

Deceptive sexual signals keep the peace in a bonobo society

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Female Bonobo. Image: Wikipedia.

Female bonobos could have become the dominant sex in their societies by deceiving males as to when they are likely to conceive, according to research published in the open access journal *BMC Evolutionary Biology*. The females' unreliable sexual swellings, which can remain swollen up to 31 days, make it difficult for a male to monopolize and guard female mates to ensure he sires their offspring. This may reduce aggressive mate competition and male sexual coercion toward females, and result in bonobo societies being relatively peaceful.

Exaggerated sexual swellings occur in some species of nonhuman primates, where the skin surrounding the female genitalia changes in size, shape, turgidity and color during the phases of the menstrual cycle.

Many female primates display tumescent (enlarged) sexual swellings to advertise to males that they are ready to mate and likely to conceive. However, they do not appear to be a reliable indicator of fertility in wild bonobos (*Pan paniscus*).

Lead author, Pamela Heidi Douglas from the Max Planck Institute in Leipzig, Germany said: "The sexual swellings of female bonobos appear to send mixed messages to males, making it much harder for males to successfully time their mating efforts. We found that sometimes females would advertise they were fertile when they were not ovulating and thus unlikely to conceive. During other cycles, females did not display that they were fertile even though they were ovulating."

Male-male competition often occurs when sexual swellings are a reliable indicator of a female's condition. When sexual swellings are less precise indicators, this makes it increasingly difficult for males to predict when the female is ovulating and time their mating efforts accurately. This suggests that aggressive mating tactics and coercive mate guarding may not be beneficial mating strategies for male bonobos.

Pamela Heidi Douglas adds: "Males may have to rely on other signals, such as vocal or behavioral cues, to detect when a female is likely to conceive. They also may have to use other techniques to increase their mating success, such as spending more time with the females by grooming them, rather than competing with other males for mating opportunities." Such alternative mating strategies may have been one mechanism by which [bonobo](#) communities became relatively peaceful compared to other primates.

Wild bonobos live in multimale-multifemale societies in which females exhibit extended sexual receptivity and [mating](#) is polygynous (males mate with more than one female) and polyandrous (females mate with more than one male). The data were collected from the Bompusa

community of wild bonobos at the Luikotale field site, located near the southern sector of Salonga National Park, Democratic Republic of Congo, over a period of three years from December 2010 to December 2013.

A total of 13 mature females were observed to characterize female swelling cycles and nine females were used to assess the timing of ovulation in ovarian cycles. A total of 34 cycles were analyzed and female fertility was accurately signaled in only half of them.

The authors suggest that this study advances our understanding of the evolution of sexual signaling in our closest relatives. If the males can no longer rely on sexual swellings as signs of fertility and the [females](#) are free to express mate choice without being constrained by males, this could have led to female dominance in this species.

More information: Pamela Heidi Douglas et al. Mixed messages: wild female bonobos show high variability in the timing of ovulation in relation to sexual swelling patterns, *BMC Evolutionary Biology* (2016). [DOI: 10.1186/s12862-016-0691-3](https://doi.org/10.1186/s12862-016-0691-3)

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