

Research Article

Volume 14 Issue 3 - November 2021
DOI: 10.19080/OFOAJ.2021.14.555889

Oceanogr Fish Open Access J

Copyright © All rights are reserved by P Padmavathi

First Record of the Ocean Sunfish, *Mola alexandrini* (Ranzani 1839), (Tetraodontiformes: Molidae) from the Coastal Waters of Andhra Pradesh, India



Darwin Chatla and P Padmavathi*

Department of Zoology & Aquaculture, Acharya Nagarjuna University, India

Submission: February 10, 2021; **Published:** November 15, 2021

Corresponding author: P Padmavathi, Department of Zoology & Aquaculture, Acharya Nagarjuna University, Nagarjuna Nagar, Guntur, Andhra Pradesh, India

Abstract

Mola alexandrini, commonly known as bump-head sunfish has been reported for the first time from Andhra Pradesh coastal waters. A detailed morphological description of the specimen is provided, and the morphometric and meristic data are compared with those of the same species reported by earlier workers. Historical records of the family Molidae from Indian waters are summarized and discussed.

Keywords: First record; *Mola alexandrini*; Morphometrics and meristics; Ocean sunfish

Introduction

The ocean sunfishes belonging to the family Molidae are composed of three genera (*Ranzania*, *Masturus* and *Mola*) with five valid species viz., *Ranzania laevis* (Pennant 1776), *Masturus lanceolatus* (Lienard 1840), *Mola mola* (Linnaeus 1758), *Mola tecta* (Nyegaard et al. 2017) and *Mola alexandrini* (Ranzani 1839) [1-4]. Family Molidae is monophyletic among highly derived order Tetraodontiformes [5] and characterized by distinctly-shaped body by the lack of true caudal fin, which is replaced by a broad stiff lobe, a pseudo-caudal fin called clavus [6]. These fishes are known to be active swimmers and opportunistic foragers in the pelagic waters of both temperate and tropical oceans [7-9]. The occurrence of ocean sunfishes is rare from Indian coastal waters [10]. However, the presence of some molds has been reported in new areas [11] and previously known distribution ranges are being expanded [12]. These fishes occupy a unique position in marine food web [13,14]. The consumption of these oddly species has not been attracted the folk's attention due to their rare occurrence and lack of information on their nutritional aspects. However, the meat of the ocean sunfishes is reported to be delicious in Taiwan and Japan [15].

The bump-head sunfish, *Mola alexandrini* (Ranzani 1839) is a large pelagic species which claimed a record of world's heaviest

teleost fish with a weight of 2,300 kg with 272 cm TL [16]. However, this fish may grow even larger [17]. Sawai et al. [16] found *Mola alexandrini* (Ranzani 1839) to be synonymous with *Mola ramsayi* (Giglioli 1883). The present study reports the first record of *M. alexandrini* from the coastal waters of Andhra Pradesh, India, and an attempt was made to compare the morphological, morphometric, and meristic characters among the known records of the species. The historical records of the family Molidae from the Indian coastal waters are provided and discussed.

Materials and Methods

One specimen of *M. alexandrini* was collected as by-catch from trawl catches of Kakinada fishing harbor (16° 58' 30" N, 82° 16' 44" E), East Godavari district, Andhra Pradesh, India (Figure 1). The fish was caught from commercial trawler operated at a depth range of 20-100m on 11th December 2018. The morphological characters were observed in fresh specimen. Morphometric and meristic details were recorded using the standard methods of Fraser-Brunner [6] and Whitley [18]. The species was identified based on the description given by Fraser-Brunner [6]; Sawai et al. [16]; Yosita et al. [17]; Nyegaard et al. [19]. Morphometric measurements were taken as straight-line distances (± 1 mm) using a 500 cm tape with 1mm gradation.

