ELEMENTS

IS THE RAT WAR OVER?

In New York, a rat czar and new methods have brought down complaints. We may even be ready to appreciate the creatures.

By Rivka Galchen

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Photograph by Lucia Buricelli

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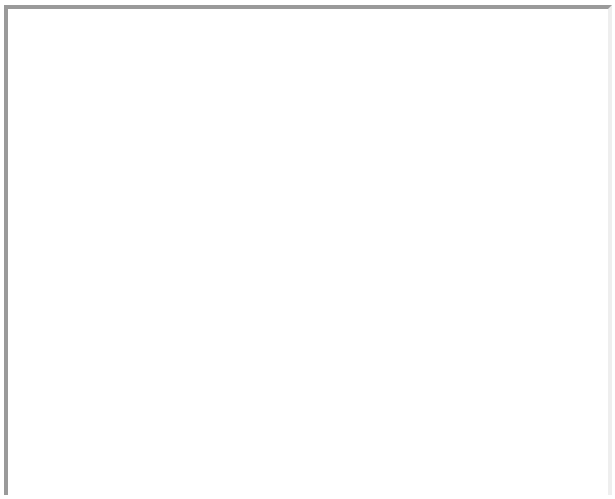
Rats were leaving Manhattan, hurrying across the bridges in single-file lines. Some went to Westchester, some to Brooklyn. It was the pandemic, and the rats, which had been living off the nourishing trash of New York's densest borough for generations, were as panicked about the closure of restaurants as we were. People were eating three meals a day at home, and the rats were hungry. At least that was the story going around. P., a Brooklyn friend of mine, told it to me. "We had rats in our front yard," P. said. "And also in our back yard." Respectable sources confirmed her sense of suddenly seeing rats everywhere. In 2021, there were twenty-five thousand reported rat sightings, more than double the number from 2010.

P. and her husband thought that they would find a way to coexist with the rats; that's the kind of people they are. Some neighbors of theirs, who had been passing pandemic evenings on their stoops, spoke of seeing "a huge patriarchal rat" making its way into the crevices of the retaining wall of P.'s front garden. P. and her husband replaced the charming old wall with a solid slab of concrete. Nevertheless, their son and his friends had been spending a lot of time in the back yard and reported seeing one of those fabled head-to-tail rat parades, "where it looks like a decision has been made, and they have a destination in mind," P. said. One day, while watching a movie, P. looked down and saw rat feces on the sofa. "At that point, it was a war," she said.



Winning a rat war is famously difficult. Poison isn't the definitive move that most people think it is, and it also can result in a vast underground network of tunnels becoming dense with decaying rat corpses. Among the many steps that P. and her husband took, the inarguably cutest one—the only cute one—was driving out to Amish country to pick up a rat terrier, though they returned with not one but two: a sister and a brother, Tillie and Brutus. That was another story going around at the time—that terriers could solve rat problems.

The dominant species of rat in New York City, and in most American cities, is *Rattus norvegicus*. These Norway rats are also known as brown rats. Sewer rats are brown rats that live in sewers, and street rats are brown rats that live on the streets. Norway rats did not originate in Norway, though for a time it was thought that they did. They trace back to the high-steppe area that is now China and Mongolia, and are thought to have arrived in New York Harbor sometime in the seventeen-hundreds, displacing the extant *Rattus rattus* population. Norway rats can and still do sometimes live in the wild, but more commonly they are connoisseurs of old pizza slices; empty coffee cups; crumbs from a bacon, egg, and cheese on a sesame bagel. They are urbanites. And, in terms of population and reach, they are a tremendous success.

The key species in rats' ecosystem is us. But they are generally unwelcome. The rats that live among us don't merely have unsettlingly long tails and a bad reputation. Cities work to keep their numbers down because they pose real perils. They are carriers of plague, murine typhus, hantavirus, rickettsialpox, rat-bite fever, leptospirosis, lymphocytic choriomeningitis, and tularemia, to name only the marquee diseases. They can chew through electrical wires. (The word "rodent" comes from the Latin *rodere*, to gnaw.) As the rodentologist Bobby Corrigan observed, "Even if they didn't carry any disease, a wire looks like a plant stem to them. If they're in your ceiling, or in your utility wall, or on a plane—that's a no-brainer."

When a family (or business or neighborhood or city) needs help with a rat problem, they often call Corrigan, a seventy-five-year-old independent consultant. He has worked in Copenhagen, Chiang Mai, Buenos Aires, Tokyo, London, Quito, Vancouver, and Paris, and in forty-six states. He also leads the New York City Department of Health and Mental Hygiene's "Rat Academy," which offers courses on rat prevention.

