

~~Such zoos as Hancock's proposes already exist. The New York zoos administered by the Wildlife Conservation Society (WCS), including the Central Park, Bronx, and Queens zoos, as well as several other local institutions, are proof that captive animals can be put to more useful, honest, and humane purposes. More than four million visitors attend these zoos every year, and the simple zoo-going experience is vastly augmented by the institutions' far-reaching education programs. The WCS zoos also serve the diplomatic-mission purpose Hancock proposes, by linking New Yorkers to projects the organization is undertaking in 53 countries around the world. Those projects are geared mainly toward securing necessary habitat for endangered species, "from butterflies to tigers."~~

~~WCS scientists are training conservation officers in East Africa. They have rediscovered a wild pig, thought to be extinct a hundred years ago, in Southeast Asia. They're working with government bureaucrats in Iran to conserve the last tracts of habitat frequented by the endangered Asiatic cheetah. They're mapping Amur tiger habitat on the Russian-Chinese border, developing conservation initiatives for the critically endangered crested iguana in Fiji, and using radio tags to track great white sharks off the coast of South Africa with satellites. Even the Singapore Zoo is starting to do this kind of work, establishing a Sumatran rhino research station in Sabah, on the island of Borneo.~~

~~This is not the work of building arks. It's about something far more hopeful.~~

TERRY BLAVIN

THE SIXTH EXTINCTION

THOMAS DUNNE BOOKS

A bird

Waiting for the Macaws

*While the bird was asleep they carried it up to their booths,
kept it alive for three days, and then killed it with a stick,
for there had been heavy gales not long before
and it might have been a witch.*

—An account of the last great auk in the Outer Hebrides,
found by four men at Stack-An-Armine,
an islet off St. Kilda, in 1821



There are people whose love of birds will cause them to spend months tramping across mucky Scottish heaths hoping to see a red kite, or years thrashing around the Volga River delta looking for curly pelicans. They save their pennies for a once-in-a-lifetime trip to South Africa's Blyde River Canyon just for the slim chance of seeing a black-rumped butorquail. Birdwatchers think nothing of giving over their entire lives to such things. They endure great hardship. They persevere. They stay awake.

This is the kind of thing I kept telling myself, sitting in a patch of dry forest swamp at a makeshift observation post more or less in the middle of the 1500-hectare Curú National Wildlife Refuge, on Costa Rica's Pacific coast. I'd travelled 5800 kilometres for a glimpse of a scarlet macaw. I was in the right place, at the right time. But the iguanas were going lazily about their business, climbing up and down the coconut trees like giant languid squirrels, and the air was growing warmer and drowsier with the scent of hibiscus. Huge land crabs slowly clattered to and fro across a carpet of dead palm leaves, and strange blue butterflies fluttered in and out of the forest canopy. I could barely keep my eyes open. This wasn't exactly hardship.

Every few minutes a coconut fell to the ground with a thud, and I'd be alert again to the fact that if I was ever going to catch a glimpse of a scarlet macaw in its own element ever in my life, then it would happen right here. I'd been directed to the spot by Greg Matuzak, a lanky, 34-year-old Californian biologist who oversees bird research projects at Curú. Bernadette Bezy, a marine ecologist who had also come to Curú from California, had lent me a pair of binoculars. Matuzak had even graciously given me two 250-gram packages of Kikii Girasol sunflower seeds to empty into two boxes hanging from poles in the clearing. The macaws come to the boxes between three and four o'clock every afternoon, Matuzak had said. Sunflower seeds are like macaw candy, and macaws are smart, so all you have to do is sit quietly in the grove of palm trees in that patch of dry swamp, about 25 metres from the seed boxes. There are camp chairs there and everything. Nothing to it.

But the reason I'd come to Curú was not just for a glimpse of an especially beautiful kind of parrot. It was because events unfolding at Curú were showing that the fate of the world's vanishing birds was not necessarily extinction, aviaries, or the limited confines of a few parks—the trends in the extinction of the world's "wild" things do not have to lead in the same dismal direction

Curú is a paradise of tropical forest, orchard, and pasture at the southern tip of the Nicoya Peninsula, at the end of a bumpy road a few kilometres south of the town of Paquera. Forty years earlier, there had been no scarlet macaws left at Curú. The birds the locals call *lapa roya* and scientists call *Arax macao* had vanished from pretty much the entire Nicoya Peninsula—and indeed, by then, from almost all of Costa Rica. Once common throughout the Caribbean lowlands on the other side of the country, the macaws had disappeared there, too, except for a few near the Nicaraguan border.

Throughout the Nicoya they had flocked in communal roosts of as many as four dozen birds, making their nests in the cavities of gallinazo trees or in the deep hollows of ancient ceiba trees, revered by the Maya as providing a mysterious conduit between the sky world and the underworld. Most of that old forest was gone, and the scarlet macaws with it. Over the years, the birds had been killed for food, shot out of the trees by farmers who considered them pests, or captured for the pet trade. But now, after all these years, macaws lived at Curú again—not many, but some. It was a heartening departure from the clear trend among the world's birds.

The best information the International Union for the Conservation of Nature (IUCN) has about any kind of animal is about birds. Roughly 10,000 bird species exist in the world; about 1 in 8 is threatened with extinction. Of those, 250 species are considered "critically endangered," a status set aside for species with a 50-50 chance of vanishing within five years.

Among those hard cases is the crested shelduck, a favourite subject of early Japanese watercolours. The bird was once found over a wide stretch of North Pacific coastline, from Vladivostok to South Korea. If unconfirmed reports from peasant farmers on the Chinese mainland coast are anything to go by, perhaps 50 pairs are left, but no confirmed sightings have been recorded since 1964. In similar straits is the northern bald ibis, the bird the ancient Egyptians considered holy. This

splendid bird was once widespread across Europe, and its rookeries were known from Syria to Switzerland. It has been reduced to roughly 220 birds, in 3 small breeding colonies in Morocco. The po'ouli, the little Hawaiian honeycreeper I had wanted to write about, was even more unlucky—it had become extinct just months before I came to Curú to look for macaws and talk to Greg Matuzak about parrots.

Of all the great bird families, the parrots are distinguished by the highest proportion of species—close to one-third—threatened with extinction. The order Psittaciformes encompasses roughly 340 existing species of cockatoos, conures, lorics, lorikeets, macaws, parakeets, and parrots. The terms get a bit confusing because the word *parrot* is usually used to describe all these species but sometimes it's used in a way that puts “parrots” and macaws in the Psittacidae family and shuffles the cockatoo species, the lorics, and lorikeets into the Cacatuidae and Loridae families. For our purposes, we'll be using the word *parrot* to mean all the Psittaciformes.

The smallest is the buff-faced pygmy-parrot of New Guinea, which looks exactly how you would imagine a green parrot to look, except it's about the size of a hummingbird. It rarely exceeds eight centimetres from its beak to its tail. The largest, by weight, is the solitary, flightless, four-kilogram kakapo of New Zealand. It looks a bit like a big green owl, grows like a dog, and has been known to hike several kilometres on its nightly foraging rounds. Through the ages it developed a predator-avoidance strategy of standing perfectly still in the hopes of going unnoticed. That habit didn't do it much good when the Maori and their dogs arrived in New Zealand about a thousand years ago and was of no better use after Europeans arrived with their cats. Fewer than 100 kakapos are known to exist today.

