INTERNATIONAL INDIAN OCEAN EXPEDITION

Issue No. 11
August 2019

The Indian Ocean Bubble 2

IN THIS ISSUE

Sea Research Part II: Topical Studies in Oceanography 46.8-9 (1999): 1903-1931.

3. Naqvi, S.W.A., Jayakumar, D.A., 2000. Increased marine production of N_2O due to intensifying anoxia on the Indian continental shelf. Nature, 408, 346-348.

4.Penven, Pierrick, et al. "Software tools for pre-and post-processing of oceanic regional simulations." Environmental Modelling & Software 23.5 (2008): 660-662.

5.Prasad, T. G., and M. Ikeda. "The wintertime water mass formation in the northern Arabian Sea: A model study." Journal of physical oceanography 32.3 (2002): 1028-1040.

6.Shchepetkin, Alexander F., and James C. McWilliams. "The regional oceanic modeling system (ROMS): a split-explicit, free-surface, topography-following-coordinate oceanic model." Ocean modelling 9.4 (2005): 347-404.

Dare to Care- Conservation Measures

Approach field trials of gillnets and fishing lines with alternate materials in the Arabian Sea

Muhammed Sherief P.S *(Development Officer -Technical , Kerala State Cooperative Federation For Fisheries Development)*

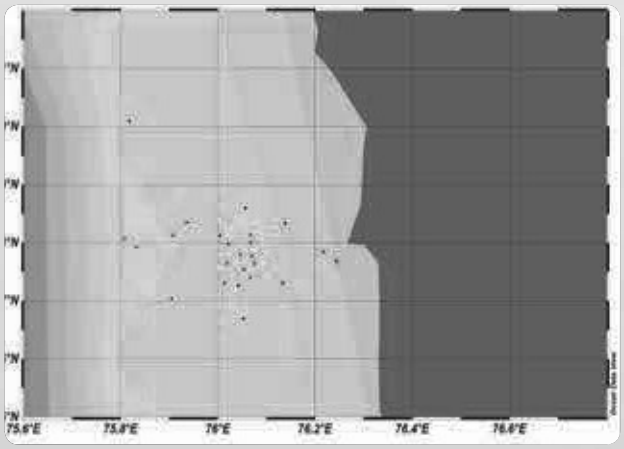
Rithin Joseph *(Research Fellow,CIFT,Kochin)*

Dr.Leela Edwin *(Principal Scientist,CIFT,Kochin)*

Dr.Saly N.Thomas*(Principal Scientist,CIFT,Kochin)*

sheriefmuhammed@gmail.com

The first author's research is focussed on improvements in fishing technology with an emphasis on conservation.



Gillnet operational track at eastern Arabian sea

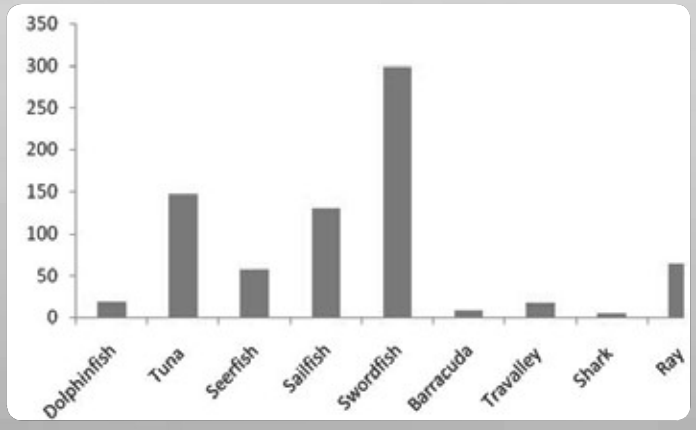
Gillnet operational track at eastern Arabian sea

The experimental gill net trials, with new generation materials Sapphire (7x3), STAR (No.8) with control (Polyamide, 8x3) of mesh size 135 and 140 mm, were carried out on F V Sagar Harita. These trials in on board the departmental vessel for longlining and gillnetting were conducted beyond 1900 m depth to tap the resources off the eastern Arabian Sea. Results showed increased target catch in experimental nets and reduced bycatch (turtle and dolphin) compared to control nets. Even though

Tuna samples caught

tuna was the target (70-150 cm size range) catch, a number of other high-value fish species of commercial importance were also noted.

