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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

[*]Purushottama, G. B Anulekshmi, C Ramkumar, S Thakurdas & Bala Mhadgut

Central Marine Fisheries Research Institute, 2nd Floor, Old CIFE Campus,
Fisheries University Road, Versova, Mumbai 400 061, Maharashtra, India.
[E-mail: puru44@gmail.com]

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Slender sunfish, *Ranzania laevis* measuring a total length of 52.5 cm and weighing 3.8 kg was caught from a depth of 40 m in the multiday dol net operated 156 km away from the Pachu Bandar Vasai Fort, Mumbai coast, Maharashtra. Detailed Morphmetric measurements, meristic counts and biology of fish were presented in the paper. This species was caught after 48 years off Mumbai, North-West Coast of India.

[**Keywords:** Slender sunfish, Mumbai, Morphometric, Meristic, Biology]

Introduction

Sunfishes or Ocean sunfishes (Family: Molidae) are the world's heaviest bony fish well known for their grotesque rounded bodies and gigantic size[1]. They are truly oceanic have a restricted distribution and occupy a unique place in the open ocean web of life. Ocean sunfishes are large pelagic fishes rarely found along the North-West Coast of India. Molidae family is represented in the Indian waters by four species belonging to three genera viz. *Ranzania, Masturus* and *Mola*. The species of sunfishes so far recorded from Indian waters are *Masturus lanceolatus, Ranzania truncata* (= *Ranzania laevis*)*, Mola mola, Masturus oxyuropterus* (=*Masturus lanceolatus*)*, Ranzania typus* (=*Ranzania laevis*)*, Ranzania laevis* and *Mola ramsayi*. *R. laevis*, the monotypic type species of *Ranzania,* is an epipelagic and cosmopolitan species of temperate and tropic seas[2]. Maximum size reached by this species is 1000 mm in total length (TL)[3]. However, smaller individuals are generally caught. The species of sunfishes reaching 3 m or more in length and weigh up to 1300 kg. Sometimes these fishes are seen swimming lazily or idling at the surface, often partially on their side (large ones occasionally struck by vessels). They are occasionally thrown up on beaches by storms. They feed on jelly fishes, medusae, algae, brittle stars, larval eels and at times larger fishes. Skin is tough and heavily parasitized[4]. Not generally used as food since flesh is comparatively less unpalatable but sometimes treated as a delicacy[5]. Data on biology and ecology of this species are scarce[2].

Synonymy for this species from the Mediterranean and Atlantic is very rich: apart from the presently valid name R. *laevis,* the following synonyms were also used[6]: *Ostracion laevis* Penn., *Tetradon truncatus Retz.,Orthagoriscus oblongus* Schn., *Ranzania truncata* Jord., *Orthagoriscus truncatus* Day. The following synonyms were used in the Adriatic in addition to some of the above mentioned ones: *Mola Planci* Nardo, *Orthagoriscus planci* Can. and *Ranzania laevis laevis* (Penn.)[2]. Earlier in our country this species was called as *Ranzania truncata and Ranzania typus*[7,8,9]. *R. laevis* records from the Arabian sea, off Mumbai, North-West Coast of India are generally rare and occasional. One or few individuals were recorded in some years ago. However, there are years with no records at all. This fish is recorded all over the Arabian Sea and Bay of Bengal in the east coast of India. Records of more than one individual at the same place and time are very rare. Both earlier and more recent ichthyological literature reports many findings of this species in Indian waters. Thus, Chacko and Mathew, 1956 recorded *Ranzania laevis* as *Ranzania truncata* for the first time in Malabar coast near Beypore, Kerala, Chhapgar, 1964 reported one record from Sassoon Dock, Bombay city. Since then the species was not reported off Mumbai. Presumably, Deraniyagala, 1944 recorded the Sun fish *Mola mola* for the first time in the Indian Ocean, Srilanka[10]. Individuals recorded from Indian waters

[*]Corresponding author

Table 1—Earlier records of sun fishes belong to the Family: Molidae from Srilanka and Indian waters.