Of all the different sorts of parrots, the macaws have suffered particularly badly. As many as eight macaw species were already extinct by the beginning of the twentieth century. As recently as the late 1980s, 3 of the world's 17 remaining macaw species were regulated by the

Convention on the International Trade in Endangered Species (CITES); 15 years later, all 17 are on the convention's lists.

Macaws are the big South and Central American parrots, the ones you saw sitting on the shoulders of pirates in all those old movies when you were a kid. They're long-lived birds—they've been known to live at least 60 years in captivity. Long before Europeans developed a fascination for macaws, South and Central American peoples commonly kept the birds as pets. Like all parrots, macaws are highly social animals, and they're famous for their oddly humanlike characteristics and their astonishing capacity for mimicry. Or maybe macaws have noticed that people are highly social animals with oddly macawlike characteristics, such as an astonishing capacity for mimicry. Either way, people and parrots have long held an affinity for each other. It is a sad paradox that this shared affection is one of the main reasons so many of their species are in danger of disappearing.

One of the 17 macaw species on the CITES list, the glaucous macaw, is still officially listed by the IUCN as endangered even though it hasn't been seen since the 1960s. It is—or was—an exquisite, grey-headed, turquoise-feathered bird. Its numbers fell through the twentieth century in tandem with the rise of the rare-bird trade and the vanishing of yatay palm groves on the frontiers of Brazil, Paraguay, and Argentina, its only known habitat. British bird conservationist Tony Pittman undertook two extensive expeditions to the region during the 1990s and failed to turn up even a rumour of one persisting anywhere in its former range. Another species, Spix's macaw, became extinct in its home habitat only nine months into the twenty-first century. This leaves 15 macaw species with at least some of their members persisting, however tenuously, outside of aviaries and private collections.

The “blue” macaws have fared the worst. Like the glaucous and Spix's macaws, the hyacinth macaw is a blue macaw, although it's actually a striking cobalt. It was once common throughout much of

Brazil and from Bolivia to Paraguay. During the 1980s, about 10,000 hyacinth macaws were bought and sold in the big-money bird markets of the world. The twentieth century ended with perhaps 2500 remaining outside of cages, in Brazil. Another blue macaw is the Lear's macaw, which was first described to science by Prince Charles Lucien Bonaparte, Napoleon's nephew, in 1856. The prince named the bird after Edward Lear, who was one of the most accomplished bird artists of the nineteenth century, a fact usually overshadowed by the nonsense verse that made him famous.

Lear's macaws had been making their way into the hands of European bird collectors since the early nineteenth century, but they were one of ornithology's enduring mysteries. The source of the birds was unknown to science until the late 1970s, when Helmut Sick, a young German biologist who first came to Brazil on assignment with the Berlin Museum, solved the puzzle. In 1939, Sick had been sent on an expedition to seek out the red-billed curassow in the wilder corners of the Brazilian state of Espiritu Santo. The Second World War broke out, and Sick's planned three-month sojourn stretched into six years. He spent the first three years in hiding and the last three in prison, as an enemy alien. After his release, he decided to stay put and settled in with the Museu Nacional in Rio de Janeiro. Then, in 1954, Sick went looking for Brazil's mysterious Lear's macaw. His search lasted 24 years.

On December 29, 1978, a triumphant Helmut Sick came upon a population of a few hundred Lear's macaws in the remote sandstone canyons of the Raso da Catarina area of Bahia, in northeastern Brazil. While I was sitting in that patch of dry swamp at Curtú, undergoing privations no greater than trying to keep awake, permanent guards kept watch over the only two remaining nesting sites of Lear's macaws in the world, in Raso da Catarina. The guards were employed by the Brazilian conservation foundations Biodiversitas and BioBrasil. Only 240 Lear's macaws remained.

The most infuriating blue macaw story involves Spix's macaw, which until October 2000 made its home in the unforgiving Caatinga region of northern Brazil, a harsh and dry Texas-sized landscape of sparse forest, cactus, and thornbushes. Spix's macaws were never very plentiful, being confined within the Caatinga to the woods along a few rivers that are dry for most of the year. The last female in the Caatinga was captured by poachers on Christmas Eve, 1987. That left a single male.

The species had been named after Johan Baptist Ritter von Spix, a Bavarian naturalist who travelled throughout Brazil in the early nineteenth century. Spix's companion, Carl Freidrick Philip von Martius, shot a macaw on the banks of the São Francisco River in 1819, adding what he thought was a hyacinth macaw to the specimen collection he and Spix were gathering. Their collection would grow to represent about 350 bird species before their four-year South American journey ended in 1820. It wasn't until 1832 that the beautiful blue parrot Martius shot on the São Francisco was discovered to be something else altogether, something exceedingly rare. Munich zoologist Johann Wagler compared the São Francisco macaw with specimens of hyacinth macaws and found that it was clearly smaller, and it had black skin on its face and a greyish head. It wasn't just a new species, either: it turned out to be the sole occupant of its very own genus. Spix's macaws quickly became a prime collector's item among wealthy nineteenth-century European bird collectors. But few aviarists ever got their hands on one.

Expeditions to Brazil in search of the Spix's macaw routinely returned without any birds. Collectors often had trouble finding anyone in Brazil who'd even heard about them. Between 1820 (when Spix and Martius returned to Germany) and the 1970s, ornithologists observed the birds in the wild only twice. It wasn't for want of trying, either.

By the middle of the twentieth century, little remained of the precarious ecological niche the birds inhabited—the gallery woodland of

caraiaba trees in Brazil's dry and ravaged Caatinga. Three of the birds were believed to exist there in the 1980s, but that was just a guess. And after Brazil banned the export of wildlife in the 1960s in an effort to stem the depletion of its rare and endangered species, and especially after CITES prohibited the trade in Spix's macaws in 1975, it became just as difficult to determine how many Spix's macaws existed in captivity.

This presented conservationists and the Brazilian government with a conundrum. To save the bird, effective breeding pairs would have to be found among the captive birds. And so without an arrangement of some kind with the few obsessive millionaires, eccentrics, and pathological acquirers who held Spix's macaws in their collections, an effective species-recovery strategy would be impossible. The Brazilian government, along with conservation groups and CITES officials, were forced into a devil's bargain.

Worldwide, the illegal market in rare and exotic birds often does as much harm as habitat loss. It isn't uncommon for a bird that is desperately rare in the wild to be fairly common, however temporarily, in the pet trade. The blue-throated macaw had been reduced, by the 1990s, to perhaps 50 birds in its only known habitat, in a remote corner of Bolivia, but several hundred existed in private collections. By the 1990s, the great green macaw, also called Buffon's macaw, was similarly endangered, despite a former range that takes in a half-dozen countries, but hundreds survived in private collections.

