



## Morphological re-examination and taxonomy of the genus *Macropodus* (Perciformes, Osphronemidae)

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### Abstract

The taxonomy of the paradisefishes of the genus *Macropodus* (F. Osphronemidae) has been confused due to inadequate sampling and the limitations of morphometrics and meristics in distinguishing species. The validity of the five currently described species, including two species described in 2002, was investigated using morphological characters. These characters included 25 morphometric measurements, otolith morphology, colouration, and counts of scales, vertebrae and spines in unpaired fins. Samples were collected from the described distributions of *M. spechti* Schreitmüller, 1936 and *M. erythropterus* Freyhof & Herder, 2002 in central Vietnam, and of *M. hongkongensis* Freyhof & Herder, 2002 in Hong Kong. Populations of *M. hongkongensis* were newly recorded in eastern Guangdong and Fujian Provinces, P.R. China. *M. opercularis* (Linnaeus, 1758) was also collected close to these locations and in the major intervening drainages. *Macropodus ocellatus* Cantor, 1842 was collected from Chongqing Municipality, China, and samples augmented by some museum specimens. The latter species could be distinguished from other species of the genus by both meristic and morphometric characters. The species *M. spechti*, *M. erythropterus*, *M. hongkongensis* and *M. opercularis* could not be reliably distinguished from each other by meristic and morphometric characters. Otolith morphology did not distinguish any species. Colouration discriminated all species except *M. spechti* / *M. erythropterus*. As a result, *M. erythropterus* Freyhof & Herder, 2002 was undiagnosable on the basis of morphology. The presence of *M. hongkongensis* in eastern Guangdong and Fujian Provinces, in addition to Hong Kong, indicates that distribution of this recently-described species clearly requires further investigation in south-eastern China.

**Key words:** *Macropodus*, morphology, morphometrics, meristics, taxonomy

### Introduction

Correct delineation of species boundaries and classification is crucial to describing biodiversity; it also underpins biogeography, community ecology, conservation biology, evolution, paleontology, and virtually all sub-fields of biology (Dayrat, B., 2005). The East Asian region, and particularly Indo-China, has increasingly become a focus of systematic and biogeographic work on fishes, as political changes have allowed improved access, coincidental with the perception that accelerating development threatens the known high diversity (Kottelat, M., 1989). The same regions have been considered a ‘centre of dispersal’ for freshwater fishes of the world (e.g. Darlington, P.J., 1957, p.100), and thus accurately recording the diversity of fish species and their distributions in these regions assumes a greater scientific significance. Recent work on taxonomy and phylogeography in the area has contributed to understanding of historical drainage connections. It is also anticipated to augment food security in the region through better identification of potential aquaculture species, particularly cyprinids (Berrebi, P., Boissin, E., Fang, F., & Cattaneo-Berrebi, G., 2005; Berrebi, P., Retif,