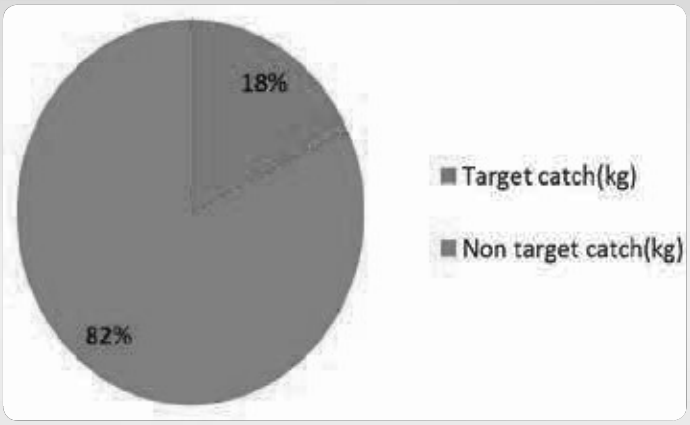
The other large pelagics consisted predominantly of talang queenfish (*Scomberoides commersonianus*) followed by kingfish (*Scomberomorus commerson*), barracuda (*Sphyraena spp.*), dolphinfish (*Coryphaena hippurus*), Indo-Pacific sailfish (*Istiophorus platypterus*), thresher shark (*Alopias superciliosus*), silky shark (*Carcharhinus falciformis*), other requiem sharks and mantas.



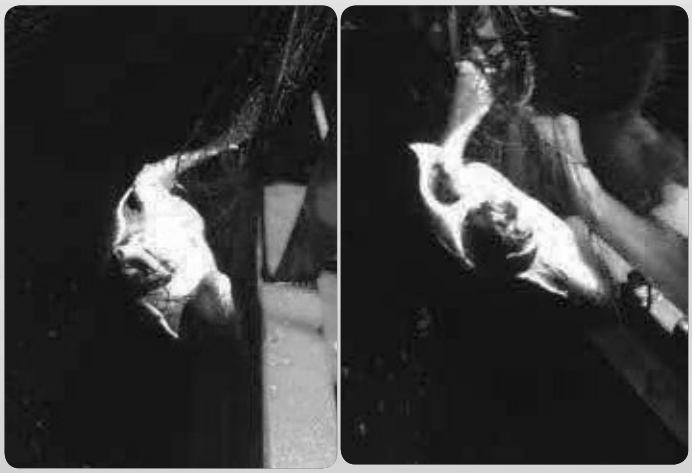
Catch details multi-day high sea gillnetting with experimental nets in the eastern Arabian Sea

Multi location testing with another set of experimental and control nets with two high sea gillnetting groups of fishermen from Tamil Nadu (FIDO and SAFF) also showed similar results. In addition species like Indo-Pacific sailfish, marlin (*Makaria indica*), striped marlin (*Tetrapturus audax*), dolphinfish, thresher sharks and mako (*Isurus oxyrinchus*) were also caught in the same nets operated commercially.

During the fishing trial Tuna (70-150 cm size range) was the target catch but maximum contribution was by other high value fish species:



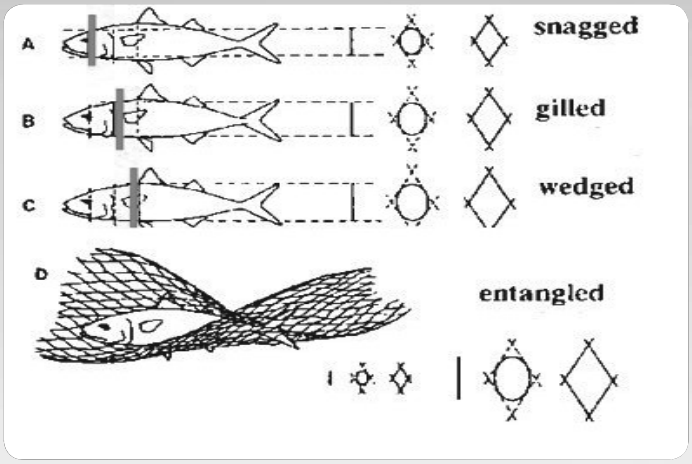
One turtle (Hawksbills) weighing 50 kg was caught in the control net which was released back to the sea:



