

A note on the fish species affected by the sea sparkle bloom in the coastal waters of the Gulf of Mannar

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A 6-kilometer stretch of coastal waters between Periyapatinam (9.250915 N, 78.909109 E) and Indira Nagar (9.265104 N, 78.923969 E) in the Gulf of Mannar witnessed a *Noctiluca* bloom from August 28th to September 2nd, 2022. The bloom

of *Noctiluca scintillans* (Macartney), a bioluminescent dinoflagellate with a size range of 0.6 to 1.15mm that emerged on September 2nd, 2022, turned coastal waters green, affecting small pelagic fish and reef-associated fish, and



A. View of the *Noctiluca* cell under the microscope (4X); B. freshly dead fish sorted on the shore; C. scattered stranded fish on the shore; D. decayed stranded fish on the shore

emitting a foul odour. We identified and quantified the species diversity of fish that perished during the bloom period. From an estimated 2.5 tonnes of fish washed up on the beach, 50% of the fish were from the family Clupeidae, followed by Gerridae and Leiognathidae. These stranded fish were collected by local fishermen. The 53 stranded fish species include 46 teleosts, 5 crabs, and one sea anemone and annelid species each. Since 2019, *Noctiluca* blooms have been a regular occurrence in the Gulf of Mannar during the brief period between the southwest and northeast

monsoons. However, in 2022, the *Noctiluca* bloom started as early as the middle of August, and continued till October, during which we maintained bloom monitoring. The primary causes of fish death in Periyapatnam and Indira Nagar coastal waters were low dissolved oxygen and an increase in ammonia concentrations. The observations during the close monitoring of the algal bloom along the coast provided information of the species with size range, that died due to the algal bloom.

Table 1. Fish mortality caused by the algal bloom

Species	Family	Size range (cm)
<i>Siganus canaliculatus</i>	Siganidae	8-9
<i>Sillago sihama</i>	Sillaginidae	25.8
<i>Gerres filamentosus</i>	Gerreidae	11.2-14.2
<i>Epinephelus merra</i>	Serranidae	23.2
<i>Ellochelon vaigiensis</i>	Mugilidae	15.6-16.2
<i>Thalassoma hardwicke</i>	Labridae	11.8-14.2
<i>Karalla dussumieri</i>	Leiognathidae	8.5-9.0
<i>Aurigequula fasciata</i>	Leiognathidae	13.2
<i>Terapon puta</i>	Terapontidae	10.2-13.0
<i>Saurida micropectoralis</i>	Synodontidae	15.2-17.5
<i>Lutjanus fulviflamma</i>	Lutjanidae	13.5
<i>Parupeneus indicus</i>	Mullidae	10-10.6
<i>Platycephalus indicus</i>	Platycephalidae	9.2-20.0
<i>Plotosus lineatus</i>	Plotosidae	14.5
<i>Sardinella albella</i>	Clupeidae	12.5
<i>Hemiramphus lutkei</i>	Hemiramphidae	18.4-26.2
<i>Alepes kleinii</i>	Carangidae	13.5
<i>Pomadasys furcatus</i>	Haemulidae	18
<i>Amphiprion sebae</i>	Pomacentridae	9-10.5
<i>Iniistius cyanifrons</i>	Labridae	7.8
<i>Lactoria cornuta</i>	Ostraciidae	6.4-8.6
<i>Ostracion cubicum</i>	Ostraciidae	5.2
<i>Zebrias synapturoides</i>	Soleidae	12.2
<i>Lethrinus lentjan</i>	Lethrinidae	5-11
<i>Jaydia queketti</i>	Apogonidae	8.9-10.2
<i>Syngnathoides biaculeatus</i>	Syngnathidae	20.4-25
<i>Uranoscopus marmoratus</i>	Uranoscopidae	9-15

Species	Family	Size range (cm)
<i>Lalmohania velutina</i>	Monacanthidae	7.2-7.7
<i>Parascorpaena picta</i>	Scorpaenidae	9.6
<i>Osteogeneiosus militaris</i>	Ariidae	16.0
<i>Sepia pharaonis</i>	Sepiidae	17.5
<i>Parapercis hexoptalma</i>	Pinguipedidae	9.2
<i>Oxyurichthys papuensis</i>	Gobiidae	8.8
<i>Strophidon sathete</i>	Muraenidae	23.5
<i>Ashtoret lunaris</i>	Matutidae	6.2
<i>Charybdis (Charybdis) annulata</i>	Portunidae	3.5
<i>Portunus pelagicus</i>	Portunidae	7.5
<i>Parapercis pulchella</i>	Pinguipedidae	5.5
<i>Hilsa kelee</i>	Clupeidae	9-9.5
<i>Nematalosa nasus</i>	Clupeidae	8.5-9.5
<i>Escualosa thoracata</i>	Clupeidae	3-5
<i>Stichodactyla haddoni</i>	Stichodactylidae	
<i>Diodon hystrix</i>	Diodontidae	15-18
<i>Epinephelus coioides</i>	Serranidae	16-18
<i>Uropterygius concolor</i>	Muraenidae	75
<i>Gymnothorax undulatus</i>	Muraenidae	75-80
<i>Thalamita crenata</i>	Portunidae	3-4
<i>Atergatis integerrimus</i>	Xanthidae	4-4.5
<i>Terapon jarbua</i>	Terapontidae	13-15
<i>Gymnothorax pictus</i>	Muraenidae	77-85
<i>Arothron hispidus</i>	Tetraodontidae	9.5-12.5
<i>Hemiramphus far</i>	Hemiramphidae	18-22.5
<i>Arenicola</i> sp.	Arenicolidae	9-13.0