

Bigger gorillas better at attracting mates and raising young

May 1 2012



This is an adult male gorilla -- also known as a "silverback" (far right) -- with a family group in Nouabalé-Ndoki National Park in the Republic of Congo. Conservationists from WCS and the Max Planck Institute for Evolutionary Anthropology recently discovered that larger male gorillas are more successful than smaller ones at attracting mates and raising young. Credit: Thomas Breuer/WCS

Conservationists with the Wildlife Conservation Society and the Max Planck Institute for Evolutionary Anthropology have found that larger male gorillas living in the rainforests of Congo seem to be more successful than smaller ones at attracting mates and even raising young.

The study—conducted over a 12-year period in Nouabalé-Ndoki National Park in the Republic of [Congo](#)—helps to illuminate the selective pressures that influence the evolution of great apes.

In assessing the role of size in the reproductive success of "silverback" [gorillas](#), the researchers selected three physical factors for measurement: overall body length; the size of the adult male's head crest (also known as a sagittal crest which is absent in females); and the size of an individual's gluteal muscles on the animal's posterior. The researchers then compared data on individual size with information on group dynamics to explore possible correlations between physical characteristics of adult males, the number of female gorillas connected to males, and the survival rates of an adult gorilla's offspring.



From 1995 until 2007, the team followed the lives of 19 adult male western lowland gorillas and their family groups from observation platforms with telescopes and cameras, tracking the number of females each male mated with, and the number of offspring produced by each adult male and their survival. Credit: Thomas Breuer/WCS

The results of the study revealed that all three characteristics were positively correlated to an adult male's average number of mates. In other words, the bigger the adult male, the more mates it had. An unexpected finding was that only head-crest size and gluteal muscles were strongly related to offspring survival (measured as infants that survived to weaning age) and overall reproductive success, measured as the number of surviving offspring.

"Our findings of correlations between physical traits and male reproductive success could be considered evidence of a selection process in gorillas, but it is not yet proof," said Breuer, the lead author of the study. "More studies would be necessary to determine the links between morphology and fitness in this and other long-lived species."

The research is the latest of several studies of gorillas made from the ideal research conditions of Nouabalé-Ndoki National Park's Mbeli Bai, a large, swampy forest clearing where gorillas (and scientists studying them) gather for long periods. From 1995 until 2007, the team followed the lives of 19 adult male western lowland gorillas and their family groups from observation platforms with telescopes and cameras. Over that time, the researchers were able to track the number of females each male mated with, and the number and survival rate of offspring produced by each adult male.

The gorilla group data was complemented by physical measurements of adult male gorillas by using a novel, non-invasive method called digital photogrammetry, which produces accurate measurements of individual gorillas and their characteristics from digital images (converting pixel size to actual lengths).

"By using non-invasive methods for measuring the size of individual male gorillas and their features, we are gaining insights about the factors that could be driving mate selection in our closest relatives," added

Breuer.

"Studies such as these—ones that examine the subtle dynamics of gorilla interactions—are only possible in the stable conditions created in protected areas such as Nouabalé-Ndoki National Park," said Dr. James Deutsch, Executive Director for WCS's Africa Program.

The study appears in a recent edition of *Journal of Human Evolution*. The authors of the study include: Thomas Breuer of the [Wildlife Conservation Society](#) and the Max Planck Institute for Evolutionary Anthropology; and Andrew M. Robbins, Christophe Boesch, and Martha M. Robbins of the Max Planck Institute for [Evolutionary Anthropology](#).

Provided by Wildlife Conservation Society

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