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A new skink fauna from Caribbean islands (Squamata, Mabuyidae, Mabuyinae)

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Abstract

Neotropical skinks are unique among lizards and other vertebrates in their degree of convergence, in reproductive traits, with eutherian mammals. They have also been famously difficult to classify into species, largely because of a conservative body plan and paucity of conventional diagnostic characters. Currently there are 26 recognized species, six of which occur only on Caribbean islands. All are placed in a single genus, *Mabuya*. We conducted a systematic revision of Neotropical skinks using both conventional and unconventional morphological characters, supplemented by DNA sequence analyses. We define 61 species grouped into 16 clades, recognized here as genera. They include three available generic names (*Copeoglossum*, *Mabuya*, and *Spondylurus*) and 13 new genera: *Alinea* **gen. nov.**, *Aspronema* **gen. nov.**, *Brasiliscincus* **gen. nov.**, *Capitellum* **gen. nov.**, *Exila* **gen. nov.**, *Manciola* **gen. nov.**, *Maracaiba* **gen. nov.**, *Marisora* **gen. nov.**, *Noto-mabuya* **gen. nov.**, *Orosaura* **gen. nov.**, *Panopa* **gen. nov.**, *Psychosaura* **gen. nov.**, and *Varzea* **gen. nov.** These 16 genera of skinks form a monophyletic group and are placed in the Subfamily Mabuyinae of the skink Family Mabuyidae. Six other skink families are recognized: Acontidae, Egerniidae, Eugongylidae, Lygosomidae, Scincidae, and Sphenomorphidae. We describe three new subfamilies of Mabuyidae: Chioniniinae **subfam. nov.**, Dasiinae **subfam. nov.**, and Trachylepidinae **subfam. nov.** We describe 24 new species of mabuyines: *Capitellum mariagalantae* **sp. nov.**, *Capitellum parvicruzae* **sp. nov.**, *Copeoglossum auae* **sp. nov.**, *Copeoglossum margaritae* **sp. nov.**, *Copeoglossum redondae* **sp. nov.**, *Mabuya cochonae* **sp. nov.**, *Mabuya desiradae* **sp. nov.**, *Mabuya grandisterrae* **sp. nov.**, *Mabuya guadeloupae* **sp. nov.**, *Mabuya hispaniolae* **sp. nov.**, *Mabuya montserratae* **sp. nov.**, *Marisora aurulae* **sp. nov.**, *Marisora magnacornae* **sp. nov.**, *Marisora roatanae* **sp. nov.**, *Spondylurus anegadae* **sp. nov.**, *Spondylurus culebrae* **sp. nov.**, *Spondylurus caicosae* **sp. nov.**, *Spondylurus haitiae* **sp. nov.**, *Spondylurus magnacruzae* **sp. nov.**, *Spondylurus martinae* **sp. nov.**, *Spondylurus monae* **sp. nov.**, *Spondylurus monitae* **sp. nov.**, *Spondylurus powelli* **sp. nov.**, and *Spondylurus turksae* **sp. nov.** We also resurrect 10 species from synonymies: *Alinea lanceolata* **comb. nov.**, *Alinea luciae* **comb. nov.**, *Capitellum metallicum* **comb. nov.**, *Mabuya dominicana*, *Marisora alliacea* **comb. nov.**, *Marisora brachypoda* **comb. nov.**, *Spondylurus fulgidus* **comb. nov.**, *Spondylurus nitidus* **comb. nov.**, *Spondylurus semitaeniatus* **comb. nov.**, and *Spondylurus spilonotus* **comb. nov.** Of the 61 total species of mabuyine skinks, 39 occur on Caribbean islands, 38 are endemic to those islands, and 33 of those occur in the West Indies. Most species on Caribbean islands are allopatric, single-island endemics, although three species are known from Hispaniola, three from St. Thomas, and two from Culebra, St. Croix, Salt Island, Martinique, the southern Lesser Antilles, Trinidad, and Tobago. Co-occurring species typically differ in body size and belong to different genera. Three ecomorphs are described to account for associations of ecology and morphology: terrestrial, scansorial, and cryptozoic. Parturition occurs at the transition between the dry and wet seasons, and the number of young (1–7) is correlated with body size and taxonomic group. Molecular phylogenies indicate the presence of many unnamed species in Middle and South America. A molecular timetree shows that mabuyines dispersed from Africa to South America 18 (25–9) million years ago, and that diversification occurred initially in South America but soon led to colonization of Caribbean islands and Middle America. The six genera present on Caribbean islands each represent separate dispersals, over water, from the mainland during the last 10 million years. Considerable dispersal and speciation also occurred on and among Caribbean islands, probably enhanced by Pleistocene glacial cycles and their concomitant sea level changes. Based on IUCN Redlist criteria, all of the 38 endemic Caribbean island species are threatened with extinction. Twenty-seven species (71%) are Critically Endangered, six species (16%) are Endangered, and five species (13%) are Vulnerable. Sixteen of the Critically Endangered species are extinct, or possibly extinct, because of human activities during the last two centuries. Several of the surviving species are near extinction and in need of immediate protection. Analysis of collection records indicates that the decline or loss of 14 skink species can be attributed to predation by the Small Indian Mongoose. That invasive predator was introduced as a biological control of rats in sugar cane fields in the late nineteenth century (1872–1900), immediately resulting in a mass extinction of skinks and other reptiles. The ground-dwelling and diurnal habits of skinks have made them particularly susceptible to mongoose predation.