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Groundhogs, Out From the Scientific Shadows

New research aims to shed light on the social habits of the popular, but often misunderstood, animal.

By Brandon Keim **Photographs by Greta Rybus**
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FALMOUTH, Maine — Groundhog Day may be a tongue-in-cheek holiday, but it remains the one day earmarked in the United States for an animal: Marmota monax, the largest and most widely distributed of the marmot genus, found munching on flowering plants — or, at this time of year, snuggling underground — from Alabama to Alaska.

Yet, for all their cultural prominence, groundhogs remain, as it were, in a bit of a shadow. Relatively little is known about their social life. They are thought of as solitary, which is not precisely wrong, but neither is it entirely accurate.

“These guys are much more social than we thought,” said Christine Maher, a behavioral ecologist at the University of Southern Maine and one of the few scientists to study groundhog behavior.

Dr. Maher arrived in Maine in 1998 with a keen interest in animal sociality. Marmots, a genus spanning 15 species of varying sociality — including alpine marmots living in multigenerational family groups, semi-social yellow-bellied marmots and ostensibly antisocial groundhogs — were a natural subject.

She found an ideal study site at the Gilsland Farm Audubon Center, a 65-acre sanctuary of rolling meadows and forests on the coast of Falmouth, Maine. There, she has tagged no fewer than 513 groundhogs, following their fates and relationships in fine-grained detail.

The resulting family trees and territorial maps, along with the records of their interactions and daily activities, are singular. “Nobody had looked at them over time as individuals,” Dr. Maher said.

Christine Maher, a behavioral ecologist at the University of Southern Maine, has been studying the same colony of groundhogs since 1998 — possibly the only long-term study of the animals' behavior.

Gilsland's groundhogs won't emerge until late February, but one morning last summer, Dr. Maher was out setting peanut butter-baited live traps around a shrub-hidden burrow beside the visitor center. The peanut butter soon proved irresistible.

The trap afforded a rare up-close view of a groundhog: sleekly sturdy, with small, serious eyes, delicate whiskers and fur that shaded from auburn on her broad chest to a mélange of chestnut, straw and russet across the rest of her body. One round ear bore a tiny bronze tag inscribed with the number 580.

"This is Torch," said Dr. Maher, who names each of her study subjects. Torch was a first-time mother. Dr. Maher deftly transferred her to a thick bag to allow for safe weighing. She also took a hair sample for later DNA analysis and measured how much Torch wriggled during several 30-second intervals — a simple test of personality.

