but open on two sides, harbors a ragtag collection of hard-luck cases: three motherless guinea chicks, a blind rooster, two skittish cats. A mob of at least 25 monk parakeets has constructed a haystack apartment in a tree ten feet from the table, and every hour they erupt in raucous quarreling. Parrots, macaws, and toucans frequent the yard too, their flashes of color and their chuckling trills and calls are intrinsic ornaments of Pantaneiro life. "They live around the house because it's safe from predators," Lau says, surveying a pair of toucans in a mulberry tree with proprietary pride.

Pantaneiros say, "It's the eye of the owner that fattens the calf." Even so, Lau and his wife, Zenilda, like many fazendeiros, don't live at the

"Taking action to preserve only the floodplain is a waste of time if we don't save the uplands, for only one reason water flows downhill."

In a cloud of dust on the Pantanal's surrounding highlands, tractors plow land yielding cotton and soybeans for global agribusinesses. Annual rains don't flood the highlands but sweep down tons of silt and pesticides. Also pouring in: tourist buses. This one packed with Brazilian fishermen splintered one of the hundred-plus wooden bridges on the Transpantaneira Highway, a 90-mile-long dirt road.









ranch full-time. They spend part of each month a hundred miles south in Aquidauana, the cow town on the southern edge of the Pantanal where many ranchers in this corner of the wetland keep a house and buy supplies. Lau's brother Jopeí or a hired hand runs Santa Marta in their absence. Bigger ranches, like Santa Sophia, employ a foreman to manage operations. Really big ranches may also subdivide the property and station a cowhand and his family in a house called a *retiro* to oversee an outlying spread.

During the 15-hour, four-wheel-drive trip that had brought me from Aquidauana to Santa Marta, Lau stopped his truck at one of these simple plank retiros on a neighbor's ranch. It was late afternoon. A man named Clemente and his wife, who was never introduced, sat at a table on the veranda, he splicing strands into a raw leather lariat that looked to be 30 feet long. Their teenage son, shirtless, in battered chaps, perched on the low veranda wall. His 13-year-old sister rocked in a hammock. Chickens scratched at the swept dirt yard. Two horses dozed at a hitching post, dressed in high Pantaneiro style: shiny metal rings laced together into bridles and chest ornaments; cushy vermilion sheepskin saddle blankets topped with a square of tooled leather.

Clemente asked if we'd accept some *tereré*, a kind of cold maté tea, equal parts ceremony and caffeine fix with which Pantaneiros punctuate their day. His wife fetched the worn cow-horn cup packed with green, grassy-tasting maté leaves, the metal straw with its bulbous strainer, and a plastic pipkin of water. Clemente filled the cup and passed it to each of us in turn. Etiquette requires the drinker to drain the cup with a last, hard, audible pull on the straw before passing it back to the host. He refills it and passes it on to the next.

As Lau and I left, I asked what the children of cowhands do out here. "That boy's been a salaried cowboy since he was 11," he said. And the girl? Lau sighed. "A 13-year-old girl we know was married this summer. It's not unusual. They have nothing else to do. There's no school out here. There are no jobs for women. Their mother nags them: Wash the clothes! Their father nags them: Sweep the yard! Marrying and being independent and having their own house starts to look good—even at 13.

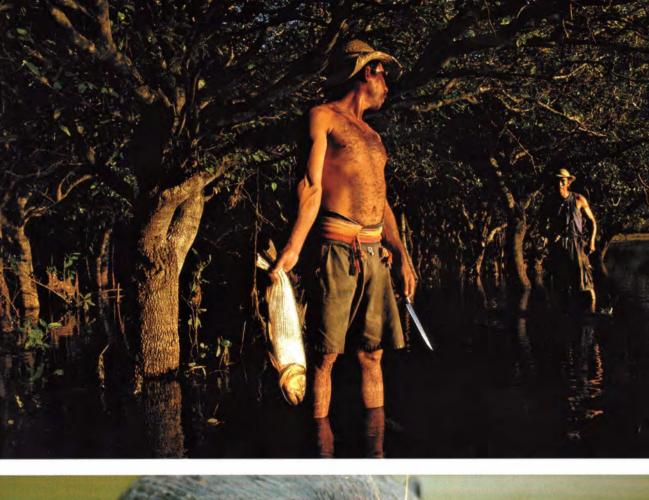
"The boys, 14, 15, 16, well, they're accustomed to visiting women of the street when they go

It took an outright war on wildlife to bring the Pantanal to the world's notice.

The wet season yields a finny crop in a flooded forest on Barra Mansa Ranch, where a worker snagged a dourado, a prized food and game fish. Tens of thousands of subsistence and sport fishermen ply the Pantanal's waters, which brim with at least 325 kinds of fish. Those fish nourish other animals such as the giant river otter (right), now on the rebound after nearly being wiped out by poachers.









to town. So they start to think, Why not save money, marry a woman of my own? Everything happens earlier here in the Pantanal."

We drove on through ever deepening mud, the landscape becoming more open, the water rising, until finally waterlogged grassland became vazante. In slowly falling light, Lau parked the truck under a lone tree, turned to me, and bowed. "Madam, your ride on wheels is over." We transferred supplies and sacks of food to a light aluminum skiff pulled up in the reeds.