The rarer the bird, the higher its market value. That's the logic driving both the legal market and the black market in rare birds. The legal market is based on the trade of endangered birds in captivity prior to the CITES restrictions, as well as the trade of their offspring. The black market is supplied by gangsters who raid nests in the forests of the world and "launder" the birds with false documents. Supply and demand grind extinction's treadmill. A diminishing supply boosts the demand for rare parrots, which makes them rarer still, which raises their price, and on it goes.

By the 1980s, a single Spix's macaw fetched \$30,000 U.S. on the black market. In the early 1990s, a Brazilian dealer sold a single Lear's macaw for \$13,000 and a new car. A decade after that, a single hyacinth macaw could readily fetch \$10,000 on the open market. While I was writing this chapter, it took me less than 15 seconds to find a pair of hyacinth macaws advertised on the internet for \$28,000.

The underground trade in wild birds is a vile business that's often as lucrative as high-stakes international drug trafficking and gun running. It is also quite separate from the conventional trade in, say, budget-gars—endangered-bird traffickers and collectors are of a different class altogether from the millions of largely harmless people worldwide who keep pet birds. This isn't to say the lines are always clear. Many conscientious bird enthusiasts unwittingly contribute to their subjects' peril by buying endangered birds that originated in the black market. Many rare-bird collectors profess transparently disingenuous concerns about the fate of their birds' free cousins. Still other collectors are quite obviously and sincerely concerned about conservation and species recovery.

It's never easy sorting these things out, and in the late 1980s the International Council for Bird Preservation had few rules to rely on in its dealings with bird collectors. The CITES specialists' group on parrots was contemplating a similarly blank page. In the midst of this uncertainty, the basis for the Spix's macaw recovery plan was established, and the devil's bargain was struck.

Informed speculation about the number of Spix's macaws in private hands and in zoo holdings put the worldwide population of captive Spix's macaws at perhaps two dozen. At the time, it was uncertain whether any persisted in the wild. Spix's macaws had been successfully bred in captivity perhaps twice, and outside the world of private zoos and aviaries there was little expertise in the all-important work of captive breeding. Brazilian government officials faced the cold truth that no recovery program for Spix's macaws could work without the willing participation of the bird collectors who held those that

remained. So they offered an amnesty in exchange for the private owners' agreement that all buying and selling would come to an end and all birds would be made available for a carefully controlled breeding program, geared to the recovery of the birds in the wild. By 1989, the Brazilian government, with the cooperation of CITES and bird conservation groups, had cobbled together an ad hoc international committee to oversee the work. The committee first met that year at the CITES annual meeting, in Lausanne, Switzerland.

The committee's membership included some individuals with questionable backgrounds, such as Tony Silva, an American who had been selling parrots into the United States from Antonio de Dios's "parrot factory" in Quezon. At the time, it later turned out, Silva was engaged in a hugely profitable business smuggling hyacinth macaws and other endangered birds from Brazil to buyers in America (in 1996, Silva was convicted in a U.S. court for violating the U.S. Endangered Species Act and sentenced to a seven-year jail term). Also at the meeting in Lausanne was Antonio de Dios himself—a Filipino millionaire whose heavily guarded private bird-breeding facility in Quezon hosted several thousand parrots from almost half the world's species, including a half-dozen Spix's macaws. Wolfgang Kiesling, a man not without a conscience, was also in attendance, as the owner of two Spix's macaws. Kiesling kept them at his Disney-scale zoo, aquarium, and aviary at Loro Parque, on Tenerife—the Canary Islands "ark" described in the previous chapter. Lurking in the background at the Lausanne meeting were other figures, some of whom were associated with a macaw-smuggling enterprise in Paraguay.

The committee's work lasted a little better than a decade. During its term, it established the whereabouts of more than 60 captive Spix's macaws, but most of them turned out to be closely related and were consequently poor prospects for founding a new population. The committee's biggest boost came during its early days, with the July 9, 1990, discovery of one last Spix, a male, in the Brazilian Caatinga, in

a patch of caraiaba trees at Malencia Creek. Elaborate plans were laid out and enormous sums of money spent on plans to return some of the captive birds to join the last wild Spix. Kiesling personally donated more than \$500,000 U.S. to the effort.

In the first of many setbacks, a female Spix that showed some promise of becoming a mare was released at Malencia Creek, only to die entangled in electrical wires on a power pole. Then, on October 5, 2000, that last male Spix, after having survived alone in the Caatinga for 14 years, disappeared. The poor farmers of the region undertook a massive search for him. They had rallied behind the bird through the 1990s, taking him on as a symbol of their own hardscrabble persistence in that parched countryside. Their search was in vain.

The recovery committee collapsed a year later, and no honest person shed a tear over its demise. It had degenerated into a private trading club among millionaire Spix fanciers. The one glimmer of hope was the effort Wolfgang Kiesling was putting into his own breeding program on Tenerife. Kiesling surrendered the ownership of his three macaws to the Brazilian government, and in return, the Brazilian government allowed him to hold the birds and cooperated fully with his breeding program. In 2005, a chick was born at Kiesling's facility on Tenerife. The Brazilian government possessed nine other macaws, but there wasn't much talk about a reintroduction program. Apart from two birds held by a Swiss collector, the world's remaining macaws—all 42 of them—had been acquired by billionaire Sheikh Saoud bin Mohammed bin Ali al Thani, the Qatari menagerie-owner we met briefly near the end of the last chapter.

As much as all this was enough to make you want to spit on your hands, raise the black flag, and start slitting throats, it was all the more reason to take heart from what was happening in Curú and, indeed, throughout Costa Rica.

At Curú, the very thing the conservationists trying to save the Spix's macaw had only dared to hope for was taking place—a kind of

life-after-death story. Greg Matuzak and his volunteers were showing at Curú that not only can the world's vanishing birds escape extinction, but they are not inevitably destined to the end-of-the-road existence of zoos, aviaries, and parks, either. There is life after captivity.

The Curú experiment is still underway, but it has already shown that macaws can be re-established where they were once locally extinct, and even "hand-reared" macaws, under the right conditions, can make a go of it back out there where they belong. All the scarlet macaws at Curú had been born captives. Their parents had been confiscated from poachers by the Costa Rican government. The birds had been hand reared at a private facility at Alajuela, near San José, Costa Rica's capital city, and now they were free and starting to raise their own young. It was the first time that hand-reared macaws reintroduced to the wild had successfully borne offspring.

"You'll probably see one. I don't know why not," Matuzak said. We were strolling through Curú, on a dirt track following the edge of an old pasture that was slowly being taken back by the forest. We passed a rock-and-mortar shrine to St. Francis of Assisi, the Catholic heretic/saint who preached that birds have souls, and continued on toward a muddy creek in one of the pastures where the cattle come to drink. Only the other day, some scarlet macaws were bullying a bunch of black vultures there, Matuzak said. They might be there now, you never know.

When we got there, about a dozen vultures were hanging around, and a family of white-tailed deer moved through the long grass. So we decided to wait around for a while, and Matuzak went through the complicated story behind the return of scarlet macaws to Curú.

