Plastic menace faced by fishers of Satpati, Maharashtra

R.Ratheesh Kumar, Ajay D. Nakhawa, Anulekshmi Chellappan, Vaibhav D. Mhatre, Balu B. Chavan and Veerendra Veer Singh
Mumbai Research Centre of ICAR-Central Marine Fisheries Research Institute, Mumbai

Small conical stationary bag nets (*Bokshi*) are operated by artisanal fishers mostly in creeks, with strong tidal currents in certain regions of Maharashtra. The net is set using wooden pole (*Khunt*) driven at creek bottom against the flood or ebb tide. At Satpati, *Bokshi* nets are operated in the near shore creek for about 16 days in a month at a rate of 2 hauls per day. Here, fishermen are concerned about the increasing quantity of plastic debris entering their nets during fishing operations adversely affecting their livelihood. The plastic menace reduces the life of the gear materials due to clogging of plastics in the nets and the resulting drag on the net which also causes distortion of the *Khunt* position. Moreover, fishers are forced to haul the net within a short soaking period resulting in less fish catch and economic loss.

Three experimental netting operations were done in Satpati creek (19°43E46.67"N, 72°41E45.55"E) in the month of July 2017. Length of the nets operated was 30 m with 4 panels (*Munde*, *Dhishe*, *Patala* and *Khola*) of different mesh size varying from 70 mm to 10 mm from the mouth to the cod end. Length of *Munde* was 10 m followed by *Dhishe* measuring 8 m, *Patala* 10 m and *Khola* (cod end) 2 m. Net was set in the morning during high tide time at about 5m depth and hauling was done after 2 hours. During fishing operation, nets accumulated huge quantities of macro-plastic. More than 80% of the catch in the net was contributed by plastic debris. In each operation about 25 to 30 kg plastic was trapped in the net while the average catch rate of fish was only about 3 kg/hr. Major plastic debris deposited in the net during fishing were plastic bags, plastic bottles/containers, chappals, boots, straps, fishing gear and ropes. Fish collected during the trials were analysed in the laboratory. Thirty nine fish species where recorded from the catch including the commercially important fishes such as ribbon fish (*Lepturacanthus savala*), cat fishes (*Arius maculatus*), bombayduck, mullets, mud crabs, sciaenids and non penaeid prawns (Table 1).

Sorting of fish from plastic debris

Table 1: Major species/groups landed by Bokshi net and their percentage contribution

Major species/group	Percentage contribution
Lepturacanthus savala	12.50%
Arius maculatus	10.45%
Scatophagus argus	8.06%
Puffer fish	7.82%
Harpadon nehereus	6.98%
Mullets	6.70%
Sciaenids	6.52%
Escualosa thoracata	4.32%
Acanthopagrus arabicus	4.02%
Non penaeids	3.85%
Scylla serrata	3.80%
Ilisha spp.	3.49%
Therapon jarbua	3.31%
Gobies	3.22%
Lates calcarifer	3.14%
Eleutheronema tetradactylum	2.75%

The results from the study revealed that several economically important fish and shellfish species are available in Satpati area which can support livelihood of traditional fishermen. But in the present scenario, *Bokshi* net fishers are facing difficulties because of the high incidence of plastic entering the nets resulting in low fish catch and a high fish catch sorting time, low soaking time and gear damage due to the plastic accumulation in the nets. This is a matter of concern which need to be addressed by fisheries management plans emphasizing on addressing the issue of marine plastic pollution.