

and any pathogenic strain can present several challenges in human health sector.

This work carried out under the “North East India One health Study on Transmission Dynamics of Antimicrobial Resistance (NEOSTAR). Sanc. No: BT/IN/Indo- UK/AMR/O6/BRS/2018-19 funded by the Department of Biotechnology, Government of India. We also thank Dr. Rajendran Thomas, Senior Scientist, ICAR-National Research Centre on Pig, Rani, Guwahati, Assam for providing lab facilities.

## References

- Bhuyan P.C., Goswami C. and Kakati B.K. (2017) Study of Fish Consumption Patterns in Assam for Development of Market-Driven Strategies. *Res J. Chem. Environ. Sci.* 5 42-52
- Bradford P.A. (2001) Extended-spectrum -lactamases in the 21st century: characterization, epidemiology, and detection of this important resistance threat. *Clin. Microbiol r*(2001). *Rev.* 14(4) 933-951.
- Bush K. K, Courvalin P., Dantas G., Davies J., Eisenstein B., Huovinen P., Jacoby G.A, Kishony R., Kreiswirth B.N., Kutter E. and Lerner S.A. (2011) Tackling antibiotic resistance. *Nat. Rev. Microbiol.* 9, 894-896.
- Christopher A.F., Hora S. and Ali Z. (2013) Investigation of plasmid profile, antibiotic susceptibility pattern multiple antibiotic resistance index calculation of *Escherichia coli* isolates obtained from different human clinical specimens at tertiary care hospital in Bareilly-India, *Ann. Trop. Med. Pub. Health*, 6, 285.
- CLSI (2020) Clinical and Laboratory Standards Institute Performance standards for antimicrobial susceptibility testing; 30th edition, document M100 (2020). CLSI, Wayne, PA.
- Sivaraman G.K., Sudha S., Muneeb K. H., Shome B., Holmes M and Cole J. (2020) Molecular assessment of antimicrobial resistance and virulence in multi drug resistant ESBL-producing *Escherichia coli* and *Klebsiella pneumoniae* from food fishes, Assam, India. *Microb Pathog.* doi: 10.1016/j.micpath.2020.104581.

---

## “ Caring the crafts” : off season maintenance of fishing boats of Gujarat coast

Prajith K.K. \*, Ejaz A.R. Parmar and Toms C. Joseph

ICAR-Central Institute of Fisheries Technology, Cochin - 682 029

\*Email: prajithkk@gmail.com

There are number of factors which influence the operation and maintenance of the fishing systems. The coastal districts of Saurashtra and Kutch region of Gujarat, are well-known for skill and craftsmanship for construction of highly efficient fishing and cargo vessels (Prajith et al 2017). The fishery of Gujarat is mainly contributed by the mechanised fishing vessels

(6.96 lakh t) followed by motorized fishing vessels (0.84 lakh t) and non-motorized fishing vessels (397 t). The catches from the mechanized sector are mostly contributed by multiday trawlers (CMFRI, 2019). Veraval, Mangrol, Okha and Porbandar are the major fish landing centres of the state. In Veraval coast, trawling is done with wooden and FRP vessels (only one steel vessel

is engaged in commercial fishing). Maintenance and conditioning of vessel is mostly carried out every year during off season. As per the recent order of government of India, the trawl ban in the west coast of India was made uniform for a period of 45 days, starting from 15<sup>th</sup> June.

In Gir Somnath district of Gujarat, due to the presence of large number of fishing vessels and lack of space for maintenance, lifting of vessels for annual maintenance starts before the commencement of trawl ban (by the end of April). Cranes are usually used for lifting vessel from the water and costs 5000-6000 INR for a single vessel. Once the vessel is lifted, it will be kept on specially constructed iron tables to keep the vessel in stable upright position. Extra wooden blocks and empty metallic barrels are also used for additional support. After placing the vessel on supporters, the portion below the water line is scrapped and washed. This process lasts for few hours depending on the intensity of fouling and usually 5-6 persons are engaged in the scraping and cleaning process. If major maintenance works are needed, the boats are covered with old jute bags or green High-Density Polyethylene (HDPE) sunshade nets. After scraping and cleaning, wooden plates on the body of the boat are examined for damages by carpenters and the damaged portions are repaired (Fig. 1).



