



Research Note

Trawl Codend Selectivity of Torpedo Scad, *Megalaspis cordyla* (Linnaeus, 1758)

Leela Edwin*, Saly N. Thomas, P. Pravin, M.P. Remesan and M.R. Boopendranath

Central Institute of Fisheries Technology, P.O. Matsyapuri, Cochin - 682 029, Kerala, India

The torpedo scad, *Megalaspis cordyla* (Linnaeus, 1758) is a moderately large marine fish belonging to family Carangidae. The largest recorded individual was 80 cm long (TL) (Smith-Vaniz, 1984). It is a high level carnivore with a trophic level of 4.40 and feeds on a variety of fish, cephalopods and crustaceans (Kasim, 2003; Rajanna et al., 2006; Vivekanandan et al., 2009). The torpedo scad is distributed throughout the tropical and subtropical waters of the Indian and west Pacific Oceans (Froese & Pauly, 2011). Boopendranath & Pravin (2005) have reviewed trawl selectivity and presented selectivity parameters reported for some fishes caught in Indian waters. Selectivity characteristics of trawl codends in respect of *Alepes kleinii*, *Leiognathus bindus*, *Nemipterus japonicus*, *Rastrelliger kanagurta*, *Thryssa purava*, *Thryssa mystax*, *Upeneus vittatus*, *Upeneus moluccensis* and *Pampus argenteus* occurring in Indian waters have been reported (Prakash et al., 2008; 2010; Madhu et al., 2010; Pravin et al., 2010; Remesan et al., 2010; Boopendranath et al., 2012). In this paper, selectivity characteristics of 65 mm diamond mesh codend, in respect of torpedo scad, *Megalaspis cordyla* are discussed, based on trawl selectivity experiments, off Cochin.

Torpedo scad is an important pelagic fish resource in India (Kasim, 2003). Average landings during 2009-10 period was about 32 000 t which formed over 18% of the carangid landings and 1% of the total marine landings in India (CMFRI, 2011). The size range in commercial landings is 20.0-67.0 cm and the species grows to 21.6, 35.8, 43.8, 48.5 and

51.5 cm in 0.5, 1, 1.5, 2 and 2.5 years, respectively (Kasim, 2003). The species is caught mainly in trawls, drift gillnets, purse seines and hook and lines in Indian waters (Sivakami, 1995; Kasim, 2003; Thomas & Hridayanathan, 2003).

Selectivity studies using covered codend method (Pope et al., 1975) were carried out onboard research vessels MFV Sagar Sakthi (L_{OA} 15.24; 223 hp) and MFB Matsyakumari (L_{OA} 17.5 m; 278 hp), off Cochin during 2007- 2008, using 18 m semi-pelagic trawl, fitted with 65 mm diamond mesh codend. The codend was provided with a cover made of 30 mm mesh size polyamide netting, which is approximately 1.5 times the size of the codend as suggested by Stewart & Robertson (1985). During the selectivity experiments, 45 hauls of 1 h duration each were carried out in the depth range of 10-25 m, at a trawling speed of 2.3-3 kn. Samples were drawn from the codend and cover and the length frequency data were recorded for the selected species, torpedo scad (*Megalaspis cordyla*). The logistic model commonly used to describe trawl selection ogive (Sparre et al., 1989) was adopted for the study.

Selectivity curve for 65 mm diamond mesh codend, in respect of *Megalaspis cordyla* is given as Fig. 1. According to the selectivity studies, the L_{25} , L_{50} and L_{75} values for *Megalaspis cordyla* were 231, 294 and 357 mm respectively (Fig. 1; Table 1). Selection range and selection factor were 126 mm and 4.53 respectively (Table 1). The size at first maturity (L_m) of torpedo scad has been reported as 250 mm (TL; unsexed) (Reuben et al., 1992; Kasim, 2003; CMFRI, 2011). The mean selection length is generally proportional to the mesh size of the codend over a certain range. Based on selection factor and length at first maturity for torpedo scad, the optimum mesh size for the trawl codend for responsible

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* E-mail: leelaedwin@gmail.com

harvesting of the species has been estimated to be 55 mm. However the cod end mesh size commonly used for fish trawl is 16-30 mm (Gibinkumar, 2008). Use of suitable Bycatch Reduction devices (BRD) can protect the juveniles from exploitation. In trawl nets fitted with oval grid and Bigeye BRD, L_{50} value of *M. cordyla* was less than its length at first maturity indicating good exclusion opportunity (Gibinkumar, 2008; Sabu et al., 2011)

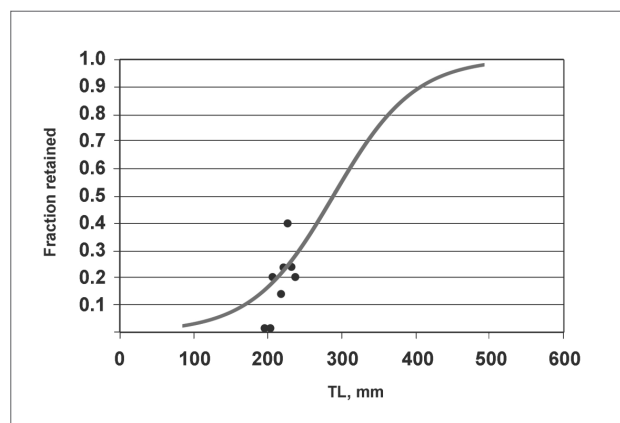


Fig. 1 Selectivity curve in respect of *Megalaspis cordyla*

Table 1. Selectivity parameters of *Megalaspis cordyla*

Selectivity parameters	Value
L_{25} (TL, mm)	231
L_{50} (TL, mm)	294
L_{75} (TL, mm)	357
Selection range (mm)	126
Selection factor	4.52
Length at first maturity (TL, mm) (based on Reuben et al., 1992)	250
Codend mesh size required (mm)	55

Trawl codend selectivity information is required for biological investigations, fish stock assessment, fisheries management and fishing gear design and development. Based on the selectivity experiments, the codend mesh size that can be recommended to harvest the mature torpedo scad is estimated as 55 mm, for conventional diamond mesh codends.

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