A self-described "nature nerd," Corrigan grew up as one of eight children in Flatbush, Brooklyn, and paid his way through a degree in entomology, at SUNY Farmingdale, by working as an exterminator. Later, as a graduate student in rodentology, at Purdue University, his research entailed hours upon hours of observing rats outside the lab, in such settings as chicken farms and granaries. He

also spent many weekends doing observational overnights in a rat-infested barn. Although much was known about rats in laboratories, little was understood about them out in the wider world, and that remains somewhat true even today. "They're amazing mammals," he told me, emphasizing that the genetic makeup of *Homo sapiens* is extremely close to that of rats. "But a rat in my house—not good."

A devoted reader of Sherlock Holmes stories, Corrigan came to see a parallel between solving mysteries and solving rat problems. "They're so cryptic," he said of rats. "And that whole thing gets me going. It's, like, I need to know where they live, how they do their thing, how they hide from us." At the first-ever National Urban Rat Summit, held in New York City, in 2024, he gave a presentation on how remote rat-sensor technologies are enabling early intervention, before the problem gets out of hand. Treating a rat issue by putting out poison is "definitely not the smartest thing," not only because those poisons end up affecting hawks, owls, raccoons, opossums, and neighborhood cats but also because it fails to quash the problem. At the rat summit, Corrigan said, "There were no presentations from exterminators saying how they get the best kill, because that's not what it's about." Poison wins battles, not wars. He explained to me that rats reproduce so quickly that you would need to have a ninety-six-per-cent kill rate to prevent a population rebound, a rate that extermination services almost never achieve. "Rats in a city, rats in a block—that's an environmental issue," Corrigan said. "It's not a pesticidal issue." Rather than thinking of exterminating rats, we should ask: Why are they here? "But that has no pizzazz to it," he said. "No attention-grabber. It's, like, 'Hey, you're telling me that I need to get better garbage cans?' "

Rats are appealing, though, if you inhibit an instinct or two. When Corrigan was sleeping in the rat-infested barn, he recalled thinking, "I could have sworn that rat just brought a gift to this other rat." At the time, he discounted his observations, telling himself that it could have been coincidence, or that maybe he was losing it. But these days, he reads studies confirming much of what he saw. "I *was*

witnessing altruism," he said. "I *did* see kind rats. I *did* see rats that were doing these happy dances. And I saw depression and sadness and anger and everything." Recent work has demonstrated that rats have imaginations. Or, at least, that is a respectable interpretation of the relevant studies. While still, they daydream of making their way along paths they have followed to food in the past. Kelly Lambert, a neuroscientist at the University of Richmond and the author of the 2011 book "The Lab Rat Chronicles," conducted experiments designed to look at learning in rats. After observing that the rats learned to drive miniature vehicles not only in pursuit of treats but also just for fun, Lambert shifted the focus of her research to look into how positive events—joyrides, for example—affect the brain.

In April, 2023, not too long after Brutus and Tillie moved to Brooklyn, Mayor Eric Adams appointed Kathleen Corradi as the director of rodent mitigation, a.k.a. the rat czar. As part of Adams's war on rats, the city had run a social-media campaign that spoofed the scrolling text of the opening of "Star Wars": "For generations, trash bags sat on the curb for hours and hours every day. The Rat Rebellion feasted by night, growing stronger and meaner. . . ." Jason Munshi-South, a behavioral biologist and urban ecologist at Drexel University, who has done extensive research on New York City rodents, said of Adams's Rat Wars initiative that he at first "thought it was going to be terrible, because the ad he put out was, like, they were going to murder them all." But Munshi-South was impressed by Corradi, under whom a variety of rat-control measures were deployed.

There was *some* murdering: carbon monoxide was pumped into rat burrows under tree beds, an approach that some saw as an improvement on poisoning and that others saw as cruel and of limited efficacy. The "better trash cans" approach was also tested, with a pilot program on eight West Harlem blocks of mod-looking, key-card-access trash bins. Rat sightings in the area fell by around sixty per cent, and the program has since expanded. More buildings now must put their trash in rat-proof bins instead of in trash bags, and new side-loading trucks collect those

containers more quickly. Another pilot program is looking at the potential effectiveness of edible rat birth control. In 2024, rat complaints went down by about a quarter, and in 2025 they again declined. Corradi stepped down in October, and rat-aware New Yorkers hope that Zohran Mamdani will maintain the rat-czar position.

Brutus and Tillie, the rat terriers, have also impressed. Tillie regularly stays out in the back yard after midnight, patiently waiting for a rat to emerge. Brutus sometimes barks them out. He and his sister have both caught large rats, whose corpses they have presented to their humans. Nowadays, with the diminished rat population, Brutus and Tillie mostly catch rat pups. "They're quite cute, it's quite sad," P. said. "Our rat guy"—a local expert, who began the de-rattification with less celebrated methods, including poison—"says the dogs have sent a message to the neighborhood."

