

# Squirrels send ultrasonic SOS, Manitoba researchers find

BY SARAH STAPLES

Squirrels living in a park in Winnipeg were observed screaming ultrasonic warnings to each other, according to a study in this week's edition of the journal *Nature*.

The screams of *Spermophilus richardsonii*, or Richardson's ground squirrel — often referred to as a "prairie gopher" — reach frequencies of 48 kilohertz, far beyond the human hearing range of 14 to 15 kHz.

Researchers from the University of Manitoba are calling their find the first documented evidence of an animal's sub-audible SOS. And they say such calls may help explain the evolution of a variety of species, including humans.

"It's such conspicuous behaviour, it has been somewhat troubling to figure out why it evolved and why it sticks around," said David Wilson, who is due to collect a master's degree in zoology from the University of Manitoba in Winnipeg this December.

Mr. Wilson's graduating thesis called for him to spend a summer searching for the squirrels.

Mr. Wilson would coax the sandy-coloured creatures with peanut butter, trap them and paint numbers on their backs using black hair dye.

Squirrels thus tagged were observed chattering in Winnipeg's Assiniboine Park, which is surrounded by trees that filter out sound debris, such as the sound of leaves rustling.

The Manitoba team had previously published the discovery that the squirrels scream in short, quarter-second bursts resembling the bleeps of a stopwatch —

except that at 90 decibels, the sound can be heard half a mile away.

It's all part of a chain-reaction-style warning system, in which one squirrel sends an SOS to others that pass the message along. But what puzzled the researchers was that every so often, a squirrel goes through the motions of screaming but produces no sound — only a faint rush of air, dubbed a "whisper call."

Using a "bat detector" — a walkie-talkie-sized listening device designed to pick up echo location — and a computer program designed to analyze the squirrels' ultrasonic chirping, Mr. Wilson found the whisper calls were audible within a narrow ultrasonic range and quickly faded.

The screaming ground squirrel, in effect, is able to selectively warn its immediate family members living in the vicinity, without tipping off predators. The closer the kin, the earlier they are warned of danger.

Mr. Wilson subsequently played those first whisper calls over a loudspeaker to squirrels living in a farmer's field outside of Winnipeg. The squirrels responded in fear, confirming the silent screams are in fact a warning.

Other species issue warnings, but those are audible signals. And species that use ultrasound, such as whales, bats, rats and gerbils, seem to use it for purposes other than warning kin, he said.

The results "give credibility" to the kinship theory of survival, he said. "It's about the limits of information-sharing among animals living in groups — it's how far we're willing to go to help our relatives."

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