

skinny and small, within a limb of branches representing what lives within horseshoe bats.

What did this mean? It meant that horseshoe bats are a reservoir, if not *the* reservoir, of SARS-CoV. It meant that civets must have been an amplifier host, not a reservoir host, during the 2003 outbreak. It meant that no one knew just what had happened in Guangdong that winter to trigger the outbreak, although Li and his colleagues could speculate. (“[An infectious consignment of bats](#) serendipitously juxtaposed with a susceptible amplifying species,” they wrote, “could result in spillover and establishment of a market cycle while susceptible animals are available to maintain infection.” Infection by association. Susceptible animals might include not just masked palm civets but also raccoon dogs, ferret badgers, who knows what. So many different candidates pass through the wildlife supply chain.) It meant that you could kill every civet in China and SARS would still be among you. It meant that this virus existed—facing its ecological limits and opportunities—within a culture where “an infectious consignment of bats” might arrive at a meat market as a matter of course. It meant, Let the diner beware. And it meant that further research was needed.

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Aleksei Chmura is a young American researcher of mild demeanor, clean-cut appearance, diverse experience, and catholic tastes. He grew up in Connecticut, quit college, traveled, worked as a baker, trained as a chef, shifted to furniture restoration, and reentered academia after ten years to study environmental science. Employed, when I first encountered him, in an administrative capacity by the Consortium for Conservation Medicine (a program of Wildlife Trust, which has since been renamed EcoHealth Alliance), he was also gathering data toward a doctorate on the ecology of zoonotic diseases in South Asia, particularly SARS. For that he was collecting samples from bats. He invited me to come out and see some of the work. On the agreed date he met my flight in Guangzhou, and I suppose the durian should have been my first signal that he was a temerarious eater.

Just in from the airport, Chmura and I joined a group of his friends at Sun Yat-sen University and plunged into a snack of the world’s stinkiest fruit. It’s a large spiky thing, a durian, like a puffer fish that has swallowed a football;

pried open, it yields individual gobbets of glutinous creamy pulp, maybe eight or ten gobbets per fruit, and an unwelcoming bouquet. The pulp tastes like vanilla custard and smells like the underwear of someone you don't want to know. We ate barehanded, slurping the goo between our fingers as it oozed and dripped. This was before dinner, in lieu of peanuts and beer. Then we went out to a restaurant where Chmura ordered us a dish featuring congealed pig's blood—in little hepatic cubes, like diced liver—with bean sprouts and hot red peppers. By late evening my shirt was soaked with sweat. Welcome to China. But I was keen to learn what Aleksei Chmura knew, to benefit from his voracious curiosity, and I would eat my way toward insight at his side, if necessary.

Next day we flew onward to the city of Guilin, northwest of Guangzhou, in a river valley famed for its karst-mountain vistas and its caves. The mountains rose abruptly, like croquettes on a plate, but they were forested in green and riddled with natural cavities, chutes, potholes, and nooks weathered out through the soluble limestone of the karst. It was a good place to be a tourist, if you wanted dramatic scenery, and a good place to be a bat, if you wanted to roost. We hadn't come for the scenery.

But before the bat work began, Aleksei took me out to a food market for a glimpse of what's presently available in Guilin's aboveground economy. Strolling the narrow corridors between stalls, I saw vegetables laid out in neat bundles. The fruits were carefully piled. The mushrooms were gnomish. The red meat was sold mainly in slabs, joints, and pieces by women at large plywood tables, wielding sharp cleavers. The catfish, the crabs, and the eels churned slowly in aerated tanks. The bullfrogs huddled darkly in scrums. It was grim to be reminded how we doom animals with our appetite for flesh, but this place seemed no more odd or morbid than a meat market anywhere. That was the point. This was the “after” condition in a “before/after” contrast revealing how SARS had put a damper on yewei. What had changed here in recent years, Aleksei told me, was the disappearance of the trade in wildlife. Things had been far different in 2003—and even in 2006, when he first started visiting wet markets in southern China.