This past summer, the researchers Emily Mackevicius and Ralph Peterson went searching for some of the city's surviving rats. They weren't trying to kill rats but to record them. Mackevicius's background is in neuroscience, and she is a co-founder and a director of Basis, where she leads the Collaborative Intelligent Systems group, of which Peterson is now a member. (Basis is a nonprofit applied-research organization founded to do "human values first" A.I.-assisted research.) The researchers made audio recordings as well as heat-mapping videos of rats in Central Park, Marcus Garvey Park, and the Union Square subway station. "Sometimes friends will want to come bird-watching with me, but everyone wants to come along when I'm doing a rat walk," Mackevicius told me.

The researchers monitored audio between zero and two hundred kilohertz. Sounds above twenty kilohertz are ultrasonic, which can't be heard by humans but can be heard by rats. *Most* rat vocalizations are ultrasonic. "They're quite distinct," Peterson said. "When you're looking at a picture of the audio"—a visualization of

sound called a spectrogram—"you can see the rat vocalizations outside of the typical noise that you would see in the city, which is centered in the lower-frequency bands." It turns out that city rats are "chatting" almost constantly. If humans could perceive the ultrasonic range, rat chirruping would be as much the sound of New York as sparrows, starlings, and traffic.

Although the researchers can't straightforwardly decode the rat sounds, they can make reasonable surmises. A rat foraging in a garbage bag made repeated "alarm-call-style" sounds. "It makes a kind of sense. If you're out in the world, in a dangerous situation—like foraging for food in a trash bag—these vocalizations could be like a beacon," Peterson said. "They could let your family know where you are, and that you're O.K."

It was the successful techniques for recording, more than the recordings themselves, that impressed Munshi-South. He had already assumed that rats were in constant communication. Corrigan recalled recordings of rats made during his student days, with more basic equipment. "I call it rat song," he said, making the comparison to whale song. Peterson related what followed the whale-song recordings of the nineteen-sixties and seventies made by the biologist Roger Payne: a near-total moratorium on whale hunting.

Incidental findings of a study can be more affecting than what is sought. Munshi-South recalled work that his team had done on rat birth control. "As part of that study, we had put up cameras to monitor whether the rats were drinking the birth-control bait," he said. "We had thousands of pictures of rats grooming each other, playing with each other, wrestling." He contrasted that with the more typical image humans have of rats, hurriedly scurrying: "We tend to see them when they're nervous."

While working on a rat survey in a subway tunnel on the Lower East Side, Corrigan saw a rat in the beam of his flashlight. It didn't scamper away. Instead, it stood up on its haunches and stared directly at him. Most rats will run

if you make a sudden movement. “This one did not,” he said. “This rat was curious about me.” Corrigan felt compelled to follow the rat. “I was, like, ‘We had this moment. Is there anything to that?’ ”

Soon he was in an unlit back room. He couldn’t see, but he could hear rat sounds above his head, and he could smell rat. Standing still, with his back against a wall, he took out his camera, figuring that maybe he would learn something. “One of their vocalizations is that they grunt when either they’re nervous or curious,” he said. “And then they chatter their teeth, those incisors, right? Like sabre-rattling.” Corrigan had the sense that the rat was nearby, on a ledge above his head: “I could hear his breathing.” Rats have poor eyesight. They use their long whiskers—vibrissae—to do what’s called sweeping, or whisking, which provides them with a detailed sense of the world around them. They sweep walls, they sweep objects, they sweep other rodents as a kind of greeting. That rat leaned down toward Corrigan, “and he swept those long whiskers across my face,” he said, running his fingertips along his cheek. “I’m, like, What was that? Like a handshake? A nice-to-meet-you thing?” After the sweep, the rat disappeared into the dark again. No stare, no attack. “Swimming with a whale has long been on my bucket list,” Corrigan told me. “But I did a facial sweep with a rat, which may be just as good as the whale swim.”

When Corrigan resurfaced, he was asked if he had seen any rats. He had been down there, after all, on a job. “I said, ‘Not a single one,’ ” he told me. He was emotionally overwhelmed. He had never lied like that. “It sounds silly, but it’s the only time in my career that’s happened. I thought, If that rat is super cool in some way, in its relationship with other species, including people—we need those genetics.” Corrigan, a natural talker, was reaching for words to articulate his feelings. “If rats could speak, they’d say, ‘You guys are pretty crummy co-partners on planet Earth.’ I’m sure if they could curse it would be one long string of curses at us.” ♦