In January 1999, 13 scarlet macaws born at Alajuela were brought to Curú. They spent two months in huge cages near the seed-box observation post where I'd been waiting for them, and for another six months they were slowly weaned from a diet of fruit, beans, rice, and dog food. Apart from their minor daily treats of sunflower seeds, the

13 birds quickly became fully dependent upon the fruits of the forest. Before long, they were happily foraging on the flowers, seeds, bark, and fruit of 25 tree species, such as wild plum, beach almond, jocote, ojoche, coconut, and royal palm.

The Curú project, sponsored by the bird conservation group Amigos de las Aves, was undertaken in conjunction with two other scarlet macaw release efforts. One was at Golfito, a valley adjacent to the 15,000-hectare Piedras Blancas National Park on Costa Rica's southwest coast. The other was undertaken at Tambora, in Peru, at a remote site adjacent to two parks comprising almost 800,000 hectares. A major point of the whole exercise was to determine what works and what doesn't in bird reintroduction programs of this kind. Comparatively, the Curú experiment was more successful than those at Golfito and Tambora. At Golfito, 34 birds were released, 2 of which were killed almost immediately by an ocelot; a third was eaten by an eagle. Still, four years later, half the original Golfito birds were still believed to be alive. At Tambora, 11 of 20 were alive four years later. At Curú, 9 birds survived the initial release of 13. Then, in 2004, 2 chicks were hatched, bringing the population up to 11.

The birds at Curú had names, thanks to Fiona Dear, an English biologist whose work with Matuzak had been sponsored by such outfits as British Northern Parrots, the Paradise Wildlife Park, and a charity fund maintained by the Cadbury's chocolate company.

Emilio and Talula were the lucky ones who'd produced the two fledglings, Hans and Rira. There were Eva and Renaldo, and another pair, Cariño and Jemima. *Cariño* means "caring" in Spanish, and he got the name because he's something of a sweetheart, especially to Jemima. Ringo was so named because he had a ring, or band, on his right leg rather than on his left, as the others did. He tended to be at the bottom of the social ladder, the one that waited at the seed boxes until everybody else had eaten their fill. Rico was the most beautiful of the lot, they say. The last one was unnamed. He was a solitary character,

though he used to hang around with Cariño and Jemima. He kept his own counsel and had shown up only a few times at the seed boxes.

The main point of the daily ration of sunflower seeds in those boxes was to allow biologists to monitor the macaws' health and their seasonal movements, to find out whether there were any fledglings around, to study relationships between the birds, and that sort of thing. It wasn't about feeding the birds. They were finding food all by themselves.

Another particularly heartening outcome of the Curú experiment was that the macaws were foraging outside the refuge. This opened up possibilities that you couldn't contemplate in Singapore, or anywhere else in Southeast Asia where habitat loss was the price exacted by the stoking of economic engines. In North America, William Newmark's studies had exposed the great parks and wilderness areas of the continent's western half as places within fragmented landscapes where animals go to die. At Curú, and in the landscape around it, a different kind of story was taking shape.

Curú was Costa Rica's first private wildlife refuge. After watching the forests disappear from much of Costa Rica in the 1960s, Federico and Doña Julieta Schurr, prosperous ranchers, had decided they didn't want to see the ruin of their beloved countryside. They started with an 84-hectare refuge and later won official "protected forest" status for all but a small portion of the remaining 1400 hectares of their former hacienda. The result is formally known as the Refugio Nacional de Vida Silvestre Curú. The refuge where these experiments are now underway is surrounded by a vast no-hunting zone of ranch country and broken forest—territory the macaws were venturing into.

The Curú experiments opened up the very real possibility that with a large enough population of macaws with their epicentres in refuges such as Curú, the birds might eventually repopulate much of their former range. Costa Ricans showed broad support for such ambitious projects; in fact, they had come to think of the scarlet macaw as a

symbol of the country's unusual efforts to maintain the diversity of living things that the rest of the world was losing.

What allowed Costa Ricans to envision such possibilities was the fact that theirs is a relatively comfortable country that has sorted out the deep contradictions that ended up disfiguring so much of the tropical world—the very contradictions that result in mass extinction. Costa Rica is poor by conventional economic measurements, but it's also an island of peace and stability in a region that remains crippled from the rebellions, military coups, revolutions, and counter-revolutions that raged throughout much of the twentieth century. Hundreds of thousands of innocents died in El Salvador, Guatemala, Nicaragua, Panama, and Honduras, but Costa Rica avoided the bloodshed. It wasn't just through good luck, although that had a lot to do with it. It was also because during the 1950s, Costa Ricans forged a democratic consensus that was broad enough to enjoy the support of both the Catholic Church and the Costa Rican Communist Party. The consensus inhibited the development of Marxist insurgencies, but perhaps most importantly, a constitutional prohibition on maintaining a standing army immunized Costa Rica from the U.S. government's usual method of bullying: corrupting, and brutalizing Central American societies.

By the 1980s, Costa Rica had further distinguished itself by an earnest commitment to protect its ecological heritage. The country had lost most of its aboriginal peoples centuries before, mainly to disease. Those cultures never recovered. It had also lost more than half its forests to industrial logging, which gathered steam during the 1950s. Today, Costa Rica's national park system covers only 11 percent of the country, but roughly 25 percent of its land mass is at least nominally protected from high-impact development—a far higher threshold than most countries can claim. While only two of Costa Rica's ecological reserves are "absolute" reserves (Cabo Blanco, not far from Curú, is one of them), the other protected areas include vast contributions from

private owners, like the Schurt family at Curú. Deforestation continues, but its pace is slowing. Costa Rica's famous cloud forests and other natural attractions draw millions of visitors to the country every year, bolstering the national economy: ecotourism ranks lower only than bananas as a contributor to the country's gross national product. The country is consciously making its way down the "sustainability first" road described by those UNEP scientists at the beginning of this book.

Costa Rica also started out with the distinct advantage of an immense ecological legacy of rainforest, dry forest, mountain, mangrove, swamp, savannah, marsh, and plain. The country is just over a third the size of England, but it hosts roughly 850 bird species—more than remain in all of Europe, and more than in all of North America. Even in the middle of the night, driving down the dusty and rutted roads of the Nicoya Peninsula, I was routinely shocked by the sudden darting of paragues into the headlight beams. I'd made a habit of taking an afternoon cappuccino outside the Iguana Café in the hippie-surfer town of Montezuma, not far from Curú, and during each visit I was harassed by flocks of half-metre-long, bright blue birds with long tails and ridiculous curved-feather crests jutting from their foreheads. They were white-throated magpie jays. The 511-page *Guide to the Birds of Costa Rica* describes their habits this way: "Travels in noisy, straggling flocks of 5–10 ... loudly mobs Spectacled Owls and other predators, including man." I'll say.

