

Gorillas do not bluff when they beat their chests: Honest signaling indicates body size

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A male gorilla chest beating. Credit: Jordi Galbany / Dian Fossey Gorilla Fund

The gorilla chest beat is one of the most emblematic sounds in the animal kingdom. However, until recently, it was unclear what information gorillas were conveying when they gave these impressive displays. A team of international researchers show that chest beats reliably indicate the body size of the chest beater. Body size indicates competitive ability in gorillas. Therefore, this information is likely to be crucial for rival males as well as females in influencing mate choice.

Gorillas usually stand bipedally and rapidly beat their chests with cupped hands in rapid succession. Chest beating is a unique sound because it is not a vocalization, like frogs croaking, but rather it is a form of gestural

communication that can be both heard and seen. The emanating drumming sound can be heard over one kilometer away. The presumed function of gorilla [chest](#) beats is to attract females and intimidate [rival males](#).

Researchers recorded chest beats and used a technique called photogrammetry to non-invasively measured body size of adult male wild mountain [gorillas](#) monitored by the Dian Fossey Gorilla Fund in Volcanoes National Park, Rwanda. They found that larger [males](#) emitted chest beats with lower peak frequencies than smaller ones. In other words, chest beats conveyed information regarding the body size of the chest beater.

"The gorilla chest beat is one of those iconic sounds from the [animal kingdom](#), so it is great that we have been able to show that [body](#) size is encoded in these spectacular displays," says Edward Wright, the first author of the study from the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany.

Body size is a key attribute in many animals as it often reflects fighting or competitive ability. Previous research by this team showed that larger males were more socially dominant and more successful in terms of reproduction than smaller males.



Silverback chest beating during an inter-group interaction. Credit: Dian Fossey Gorilla Fund

"Conducting this study was challenging because the chest beats are relatively short in duration and the we needed to be in the right place at the right time to obtain the sound recordings, as well as staying clear from these large powerful animals," says co-author Eric Ndayishimiye, research assistant with the Dian Fossey Gorilla Fund.

Rival males are likely to attend to the [body size](#) information transmitted in chest beats as it allows them to assess the competitive ability of the chest beater, this will help them decide whether to initiate, escalate or retreat in aggressive contests with them. Females on the other hand, are likely to use this information in their choice of potential mates.



Silverback chest beating. Credit: Dian Fossey Gorilla Fund

Interestingly, the researchers also found a great deal of variation among males in both the number of beats comprised in a chest beat as well as the duration of the chest beat. "This hints at the possibility that chest beats may have individual signatures, but further study is needed to test this," says Wright.

The study is published in study published in *Scientific Reports*.

More information: Chest beats as an honest signal of body size in male mountain gorillas (*Gorilla beringei beringei*) *Scientific Reports*,

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