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Author for correspondence:
Emily C. Lynch
e-mail: eclync@utu.fi

Evolutionary significance of maternal kinship in a long-lived mammal

Emily C. Lynch[1], Virpi Lummaa[1], Win Htut[2] and Mirkka Lahdenperä[1]

[1]Department of Biology, University of Turku, Turku 20014, Finland
[2]Myanma Timber Enterprise, Ministry of Natural Resources and Environment Conservation, Yangon, Myanmar

ECL, 0000-0003-4522-924X; VL, 0000-0002-2128-7587; ML, 0000-0003-0062-6284

Preferential treatment of kin is widespread across social species and is considered a central prerequisite to the evolution of cooperation through kin selection. Though it is well known that, among most social mammals, females will remain within their natal group and often bias social behaviour towards female maternal kin, less is known about the fitness consequences of these relationships. We test the fitness benefits of living with maternal sisters, measured by age-specific female reproduction, using an unusually large database of a semi-captive Asian elephant (*Elephas maximus*) population. This study system is particularly valuable to an exploration of reproductive trends in a long-lived mammal, because it includes life-history data that span multiple generations, enabling a study of the effects of kinship across a female's lifespan. We find that living near a sister significantly increased the likelihood of annual reproduction among young female elephants, and this effect was strongest when living near a sister 0–5 years younger. Our results show that fitness benefits gained from relationships with kin are age-specific, establish the basis necessary for the formation and maintenance of close social relationships with female kin, and highlight the adaptive importance of matriliny in a long-lived mammal.

This article is part of the theme issue 'The evolution of female-biased kinship in humans and other mammals'.

1. Introduction

Among social mammals, there is widespread evidence that individuals prefer kin over non-kin as social partners [1–3]. Generally, these preferences are explained by kin selection theory [4], whereby kin-biased cooperation and