Field study shows titi monkeys convey both location and predator type with vocal alarms

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Dusky Titi Monkey (Callicebus brunneus). Credit: Wikipedia

(Phys.org) —A team of researchers from the U.K. and Brazil has found that black-fronted titi monkeys are able to convey two types of

information in their vocal alarms: location and predator type. As the team notes in their paper published in the journal *Biology Letters*, this is the first known instance of an animal other than human that is able to convey both types of alarms in one sequence of vocal alarms.

Over the years study by various researchers has determined that calls, screeches and other noises made by animals convey far more information than had been originally thought. Many species have been found to use vocal callings to warn others in their group of impending danger. Chief among them are calls to warn of predators that have wandered into the vicinity. Some animals call out to warn of the type of predator, others to let others know where the threat lies. Titi monkeys have, apparently, learned to convey both types of information by connecting different types of sounds together.

To learn more about titi monkeys and what their calls might mean, the research team ventured into a part of Brazil known as Minas Gerais—it's a private nature preserve. There they placed stuffed versions of two types of animals that kill and eat titis when they can catch them: a bird of prey known as a caracara and oncilla, a predatory cat. Some of the stuffed predators were placed on the ground, while others were placed in the trees. After doing so, the researchers recorded the calls made by the titis in the area.

In analyzing the recordings, the researchers discovered that the monkeys emitted a series of noises when sending out alarms. Those patterns, they learned came in four distinct variants: one to indicate a bird in a tree, another a bird on the ground, one to indicate a cat on the ground and another that meant there was a cat in a tree. The sounds were individualized by changing the pitch, moving from a low to a high sound, or vice versa. In essence, the monkeys had developed a sort of Morse code.

The researchers suggest that their mode of study is likely the reason they discovered the unique talent of the monkeys, rather than a true uniqueness of ability. They suspect similar studies of other animals will likely reveal a similar capability.

More information: Titi monkey call sequences vary with predator location and type, Published 4 September 2013 DOI: 10.1098/rsbl.2013.0535

Abstract

Animal alarm calls can encode information about a predator's category, size, distance or threat level. In non-human primates, alarm calls typically refer to broad classes of disturbances, in some instances to specific predators. Here, we present the results of a field experiment with a New World primate, the black-fronted titi monkey (Callicebus nigrifrons), designed to explore the information conveyed by their alarm call system. Adults produced sequences consisting of two main alarm call types that conveyed, in different parts of the utterance, information about a predator's type and location. In particular, sequence compositions differed depending on whether the predator was a mammalian carnivore or a raptor, and whether it was detected in a tree or on the ground. This is the first demonstration of a sequence-based alarm call system in a non-human animal that has the capacity to encode both location and type of predatory threat.