

# Assessment of low-value bycatch (LVB) in bottom trawl landing at Kasimedu, Chennai during 2006-2011

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Non-targeted resources that occur in the commercial fish landings, generally referred to as by-catch, form about 65-70% of the average annual bottom trawl landing at Kasimedu Fisheries Harbour, Chennai. By-catch includes adults and juveniles of commercially exploited resources other than the targeted fishery, non-conventional fishes which occur in the fishery at random and also low-value by-catch (LVB). The LVB is mostly composed of undersized or poor quality marine organisms, which have very low market value.

A study of LVB in the bottom trawl landing at Kasimedu Fisheries Harbour, Chennai was conducted during the period January 2006 to December 2011. Out of the 1,39,986 t of marine resources landed at Chennai 22,337 t was LVB (16%). The proportion of LVB in the total trawl landing fluctuated between 8.3% (2010) and 21.8% (2009) (Fig. 1).

The average monthly catch of LVB was high during the month of June (16%), followed by December (14%) and July (12%) (Fig. 2). The average LVB catch in April

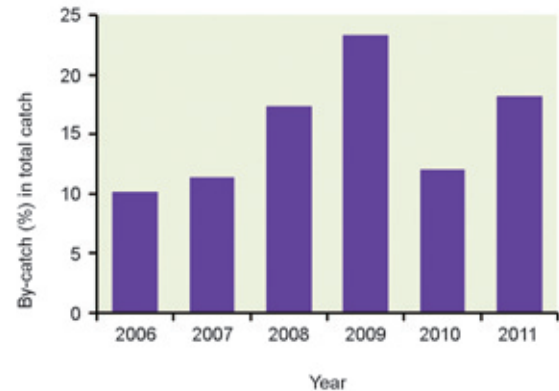


Fig. 1. Annual proportion of by-catch (%) in total trawl catch during 2006-2011 at Chennai

formed only 3% of the average annual, the trawl fishery being restricted to the first fortnight only in April. There is no information available for the month of May on account of the 45-day trawl ban (15 April to 30 May) that prevails along the Tamil Nadu coast. Increase in LVB during the month of June can be attributed to revival of trawl fishing after the ban period, when there is a spurt in single-day and short

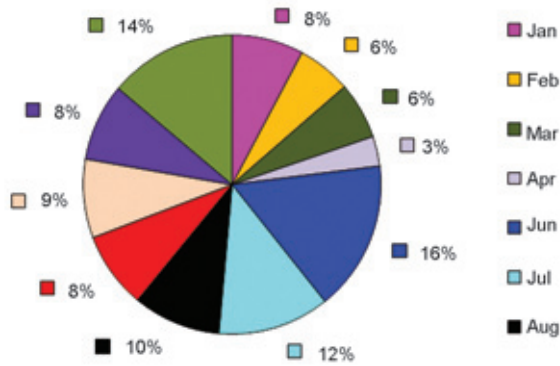


Fig. 2. Month-wise share of LVB (%) in total by-catch (average for the period 2006-2011)

multi-day (3-4 days) fishing in the coastal waters. Seasonal analysis revealed that the proportion of LVB tended to be more from June to December and relatively less from January to April (Fig. 3).

Fishes formed 62.8% of the annual average trawl by-catch at Chennai during 2006-2011, followed by crustaceans (30.6%) and molluscs (4.9%). Other groups like echinoderms and sponges formed 1.7% (Fig. 3).

