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Revision of Australian jumping spider genus *Servaea* Simon 1887 (Aranaea: Salticidae) including use of DNA sequence data and predicted distributions

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Abstract

The genus *Servaea* Simon 1887 is revised and redefined. Descriptions and identification keys are provided to the following six species, of which three are described as new: *Servaea incana* (Karsch 1878), *Servaea narraweena* n. sp., *Servaea melaina* n. sp., *Servaea spinibarbis* Simon 1909, *Servaea villosa* (Keyserling 1881) and *Servaea zabkai* n. sp. The type species of the genus, *Servaea vestita* (L. Koch 1879), is proposed here to be a junior synonym of *Servaea incana*. In addition to the diagnoses and descriptions, distributional and nucleotide sequence information are provided. DNA sequence data for the segment of COI used in other salticid studies was obtained for the five species for which suitable material was available. Intraspecific variation in *S. villosa* and *S. incana* were studied in more detail. Within-species divergence was <2% while between-species divergence ranged from 4–8%. The predicted distribution of each species was calculated using BIOCLIM. The two small and similar WA species, *S. melaina* and *S spinibarbis*, had adjacent predicted distributions, one coastal on sandy soils and one inland on other soil types.

Key words: COI, BIOCLIM

Introduction

The genus *Servaea* Simon 1887 is distinctive, and specimens are common, both in the field and in Australian collections. Spiders in this genus can be up to 1.5cm in length and are quite variable in background colour and overlaying colour pattern. They live under loose bark on eucalyptus trees in temperate Australia and hunt insects on the tree trunk. Males and females frequently occur together under the same piece of bark. There are real problems, however, in identifying species within the genus as the female genitalia (compare Figs 11, 49 and 56) and the male palps (compare Figs 15, 27 and 43) show little or no variation between species and the sexes are dimorphic. As well, colour patterns are highly variable within species (e.g. Fig. 1) and the same, very distinctive, patterns may appear intermittently in several species. As a consequence, and in the absence of modern descriptions and keys, most specimens have been placed in *Servaea vestita* (Koch, L. 1879).

The potential usefulness of predicted distribution data in taxonomic studies of Australian salticids follows from Richardson *et al*. (2006) and Richardson (2009), whose studies of the predicted distributions of 52 Australian genera of jumping spiders, showed that predicted distributions were confirmed when new data became available for areas where no specimen data were used in the development of the predictions but the species was predicted to be present. As a consequence, for example, the presence of specimens in an area where no known species are predicted can be taken as supporting evidence of the presence of a new species.

To test the validity of the resulting hypothesised species, DNA sequence data for all forms for which suitable material was available were obtained and compared. Sufficient specimens were typed to allow discrimination between within-species and between-species divergence in two of the species.

The genus *Scaea* was established by L. Koch in 1879 for the species *Scaea vestita* Koch, L. 1879. The name *Scaea*, however, was preoccupied (*Scaea* Phillipi 1844) and Simon proposed the replacement name *Servaea* Simon, 1887. Maddison and Hedin (2003) place *Servaea* in the subfamily Euophrinae thereby identifying potential related genera. Because the genus is distinctive, widespread in temperate Australia, and commonly collected, its distribution on mainland Australia and surrounding islands has been described (Rainbow 1912; Zabka 1990, 1993;

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