

## Biodiversity Record: First record of at-sea copulation of hawksbill turtles in Singapore

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**Subjects:** Hawksbill turtle, *Eretmochelys imbricata* (Reptilia: Testudines: Cheloniidae).

**Subjects identified by:** Joseph S. K. Cham.

**Location, date and time:** Singapore Strait, Sisters Islands Marine Park, channel between the Sisters Islands (1°12'48.0"N, 103°49'54.1"E); 26 May 2021; around 1845 hrs.

**Habitat:** Marine. Coastal sea in open water above coral reef.

**Observers:** Joseph S. K. Cham and Edwin J. K. Ong.

**Observation:** Two hawksbill turtles, each of approximately 0.8 m carapace length, were observed in copulatory posture at the surface of the sea (Fig. 1). Attention to these individuals was prompted by atypical splashing at the water surface about 100 m from the research boat on which the observers were stationed. The male had hooked onto the anterior margin of the female's carapace using the claws on his front limbs. His tail was folded under the rear end of the female's plastron. Throughout the entirety of the observation, which lasted slightly more than one minute, the male turtle continually bit the neck of his mating partner. As our vessel drifted closer to the pair, the female apparently took fright and dived underwater with the male turtle firmly latched to her carapace. The pair rapidly disappeared from the view of the observers.

**Remarks:** Hawksbill turtle nesting events have been reported on several beaches on Singapore Island, as well as on other islands in Singapore such as the Sisters Islands (Sih, 2019). This report features the first photographic evidence of at-sea copulation of hawksbill turtles in the country.

During breeding season, marine turtles return to the beaches where they hatched. Copulation occurs in the shallow coastal waters near these natal beaches at or near the water surface (Witzell, 1983; Miller, 1997). Copulation is preceded by courtship behaviour that typically involves the male turtle nuzzling the head of the female, and biting her neck and rear flippers (Maggeni & Feeney, 2020). When ready for copulation, the male turtle holds on to the carapace of the female with the claws on his front flippers, folds his tail under the female's plastron (Witzell, 1983), and inserts the epididymis into her cloaca (Hamann et al., 2002; Limpus & Miller, 2008). Hawksbill turtles do not nest annually. Instead, they are typically observed to have a remigration interval of between two and three years (Richardson et al., 1999; Gaos et al., 2017). In a single nesting season, female hawksbill turtles may surface to lay multiple clutches of eggs (Richardson et al., 1999; Gaos et al., 2017), in intervals of approximately 14 to 20 days (Kamel & Delcroix, 2009; Walcott et al., 2012; Gaos et al., 2017).

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Fig. 1. A pair of hawksbill turtles exhibiting copulatory posture at the water surface. (Photograph by: Joseph S. K. Cham).