

# Colonization time of Arabia by the White-tailed Mongoose *Ichneumia albicauda* as inferred from mitochondrial DNA sequences

(Mammalia: Herpestidae)

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**Abstract.** Given the presence of several species of terrestrial wildlife with an Arabian population separated from their main distribution range, the Arabian Peninsula can be seen as a biogeographic isolate. This arises from its single links with Africa via the Sinai land bridge and the ecological barrier of the Rub' Al Khali desert to dispersals. In the context of Afro-Arabian biogeography, sub-Saharan and Maghreb populations, for which access to the Sinai land bridge is limited respectively by the eastern Sahara and Libyan deserts, are particularly isolated from their Arabian counterparts. Genetic markers have proved useful in studying the evolutionary history of the Arabian populations. A study of mitochondrial DNA sequence data for the White-tailed Mongoose *Ichneumia albicauda* (an Afrotropical mammal) suggested a single colonization period of the Arabian Peninsula  $\approx$  32,500 years ago, making this species a relatively long-term resident and natural colonist of Arabia. Given that colonization of the Arabian Peninsula is estimated to have occurred at a time in which the Red Sea was neither particularly narrow nor shallow, and during a prolonged wet period, the scenario of invasion of Arabia via the Sinai land bridge is perhaps more likely. However, the hypothesis that the Arabian founders derived from a successful landing of a sweepstake-rafting event across the southern Red Sea, difficult to validate or falsify as it is, cannot be categorically rejected. Importation and release of individuals from Africa in the peninsula is thus strongly advised against since it could obliterate a unique evolutionary history.

**Key words.** *Ichneumia albicauda*, White-tailed Mongoose, Afro-Arabian zoogeography, phylogeography, mitochondrial DNA, colonization, Arabia

## Introduction

Most of the terrestrial mammalian species present in the Arabian Peninsula are, biogeographically, Afrotropical or Saharo-Sindian (DELANY 1989). The former elements tend to be seen as the result of direct dispersals from Eritrea-Somalia into south-western Arabia (DELANY 1989) but, given the evidence for colonization through the Sinai by Afrotropical species from other faunal groups (ROBINSON & MATTHEE 1999, POOK et al. 2009), our view on the route(s) and time(s) of their invasions of Arabia necessarily remains hazy. To my knowledge, only for the Hamadryas Baboon *Papio hamadryas* possible scenarios have been detailed based on phylogeographic genetic data (WILDMAN et al. 2004, WINNEY et al. 2004, FERNANDES 2009).

The White-tailed Mongoose *Ichneumia albicauda* Cuvier, 1829 is a mammalian carnivore of the family Herpestidae widely distributed across sub-Saharan Africa, in a broad range of habitats from woodland to semi-deserts, and also found in southern Arabia (WILSON & MIT-