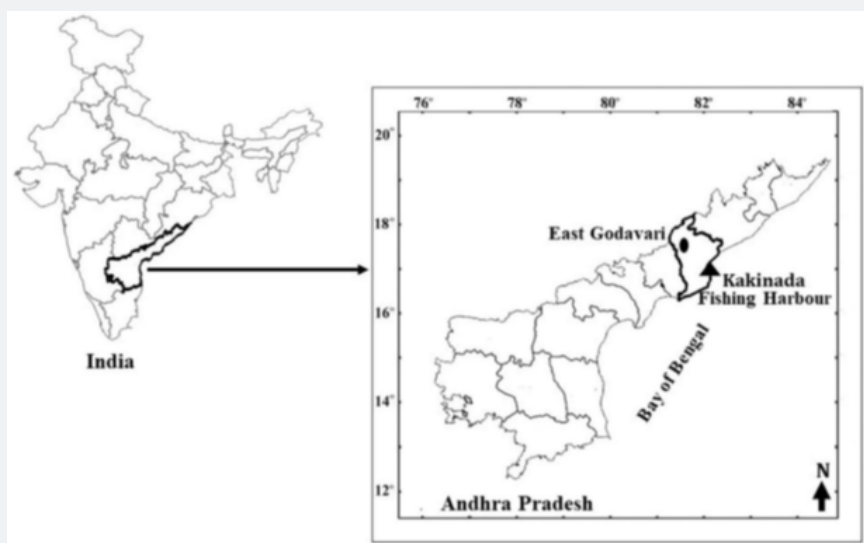


Figure 1: Map showing the landing center of *Mola alexandrini* at Kakinada fishing harbor.

They included the total length (TL), a linear distance from the tip of the snout to the distal edge of the clavus; pre-clavus band length (PCBL), the straight distance from the tip of snout to the origin of clavus; total body depth (TBD), a linear length between dorsal fin and anal fin tips; body depth (BD), vertical distance between the dorsal and ventral margin of the body where the height is greatest; eye diameter (ED), the distance between the anterior and posterior edges of the orbit; pre-orbital length (POL), the distance between the tip of snout to the origin of eye orbit; pre-dorsal length (PDL), a straight distance from the tip of the snout to the anterior edge of dorsal fin; pre-pectoral length (PPCL), measured from the tip of snout to the anterior end of the pectoral fin; pre-anal length (PAL), a straight distance from the tip of the snout to the anterior end of the anal fin; height of dorsal fin (DFH), the vertical distance from the base to the tip of the dorsal fin; height of anal fin (AFH), the vertical distance from the base to the tip of the anal fin; and length of pectoral fin (PCFL), measured between its origin to the extreme tip. Meristic characteristics included the counts of fin rays in dorsal, pectoral, and anal fins, and clavus ossicles.

Results

Taxonomic position

- Phylum: Chordata
- Class: Actinopterygii
- Order: Tetraodontiformes Berg, 1940
- Family: Molidae Bonaparte, 1835
- Genus: *Mola* Koelreuter, 1766
- Species: *M. alexandrini* (Ranzani 1839).

Description

Body orbicular, deep and laterally compressed; skin thick and leathery; scales rectangular; mouth small and terminal; teeth on both jaws fused and beak-like; eyes small; pair of small nostrils in front of eyes; head bump extends from above the eyes to the base of dorsal fin; chin bump from beneath the lower jaw to anal fin base; gill openings small and oval; dorsal and anal fins opposite and triangle shaped; fins with soft rays and spineless; pelvic and caudal fins absent; caudal fin replaced by broad clavus with round margin; smooth band at the base of clavus between dorsal and anal fins; pectoral fin small rounded. Body gray to silvery white dorsally, dusky white ventrally, dorsal and clavus region with reddish brown tinge; fins bluish black, and many irregular paler spots over the body (Figures 2 & 3). The morphometric and meristic characters of the present specimen along with those of earlier works on *M. alexandrini* are shown in Table 1.

Discussion

The homogeneity in the morphological characters of *Mola* has created confusion in the species identification. However, the major distinguishing characters for the identification of *Mola* species are the presence or absence of head bump, chin bump and smooth band back-fold at the base of clavus; shape of the clavus margin; number of fin rays and ossicles in clavus; and the shape of the body scales [6,16,17,19-22]. The diagnostic characters of *M. alexandrini* observed in the present study such as the presence of head and chin bumps; smooth band at the base of clavus without a back-fold; rounded clavus; 12 clavus ossicles; scales rectangular on middle region of body and paler spots over the body are in conformity with those observed by the earlier workers [6,16,19].



