

APPARENT MIMICRY OF JELLYFISH BY JUVENILE POMFRET, *Pampus chinensis* (TELEOSTEI: STROMATEIDAE)

H. H. Tan

Raffles Museum of Biodiversity Research, Department of Biological Sciences,
National University of Singapore, 6 Science Drive 2, #03-01, Singapore 117546, Republic of Singapore
(Email: heokhui@nus.edu.sg)

INTRODUCTION

In Asia, pomfrets of the genus *Pampus* are economically important in fisheries (Tan et al., 1996; Carpenter & Niem, 2001). The Chinese pomfret, *Pampus chinensis* (Euphrasen) (Fig. 1), also known as *dǒu chāng* in Mandarin, is commonly sold in wet markets in Singapore, and commands moderate to high prices of S\$15–35 per kg, depending on the size. All pomfrets in Singapore are caught in the surrounding sea, mainly with gill nets and drift nets. According to a local fisher (H. L. Oung, pers. comm.) and from personal observation, the Chinese pomfret, apparently a benthopelagic species, is usually caught at night. Juvenile pomfrets are rarely encountered. This article documents the observations of a live juvenile *Pampus chinensis* collected by the author.



Fig. 1. *Pampus chinensis*, adult, ca. 300 mm SL, Johor Straits.

MATERIAL AND METHODS

Voucher specimens were obtained from the Singapore side of the Johor Straits with gill nets, drift nets and hand nets. They were fixed in 10% formalin and preserved in 75% ethanol (both volume:volume), and were deposited at the Zoological Reference Collection (ZRC), Raffles Museum of Biodiversity Research of the National University of Singapore. The abbreviation, SL, refers to standard length.

Material examined: ZRC 51495, 1 juvenile: 24.9 mm SL, off Seletar Island, collector: H. H. Tan, 17 Aug.2004 (Fig. 2); ZRC 50217, 1 specimen: 78.7 mm SL, off Pulau Tekong south, collector: H. H. Tan et al., 16 Nov.2004. Three adults (ranging from 300–350 mm SL) from the Johor Straits were examined, but not preserved.



Fig. 2. *Pampus chinensis*, juvenile, ZRC 51495, 24.9 mm SL, Johor Straits.

SPECIMEN DETAILS

The adult *Pampus chinensis* (Fig. 1) is steel-grey on the back and sides, lighter at the ventrum. The body is laterally compressed and diamond-shaped. The head is rounded, and the mouth terminal. The elongated pectoral fin is pointed, and reaches the mid-body. There are no pelvic fins. The dorsal and anal fins are triangular, slightly indented and pale grey. The caudal fin is forked. The dark grey scales are minute and deciduous, and come off in sheets upon capture, exposing the pale grey or white skin underneath. *Pampus chinensis* is reported to attain a maximum size of 400 mm SL (Carpenter & Niem, 2001).



Fig. 3. Short-tentacled jellyfish (*Thyanostoma* species) (in-situ), Johor Straits.

The juvenile fish (ZRC 51495: 24.9 mm SL) also has a laterally compressed body, but is pale orange and translucent. Its pectoral fins are deep orange, large and rounded, and reaching to the caudal peduncle. Its dorsal and anal fins are rounded, dark orange, and together with the body, form a triangle. The caudal fin is hyaline with an outer orange margin.

The specimen, ZRC 51495, was observed swimming in the waters off a kelong (pallisade trap). Its erratic swimming behaviour and orange colouration (see [video clip](#) of the captive specimen swimming in a tub) resembles the behaviour and colouration of a jellyfish, in particular, the short-tentacled *Thyanostoma* species (Cnidaria: Scyphozoa: Rhizostomeae) that is commonly encountered in Singapore's coastal waters (Fig. 3). When scooped up in a hand net out of the water, the specimen exuded copious quantities of clear mucus, which fell through the netting in slimy strands.

The fishers at the kelong commented that juvenile pomfrets are uncommon and are found seasonally, apparently around the third quarter of the year.

DISCUSSION

The observations strongly suggest mimicry of a jellyfish by the juvenile Chinese pomfret. At the stage where it is unable to swim fast enough to evade predators, this behaviour serves to disguise the juvenile fish and prevent it from

being eaten. In Singapore, examples of juvenile fish mimicking a poisonous invertebrate are not unknown. The erratic swimming pattern is reminiscent of the juvenile clown sweetlips (*Plectorhinchus chaetodonoides* Lacépède) [Teleostei: Perciformes: Haemulidae] which is believed to copy the movement and appearance of a poisonous flatworm (Allen et al., 2003).

The copious mucus secreted during capture could possibly serve to glue the predator's jaws, to make it difficult to swallow the fish. Another fish that secretes excess body slime when harassed (in this case, toxic) is the yellow emperor (Serranidae, *Diploprion bifasciatum* Cuvier) (Lim & Low, 1998).

As life-history notes of economically important fishery species are rare, this case of apparent jellyfish mimicry is interesting to note, and could imply that healthy jellyfish populations are necessary for the survival of certain fishery species.

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