



## Redescription of *Clubiona blesti* Forster, 1979 (Araneae: Clubionidae) with a preliminary molecular phylogeny of New Zealand *Clubiona*

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### Abstract

The New Zealand spider *Clubiona blesti* Forster, 1979 is redescribed, with the male described for the first time, and a preliminary molecular phylogenetic analysis of cytochrome *c* oxidase subunit I (COI) mtDNA sequences for eight species of New Zealand *Clubiona* and an outgroup from Tasmania is presented.

There is considerable intraspecific variation in *C. blesti*, both genetic and in the morphology of copulatory organs, which may be explained by its wide distribution. The lack of a geographic structure based on consistent differences between populations may suggest great dispersal ability. Given the limited sample size, further sampling and data on additional genetic markers will be necessary to confirm this.

The phylogenetic analysis of seven more species indicated that *Clubiona cambridgei* is the sister species of *C. blesti* and confirmed the existence of at least two monophyletic groups among the New Zealand *Clubiona*: species with a striped abdomen and with a spotted abdomen.

**Key words:** Taxonomy, spiders, morphological variation, genetic divergence, COI

### Introduction

New Zealand is classified as a biodiversity hotspot (Myers *et al.* 2000) with high levels of endemism in most studied taxa (Kuschel 1975). Spiders are no exception and it is estimated that 93% of all species in the country are endemic (Paquin *et al.* 2010). A large percentage of these species remain undescribed, which hinders morphological identification or classification of specimens in biodiversity studies (Malumbres-Olarte *et al.* in press). More than half of the New Zealand spider species known to date were described by R.R. Forster (Patrick *et al.* 2000). Despite this enormous contribution, a considerable number of species were described from only one sex, and in certain cases, split into separate species due to morphological mismatches (e.g. Vink *et al.* 2011). Genetic information has proved invaluable for correcting such mistakes, as well as for describing new species and studying their phylogenetic relationships (e.g. Vink 2002; Vink & Dupérré 2010; Vink *et al.* 2011).

The genus *Clubiona* Latreille, 1804 has a worldwide distribution, with 461 described species (Platnick 2011) known from all continents except Antarctica. It is the only representative of the family Clubionidae in New Zealand, where it is represented by 14 endemic species, of which two have been described from only female specimens, *Clubiona blesti* Forster, 1979 and *Clubiona torta* Forster, 1979 (Forster 1979; Paquin *et al.* 2010). It is common in native ecosystems, such as forests and tussock grasslands, however, there has been no phylogenetic analysis of the New Zealand species of *Clubiona* since the systematic revision by Forster (1979).

This paper redescribes *C. blesti*, with the first description of the male, and presents the first preliminary molecular phylogeny of New Zealand *Clubiona* species based on the genetic marker cytochrome *c* oxidase subunit I (COI).