Melichthys indicus x M. vidua, a hybrid triggerfish (Tetraodontiformes: Balistidae) from Indonesia

John E. Randall¹, Robert F. Myers², and Richard Winterbottom³

1) Bishop Museum, 1525 Bernice St., Honolulu, Hawaii 96817-2704, USA
2) Robert F. Myers, 1423 SW 109th Way, Davie, Florida 33324-7181, USA.
3) Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, M5S 2C6, Canada

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Abstract
The hybrid of the triggerfishes Melichthys indicus and M. vidua is reported from two underwater photographs taken at Bali, Indonesia and a single specimen collected in the Chagos Archipelago. This constitutes the first record of a hybrid for the family Balistidae.

Zusammenfassung

Résumé

Sommario
Si riporta la presenza di una forma ibrida tra due specie di pesci balestra, Melichthys indicus e M. vidua, documentata sulla base di due fotografie scattate a Bali, in Indonesia, e sulla cattura di un esemplare nell’Arcipelaga Chagos. Si tratta del primo ibrido nell’ambito della famiglia Balistidae.

Introduction
As noted by Schwartz (1972), the great majority of records of hybrids of fishes are from fresh water, although the proportion of records from the marine environment has increased in recent years (Schwartz, 2001). Among the coral reef fishes, the butterflyfishes (Chaetodontidae) and angelfishes (Pomacanthidae) have the highest number of recorded hybrids (Pyle & Randall, 1994). This may be due to their popularity among underwater photographers and fish watchers, to their prevalence in the aquarium trade, and their distinctive colour patterns that enable intermediate patterns to be recognized more easily. Recent reports have documented eight examples of hybrids among surgeonfishes (Acanthuridae), most of which are uniquely coloured (Randall & Frische, 2000; Randall et al., 2001). In all of these cases, where the relative abundance of the parent species was known in the area where the hybrids were found, one of the species was much more common than the other. Under such circumstances the rarer species, failing to find a mate or spawning aggregation of its own species, may spawn with a close relative. The species of the above three families all lay pelagic eggs, so it is also possible for the sperm of one species to fertilize the ova of another if the two species are adjacent during the time of spawning.

Melichthys indicus x M. vidua

From the research of Fricke (1980) and our own observations, triggerfishes are known to spawn in pairs; therefore, hybridization would seem much less likely than for species that lay pelagic eggs, particularly those that are group spawners. The eggs of balistid fishes are laid in a nest prepared by the female who later guards it (though in some species she may be assisted by the male); two of the large species, Pseudobalistes fuscus (Bloch & Schneider, 1801) and Balistoides viridescens (Bloch & Schneider, 1801), have bitten humans who have ventured near the nest (Fricke,1980; Randall & Millington, 1990).

It was therefore a surprise when the first and second authors each independently discovered a hybrid of the triggerfishes Melichthys indicus Randall & Klausewitz, 1973 (Fig. 1) and M. vidua (Solander, in Richardson, 1845) (Fig. 2) at Bali, Indonesia.

Melichthys indicus occurs in the Indian Ocean from the east coast of Africa to the Cocos-Keeling Islands, Christmas Island, and the southern islands of Indo-
nesia east to Bali where it appears to be a vagrant. *M. vidua* is wide-ranging in the Indo-Pacific region, from the east coast of Africa to the Hawaiian Islands and the islands of French Polynesia.

The hybrids of *Melichthys indicus* and *M. vidua* were spotted at Bali by virtue of the intermediate colour pattern. The one found by the first author (Fig. 3). The feature that was encountered on a coral reef in 3 m off Tulamben on the northeast coast in October 2000, first attracted attention was the very broad black margin of the otherwise pale second dorsal and anal fins. These fins have a much narrower margin in *M. vidua* but are entirely black in *M. indicus*, except for a bluish white band at the base. A submarginal dusky pink streak was then noted in the upper and lower part of the caudal fin of the Tulamben fish. In *M. vidua* this fin is pink with a broad white bar at the base, whereas it is black with a narrow pale blue margin in *M. indicus*. Because Tulamben, a popular diving site, is off limits to fishermen, it was not possible to collect the fish.

The hybrid photographed by the second author (while snorkeling after running out of air in his SCUBA tank) (Fig. 4) was found at Menjangan Island, a small marine reserve off northwest Bali, in November 1999. This fish has the second dorsal and the anal fins of similar colour to the Tulamben hybrid, but the white band at the base of each fin is broader. The caudal fin has more pink, hence the hybrid is more intermediate to the parent species in its pattern than is the Tulamben hybrid.

*Melichthys vidua* is common for a triggerfish at Tulamben, but only a single individual of *M. indicus* was seen. *M. vidua* is present at Menjangan Island, but *M. indicus* was not observed.
Winterbottom et al. (1989) reported three lots of *Melichthys indicus* from the Chagos Archipelago in the western Indian Ocean. One of their adult specimens (ROM 40941, 170 mm SL, illustrated in their Figure 431) was regarded as a colour morph. It is unusual in having white second dorsal and anal fins with a broad black border. There would have been no reason to suspect that it was a hybrid, because *M. vidua* was not observed in the Chagos Archipelago and no hybrids of triggerfishes had been reported. We now identify this specimen as a hybrid of *M. indicus* and *M. vidua*.

Evidently *M. vidua* is not common in the Indian Ocean. It was reported as rare in southern Africa by Smith & Heemstra (1986); it was not found in the Maldivian Islands by Randall & Anderson (1993), but it has been recorded from Réunion (Harmelin-Vivien, 1976).

Of the three species of *Melichthys*, only the circumtropical *M. niger* (Bloch, 1786) is easily distinguished morphologically by its emarginate caudal fin, higher pectoral ray count, and fewer head scale rows (Randall and Klausewitz, 1993). Other than colour, the only character to separate *M. indicus* from *M. vidua* is a shallow oblique groove, white in life, on the lower side of the head of *indicus*, beginning behind the corner of the mouth. The Chagos specimen ROM 40941 lacks this groove. The caudal fin, being mainly black, is reminiscent of *indicus*, but the colour of the second dorsal fin is closer to that of *vidua*. We have no hesitation in regarding this specimen as a hybrid in spite of *vidua* not being observed or reported from the Chagos Archipelago.
References


