
Disease avoidance conditions the dispersal patterns of western lowland gorilla females

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Abstract

Social dispersal is an important feature of species dynamics. When mammal females are structured in polygynous groups, their dispersal decisions are conditioned by various female-, male-, and group-related factors. Among them, the influence of disease often remains difficult to assess. The major drivers of female social dispersal are inbreeding avoidance, reduction of predation risk, reduction of competition, selection of a higher-quality male, and reduction of pathogen transmission. However, among them, the influence of disease often remains difficult to assess and has been little investigated in social species. To address this challenge, we investigated the extent to which disease avoidance drives the dispersal decisions of gorilla (*Gorilla gorilla gorilla*) adult females, after controlling for other potentially influential factors. Studies on wildlife and humans show that individuals attempt to avoid disease transmission using external signs of disease on conspecifics. Therefore, we studied disease avoidance in gorillas using yaws-like skin lesions as visible signs of disease in two long-term monitored populations. Yaw prevalence, which was mostly expressed through facial lesions, was 16-22% individuals depending on the year and population. We monitored 212 different females and observed 112 dispersal events. Whatever the population, we showed that adult females avoided breeding groups with a high prevalence of skin disease by emigrating from them and immigrating into healthier ones. By contrast, females did not choose silverbacks according to their disease status. Instead, the critical silverback's feature seemed to be his age. Indeed, females preferentially joined young groups led by young fully-grown silverbacks, rather than older ones. Those silverbacks could be of higher reproductive and protective value. Our study highlights that disease avoidance and selection of high-quality males are critical drivers of gorilla female dispersal decision.

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