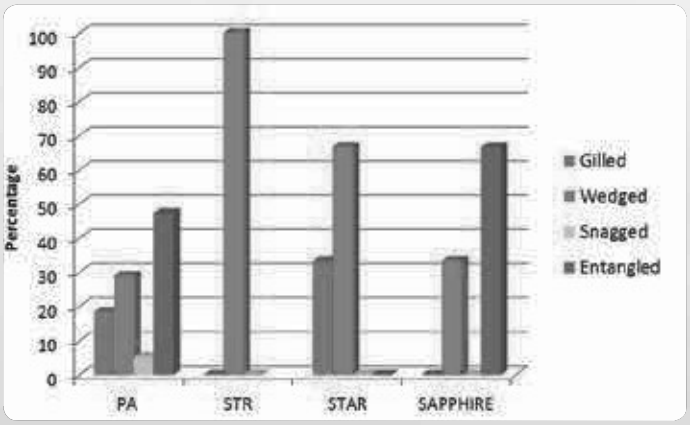
STR and Sapphire gillnets each had contributed 37.5% of the total catch in experimental gillnets. STAR gillnets caught 25% of the catch.

CPUE (kg)	PA	STR	STAR	SAPPHIRE
Catch/haul	110	45	37.5	13.5
Catch/h of soaking	13.75	5.62	4.68	1.68

Mode of capture in different gillnets:



In control (PA) nets, maximum fish was caught by entangling followed by wedging. Among different materials, gilling was maximum in STAR fishing nets:



Advanced long line fishing system

Fishing voyages using newly-designed monofilament longlines were organized on board vessel F.V. Sagar Harita from 5th November 2016 to January 31st 2017. Multi-day fishing operations were carried out at a depth of 1500 to 1900 m at six fishing stations. A total of 150 - 270 hooks were deployed. The experimental fishing area was area A: latitude 09°53.10 N and longitude 75°29.32 E, area B: latitude 09°46.45 N and longitude 75°250.7 E, area C: latitude 10°15.18 N and longitude 75°.30 E, area D: latitude 9°36.50 N and longitude 75°20.02 E, area E: latitude 9°42.23 N and longitude 75°37.35 E, and area F: latitude 9°44.3 N and longitude 75°37.4 E.

One of the main objectives of this work was to evaluate the efficiency of the circle hook in comparison with the J-hook using three different types of baits. Preliminary observation did not show significant difference in "J" and "Circle" hooks. However experiments are being continued. Another set of experimental operations using advanced longline fishing systems, being operated by the high-sea fishermen groups from Tamil Nadu for large pelagics in comparative analysis also showed the same results. The efficiency of circle hook and J-hook in longline fishery were determined in different fishing stations in selected areas.

Long line catch

Long line operation in F .V Sagar Harita

Call for Contributions

Informal articles are invited for the next issue. Contributions referring Indian Ocean studies, cruises, conferences, workshops, tributes to other oceanographers etc. are welcome. Articles may be up to 1500 words in length (MS-Word) accompanied by suitable figures, photos (separate .jpg files).

Deadline: 30th November 2019

Send Your Contributions as usual to **iioe@incois.gov.in**

Editorial Committee : Satheesh C. Shenoi, Satya Prakash, Celsa Almeida

For monthly updates on the IIOE-2 programme activities, join our mailing list by signing up at *http://www.iioe-2.incois.gov.in/IIOE-2/Signup.jsp*

@IIOE2

@iioe_2

INCOIS