

Necks for sex or food: Giraffes stand to gain

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Abstract

Evolution of the giraffe neck was originally proposed as an adaptation to foraging at the tops of acacia trees, but this theory has been overshadowed by the “necks for sex” hypothesis that proposed that long necks evolved via sexual selection associated with male neck fighting. The necks for sex hypothesis predicted that males would have longer necks than females and that their necks would continue to grow throughout their lives. Because adult giraffe males are much larger than adult females, male giraffe necks are indeed longer but this is also true for all the core anatomy. We measured and analyzed the relative anatomical proportions of the neck, legs, and body trunk of the Masai giraffe (*G.c. tippelskirchi*) in captivity in North America and from wild populations in Tanzania. In contradiction to the necks for sex hypothesis, female giraffe have proportionally longer necks compared to their forelegs than males. Moreover, the female body trunk is proportionally longer whereas male forelegs are proportionally longer. We speculate that the proportionally longer female neck is to compensate for female’s overall shorter stature in foraging and their longer trunk is to accommodate fetal growth. Male’s longer forelegs may be an adaptation for mounting females during mating. Mean differences in these major body components define sex phenotypes, but several male and female giraffe display opposite-sex phenotypes with a significantly higher level of discordancy is seen in captive males. We speculate that the sex-differential phenotype is maintained by mate choice selection in the wild, and this selection is relaxed in captivity where mates are arranged by humans.

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