Costa Rica owes its enviable avifaunal diversity partly to the inherent richness of the neotropics and partly to a fortunate geological history. About 50 million years ago, an archipelago of volcanic islands—hotbeds of biological isolation and speciation—began to rise up out of the sea to the south of a peninsula that jutted out of North America to roughly where Nicaragua is today. The islands developed distinct local forms of swifts, parrots, kingfishers, hawks, and other birds that colonized from distant lands. By about five million years ago, the isthmus of Central America was beginning to

take shape, allowing diffusion and exchange of species between the two continents. Jacamars, toucans, cotingas, and manakins moved north. Gnarcatchers, motmots, swallows, quails, finches, and others moved south. Pacific and Caribbean species flourished on the coasts, and mountain and lowland species began to take on characteristics unique to themselves. When the great high-country forests took root, they became, for some birds, barriers to migration as effective as great expanses of ocean between islands. For others, the forests were like islands surrounded by fathomless seas. All this isolation and confinement further obliged immigrant birds to settle down and go about the slow and steady business of evolving into their own distinct forms. Unlike almost everywhere else, in Costa Rica hummingbirds sing. Some tanagers, on the other hand, gave up singing altogether. And the thousand or so scarlet macaws north of Costa Rica ended up in their own subspecies. Their colours and habits are slightly different from those of the scarlet macaws to the south, which occur in small populations as far distant as Brazil and Peru; Costa Rican scarlet macaws form a kind of transitional population between the two subspecies.

Costa Rica's most famous bird, the resplendent quetzal, is rarely described without superlatives. The male is often called the world's most beautiful bird, with its distinctive iridescent blue-green tail feathers that routinely reach more than 60 centimetres in length. The bird derives its name from Quetzalcoatl, a deity known to all Mesoamerican cultures but revered most fervently by the ancient Mayans, whose gods were usually a nasty lot. Quetzalcoatl—the feathered serpent—was different. He was a champion of ordinary blokes and was associated with mercy, charity, and liberty. In the pre-Columbian period, the quetzal's long tail feathers were trade items of immense value, reserved mainly for adornment by the Mayan nobility, who also traded quetzal feathers to the royal families of neighbouring kingdoms as far north as the Valley of Mexico and as far south as the mountain palaces of the Inca in Peru. The quetzal is Guatemala's national bird; it appears on

the Guatemalan flag, and it gives its name to the country's main unit of currency. But it is only in Costa Rica that this bird has survived in reasonably healthy numbers. It is one of the main attractions in the cloud forests at Monteverde, the most famous of Costa Rica's forest reserves.

But other Costa Rican birds are just as beautiful. The violet sabrewing, a mere hummingbird, is a shy creature, despite being a giant among hummingbirds. It commonly reaches 15 centimetres in length, and the male's lovely green feathers and black tail are rarely noticed on account of its brilliant, almost deep purple colour. Another bird, the long-tailed manakin, is not unlike the quetzal in its ostentation. It's a small black bird with a sky blue back and an olive green breast, and the male is distinguished by long tail feathers that double its usual 12-centimetre length. The purple gallinule looks like a common coot dressed up for carnival. The tanagers are outrageously coloured in lime green, yellow, pastel blue, black, and mottled brown. The scarlet macaw, meanwhile—shocking bright red, blue-green, and yellow—is a breathtaking sight amid the emerald canopy of a Costa Rican forest. Or so I'd been told.

When Matuzak wasn't keeping track of the macaws, he was working on a study of the yellow-naped parrots that nest on the Tortugas Islands, just offshore. The parrots forage within the refuge at Curú and hang around in the mangrove swamp, and they are a worry. They're an endangered species; Curú has only about 150 of them. Matuzak was clearly smitten. He'd ended up overseeing the scarlet macaw project after a spell as a field biologist there, but he'd begun his time in Central America researching melodious blackbirds, blue ground doves, and yellow warblers in Honduras. Matuzak graduated from the ecology department at the University of California at Davis, but he'd started out in economics, at San Diego State University. The story is more complicated than that, of course. These stories always are. For Matuzak, who grew up in Redondo Beach, the thing about birds and other living

things began when he was a kid, camping at Yosemite National Park with his dad, and fishing, hiking, and skiing. Somewhere along the way, the birds got to him.



Birds are particularly reliable witnesses for the case that human beings belong to a daff and bumbling species that nonetheless harbours an abiding affection for other creatures. From the ibis of the ancient Egyptians to the raven and the eagle that fly within the cosmologies of the aboriginal nations along the coast where I live, birds have always summoned our deepest longings and have always managed to lift the human spirit somehow. They get to you.

The birds that got to me were crested mynabs. There were once thousands of those lovely and harmless little birds on Canada's west coast. On the streets where I grew up, in Vancouver, Burraby, and New Westminster, the little black birds with white patches on their wings used to gather in little flocks of a half-dozen or so. They would skip along down crowded sidewalks, looking just like busy little old men with their arms clasped behind their backs. Chinese immigrants had brought the birds to Canada in the 1890s, as affectionate companions from home. The few birds that escaped their cages over the years eventually established flocks, and those were the mynabs that had fluttered and chirruped through my own childhood. Tamed ones could be taught to repeat words. Street birds tolerated the company of people and amused themselves by mimicking the sounds of the city—doors opening and closing, the air brakes on buses.

But, like Singapore, Vancouver was constantly changing and growing, inventing and reinventing itself, demolishing its old buildings and constructing ever taller ones so that you could barely see the mountains anymore. There was more pavement, fewer trees, and more nest-robbing European starlings. By the beginning of this century, only two crested mynabs remained in Vancouver, a nesting

pair. In February 2003, one of them was hit by a car at Second Avenue and Columbia Street, near the Cambie Street Bridge. The last mynah kept a faithful vigil beside its dead mate, until it too was run over, two weeks later. And then there were none.

It's cold comfort to be told that crested mynahs were not "native" to Vancouver, or that from an "environmental" perspective their disappearance did not diminish the integrity of the species, which still flourishes in Asia. The loss of Vancouver's mynahs diminished the city all the same. When I saw a crested mynah in Singapore, casually hip-hopping down the sidewalk outside the Sri Sri Foot Reflexology establishment in Arab Street, just around the corner from the In The Name Of Allah The Most Gracious The Most Merciful Mohd Rajeen & Brothers Café, I was overwhelmed by melancholy and a childish happiness.

Fleeting encounters with birds are known to cause in people something the American writer Joseph Kastner has called "surprised enchantments." Sometimes these are just profoundly personal, mysterious, and delightful little experiences that one doesn't spend too much time pondering because they are, after all, imponderable. At other times they strike like a shock of insight. They come as a consequence of completely random events, and it is as though all the notes of some magnificent, ancient chord have been struck, thoroughly by chance, deep within one's subconscious.

Birds have always soared in the vast skies of humanity's collective unconscious. Birdwatching is commonly called the most popular hobby on earth; American birders claim that they are 40 million in number and spend \$32 billion every year in their pursuits. And birds sparked the modern worldwide struggle for the conservation of wild things: the first international covenant for the protection of wildlife was an 1895 summit of European nations in Paris, and its great result was a multilateral accord for the conservation of birds. Every international treaty on environmental protection owes its origin to that first

covenant. The "father of ecology" is often identified as John James Audubon, the gifted French American bird artist. The environmental reawakening that occurred in the 1960s started with Rachel Carson's *Silent Spring*, a shocking overview of the worldwide effects of pesticides, most notably their effects on birds.

