INTRODUCTION

**Thaumoctopus mimicus** Norman and Hochberg, 2005 inhabits exposed sea bottoms of sand or mud at depths of 0.5–37 m, occupying vacated burrows of other animals as its lair (Norman and Hochberg, 2005). The common name “mimic octopus” is based on its ability for dynamic mimicry, impersonating the shape and behaviour of numerous venomous or dangerous animals co-occurring in such habitats (Norman et al., 2001).

The distribution range of *T. mimicus* covers the tropical Indo-West Pacific region from New Caledonia, Northeast Australia (Lizard Island and Great Barrier Reef), Papua New Guinea, north to the Philippines west through Indo-Malayan Archipelago into the Red Sea (Norman and Hochberg, 2005; Norman et al., 2013; Coker, 2013) and the Gulf of Thailand (Nabhitabhata and Sukhsangchan, 2007; Sukhsangchan and Kaewchaichalearnkit, 2013). Distributions in the Red Sea and West Indian Ocean are based on photographic records (Norman et al., 2013). The distribution map of Norman et al. (2013) includes the East Indian Ocean, but there is no known record in this region. *T. mimicus* has been described based on specimens that dated back to 1905 and 1994 (Norman and Hochberg, 2005) reflecting the difficulties in obtaining specimens.

MATERIALS AND METHODS

The octopus were observed and photographed in the coastal waters southwest of Phuket Island, Thailand in the Andaman Sea, in the eastern Indian Ocean. All photographs were taken during daytime, 09.00–17.00, at a depth of about 13–15 m. Identification was based on direct observation of morphological and behavioural characteristics derived from still photographs and video footage.

RESULTS

Morphological Characteristics

The octopus sizes were between 40–60 mm mantle length (ML) with specimens exhibiting a muscular body. Diagnostic characteristics included colour patterns observed on the dorsal mantle which were white markings on a dark brown background. A white teardrop ring was present on the mid-dorsal mantle (Fig. 1). A white “U” patch with the larger lower-part of the “U” being seen on the posterior-dorsal mantle, was also noted. The U patch might occasionally fuse with the teardrop ring (Fig. 2). Arms were about 7 times the mantle length and exhibited zebra colour patterns, *i.e.*, regular white bands on a dark brown background (Figs. 1, 2). The arm webs were well developed.
and the dorsal web was the shortest one (Fig. 3). Arm suckers were biserial. A large and elongated supraocular papilla and a smaller antero-ocular papilla were presented on each eye (Fig. 4).

**Figure 1.** Colour patterns on the dorsum, arrows indicate the white teardrop and U-patch and the white bands on the arms.

**Figure 2.** Arrows indicating a colour pattern where the white teardrop on the dorsal mantle is fused with the U-patch. (Photo extracted from a video footage).
**First photographic record of mimic octopus**

**Figure 3.** The mimic octopus displayed an oral “disc” of curled arms and webs during its defence mode in the water column, and was assumed to mimic a crinoid.

**Figure 4.** The mimic octopus in its den, mimicking a jawfish. The papillae are observed above (left) and in front of the eyes (right) and are indicated by arrows.

**Behavioural Characteristics**

The behaviour supported the morphological identification. The octopus inhabited open plain substrates of estuarine mud, fine silt mud (observed in 3 dives) and muddy sand with coral gravel (1 dive). The solitary habit was a ritual behaviour, with an individual octopus occupying a den on the top of an elevation in front of the reef (Fig. 5). More than one octopus in a den was observed in the same area with a distance between dens of about 50–100 m. It is not known whether the octopus made those dens or just occupied the vacated dens previously made by other animals. However, burrowing behaviour was observed as the animal inserted one arm into the substrate in an opening to a certain depth before burrowing. Insertion of an arm might act as a test for substrates. On hard substrates like coral gravel where the octopus could not easily burrow, the octopus would soon cease to burrow and would flee to other rock crevices or dens. While sitting in its den, the octopus mimicked a jawfish (Fig. 4). Foraging was diurnal and exhibited only at dawn and dusk, never at midday. Mimicry of a flatfish was demonstrated during swimming with strong disruptive colouration (Fig. 6). As a defence against intrusion by a diver the mimic octopus impersonated a lion fish in the water column (Fig. 7). Other mimicry displayed included that of a crinoid and a flatfish in the water column (Fig. 3) and on the substrate (Fig. 8).
Figure 5. The mimic octopus den on top of an elevation on a mud plain.

Figure 6. Mimicry of a flatfish during swimming.
DISCUSSION

Hanlon et al. (2008) reported that the mimic octopus spends up to as much as 58% of its active period sitting in its den and about 20% in swimming like a flatfish. Such conclusions were supported by this study. Huffard et al. (2010) suggested that this mode of locomotion might have evolved to combat the inefficiencies of forward swimming by having its eyes position in an anterior position. Impersonations of the octopus as a lion fish and as a crinoid were observed in this study with similar behaviour being reported by Norman et al. (2001) and Norman and Hochberg (2005) for T. mimicus. Huffard et al. (2010) suggested that such defences as flatfish-swimming did not aim to camouflage, but rather to draw attention as a warning colouration, such behaviour being rare in cephalopods. The warning colouration might indicate that the octopus was actually a venomous animal (Hemdal, 2007).

Harvest of the octopus for the aquarium trade and any disturbance by tourism activities may be potential conservation issues for this species in the future. The authors agree with Norman et al. (2013) that T. mimicus is of significant commercial value for tourism (with limited disturbance) only when it is alive and is in its natural habitat.

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REFERENCES


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