



## Revalidation and redescription of *Bungona illiesi* (Lugo-Ortiz & McCafferty) (Ephemeroptera: Baetidae) from Australia, based on mitochondrial and morphological evidence

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### Abstract

*Bungona illiesi* (Lugo-Ortiz & McCafferty) n.comb. was described from a single specimen collected in northern Queensland, Australia, as a species of *Cloeodes* Traver. The distinguishing characteristics of a minute maxillary palp, the absence of spination on the mandibles between the mola and prostheca, narrow-elongate gills, and medially expanded labial palps were later found to occur in *Bungona narilla* Harker, and the two species were synonymized. Extensive collecting in northern Queensland yielded larvae and adults of *Bungona* that differ from *B. narilla* in all life stages. We believe our specimens are equivalent to *B. illiesi* because they were collected only a few kilometres from the type locality, at least one specimen had both minute and normally sized maxillary palps, nearly all specimens had medially expanded labial palps, and the dorsal abdominal colour pattern was similar. Sequences of a 657-bp fragment of the mitochondrial gene cytochrome oxidase I supported the recognition of two species and confirmed the association of larvae and adults of *B. illiesi*. Interspecific p-distances ranged from 18.8–19.4% and the maximum intraspecific divergence observed was 1.7%. Based on the combination of morphological, mitochondrial, and biogeographical data, we show *B. illiesi* should be recognised as a valid species distinct from *B. narilla*. Larvae of *B. illiesi* differ from those of *B. narilla* by having fewer robust setae on the femora and a small lateral tooth on the outer incisor of both mandibles. Male and female adults differ from those of *B. narilla* by having less extensive red colouration on the abdominal terga.

**Key words:** mayfly, Australia, mtDNA, cytochrome oxidase I, taxonomy

### Introduction

The Australian Baetidae remain poorly known, with only 20 species described to date, although unpublished data indicate the occurrence of approximately 60 species. *Bungona* Harker was established for *B. narilla* Harker, 1957 and described from larvae, males, and female subimagos from near Sydney, New South Wales. Adults of *Bungona* are distinguished from those of other Australian baetids by the absence of hindwings, turbinate eyes of the male with parallel margins, double marginal intercalaries in the forewing, a distinctive colour pattern, and the lack of a dorsal projection on the metascutellum. The larvae are differentiated from those of all other Australian Baetidae by the presence of transverse rows of fine setae on abdominal sterna 4–6, an arc of very long, fine setae on the tibiae, and an oblique row of very long, fine setae on the tarsi.

Since its initial description, *Bungona* has been found to be widespread in eastern Australia from northern Queensland to Victoria, and one specimen is known from Tasmania (Suter and Pearson 2001). In their redescription of *Bungona*, Suter and Pearson (2001) synonymized two species that had been described in *Cloeodes* Traver by Lugo-Ortiz and McCafferty (1998) with *B. narilla*. *Cloeodes fustipalpus* Lugo-Ortiz & McCafferty, 1998 was described from a small series of larvae and exuviae from northern New South Wales, and *C. illiesi* Lugo-Ortiz & McCafferty, 1998 was based on a single specimen from near Cairns in northern Queensland.