The recoveries of near-extinct birds are among the greatest successes of the conservation movement. The whooping crane, a regal creature that lost its tall-grass prairie habitat with the advance of farming across the United States, was down to 20 individuals by the 1940s, but because of the vigilance and devotion of its human admirers, it numbered about 200 by the beginning of this century. The California condor—misnamed, since it once ranged throughout much of North America—was once as badly off as the whooping crane, with about 20 animals left. Written off by most conservationists in the 1960s, the condor won the hearts of a few committed eccentrics whose perseverance allowed the population of North America's largest flying bird to grow tenfold by the late 1990s.

At the same time, of all the creatures that have disappeared because of human activity, birds have fared especially badly. One-fifth of all the birds that existed 20,000 years ago are now extinct, mainly because of the time of Christopher Columbus, more than two-thirds were lost not so much because of wanton slaughter, but because critical habitat had been taken from them, or their eggs had been eaten by human-associated species. This is the fate that befell the dodo, on the island of Mauritius in the Indian Ocean. Perhaps the best-known extinct bird of them all, the dodo, a flightless, turkey-sized creature, was subjected to wanton slaughter by passing mariners, but it finally succumbed to a host of torments, not the least of which were the ravages of several introduced species, including pigs, dogs, goats, and cats. Importantly, the dodo was the first animal understood to have been rendered extinct from causes at least indirectly attributable to human activity.

The last dodos were from a small flock observed by a marooned Dutch sailor in 1662.

Even in the most cursory review of the sad story of animal extinctions in modern times, what becomes quickly obvious is the prominence of island-dwellers. The reasons are complicated, and explained eloquently in David Quammen's brilliant and exhaustive *The Song of the Dodo: Island Biogeography in an Age of Extinction*. But the main reason is that island species tend to exist *only* on a single island or a small archipelago; when they're gone, all of their kind are gone with them.

For all we might observe about humanity's negligence and wantonness, over-hunting was the culprit in only about a tenth of bird extinctions over the past 500 years, and even in those cases people often fought desperately to save them. But those people, and their stories, have been largely forgotten. One such story concerns the great auk.

The cause of the great auk's extinction is no mystery: it was hunted to death. Slaughtered for its flesh, for the oil that could be rendered from its fat, and later for its feathers and skins, Europe's original "penguins" once roosted on rocky islets throughout the North Atlantic. By the early nineteenth century, apart from a few stragglers in Scandinavian waters, no auks survived on European shores. The last credible European account—of a solitary bird—comes from the Scottish island of St. Kilda, in the Outer Hebrides. For generations, sea-fowling villagers had taken great care to leave enough eggs in the auks' nests to replenish the great flocks, but by the nineteenth century the birds had become so rare that individual stragglers were regarded as possible omens. In about 1820, one had been captured and kept for four days, but it had escaped. The last auk at St. Kilda was found by four local men, on a skerry known as Stack-An-Armine, in 1840. It was also kept, for three days, but owing to unusually heavy winds and gales that accompanied its discovery, one of the men killed the bird with a stick—he thought "it might have been a witch."

The great auk's last great breeding colony was on Newfoundland's Funk Island. During the latter half of the eighteenth century, Funk Island was being mined of its auks, mainly by New Englanders. In 1775, Newfoundlanders petitioned Britain to restrain the slaughter. Some Yankees who were caught skinning birds and plundering eggs on Funk were brought to St. John's and publicly flogged. The controversy finally provoked a legal prohibition of auk-skinning and feather-taking in 1794, but the poaching continued. By the first years of the nineteenth century, Funk Island was barren of auks.

The auk's doom came on June 3, 1844. That morning, Keil Ketilsson, Jon Brandsson, and Sigurdur Isleffson set out from the Icelandic fishing village of Stadur for the rocky, volcanic islet of Eldey. They left in search of auk eggs and feathers, which by then were so rare they commanded fabulous prices from European collectors. Eldey had once been thick with auks in the summer breeding season, but all that was left on that day was a nesting pair. The fishermen killed them. One egg lay on a lava slab. It broke at Keil Ketilsson's feet, and that was the last of the great auk.

The case of the Bermuda petrel is a strange one. In 1616, Bermuda's colonial officials passed a law to protect the island's cahows, as Bermuda petrels were known then. The small seabirds knew no predators in their nesting colonies until the sixteenth century, when mariners—and, more fatally, their egg-eating pigs, cats, and dogs—began winnowing Bermuda's wild bird populations. A stricter law was adopted in 1621, and the cahows were saved, but nobody knew that until the 1950s. That was when Bermuda's petrels, long written off as extinct, were rediscovered.

Even the story of the passenger pigeon, so often told as a simple tale of barbaric human stupidity, is not without its heroes. Though they were extinct by 1912, North America's passenger pigeons were probably the most abundant bird species on earth in the early years of the nineteenth century. The Hirrone saw the couple of all that had

in those great flocks, and among North American settlers, there was nothing irrational or bloody-minded in the common belief that any kind of hunting restraint was silly, that nothing could harm their numbers. The birds massed in nesting colonies over hundreds of square kilometres, and their harvest provided a bounty of cheap food both to the working poor of the growing cities along the U.S. eastern seaboard, as well as to foxes, wolves, lynx, hawks, and eagles.

Passenger pigeons were lovely birds, with blue-grey wing feathers, red breasts, and purple iridescent neck feathers. They were much bigger than mourning doves, and every bit as plump and tasty, and so by the late 1870s their numbers were already dwindling rapidly. The initial decline can be confidently laid at the feet of the wild-game industry, which supported thousands of hunters, shippers, middlemen, and retailers. In a largely forgotten chapter of North American history, wild game was a significant part of the urban diet, well into the twentieth century. Venison, wild trout, rabbit, wild goose, prairie chicken, buffalo, wild turkey, snipe, plover, and a wide variety of shorebird and duck species were common North American dinner fare. As the abundance of so many game animals dwindled, market hunters increasingly turned to passenger pigeons. Conservationists responded, fighting for and winning a series of protective laws, aimed mainly at keeping hunters away from key roosting areas during the breeding season. But the laws proved almost impossible to enforce, partly because so many people thought the laws were unnecessary and not worth obeying.

One of the last great battles for the passenger pigeon occurred in 1878, in and around a massive roosting of the birds in the woods near Petoskey, Michigan. The limbs of the trees lay thick and heavy with passenger pigeons over a vast area, roughly 16 kilometres wide and 60 kilometres long. Dozens of volunteers from the Saginaw and Bay City game protection clubs faced heavily armed hunters. The conservationists were led by Saginaw college professor H.B. Roney,

with game-industry officials. When it looked like the conservationists were losing, Roney spread rumours that the Petoskey pigeons had been eating poisoned berries. It was a mischievous tactic, echoed more than a century later in the spiking of old-growth cedars with nails big enough to break chainsaws and scare away loggers. But it worked, at least for a time.