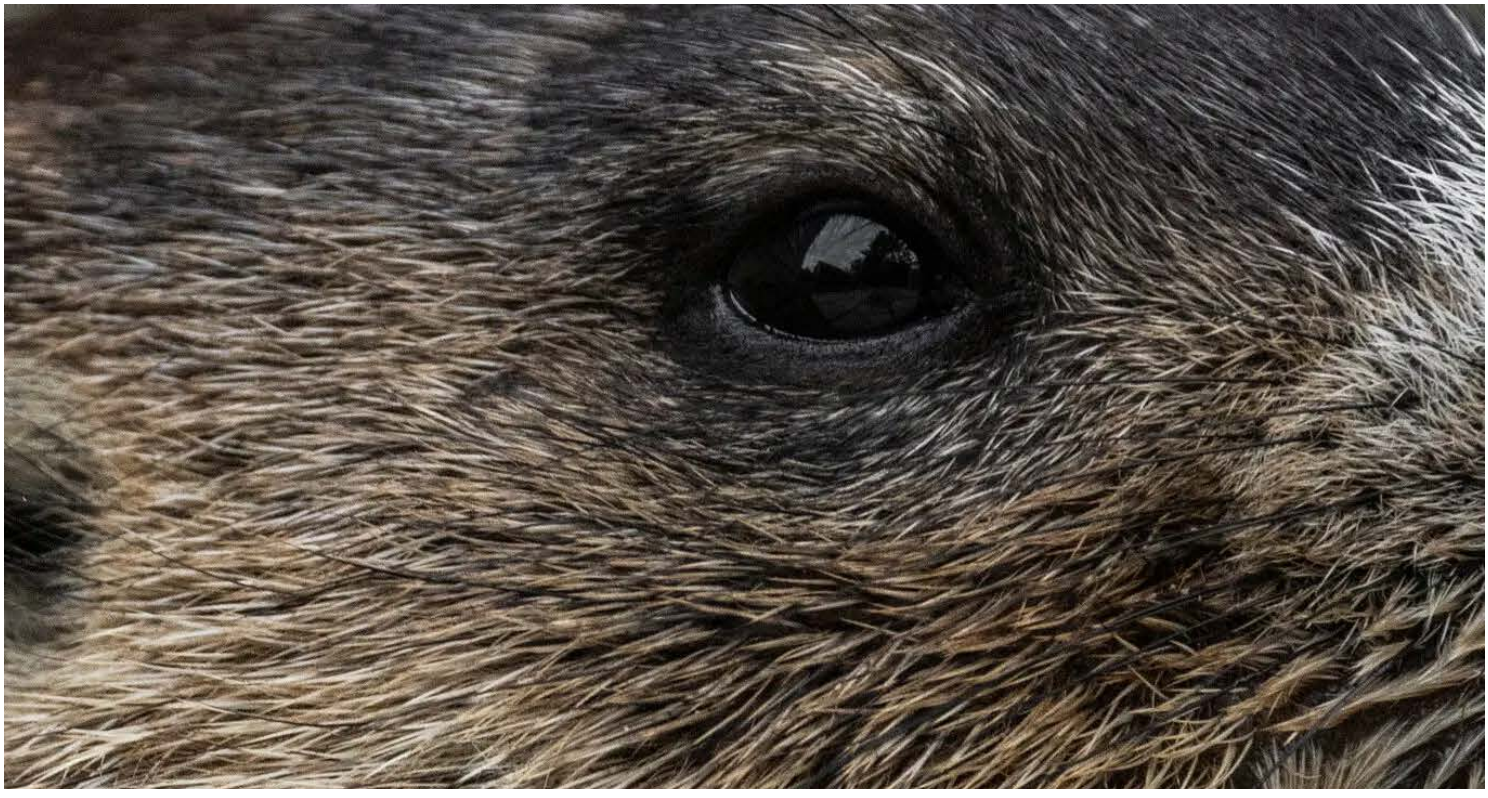
After returning Torch, irritated but unharmed, to her burrow, Dr. Maher started a circuit of Gilsland. She checked several still-empty traps for Barnadette, who was raising her pups beneath an old barn. Near the barn was a sprawling community garden and the smorgasbord of their compost pile.

As anyone whose vegetable garden is visited by groundhogs can attest, the arrangement created a certain tension. Charles Kaufmann, one of the garden's coordinators, acknowledged that conflicts with gardeners had occurred, but had been resolved peacefully. Among their peacekeeping tools are floppy fences that groundhogs struggle to climb.

"Audubon is for the preservation and appreciation of the natural world," Mr. Kaufman said. "We feel bound to live within that perspective and philosophy." Also, "groundhog pups are just the cutest things in the world."

A coterie of groundhogs

Groundhogs feed on fallen apples and pears in late summer and early autumn to store energy for winter hibernation.



Groundhogs go by many names, including whistle-pigs and woodchucks. “I just prefer woodchucks, which actually is a variation of Indigenous Peoples’ names for them,” Dr. Maher said.

Along a freshly mowed path leading from the gardens into a meadow, Dr. Maher spotted a groundhog. Through her scope she identified Athos, a yearling and a sibling to Porthos and Aramis.

She named them after the Three Musketeers, which was a trick to help her remember them — but it was also fitting. A few days prior, she had observed them hanging out together at the burrow where they were born.

Such interactions belie the species’ solitary reputation, and conventional wisdom holds that juvenile groundhogs leave home to seek new territories just a few months after they are born. At Gilsland, Dr. Maher has found that roughly half the juveniles remain for a full year in the territory of their birth. When they finally depart, they often stay nearby.

“It depends on whether they can strike an agreement with their mother,” Dr. Maher said. “Some moms are willing to do that. Others are not.” Mothers may even bequeath territories to their daughters. Dr. Maher suspected that Athos’s mom had left Athos the family burrow.

As groundhogs mature, their interactions become less amicable — the Three Musketeers most likely would not lounge together for much longer — but neither are they entirely antagonistic. Dr. Maher has also found her groundhogs to be friendlier to relatives than to unrelated individuals.

Some of the many pages of notes that Dr. Maher and her students have collected over the years on the names, markings and notable behaviors of groundhogs in the Falmouth study.

The result is a community of related groundhogs whose territories overlap. Some individuals do venture farther afield or arrive from afar, which helps keep the gene pool fresh — but a kinship-based structure remains. Gilsland Farm's groundhogs could be understood as living in something like a loose-knit clan, its members keeping their distance but still crossing paths and maintaining relations.