At the Chatou market in Guangzhou, for instance, he had seen storks, seagulls, herons, cranes, deer, alligators, crocodiles, wild pigs, raccoon dogs, flying squirrels, many snakes and turtles, many frogs, as well as domestic dogs and cats, all on sale as food. There were no civets, not when he saw the place; they had already been demonized and purged. The list he recited was

just a selection, from memory and from his own discreet inspections, of what food markets were offering then. You could also buy leopard cat, Chinese muntjac, Siberian weasel, Eurasian badger, Chinese bamboo rat, butterfly lizard, and Chinese toad, plus a long list of other reptiles, amphibians, and mammals, including two kinds of fruit bat. Quite an epicure's menu. And of course birds: cattle egrets, spoonbills, cormorants, magpies, a vast selection of ducks and geese and pheasants and doves, plovers, crakes, rails, moorhens, coots, sandpipers, jays, several flavors of crow. One fellow, a Chinese colleague of Aleksei's, told me that the bird-and-bat trade was covered by an adage: "People in south China will eat everything that flies in the sky, except an airplane." He was a northerner himself.

After the SARS outbreak and the civet publicity, local governments (presumably with some pressure from Beijing) had tightened down, enacting new restrictions against wildlife in the markets. The Era of Wild Flavor hadn't ended but it had been driven underground. "There's still a lot of people in China that believe eating fresh, wild animals is good for your respiratory system, it's good for sexual potency, whatever," Aleksei said. But tracing the traffic now, let alone measuring it, was difficult. Market sellers had gotten wary, and especially wary of obvious outsiders such as Aleksei, a westerner speaking hesitant Mandarin, who might come snooping around. Wild animals were still available, no doubt, but they would be under the counter, or going out the back door, or traded from a van that stopped on a certain street corner at 2 a.m. If you wanted to feast on a Burmese star tortoise or a muntjac nowadays, you would need to know somebody who knew somebody, pay premium rates, and make your arrangements beyond the sight of the crowds.

Aleksei himself, I discovered as we shared time and meals, harbored a robustly unusual attitude on the subject of carnivorism—unusual, anyway, for an American. He didn't judge yewei harshly. He didn't disapprove of eating an animal, virtually any animal, so long as it hadn't been illegally harvested, it didn't belong to a threatened species, and it wasn't contaminated with the sort of pernicious microbes he'd come to study. One evening as we sat together over a pot of delicate little fish and bamboo shoots, crunching the fish heads and backbones as we chewed, I tried to push him to articulate his scruples. I suppose my questions were obvious and simplistic. What animals *won't* you eat, Aleksei? Tell me what kinds are off limits. Primates? Would you dine on a monkey? Without a blink he said yes, with a proviso: that the

monkey meat seemed appetizing. What about ape? If you were in Africa, would you eat gorilla or chimpanzee? “I can’t draw the line there,” he answered. “It’s either eat meat, or don’t eat meat. You’d have to test me by putting human flesh in front of me.” This could have sounded ghoulish, provocative, or just silly, but it didn’t, because he was earnestly trying to answer my hypothetical with candor and logic. Taxonomy simply wasn’t among his guiding standards of diet. Back in New York, he had told me, he lives mainly on fruit.

We spent the following days, in and around Guilin, trapping bats. The karst mountains, with all their erosional hollows, offered plenty of roosting sites. The trick was to find which caves were presently in use. For scouting the good spots, and for help with the netting and processing, Aleksei was assisted by several Chinese students, including a young ecologist named Guangjian Zhu, from East China Normal University in Shanghai. With years of experience, Guangjian was an expert handler of bats, sure-fingered and steady with the delicate little animals as they tried to wriggle free from a mist net, bite him, and escape. He was small, lean, and strong, an agile climber, an unhesitating spelunker, traits that serve well for studying bats in the wild. Yang Jian, another student, knew the local terrain and led the way to the caves. Late on the third afternoon, we four took a taxi to the outskirts of Guilin and, armed with our nets and poles, began walking down a narrow village lane. Late afternoon is when a person goes trapping for cave-roosting bats, so that they can be caught as they emerge for a night’s feeding.

