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# Exploring the record occurrence of *Cynoglossus lachneri*, Menon 1977 from India

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## ABSTRACT

*Cynoglossus lachneri* Menon, 1977, was collected from commercial trawls at landing centers in Mumbai, India. The original description of this species was based on unique holotype specimens (preserved in ZSI F 2609/2, ZSI F 6207/2, and ZSI F 6208/2). This research marks the first-ever description of *Cynoglossus lachneri* from the west coast of India. Information from the initial description and the accompanying illustration of *C. lachneri* reveals distinguishing features of this tonguefish, including a dorsal fin with 113-121 rays (average of 117), an anal fin with 92-98 rays (average of 96), and a caudal fin with 10 rays in 7 specimens (radiographs). Additionally, it has two lateral lines on the eyed side, with 110-111 scales along the mid-lateral line and 16-18 scales between the two lateral lines. On the blind side, two lateral lines are also present.

**Key words:** *Cynoglossus lachneri*, India, Cynoglossidae

## Introduction

The species under the genus *Cynoglossus* Ham. Buch. 1822, of the family Cynoglossidae (Pleuronetiformes), is distributed in tropical Indo-Pacific and eastern tropical Atlantic waters. According to Menon (1977), 11 species of the genus *Cynoglossus* are reported from India. The genus is characterized by having sinistral forms, a toothed jaw on the blind side, absence of an opercular margin, gill membrane fused with branchiostegal, and absence of fringed lips. Even after many investigations on taxonomy of the family Cynoglossidae occurring in the Indian waters, a considerable amount of ambiguity exists in their identification, resulting in ignorance of the commonly distributed Lachner's tongue sole, *Cynoglossus lachneri* Menon, 1977, along

the west coast of India, which was earlier reported to be restricted to the east coast of Africa, the Zanzibar coast Menon (1977). This is the first report of the species from the west coast of India where it is exploited, mainly by the trawl fleets operating in the nearshore areas, as well as the artisanal sector of Mumbai, North-west coast of India (19.0760° N, 72.8777° E).

## Materials and Methods

During the study on taxonomy of family Cynoglossidae (August 2019 to May 2020), a total of 35 specimens of *C. lachneri* were collected from trawl landings in Mumbai. Taxonomic identification was conducted in fresh condition, using standard taxonomic key Menon (1977). The morphometric and

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meristic data were recorded following Menon (1977), except wherever specified. Species were identified as per taxonomic characteristics explained in Norman (1934) Body depth 1 (BD<sup>1</sup>) is measured at ventral opercular margin, whereas body depth 2 (BD<sup>2</sup>) was measured as the maximum body depth expect in the berried forms. All counts and measurements were taken from the eyed side of the specimens. The six meristic characters recorded were numbers of dorsal fin rays, anal fin rays, caudal fin rays, pectoral fin rays, rows of scales between above and mid lateral line on eyed side and number of scales on mid lateral line (from the cephalic junction or commissure to the base of caudal fin).

## Results and Discussion

Morphometric ratios provide a comprehensive representation of species identification, encompassing the overall outline. Furthermore, it places emphasis on the personalities or forces that bear responsibility for the specific delineation. The ED/IOL ratio indicates a value close to 1, suggesting that the ED in *C. lachneri* is about equivalent to the IOL. The study revealed a weak association between Standard length (SL) and snout length (SN) ( $r = 0.25$ ) as well as snout to mouth distance (SM) ( $r = 0.09$ ). These findings suggest that as the fish increases in size (length), the growth rate of the snout and the distance between the snout and gills is comparatively slower than that of the Standard length. Therefore, in mature fish, the superior anterior eye is positioned in proximity to the snout, serving as a promi-

nent characteristic for discerning non-specific fish species.

In the past, the classification of flatfish species mostly relied on characteristics such as mouth morphology, scale composition, the number of rows between two lateral lines on the eyed side, eye placement, and the number of lateral lines on both sides. Furthermore, it is worth noting that numerous species that have been identified within the past decade have been mostly based on a limited number of specimens. This implies that the characteristics observed by previous researchers were insufficient in providing a comprehensive understanding of these species (Seshappa, 1970).