Figure 2: *Mola alexandrini* (Ranzani 1839) landed at Kakinada fishing harbour.



Figure 3: Clavus of *Mola alexandrini* (Ranzani 1839).

The historical records of the family Molidae for over 65 years (1953-2018) from Indian coastal waters have been presented in Table 2. Based on the historical data, the distribution of the family Molidae in Indian waters is restricted to four species namely *M. mola*, *M. lanceolatus*, *R. lavis*, and *M. alexandrini*. Of these, *M. mola* [23] and *M. lanceolatus* [24] have been reported from coastal waters of Andhra Pradesh. *M. alexandrini* was reported in Indian waters with the rare occurrence of two records, one from Chennai, Tamil Nadu by Mohan et al. [21] and the other from Kochi, Kerala by Kishor et al. [20]. Hence, it is evident that the current reporting of *M. alexandrini* is the 3rd record from India and the first ever report from Andhra Pradesh.

In Indian coastal waters, the ocean sunfishes are considered as vagrant species, with only few sporadic sightings. Since

1990's, however, there has been a considerable increase in the frequency of molids observed in Indian waters [25-30] (Table 2). The occurrence of *M. alexandrini* in the study area might be due to the fact that the species which are weak may get drifted to the coastal waters by strong currents or in course of chasing specific plankton/diatoms, as they are opportunistic foragers and selective feeders [3,5,13]. Moreover, in recent times there has been a massive development of fisheries and upgraded fishing vessels extended their trawling operations into deeper waters, catching more varieties of fishes in the study region [31-35]. The present report of the species from Andhra Pradesh coastal waters along central east coast of India would help in creating new awareness and scope for the proper documentation of data on this deficient species from the Indian waters [36-47].

Table 1: Morphometric and meristic characteristics of *Mola alexandrini*.

Location	Kakinada, Andhra Pradesh	Kochi, Kerala	Chennai, Tamil Nadu
Reference	Present study	Kishor et al. 2013 [20]	Mohan et al. 2006 [21]
Characters	mm (%TL)	mm (%TL)	mm (%TL)
Morphometrics			
Total length (TL)	935	1110	835
Pre-clavus band length (PCBL)	715 (76.4)	910 (81.9)	685 (82)
Total body depth (TBD)	1480	-	1260
Body depth (BD)	682 (72.9)	-	600 (71.9)
Eye diameter (ED)	48 (5.1)	65 (4.5)	42 (5)
Pre-orbital length (POL)	145 (15.5)	-	120 (14.4)
Pre-dorsal length (PDL)	495 (52.9)	-	545 (65.3)
Pre-pectoral length (PPCL)	300 (32)	-	272 (32.6)
Pre-anal length (PAL)	460 (49.2)	-	-
Height of dorsal fin (DFH)	465 (49.7)	480 (42.7)	435 (52.1)
Height of anal fin (AFH)	440 (47)	475 (42.7)	400 (47.9)
Length of pectoral fin (PCFH)	114 (12.2)	145 (11.7)	125 (15)
Meristic			
Dorsal fin rays	19	-	-
Anal fin rays	17	-	-
Pectoral fin rays	12	-	-
Ossicles in clavus	12	-	-

Table 2: Historical records of Ocean sunfishes (Family: Molidae) from Indian coastal waters.