Lau's brother Jopeí and son had paralleled us with a string of horses to be returned to Santa Marta. Lau lashed the bowline of the skiff to Jopeí's saddle, we clambered aboard, and for an hour and a half were towed serenely across the marsh-meadow in the one-horse-power pleasure barge. Isolated thunderheads painted the broad sky here and there with rain. A river of egrets poured away from us homeward low across the sky. The string of horses splashed ahead. In the last horizontal shafts of light, a full double rainbow appeared in the east.

This is the Pantanal that Lau cannot bear to think would disappear. But he sees disquieting signs. Deforestation for agriculture near the headwaters of the Rio Negro is causing silt buildup in the river. "The government permits it to happen," he says. "It makes a person feel very small, very helpless."

I saw that forests had been razed in this part of the Pantanal too, on fazendas with absentee owners, not native Pantaneiros, who are replacing trees with non-native grass to create yearround pasture. "People are cramming more cattle onto the land," Lau says. "What will happen to the animals who live in those forests? The grazers will be all right; they'll stick around. But the animals that eat fruit and palm nuts the parrots, the monkeys—they'll move on. They'll move to my ranch, I guess."

t took an outright war on wildlife to bring the Pantanal to the world's notice and cre-■ ate a better understanding in Brazil itself of the wetland's ecological importance.

Commercial hunting of wildlife became illegal in Brazil in 1967, but the law lacked teeth and the fines were slight. When caiman poachers set their sights on the Pantanal, little stood in their way. Starting in the late 1970s, most of the world's crocodile-skin fashion accessories for the mass

market were made from skins stripped from caimans right here in the Pantanal.

Pairs of hunters called *coureiros*—from *couro*, or leather—punted the shallows by night, locating caimans by their distinctive eyeshine and shooting them between the eyes. By day the coureiros retreated to the woods to salt the skins, leaving rotting carcasses stacked hundreds deep. Their take may have reached as high as a million caiman skins a year. Vultures and the stench of carrion drifted over the marsh like a pall.

"The main trade was caimans, but they took whatever they came across," a cowhand who found himself in the thick of it told me. "Ocelots, otters, jaguars, anacondas." The skin trade spawned traffic in live animals for the exotic pet market. Ten thousand hyacinth macaws were stripped from the Pantanal during the 1980s alone. Along with giant otters, they all but disappeared. Only the sheer number of caimans -millions upon millions—kept them from being wiped out.

Lau's Fazenda Santa Marta proved too remote for the coureiros, but Bia Rondon's Santa Sophia was sacked for its wildlife, as were other ranches along the more accessible stretch of the Rio Negro closer to Aquidauana.

"The Pantanal was a battleground," says Bia. "No one dared leave the house. Employees fled. My relatives and I tried to get the local police to expel the trespassers, but even the local police were in on the business."

Desperate, Bia and a small group of relatives and neighbors took matters into their own hands in 1984. Calling themselves SODEPAN—Society for the Defense of the Pantanal—they sold 20 heifers each and pooled the money to pay for gas, munitions, and bush planes to fly police in from the city. In their battle against the coureiros, Bia and her siblings received death threats; families took refuge in São Paulo; coureiros, cowboys, and police were shot, some killed.

A reporter from a São Paulo newspaper infiltrated the trade. His shocking reports of a Pantanal plundered of its wildlife, uncontrolled trafficking that eventually extended to marijuana, cocaine, probably arms, and evidence of involvement by the Bolivian and Paraguayan military, attracted worldwide attention.

Bowing to pressure, Brazil created a special forestry police in 1986, and in 1988 strengthened its law against the hunting of wildlife. With

armed patrols turning up the heat, fewer coureiros found the risk worth the price they got for skins, about two dollars. When a 1992 resolution by the Convention on International Trade in Endangered Species banned the export of raw or salted skins—the only processing poachers could manage in the field—the coureiro wars were finally over, and with them the wholesale liquidation of wildlife in the Pantanal.

B ut even as the coureiro wars were raging, other factors were coming into play that would launch permanent, long-term changes in the Pantaneiro way of life.

In 1974 a historic flood caught owners unprepared; tens of thousands of cattle drowned, and every fazenda suffered losses. Some lost everything. In the following decades, the full season continued to run ruinously high.

Also in the mid-seventies, the Brazilian government gave away land in the country's interior highlands to populate the central-west and to ease pressure on the Amazon rain forest. The new farms proved more lucrative than the floodplain of the Pantanal. Whereas Lau needs more than five acres for every cow and Bia needs seven, the new farms, with year-round grazing, can put a cow on every acre. With more Brazilian cattle coming to market, beef prices tumbled.

More threatening, "a huge amount of change is occurring in the highlands north and east of the Brazilian side of the Pantanal," says Carlos André Bulhões Mendes, a professor in the water resources and environmental planning institute of the Federal University of Rio Grande do Sul. "You see the full spectrum of development ringing the Pantanal—cities with inadequate sewage treatment; chemical-intensive soybean, sugarcane, and cotton plantations; intensive ranching. There is a growing awareness that taking action to preserve only the floodplain is a waste of time if we don't save the uplands, for only one reason—water flows downhill."