Year of Records	Species Named	Species Valid Name	Area	Total length (mm)	References	Type of net	Remarks
1944	*Mola mola*	*Mola mola*	Indian Ocean, Srilanka	-	10	-	First record of any kind of sun fish from Indian ocean
1953	*Masturus lanceolatus*	*Masturus lanceolatus*	Bombay waters	925	5	-	First record of any kind of sun fish from Indian waters
1956	*Ranzania truncata*	*Ranzania laevis*	Malabar coast near Beypore	610	7	-	First record of this species
1964	*Ranzania truncata*	*Ranzania laevis*	Sassoon Dock, Bombay city	571	8	-	-
1973	*Mola mola*	*Mola mola*	Off Satpati, Bombay	1240	33	Gill net	First record of this species
1976	*Masturus oxyuropterus*	*Masturus lanceolatus*	Gulf of Mannar	880	34	Shore-seine	First record of this species
1984	*Ranzania typus*	*Ranzania laevis*	Erayumanthurai, Kanyakumari, Tamilnadu	616	9	Shore-seine	First record of this species
1986	*Mola mola*	*Mola mola*	Vishakapatnam, Andhra Pradesh	912	35	Hook and Line	-
1993	*Masturus lanceolatus*	*Masturus lanceolatus*	Off Tuticorin, Gulf of Mannar	1535	36	Drift gill net (Paruvalai)	-
1994	*Masturus lanceolatus*	*Masturus lanceolatus*	Periapattinam, Gulf of Mannar	1830	37	-	-
1997	*Mola mola*	*Mola mola*	Bhidia Fish Landing Centre, Off Verval, Gujrat	1000 870 1030 900	38	Trawl net	First record of more than two species from Indian waters
1998	*Ranzania laevis*	*Ranzania laevis*	Mandapam, Palk Bay	660	14	Shore-seine	-
2001	*Masturus lanceolatus*	*Masturus lanceolatus*	Cuddlore, Tamilnadu	529	-	-	-
2001	*Mola mola*	*Mola mola*	Off Keel Vaipaar, Tuticorin, Tamilnadu	630 & 650	39	Drift gill net (Paruvalai)	-
2002	*Masturus lanceolatus*	*Masturus lanceolatus*	Off Tuticorin, Tamilnadu	1150	39	Trawl net	-
2005	*Mola mola*	*Mola mola*	Tuticorin, Tamilnadu	-	40	Drift gill net (Paruvalai)	-
2006	*Ranzania laevis*	*Ranzania laevis*	Rameswaram, Gulf of Mannar	620	41	Shore-seine	-
2006	*Mola mola*	*Mola mola*	Calicut	700	42	Trawl net	-
2006	*Mola ramsayi*	*Mola ramsayi*	Chennai, Tamilnadu	835	43	Trawl net	-
2007	*Masturus lanceolatus*	*Masturus lanceolatus*	Ervadi, Gulf of Mannar	840	44	-	-
2011	*Masturus lanceolatus*	*Masturus lanceolatus*	Parangipettai, Tamilnadu	1270	1	Drift gill net	-
2011	*Ranzania laevis*	*Ranzania laevis*	Pamban, Tamilnadu	550	45	Kalamkatti valai (similar to gill net)	-
2013	*Ranzania laevis*	*Ranzania laevis*	Arabian Sea, Off Vasai, Mumbai	525	Present study	Multiday dol net	Second report of this species in Mumbai waters

for the last 69 years are given in Table 1. As shown

by the Table, this fish has been recorded from Arabian sea and Indian ocean in the southern part of India, however, more frequently from its southern parts (Tuticorin, Gulf of Mannar, Palk bay and Mandapam region). Their frequency of occurrence differs from time to time with no regular pattern.

Materials and Methods

On 25th February, 2013 a specimen of slender sunfish, *Ranzania laevis* (Pennant, 1776) was caught in a multiday dol net operated 156 km away from the Pachu Bandar Vasai Fort, Mumbai coast, Maharashtra (lat. 20° 29' 449" N and long. 72° 00' 132" E) (Fig. 1). Morphometric and meristic details following Jardas and Knežević, 1983 and biology of fish was carried out.

