

Heavy exploitation of juvenile threadfin bream, *Nemipterus randalli* along Kerala coast

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Threadfin breams are one of the most dominant group among the demersal fisheries resources along the Kerala coast, landed mainly by multiday trawlers operating beyond 100 m. Among the threadfin breams, *Nemipterus randalli* is the most abundant species contributing over 60% of threadfin bream landings of the state. Large quantities of this species are landed by trawlers at Cochin, Munambam and Neendakara Fisheries Harbours of the state. Threadfin breams locally known as “kilimeen” have good local demand in fresh condition and is sold at ₹ 40-60/- per kg. Peak landing occurs during August - September months, immediately after south-west monsoon. The present report is based on the observations made on threadfin bream landings at the above landing centres during 2010.

Monthly estimates of catch of *N. randalli* landed at Cochin and Neendakara Fisheries Harbours were carried out based on weekly observations. Fishes below the size of smallest mature fish were grouped under juveniles. The minimum size in which matured ovary was found (*i.e.*, 125 mm) was considered as minimum size at maturity. Percentage of juveniles in each sample was estimated from the length-frequency distribution. The data thus obtained were used for calculating the percentage of juveniles in the fishery by number and by weight. Monthly percentage of juveniles in the landing was also determined using length - frequency distribution.

The estimated landings of threadfin breams in the major gear *i.e.*, trawl in Kerala for the year 2010 was 33,680 t with *N. randalli* forming the major share (62%). *Nemipterus japonicus* (26%) and *Nemipterus bipunctatus* (6%) were the other important species landed. The estimated catch was maximum (10,031 t) during the month of August. The threadfin bream landings at Cochin and Neendakara Fisheries Harbours were 1844 t and 7136 t forming 5.5% and

21.2% of Kerala landings, respectively. The trends in all India and all Kerala threadfin bream landings during 1999 to 2009 are shown in Fig. 1. From 2007 onwards there is significant increase in threadfin bream landings of both India as well as Kerala, the increase at all India level being more prominent as compared to state level. Table 1. summarises the monthly estimated landings of threadfin breams in Kerala along with monthly catch per hour (CPH) in comparison with total marine fish landings during respective months.

Length range of *N. randalli* in the fishery of the state was 50 to 290 mm TL, annual mean size being 135.6 mm TL with 2 modes at 85 mm and 115 mm. During the first and last quarters of the year, immature fishes dominated the fishery. Mature fishes were dominant from June to October.

Though there was an increase (19.5 %) in the landings of threadfin breams in 2010 (33,680 t) as compared to that of 2009 (28,176 t), an alarming situation observed was the dominance of juveniles, ranging in size from 50 – 125 mm TL of *N. randalli* in the landings (Fig. 2-4) especially during October - March. The contribution of juveniles of *N. randalli* in the 2010 threadfin bream landings of the state was 75.6% in terms of numbers and 69.4% in

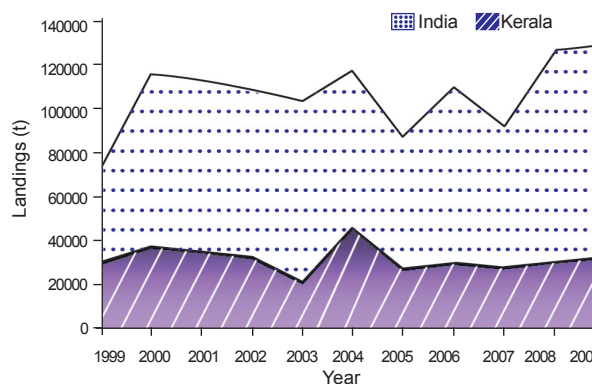


Fig. 1. Trends in threadfin bream landings (1999-2009)

Table 1. Monthly estimated landings (in tonnes) of threadfin breams in Kerala

Month	Effort (AFH)	Total marine fish landings (t)	Threadfin bream landings	CPH (kg/h)	% in total landings
January	421875	16184	4107	9.73	25.4
February	304831	9160	2347	7.69	25.6
March	413195	13807	3382	8.18	24.5
April	296523	10087	721	2.43	7.1
May	339955	18714	4173	12.27	22.3
June	190733	12535	3086	16.17	24.6
July	Trawl ban period				
August	313181	17612	10031	32.02	56.9
September	260268	13996	3036	11.6	21.7
October	270274	17318	468	1.73	2.7
November	350808	16211	1198	3.41	7.4
December	345887	12795	1131	3.26	8.8
Total	3507530	158418	33680	9.6	21.3

terms of weight. Length-frequency distribution revealed that maximum contribution of juveniles was recorded in January *i.e.*, 99.93% in terms of estimated numbers followed by February (96.10%), October (90.03%), December (79.7%) and March (75.44%). The size range and mean size of *N. randalli* landed in Kerala from October 2010 to March 2011 are shown in Table 2. The quantity of juveniles landed was estimated as 226 t in October, 20 t in November, 385 t in December, 4552 t in January, 2186 t in February and 1530 t in March.

N. randalli has an extended spawning season off Kerala with major peak during June - October and the juvenile abundance may be following this peak spawning period *i.e.*, juveniles appearing in the fishery from October and extending upto February - March of the subsequent year.

The catch is generally auctioned at ₹ 20/- to 60/- per kg at the landing centre. The entire catch including adults are transported to Mangalore for processing into minced fish paste, known as *surimi*, which forms an important item for export.

The estimated juvenile landings of *N. randalli* in 2010 amounted to 10,207 t, the value of which comes to around ₹ 2,041 lakhs (at the the rate of ₹ 20/- per kg). The yield, if the juveniles were allowed to grow to optimum size at capture was estimated to be 32,441 t which would fetch a value of ₹ 19,465 lakhs (at the rate of ₹ 60 per kg) *i.e.*, an increase in

Fig. 2. *N. randalli* landed at Munambam mini Harbour with juveniles forming a major shareFig. 3. *N. randalli* landed at Munambam Harbour



Fig. 4. Size range of juveniles of *N. randalli* landed at Cochin Fisheries Harbour during December 2010

weight of 22,234 t and an increase in value of ₹ 17,424 lakhs.

The occurrence of juveniles of small sizes in large numbers during the periods of abundance in the fishery is indeed a matter of great concern. Such unrestricted exploitation of juveniles could lead to growth overfishing. In the open access multi-species tropical marine trawl fisheries, the non-targeted catches in the form of juveniles are detrimental, as this would reduce future yield and subsequent recruitment to the fishery. Though it is difficult to implement policies for avoiding juvenile catches, it is high time to formulate guidelines under responsible fisheries, in order to minimise the probable damage to the resources/stocks due to juvenile exploitation.

Table 2. Size range and mean size of juvenile *N. randalli* landed during October 2010-March 2011

Month	Size range (mm)	Mean size (mm)
October	71 - 120	105
November	61 - 120	90
December	52 - 120	92
January	61 - 115	84
February	51 - 115	81
March	91 - 115	108