



How do animals communicate?

KS2 KS3 Ages 7-14 ⌚ 4 min read

For a long time, humans assumed we were uniquely gifted with language — that other animals communicated only in simple signals, nothing approaching the complexity of human speech. The more scientists look, the more that assumption looks like arrogance. Animal communication is extraordinarily rich, diverse, and in some cases, still almost entirely mysterious to us.

Whale song

Humpback whales produce songs of startling complexity — sequences of moans, howls, and cries that can last for hours. These songs travel through ocean water for thousands of kilometres. Only males sing, typically during breeding season, and the songs evolve over time: new phrases spread across entire ocean populations within years, as if whales are following musical trends. We don't fully understand what the songs mean, but the structure — with repeating themes, phrases, and hierarchical organisation — shows a level of sophistication we can barely decode.

🌐 Imagine a language you've never studied, spoken by people on the other side of the world. You can hear it, record it, analyse its rhythms and patterns, and even notice that it changes over time — but without a translation key, the meaning stays opaque. That's exactly the position researchers are in with whale song. The intelligence and complexity are obvious. The meaning largely isn't.

The waggle dance

Honeybees solve a remarkable communication problem: how do you tell thousands of hive-mates the exact location of a food source up to three kilometres away? With a dance. A bee returning from flowers performs a "waggle dance" on the honeycomb — a figure-eight pattern where the angle of the central run indicates the direction of the food relative to the sun, and the duration of the wagging indicates how far away it is. It's a symbolic communication system: the dance represents the location without directly showing it. It works.

Elephant infrasound

Elephants communicate across kilometres using sounds too low for human ears to detect — infrasound below 20 Hz. These rumbles travel through both air and ground; other elephants can detect them through their feet as well as their ears. Elephant calls carry information about identity, emotional state, predator warnings, and reproductive status. Family groups that appear to coordinate despite being out of visual range are often doing so via these underground vibrations.

What AI is revealing

Machine learning is now being applied to animal communication at scale. Projects like Project CETI (Cetacean Translation Initiative) are using AI to analyse millions of sperm whale clicks, looking for structure, context, and meaning. Early results suggest sperm whale clicks have a combinatorial structure similar to human language — elements that can be combined in different ways to produce different meanings. Whether this constitutes a true language is contested. But the possibility that we share our planet with non-human species capable of genuinely complex communication is looking less far-fetched than it once did.