New insights on the origin and dispersion history of invasive populations of the small Indian mongoose, Urva auropunctata, in the Caribbean islands

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Abstract

Invasive alien species (IAS) represent one of the major factors of erosion of global biodiversity, especially within island environments. The study of the dynamics of introduction and dispersion of IAS is therefore at the heart of conservation efforts in insular ecosystems. The small Indian mongoose, *Urva auropunctata*, is a carnivore whose native range extends from Middle-East countries, to northern India, Nepal and Myanmar. However, the species was introduced into a large number of islands of the Pacific and Indian Ocean, as well as islands of the Adriatic and Caribbean seas during the 19th and 20th centuries. This work was conducted with the aim of understanding the origin and dispersion of the populations of small Indian mongooses in the Caribbean. In addition to the sequencing of two mitochondrial markers (Cytochrome b and Control Region) from 129 samples of native and introduced zones, we developed 23 new microsatellites markers to genotype 480 individuals from six Caribbean islands, including some populations never sampled before. Classical descriptive statistics as well as spatial approaches were used to infer genetic structure patterns and colonization dynamics. Both mitochondrial and microsatellite markers revealed a strong structuration of the Caribbean populations into two main groups: the first includes the populations of Jamaica, Puerto Rico, Saint Kitts, Saint Martin, the Virgin Islands, and Grenada; the second grouped the populations from Guadeloupe and Martinique. Jamaica had the highest number of haplotypes, unique or shared with the several islands mentioned above. This results suggests, consistently with the historical records, that Jamaica could be the local source of the introduction to the other Caribbean islands formerly part of the British West Indies. These data also suggest that the populations from Jamaica originated from Southeast India or Bangladesh, while the populations of Guadeloupe and Martinique appeared closer to Pakistan individuals, and therefore seemed to result from a different introduction. The genetic structure observed for the small Indian mongoose in the Caribbean islands reveals that introduction events reflects historical geopolitic relationships of the former colonies. Understanding these patterns as well as local dynamics should help improving pest management in this region.

Keywords: invasive species, Urva auropunctata, dispersion, Caribbean, genetic markers

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