



A Taxonomic Review of the Australian Butterfly Ray *Gymnura australis* (Ramsay & Ogilby, 1886) and Other Members of the family Gymnuridae (Order Rajiformes) from the Indo-West Pacific.

IAN P. JACOBSEN¹ & MIKE B. BENNETT²

School of Biomedical Sciences, University of Queensland, Brisbane 4072, Queensland Australia.

E-mail: i.jacobsen@uq.edu.au¹; m.bennett@uq.edu.au²

Abstract

The taxonomy of *G. australis* was examined as part of a wider review of Indo-West Pacific Gymnuridae species. The study revealed two distinct morphological variants: *G. australis* var. eastern Australia and *G. australis* var. northern Australia. *Gymnura australis* var. eastern Australia has ≤ 3 complete or partially-complete white tail-bands and may or may not have a dorsal fin. *Gymnura australis* var. northern Australia has a longer tail region, always possesses a dorsal fin and has ≥ 4 predominantly complete white tail-bands. Morphological and genetic comparisons indicate the observed differences were intraspecific (1.22% genetic gap difference). Wider morphometric comparisons between Indo-West Pacific gymnurids, revealed species differ principally in tail morphology. Dorsal-fin development in *G. zonura* also varied intraspecifically. Results obtained from the study, help clarify the taxonomic status of the family and provide strong evidence that all Gymnuridae species belong to a single genus *Gymnura*, with *Aetoplatea* subsequently defined as a junior synonym.

Key words: Gymnuridae, *japonica*, *poecilura*, *tentaculata*, Japan, Indonesia

Introduction

The Gymnuridae (Butterfly Rays) have a worldwide distribution and are generally found in warm-temperate and tropical seas (Last & Stevens 2009). The family is represented by a single genus *Gymnura* van Hasselt, 1823, although a second genus *Aetoplatea* Valenciennes in Müller & Henle, 1841 has been included on occasion (Compagno & Last 1999; Vossoughi & Vosoughi 1999; Yano *et al.* 2005; White 2006). The family consists of at least 12 recognised species, six of which are found in the Indo-West Pacific region: the Tentacled Butterfly Ray *G. tentaculata* Müller & Henle, 1841, the Zonetail Butterfly Ray *G. zonura* Bleeker, 1852, the Australian Butterfly Ray *G. australis* (Ramsay & Ogilby, 1886), the Japanese Butterfly Ray *G. japonica* (Temminck & Schlegel, 1850), the Longtail Butterfly Ray *G. poecilura* (Shaw, 1804), and the Smooth Butterfly Ray *G. sp. cf. micrura* (Bloch & Schneider, 1801) (Compagno & Last 1999; Bizzarro & White 2006; White 2006). Only a single gymnurid species has been recorded in Australian waters, *G. australis* (Last & Stevens 2009).

The Gymnuridae are characterized as having a disc width considerably larger than the disc length and a short 'rat-like' tail when compared to other batoid species (Compagno & Last 1999; Last & Stevens 2009). Interspecifically, gymnurid species exhibit a high degree of similarity in body shape and colouration. As a consequence, they are frequently differentiated by the morphology of their tail (Bigelow & Schroeder 1953; Murdy *et al.* 1997; Compagno & Last 1999). In their original description, Ramsay and Ogilby (1886) described the tail of *G. australis* as having two interrupted white bands and lacking a dorsal fin. However, subsequent taxonomic analysis has shown that both dorsal-fin development and tail banding can vary in this