



## Description of *Poecilia (Acanthophaelus) obscura* n. sp., (Teleostei: Poeciliidae), a new guppy species from western Trinidad, with remarks on *P. wingei* and the status of the “Ender’s guppy”

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### Abstract

*Poecilia obscura*, new species, is described from the Oropuche system, Trinidad. A mitochondrial DNA-sequence based molecular phylogenetic analysis revealed the status of the new species as a separate taxon. It is most closely related to the Common guppy, *P. reticulata* and to the recently described species, *P. wingei*. It can also be distinguished by morphometrics and gonopodial characteristics from these two species, although the ranges for all values overlap. A definition of the new species on morphology criteria alone is thus impossible. Therefore, *P. obscura* forms a cryptic species complex with the two other species. *P. wingei* is now unequivocally defined by the molecular phylogeny as a valid species. The three guppy species are included in the subgenus *Acanthophaelus* Eigenmann (1907), which is considered as generically different from all other taxa of the Poeciliinae sensu Parenti (1981).

**Key words:** molecular phylogeny, sexual dimorphism, freshwater fish, artificial introduction, hybridization, cryptic species complex

### Introduction

Fish that are commonly known as guppies are one of the most widely used model systems and laboratory animals. They also became a favorite ornamental fish for aquarium hobbyists due to the possibility to create fancy colorful morphs with exquisite fin forms. Their popularity in the pet trade and use in mosquito control has resulted in guppies being released worldwide outside their natural range in the northeastern part of South America and adjacent Caribbean Islands.

For a long time the guppy was considered monophyletic and hence a monotypic taxon, *Poecilia reticulata* (Peters, 1859). Allozyme and DNA sequence based studies revealed a marked genetic differentiation among guppy populations (Alexander and Breden, 2004; Carvalho *et al.*, 1991; Russell and Magurran, 2006; Shaw *et al.*, 1991). In particular, this phenomenon was most obvious for fish from the Caroni vs. the Oropuche drainages of Northern Trinidad and for guppies from certain habitats around the city of Cumaná (also known as Ender’s guppy) vs. other populations from Venezuela. This genetic differentiation was interpreted as being the consequences of independent cases of incipient speciation in *P. reticulata* (Alexander and Breden, 2004; Russell and Magurran, 2006). The observed phenomenon was strongly argued as being an instance of “evolution in action” where population differentiation has not led to the formation of species (Magurran, 1998).

Poeser *et al.* (2005) described exclusively on the basis of morphological and behavioral characters a second species of guppy from the Paria peninsula (Venezuela) as *Poecilia wingei* and hypothesized that the Cumaná guppies used in the above mentioned genetic studies might be local populations of *P. wingei* or even