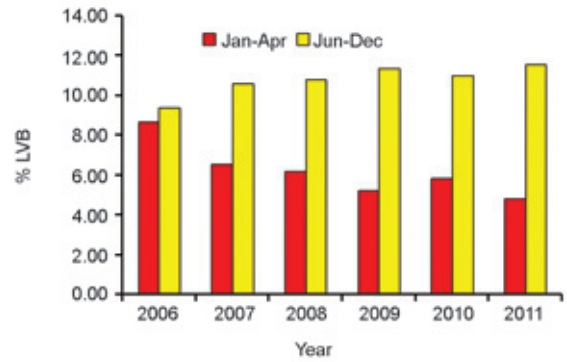


Fig. 3. Seasonal trend in share of LVB (%) in total by-catch during 2006-2011

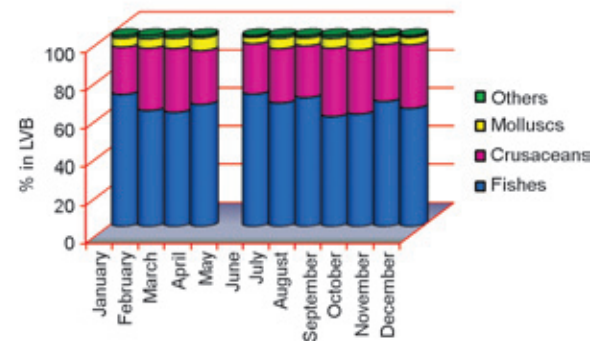


Fig. 4. Average monthly group-wise composition (%) of LVB at Chennai during 2006-2011

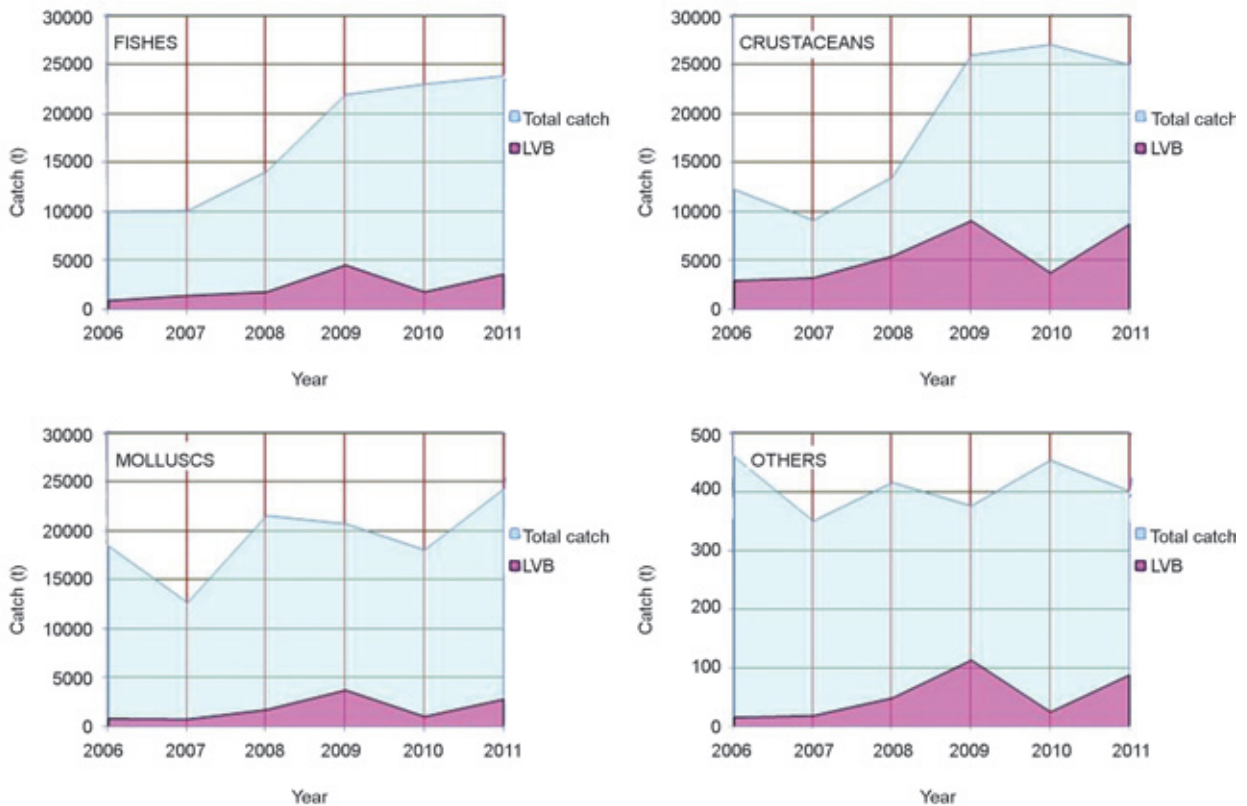


Fig. 5 Group-wise proportion of LVB in total (group) landing (tonnes) at Chennai during 2006-2011

Within each group, the contribution of LVB to the total trawl landing of that group was highest in crustaceans. The lowest ratio between total catch and LVB was seen in molluscs (Fig. 5). The crustacean LVB landed at Chennai formed about 30% of the total landings of crustaceans by trawl nets at the centre during 2006-2011; in the case of fishes, mollusks and others the contribution was about 14%, 10% and 13% respectively.