The taxonomic classification of species within this family has been a source of confusion, primarily because the descriptions of certain species were derived from a limited number of specimens. As a result, the validity of the majority of these species has remained uncertain for an extended period. This uncertainty can be attributed to the highly variable color patterns observed and the overlapping morphometric and meristic characteristics, as noted by Menon in 1977.

The descriptive statistics of the recorded species included the measurement of ocular diameter (ED) and interorbital distance (IOL) as the primary characteristics for distinguishing between species, a viewpoint also supported by Seshappa (1970). In the current investigation, two distinct body depths, referred to as BD1 and BD2, were introduced for the purpose of characterizing the morphology of the fish specimens. These body depths were utilized to de-

**Table 1.** Morphometric data and ratios of *Cynoglossus lachneri* with the characters and correlation of SL with different morphometric characters

Character/ Species	Cynoglossus lachneri	Ratios/ Species	Cynoglossus lachneri	Correlation with SL / Species	Cynoglossus lachneri
SL	202.30 ± 14.83	(TL/HL)	4.84 – 5.87	TL	0.93
TL	216.96 ± 16.29	(SL/HL)	4.727 – 5.419	BD <sup>1</sup>	0.93
BD <sup>1</sup>	51.01 ± 4.39	(TL/BD <sup>1</sup> )	3.824 – 4.484	BD <sup>2</sup>	0.92
BD <sup>2</sup>	58.67 ± 5.05	(TL/BD <sup>2</sup> )	3.32 – 3.89	LB	0.76
BD2	55.77 ± 2.65	(SL/BD <sup>1</sup> )	3.73 – 4.10	ED	0.67
ED	3.40 ± 0.43	(SL/BD <sup>2</sup> )	3.247 – 3.57	IOL	0.84
IOL	3.08 ± 0.59	LB/HL	1.35- 1.42	SN	0.25
SN	11.91 ± 0.95	(TL/SL)	1.024 – 1.13	HL	0.76
HL	39.90 ± 2.65	(HL/SM)	2.13 – 2.857	SM	0.09
SM	16.20 ± 1.36	(HL/MD)	4.056 – 5.051	MG	0.66
MG	29.09 ± 1.85	(HL/SN)	3.06 – 3.77	MD	0.87
MD	8.83 ± 0.724	(SN/ED)	2.92 – 4.8		
	(HL/ED)	9.97 – 15.41			
	(ED/IOL)	0.75 – 1.39			



Fig. 1. *Cynoglossus lachneri*

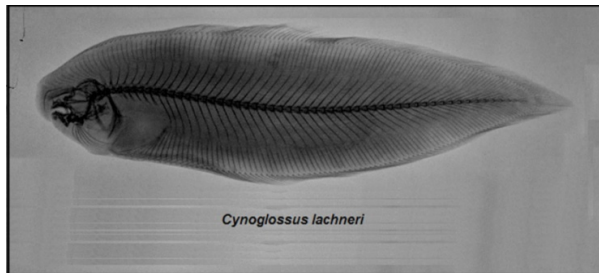


Fig. 2. Radiograph of *Cynoglossus lachneri*

termine the precise location at which the depth measurements were taken. The discovered larger differences in *C. lachneri* (7.66) compared to other species suggest that this particular species possesses a comparatively more profound body structure located posterior to the operculum. The study revealed that *C. lachneri* had lower values for inter-orbital space (IOL), snout length (SN), and snout to mouth distance (SM) when compared to other cynoglossids of similar lengths. The study also indicated that the snout length of *C. lachneri* was comparatively shorter

than that of other species of similar lengths, indicating closer proximity of the eyes to the snout. The analysis of the mouth-gill distance (MG) relative to the head length indicates that *C. lachneri* is a species of fish with a pronounced hook shape and an elongated snout. The longer snout is further supported by the higher proportion of snout in relation to head length (HL/SN) with a value of 3.06, compared to *C. bilineatus* with a value of 2.39 and *C. dubius* with a value of 2.13.

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