The Petoskey battles were repeated elsewhere, on a less dramatic scale, but by the late 1880s the passenger pigeons were doomed. As Christopher Cokinos shows in his heart-rending *Hope Is the Thing with Feathers*, neither side of the debate fully understood just how vulnerable the massive flocks had become. With breeding pairs that cared for only a single egg every year, the productivity of the huge flocks depended upon the safety of their sheer numbers. As the flocks declined in size, the numbers of hatchlings fell exponentially, like compound interest, only in reverse. In the pigeons' final years, the sound of a few shotgun blasts was enough to disrupt an entire breeding season. And as the flocks grew ever smaller, the legions of game hunters that had grown dependent upon them became ever more desperate. All the best intentions, and all the conservation measures aimed to protect the pigeons, proved too little, too late.

The point is, though, that the intention was there. In 1708, several New York counties were already enforcing annual closed seasons to protect turkeys, grouse, heath hen, and quail, and by the end of the eighteenth century, game-protection laws were common in the United States. Even the buffalo had its champions. The story of the U.S. government's deliberate extirpation of the buffalo from the prairies—a strategy aimed partly at subduing the Plains tribes—is well known. What is not so well known is that in 1874, the U.S. Congress adopted a law to prevent the “useless slaughter” of the buffalo, but the law was stymied by U.S. president Ulysses S. Grant. In Canada, the buffalo's demise was widely understood for the tragedy it was, and valiant efforts were made to domesticate the animal as a way of maintaining its

numbers. Across the Canadian west in the late nineteenth century, game-protection societies were established to conserve a wide variety of wild species. Even in the American west, Idaho was passing laws to protect buffalo, deer, elk, antelope, and other animals as early as 1864. Wyoming prohibited any killing of buffalo in 1890, and seven years later Montana made the killing of buffalo a felony offence, punishable by a two-year prison term.

By the late nineteenth century, inspired partly by early leaders such as H.B. Roney, the bird conservation movement in the United States was going strong. Led mainly by the Audubon Society, it drew many of its most energetic recruits from the ranks of America's children, who made up the majority of the 50,000 people who signed a pledge in the late 1880s to refrain from killing wild birds. The children appear to have been particularly distressed by the fashion in women's hats, some of which displayed not just feathers but entire stuffed birds.

More than a century after women's taste in hats was threatening the extinction of North America's egrets, terns, spoonbills, and ibises, many creatures are still being pushed to the edge of the abyss by the fashion industry. One such animal is the Tibetan antelope, hunted so vigorously for its fine wool that it is teetering on the brink of extinction, a process exacerbated by the rage for shahtoosh shawls unwittingly set off during the late 1990s by Queen Elizabeth II and fashion model Christie Brinkley.

Just as the trade in rare parrots has led to their rapid disappearance in recent years, the trade in bird feathers was one of the main reasons the skies were growing so silent during the late nineteenth century. Yet it's too often forgotten that this tragedy provoked a powerful response among ordinary people. Early conservationists built a movement that touched off the same kinds of social division, high drama, and political intrigue that marked the great labour struggles of the 1930s and the civil rights movement of the early 1960s. After Audubon Society warden Guy Bradley was murdered in 1905 while protecting birds in

Americans were losing their patience, and it was the fate of a parrot that touched their hearts.

The last Carolina parakeet died in a Cincinnati zoo in 1918. It was the only parrot species that made its home solely in North America. Much prized for its feathers, the bird was formerly abundant in the forests of the southern United States and came to be regarded by farmers as a pest. Carolina parakeets displayed the endearing but fatal habit of flocking around their fallen comrades, a trait that made them particularly vulnerable to slaughter. By the time of their extinction, the U.S. courts were being harnessed in defence of wild birds.

A landmark case began with the 1919 arrest of Missouri attorney general Frank McAllister on charges of killing 66 ducks out of season. By upholding his conviction, the courts confirmed the federal power to protect migratory birds and resolved legal uncertainties about the force and effect of the 1918 Migratory Birds Convention between Canada and the United States. Justice Oliver Wendell Holmes, the famous American jurist perhaps best remembered for upholding the rights of workers to organize labour unions, wrote the key decision in the case. As a young man, Holmes added his own signature to the children's pledge to refrain from bird-killing.

While its depredations should not be ignored, focusing too closely on hunting can allow more subtle and lethal causes of extinction to go unnoticed, such as in the case of the passenger pigeon. Throughout the late nineteenth century, the great oak, beech, and chestnut forests of the U.S. northeast and midwest were shrinking. The situation caused by the felling of beech trees was especially dire. It takes a beech tree 40 years to produce seed, which was a staple of the pigeons' diet, and the big old beech trees were disappearing the fastest. As a line on a graph, the decline of the passenger pigeon is the same as the line marking the rate at which America's great eastern forests were being felled. The pigeons disappeared so quickly that for several years after the American Ornithologists' Union declared the birds extinct in 1912

many Americans still refused to believe it was possible. Even if they were gone, the thinking went, it must have been because the birds had migrated to South America or had succumbed to some catastrophic viral disease.

That's one of the more peculiar things about extinctions: when an animal disappears—especially a bird—nobody wants to believe it. It's as though the animal simply refuses to leave the human imagination. It becomes a ghost that haunts the sleep of its former tormentors and would-be saviours alike.

The eskimo curlew vanished in this way, not so much with a bang from a hunter's rifle as with a chorus of whimperers. Although the last bird was killed in the 1960s, people were still hearing that chorus in the distant sky as late as the 1980s. Like the passenger pigeon, flocks of eskimo curlews formed like clouds, and its disappearance was also the result of a series of unintended consequences. Hunters were certainly among the culprits—as passenger pigeons became more scarce, bird hunters turned increasingly to shorebirds like eskimo curlews. But habitat loss inflicted deeper wounds.

As the great prairies were emptied of buffalo and converted to wheatfields, cornfields, and cow pastures, an ecological domino effect that ecologists call a *trophic cascade* was set in motion. An especially important domino in the line behind the eskimo curlew was yet another sky-darkening creature, the Rocky Mountain locust. In their final, superabundant years, locusts left everything they touched black and scorched and dead in massive tracts of landscape between the Gulf of Mexico and Saskatchewan. In one especially gruesome swarm, in 1875, locusts devoured every green and living thing over an area almost three thousand kilometres long and 200 kilometres wide. Then they turned the centre of the very continent into a rank and fetid mass of their own dead bodies. A quarter of a century after that event, the locusts mysteriously disappeared from the face of the earth. The last time anyone saw a living Rocky Mountain locust was in 1902.

While one might be forgiven for caring little that the locust is gone, its departure was probably the final nail in the eskimo curlew's coffin, the event that condemned the bird to a state of latent extinction that ended with its oblivion. The locusts had been a primary food source for the eskimo curlews during their long northward migrations from Patagonia to their breeding grounds in Canada's Northwest Territories. By the early 1900s, an eskimo curlew sighting was already a rare event. The last one seen in the wild was shot in Barbados in 1963. Just as the IUCN was reluctant to concede the extinction of the glaucous macaw even though one had not been seen since the 1960s, so the U.S. Endangered Species Act still chooses to list the eskimo curlew as endangered. Even the venerable Audubon Society hasn't given up hope that there may still be a small flock out there somewhere, unnoticed because of the birds' resemblance to other curlew species. In the 1990s, sightings were still occasionally reported, as though the birds' ghosts were appearing to people from time to time.

