CMFRI

Policy Guidance on Minimum Legal Size [MLS] for commercially exploited marine species[1]

Ref: Letter from DOF-GOK G2/7527/2014 dated 26-06-2014

Background

Exploitation of juvenile fish results in considerable economic loss, in terms of what could have been obtained had the fishers waited for a few months and allowed the animal to grow in size and weight. This phenomenon called as growth over-fishing also causes serious damage to the fish stock in terms of long-term sustainability of the resources. A minimum legal size (MLS) is seen as a fisheries management tool with the ability to protect juvenile fish, maintain spawning stocks and control the sizes of fish caught. The MLS sets the smallest size at which a particular species can be legally retained if caught. MLS could be used to protect immature fish ensuring that enough fish survive to grow and spawn, control the numbers and sizes of fish landed, maximize marketing and economic benefits and promote the aesthetic values of fish.

Setting a MLS and implementing the same would increase the economic efficiency of the fishery besides affording protection to juveniles and allowing them to grow in weight and length. Because of the relative fast growth rates in tropical species (as in Kerala), higher weights can be reached very quickly within a few months resulting in higher harvest biomass, and therefore, higher incomes to fishers.

Objective

- To prevent growth overfishing by prescribing MLS for major commercially exploited marine fish stocks of Kerala State.
- Maintain healthy stock of marine fishes off the coast of Kerala.
- Ensure better incomes to marine fishers of Kerala on a sustainable basis.

Treatment

Analyses were carried out with maturity data collected by scientists of CMFRI. SFM (size at first maturity or size at which 50% of fish are mature) and MSM (minimum size at maturity or size of the smallest mature fish) were determined by logistic curve method. Only female fishes have been considered in this analysis, as males mature at earlier sizes and are reproductively more active.

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Decision Logic

CRITERIA	EXPLANATION	LOGIC
SSD	Size at sexual differentiation into male and female	This metric can be used to prevent juvenile exploitation and growth overfishing in those stocks which are very abundant, have high reproductive potential and whose biomasses are not affected by high fishing pressure.
MSM	Minimum size at maturity or size of smallest mature fish	This metric can be used to prevent growth overfishing in stocks which are moderately resilient to fishing pressure.
SFM	Size at first maturity or size at which 50% of the fishes are mature	Conventionally used as a metric to prevent growth overfishing completely and recruitment overfishing partially. Can be used in situations where the stock is depleted or rebuilding.
SCM	Size at complete maturity or size at which 100% of the fish are mature	Can be used to prevent recruitment overfishing by capping the maximum legal size of capture. Seasonally applicable to fishes which grow to large size and exhibit slow growth rates.

Net & Mesh Sizes

Exploitation of juveniles of all fishes can be reduced to a very large extent by strictly implementing the optimum net size and mesh size for different gears as prescribed in the recent Trawl Ban Committee Report (2014) already submitted to the DOF-GOK.

Recommendation

1. The CMFRI recommends to the DOF-GOK to implement the suggested MLS (for 58 commercial species) either by promulgating an ordinance or by amending the KMFRA, the former as an immediate measure and the latter as a more permanent measure.
2. The earlier advisory by CMFRI (Pillai, N G K, Vivekanandan, E, Ganga, U and Ramachandran, C (2009) Marine Fisheries Policy Brief-1. CMFRI Special Publication 100: 1-24) may be considered as revised.
3. For determining violations of the MLS, the DOF is advised to take a random species-wise sub-sample of the catch (about 25-50 numbers), take appropriate measurements, and consider the catch as a violation if more than 50% of the catch sample is composed of fishes at or below the prescribed MLS.
4. Inspections may preferably be carried out at sea or in the landing centre using an unsorted sample.