Results and Discussion

The identified specimen was a female of total length 525 mm and weighing 3.8 kg. Body depth into body length 2.1 times; lips were soft, beak like forming a vertical slit when closed; body with adjoining scales often hexagonal in shape; pectoral fin elongate, fitting into shallow concavity, total dorsal and anal soft rays were 18 each. Pelvic fins are absent and dorsal and anal fin are devoid of spines, pseudo caudal fin (Gephyrocercal tail) was present. Our analysis included 20 morphometric and 4 meristic characters which were taken to the nearest millimeter and given in table 2 for comparison. Comparision of our data with the earlier ones shows broad agreement both in morphometirc and particularly meristic values. Our results show the length: depth up ratio 1:2.1 or in percentages, depth makes 47.6% of the total body length. However, some other authors recorded 1:2 ratio[11,12,13,14], or very near to this ratio[15]. However, Jardas and Knežević, 1983 and Katurić, 1892 reported that the body length was 2.6 – 3 and 2.5 times the body depth respectively. Specchi and Bussani, 1973 found this ratio to be 1: 2.36. Jawad *et al.*, 2010 reported the ratio for the two specimens to be 1.98 and 2.2 [17]. Our data support these earlier reports and it is assumed that this ratio variability is mainly dependent on the body depth variability.

Fig. 1—*Ranzania laevis* (Pennant, 1776) recorded from Mumbai, North-West Coast of India

R. laevis is widely distributed in subtropical and temperate waters of Western Atlantic: Florida (USA), Martinique, Venezuela and Brazil[18]. Eastern Atlantic: Madeira to Scandinavia[19]; Dakar, Senegambie, and Sierra Leone[20]; South Africa. Eastern Pacific: central California, USA to Chile; rare north of Mexico[21]. Indian Ocean: Madagascar[22], Mauritius[23], Reunion[24], Iran[25], Australia. West Pacific: Japan[26], China[27], Taiwan[28], New Zealand[29] (Fig. 2). Strictly marine and cosmopolitan, *R. laevis* is a taxon with different ecological preferences, one of which for example, has a larval pelagic existence in coastal waters[30, 31,17]. The relation between a sudden rise in sea surface water temperature and the presence of *R. laevis* was also observed by Castro and Ramos, 2002, who related the presence of *R. laevis* off Gran Canaria (Canary Islands) to the sudden west-east warming process of the sea surface in the central Atlantic[32]. Jawad *et al.*, 2010, also opined that it could be related with changes in environmental factors such an increase of sea surface temperature. Warmer water masses might cause the slender sunfish to proceed further north of its native distribution. A sudden southern warming process of the sea surface in the Oman Sea area was evident during the period January–February 2009 where warm water masses were recorded entering through the Straight of Hurmoz[17].

The female fish was cut opened and the intestine measuring 110.8 mm long suggested a carnivores diet. The ovary length was 165 mm and weighing 37.8 g and showing maturity stage III (maturing) (Fig. 3). The observed ovary was turgid, opaque and dark red in colour with granular appearance. Development of blood vessels was perceptible. Anterior portion of ovary was fused and posterior part was joined with thin membrane. The empty stomach of the *R. laevis* shown green mass in the form of paste, the flesh was crystal white and almost spongy.

Table 2—Morphometric and meristic characters of *Ranzania laevis* collected from Mumbai, North-West Coast of India compared with the specimens obtained from the literature (NA=Not Available) *(Contd.)*

