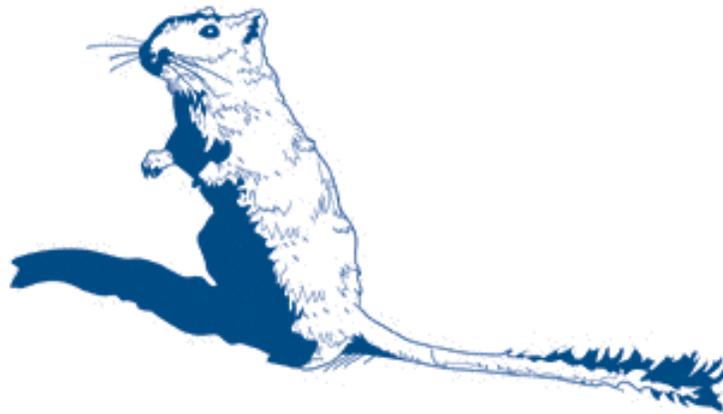


ANECDOTAL EVIDENCE

AN INVESTIGATION INTO  
XINJIANG'S GROWING SWARM OF  
**GREAT GERBILS**



*which may or may not be*  
LOCKED IN A DEATH-STRUGGLE  
*with the*

**GOLDEN EAGLE**

*with important parallels and/or implications regarding*

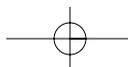
KOALA BEARS  
THE PIED PIPER  
SPONGMONKEYS

CANE TOADS  
BLACK DEATH  
TEXT-MESSAGING

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*by* JOSHUAH BEARMAN

IT WAS EARLY last spring when people started noticing. There was a late thaw, ice still on the ground, and already a lot of gerbils—numerous, fat, and healthy-looking. Then came heavy rains, and the seasonal pastures around the edge of the Junggar Pendi desert bloomed with taller and greener grass than usual. These were the makings of a really bad gerbil year. By early summer, it was. Changji, Tacheng, the Altay foothills—half of Xinjiang province was overrun by swarms of oversized gerbils.



There are now so many—at least a billion by some estimates—that they have affected around five million hectares, or an area the size of Costa Rica. They’ve eaten the grass, attacked crops, killed trees by tunneling through the root systems, and even undermined roads and railways. This is because gerbils are fossorial, meaning they dig a lot, excavating as many as two thousand holes per acre. And these gerbils are so big—about a foot long, sixteen inches with the tail—that their extensive burrows weaken the earth, making it unsuitable for agriculture or grazing, and even dangerous, because when the nomadic herders who live in the area come through with their goats and camels and wild asses, they and their livestock can fall through the ground into the gerbil-warren sinkholes below.

The Chinese government, always quiet on catastrophe, revealed the problem to the world only after it was beyond control. And what little information that did circulate about the gerbils was contained in only a very few short reports in the BBC World Service, Reuters, and the *China Daily*, an English-language Chinese government newspaper. By then, vast areas had been destroyed entirely, and the focus shifted to trying to save what grasslands they could in the region. It was turning out to be, in the words of Xiong Ling, a local government official quoted in all the news items, “the worst rodent disaster since 1993.”

Xiong’s authority rests on her employment with an office called the Regional Headquarters for Controlling Locusts and Rodents. They’re the local entity responsible for addressing the gerbil problem with force. They laid out poison, gassed the burrows like trenches at the Somme, and offered bounties to the locals to kill as many gerbils as possible. The gerbils continued to thrive. When the traditional arsenal failed, the government turned to a new weapon. They decided to breed a massive convocation of eagles to fight the gerbils the way nature intended—from the skies.

The Chinese word for gerbil is *sha shu*. This literally means “desert mouse.” I turned to *Walker’s Mammals of the World, Volume II* to make sure the news reports weren’t conveying some kind of mistranslation. They weren’t: *Rhombomys opimus* is the beast in question, and he is indeed a gerbil, the Great Gerbil of Central Asia by his full familiar name—the largest member of the many gerbil genera, and monotypic, meaning he’s somewhat unique in evolutionary terms as the only species within his genus.

The great gerbil inhabits the sandy and clay desert steppes areas throughout northwestern China, Afghanistan, Pakistan, and the former

Soviet Republics of Central Asia, such as Kyrgyzstan, Uzbekistan, Tajikistan, and gigantic Kazakhstan. This is the kind of environment favored by all gerbils: arid, desert areas where the soil is loose enough to burrow easily and they won't get washed out by too much rain. For this existence, gerbils are well equipped with bodies that require little water and do not sweat, so they reabsorb their few liquids. They also have strong hind haunches that allow them to cover large distances, and jump quickly from shrub to shrub in a harsh habitat full of predators. Many sources on gerbil physiology describe how gerbils produce infrequent, small amounts of thick urine, and that their droppings are always bone-dry. But only one—Helga Fritzsche's *Hamsters, Golden Hamsters, Dwarf Hamsters, Gerbils: A Complete Pet Owner's Manual*—also points out that when gerbils excrete their dusty pellets and rare urine concentrate, they do so entirely without sound.

Trying to find out the gerbil status in Xinjiang, I called China. A rough business when you speak no Chinese. Via a dogged and expensive effort of extreme international telephony, I did make it as far as Urumqi (pronounced Oo-ROOM-chi), the capital of Xinjiang, where the trail went dead. Noted: the number for information in China is 114, the exact opposite of our number for information. Also noted: whenever I called information, the operator-people on the other end just kept asking for my number. Like so (from a partial transcript of one such call):

Urumqi 114: [Chinese greeting!]

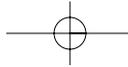
Me: Yes, hi, I'm terribly sorry—do you speak English?

Urumqi 114: Please.

[Silence, as operator fetches someone. The full sound of the crowded room behind Urumqi's information hotline comes through clearly. They discuss at length who should speak with me.]

Urumqi 114: Yes?

Me: Hi. I am looking for an office.