Author/s	Species reported	Year	N	Area	TL (mm)	TW (Kg)	Gear
Kulkarni, 1953 [25]	<i>Masturus lanceolatus</i>	1953	1	Bombay waters	925	9	-
Chacko & Mathew, 1956 [26]	<i>Ranzania truncata</i>	1956	1	Malabar coast	610	-	-
Chhapgar, 1964 [27]	<i>R. truncate</i>	1964	1	Sassoon Dock, Bombay	571	605	-
Mohammed, 1975 [28]	<i>Mola mola</i>	1973	1	Satpati, Bombay	1240	-	Gill net
Devaraj et al. 1976 [29]	<i>Mola oxyropterus</i>	1976	1	Gulf of Mannar	880	15	Shore-seine
Ebenezer & Joel, 1984 [30]	<i>Ranzania typus</i>	1984	1	Kanyakumari, Tamilnadu	616	8	Shore-seine
Ram et al. 1988 [23]	<i>M. mola</i>	1986	1	Visakhapatnam, Andhra Pradesh	912	-	Hook line
Somvanshi et al. 1996 [31]	<i>M. lanceolatus</i>	1992	1	Northwestern Indian EEZ	-	-	-
	<i>M. mola</i>		8	-	-	-	-
Arumugam et al. 1994 [32]	<i>M. lanceolatus</i>	1993	1	Tuticorin, Gulf of Mannar	1535	62	Drift gill net
Badrudeen, 1995 [33]	<i>M. lanceolatus</i>	1994	1	Periapattinam, Gulf of Mannar	1830	75	-
Manoj et al. 1998 [34]	<i>M. mola</i>	1997	4	Bhidia Fish Landing Centre, Off Verval, Gujrat	1 0 0 0 , 8 7 0 , 1030 & 900	46,40,49 & 43	Trawl net

Victor et al. 1998 [35]	<i>Ranzania laevis</i>	1998	1	Mandapam, Palk Bay	660	8.2	Shore-seine
Kar et al, 2000 [36]	<i>R. laevis</i>	2000	1	Medinipur West Bengal	-	-	-
Chellappa et al. 2002 [37]	<i>M. mola</i>	2001	2	Keel Vaipaar, Tuticorin	630 & 650	11.5 & 12	Drift gill net
	<i>M. lanceolatus</i>	2002	1	Tamilnadu	1150	40	Trawl net
Chellappa et al. 2006 [38]	<i>M. mola</i>	2005	1	Tuticorin, Gulf of Mannar	-	-	Drift gill net
Sandhya et al. 2006 [39]	<i>R. laevis</i>	2006	1	Rameswaram, Gulf of Mannar	620	7	Shore-seine
Mohan et al. 2006 [21]	<i>Mola ramsayi</i>	2006	1	Chennai, Tamilnadu	835	10.5	Trawl net
Manoj & Pavithran, 2007 [40]	<i>M. mola</i>	2006	1	North west off Calicut	700	19	Trawl net
Ramamoorthy et al. 2007 [41]	<i>M. lanceolatus</i>	2007	1	Ervadi, Gulf of Mannar	840	-	-
Ramamurthy et al. 2012 [42]	<i>R. laevis</i>	2011	1	Pamban, Tamilnadu	550		Kalamkatti valai (similar to gill net)
Bandana et al. 2012 [43]	<i>M. lanceolatus</i>	2011	1	Parangipettai, Tamilnadu	1270	70	Drift gill net
Nair et al. 2013 [44]	<i>M. lanceolatus</i>	2013	1	South west coast off Cochin	1705		Drift gill net
Kishor et al. 2013 [20]	<i>M. ramsayi</i>	2013	1	Kochi, Kerala coast	1110	50	Trawl net
Purushottama et al. 2014 [45]	<i>R. laevis</i>	2013	1	Vasai, Mumbai	525	3.8	Multiday dol net
Das et al. 2014 [46]	<i>M. lanceolatus</i>	2013	1	Lakshadweep Sea	1535	100	Hook line
Prakash et al. 2015 [47]	<i>M. lanceolatus</i>	2012	1	Cuddalore, Tamilnadu	1350	63.5	Purse-seine
Naranji et al. 2016 [24]	<i>M. lanceolatus</i>	2016	1	Vishakhapatnam, Andhra Pradesh	1390		Trawl net
Babu et al. 2019 [48]	<i>M. lanceolatus</i>	2016	1	Kasimedu, Tamilnadu	120	44	Gill net
Dipanjan et al. 2019 [10]	<i>M. mola</i>	2018	2	Digha Mohona, West Bengal	685-780	-	Trawl net
Present study	<i>Mola alexandrini</i>	2018	1	Kakinada, Andhra Pradesh	935	62	Trawl net