In this same way the Lord God Bird, as the ivory-billed woodpecker was called, slowly retreated from the known world into the deep recesses of the human subconscious.

Once abundant in the old-growth forests of the southern United States, the ivory-billed woodpecker was a gorgeous creature, the "king of the woodpeckers," much loved by bird fanciers. For decades, the official verdict had been that the last reputable sighting was of a lone female in Louisiana, in 1944, in a forest on the Tensas River, one of the last forests of the kind the birds require to survive. Wildlife artist Don Eckelberry spent two weeks catching occasional glimpses of the bird for his sketches, while German prisoners of war felled trees all around him and the Chicago Mill and Lumber Company only barely tolerated his presence in the woods. Despite appeals from the U.S. federal government and entreaties from the governors of Louisiana, Mississippi, Tennessee, and Arkansas, the logging company kept right on cutting trees.

More than a half-century after Eckelberry's visit to the Tenzas, ivory-billed woodpecker sightings were still being reported to wildlife authorities, universities, and the Audubon Society. They came from forests throughout the southern United States, and from as far away as Cuba. Well into the 1990s, government wildlife officials were still getting calls from people claiming to have seen a Lord God Bird, or to have heard one. The call of the ivory-bill was haunting. Its cry, when injured, was like that of a human child.



The macaws had come from the west, and they'd flown low, down at Curú's beautiful curving beach, right past the wildlife refuge headquarters, which is what they call the cighthouse, a gift shop, and a collection of shacks where research volunteers and visiting biologists stay. The birds had flown all along the beach at about tree height, and they were beautiful and bold and graceful. Then they'd quickly disappeared into the palms just below the *mirador*, a lookout point that commands a grand view of Curú's beach, the Tortugas Islands just offshore, and the blue Pacific beyond.

So I was told, anyway. It was a fleeting event and I'd missed it. At the time, I was just a few paces from the beach. An extended family of howler monkeys had been engaged in difficult and comical negotiations with a group of capuchin monkeys about how to fairly divide a clutch of plantains. I'd found it all fascinating, and while I was taking it in I'd missed the macaws.

It was also because of howler monkeys that I was finding it so hard to stay awake at the observation post, waiting for the macaws to come for their sunflower seeds. The night before, a troop of howler monkeys had roosted in the trees directly above the little roadside inn where I was staying near Cabo Blanco. They'd kept me awake most of the night. There is no charitable way to describe the sound a howler monkey makes. They are small monkeys—an adult male is barely the

size of an 18-month-old child—but they have hollow hyoid bones in their throats that act like echo chambers, and when they're giving out of themselves the unearthly bellowing can be heard several kilometers away. They carry on this way to mark their territory, for hours on end. The racket provides much amusement for the surfers who flock down the bone-jarring roads to the remote beaches along Nicoya's southern shore every winter. But when the howlers are at it in a tree right above you on a moonless night, you'd think you were surrounded by giant gorillas, and they were all shouting at you.

So I sat in my camp chair with my borrowed binoculars and a clear view of the two seed boxes through the trees, and waited. I made a great effort to stay awake so I could know for myself the experience of seeing a scarlet macaw where it belongs, in its own forests, with its unmistakable feathered costume of bright red and brilliant yellow flashing and its long, blue-green tail feathers. I watched and waited, and I listened, too, but in the dull, distant chatter of bird calls I couldn't make out the macaw's distinctively resonant squawking, no matter how hard I tried. There were instead the timorous cries of what I took to be parakeets, maybe red-lored parrots, or perhaps yellow-naped parrots or orange-fronted parakeets. Every so often, I would see something flicker from the corner of my eye, only to turn out to be a grackle swooping down to land on one of the seed boxes to peck a few seeds before flying off.

An iguana climbed one of the poles in the clearing where the seed boxes were hanging, and it sat motionless and barely noticeable, sunning itself. The crickets picked up again. After a while, nothing moved. Another coconut fell. I waited, and the lazy sun glistened through the green palm canopy, and the iguanas went quietly to and from their appointments. The strange blue butterflies fluttered through the perfumed air.

While I was waiting for the macaws, a team of 50 ornithologists and field biologists was reviewing the results of a top-secret survey of

the Cache River and White River wildlife refuges in Arkansas's Big Woods area. Led by the Nature Conservancy and the venerable Cornell University Laboratory of Ornithology, the scientists were gathering evidence to confirm one of the most credible reports of a Lord God Bird sighting in the 60 years that had passed since Eckelberry's days on the Tensas River.

Gene Sparling, of Hor Springs, Arkansas, had convinced Cornell that a bird he spotted on the Cache River on February 11, 2004, just might have been an ivory-billed woodpecker. Two weeks later, Sparling brought Tim Gallagher, editor of Cornell's *Living Bird* magazine, and Bobby Harrison, associate professor at Alabama's Huntsville College, to the bayou where he saw the bird. A huge black and white bird answering every description of an ivory-billed woodpecker flew across the bayou not more than 25 metres from them. The trio agreed that there was no way they could be mistaken. Harrison sat down on a log and wept.

The Cornell ornithologists and the Nature Conservancy followed up with an intensive search. The result was several fleeting sightings, audiotape of some very woodpecker-like sounds, and, most dramatically, a few seconds of videotape that shows a woodpecker that looks very much like a Lord God Bird. The discovery was announced in April 2005. It was one of the most widely and enthusiastically reported news stories of the year—the ornithological equivalent of discovering a sasquatch, or finding Elvis alive after all.

By July the findings were mired in controversy. Scientists with Yale University and the University of Kansas were the main skeptics, and their dissent was reported almost as widely as the initial story. But the fuss was short-lived. After listening to recordings unavailable during the initial flurry of announcements, the skeptics came on side. Yale's Richard O. Prum said the tapes left him "strongly convinced" of at least a pair of Lord God Birds in the Arkansas swamps. After hearing the audiotapes, Mark B. Robbins of the University of Kansas agreed. He said he was "absolutely stunned."

But unlike those Cornell ornithologists, or those stubborn birders who bushwack across the Volga delta looking for curly pelicans, I spent my last day at Curú resigned to the idea that I would not see the birds I'd come for. I spent the time down at the beach with my wife, Yvette, who was itching to get to the surfing beaches on Nicoya's west coast before we headed home. I'd been told there was a slim chance that I'd see a macaw along the banks of a lazy little river that winds through a palm forest to the beach at Curú, so on our way out we waded up the river, hip deep, as far as a rustic-looking rope footbridge. When we scrambled up the bank, we noticed a sign: Beware Crocodiles. It had not been my best day.

Walking the trail back to the cookhouse, I took comfort in the knowledge that Costa Rica was evidence enough that all roads do not lead into the Valley of the Black Pig, and that the fate of the rare things of the world is not necessarily extinction or the living death of zoos and aviaries. Life's greatest enchantments are those things you have to wait for. You have to persevere, and sometimes you just get lucky. I was telling myself these things on the trail when something caught my eye—a flash of red, high in the forest canopy.

There, in the fronds of a palm tree, were two impossibly beautiful scarlet macaws.