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Urumqi 114: ...

Me: A phone number for an office.

Urumqi 114: ...

Me: The Regional Headquarters for Controlling Locusts and Rodents—

Urumqi 114: Yes?

Me: —for Xinjiang?

Urumqi 114: ...

Me: Is this information?

Urumqi 114: Information! Yes!

Me: Yes. Telephone for Regional Office—

Urumqi 114: Region?

Me: Yes. The Region Office for Controlling—um, okay, how about this: Foreign Liaison Office.

(I was asking for the Foreign Liaison Office not because I knew what it was, but because that's what was recommended to me by one Mr. Gao, National News Editor of the *China Daily*. I reached him at his office in Beijing. He spoke English and was the reason I made it as far as Urumqi at all. He himself did not have any updates about the gerbils, or even know what I was talking about at first. "Remember?" I said. "Over the summer—the horde of gerbils eating the interior of China?" "Oh yes, yes, I do recall," he said. "And they were breeding eagles. I wonder what happened.")

Urumqi 114: Number please?

Me: Yes, I was—yes, I need a telephone number. For the—

Urumqi 114: Number?

Me: Yes. A number, that's right.

Urumqi 114: Please—take number?

Me: My number? I'm in Los Angeles.

Urumqi 114: Yes, number please.

Me: What, like, my phone number here?

Urumqi 114: Please.

Me: Okay, I guess. It's 626...

Urumqi 114: 6... 2... 6...

Through similar interactions, at least half a dozen people in Xinjiang now have my cell-phone number, including someone who answered at 011-86-991-2842262, which I think may have been some kind of animal husbandry facility. It later occurred to me that perhaps one or more of these people was taking a message, maybe even for Xiong Ling.

There are many types of gerbils, including:

The Baluchistan Pygmy Gerbil (*Gerbillus nanus*), from northern Afghanistan;

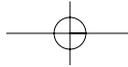
The Duprasi (*Pachyuromys durpasis*), with a fatter tail and native to northern Africa;

The Charming Dipodil (*Gerbillus amoenus*), a cute little fucker ranging in the same area;

Wagner's Dipodil (*Gerbillus dasyurus*), from the salty Sinai, land of Moses' crossing;

Shaw's Jird (*Meriones shawi*), medium-sized, and smart enough, say breeders, to respond by name; and

The Mongolian Gerbil (*Meriones unguiculatus*), which is the relatively small, variably colored gerbil known from pet stores and the glass-enclosed wood-chip habitat of the American household.



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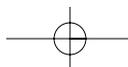
*Size comparison: Mongolian gerbil (left) vs. great gerbil (right)*

In the long history of pet domestication, gerbils are a recent entry. The first gerbils ever to leave Central Asia were a small group of “yellow rats” sent by an adventuring man of the cloth named Armand David to the Musée d’Histoire Naturelle in Paris in 1866. That’s when the Mongolian gerbil entered into modern taxonomy. In 1935, about twenty breeding pairs imported from northern China into Japan became the ancestors of all pet gerbils living today. In 1954, gerbils arrived in the United States, and ten years later they made it to the United Kingdom and beyond.

Such is the progression of what has become an elaborate realm of wild gerbil enthusiasm. For the hundreds of thousands of devoted aficionados, there are gerbil breeders, gerbil associations, gerbil magazines, gerbil newsletters, gerbil product catalogs, and an international circuit of gerbil competitions. The American Gerbil Society leads the way, and their judging standards have also been adopted by some of their “sister societies, including but not limited to, the National Gerbil Society and the Swedish Gerbil Association.” According to their standards, championship gerbils have well-proportioned tail and tuft, and eyes that are bright, widely set, large but not bulging. Their ears shall be fairly small, not too rounded, and carried erect. In temperament, they will be mellow; “hard nipping” results in immediate disqualification. But the real magic arises from the quality and color of the coat. Breeders<sup>1</sup> have thoroughly documented the genetics of fur shading, and they forever try to manipulate the gerbils’ six loci of color in just the right combination to get an animal that meets the ideal of gerbil aesthetics:

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<sup>1</sup> The dirty secret of the gerbil world, if there is one, is that the constant breeding and the narrow genetic origins of today’s pet gerbil population means that they can be physically troubled animals. The most common problem is that they are prone to seizures, which are euphemistically referred to as “fits.” Some gerbil enthusiasts like to claim that the seizures, rather than evidence of genetic abnormality, are actually a clever evolutionary mechanism that in the wild helps gerbils to “confuse predators.”



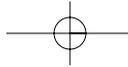
distinctive markings with a striking contrast of colors—but with gradual shading, “pleasantly blended away from all points, except the ears... and darker towards the ends of the animal.” Nowhere, according to the AGS, should a gerbil’s color change suddenly.

Xinjiang is a place of lonely scale. It is big, mostly deserts and mountains. I used to read about it as a kid in Victorian travelogues like *Visits to High Tartary* and old history books that referred to the region as Chinese Turkistan or the Central Asian Oases. What they called oases were the stops along the Silk Road, the path Marco Polo took to visit Kublai Khan, and the path of passage-making caravans before and since. I remember particularly liking the accounts of Turfan, a rainless outpost below sea level that remains important to this day and draws its fresh drinking water from a series of deep wells called *karez* that all connect to a vast underground river network 150 feet below the desert floor.



More than half the area is basically empty. The Tarim Basin, or Taklimakan Depression, a desolate tract bigger than the Gobi, is one of the world’s most severe environments. Only a few isolated oases support small populations there. Most of the people—a nomadic, Muslim, linguistically Turkic people called Uyghurs<sup>2</sup>—live to the north, on the other side of the T’ien Shan, or Heavenly Mountains, whose major peaks rise higher than twenty thousand feet and always bear snowcaps. The forested, northern slopes of the T’ien Shan give way to another desert depression, smaller and milder, called the Junggar. It’s the foothills and edges of the Junggar, enclosed by a belt of true pasture naturally watered by snowmelt from the T’ien Shan and the Altay mountains on other side, that support the traditional herding economy of the Uyghurs.