Characters (mm) and ratios (%)	Present study	Jawad *et al* (2010)			
Morphometris		Specimen 1	Specimen 2	Phillipps (1942)	Jardas and Knežević (1983)
Total length (TL)	525	495	507	374	420-560
Standard length (SL)	480	470	470	NA	490-528
% TL	91.4	94.9	92.7	NA	92.5-94.3
Head length (HL)	190	168	186	142	152-193
% TL	36.2	33.9	36.7	37.9	34.3-36.8
% SL	39.6	NA	NA	NA	NA
Prepectoral fin length	190	185	190	NA	200-220
% TL	36.2	37.3	31.8	NA	37.7-39.3
% SL	39.6	NA	NA	NA	NA
Predorsal fin length	445	443	450	NA	385-496
% TL	84.8	89.5	88.8	NA	88.4-91.7
% SL	92.7	NA	NA	NA	NA
Preanus length	395	370	356	NA	325-400
% TL	75.2	74.7	70.2	NA	76.9-77.4
% SL	82.3	NA	NA	NA	NA
Preanal fin length	425	379	418	NA	NA
% TL	81.0	76.6	82.9	NA	NA
% SL	88.5	NA	NA	NA	NA
Greatest body depth (H)	250	250	230	152	168-280
% TL	47.6	50.5	45.4	40.6	38.6-50
% SL	52.1	NA	NA	NA	NA
Body depth at pectoral fin	240	235	218	NA	NA
% TL	45.7	47.5	43	NA	NA
% SL	50.0	NA	NA	NA	NA
Pectoral fin length (PFL)	116	102	106	66	103-110
% TL	22.1	20.6	20.9	17.6	194-196
% SL	24.2	NA	NA	NA	NA
Dorsal fin length (DFL)	150	127	129	NA	130-160
% TL	28.6	25.7	25.6	NA	24.5-28.6
% SL	31.3	NA	NA	NA	NA
Clavus length	172	182	170	104	NA
% TL	32.8	36.8	33.7	27.8	NA
% SL	35.8	NA	NA	NA	NA
Anal fin length (AFL)	123	110	130	84	137
% TL	23.4	22.2	25.8	22.5	25.8
% SL	25.6	NA	NA	NA	NA
Preorbital length	73	67	70	NA	55-73
% HL	38.4	39.9	37.6	NA	35-38.5
Eye diameter	31	28	30	NA	255-350
% HL	16.3	17	16.1	NA	13.4-18.1
Mouth diameter	25	25	15	NA	NA
% HL	13.2	15.2	8.1	NA	NA
Interorbital distance	49	50	59	NA	NA
% HL	25.8	25.8	31.9	NA	NA
Dorsal fin base	55	57	52	89	45-70
% DFL	36.7	44.8	40.3	NA	34.6-43.8
Pectoral fin base	26	26	24	NA	27-30
% PFL	22.4	25.5	22.6	NA	26.2-27.3
Anal fin base	64	62	48	NA	45
% AFL	52.0	56.4	34.6	NA	32.8

(Contnd.)

Table 2—Morphometric and meristic characters of *Ranzania laevis* collected from Mumbai, North-West Coast of India compared with the specimens obtained from the literature (NA=Not Available)

	Meristics				
Number of dorsal fin rays	18	17	15	15	17-18
Number of Pectoral fin rays	13	14	12	14	13-14
Number of anal fin rays	18	18	17	18	18-20
Number of Clavus fin rays	18	19	18	19	17-19

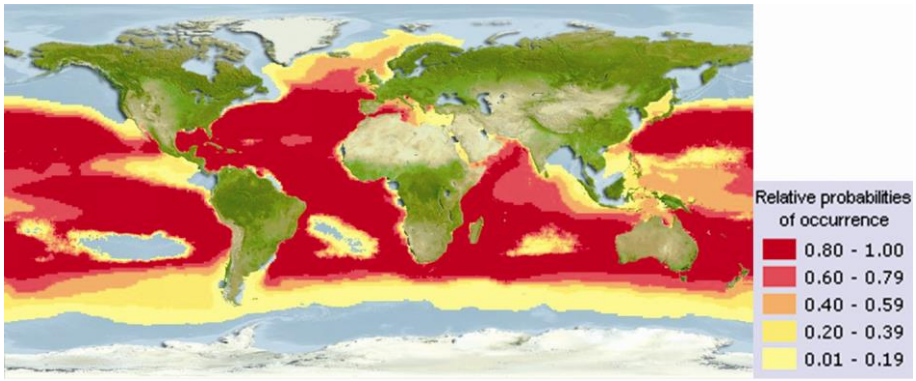

Fig. 2—Relative probabilities of occurrence of *Ranzania laevis* around the world [25]

Fig. 3—Ovary of *Ranzania laevis* (Pennant, 1776) recorded from Mumbai, North-West Coast of India

The rare occurrence of *Ranzania laevis* at North-West Coast of India may be attributed to the rise in sea surface temperature and habitat destruction driving the species towards congenial habitat or the population might not be revived regularly. *R. laevis* is a harmless fish and the IUCN Red List Status is 'Not Evaluated'. The specimen was preserved in -20°C for the future reference.

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