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RESEARCH ARTICLE

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Changes in age-structure over four decades were a key determinant of population growth rate in a long-lived mammal

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Abstract

1. A changing environment directly influences birth and mortality rates, and thus population growth rates. However, population growth rates in the short term are also influenced by population age-structure. Despite its importance, the contribution of age-structure to population growth rates has rarely been explored empirically in wildlife populations with long-term demographic data.
2. Here we assessed how changes in age-structure influenced short-term population dynamics in a semi-captive population of Asian elephants *Elephas maximus*.
3. We addressed this question using a demographic dataset of female Asian elephants from timber camps in Myanmar spanning 45 years (1970–2014). First, we explored temporal variation in age-structure. Then, using annual matrix population models, we used a retrospective approach to assess the contributions of age-structure and vital rates to short-term population growth rates with respect to the average environment