<sup>2</sup> There is also a smaller population of Kazakhs and other Turkmen groups. But the region has long been the object of Chinese colonialism. Although Xinjiang is also officially called the Uyghur Autonomous Region, it is a titular autonomy only, and the central government has been for decades systematically settling ethnic Han in the area to tip the demographic scale toward the Chinese. Today, there are almost as many Chinese as Uyghurs.



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As well as the traditional hoarding economy of the great gerbil. To ensure survival, gerbils cooperate. Unlike most rodents, who are solitary roamers—a trait that has helped solidify the poor reputation rodents have developed over time, typified by Templeton the selfish rat in *Charlotte's Web*—all gerbils, including the great gerbil, are extremely social animals, with complicated underground societies.

And the Junggar is a natural setting for gerbil society to flourish: a predominantly dry area of easy burrowing, but with enough water from elsewhere to provide a stable food supply. The gerbils lie low in the winter, and get most active in the spring when there is a bounty of fresh grass and other vegetation to exploit. Below ground, they manage their extended families, which can range in size, sometimes including a male with several females or a kinship of related pairs. Females are called sows; males are boars. And everyone cares equally for the pups, which come into the world as furless, blind, deaf, little nubs that weigh a fraction of an ounce. In high times, gerbil families can be large, up to fifty or sixty animals—true communal enterprise on the rodent scale of sociability. Together, they all live in a complex array of tunnels, which include multiple nests and subterranean pantries for storing all the food collected in the spring.<sup>3</sup> It's that group-pantry system that allows the gerbil to beat the mean season—a blistering long summer, during which they emerge only at dusk or dawn and only when necessary. This is how the gerbils have made their way for a long time in the Junggar depression, and when the nomads showed up a few millennia ago, they learned to survive similarly, by relying on the terrain and rain runoff and by storing calories, in their case in the form of livestock.

The golden eagle of the steppes is a formidable bird. Central Asia is still mostly wilderness and there are a host of marauders that may hunt the great gerbil—wolves, lynxes, polecats, weasels, snakes and huge monitor lizards—but the golden eagle is the champion predator. And the most handsome, according to ornithologists, who affectionately call their subjects “goldies.”

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<sup>3</sup> When it comes time, young males will leave home and start digging a new burrow elsewhere. Or re-inhabit an empty one. Because of the flux of the gerbil population, there are times, like now, when hordes of venturing juveniles have to strike out and dig their own burrows; and then there are easier times of cheap real estate, with plenty of empty burrows ready for turnkey living. Carbon-14 dating suggests that some burrow compounds have been in use for thousands of years.



The golden eagle's wings can span up to 1.8 meters, or five feet. They get their name from the fair hue of their napes. Males and females are hard to tell apart, but—and this seems a measure in my mind of a badass species—the females are usually bigger.

Golden eagles usually attack prey from upwind. The speed of their descent is often compared (with some exaggeration) to lightning. But this I do remember from a report in third grade: the peregrine falcon is the fastest animal on earth, with a vertical dive approaching two hundred miles per hour. Cold jacking rodents with a quickness! Golden eagles are slower, but still fast; the time between eagle-eye recognition, swoop, and gerbil-in-talons is usually a matter of seconds. They have, in fact, several methods of airborne hunt, each of which have names, such as the “high soar with glide attack,” “glide attack with tail chase,” and “low flight with sustained grip attack.” Each tactic targets a different type of prey. The preferred method for surprising colonial prey, like the great gerbil, is called the “contour flight with a short glide attack.”



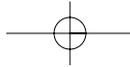
*The golden eagle*

According to Fritzsche's *Pet Owner's Manual*, Mongolian gerbil pairs live in life-long matrimony. Like swans. Don't own just a single gerbil, she says, unless you want that gerbil to be very sad. And if you do have a gerbil couple and one dies, be careful not to let the other plunge into depression. You can avoid this by “showing great concern for the survivor. [You] must not only feed her but also stroke her and give her companionship and frequent excursions outside the cage. Otherwise, she will languish, and grow fat and apathetic.”

Gerbils are not hamsters!

As any gerbil fancier will tell you, gerbils are way better than hamsters because gerbils are intelligent, happy creatures who enjoy life, whereas hamsters are boring misanthropes. But another central dogma among gerbil fanciers is that gerbils' love for each other is matched only by their love for people. Hamsters don't need one another, and they don't need you. But gerbils specifically enjoy human interaction. And, they say, gerbils know and care for their human captors, who in turn can tell when their gerbils are happy because gerbils like to wink at their people friends.

So strong is the perceived bond between people and the Mongolian gerbil that the American Gerbil Society maintains an Internet memorial called



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*Prairie dog w/ reporter, Los Angeles Zoo*

Gerbil Heaven, where countless mourners have shared tales of loss about their beloved gerbils, who, as the memorial says, “have passed over the ‘Rainbow Bridge.’” That includes: Leaper; Peanut; Final Fantasy; and Sugar Cookie, who only weeks before her age caught up with her had won the Outstanding Senior Award in the Self Class of the 2003 AGS Virtual Gerbil Show. Sugar Cookie’s epitaph: SLEEP TIGHT LITTLE ONE!

“I never saw one of my prairie dogs wink at me,” said Mike D.,<sup>4</sup> the curator of the Los Angeles Zoo. There are two important institutions of rodentia in Los Angeles, the Museum of Natural History and the prairie-dog exhibit at the Los Angeles Zoo. The main attraction of the prairie-dog exhibit is that you can go underneath the prairie dogs’ terrain and then surface in these plastic bubbles that allow you to observe the little guys at their own vantage.