Just outside the village, with the sun sinking blearily behind Guilin’s smog, we tromped through a citrus grove, then a pea field, then a zone of high weeds, and ascended on a faint tunnel-like trail through the hillside vegetation, a thicket of thorns and vines and bamboo. After a brief traverse, we came to a hole in the slope, not much larger than an old cellar door. Guangjian and Jian climbed down into it and disappeared; Aleksei and I followed. Beyond the hole was a small foyer and, on the far side of that, a low slot, like a mountain’s smirk, leading onward. We belly crawled through and came up dirty in a second small chamber. Not for the claustrophobic. We crossed that chamber and then butt skidded through another low gap, down another rabbit hole into a third chamber (this all felt a little like being swallowed through the multiple stomachs of a cow), which opened out wider and deeper. Here we found ourselves perched high above the floor, as though on the sill of a second-floor window. We could feel the flutter of little bats

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whirling through the air around our faces. Which of them carries this deadly virus? I wondered.

Bats everywhere, that was good—but would we, from our perch in a high corner, be able to catch any? I couldn't see how. Then again, I couldn't see much of anything. By the light of my headlamp, I found myself a small ledge of knobby limestone on the sloping wall of the room, settled my rear upon it, and waited for whatever would happen next. What happened, to my surprise, was that Aleksei and Guangjian spread a mist net across the hole we had just come through, sealing us inside the chamber. Now the bats were sealed in too. The air was cozily warm. Mmm, yum. The net immediately began stopping little creatures, scarcely audible as they hit and stuck, like flies in a spider's web. Exit blocked, they couldn't escape us. We were the spider.

Aleksei and Guangjian untangled the bats quickly, dropping each into a cloth bag and handing the bags to me. My assigned job was to hang the bags, like laundry, on a horizontal pole I had rigged into place between rocks. It seems that bats remain more calm and comfortable—even bats in cloth bags—when they dangle. Jian meanwhile stood at the bottom of the chamber, sweeping the air with a butterfly net to catch other bats in flight, and cursing at them mildly in English when he missed.

At this moment I became conscious of a dreary human concern: Though we were searching for SARS-like coronavirus in these animals, and sharing their air in a closely confined space, none of us was wearing a mask. Not even a surgical mask, let alone an N95. Um, why is that? I asked Aleksei. "I guess it's like not wearing a seat belt," he said. What he meant was that our exposure represented a calculated, acceptable risk. You fly to a strange country, you jump into a cab at the airport, you're in a hurry, you don't speak the language—and usually there's no seat belt, right? Do you jump out and look for another cab? No, you proceed. You've got things to do. You might be killed on the way into town, true, but probably you won't. Accepting that increment of risk is part of functioning within exigent circumstances. Likewise in a Chinese bat cave. If you were absolutely concerned to shield yourself against the virus, you'd need not just a mask but a full Tyvek coverall, and gloves, and goggles—or maybe even a bubble hood and visor, your whole suit positive-pressurized with filtered air drawn in by a battery-powered fan. "That's not very practical," Aleksei said.

Oh, I said, and continued handling the bagged bats. I couldn't disagree. But what I thought was, Catching SARS—*that's* practical?

