GALÁPAGOS now

Charles Darwin, who visited these islands in 1835, based his theory of evolution on the riotous diversity he found. The diversity is still here, but so are alien species, tourists, and increasingly restive fishermen. Can the Galápagos ecosystem survive?

BY **SUSAN McGRATH** PHOTOGRAPHY BY **JOHN HUBA**

PHOTOGRAPHY BY JOHN HUBA/A•C ANTHOLOGY

Barren landscapes like Pinnacle Point (opposite) can set the stage for violent encounters. A frigate bird flies above a booby in a common display of aerial competition.

binoculars

braced, cameras cocked, our small group stands at the ready in a dusty clearing. Our ears are trained on the leafless thicket ahead, from which we can hear what sounds like a rhinoceros crashing toward us—though it's certainly not a very fast rhinoceros, because we've been waiting for it to burst from cover for a long time. And then, all of a sudden, it does. An ancient, toothless face emerges from the bush at hip height, glaring at us dourly from tiny eyes. The creature pauses, surveys its audience dispassionately, steps ponderously forward: One one-thousand, two one-thousand, step. One one-thousand, two one-thousand, step.

Our quarry is a vastly eroded, 400-pound, black steamer trunk with elephant legs and Mr. Magoo's wizened face on an elephant-trunk neck. A Galápagos giant tortoise. Superstar of the reptile world. Symbol of Darwin's mythic islands. And a male, judging by the length of his tail. The sight of him provokes my companions—two English businessmen, a couple of Austrian honeymooners, and an American photographer—into a paparazzi-like paroxysm of chirring and clicking. Fortunately, this is the Galápagos, famous home of the animals that know no fear, and the old gentleman is supremely indifferent to my shipmates' shenanigans. He stares for rather a long time at an Englishman in a lime-green Hawaiian shirt, then moves away at a stately pace. One one-thousand, two one-thousand, step. One one-thousand, two one-thousand, step.

In the wider world these days, all news of the Galápagos is bad news. Darwin's marvelous archipelago, we're told, has succumbed to the litany of modern ills now numbingly familiar to all of us. Tourists besiege it. Introduced species overrun it. El Niño has irrevocably altered it. Immigrants from the mainland overpopulate it. The government of Ecuador, of which it is a province, milks it for cash. And long-standing tensions between conservationists and fishermen have been running murderously high.

Late last year, protesting what they saw as unfairly restrictive fishing quotas, Galápagos fishermen went on a destructive rampage, vandalizing Galápagos National Park property and threatening park personnel. On Isabela Island, strikers occupied the tortoise-breeding center, holding three rare giant tortoises hostage. The government hastily raised the fishing quota. The tortoises were released unharmed. And the fishermen went back out to sea.

Now, as if all that weren't bad enough, a tanker has spilled some 200,000 gallons of fuel at the edge of the archipelago. At press time, winds and ocean currents had dispersed the fuel, averting a complete disaster, but the ultimate outcome is unknown.

Interestingly, until these latest setbacks—and perhaps despite them—Ecuadorans had begun to feel quietly optimistic about the state of their archipelago. The climate has changed, Ecuadoran photojournalist Pablo Corral told me, the political as well as the physical. The catastrophic El Niño of 1997–98 has gone for now, taking with it the torrential rains and warm seas that disrupted the cold-water marine ecosystem. A restorative La Niña replaced it, flooding the archipelago with icy, nutrient-rich water. A pro-environment government in Quito has passed the quasi-miraculous Special Law for Galápagos, prohibiting large-scale commercial fishing and restricting immigration from the mainland—at least on paper. The national park service is eradicating nonnative species ensconced since Blackbeard's day. Tourism—and tourists—are strictly regulated. Three and a half million people toured Yosemite in 1999. Sixty thousand toured the Galápagos.

I was one of them. Come to see what was really happening here, I found myself 700 miles off the coast of Ecuador, watching a dusty boulder amble across a patch of dirt.