For a zoo curator, Mike D. didn’t seem that interested in animals. “That creature of yours sure is a weird one,” he said when I met him at the gate. “I looked him up in the book.” Mike started pronouncing the taxonomical name and after stumbling on the specific epithet *opimus*, he shrugged, laughed, and trailed off with, “Oh, you know, some Latin deal.”

Mike also suggested that the great gerbil might be “what’s in those Quizno’s commercials.” For the uninitiated, Quizno’s is a sandwich chain that markets itself as the down-home version of Subway, the main feature of their down-hominess being that they toast their buns. Quizno’s recently launched an ad campaign in which a duo of curious little furry things with human eyes and mouths sing like Daniel Johnston about how the Mesquite Chicken and Bacon Sub is “like a toasty tasty heaven” and creates “big joy in our hearts.”

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<sup>4</sup>This is how he introduced himself.

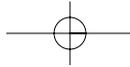
“Hell, I was watching TV with my wife and those things came on, and I said, ‘What the hell is that?’ Hamsters? Or a couple of albino tarsiers? Could be it’s your gerbils!”<sup>5</sup> Mike was only casually interested in the actual gerbils in Xinjiang, about which he said, “You’d figure over there, if they got too many gerbils, they’d just BBQ ’em,”—adding with a chuckle—“I don’t call that a disaster; I call that a bonanza!”

Mike did confirm that prairie dogs are rodents too, and share with the great gerbil the atypical habit of living in large groups. Back when there was much more prairie, the prairie-dog colonies, or “towns” as they’re colloquially known, could be huge. One prairie-dog town on the Texas high plains a hundred years ago was recorded to be two hundred miles wide. I asked Mike what would cause such an explosion in the population of a rodent like the great gerbil. Mike responded that he’d never heard of such a thing, and then added, as his primary advice: “All I know is, if you’re planning to go to China with all those gerbils, be sure to tuck your pants into your boots...”

Rodent disaster is not confined to the distant regions of Mongolia. In 1929, the town of Taft, in the San Joaquin Valley of Southern California, was invaded overnight by millions of mice. The battle against them lasted months, beginning with the locals driving their harvesters and combines through mice by the acre—a tactic that quickly failed when the blades of the machines became clogged with dead mice and stopped working. Here’s an account from an observer, William Rintoul, that describes how rapid rodent disaster can unfold:

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<sup>5</sup> The rodentlike things singing bizarre ditties about Quizno’s are not hamsters, gerbils, or albino tarsiers. They’re called spongmonkeys, and, if you believe the trades, they are at the center of an advertising phenomenon the likes of which have not been seen since 4’ 11” Clara Peller lifted the burger buns of Wendy’s rivals back in 1984 and asked about the whereabouts of her beef. The spongmonkeys were created by a British internet animator in London named Joel Veitsch, whose website had been forwarded to one of the advertising executives on the Quizno’s account. “Advertising gold” is how one admiring writer described Quizno’s subsequent bold attempt to challenge Subway for the top ranking in the “sandwich segment of quick-service restaurants” by using a national campaign that is confusing and/or disgusting to the average viewer. It’s a heterodoxy that seems to be working. There is a school of advertising that says ads work best when polarizing the nation; love ’em or hate ’em, people are talking about the spongmonkeys, and by extension they’re talking about Quizno’s. A hundred thousand people have downloaded the screensaver that puts the two spongmonkeys on daily view on their desktops. Both children and adults come into Quizno’s singing the songs. Even Bob Goldstein, the grouchy critic of *Advertising Age*, applauded the spongmonkeys for “break[ing] through the clutter as few ever have.”



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Advancing to the southwest, [the] mice killed a sheep and devoured the carcass in less than a day. A column slipped past the poison-filled trenches to touch off an exodus of women from Ford City, an unincorporated community adjoining Taft. Another column captured the golf course, encountering only token opposition from fleeing golfers. To the north, hordes swarmed the highway, where thousands were ground to death beneath car wheels, making the highway dangerously slippery.

This is the kind of thing immortalized in story of the Pied Piper from Hamelin, and in fact the Taft paper advertised “Fabled Pied Piper Needed,” after which the U.S. Bureau of Biological Survey promptly sent in their number-one wildlife poison officer, a man named Stanley E. Piper. A veteran of many a rodent disaster, Piper assembled a team of recruits—called the “Mouse Marines”—to begin the extermination campaign. Unlike his namesake, Piper could not subdue the mice. But after three months, the mice were defeated by nature. First, rodent *septicemia bacillus* swept through the population, weakening their numbers. Then, the sky filled with birds; hawks, owls, gulls, herons, ravens, shrikes, and golden eagles dove down for days to get their pick of mice. Shortly thereafter, the mice were gone, and the infestation ended as abruptly as it began.

There are no great gerbils in the United States. At one time there were some specimens living in the United Kingdom, having been imported by the BBC to play bit parts in a television series called *Realm of the Russian Bear*. Today, the only great gerbils in captivity are at the Moscow Zoo.

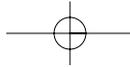
The Museum of Natural History in Los Angeles has many stuffed rodents, but no great gerbils. They only acquire rodents indigenous to California, explained Jim Dines, the head of the Mammalogy Collection. And, he added, it is unlikely any other major museums would have great gerbils either. But Jim did know something about the population dynamics of rodents, having studied the biogeography of an obscure member of the order in the Pacific Northwest called the mountain beaver—an animal, he said (because scientists love to say such things), that is neither a beaver nor lives exclusively in the mountains. “Beavers are rodents,” he said, “but this rodent’s not a beaver.” He drew me a map of the scattered dwellings of mountain beavers around Washington state.

So what causes rodent disaster? “It’s mysterious,” Jim said. He explained how some rodents, like lemmings and voles, have a very regular boom-bust cycle. Every few years, a static, small population surges, plateaus, and then crashes. Plotted on a graph, the reliability and scale of these swings are impressive. Yet other rodent populations don’t do this. Why? People have studied these cycles for a long time, and still find it difficult to identify precisely what causes them. The obvious elements, like food, are well-known; harder to pin down are the many ancillary factors, their thresholds, incremental changes, and combinations thereof, that cause a population of animals to oscillate between two points of stability an order of magnitude apart.



