sinking speed by substituting certain portions of nylon mini purse seine with UHMWPE were developed by ICAR-CIFT. Although empirical results show better performance, trials are to be carried out to get real time results. As the material is highly bite resistant, depredation problem by puffer fish and dolphin can also be prevented. UHMWPE ropes can be used in trawling to substitute wire ropes which helps in weight reduction, drag reduction, fuel saving and a clean catch devoid of oil and grease contamination. Fishing trials conducted by ICAR-CIFT using UHMWPE rope of 12 mm dia. for the past five years, proved it as a very good substitute to steel wire rope. UHMWPE webbing is a very good choice for cages by providing better water exchange and low resistance. Thus UHMWPE is a 'green fibre' for the fisheries industry of the Country for energy saving and resource conservation.

FS OR 22

Enhancing energy efficiency through hull form optimization in deep sea fishing vessel design

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Fuel consumption is the most decisive operational parameter deciding the profitability of a commercial fishing vessel. An all India survey conducted by ICAR-CIFT on the commercial fishing vessel designs reinforced the need for fuel saving. This work attempts to reduce resistance and optimize a hull form for a fuel efficient combination fishing vessel. The effect of optimization of hull form of a deep sea fishing vessel to reduce resistance is discussed in this paper. Computational Fluid Dynamics is utilized to simulate the vessel and arrive at the resistance at various operating speeds scientifically. Model testing to verify this resistance values and also to assess the maneuvering behaviour of deep sea hull form is described. It is very important to select an appropriate main engine and reduction gear box to arrive at fuel efficiency. The introduction of bulbous bow in the forward hull bottom reduces wave resistance. A kort nozzle around the propeller increases the thrust during fishing. A deep sea fishing vessel hull was developed and constructed and trials were carried out to prove the fuel efficiency by various steps.

FS OR 23

Demonstration of off-bottom trawl systems (OBTS) in coastal waters of Goa, India as an ecofriendly trawl design

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Marine capture fisheries contributes significantly to the economy of Goa. Though bottom trawling is a widely practiced fishing method, it often affects the benthic ecosystem adversely. In this context, off-bottom trawl system (OBTS), an ecofriendly trawl design compared developed by CIFT was demonstrated in Goa. The operational efficiency of a 22 m high density polyethylene (HDPE) OBTS fitted with 65 kg suberkrub otter boards was tested on-board mechanized trawlers along the coastal waters off Chapora, Goa. Five hauls of one hour duration each were carried out at 10 to 12 m depth zone. A total of 43 different

species of finfish and shellfish were present in the catch. The absence of bottom dwelling organisms like shrimp, squilla and gastropods which are generally encountered in bottom trawls was conspicuous in OBTS. The off-bottom fishes contributed 83% and pelagic fishes contributed 17% of the total catch in the OBTS. The CPUE for the 22 m OBTS was 15.5±6.9 kg/h. The top five species caught in the OBTS were *Alepes kleinii* (31.11%), followed by *Alepes djedaba* (15.6%), *Atule mate* (12.07%), *Otolithes ruber* (4.32%) and *Megalaspys cordyla* (3.04%). The results of this study show OBTS as a potential gear which can replace the deleterious bottom trawls in non-shrimp seasons for capture of off-bottom species with minimum impact to the benthic ecosystem.

FS OR 24

Catch and bycatch composition from dolnets of Maharashtra

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Dolnets are operated extensively in areas with strong tidal currents along the northwest coast of India. As per CMFRI Marine census 2010, Maharashtra state having the maximum number of stationary bag nets (dolnets), majority of which are operated along Palghar, Thane and Greater Mumbai districts. A study was conducted to understand the catch and bycatch composition along with the size composition in the single day dolnets of Maharashtra. The average catch rate was around 34 kg/h. Catch is contributed by six major groups *viz*., non-penaeid prawns (41.3%), bombay duck (32.1%), coilia (5.5%), penaeid prawn (4.5%), silver pomfret (2%), and ribbon fish (1.3%) which are the targeted species. These six groups together contributes to about 87% of the total dolnet catch and the rest 13% is constituted by 53 groups/species which mainly include clupeids, sciaenids, catfishes, sharks, rays, skates, unicorn cod etc, which can be considered as bycatch. Due to its demand and economic importance, bycatch is also landed at the landing centers. Percentage of juveniles in the catch was high for all the commercially important species and highest during the months of April and May.

FS PO 01

Fishing complement of mangrove habitats around south Andamans

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The craft and gears along the mangrove habitats were studied. Traditional crafts were the most important and commonly operated fishing crafts (locally called as *dongi*) compared to motorized crafts. Traditional crafts were recorded in all stations, except Beodanabad, while motorized crafts were recorded from Manjery, Chouldary, Sippighat and Shoal Bay. Highest number of fishing crafts was recorded from Shoal Bay. The fishing gears recorded in the study area included cast net, gillnet, hook & line, scoop net, trap, crab rod, crab net and longlines. The highest catch was recorded from cast net (13086 kg/9140.7 kg) during the study (2012-13/2013-14) followed by crab rod (3449