N- Number of individuals; TL- Total length; TW- Total weight

Acknowledgment

The author, Darwin Chatla is grateful to the UGC for granting BSR (Basic Scientific Research) fellowship. Authors are thankful to the authorities of Acharya Nagarjuna University for providing necessary facilities. We are thankful to Marianne Nyegaard, School of Veterinary and Life Sciences, Murdoch University, Australia, and Laith A. Jawad, Freelance Fish Biodiversity Consultant and Expert, Auckland, New Zealand, for confirming the species identification and for their valuable advice and suggestions.

References

1. Fricke R, Eschmeyer WN, Van der Laan R (2019) Eschmeyer's Catalogue of Fishes: genera, species, references.
2. Froese R, Pauly D (2019) Fishbase.
3. Nyegaard M, Loneragan N, Hall S, Andrew J, Sawai E, et al. (2018) Giant jelly eaters on the line: Species distribution and bycatch of three dominant sunfishes in the Southwest Pacific. *Estuarine, Coastal and Shelf Science* 207: 1-15.
4. Sawai E, Yamanoue Y, Jawad L, Al-Mamry J, Sakai Y (2017) Molecular and morphological identification of *Mola* sunfish specimens (Actinopterygii: Tetraodontiformes: Molidae) from the Indian Ocean. *Species Diversity* 22(1): 99-104.
5. Pope EC, Hays GC, Thys TM, Doyle TK, Sims DW, et al. (2010) The biology and ecology of the ocean sunfish *Mola mola*: a review of current knowledge and future research perspectives. *Reviews in Fish Biology and Fisheries* 20(4): 471-487.
6. Fraser-Brunner A (1951) The ocean sunfishes (Family Molidae). *Bulletin of the British Museum (Natural History) Zoology* 1: 89-121.
7. Breen P, Canadas A, Cadhla OO, Mackey M, Scheidat M, et al. (2017) New insights into ocean sunfish (*Mola mola*) abundance and seasonal distribution in the northeast Atlantic. *Scientific Reports* 7(1): 2025.