*Mountain beaver dwellings  
(rough sketch)*

Or suddenly shoot out of control. Because in much of the natural world, things aren’t regular at all. The unpredictability and density of causes behind population dynamics are what make the field a very technical business, the province of data and its interpreters. It is, in fact, precisely the kind of inquiry where the theoretical and heavily mathematic fields of chaos and complexity are supposed to lend insight, because they help describe non-Newtonian systems—that is, systems where looking at current conditions don’t seem to predict what the conditions will be down the line. And what are the conditions to measure anyway? From a scientific perspective, an actual forest or desert steppe is so full of unknowability that most population-dynamics work is done in a lab so the variables can be limited and controlled. Or inside computers, where biogeographers produce enormously detailed mathematical models, trying to factor in anything they can think of: predators, moisture, landscape, rainfall, sunspots. Consequently, when you open the discipline’s scholarly texts, even James Tanner’s *Guide to the Study of Animal Populations*, a book meant as a primer, it’s not yet page six before the hieroglyphic narrative of equations begins. The first of these equations I actually de- and re-focussed my brain to understand in a heroic exertion of mental retrieval after which I turned the page, saw ten more equations, closed the book, and said: fuck it. The one mathematical statement about the great gerbils we do need to know is they have such reproductive potential—two to three litters a year; quick, twenty-four-day gestation; between four to seven (but as many as fourteen) pups per litter; three months until the pups can bear their own pups, and so on—that, if unimpeded, they can multiply exponentially in a short amount of time—a set of arguments that we may as well relate with the precision of an equation like thus:



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Favorable conditions in Xinjiang x reproductive potential =  
one assload of great gerbils. (1.1)

In the bulletins last August, Xiong Ling claimed that the great gerbil does go through a multiyear reproductive cycle, and that this year was a peak. She also said that the great gerbil's cycle used to be smaller and regular, every four or five years, until the phase was broken when her office implemented more aggressive rodent control in 1990. But such a cycle has never been documented among great gerbils. And a thousandfold increase is beyond cycles, anyway. This is Hamelin territory—an unexpected, dramatic population spike, hinting that something has gone haywire.

A Chinese cell-phone call costs one Yuan per minute. But a Chinese text message sent between cell phones is much cheaper, at .2 Yuan per message. This cost differential has created a hugely popular, wide-scale instant messaging network, called *duan xin xi*, which translates as “short information.” Everyone uses it as a regular means of communication, for quotidian purposes like movie listings as well as for sharing very intimate, important information. A friend of a friend of mine told her boyfriend that she was pregnant by means of *duan xin xi*, and back came a text message from the boyfriend saying he wanted nothing to do with it. No more than fifty words were exchanged, in under five minutes, and the whole business was settled. Like email, the text messages can be forwarded to multiple people, so in addition to companies picking up the network as a new outlet for advertising, *duan xin xi* has also flourished as a frictionless vector of information, both good and bad.

Because of the lack of open news sources, China is a massive churning rumor mill, and so the bad tends to prevail. During the SARS season, while the Chinese government and local media kept mum, the invisible membrane of *duan xin xi* was alive, spreading mass paranoia among China's citizenry. Like, for example, the erroneous belief that household pets were SARS carriers, which caused panicked pet owners to throw their dogs and cats out the window. And another rumor that the government would send planes to spray disinfectant against SARS over all of Beijing on a certain date that led people to stay home and seal up their windows and doors.

To find out what *duan xin xi* had to say about the great gerbils in Xinjiang, I asked a friend of mine in Beijing (the third and closest “friend” in the list above) to put out a feeler through her cell phone. She sent a message to several friends, who forwarded it to their friends, and so on.



*The port of Messina*

Theoretically, the query could get around the country quickly, perhaps as far as Urumqi, and—who knows—maybe even to Xiong Ling. With the net cast, she waited.

In October of 1347, a fleet of twelve Genoese merchant ships was quarantined in the port of Messina in Sicily. The merchants had fled with their families from war on the Black Sea coast, and while underway they began dying of an unknown malady, described by a Sicilian observer at the receiving end as a “sickness clinging to their very bones.” Clinging to their bones was *Yersinia pestis*, the bacterium that causes the Bubonic Plague, and they were the patient-zero population that brought the Plague to Europe.

The Genoese merchants had been infected while under siege by Tatars in Kaffa, a city on the Crimean Peninsula. The Tatar army failed to breach the city walls, partly because they started dying. Before departing, the Tatar captains used catapults to volley their diseased corpses into Kaffa. It was the first modern use of biological warfare. And the most effective: two months after the Genoese arrived in Messina, half the city was dead. Thirty days later, Marseilles was infected. By the summer, the Plague had reached Paris, and was spreading east and north, arriving in London in December 1348. When it was over, a third of Europe had succumbed to what came to be known by the English as the Black Death, by the Germans as *das Grosse Sterben* (the Great Dying), and among medieval scholars by the cataclysmic-sounding Latin designation: *Magna Mortalis*.



*Xenopsylla cheopsis*

The Tatar armies had been in the path of a Plague outbreak fanning westward through the Lower Volga, the Middle East, and the Caucasus—all territories with overland caravan routes leading back to the Silk Road and the desert steppes of today's Xinjiang. It was there that the Black Death originated, among the marmots, the hares, and indeed, the great gerbils. In fact, the various great gerbil populations in Central Asia are what epidemiologists call inveterate foci of *Yersinia pestis*—permanent reservoirs for the Plague. Which they remain to this day. *Y. pestis* resides in the gut of *Xenopsylla cheopsis*, a hardy flea that prefers rodents. Normally, bacteria and flea live together in an equilibrium, and the whole operation cohabitates peaceably on the unaffected rodent; but sometimes the flea's *Y. pestis* population rapidly swells, escapes the flea's gut, kills the rodent, and sends the flea packing to find a new host. Likewise, the great gerbil normally lives in equilibrium with its environment; but its population also sometimes rapidly swells—as in Xinjiang—and the gerbils, eating themselves out of house and home locally, go looking for greener pastures. Here is danger. It's this dual population dynamic that allows fleas regurgitating *Y. pestis* to hitch that ride—from remote desert burrow to exploratory juvenile rodent to urban rodent to human—and create devastating pandemics.