Recommended MLS for major marine fish stocks of Kerala State to be implemented by the DOF-GOK

No	Species Name	Common Name	Vernacular Name	Recommended MLS (cm) (g*)	Decision Logic	Remarks
Major Pelagic Fish Stocks						
1	*Sardinella longiceps*	Oil sardine	Mathi/ Nei-chala	10 TL	SSD (length of transition from juvenile to adult). MSM is 13 cm	This is a small pelagic having high abundance in the ecosystem. Recruitment is subject to environmental changes and stock is capable of withstanding high fishing pressure. Juvenile fish shoals can be voluntarily avoided by fishers
2	*Rastrelliger kanagurta*	Indian mackerel	Aiyala	14 TL	MSM	This is also a small pelagic, but its abundance is not as high as oil sardine, and therefore needs a more conservative protection measure like MSM.
3	*Euthynnus affinis*	Little tuna	Kera choora	31 FL	MSM	
4	*Auxis thazard*	Frigate tuna	Eli choora, Urulan choora	25 FL	MSM	
5	*Katsuwonus pelamis*	Skipjack tuna	Varayan Choora	35 FL	MSM	
6	*Thunnus albacares*	Yellowfin tuna	Kera	50 FL	MSM	
7	*Auxis rochei*	Bullet tuna	Eli choora	18 FL	MSM	
8	*Sarda orientalis*	Bonito	Neimeen choora	35 FL	MSM	
9	*Thunnus tonggol*	Longtail tuna	Kara choora	44 FL	MSM	
10	*Gymnosarda unicolor*	Dogtooth tuna	Pallan choora	50 FL	MSM	
11	*Scomberomorus commerson*	King seer	Neimeen/ Aiykora	50 FL	MSM	
12	*Scomberomorus guttatus*	Spotted seer	Seela neimeen	37 FL	SFM	The more conservative SFM is applied due to the fact that the stocks are in declining status
13	*Rachycentron*	King fish	Motha	61 FL	SFM	

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14	*Coryphaena hippurus*	Dolphin fish	Cycle chain, Pulli motha	38 FL	MSM	
15	*Trichiurus lepturus*	Ribbon fish	Pambada	46 TL	SSD	
16	*Megalaspis cordyla*	Horse mackerel	Vangada	19 TL	SSD	
17	*Selar crumenophthalmus*	Big-eye scad	Aiyilakanni	16 TL	MSM	
18	*Decapturus russelli*	Indian scad	Thiriyan Chamban	11 TL	MSM	
Major Demersal Fish Stocks						
19	*Cynoglossus macrostomus*	Malabar sole	Manthal Nangu	9 TL	MSM	
20	*Nemipterus japonicus*	Threadfin bream (yellow)	Kilimeen Puthiyappla kora	12 TL	MSM	
21	*Nemipterus randalli*	Threadfin bream (red)	Kilimeen Puthiyappla kora	10 TL	MSM	
22	*Lactarius lactarius*	White fish	Parava/ Adavu	10 TL	MSM	
23	*Saurida tumbil*	Greater Lizard fish	Arana meen	17 TL	MSM	
24	*Saurida undosquamis*	Lizard fish	Arana meen	10 TL	MSM	
25	*Pampus argenteus*	Silver pomfret	Vella avoli	13 TL	MSM	
26	*Parastromateus niger*	Black pomfret	Karutha avoli/ Machan	17 TL	MSM	
27	*Priacanthus hamrur*	Bull's eye	Udupu oori/ kalava kuttan	14 TL	MSM	

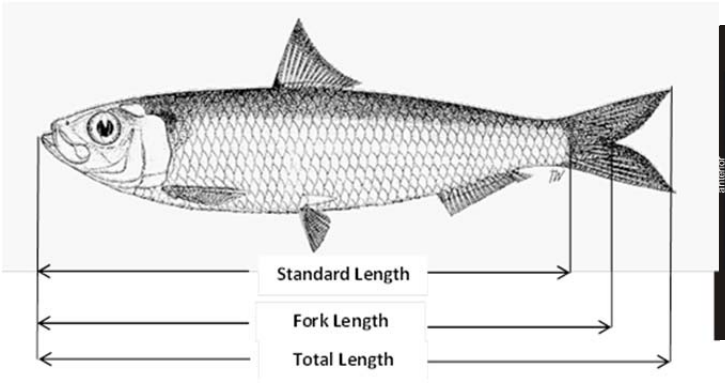
28	*Otolithes ruber*	Tiger toothed croaker	Kora	17 TL	MSM	
29	*Otolithes cuvieri*	Lesser tiger toothed croaker	Palli kora	16 TL	MSM	
30	*Johnius sina*	Sin croaker	Mutti kora	11 TL	MSM	
31	*Johnius carutta*	Karut croaker	Kuttan kora	15 TL	MSM	
32	*Johnius belangerii*	Belanger's croaker	Kora	14 TL	MSM	
33	*Johnius glaucus*	Pale spotfin croaker	Kuttan kora	15 TL	MSM	
34	*Nibea maculata*	Blotched croaker	Korukka	14 TL	MSM	
35	*Pennahia anea*	Bigeye croaker	Kora	13 TL	MSM	
36	*Epinephelus diacanthus*	Spiny cheek grouper	Kalava	18 TL	MSM	
37	*Himantura 5imbricata*	Scaly whipray	Mookan thirandi	14 DW	MSM	
38	*Himantura jenkinsii*	Pointed nose sting ray	Thirandi	61 DW	MSM	
39	*Gymnura poecilura*	Long-tailed butterfly ray	Perum thirandi	29 DW	MSM	
40	*Rhizoprionodon oligolinx*	Grey sharp nose shark	Pal sravu	53 TL	MSM	