8. Houghton JD, Doyle TK, Davenport J, Hays GC (2006) The ocean sunfish *Mola mola*: insights into distribution, abundance and behaviour in the Irish and Celtic Seas. *Journal of the Marine Biological Association of the United Kingdom* 86(5): 1237-1243.
9. Nelson JS, Grande TC, Wilson MV (2016) *Fishes of the World*. In: (5th edn.) John Wiley & Sons Inc, Hoboken, New Jersey, USA, Pp.1-707.
10. Dipanjan R, Anil M, Mrinmay G, Prasad CT, Subhrendu SM (2019) First record of a rare sunfish, *Mola mola* (Linnaeus, 1758) from coastal waters of West Bengal, India. *Rec Zool Surv India* 119(1): 81-84.
11. Todd VLG, Grove JS (2010) First records of golden trevally (Gnathodon speciosus, Carangidae), sharp-tail mola (*Masturus lanceolatus*, Molidae) and evidence for white shark (Carcharodon carcharias, Lamnidae) in the Galápagos Islands, Ecuador. *Marine Biodiversity Records* 3: 1-7.
12. Palsson J, Astthorsson OS (2016) New and historical records of the ocean sunfish *Mola mola* in Icelandic waters. *J Fish Biol* 90(3): 1126-1132.
13. Thys TM, Ryan JP, Dewar H, Perle CR, Lyons K, et al. (2015) Ecology of the ocean sunfish, *Mola mola*, in the southern California Current System. *Journal of Experimental Marine Biology and Ecology* 471: 64-76.
14. Sousa LL, Xavier R, Costa V, Humphries NE, Trueman C, et al. (2016) DNA barcoding identifies a cosmopolitan diet in the ocean sunfish. *Scientific Reports* 6: 1-9.
15. Thys TM (2006) OceanSunfish.org.
16. Sawai E, Yamanoue Y, Nyegaard M, Sakai Y (2018) Redescription of the bump-head sunfish *Mola alexandrini* (Ranzani 1839), senior synonym of *Mola ramsayi* (Giglioli 1883), with designation of a neotype for *Mola mola* (Linnaeus 1758) (Tetraodontiformes: Molidae). *Ichthyol Res* 65(1): 142-160.
17. Yoshita Y, Yamanoue Y, Sagara K, Nishibori M, Kuniyoshi H, et al. (2009) Phylogenetic relationship of two *Mola* sunfishes (Tetraodontiformes: Molidae) occurring around the coast of Japan, with notes on their geographical distribution and morphological characteristics. *Ichthyol Res* 56(3): 232-234.
18. Whitley GP (1931) *Studies in Ichthyology*. *Rec Australian Mus* 18(3): 96-134.
19. Nyegaard M, Sawai E, Gemmell N, Gillum J, Loneragan NR, et al. (2017) Hiding in broad daylight: molecular and morphological data reveal a new ocean sunfish species (Tetraodontiformes: Molidae) that has eluded recognition. *Zoological Journal of Linnean Society* 182(3): 631-658.
20. Kishor TG, Suraj KS, Dhaneesh KV, Dinesh Kumar S, Seetha PK, et al. (2013) Southern sun fish *Mola ramsayi* (Giglioli, 1883) recorded from Kochi, southwest coast of India. *Mar Fish Infor Serv T & E Ser* 218: 9-10.
21. Mohan S, Selvanidhi S, Srinivasan G, Poovannan P (2006) *Mola ramsayi* (Southern sunfish): a new record from Indian waters. *Marine Fisheries Information Service, Technical and Extension Series* 189: 23-24.
22. Ram Bhaskar B, Panduranga Rao D, Rama Murthy M, Maheswarudu G, Durga Prasad YVK, et al. (1988) Rare occurrence of sunfish *Mola mola* (Linnaeus) from the coastal waters off Visakhapatnam (Bay of Bengal). *Journal of The Bombay Natural History Society* 85: 629-631.
23. Naranji MK, Rao VG, Venu D (2016) An occurrence of the rare Sharptail Mola *Masturus lanceolatus* (Lienard, 1840) (Tetraodontiformes: Molidae), in the coastal waters of Visakhapatnam, India. *J Threat Taxa* 8(13): 9592-9594.
24. Kulkarni CV (1953) Local and scientific name of commercial fishes of Bombay. *J Bombay Nat Hist Soc* 51(4): 948-950.
25. Chacko PI, Mathew MJ (1956) A record of the Sun fish *Ranzania truncata* (Retzius). *J Bombay Nat Hist Soc* 53(4): 724-725.
26. Chhapparg BF (1964) Occurrence of the Oblong Sunfish *Ranzania truncate* (Retzius) in Bombay waters. *J Bombay Nat Hist Soc* 61(2): 453-456.
27. Mohammed ZKM (1975) On the Sunfish, *Mola mola* (L) a new record from Indian waters. *Indian J Fish* 22(1&2): 295-296.
28. Devaraj M, Nammalwar P, Thiagarajan T (1976) Record of the sunfish *Masturus oxyropterus* (bleeker) from the Indian coast. *J Mar Biol Assoc India* 18(3):663-666.
29. Ebenezer IP, Jerold Joel J (1984) On a large sunfish *Ranzania typus* from the South-West coast. *Indian J Fish* 31(3): 360-361.
30. Somvanshi VS, Varghese S, Gupta RK, Naik VV (1996) Sunfishes (Family: Molidae) caught from the Northwestern Indian EEZ. *Occasnl* 9.
31. Arumugam G, Balasubramanian TS, Chellappa M (1994) On the largest sunfish ever caught from Indian seas. *Mar Fish Infor Serv T & E Ser* 128: 16-17.
32. Badrudeen M (1995) On the largest sun fish *Masturus lanceolatus* Leonard recorded at Periapattinam, Gulf of Mannar. *Mar Fish Infor Serv T & E Ser* 137: 20.
33. Manoj KB, Kizhakudan JK, Sujitha T, Dinesh Babu AP (1998) A record of sun fish *Mola mola* from coastal waters of Verval. *Mar Fish Infor Serv T & E Ser* 157: 21-22.
34. Victor ACC, Kandasamy D, Ramamoorthy N (1998) On the large sunfish landed near Mandapam. *Mar Fish Infor Serv T & E Ser* 157: 26-27.
35. Kar S, Chakraborty R, Mitra S, Chatterjee TK (2000) First record of the sunfish *Ranzania laevis* (Pennant) (Pisces: Osteichthyes: Perciformes: Molidae) from the West Bengal Coast. *J Bombay Nat Hist Soc* 97(2): 288-288.
36. Chellappa M, Balasubramanian TS, Arumugam G (2002) On the occurrence of sunfish along Gulf of the Mannar. *Mar Fish Infor Serv T & E Ser* 174: 10.
37. Chellappa M, Balasubramanian TS, Arumugam G (2006) Occurrence of Sunfishes along Tuticorin Coast. *Mar Fish Infor Serv T & E Ser* 188.
38. Sandhya S, Kasinathan C (2006) A note on the landing of slender sun fish near Rameswaram. *Mar Fish Infor Serv T & E Ser* 187: 18.
39. Manoj Kumar PP, Pavithran PP (2007) First record of ocean sunfish, *Mola mola* from Malabar Coast. *Mar Fish Infor Serv T & E Ser* 192: 15-16.
40. Rammoorthy N, Molly V, Raju A, Kasinathan C, Seeni M (2007) On the sunfish, *Masturus lanceolatus* landed near Ervadi, Gulf of Mannar. *Mar Fish Infor Serv T & E Ser* 192:15.
41. Ramamurthy N, Vinod K, Gopakumar G (2012) Note on the slender sunfish, *Ranzania laevis* (Pennant, 1776) landed at Chinnapalam (Pamban), south-east coast of India. *Mar Fish Infor Serv T & E Ser* 211:10-10.
42. Bandana D, Gopalkrishnan A, Saravanakumar A (2012) Rare catch of *Masturus lanceolatus* (Lienard, 1840) Gill, 1885 from Parangipettai coast, Tamilnadu. *Indian Journal of Geomarine Sciences* 41(5): 489-490.
43. Nair RJ, Paul S, Dinesh Kumar S (2013) Record of a rare Sharp-tail sunfish, *Masturus lanceolatus* Liénard, 1840 (Tetraodontiformes: Molidae) landing from South-west coast of India. *Mar Fish Infor Serv T & E Ser* 218: 7-7.