And not just in the fourteenth century. The same thing had occurred eight hundred years earlier, in 540 CE, and after the Black Death there were substantial flare-ups around the world as *Y. pestis* resurfaced episodically. In both absolute and relative numbers, Plague has been the most destructive scourge in history. The last major pandemic shot out of Central Asia in the mid-nineteenth century, and killed thirteen million people over the next fifty years.

It was during this time that Plague entered the United States, through ships with Chinese manifests mooring in the San Francisco bay. Eighty-nine people died of a small run of the Plague there in 1907–1908. The longer-term consequence was that *Y. pestis* established itself among the wild rodent population in the American West. From the raiding mice of Taft to the friendly squirrels and perky chipmunks begging gamely at our campgrounds, rodents are all potential Plague vectors. In spring, when there are vehicles from the Centers for Disease Control criss-crossing the mountains and deserts of the Southwest, it's usually the Vector Control Division on the

move, evaluating rodents for the incidence of *Y. pestis*. Up in the Angeles National Forest above Pasadena, where I camped in high school and sometimes hike today, such surveys always turn up infected fauna. And it was in Los Angeles in 1924 that the last urban plague in the United States erupted.

Traditionally, agriculture has been secondary to pastoral herding among the Uyghurs. When Chinese settlement in the region increased, the government began using runoff from the mountains to irrigate for crop-based agriculture. Agriculture has been a preoccupation of modern China, since there are so many people to feed. Collectivization, the Great Leap Forward, the Four Modernizations, the “free-market” reforms of 1978—all were partly conceived as grand schemes to increase agricultural productivity. Xinjiang was not exempted from this process. Dams, ditches, and canals were built. A lot of pasture was converted to farmland. A lot of desert was converted to farmland. Pictures from the region show moist fertile fields whose edges draw a sharp line against sandy dunes. Today, juicy melons from rainless Turfan are enjoyed by millions of people across China.

The rise of agriculture in Xinjiang has locked its people in an elevated-stakes duel with the great gerbil. The gerbil is now more of a pest, because there are valuable crops to eat, and because there are crops to eat, there are more of them to be pests. Hence the Regional Office for Controlling Locusts and Rodents. Those frequent rodent explosions in recent decades referred to by Xiong Ling were probably caused by the availability of agriculture as a food source. Similar great gerbil populations in areas that are still true desert, according to the literature, don't seem to swing so rapidly. In Xinjiang, the irrigated fields have become the perfect growing medium for rodents, and all it takes is for a few colonists to find their way in for a surge to take hold. In fact, this is what set the stage for the great mouse war in Taft, where a few mice became a hundred-million-strong swarm by living unmolested nearby in the once-dry bed of Buena Vista Lake that had been irrigated and planted with eleven thousand acres of grain.

In 1859, a man named Thomas Austin released twenty-four rabbits from his house outside Victoria, Australia, on Christmas Day. Fifteen years later, the rabbits had spread fifteen hundred miles. Another fifteen years after that, they were all over the continent, eating up all the vegetation and leaving nothing for the native species. It was one of the world's worst environ-

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mental disasters. Australians of grandparenting age can tell stories about the peak years of the 1940s when the yards in the evening would be undulating carpets of furry little bunnies. The plague of rabbits grew so dire that the government erected a giant fence that spanned the entire continent longitudinally: eighteen hundred kilometers from Starvation Boat Harbour to Cape Keraudren. But by the time the fence was finished in 1907, there were already enough rabbits on the other side that it was all but ineffective.



*The rabbit fence (detail)*

In the 1950s Australia afflicted its rabbits with a disease called myxomatosis, which caused them to go blind and/or die. But not all of them. And it doesn't take very many rabbits to form the seed of a horde, which is what reappeared, as multitudinously fluffy and hungry and horny as ever. Recently, the Australian government returned to biological weapons. They developed the Calici virus, a lethal disease specific to rabbits, at an experimental research station on an island off Australia's coast. The authorities were reluctant to release it before they knew it would not affect other animals, but a few years ago the disease mysteriously appeared on the mainland and quickly destroyed the rabbit population. It created a riotous scandal: environmental sabotage that was, in the end, applauded by environmentalists.

And that's just one of example of ecological woe in a place that acts like a perpetual laboratory of creatures run amok. Like the proliferation of grey kangaroos when watering holes were built for cattle. Or the koala infestation on Kangaroo Island. Can koalas infest? Well, koalas had never been to the island in the Gulf St. Vincent near Adelaide. Soon after crossing over a few years ago, they took to the resident gum trees like nobody's business and now there are too many of them. This of course raises the philosophical question: can there be too many koalas? To which my answer would be no, since when I imagine even an infinity of koalas, what I am really imagining is heaven, as I dive amongst them and snuggle and kiss and hug them and sing how very much I love them! In fact, I hereby declare that I would pay a thousand dollars to snuggle with a room full of koalas for one hour.

But this is not how Kangaroo Islanders see koalas. They say the koalas are overeating their welcome, to the point that the "invaders" may soon exhaust the forests and starve themselves to death anyway. "We're in crisis mode," says the local government in Kangaroo Island, and as preventive

measures it is considering biological control (a golden eagle-type method), sterilization, and even allowing people to shoot koalas out of the trees.<sup>6</sup>

Here's what gerbil news *duan xin xi* turned up: not much. So meager is the available information about Xinjiang's rodent disaster that the text-messaging chatterbox can't come up with even unfounded gossip on the topic.

