

The mystery behind the proboscis monkey's big nose

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Male proboscis monkeys weigh about 20 kilograms while females are roughly half that. The long nose is only found in males. Credit: Kyoto University / Masuda Lab

Exaggerated male traits, such as a large nose, can be great for attracting females, finds a study of proboscis monkeys in Malaysia.

Scientists from Cardiff University, the Danau Girang Field Centre, Kyoto University and Sabah Wildlife Department, found a clear link between the [nose](#) size of the [male monkeys](#) and the number of females in their harems, clearly showing that size does matter!

Dr. Sen Nathan, Assistant Director of Sabah Wildlife Department and Ph.D. student at Cardiff University and Danau Girang Field Centre, said: "Although the unique nature of the 'odd-nosed' [proboscis](#) monkey has long been admired as an extremely attractive visual feature by biologists, explanations for its evolution have so far been gleaned more from folklore than from science.

"We show evidence supporting both male-male competition and female choice as causal factors in the evolution of enlarged male noses. We also observed that nasal enlargement modified the

resonance properties of male vocalisations, which probably encode male quality. Our results therefore indicate that the audiovisual contributions of enlarged male noses serve as advertisements to females in their mate selection."

During the study, morphological measurements and behavioural observations in free-ranging proboscis monkeys were carried out in the Lower Kinabatangan Wildlife Sanctuary. The researchers also recorded the vocalisations of male and female proboscis monkeys at three different zoos: Yokohama Zoo in Japan, Singapore Zoo and Low Kawi Zoo (Sabah).

Dr. Ikki Matsuda, from Chubu University and Kyoto University in Japan, said: "Based on the collected data, we tested the correlations between body mass, facial characteristics, testicular volume, vocalisations, and number of harem females in captive and free-ranging proboscis monkeys.

"In addition to finding that enlarged male noses serve as advertisements to females in [mate selection](#), we also found that males with larger noses also tended to have larger body mass and testis. This suggests that nose enlargement is a reliable predictor of social dominance and high sperm count."

Dr. Benoit Goossens, Director of Danau Girang Field Centre and Reader at Cardiff University, added: "We expect our study will shed light on the hypothesis of audiovisual coevolution of exaggerated male traits in primate lineages and provide further evidence for the evolutionary pathway of enlarged noses in proboscis monkeys.

"The proboscis monkey is endemic to Borneo and is a totally protected species in Sabah. Every piece of information that allows us to better understand the behavior of these charismatic animals is important.

"Now our tour guides will be able to tell their guests that size matters, and that males with larger noses attract more [females](#) in their harem."

This study 'Nasalization by *Nasalis larvatus*: larger noses audiovisually advertise conspecifics in proboscis [monkeys](#)' is published in *Science Advances*.

More information: H. Koda et al., "Nasalization by *Nasalis larvatus*: Larger noses audiovisually advertise conspecifics in proboscis monkeys," *Science Advances* (2018).

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Provided by Cardiff University

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