



Short Communication:

Feeding observation of the Indian volute *Melo melo* (Lightfoot, 1786) in captivity

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Introduction

Melo melo (Lightfoot, 1786) is a large, predatory marine gastropod distributed in the shallow waters of Malaysia, Singapore, Philippines, Thailand, Burma, Hong Kong, and other countries within the Southeast Asian region. The *M. melo* can be distinguished based on the large orange globose-ovate shaped shell without spines (Poutiers, 1998). The body colour of *M. melo* is unique among its congeners, being cream in colour with stripes ranging from brown to black in colour (Morton, 1986). Figure 1 illustrates an outline sketch of *M. melo* and its external anatomy.

Traditionally *M. melo* were collected as food while its shell used as decorative artistic pieces (Poutiers, 1998). Despite being heavily exploited, there has not been many studies done on this species. As the first step towards understanding

their ecology and life cycle, the diet of the *M. melo* must first be studied.

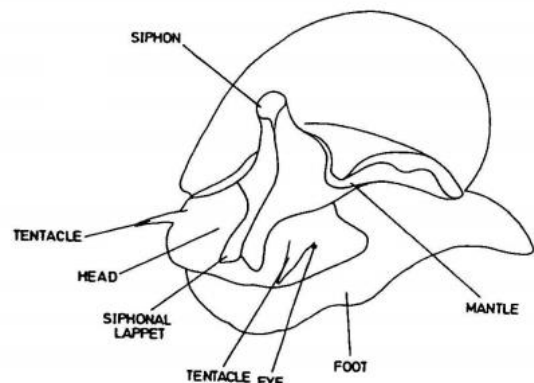


Figure 1: Outline sketch of *M. melo* and its external anatomy (Adapted from Morton, 1986).

Past studies have reported *M. melo* as a specialized predator of continental shelf gastropods such as *Hemifusus tuba* (Gmelin, 1791), *Babylonia lutosa* (Lamarck, 1816), and *Laevistrombus canarium* (Linnaeus, 1758) (Morton,

1986; Cob *et al.*, 2009). However, it is very likely that *M. melo* can consume a wide variety of prey gastropods other than the three species mentioned. Hence, this study aims to verify the ability of *M. melo* to consume other gastropod species other than the species previously reported.

Materials and methods

Two individuals of *M. melo* were collected from Pulau Gazumbo, Penang

and kept in a saltwater tank in ambience temperature and flowthrough of seawater in the Centre for Marine and Coastal Studies (CEMACS), Universiti Sains Malaysia. Prey gastropods were collected from a rocky shore and by dredging. Every week, a variety of prey gastropods were introduced into the tank while empty shells were collected every morning for identification. Additionally, the hunting behaviour of the *M. melo* was also recorded. Figure 2 shows the location of CEMACS, the rocky shore, and Pulau Gazumbo.

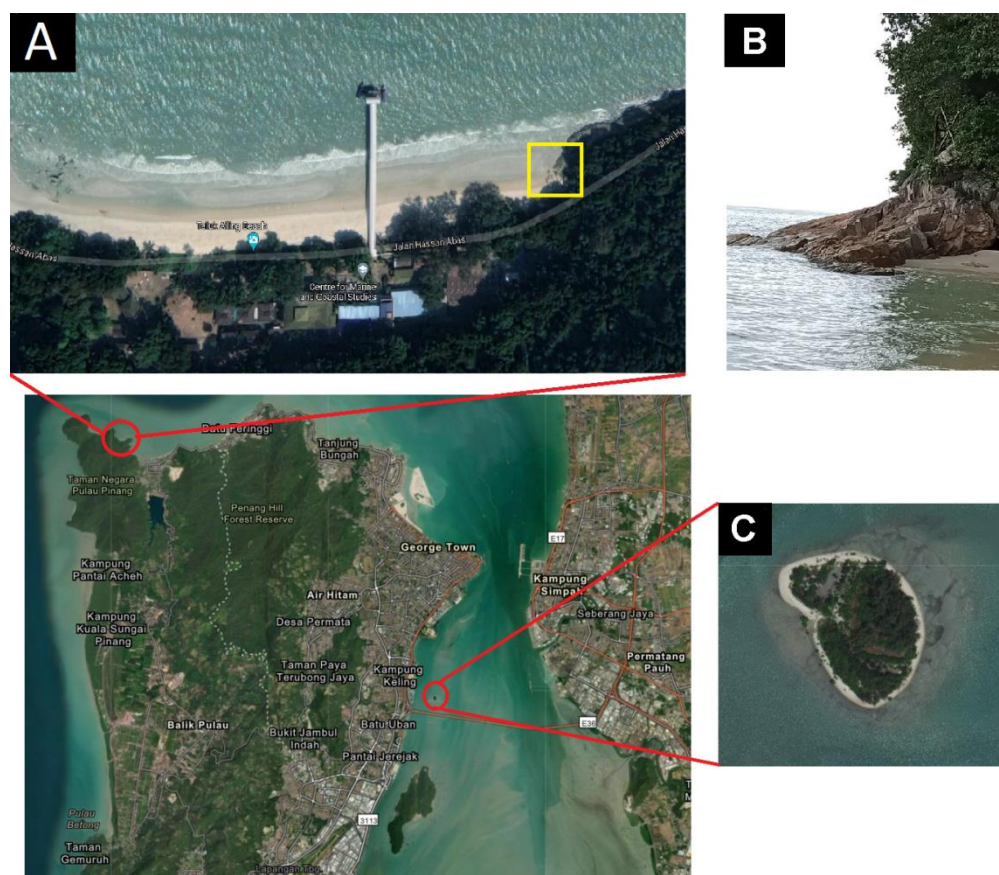


Figure 2: Location of Pulau Gazumbo: A. CEMACS; Yellow Square: Location of rocky shore; B. Appearance of rocky shore; C. Pulau Gazumbo.