From: Andrea Hill  
Subject: re: Gerbil Fury 2004  
Date: March 27, 2004  
To: Joshuah Bearman

Dear Josh,

I'm sad to report few solid leads. Nobody here knows much about these gerbils. A few people remember the story from last summer. That's it. The text messages I got back all asked me to tell more about the gerbils. I did also do a search of Chinese-language news sources, but there's not much there either.

P.S. No word from Xiong Ling.

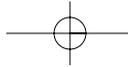
Andrea did turn up one report, more recent than those I'd seen, from November 19, 2003, which updated the affected area from five to six million hectares. At least some bureaucratic progress has been made, because this new intelligence was attributed to something called the Autonomous Region Locust and Rodent Elimination Command Post.

In the fourteenth century, no one understood disease or pathogens like *Y. pestis*, so when every other person in Europe started dying, Europeans laid blame everywhere else:

- 1) On the Jews. It was obvious to all that the Jews had poisoned the wells, so pogroms broke out all over Europe. Tens of thousands of Jews were killed, many burned alive, and even those conventionally slaughtered were incinerated for good measure.

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<sup>6</sup>NO!



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2) On the stars. At the request of King Philip VI of France, forty-nine medical masters at the University of Paris studied the problem and published their findings in the *Paris Consilium*, which concluded that the plague was probably caused by the conjunction of Saturn, Jupiter and Mars in the 40th degree of the moist, miasmatic sign of Aquarius at precisely 1 p.m. on March 20, 1345.

3) On themselves. Incredibly, Pope Clement VI quite reasonably declared the plague not to be God's wrath against sin, but no one listened. Local clergy preached divine punishment, and in early 1348, the defunct Order of Flagellants was revived. These were Christians who wandered from town to town, flogging themselves with metal-tipped leather whips until their bodies were covered in blood. Their painful public penance was supposed to deliver absolution to onlookers and confessors—for a fee. The flagellants managed to identify the source of the plague as both Christian transgression against God *and* the sinister doings of Jews, so they incited anti-Semitic riots wherever they went. It was these "Brethren of the Cross," forbidden as they were from bathing, washing, sleeping in a bed, or changing clothes, who actually brought plague with them on their "processions." The word *scourge*, which today refers to widespread disease, like the Plague, or its path of transmission, like rodents, originally described the whipping of the flagellants.

Jan Randall, a field biologist with a quarter century of desert-rodent study under her belt, is the English-speaking world's foremost expert on great gerbils. For the last ten years, she has sojourned each spring, first to Turkmenistan and now Uzbekistan (always carrying a heavy regimen of Tetracycline in case of Plague), to observe great gerbils in their natural habitat. That entails spending a lot of time watching gerbils munch seeds and grass while standing on their hind legs and looking around in various directions. "That's what they're up to much of the time," she said. They also sometimes do maintenance on their burrows, and so an active workday might find the steppe punctuated by petite dirt plumes being expelled over areas of construction.

"Do they ever wink at you?" I asked.

"No. Great gerbils don't wink at people."

"Are you sure?"

"Yes. And I've worked with the Mongolian gerbil in the lab and they

don't wink either."

Jan's main research interest is gerbils' genuine social behavior. She believes that the great gerbil is a keystone species, meaning that it plays a central role in the area's ecosystem, and has a theory that its adaptive social structure enhances survival during environmental changes. Jan also listens to the gerbils. They're a chatty lot, twittering, peeping, and chirping away while interacting intimately and cleaning each other. But what Jan has been writing about is the long-distance exchanges. When the gerbils are standing, eating, and looking around, they are also acting as sentries, and when danger appears, they make alarm calls with foot drumming and whistles. "We're not sure exactly how it works," Jan said. "I've worked on drumming in kangaroo rats, which is my earlier expertise. Kangaroo rats are just trying to scare predators; they're not talking to other kangaroo rats, since they travel alone. But *Rhombomys*' antipredator behavior is group communication. It sends messages to the rest of the burrow." What does gerbil song sound like? "They're not really songs," Jan said. "And their drumming doesn't change that much."

I asked Jan for the scuttlebutt in the great gerbil scientific community about the state of affairs in Xinjiang. She replied that there is no scuttlebutt, both for lack of enough scientists studying the great gerbil to constitute a community capable of scuttlebutt, and because none of those scientists have been to Xinjiang in the past year. The only concrete information she could provide was that a local contact of hers "checked it out and said the population is very high."

And the eagles?

"I heard about that," she said. "I don't know if they put that in place. But the eagles are what got National Geographic interested."

National Geographic?

"They contacted me recently and asked me to accompany them to Xinjiang to do a documentary. They want to film the gerbils. It will be the first time I've been there. They're planning to go in June."

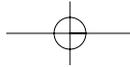
And until then?

"No one knows how many gerbils there are now."

No one at all?

"No one knows."

Here are some theories. Refer back to equation (1.1). Let us examine those favorable conditions. Jim Dines, from the Museum of Natural History,



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described the usual suspects for broad factors behind volatile population growth: food abundance, the elimination or lack of natural predators, and human activity. And these days, Jim pointed out, the first two factors are usually direct results of the third. Or, as he phrased it: “Fuck with Gaia... and she’ll always come back and bite you in the ass.”

Last year, the wet spell yielded rich pasture. There’s also the agricultural growth, which entails wildlife control and with the rains created an unprecedented motherlode of cultivated food. That all follows a couple years of drought from the Buran, a hot summer wind that blows across Central Asia and sets the stage for some rains to shake things up. (It was desert flooding that provided the actual spark for the Taft’s mice; when the Buena Vista Lake bed became inundated, they fled en masse and set to colonizing the town itself and areas beyond.) It may even be that weather patterns, together with the rodent-control program itself, helped lay the foundation for the worst rodent disaster since 1993 by interfering with the natural balance between predator and prey. When the rodent population plummets from drought and extermination, the predator population follows. This creates a predator vacuum, and when conditions especially congenial to rodents return, there is nothing to keep a burgeoning generation of gerbils in check. By then no amount of human pest control on its own is effective.

