



Why does asexual queen succession accommodate balanced alate sex ratio in neotropical soil-feeding termites?

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In some termite species, the primary (founder) queen produces parthenogenetic daughters which develop into neotenic reproductives and take over her reproductive tasks, sooner or later in the colony's life. This process, called "asexual queen succession" (AQS) may boost the colony's growth rate without altering its genetic composition. However, if the king dies, only sexually produced male offspring can develop into a neotenic to replace him. This event biases the transmission of the founders' genes to the next generation, benefitting the founder queen. If AQS followed by king replacement commonly occurs in the population, biases in gene transmission will enhance the reproductive value of female dispersers. This will favour a female-biased alate sex ratio, actually observed in the *Reticulitermes* species where AQS was first reported. By contrast, in the neotropical soil-feeding Termitinae *Cavitermes tuberosus*, AQS occurs without bias of the alate sex ratio. Here, we report a number of additional life-history features of *C. tuberosus* which may influence the relative reproductive success of the primary queen and king. These include: production of alates prior to queen replacement, occurrence of sexually produced neotenic females, and asexual production of female dispersers. Altogether, the presence of sexually produced neotenic females (favouring the male founder's genes) compensates for king replacement and production of parthenogenetic female alates (favouring the female founder's genes), yielding nearly equal reproductive values for male and female dispersers and thus predicting a balanced sex ratio at the population level. Likewise, in the soil-feeding Syntermitinae *Silvestritermes minutus*, a balanced alate sex ratio under AQS can be explained by the short, explosive colony life cycle, leaving little time for king replacement.