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A new species of extinct scops owl (Aves: Strigiformes: Strigidae: *Otus*) from São Miguel Island (Azores Archipelago, North Atlantic Ocean)

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Abstract

The extinct São Miguel Scops Owl *Otus fruticosi* **n. sp.** is described from fossil bones found in Gruta de Água de Pau, a volcanic tube in São Miguel Island (Azores Archipelago, North Atlantic Ocean). It is the first extinct bird described from the Azores and, after the Madeiran Scops Owl (*O. mauli* Rando, Pieper, Alcover & Olson 2012a), the second extinct species of Strigiformes known in Macaronesia. The forelimb elements of the new taxon are shorter, the hindlimb elements are longer, and the pelvis is shorter and broader than in the Eurasian Scops Owl (*O. scops* Linnaeus). The new species differs from *O. mauli* in the smaller size of many of its bones, especially the ulna and tibiotarsus. Its measurements (estimated weight, wing area, and wing loading, and the ratio of humerus + ulna + carpometacarpus length/femur length) indicate weak powers of flight and ground-dwelling habits. The latest occurrence of the new species, as evidenced by a radiocarbon date of 1970±40 BP from bone collagen, indicates a Late Holocene extinction event subsequent to 49 cal BC, and was probably linked to human arrival and subsequent habitat alterations.

Key words: AMS 14C, extinction, evolution of island biotas, Macaronesia, *Otus fruticosi* **n. sp.**, Quaternary, São Miguel Scops Owl

Introduction

Archipelagos have provided useful models for the study of colonization and adaptive radiation. The diversity and the high level of endemism in some historically known groups of island vertebrates are well known, examples being the honeycreepers of Hawaii and the anoles of the Antilles (Pratt 2005; Losos 2009). However, Quaternary faunas on oceanic islands indicate that current levels of autochthonous biodiversity are only poor remnants of the original faunas (e.g., Olson & James 1982; Worthy & Holdaway 2002; Steadman 2006; Turvey 2009; Hume & Walters 2012). In most cases the impoverishment took place after human arrival in the islands, so that extant taxa are only relicts of a greater past diversity with most of the original members now being extinct. Extinction episodes have been dramatic in remote islands, such as those of Polynesia, where most of the original avifauna became extinct during the last few millennia (Olson & James 1982; Steadman 2006). Discovering and describing the pristine biodiversity of oceanic archipelagos is essential for understanding and calibrating human impacts on island ecosystems.

The volcanic Azores Islands constitute the most isolated archipelago of Macaronesia, and are spread over a distance of c. 600 km in the North Atlantic Ocean. They are located c. 1350 km west of Portugal and 1700 km from America, and consist of nine main islands, ranging northwest to southeast roughly between 37° to 40° N and 25° to 31° W. They can be divided into a western group (Corvo and Flores), a central group (Graciosa, Faial, São Jorge,