But here’s another idea. An intrinsic characteristic among great gerbils that can suppress their population is territoriality. What biologists designate as family units are called clans by pet owners and breeders, and that better expresses how defensive gerbil groupings are in relation to one another. With domesticated gerbils, two males from different clans in the same terrarium will invariably fight, usually to the death. Even brothers may chew each other’s tails off if they’re feeling surly. In the wild, each gerbil clan will stake out a homestead and fight off intruders. Other clans can’t come along and buddy up or share resources. Theirs is a community divided, and that usually restricts expansion. Which suggests, then, that this particular expansion in Xinjiang might represent a truce between the clans—if they’re advancing so fast through the fields, they must not be wasting any time fighting with one another. I.e.: the gerbils have unified against us.

This has happened before, with the ants. All those little black ants that so resourcefully seek out lost bits of bacon from behind the stove are not just ants; they’re members in good standing of a colonial confederation of *Iridomyrex humilis*, or Argentine ants. Unlike other ants, who fight intramurally, those little black ants are so successful because they’ve colluded together and turned their attention toward the common enemy. In Europe,

entomologists recently discovered the Argentine ants had organized themselves into the largest single ant colony in the world: 3,600 miles long, from the Italian Riviera to Northwest Spain. It's a sensible strategy: why fight each other when you can fight the Man?

Which brings us back to the golden eagles. Because if the gerbils are indeed united, all the more reason why you need to fight them with eagles, right?

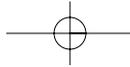
There are two problems to consider here. The first is logistical, since the gerbils reproduce so quickly, while it takes some time to come up with a lot of eagles. But the wider predicament posed by using one animal population to control another—integrated pest management, they call it—is that it often backfires. Everyone points to the well-known successful use of ladybugs to eat aphids, employed by backyard gardeners and commercial horticulturalists alike. “But now,” as Jim Dines said, “people are quick to reach for this solution. They bring in one species to eat another one that is going insane. But then the new one goes insane and they need something else to eat the one they brought in.”

Except sometimes there is no “something else” higher up the chain. As in the case of the amphibious horror called the cane toad. Again we turn to Australia, where *Bufo marinus* was introduced deliberately to eat the cane beetles that were seen as pests by the local sugarcane growers. Since 1935, a hundred tadpoles have become who-knows-how-many millions of indestructible cane toads, spreading steadily and vying with rabbits as an unmatched environmental disaster. This is because the cane toad eats anything and can be eaten by nothing, since every life cycle of the thing is poisonous. The cane toad parotoid glands create a potent venom that, if ingested directly, causes cardiac arrest in minutes. And if the cane toad empties its glands in water, it turns the aquatic area around it into poison.<sup>7</sup> Now, across Australia, a creature that was supposed to help out by eating some beetles is marching along the coast, creating vegetative carnage



*Bufo marinus*

<sup>7</sup> Observers who have spent time among stoners of the American Southwest and Floridian peninsula may notice from the cane toad's scientific name that it is related to the local *Bufo alvarius*, otherwise known as “this fuckin psychedelic frog, dude, that Tim licked last night out in the desert, fuckin bufo man, and seriously he was still trippin' this morning, swear to God,” which is the lay description Matt Devonshire gave me the first time his brother came back from Joshua Tree. As part of their dermatological defense, both *Bufos* excrete an alkaloid called Bufotenine 11, which is indeed an extremely potent hallucinogenic. So don't take too much, and if you do, smoke it, otherwise it may be the final voyage: every so often someone straight up licks too much bufo and dies right there, toad in hand, wrapped in a bandana.



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and rendering dog bowls, wells, and entire wetlands toxic. Greetings... from Gaia?

Think about those eagles back in Xinjiang again. A quick calculation tells you that if the typical golden eagle can eat about a gerbil a day—the figure I got from the ornithologist on staff at the Museum of Natural History—you’d need an armada of eagles to make a dent in this rodent disaster. Like a million. Perhaps two. And do you really want a couple million eagles circling overhead? What if they finish off the gerbils and start in on something else?

Or worse. The sagacious editor of this article, upon first hearing the subject matter, asked what may be the critical question: what if the eagles and gerbils become friends, like Milo and Otis, and go on exciting adventures together? Sounds silly, but perhaps not in light of the clever Argentine ants and the possible alliance of gerbil clans last summer that helped bring on the rodent disaster in the first place—which would be how much worse with the gerbils and eagles in league? The first time Xiong Ling steps off her porch and sees a majestic goldie soaring overhead with a gerbil riding shotgun, she’ll realize maybe the eagles weren’t such a hot idea after all.

The possibilities spiral outward. One reason the multiplying gerbils haven’t yet left Xinjiang is that the terrain surrounding the Junggar depression is harsh enough that they can’t traverse it on their own. But: what if they have air transportation? With no news from the area, who can say what will or has already happened? Are the gerbils spreading, or in abeyance? Are the eagles locked with the gerbils in a deadly *pas de deux* over the desert? Or have they together laid waste to the Regional Headquarters for Controlling Locusts and Rodents and are now making for the rest of China? As Jan said, no one knows. She could arrive there in June and find no gerbils. Or no Xinjiang. And we might have to wait for answers until she gets back.

Unless in the meantime my number has floated around Xinjiang long enough, through 114 outposts or the channels of *duan xin xi* or the corridors of the local wildlife bureaucracy, and I wind up getting a call from the Elimination Command Post.

“Is this Josh Bearman?”

“Yes?”

“Xiong Ling speaking. You want to know about our gerbils?”