44. Purushottama, Anulekshmi GB, Ramkumar C, Thakurdas S, Bala M (2014) A rare occurrence and biology of the Slender sunfish, *Ranzania laevis* (Actinopterygii: Tetraodontiformes: Molidae), in the coastal waters of Mumbai, North-West Coast of India. Indian J Geomarine Sci 43(8): 1554-1559.
45. Das P, Singh P, Bhargava AK, Singh P, Nagpure RS (2014) New locality of sharp-tail sunfish (*Masturus lanceolatus*) in Indian waters. Marine Biodiversity Records 7.
46. Prakash S, Kumar TTA, Thangaraj M (2015) DNA Barcoding of Sharp Tail Sunfish *Masturus lanceolatus* Lienard, 1840 (Tetraodontiformes: Molidae). Proceedings of Zoological Society 69: 153.
47. Babu C, Silambarasan K, Anrose A, Ramalingam L (2019) A new record of a rare species *Masturus lanceolatus* (Point-tail sunfish) from Chennai coastal waters, India. Indian Journal of Geo-marine Sciences 48(3): 297-301.



This work is licensed under Creative Commons Attribution 4.0 License
DOI: [10.19080/OFOAJ.2021.14.555889](https://doi.org/10.19080/OFOAJ.2021.14.555889)

**Your next submission with Juniper Publishers
will reach you the below assets**

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
(Pdf, E-pub, Full Text, Audio)

- Unceasing customer service

Track the below URL for one-step submission
<https://juniperpublishers.com/online-submission.php>