Results and discussion

A total of four genera of prey gastropods: *Bufonaria* Schumacher, 1817, *Gyrineum* Link, 1807, *Tylothais*

Houart, 2017 and *Reishia* Kuroda & Habe, 1971 were successfully hunted and consumed by both individuals of *M. melo*. However, species of gastropods

belonging to the genus *Nerita* Linnaeus, 1758 and the family Naticidae Guilding, 1834 that were placed in the tank was not consumed by both individuals of *M. melo*. This may suggest that *M. melo*

shows some degree of preference in their choice of prey, though more research is required to ascertain its validity. Figure 3 depicts the shell of the prey gastropods that was consumed by the *M. melo*.

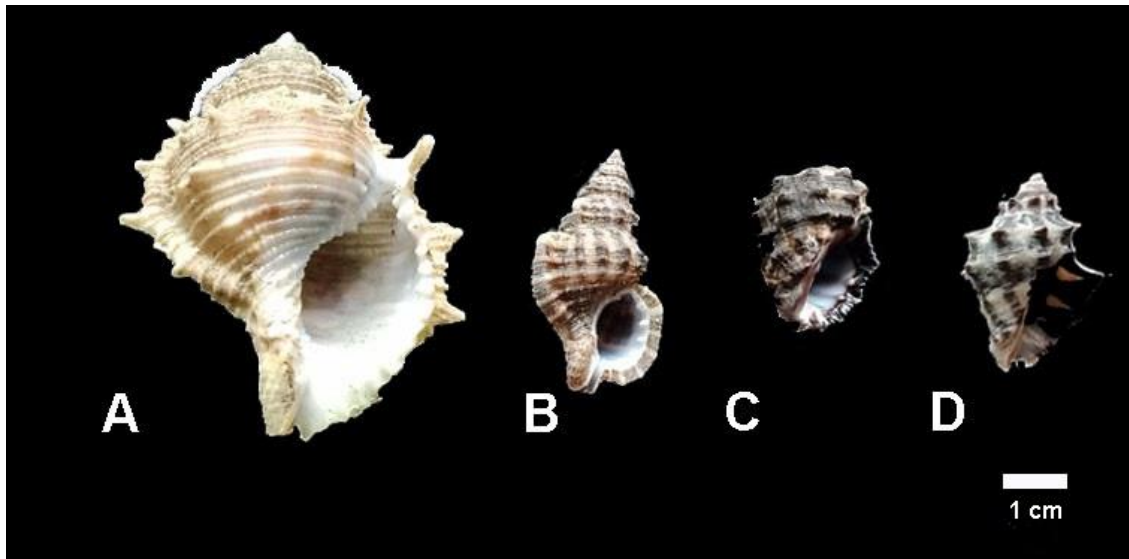


Figure 3: Shell of prey gastropods consumed by *M. melo*: A. *Bufo naria* sp., B. *Gyrineum* sp., C. *Tylothais* sp., D. *Reishia* sp.

The mechanism of prey capture described by Morton (1986) was consistent with the observation of this study. However, the description provided by Morton (1986) was limited and did not further elaborate on the hunting behaviour of *M. melo*. Hence, the following description of the hunting behaviour of *M. melo* provides additional information to supplement the description by Morton (1986). In general, the hunting behaviour of *M. melo* can be separated into three main phases. In the first phase, the *M. melo* stretched its siphon outwards and waved it from side to side. The *M. melo* were also observed to have roamed around the tank with its tentacle outstretched. This hunting behaviour was not recorded by Morton (1986). Once the siphon

encounters a prey gastropod, the *M. melo* then examined the prey with its tentacle before the prey was engulfed with its foot.

In the second phase the *M. melo* was observed to move the anterior part of the foot that was gripping the prey back and forth. It was likely that the *M. melo* was trying to position the aperture of the prey's shell towards its head as described by Morton (1986). Once the anterior part of the foot ceased moving, the entire foot folded in half laterally, causing the *M. melo* to fall to its side, identical to the description provided by Morton (1986). In this position, it was presumed that the *M. melo* was consuming its prey, though the exact feeding mechanism was not observed as the prey was completely sealed within its foot. Morton (1986)

suggested that it may be possible that *M. melo* secretes venom to kill and consume its prey, though additional studies are required to verify this.

The third phase started once the *M. melo* finished consuming its prey. The *M. melo* slowly unfolded its foot and the empty shell of its prey falls out. The *M. melo* then turned itself upright before it either started to hunt once again or to rest.

The success in hunting and consuming other species of prey gastropods suggests that their diet was not restricted to certain species as previously thought. This represents a plausibility in culturing *M. melo* in captivity for food, aquarium trade, or conservation efforts as we could introduce prey gastropods that can be collected or even cultured sustainably.

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