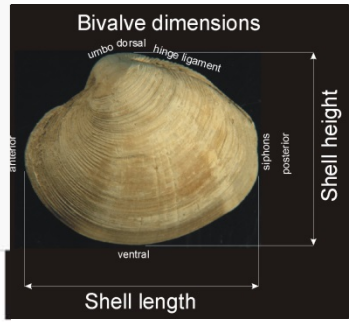
Major Crustacean Stocks						
41	*Charybdis feriatus*	Crucifix crab	Kurishu njandu	5 CW	MSM	Berried (with egg) female crabs are easily identifiable by fishermen and they should be encouraged to release such crabs back into the sea
42	*Portunus sanguinolentus*	Spotted crab	Kavalan njandu	7 CW	MSM	
43	*Portunus pelagicus*	Blue crab	Kavalan njandu	9 CW	MSM	
44	*Metapenaeus dobsoni*	Flower tail prawn	Poovalan chemmeen	6 TL	MSM	
45	*Parapenaeopsis stylifera*	Kiddi prawn	Karikadi chemmeen	7 TL	MSM	
46	*Metapenaeus monoceros*	Speckled prawn	Choodan chemmeen	11 TL	SFM	This species is depleted and needs additional protection, and therefore, the SFM is used as a conservative measure.
47	*Metapenaeus affinis*	Jinga prawn	Kazhanthan chemmeen	9 TL	MSM	
48	*Plesionika quasigrandis*	Oriental narwhal shrimp	Deep sea pullan	8 TL	SFM	Both these are deep sea shrimps have low regeneration capacities and hence as a conservative measure SFM is used as the metric to decide the MLS.
49	*Aristeus alcocki*	Arabian red shrimp	Red ring	13 TL	SFM	
50	*Panulirus homarus homarus*	Scalloped spiny lobster	Kadal konchu	200 g	WFM	Notified as MLS for export by MPEDA
51	*Panulirus polyphagus*	Mud spiny lobster	Kadal konchu	300 g	WFM	
52	*Panulirus ornatus*	Ornate spiny lobster	Kadal konchu	500 g	WFM	
53	*Thenus unimaculatus (=T. orientalis)*	Sand lobster	Adippan	150 g	WFM	

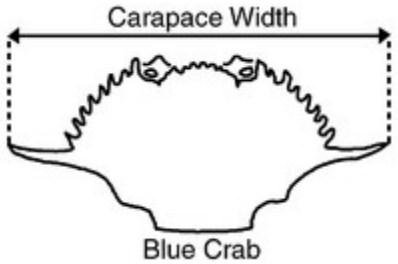
Major Molluscan Stocks						
54	*Uroteuthis photololigo duvauceli*	Indian squid	Koonthal Olakanava	8 DML	MSM	
55	*Sepia pharaonis*	Pharaoh cuttlefish	Kallan kanava	11 DML	MSM	
56	*Amphioctopus neglectus*	Ocellate octopus	Neerali Kinavalli	5 DML	MSM	
57	*Paphia malabarica*	Short-neck clam	Kalli kakka	2 APM	SFM	
58	*Villorita cyprinoides*	Black clam	Karutha kakka	2 APM	SFM	

