

## The damselfly genus *Xanthocnemis* in New Zealand (Odonata: Coenagrionidae)

Milen Marinov \*<sup>1</sup>, Catalina Amaya-Perilla <sup>2</sup>, Gregory Holwell <sup>3</sup>, Arvind Varsani <sup>4</sup>, Katherine van Bysterveldt <sup>4</sup>, Simona Kraberger <sup>4</sup>, Daisy Stainton <sup>4</sup>, Anisha Dayaram <sup>4</sup>, Nathan Curtis <sup>5</sup>, Robert Cruickshank <sup>5</sup>, Adrian Paterson <sup>5</sup>

<sup>1</sup> Ministry for Primary Industries; 231 Morrin Rd; Auckland

<sup>2</sup> Department of Conservation; 33 Turanga Place; Turangi

<sup>3</sup> University of Auckland; Private Bag 92019; Auckland

<sup>4</sup> University of Canterbury; Private bag 4800; Christchurch

<sup>5</sup> Lincoln University; PO Box 85084; Christchurch

The damselfly genus *Xanthocnemis* is endemic to New Zealand with four described species: *zealandica* distributed all over the North, South and Stewart Islands, *sobrina* restricted to forested shady streams in the North Island only, *sinclairi* discovered around the South Island mountain tarns and *tuanuii* identified in the Chatham and Pitt Islands only. The variations in morphological features used for species distinction are minor and largely confined to the male genitalia with only *X. tuanuii* showing distinction in external morphology. A new approach was developed to tackle taxonomic difficult groups like *Xanthocnemis*. It relies on integration of geometric morphometrics and molecular analyses. The first uses morphological landmarks assigned to areas considered important in damselfly diagnostics and the second targeted mitochondrial and ribosomal genes utilised in other taxonomic studies. The four taxonomic entities were analysed in two separated studies using both tests. The results showed support for separate status of two species only: *X. zealandica* and *X. tuanuii*. The other two *X. sobrina* and *X. sinclairi* are proposed as junior synonyms of *X. zealandica*.