"You have these whole networks of sisters living together, aunts, cousins, extending outward," Dr. Maher said. "This had been hinted at, but I don't think people knew just to what extent it was happening."

Daniel Blumstein, an evolutionary biologist at the University of California, Los Angeles, who leads a long-term study of yellow-bellied marmots at Rocky Mountain Biological Laboratory, said that Dr. Maher's data was "increasing our understanding of the benefits of having subtle social relationships." He added, "She is allowing us to appreciate more the nuanced complexity of less in-your-face social relationships."

An open question is whether the patterns Dr. Maher sees at Gilsland Farm are common in other groundhog populations. Their behaviors may vary depending on local circumstance, she said.

Gilsland Farm's groundhogs live on what amounts to a habitat island; to the west is an impassable estuary, to the east is a dangerous highway. North and south are suburban neighborhoods rich in potential habitat but bristling with unwelcoming homeowners. "They're seen as varmints," Dr. Maher said of the groundhogs. "People don't seem to give them much thought."

An ancestral state

An abandoned burrow.

An as-yet-untagged groundhog known as Brown Barn, one of seven born to Barnadette, whose den is under a barn.

When young groundhogs do leave Gilsland Farm, they tend to end up run over or shot. So there are advantages to staying home, provided there is enough food. There are also mutual benefits to be shared: For example, a whistle of alarm occasioned by an approaching fox would be heard by all nearby.

From the bird's-eye vantage of evolution, the genes of somewhat-social groundhogs spread more readily than more solitary ones, and Dr. Maher thinks that it actually represents a return to something like an ancestral state. Before European colonization, groundhogs would have lived in clearings — created by fires, storms, beaver activity and Indigenous practices — separated by inhospitable forests.

"They were forced to live closer together, so they were more tolerant of each other and more social," she said. "When Europeans cleared all that forest, they actually increased the amount of habitat available for groundhogs. Perhaps they became less social because they could spread out."

To gardeners, groundhogs mean trouble. The animal's burrowing skills and appetites often require wire barricades and buried fencing.

The neighborhoods don't have to be dangerous, though. Dr. Maher hopes that a deeper appreciation of groundhog sociality may help people become more sympathetic to them and even graciously share the suburban landscape with them, the way the Gilsland Farm gardeners do.

Her work also intersects with some nonscientific efforts, such as the social media presence of Chunk the Groundhog — followed by more than 500,000 people on Instagram — and the amateur naturalists whose 15 years of backyard observations yielded the uniquely intimate accounts of Woodchuck Wonderland.

"People don't usually have that insight into the way they live," said John Griffin, director of Urban Wildlife Programs at the Humane Society of the United States. In his own work, Mr. Griffin often encounters a sense of groundhogs as intruders. He thinks that a lack of familiarity — for all their ubiquity, groundhogs are often glimpsed only along roadside verges or dashing for cover — leads to intolerance or an exaggerated sense of risk.

Appreciating that animals have social lives can change how they are perceived, Mr. Griffin said. "I don't know how to quantify it, but I think it's valuable," he said. "Conflict resolution is all about perspective."

Dr. Maher has tagged more than 500 groundhogs over two decades of study.

Wire fencing, the floppier the better, as groundhogs find it hard to climb.

Tolerance would benefit more than groundhogs. Their digging helps aerate and enrich soil, Dr. Maher said, and many other creatures use their burrows. Groundhog burrows may even create hot spots of local biodiversity.

Athos, at least, would be spared the suburban gauntlet. “The fact that she hasn’t left yet makes me think she’ll stick around,” Dr. Maher said.

Athos moved slowly along the path, eating the clover and dandelions that would sustain her through the coming winter. Every so often she stood on two legs and looked around. Dr. Maher noted her activities on a hand-held computer.

When an approaching pedestrian sent Athos scurrying into the tall grass, Dr. Maher explained how the system worked. “I just key in two-letter codes for their behavior,” she said. “Feed. Walk. Alert. Run. Groom. Dig, occasionally. They don’t have a huge repertoire.”

She sounded slightly self-conscious about this. Passers-by, she admitted, are sometimes amused that she spends so much time watching seemingly boring creatures.

With a rustle Athos returned to the path. “Oh, there she is!” Dr. Maher exclaimed, the enthusiasm in her voice suggesting that, after all these years, she still finds groundhogs quite interesting indeed.

Dr. Maher walking a trail of the Maine Audubon Center in Falmouth.