



A revision of the western North Pacific swellsharks, genus *Cephaloscyllium* Gill 1862 (Chondrichthyes: Carcharhiniformes: Scyliorhinidae), including descriptions of two new species

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Abstract

The genus *Cephaloscyllium* Gill 1862 (Chondrichthyes, Carcharhiniformes, Scyliorhinidae) until recently had only two species recognized, *C. isabellum* [= *C. umbratile* (Jordan & Fowler 1903)] and *C. fasciatum* Chan 1966, from the western North Pacific (WNP), with one dubious species, *C. formosanum*, having been described by Teng in 1962. Recently, three additional species were described, *C. circulopullum* Yano *et al.* 2005, *C. sarawakensis* Yano *et al.* 2005, and *C. parvum* Inoue & Nakaya 2006 from this region. Here we present a revision of this genus for the WNP, including redescrptions of *C. fasciatum* and *C. umbratile* based on the holotypes, a re-examination of the recently described species, and descriptions of two new species from Taiwan. *Cephaloscyllium umbratile* can be distinguished from its congeners based on maximum size, length of first dorsal-fin base, anal–caudal space, and dorsal–caudal space. We conclude, based on a comparison of *C. parvum* and *C. sarawakensis*, that the former is a junior synonym of the latter species. The two new Taiwanese species can be separated from other WNP species by color pattern, shape of the anterior nasal flap, anal and dorsal-fin size, internarial width, and mouth size. Finally, we present a revised dichotomous key to the WNP *Cephaloscyllium* recognizing six contemporary taxa: *C. circulopullum*, *C. fasciatum*, *C. sarawakensis*, *C. umbratile*, *C. pardelotum* **sp. nov.** and *C. maculatum* **sp. nov.**

Key words: Carcharhiniformes, Scyliorhinidae, *Cephaloscyllium*, Swellshark, Taiwan, western North Pacific, new species

Introduction

One of the more enigmatic, albeit poorly studied groups of carcharhiniform sharks are the catsharks (Chondrichthyes: Scyliorhinidae). Currently, the Scyliorhinidae is composed of roughly 16 genera and 151 species, accounting for 13% of all extant cartilaginous fishes (Human *et al.* 2006). The interrelationships of the Scyliorhinidae, the largest family within the order Carcharhiniformes, have long been debated by taxonomists. However, according to recent molecular phylogenetic investigations, the subfamily Scyliorhininae including the genera *Cephaloscyllium*, *Poroderma*, and *Scyliorhinus* represent a monophyletic, basal group (Iglesias *et al.* 2005; Human *et al.* 2006). These genera, members of the “true” catsharks, have long been considered plesiomorphic for several reasons; they are oviparous as opposed to pseudoplacental, small in size, and possess multicuspid teeth, few and poorly calcified vertebrae, unprotected eyes (lacking a nictitating membrane), flexible lobe-like fins with a reduced second dorsal fin, and an eel-like swimming mode (Springer 1979).

Members of the genus *Cephaloscyllium* Gill 1862 are also known as swellsharks, their common name being derived from the unique ability to swallow either air or seawater, inflating their stomachs to deter preda-