



## FIRST RECORD OF BLUE MACKEREL, *Scomber australasicus* (PISCES: Scombridae) IN THE BAY OF BENGAL, BANGLADESH

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### ABSTRACT

A blue mackerel, *Scomber australasicus*, was recorded during monthly survey on the availability of coastal and marine fish in Bangladesh. The specimen was captured from the Bay of Bengal by operating commercial gill net. This historic occurrence represents the first record of blue mackerel in the Bay of Bengal. The species was previously reported from the nearest Vizhinjam Coast of Laccadive Sea in India. The report of *S. australasicus* in the area further enriches the ichthyofauna of the area and points to the need for further detailed studies for conservation initiatives with respect to such rare fishes.

**Keywords:** First record, *Scomber australasicus*, Carnivorous, Bay of Bengal



## Introduction

The blue mackerel (*S. australasicus*, Cuvier, 1832), also known as Pacific mackerel or spotted chub mackerel is a pelagic fish species of the family scombridae. It's an oceanic species but also found in coastal water (Collette, 1995) and commonly occur within the depth of 87-200 m (May and Maxwell, 1986). This species is widely distributed in tropical and subtropical water (Tzeng et al. 2009) of Western pacific from China, Japan to Australia and New Zealand, extending east to the Hawaii and Socorro Island and Indo-West Pacific region covering Red sea, Gulf of Aden, Gulf of Oman and Persian gulf. In feeding habit, blue mackerel is carnivorous and juvenile feed on plankton while adult prefer smaller pelagic fish, krill, anchovies, squids. Blue mackerel can survive up to 7 years but mostly found within 1-3 age group (Stewart et al. 2001). Blue mackerel are consumed by humans in the form of smoke (Frimodt, 1995), grill or broil as well as used as bait for tuna and other fish.

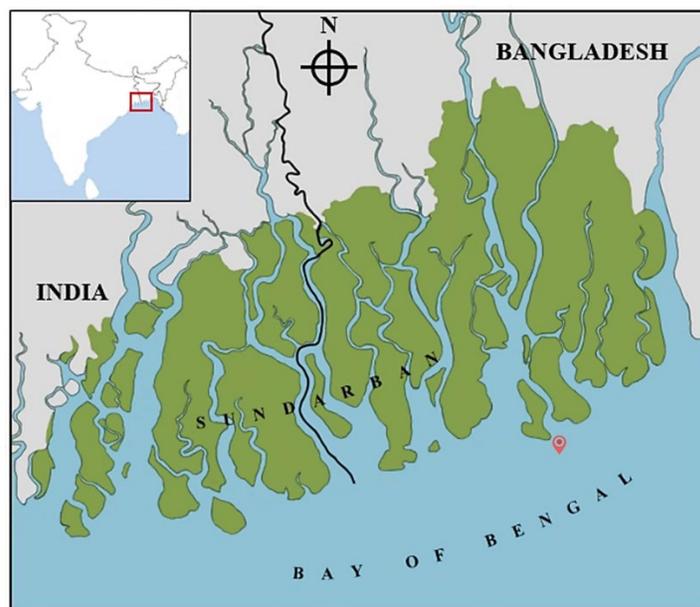
The Bay of Bengal and its adjacent is often considered as fish biodiversity hotspot (Quader, 2010, Hanif et al. 2015, Siddik et al. 2017, Hanif et al. 2018, Hanif et al 2019). This iconic and productive ecosystem is acting as a perfect ecological niche for diversified fish species that influence non-indigenous species occurrence and establishment in this region. However, ichthyofaunal diversity of Bay of Bengal is largely unexplored till now (Hanif et al. 2019). Within the described 20 mackerel species, only one species in the genus *Rastrelliger* and three species in the genus *Scomberomorus* is reported from the territorial waters of Bangladesh. However, no species of the genus *Scomber* had yet been reported till now from the Bay of Bengal. Thus, the goal of this study is to report the first occurrence of *S. australasicus* in the Bay of Bengal, Bangladesh.

## Material and Methods

On 17 June 2018, a single specimen of blue mackerel was collected from a fisherman after fishing by operating gill net (bar length of mesh 65 mm) in the Bay of Bengal (Latitude, 21°40'53.9"N; Longitude, 89°38'09.9"E) near Dublar Char during day time at a depth approximately 38 m (Figure 1). Collected specimen were preserved in ice box and taken to the laboratory for identification. The specimen was identified as *S. australasicus* (Figure 2) based on morphometric and meristic characters. A digital vernier caliper was used for morphometric measurement with an accuracy of 0.01 mm. All morphometric measurements and meristic counts are presented in Table 1. The specimen was deposited in the fisheries laboratory, Patuakhali Science and Technology University with the accession number FBG-PSTU-08.

