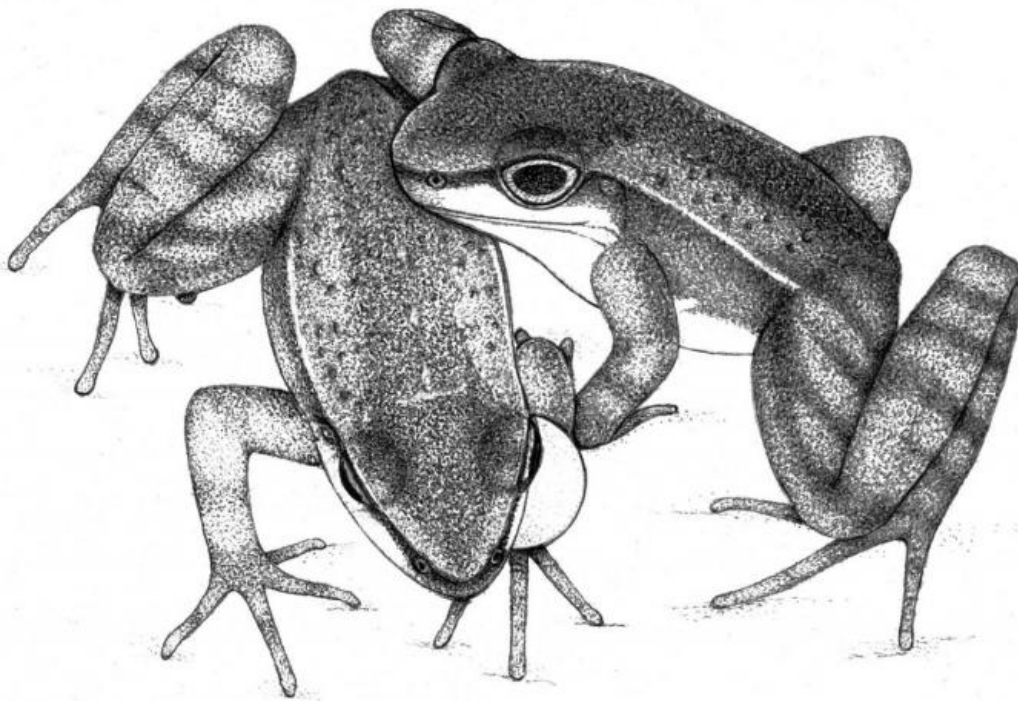


# Brazilian torrent frogs communicate using sophisticated audio, visual signals

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This image shows a mating couple of *Hylodes japi* during courtship. *Hylodes japi* female touching the dorsum of the conspecific male with her gular region during courtship (drawn based on images captured by video recording). Male is calling only with one vocal sac inflated, the one closest to the female (left vocal sac), also showing the visual component of his bright whitish vocal sacs. Note the female's left arm is closer to the male's head and the female's right arm is closer to his posterior body region. Credit: de Sá et al.

Brazilian torrent frogs may use sophisticated audio and visual signals to communicate, including inflating vocal sacs, squealing, and arm waving, according to a study published January 13, 2016 in the open-access journal *PLOS ONE* by Fábio P. de Sá, Universidade Estadual Paulista, Brazil, and colleagues.

Frog [communication](#) plays a role in species recognition and recognition of potential rivals or mates. The authors of this study investigated communication in the Brazilian torrent frog, an endemic frog to Brazil a frog endemic to Brazil, where males are known to be territorial and display elaborate [courtship](#) behavior. The researchers observed nearly 70 male and female torrent frogs over a period of 15 months.

The researchers observed a complex repertoire of acoustic and [visual displays](#) during advertisement, including long-range, short-range, and courtship communication with other frogs. During courtship, the authors observed males performing visual displays using their toes, feet, hands, legs, arms, vocal sacs, head, and body while females only displayed hand, arm, and body movements. They also describe a behavior previously unknown in frogs, where females use a combination of visual displays and touch to stimulate the male's courtship call. They also found that frogs may choose to signal with their left or right limbs, and that males can choose which of their two vocal sacs to use for visual signaling. Torrent frogs also exhibit a diverse acoustic repertoire that, besides the advertisement call, include peeps, squeals, and courtship calls.

The authors suggest their results indicate that Brazilian torrent frogs have one of the most diverse repertoires of visual and audio displays known to frogs, indicating that communication in torrent frog species is likely more sophisticated than previously thought.

Dr. Fábio P. de Sá adds "Our study indicates that communication in species of the genus *Hylodes* is more sophisticated than expected. Also we suggest that communication in frogs is more complex than thought. Likely, that is particularly true for tropical areas, where there is a higher number of species and phylogenetic groups and/or where there is higher microhabitat diversity."

**More information:** de Sá FP, Zina J, Haddad CFB (2016) Sophisticated Communication in the Brazilian Torrent Frog *Hylodes japi*. *PLoS ONE* 11(1): e0145444. [DOI: 10.1371/journal.pone.0145444](https://doi.org/10.1371/journal.pone.0145444)

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