**Fig. 1 Replacement of wooden plank in progress**

The labourers employed for scraping and carpenters are paid 700 and 1000 INR respectively, daily. Wood from sal, *eucalyptus* and *acacia sp.* are

usually used for the construction and repairing of fishing boats (Prajith et al., 2017). Depending on the quality and type, the price for the wood varies from 800-1300 INR/ cubic feet. The propeller of the vessel is dismantled, aligned, serviced and refitted. After carpentry work, inner (deck area) and below waterline area of vessel are coated with fish oil (locally known as Choppad) which costs 14000 INR for a 200L barrel.

Before application of wood primer, the outer part of the vessel is checked for gaps between the wooden planks and gaps, if any, are plugged with cotton threads and then covered with Damar Batu (locally known as Lappi), a petrified natural resin of ancient shorean trees (GVI, 2020). The Damar Batu is available in local market, which is applied after mixing with Kerosene or thinners (Fig. 2). The primers used are either red, black or silver grey in colour.



**Fig. 2 Mixing and application of Damar Batu**

As the recommended colour code for the state of Gujarat is orange and black, the wheel house and outer body are coated with dark orange and black coloured paints respectively (Fig. 3). Antifouling paints are used for painting of outer body. Shalimar, International, Nerolac are some of the brands preferred by the fishermen. Finally the area below water line are provided with an extra coat of fish oil to reduce fouling. The places wherever nails fixed, are marked with white paint and this helps to identify the area where the planks are joined together besides providing aesthetic beauty

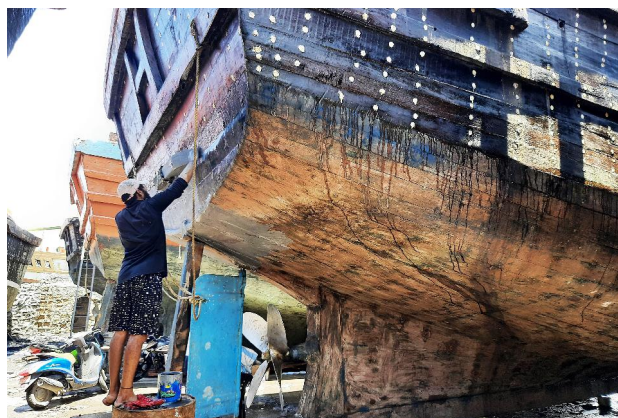


Fig. 3 Application of paint

to the vessel. The total maintenance cost for a single trawler per annum is in the range of 25000 to 100000 INR. Maintenance of wheel house, deck and fish haul are done based on requirement. The annual repair work during the trawl ban period is fully dedicated for works below the waterline area of the vessel.

The boats, decorated with garlands and flags, are launched after repair with religious fervour and fanfare on an auspicious day according to the Gujarati calendar. Ladies and kids have important role in this function.

#### References

- CMFRI (2019). Annual Report 2018-19. Central Marine Fisheries Research Institute, Kochi. 320 p
- Prajith, K.K., Paradva, J.B., Pungera, H.V. (2017) Handmade wooden boats of Gujarat: Craftsmanship for the ocean, Fishtech reporter, Vol.3 No1, January-June 2017 ISSN2454-5538
- Global Vision Impex (2020), Your window to the world of spice, natural gums and resins from Indonesia, Retrieved from [www.gvi.co.id](http://www.gvi.co.id).

## Dried fish consumption patterns in selected districts of Kerala

Sajeev M.V. \*, A.K. Mhanty, Sajesh V.K. and Rejula K.

ICAR-Central Institute of Fisheries Technology, Cochin - 682 029

\*Email: [sajeev.mv@icar.gov.in](mailto:sajeev.mv@icar.gov.in)

Fish drying is an age old practice followed for preservation of fish. Over the years, it has grown from a subsistence occupation to a full flourishing business. There has been an enduring demand for dried fish products in Kerala. Use of dry fish in different recipes is part of the culinary heritage of Kerala. The magical Kanji (rice porridge) - dry fish chutney amalgamation is a well-known combination of the state.

Dried fish segment constitutes to 20% of the total fish production in India (Anon, 2016). Detailed studies on dry fish consumption pattern, sources of dry fish, import into the state, common fish species dried, consumer acceptance, economics

of dry fish etc. pertaining to Kerala are relatively scanty. Madan *et al.*, (2018) reported that Sardine and anchovies contribute to 50% of the total dry fish produced, in Tamil Nadu. Dry fish production was found to be a profitable business with an internal rate of returns (IRR) of 75% and simple rate of returns (SRR) of 43.48% in Tamil Nadu.

Dried fish attracts greater demand during fishing ban period or lean seasons, as the fresh fish availability is relatively low (Das *et al.*, 2013). However, of late, there is round-the-year availability of fresh fish for consumers in Kerala with stocks coming from other states as well. Dry