**Table 1.** Biometric and meristic measurements of the specimen of *S. australasicus* collected from the Bay of Bengal, Bangladesh, 17 June 2018.

Morphometric measurements	Length (cm)
Total length	31.2
Fork length	29.4
Standard length	26.9
Body depth	6.3
Depth of caudal peduncle	1.6
Pre-dorsal length (1st)	10.3
Pre-dorsal length (2nd)	19.8
Pre-ventral length	9.9
Pre-anal length	19.7
Dorsal fin base length (1st)	3.9
Dorsal fin base length (2nd)	2.6
Anal fin base length	2.9
Head length	8.6
Eye diameter	1.9
Pre-orbital length	2.7
Post-orbital length	4.0
Meristic counts	
Dorsal spines	12
Dorsal fin soft ray	12
Pectoral fin soft ray	20
Ventral fin soft ray	8
Anal fin soft ray	12
Branchiostegal ray	7



**Figure 1.** Sampling location of *Scomber australasicus* in the Bay of Bengal coast, Bangladesh on June 17, 2018.



**Figure 2.** *S. australasicus* (total length 31.2 cm) caught from the Bay of Bengal coast, Bangladesh.

## Results and Discussion

The *S. australasicus* captured near Char Kukrimukri had a total length of 312 mm and a total weight of 292.28 g. Meristic and morphometric measurements are reported in Table 1. Morphological feature, colour and both morphometric and meristic traits in accordance with previous descriptions of *S. australasicus* (Collette & Nauen, 1983). Body elongate and rounded, snout pointed, first and second dorsal fin separated with a gap 4.2 cm. The space between the first and second dorsal fin is less than the first dorsal fin base for *S. japonicus*, as long as first dorsal fin base for *S. colias* and greater (approximately 1.5 times) than first dorsal fin base for *S. scombrus* (Gopakumar et al. 1993). Behind the second dorsal and anal fin 5 finlets lies up to caudal peduncle region each. Body is covered with ctenoid scale which is more conspicuous and large aback head and around pectoral fin than oddment of the body. Dorsal part of the body dark blue to bluish in fresh condition with oblique wavy lines. Ventral side white or yellowish and marked with numerous greyish rounded blotch. Pectoral fin, second dorsal fin, caudal fin and around eyes were yellowish to grey-yellowish. Origin of anal fin is just opposite to second dorsal fin for *S. japonicas*, *S. scombrus* and *S. colias* but in case of *S. australasicus*, anal fin origin below the 4<sup>th</sup> ray of second dorsal fin. The species has close resemblance with its congener *S. japonicas*, *S. scombrus* and *S. colias*.

In the Bay of Bengal, the presence of *S. australasicus* is not surprising as this species widely distributed in both tropical

and subtropical region. This tropical marine ecosystem has copious river drainage into the northern part of the bay and profusion of wetlands, marshes and mangroves that support diversified fish species as well as increase the productivity. Since the present report on maiden occurrence of *S. australasicus* in the Bay of Bengal is based on a single specimen and no other individuals of this species have been recorded from the Bay of Bengal, it can be considered as a “casual” record. The highly discrete geographical distribution of species points towards a strong preference for particular type of habitat (Riipinen et al. 2017). As a non-indigenous fish species, *S. australasicus* could be problematic for the native fish fauna by competing for food, acting as a predator on native fish larvae and eggs, and occupying the native fish habitat.

In marine environments, marine traffic is globally the most significant vector in spreading non-indigenous species (Ruiz et al. 1997; Leppäkoski et al. 2002; Bax et al. 2003; Molnar et al. 2008). The Bay of Bengal is one of the busiest shipping routes and trade lines in the world. The dispersal and distribution patterns of many marine organisms are also driven by oceanographic conditions, which are influenced by global climate (Wilson et al. 2016). It is not possible to identify the actual native area from where *S. australasicus* introduced but it can be predicted that Southern coastal water of India might be the probable place. Because, in the Bay of Bengal, South-west coastal current flows northward in the south and southward in the north, forced by the equatorial

winds during monsoon (Shetye et al. 1996) and Ocean current systems have been shown to play an important role in driving dispersal and population connectivity in many marine taxa.

## Conclusion

This observation is the first documentation of *S. australasicus* in the coast of the Bay of Bengal, Bangladesh. A through study of the accessory catch of the coastal and marine water fisheries is emergent as it presents, nowadays, the only opportunity to access such sparse species.

## Compliance with Ethical Standard

**Conflict of interests:** The authors declare that for this article they have no actual, potential or perceived conflict of interests.

**Ethics committee approval:** Not applicable

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