The worst damage can be seen in the highlands along the upper Rio Taquari, far northeast of the Rio Negro, where Santa Sophia and Santa Marta lie. Clearing, tilling, and grazing this sandy ground has created a 5,000-square-mile lunarscape of gullies and ravines. It has hemorrhaged so much silt downstream that part of the Taquari riverbed has filled up, permanently flooding some 4,000 square miles of the Pantanal. The immense shallow lake no longer supports wildlife, nor can it be farmed. A hundred small farms and 20 big ranches there now lie abandoned.

"The Brazilian government, the Organization of American States, and a coalition of environmental groups have together undertaken a lot of work to stop the erosion, with barely noticeable results," Carlos André says. "There's even been talk of dredging the lower Taquari to remove the sediment. But that would be going after the effect rather than the cause. Unfortunately, it's not a solution."

Shocked into action, Bia and other politically active landowners are pooling their considerable clout to fight for protection of the headwaters of other rivers that flow into the Pantanal, before these go the way of the Taquari. They're building coalitions, overcoming their deep-seated disdain for the meddling of outsiders. Working with national and international environmental organizations, they helped stall a grandiose plan, known as the Hidrovia, to deepen and straighten the Paraguay River and provide year-round passage for big cargo barges. But now they find themselves going head-to-head with other powerful constituencies—the soybean, sugarcane, and cotton industries—and no one doubts that some scaled-back version of the Hidrovia will eventually be put into place.

"Infrastructure improvements can bring economic benefit to the country," Carlos André says, "and there's a lot of poverty in Brazil. But the engineering must be very carefully undertaken to minimize environmental impact in the Pantanal. Tremendous damage could be done."

Bia lies awake in the small hours sometimes, thinking of little else. "The horror of it for those of us so tied to this terrible and marvelous land, you simply can't imagine."

ore immediate worries than the health of the greater Pantanal contribute to Bia's sleepless nights. Keeping her own ranch viable in the current beef market is no sure thing. It would shock her forebears, but Bia has diversified into ecotourism. The black-and-gold icon of the Pantanal—the jaguar—plays a key role in her plans.

Bia loses at least four head of cattle a month to the big cats; in a lean year they can rip the throat out of her slim profit margin. But on











"We've been good stewards. People come from all over the world to see our wildlife. But a way of life we've taken for granted can no longer be taken for granted."

Orphaned by a fence that ensnared its mother, a young anteater drinks a bottle of milk offered by a worker on Pouso Alegre Ranch (left). Anteaters thrive on the Pantanal's savannas. as does South America's largest canine, the maned wolf (top). Long legs boost the perch of its ultrasensitive ears for detecting prey in tall grass. As the outside world encroaches on the Pantanal, its wildlife and the ranchers who have minded the wetland for generations may all need a leg up. the day we examined the eviscerated fat bull at the edge of the brejo, Bia was not bitter. "Ecotourism," she said, "is turning my jaguars into a tourist commodity."

Ecotourism may indeed be the future of the Pantanal, providing ranchers with needed cash and reducing the temptation to squeeze a little more out of the land. For the cowhands' wives and daughters it creates jobs, otherwise rare for women. It's an incentive to preserve habitat for wildlife. And it helps keep ranchers from killing jaguars.

The chance to glimpse a jaguar is a big draw for tourists, whether they're budget backpackers or the high-end adventure travelers Bia caters to. Since Bia swore off hunting in 2003 as part of the jaguar-kill reimbursement project, the elusive cats seem more willing to show themselves. One sunny afternoon at her ranch, a pregnant female lingered in the Rio Negro for 15 minutes in full view of a delighted group of paying picnickers.

How many jaguars are left in the Pantanal is anyone's guess, according to Fernando Azevedo, a biologist studying jaguar predation on cattle. "They're solitary, nocturnal, very secretive. No one knows if their population is holding its own or shrinking or growing. All we can say for sure is that ranchers are still killing them."

Tonho da Onça—Jaguar Tony—one of the most famous jaguar hunters in Brazil, works with biologists tracking and anesthetizing jaguars so they can be radio collared for research. That he also still works as a hired gun for ranchers, nobody doubts. I told him I'd heard that ranchers are shooting nine or ten jaguars a month in the Pantanal. "Oh, no," he said in a vague, airy tone. "It's much more than that."

Bia doesn't blame ranchers who still resort to jaguar hunters. She hopes the reimbursement program will succeed, but she knows that not every fazenda owner can afford "to bankroll the jaguars." Nor is every fazenda right for ecotourism. For Bia, though, it's the way to keep ranching working for her, and for the Pantanal. "Though I will not," she says, "tolerate the tourists hugging my cowhands." \square

BRAKE FOR ANTEATERS Increased traffic to the Pantanal means more wildlife ends up as roadkill. Read about the problem in Did You Know? Then find more Pantanal photos and resources at nationalgeographic.com/magazine/0508.