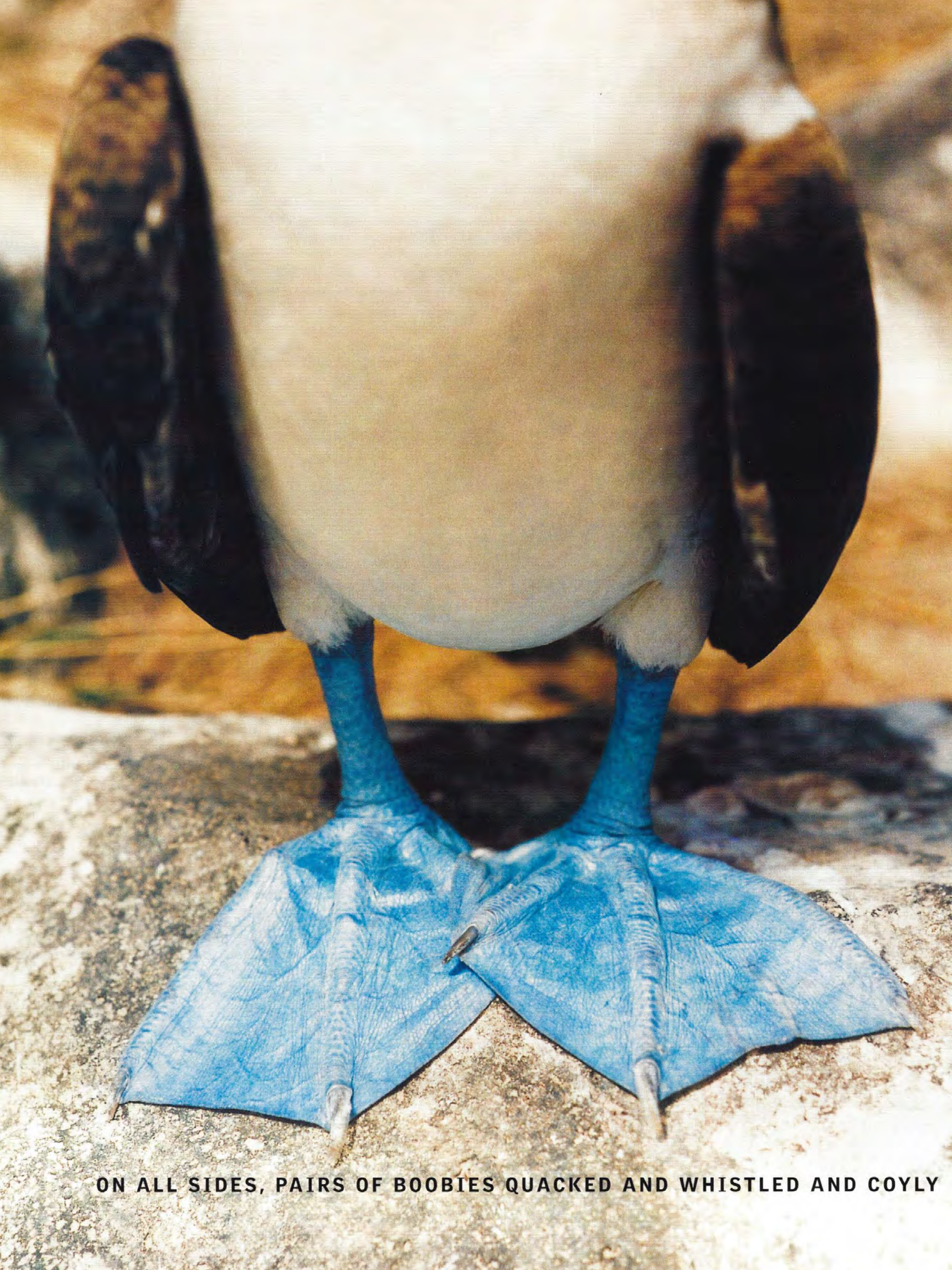
LATER OUR DINGHY LANDED US ON THE MOON: A BROAD, BLACK LAVA

The Galápagos archipelago consists of some 20 young volcanic islands amounting to 3,000 square miles of land scattered over 50,000 square miles of Pacific Ocean on the Equator. Six distinct cones joined above sea level make up Isabela; the other islands are single shield volcanoes. They look like the Little Prince's drawing of a boa constrictor that has swallowed an elephant—which is to say, they look like giant floating fedoras. Most of the islands are uninhabited, roadless, and devoid of any permanent source of fresh water. Whalers and explorers once dropped anchor here to stock up on giant tortoises—nature's canned meat for mariners—but the eerie landscape of shattered black lava flows, house-high spatter cones, and bizarre endemic vegetation repulsed the sensibilities of early European visitors. "Nothing could be less inviting than the first appearance," warned Darwin in *Voyage of the* Beagle.

