

# Myths and facts on ratadas: Bamboo blooms, rainfall peaks and rodent outbreaks in South America

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## Abstract

'Ratadas' are rodent irruptions or outbreaks that have been recorded in South America since the Spanish conquest in the 16th century. The notion that ratadas are associated with bamboo flowering and subsequent mast seeding at cycles of 30 years has appeared in the literature since the late 1800s. Based on 63 well-documented cases, we show that not only are ratadas associated with bamboo blooming, but also many are associated with rainfall peaks, and that these two outbreak types are geographically interspersed over South America. In addition, we dispel the notion that South American bamboo blooms occur every 30 years, which may only be the case for *Merostachys fistulosa*. For other species the modal cycles occur every 14 (*Merostachys* spp.), 12 (*Chusquea quila* and/or *valdiviensis*) or 14 years (*Chusquea coleou*). We also propose the hypothesis that rainfall-associated ratadas are ultimately caused by the occurrence of El Niño, and discuss the possible population dynamic mechanisms underlying rodent outbreaks in South America. Aiming at setting a standardized framework for spatial and temporal comparisons, we propose a trapping protocol and a threshold density for assigning the 'ratada' label. Several of the mice implicated in ratadas are reservoirs of emerging diseases, thus emphasizing the need for predictive power to forecast disease epidemics that affect human populations. Further, ratadas may be viewed as pulsed resources, thus enabling us to learn more of the ways communities respond to such intermittent inputs.