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Back at the laboratory in Guilin, Aleksei divided the processing chores into a sort of assembly line, with Guangjian as chief handler, Jian assisting, Aleksei himself intervening at delicate moments; all three of them had pulled on blue latex gloves. Guangjian coaxed each bat out of its bag, gripping it gently but firmly. He weighed it, measured it, and identified it by species, while Jian recorded those data. *Rhinolophus pusillus*, least horseshoe bat. *Rhinolophus affinis*, intermediate horseshoe bat. *Hipposideros larvatus*, intermediate roundleaf bat. From each animal, Guangjian took mouth-swab and anal-swab samples, handing the swabs to Jian, who broke off the cotton tips and let them drop into tubes for preservation. Then Aleksei leaned in with a needlelike tool to puncture a certain small vein near the bat's tail—just a light prick, yielding one or two drops of blood. You can't take five milliliters by syringe from such a small animal, he had explained, as you might from a monkey or a civet; you'd suck the poor bat dry. Two drops were enough for two samples, duplicates, each of which could be screened independently for virus. Jian drew the blood away with a delicate pipette, drop by drop, and released it into a tube of buffer. One complete set of blood samples and swabs would go to Shanghai, the other to New York.

The three men worked smoothly together, all tasks assigned and routinized. The routine reduced risk of jabbing one another, stressing a bat unnecessarily by clumsiness or delay, or losing data. After processing, the bats were released alive from the third-floor laboratory window—most of them, anyway. There were some unintended fatalities, as there often are in any capture and handling of wild animals. Tonight, among twenty bats caught, two died. One was a least horseshoe bat, tiny as a shrew, killed instantly in the cave by a blow from the rim of Jian's butterfly net. If he couldn't release it, Aleksei decided, he should at least dissect the dead bat, salvaging what data he could.

I watched over his shoulder as he worked with a small scissors, puncturing the skin and then zipping upward across the little bat's chest. He spread the pelt back with his fingers—a light pull was enough—to reveal huge breast muscles, reddish purple as sirloin. This animal was built like Mighty Mouse. Aleksei cut through those flight muscles and then through the bones beneath, too delicate to give much resistance to his scissors. With a pointy aliquot, he drew some blood directly from the heart. He snipped out the liver and spleen, dropping them into separate tubes. And for these tasks, I noticed, the seatbelt analogy didn't apply; in addition to his blue gloves, Aleksei donned an N95

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mask. Still, it was very undramatic. Only later did I notice the connection between least horseshoe bats and what Wendong Li's group had discovered. The least horseshoe bat is one of the suspected reservoir hosts of the virus.

Once finished, with the blood and organs preserved, Aleksei dropped the carcass into a Ziploc bag. He added the other bat carcass, after dissection, to the same bag. Where do those go? I asked. He pointed to a biohazardous waste box, specially designed for accepting suspect materials.

"But if they were food," he added, "they'd go there," indicating an ordinary trash basket against the wall. It was a shrug back toward our dinner discussions and the tangled matter of categorical lines: edible animals versus sacrosanct animals, safe animals versus infected animals, dangerous offal versus garbage. His point again was that such lines of division, especially in southern China, are arbitrarily and imperfectly drawn.

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Several days later we traveled down to the city of Lipu, about seventy miles south of Guilin, to visit a rat farm that interested Aleksei. The trip took two hours on a rather luxurious bus—one offering seat belts and bottled water. At the bus station in Lipu, while waiting for our local contact to arrive, I noticed a sign stipulating security restrictions. The sign was in traditional Chinese characters but I could tell from the illustrations what was disallowed on board Lipu–Guilin busses: no bombs, no fireworks, no gasoline, no alcohol, no knives, and no snakes. We weren't carrying any.

Mr. Wei Shangzheng eventually pulled up in a white van. He was a short, stocky, amiable man who laughed easily and often, especially after his own statements, not because he thought he was funny but from sheer joy at life's curious sweetness. That's the impression I took, anyway, as his words came translated by Guangjian and his attitude shone merrily through. We climbed into his van and rode six miles to a village northeast of Lipu, where Mr. Wei turned onto a narrow lane, then through a gate, above which was a line of calligraphy announcing: SMALL HOUSE IN THE FIELD BAMBOO RAT RAISING FARM. Beyond was a courtyard surrounded on three sides by cinderblock buildings. Two wings of the building were filled with low concrete pens. The pens contained silver-gray creatures, small-eyed and blunt-headed, that looked like gigantic guinea pigs: Chinese bamboo rats. Mr. Wei gave us a tour up and