The landscape repulsed settlers, too. Today only four islands have any permanent human population. All but 3 percent of the land belongs to Galápagos National Park. And in March 1998 the Special Law for

The Sally Lightfoot crab, preyed on by octopuses, may get its name from its fear of the water. When forced into the ocean, the crabs scamper wildly across the surface to safety.

PLAIN SO RAW AND METALLIC IT WOULD FLAY YOU IF YOU FELL ON IT.



ON ALL SIDES, PAIRS OF BOOBIES QUACKED AND WHISTLED AND COYLY

The unmistakable feet of the blue-footed booby hold the keys to the bird's heart. Males attract their mates by fancy footwork. If sufficiently impressed, the females dance along.

Galápagos made the whole 50,000 square miles of surrounding ocean a marine reserve, second in size only to the Great Barrier Reef.

I signed on with the *Samba,* a 10-passenger motor sailer whose itinerary would take me out of the more heavily traveled central archipelago to the western islands of Isabela and Fernandina. This is about as far off the beaten track as you can get here in the Galápagos, I learned, where tourism is more strictly regulated than at the Louvre. Visitors tour the islands on a licensed boat—there are 82—with a licensed guide, one to each 16 passengers. They disembark only at official visitor sites, of which there are 56, and dive only at official dive sites, of which there are 62. Boats may visit a maximum of two sites a day. Visitors must stick to designated paths and stay within sight and earshot of their guide at all times. Smoking and eating ashore are prohibited. And—what's that? Your bladder is full? Well, bad luck, mate.

Our first visitor site was on the central island of North Seymour. A dinghy dropped us onto a slippery green ledge, and within minutes we were immersed in a natural world unlike any other. Sea lions dozed fatly on the sandy lava; they took no notice of us. A phalanx of marine iguanas lay on the rocks at identical angles, their cold-blooded bodies tuned to the slant of the sun. The smaller iguanas were rock-colored, but the biggest males were alluringly clad in breeding colors of chartreuse and red, and their spiky crests flopped over with casual glamour. They, too, ignored us.

We skirted these animals and stepped onto the path. Here, a blue-footed booby lovingly tended a ring of guano in the middle of the trail. One rubbery blue foot warmed an egg. On the other lolled a reptilian-looking chick the color of house dust. On all sides, pairs of boobies quacked and whistled and coyly displayed robin's-egg feet, oblivious to our existence. Our small group of humans simply settled to the ground, amazed. Subtract the whirring of camera shutters, and this was the Galápagos as Darwin described it.

Later our dinghy landed us on the moon: a broad, black lava plain so raw and metallic it would flay you if you fell on it. We were picking our way from marker to marker, eyes glued to the frozen sea of lava underfoot, when the ground in front of us dropped away and we found ourselves perched at the rim of a secret, rush-fringed pool. In its waters two flamingos placidly shucked mud with their bills. For once my companions left their cameras at their sides and simply stared.

Drifting contentedly back to the boat, we encountered one other sign of life on this barren lava flow: a modest deposit of desiccated cat feces.

There probably weren't feral house cats here in Darwin's day, but what the national park considers its most serious problem is also its oldest problem: the 800-some species introduced by humans over the past 400 years. Rats eat undefended eggs and defenseless young. Goats devour vegetation, driving native plants to extinction, depriving native animals such as the Galápagos giant tortoise of food and vital shade. Blackberry and guava march up hillsides like kudzu.

"Controlling these alien species is the park's highest priority," explained Desirée Cruz, head of external relations for the national park. "Island by island, we are making progress. There are no goats on Pinta now, almost no pigs on Santiago." Equally important, she pointed out, is preventing new invaders from gaining a toehold. A quarantine program now stations cargo inspectors in Quito and Guayaquil, on the mainland, and at the archipelago's principal port, Puerto Ayora, on the island of Santa Cruz. Almost 60 interceptions were made in the first five months of operation, including the discovery, in a crate on Puerto Ayora's municipal dock, of the caterpillar of a moth that is destroying mangrove forests on the mainland coast.

ten

years ago Puerto Ayora was a fishing village of 1,000. Today its population has ballooned to 10 times that. Those who've been coming here to dive for the past 25 years consider the town a disheartening example of the rampant growth ruining the islands. Yet despite ubiquitous piles of construction sand and half-finished cinder-block buildings, Puerto Ayora has a cheerful, almost collegiate feel.

