Giving male Bornean rock frogs testosterone found to exaggerate their kicking gestures

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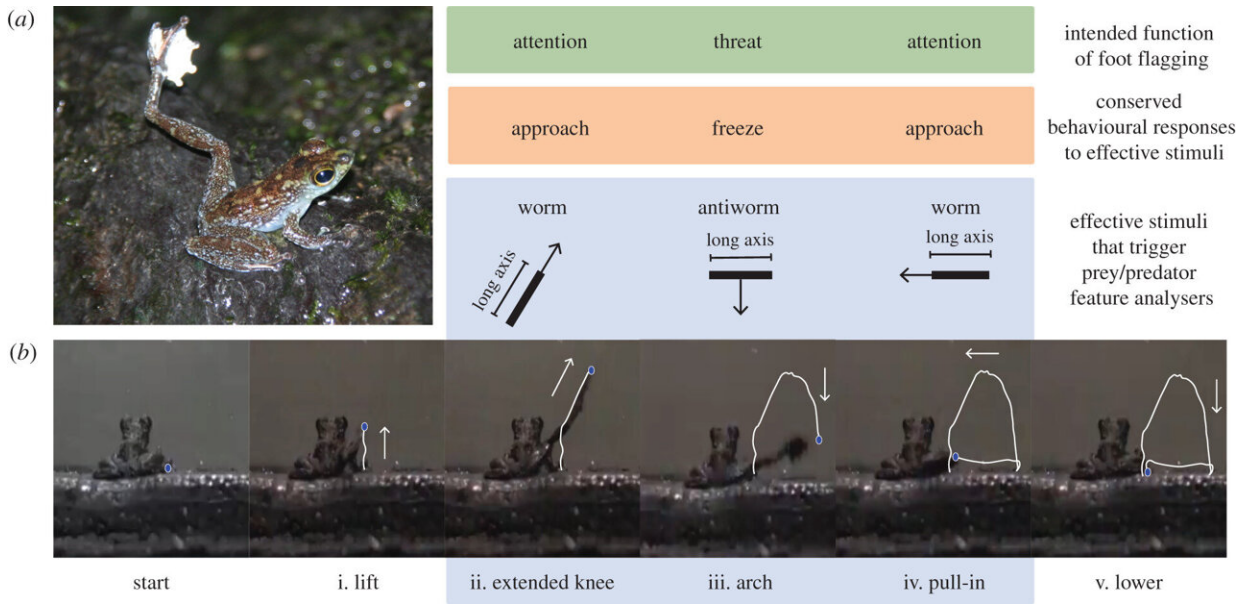

Credit: DOI: 10.1098/rspb.2021.1848

A team of researchers from Brown University, the University of Vienna and Smith College has found that giving male Bornean rock frogs testosterone pushes them to exaggerate their provocative kicking gestures. In their paper published in *Proceedings of the Royal Society B*, the group suggests their experiments show that the kicking gesture evolved as a means to intimidate other males by taking advantage of their visual system.

Prior research has shown that the kicking gestures of the male Bornean rock frogs intimidate other male rivals. Females will mate with any male; thus, males have to take action if they want to ensure they produce offspring. Prior research has also shown that Bornean rock frogs tend to react in fear to things that move but that do not look like worms. Also, Bornean rock frogs live near rapidly moving water or waterfalls, which means they cannot hear anything going on around them most of the time. The constant noise, it has been theorized, prompted the kicking gestures because the males cannot make threatening noises like other species. In this new effort, the researchers theorized that the kicking gesture was related to the worm reaction—it looks very nearly the opposite of a moving worm, which means it can be used in an intimidating way.

To test their theory, the researchers captured some of the frogs and gave them a small dose of testosterone. They believed that doing so would push the frogs to accentuate their kicking gesture to be even more intimidating to other males, thereby allowing them to mate with nearby females without interference. Testing showed that was exactly what happened. The testosterone incited much more theatrical kicks, potentially scaring rivals more than they would have otherwise. The researchers have not tested the other males yet, to see if the exaggerated kicking does actually incite more fear, but they suggest that the kicking gesture is related to fear of non-wormlike movement. But it will take some time and patience to find out for sure—waiting for the males to do their kicking gesture sometimes took hours.

More information: Nigel K. Anderson et al, Testosterone amplifies the negative valence of an agonistic gestural display by exploiting receiver perceptual bias, *Proceedings of the Royal Society B: Biological Sciences* (2021). DOI: 10.1098/rspb.2021.1848