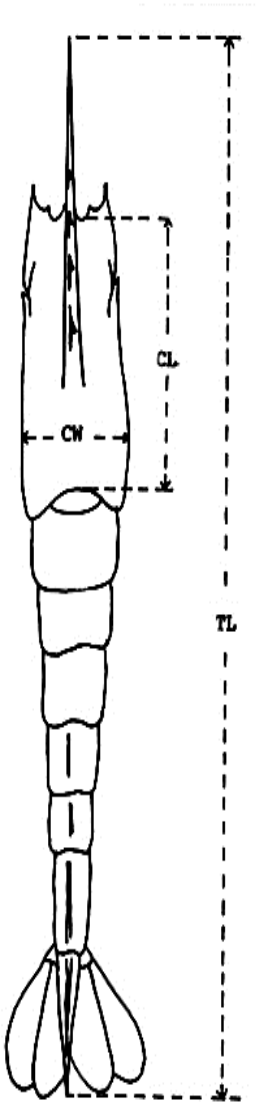
Abbreviations

TL – Total Length
FL – Fork Length
SL – Standard Length
CW – Carapace width of crabs
DW – Disc width of rays
DML – Dorsal Mantle Length in the case of cephalopods
APM – Anterior Posterior Measurement or length of bivalves
SFM – Size at first maturity or the size at which 50% of the fishes are mature
WFM – Weight at first maturity or the weight of the animal where 50% of the fishes are mature
MSM – Minimum size at maturity or the size of the smallest mature fish





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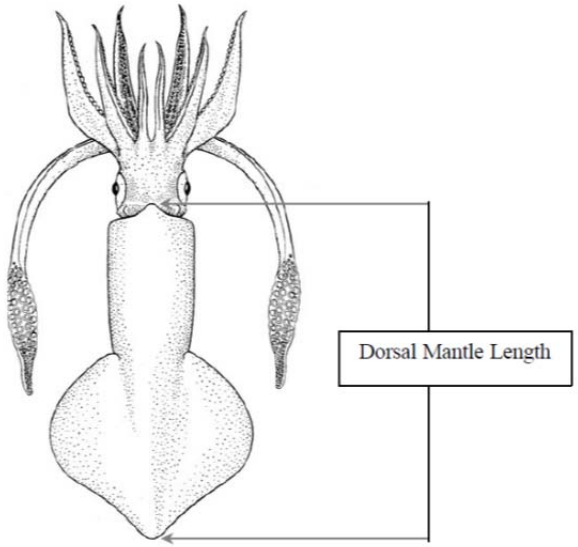
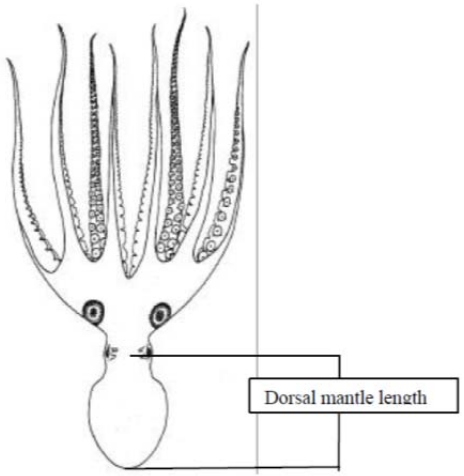
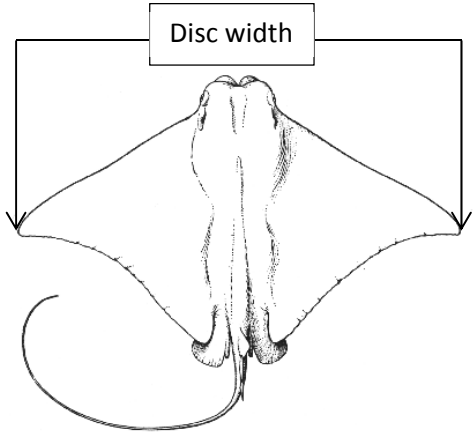

Dorsal Mantle Length


Dorsal mantle length


Disc width