

Biodiversity Record: Bioluminescent marine dinoflagellate, *Noctiluca scintillans*, in Singapore

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Subjects: Bioluminescent marine dinoflagellate, *Noctiluca scintillans* (Myzozoa: Dinoflagellata: Dinophyceae: Noctilucales: Noctilucaceae).

Subjects identified by: Lewis Low, Valerie Kwan, Inez Alsagoff and Elliott James Ong.

Location, date and time: Johor Strait, Changi Beach, off carpark 6; 20 March 2022; around 2154–2355 hrs.

Habitat: Estuarine sandy shore.

Observers: Lewis Low, Valerie Kwan, Inez Alsagoff and Elliott James Ong.

Observation: Bright blue bioluminescence was observed in the waves when these crashed against the shore. This continued for at least two hours after the first sighting at around 2154 hrs. The intensity of the bioluminescence varied and was most intense at the time of first sighting.

Remarks: Dinoflagellates from the genus *Noctiluca* appear to have been first observed in Singapore's waters in 1948 (Tham, 1973). As this genus is monotypic, it is assumed to be *Noctiluca scintillans*, which is a well-known cause of bioluminescent blooms in the seas around the world (Piontkovski et al., 2021). Blooms of this species have been recorded in Singapore for the years 1948, 1955 and 1968 by Tham (1973). In 1948 a bloom was observed in February while in 1968 three bloom periods were recorded – a major bloom in August/September and two minor ones in May and November (Tham, 1973). Bioluminescent algal blooms have been seen recently in 2016, along Singapore's southern coastline (Soh, 2022a). Apart from Changi Beach, the featured event in March 2022 was also observed at Pasir Ris (Soh, 2022a). It persisted for at least four days (Soh, 2022b).

Tham (1973) noted that most zooplankton blooms occurred in April/May of the years that he studied (1935, 1948, 1949, 1968) and hypothesized that this could be due to calmer wind conditions and stability of the water column. As such events appear to be sporadic, it would be worth monitoring and noting the conditions that surround their appearance. This is not just because they are spectacular phenomenon that can encourage appreciation of Singapore's marine environment and plankton biodiversity, but also because this species has the potential to produce toxic blooms which can be harmful to aquaculture (Piontkovski et al., 2021).

Literature cited:

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Fig. 1. Bioluminescence in the waves at Changi Beach on 20 March 2022. (Photograph by: Elliott James Ong)



Fig 2. Bioluminescence at the shore viewed from another angle. (Photograph by: Inez Alsagoff)