In a large, mangroved compound at the east end of town sits the Charles Darwin Research Station (CDRS), a sort of scientific fairy godmother that advises the national park on restoration and management. One thing keeping its scientists busy these days is a lumpy marine invertebrate called the sea cucumber. A placid decomposer in its own shallow marine habitat, the sea cucumber has the unfortunate distinction of being a favorite cooking ingredient in Asia.

"In 1990 a group of Taiwanese entrepreneurs

DISPLAYED ROBIN'S-EGG FEET, OBLIVIOUS TO OUR EXISTENCE.

arrived in Ecuador," explained CDRS marine biologist Priscilla Martinez. "They encouraged thousands of fishermen from the mainland to come to the Galápagos to collect *pepino*—sea cucumber. Since then there has been a huge reduction in the *pepino* population. We used to count 182 per 100-square-meter area. Now we count 30. And evidence from Micronesia suggests the population is unlikely to recover."

Pressed as to what changes might occur in the ecosystem, Martinez said, "This is such a complex and very dynamic place, naturally variable and unpredictable; you can't say exactly what the effect of this decline will be. We are studying sea cucumbers here in the lab, to try to understand their role. But I can say this: There is a spot in Bahia Elizabeth I have visited since 1993, one of the more rich marine communities. Then I had a baby and didn't go back for 18 months. When I did, we found barren ground. In 600 square meters, we found 3 sea cucumbers."

Though the research station has bowed to the political necessity of an official sea cucumber season, open to local, or "artisanal," fishermen registered with the islands' four fishing cooperatives, it may not be an issue for long. Shallow waters appear nearly fished out, and local sea cucumber fishermen are ill equipped to dive in deeper water. Several have died of the bends in recent years.

Eclipsing the waning sea cucumber fishery is a booming lobster fishery. It was the quota placed on the lobster catch that precipitated the riots some months after my visit—not the first time the tension between extractionist and preservationist interests in the Galápagos had erupted in violence, nor the worst. A gruesome cache of slaughtered giant tortoises was discovered on Isabela in 1995. A park warden was shot and wounded while patrolling in the marine reserve in 1997. And the young tortoises in the breeding center on Isabela—symbols of the islands and a lightning rod for conflict—have played the improbable role of hostage on a number of occasions.

isabela's

Puerto Villamil, half a dozen Galapagueños assured me, is what Puerto Ayora was 20 years ago: a quiet fishing village with unpaved streets, few cars, fewer telephones, and that disdain for government interference that characterizes rural communities in the American West. I was warned not to mention here that I was a journalist. Fine, since I was really here to stretch my legs after a week on the boat. I hitched a ride in the back of a pickup heading up Volcán Sierra Negra on Isabela's lone road inland. Eyeing the truck's gas tank—a gallon jug strapped to the side, sporting two black plastic pipes that disappeared somewhere under the truck bed—I was happy to be bumping along in the back.

In Darwin's day, 250,000 giant Galápagos tortoises roamed the islands. Now there are 15,000, and 3 of the 14 original subspecies are extinct.

It's difficult for an ordinary American or Canadian to conceive of the poverty of an ordinary Ecuadoran in the year 2001. The average per capita income is $1,100. In the United States it's $34,000. Ecuador's rudimentary welfare program suffers from a chronic lack of funds. And while it's nice to think of people living a traditional lifestyle where their few needs are met by farming and fishing, the reality is different.

THE FISHERMEN WHO MOVED TO THE GALÁPAGOS DID SO FOR THE

The thousands of fishermen who moved to the Galápagos in recent years did so for the same reason the Joads moved to California: desperation.

"In the 1980s," Pablo Corral explained, "investors put a lot of money into shrimp farms on the mainland coast. The environmental controls here are ineffective, so sewage from the shrimp hatcheries and runoff from big banana plantations polluted the coastal waters. That, combined with a really bad El Niño, devastated the coastal fishery, destroying the traditional livelihood of 30,000 or 40,000 fishermen and their families. The government, broke, could do nothing to help them. Many moved to the Galápagos because the waters there have not yet been overfished. While the native Galapagueños tend to be pretty laid back, these people from the mainland are desperate. Why is it, they want to know, that tortoises have more rights than they do? And there are commercial fishing interests, too, big fishing companies, pushing from behind and stirring up trouble."

