

(7.06%), and *Alepes kleinii* (6.45%). The implications of the results and the recommendations for optimum mesh size to be used in the panels are discussed.

FS PO 09

Performance of J-hook and circle hook in longline fishing off Cochin, India

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J-hooks are widely used in longline fishery around the world. Circle hooks were introduced with a view to avoid turtle bycatch and deep hooking in fishes. Comparative longline fishing trials using J-hook and circle hook were carried out off Cochin in 2016. The main objective of the study was to compare the fishing performance of J-hook and circle hook and the effect of different hook shapes on species caught. Fishing trials were conducted off Cochin onboard F.V. Sagar Harita. A total of 750 hooks were deployed during the study. Indian mackerel (*Rastrelliger kanagurta*) of identical size was used as bait. *Coryphaena hippurus* and *Pterotrygon violaceae* were the major species caught. Results show that the percentage of hooking (individual/100 hooks) for J and circle hooks was almost same (1.47% and 1.33% respectively). In the case of J-hook, 27% each of the fishes were hooked at throat, jaw and gut while 18% fishes were foul hooked. In circle hooks 80% of the fishes were hooked at jaw and 20% at throat while there was no foul hooking. Percentage of escapement after hooking was 23.8% in J-hook and no escapement from circle hooks.

FS PO 10

Trawl geometry studies using two off-bottom trawl systems (OBTS) along the coastal waters off Cochin

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Trawling is an important commercial fishing method along the Indian coast, contributing nearly 51% (1.7 Mt) of total marine fish landings of India. Catch efficiency of trawl is determined mainly by the mouth opening of the net, which in turn affects the catchability. Trawl geometry has been shown to vary with factors such as towing speed, operational depth, warp/depth ratio, trawl door type and direction of current. Field experiments were conducted on-board MFB Matsyakumari-II to assess the trawl mouth opening of off-bottom trawl systems (OBTS) using acoustic sensors (Trawlmaster-NOTUS) with reference to towing speed, operational depth, warp/depth ratio and direction of current during trawling. A 24.7 m ultrahigh molecular weight polyethylene (UHMWPE) and a 27 m high density polyethylene (HDPE) off-bottom trawl using 85 kg suberkrub otter boards were used for trials along the coastal waters off-Cochin. Trawls were operated at different speed (2.7, 3.0, 3.3 and 3.8 knot), warp/depth ratios (6:1, 7:1 and 8:1) and depths (10 and 20 m). Effect of direction of tow in relation to current was also investigated. For HDPE trawl, the maximum total area of opening (96.58 m²) was recorded at 6:1 warp/depth ratio with the towing speed of 3.8 knots. Similarly, for UHMWPE trawl, the maximum opening (107.68 m²) was recorded at the towing speed of 3.8 knots at a warp/depth ratio of

6:1. Towing speed and warp/depth ratio significantly affected the mouth opening of the trawl. The mouth opening of both the trawls was found to increase linearly with speed of tow.

FS PO 11

Designs of traditional fish traps of Goa

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Traditional fishing gears are rapidly disappearing due to poor catch, declining water bodies and proliferation of modern fishing gears. Traps are passive gears in which the fish enters voluntarily mostly for feeding or sheltering and will be hampered from escaping. Traps are highly selective as targeted fish can be caught and retained in live condition thereby fetching better price. A study was conducted on the traditional fish trapping devices in Goan water bodies in the north and south districts, in the context of very little documentation on this subject. Main objectives of the study were to analyse and document the design, fabrication, operation and catch composition of traps. Of the many traps surveyed, ten typical designs were identified for design documentation, viz., rectangular, conical and cylindrical traps either baited or un-baited, and with or without funnels at the mouth. Locally traps were known as *koble*, *dhopke*, *khul/khuun*, *shenul* etc. and were used for capturing crabs, shrimps and fish from estuaries and rivers. Traps are generally operated during the pre and post-monsoon seasons in shallow flowing waters. Most of the fishermen use traps seasonally as a secondary livelihood option. There is scope for modernising the

traditional fish traps with most efficient designs and durable gear materials for improving the efficiency.

FS PO 12

Solar powered fishing boat for inland waters

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A multipurpose solar powered boat suitable for inland water bodies including aqua farms has been designed and introduced to promote the renewable energy utilization. The boat made of FRP is suitable for fishing such as gillnetting and hook and line; for aquaculture farms and for recreational purposes. Selection of vessel specifications was based on studies conducted by ICAR-CIFT on energy consumption of small fishing craft. The main particulars of the vessel are L_{OA} :3.63 m, Breadth: 1.75 m and the propulsion power was 1.2 kW for attaining a speed of 3.5 knots. The boat was constructed as per Kerala Inland Vessel Rules-2010, inspected, tested and certified by Department of Ports, Government of Kerala. It meets the prescribed standard stability and safety parameters. Trials of the solar boat for gillnetting and line fishing in different locations of the Cochin backwaters indicate substantial energy conservation. A small boat of similar size consumes 2 l fuel per day for operations and on an average, has 200-250 fishing days a year. The fuel cost of approx. Rs. 25, 000 can be saved in a year if solar powered boat is used. Besides significant difference in fuel cost, the emission impact to the atmosphere which is