Proceedings: Biological Sciences Vol. 268, No. 1476 (Aug. 7, 2001), pp. 1595-1603

ISSN: 09628452
doi: 10.1098/rspb.2001.1699

PARALLEL GIGANTISM AND COMPLEX COLONIZATION PATTERNS IN THE CAPE VERDE SCINCID LIZARDS MABUYA AND MACROSCINCUS (REPTILIA: SCINCIDAE) REVEALED BY MITOCHONDRIAL DNA SEQUENCES

S. Carranza[1], E. N. Arnold[1], J. A. Mateo[2], L. F. López-Jurado[2]

1 Department of Zoology, The Natural History Museum, Cromwell Road, London SW7 5BD, UK
2 Departamento de Biología, Universidad de Las Palmas de Gran Canaria, Campus de Tafira 35017, Las Palmas de Gran Canaria, Spain

Abstract

The scincid lizards of the Cape Verde islands comprise the extinct endemic giant *Macroscincus coctei* and at least five species of *Mabuya*, one of which, *Mabuya vaillanti*, also had populations with large body size. Phylogenetic analysis based on DNA sequences derived from the mitochondrial cytochrome b, cytochrome oxidase I and 12S rRNA genes (711, 498 and 378 base pairs (bp), respectively) corroborates morphological evidence that these species constitute a clade and that *Macroscincus* is unrelated to very large skinks in other areas. The relationships are ((*M. vaillanti* and *Mabuya delalandii*) (*Mabuya spinalis* and *Macroscincus coctei* (*Mabuya fogoensis nicolauensis* (*Mabuya fogoensis antaoensis* and *Mabuya stangeri*)))). The Cape Verde archipelago was colonized from West Africa, probably in the Late Miocene or Early Pliocene period. The north–eastern islands were probably occupied first, after which the ancestor of *M. vaillanti* and *M. delalandii* may have originated on Boavista, the ancestor of the latter species arriving on Santiago or Fogo later. The *M. fogoensis*–*M. stangeri* clade colonized the islands of Branco, Razo, Santa Luzia and Sâo Vicente from Sâo Nicolau and reached Santo Antâo after this. Colonization of these northeastern islands was slow, perhaps because the recipient islands had not developed earlier or because colonization cut across the path of the Canary Current and the Northeast Trade Winds, the main dispersing agents in the region. Rapid extension of range into the southwestern islands occurred later in *M. spinalis* and then in *M. vaillanti* and *M. delalandii*. The long apparent delay between the origin of these species and their southwestern dispersal may have been because there were earlier colonizations of the southern islands which excluded later ones until the earlier inhabitants were exterminated by volcanic or climatic events. The evolution of large size in *Macroscincus* occurred in the northwestern islands and was paralleled in the eastern and southern islands by populations of *M. vaillanti*. Both cases of size increase in Cape Verde skinks were accompanied by the development of herbivory.