In the back of the pickup truck with me was a tall, courtly fisherman on his way up to visit a farmer. "What do people in Villamil think of the Special Law?" I asked him. "Well," he drawled, nodding pleasantly but with a disdainful glint in his eye that reminded me uncomfortably of an older oil executive I once interviewed, "there is that which is good, and there is that which rankles." What is good? *"Casi nada."* Almost nothing. And the part that rankles? *"Casi todo."* Almost everything. The interview was over.

Diego Ramírez, economic-affairs officer at the Ecuadoran Embassy in Washington, D.C., was more forthcoming: "Galápagos attracts immigrants as a magnet because of perceived opportunities there. But Galápagos is an unusual situation. Because tourism is so

SAME REASON THE JOADS MOVED TO CALIFORNIA: DESPERATION.

closely regulated, with people staying on boats and cruise ships, there is little infrastructure on the islands—very few cafes, hotels, shops, and the like offering low-skilled jobs. So the income that tourism generates has little broader benefit. It goes to large tour companies. And the jobs in tourism tend to be high-skilled ones. Even to be a guide you should speak two or three languages and have all this specialized natural history knowledge. Of course, then, some of these desperately poor people see no benefit in conservation.

"In the long term, everyone's needs are best served by conservation. And the long-term solution is to improve conditions on the mainland to stop immigration and create an incentive for people to move back. But in the short term, something needs to be done for these people."

Conservationists in the Galápagos are well aware that improving the standard of living for all Galapagueños is key to the islands' future. The management plans for the park and the marine reserve include efforts to shift some tourist income from Puerto Ayora and cruise ships to the inhabited islands of San Cristobal and Isabela, providing residents with an alternative to fishing. This means relaxing the park's stringent restrictions somewhat, at least in the short term. Thus, while I still had to have a guide for the hike to Volcán Chico, my official Isabela guide was a far cry from the encyclopedic, polyglot guide on the *Samba.* Here, I contracted with a genial Villamil city council member, who subcontracted me out to a jolly old duffer named Benito, toothless as a tortoise. Benito made himself comfortable under a tree while I hiked to the fumarole alone.

Until Ecuador enforces the ban on immigration legislated by the Special Law, though, improving economic conditions for Galapagueños brings a Catch-22 into play: A higher standard of living in the archipelago will draw more immigrants from the mainland, further reducing the number of lobsters and fish to go around. On top of that, Galápagos fishermen, encouraged by their victory last fall and by powerful mainland fishing interests, are now pushing for a year-round fishing calendar and for legal longline and shark fishing.

What you can do

To voice an opinion about the political situation in the Galápagos, call or write to the following people:

Ambassador Ivonne A-Baki
of Ecuador
2535 15th Street NW
Washington, DC 20009
202-234-7200

Señor Gustavo Noboa
Presidente de la Republica del Ecuador
despresi@presidencia.ec-gov.net
Fax: 011-593-2-580-735

To find out more about efforts to clean up the fuel spill, consult the **Charles Darwin Foundation** (703-538-6833; www.darwinfoundation.org) or the international consortium **Friends of the Galápagos** (703-538-6833; www.galapagos.org). The **Audubon Society** sponsors trips to the archipelago twice a year. (The next one is March 30–April 8.) For more information, call 212-979-3066 or visit www.audubon.org/market/no/.

before

I left the Galápagos, I stopped in at the Charles Darwin Research Station to say goodbye to Lonesome George, poster child of the archipelago. One of the saddle-back tortoises for which the islands were named (a *galápago* being a kind of pack saddle common in 17th-century Spain), George is the sole surviving tortoise of the subspecies endemic to Pinta Island, and a painful reminder of what all of the Galápagos's wildlife may someday come to. Perhaps it's the aura of his personal history—or maybe just his long, underslung neck—but George looks dolorous even by tortoise standards as he lumbers across his well-appointed paddock: One one-thousand, two one-thousand, step. One one-thousand, two one-thousand, step.

All hope is not lost for George. Turtle droppings have twice been found on Pinta in recent years, and George is only a sprightly 60-something. But let's face it: The odds aren't in his favor.

As to his archipelago home, one can only paraphrase our fellow hitchhiker: There is that which heartens and that which dismays. Compared to the rest of the world, the environment is still remarkably pristine. If we of the industrialized nations do not sit on our hands in the face of Ecuador's troubles, I believe the odds are in the archipelago's favor.

SUSAN MCGRATH *writes about natural history and the environment. She likes to go anywhere uncomfortable and hard to get to, but cruising the Galápagos on a yacht may have spoiled her for more down-to-earth assignments.*