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Salticid spider phylogeny revisited, with the discovery of a large Australasian clade (Araneae: Salticidae)

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Abstract

DNA sequence data from four gene regions (28S, 18S, 16S-ND1, and CO1) were gathered from 65 jumping spider (salticid) taxa to supplement previously gathered molecular data for the family's phylogeny. The additional taxa are mostly from Australasia and other regions of the Old World. Bayesian and parsimony analyses support a clade, here called the Astioida, representing a large proportion of the Australasian fauna. Included in the Astioida are, for example, the robust-bodied *Simaetha* and *Mopsus*, the flattened bark-dweller *Holoplatys*, the delicate foliage-dweller *Tauala*, the antlike *Myrmarachne* and the litter-dwelling *Neon*. One astioid, *Rhondes neocaledonicus*, is returned to that genus from its placement in *Hasarius*. Another newly supported clade, the Aelurilloida, includes the aelurillines, the freyines, and the *Bacelarella* group of genera. Other newly delimited clades are the *Philaeus* group (*Philaeus*, *Mogrus*, *Carrhotus* and others), the Leptorchesteae (*Leporchestes*, *Yllenus* and *Paramarpissa*) and the Hasarieae (*Hasarius*, *Habrocestum* and *Chinattus*). These results concur with previous discoveries (e.g., Amycoida, Marpissoida) in suggesting that salticid clades are largely restricted to continental regions.

Key words: Araneae, Salticidae, Salticoida, Astioida, Aelurilloida, jumping spider, arthropod phylogeny

Introduction

Jumping spiders (Salticidae) form a clade of about 5000 described species (Platnick 2008), characterized by a unique high-resolution visual apparatus (Land 1969; Eakin & Brandenburger 1971). These species are distributed on all continents except Antarctica, and show a great diversity of behaviours (Jackson & Pollard 1996) and body forms (Simon 1901, 1903). Early work on their systematics and phylogenetic relationships put much emphasis on the general form of the body, using it to delimit large groups (Simon 1901, 1903) as well as to assign North American species into European genera such as *Icius* Simon, *Pseudicius* Simon and *Habrocestum* Simon (e.g., Peckham & Peckham 1909). However, as more attention was paid to genitalic characters later in the 20th century (e.g., Prószyński 1976), it became clear that the New World species were misplaced in these Old World genera. Indeed, recent molecular phylogenetic studies (Maddison & Hedin 2003; Maddison & Needham 2006; Maddison *et al.* 2007) have revealed both convergence of body forms and a deep biogeographical divide between the Old World and New World. This was emphasized by the discovery of the clade Amycoida (Maddison & Hedin 2003), which is perhaps the dominant Neotropical group (in terms of numbers of species and phenotypic diversity) but which has only one relatively small and uniform lineage (*Sitticus* Simon) in the Old World. Conversely, the Heliophaninae and Plexippinae are both major Old World

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