The dominant fishes observed in the LVB were - silverbellies (25-30%), cardinal fishes (20-25%), flatheads (8-10%), scorpionfishes (6-8%), lizardfishes (4-6%), whitebaits (5-6%), anchovies (6-7%),

carangids (3-4%), threadfin & monocle breams (3-5%), pufferfishes (3-4%), flatfishes (2-4%), dragonets (2-3%), glass eyes (2-3%), rays (1-2%), eels (1-2%), filefishes (1-2%) and goatfishes (1-2%). Among the crustaceans crabs were the dominant group, forming 51-54%, followed by stomatopods (21-23%), shrimps (18-20%) and lobsters (7-8%). The bulk of the crabs in the LVB were juveniles of commercially important species like *Portunus sanguinolentus*, *P. argentatus*, *P. gladiator*, *Charybdis lucifera* and *C. hoplites*. Others include *Calappa sp.*, *Dorippe frascone*, *Arcania heptacantha*, *Liagore rubromaculata* etc. Shrimp in the LVB was mainly represented by



Fig. 6. Glimpses of the low-value by-catch in trawl landings at Chennai

juveniles and damaged adults of *Metapenaeopsis stridulans* and *Parapeneus longipes*. Stomatopods, another important constituent in the LVB, were represented by several species like *Oratosquillanepa*, *O. woodmasoni*, *O. gonyptes*, *Harpiosquilla harpax*, *H. annandeli*, *H. raphidae* etc. Lobsters in the LVB were comprised of the scyllarids *Peetractus rugosus* and *Thenus unimaculatus*. Gastropods contributed to 70-73% of the molluscan component in the LVB while bivalves formed 14-16% and cephalopods formed 11-12%.

While almost 70% of the total LVB was comprised of juveniles, the proportion of juveniles was higher in the months of December, July, August and October. Spawning and recruitment of many species, particularly demersal fishes like threadfin breams and croakers follow a seasonal preference for the monsoon months (particularly NE monsoon) and the period immediately after (November-December); this is probably reflected in the occurrence of juveniles in the LVB below the length of recruitment to the commercial fishery.

Data collected at the landing centre during 2007-2011 has revealed that the value of the LVB has been steadily rising. Based on the sorting that is done locally at Chennai Fisheries Harbour, the LVB could be categorised as -

A. *Low value by-catch comprising fishes in an advanced state of spoilage, not fit for human consumption; utilized for fish meal preparation*

- B. *Low value by-catch comprising fishes which are sorted, cleaned for drying and sold in local markets for human consumption*
- C. *By-catch comprising fishes which seldom form part of the regular trawl landings like sand perches and sand lance*
- D. *By-catch comprising fishes which occur regularly in trawl landings, but are non-targeted groups (many species of crabs)*
- E. *Juveniles of major fish groups*

The upper price limit of some categories of fishes in the LVB has risen to > '200/ kg, making the term "Low-value by-catch" sound mismatched (Fig. 6)

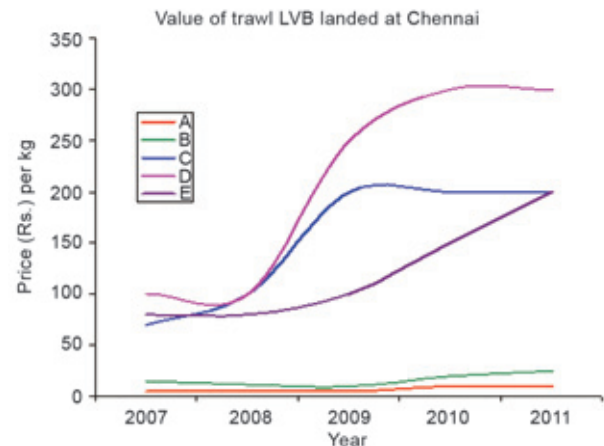


Fig. 6. Group-wise proportion of LVB in total (group) landing (tonnes) at Chennai during 2006-2011