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ABSTRACTS

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Central Institute of Fisheries Technology, Cochin
CIFT Junction, P.O. Matsyapuri, Cochin-682 029, India
URL: http://www.cift.res.in/
foraging area for adults. The size range of the paralarvae ranged from 1.47 to 9.18 mm whereas that of juveniles varied from 9.18 to 94.65 mm. Separation of the tentacles usually thought to mark the end of the paralarval period in ommastrephids, occurred at 9.18 mm ML in purpleback flying squid. Animals of size 9 to 95 mm were therefore considered as juveniles. In juveniles, proboscis is fully separated and forms two tentacles. The growth rate from paralarvae to juveniles is described.

Keywords: Distribution, paralarva, juveniles, purpleback flying squid, Thaumothous ovalaniensis, Arabian Sea

Energy optimization in fishing through m-KRISHI® Fisheries Service in Raigad district, Maharashtra

Veerendra Veer Singh*, Atul R. Sathe and Priyanka S. Vichare
Research Center of Central Marine Fisheries Research Institute
2nd Floor, CIFE, Old Campus, Fisheries university road, Versova, Mumbai - 400 061, India
E-mail: veerendraveersingh@gmail.com

A pilot study was undertaken to enhance the adaptive capacity of the fishers by increasing livelihood options, in climatically vulnerable Raigad district of Maharashtra. This was done in partnership with Tata Consultancy Services Ltd. (TCS) through implementation of mobile based agri advisory system, m-KRISHI®, in 13 fishing villages having 13 fisheries cooperative societies. Basically, two important advisories received through INCOIS were disseminated with dual objectives of providing early warning regarding wind speed and direction for safety at sea and Potential Fishing Zone (PFZ) information for optimization of fishing efforts. Implementation of this service has resulted in fuel saving and consequent reduction in carbon emissions and revenue savings. Four clusters (Cluster 1: Alibag, Saswane, Bodani and Mansawa; Cluster 2: Ekdara, Murud and Rajapur; Cluster 3: Mora, Jiva and Vashehi; Cluster 4: Salav, Koli and Nandgaon) in the Raigad district of Maharashtra state were selected for the pilot study. Clusters were extensively covered by RPA and critical gap analysis revealed that most of the fishers were not aware of the advisories on Potential Fishing Zone and wind speed and direction. About 750 mechanized and motorized fishing vessels were in operation in the district. After initial implementation, savings to the tune of 3 lakh litres of fuel per year at 5% level of adoption, was
observed in the study area. At 15% adoption level fuel saving were projected to the tune of 9 lakh liters per year. Savings in expenditure on diesel consumed (@ Rs. 52/litre) were Rs. 156 and Rs. 468 lakh/year at 5 and 15% adoption, respectively. Similarly, savings in carbon emission (@ 2.68 kg/lit of diesel burnt) were 804 and 2412 tonnes/year at 5 and 15% adoption levels, respectively. The service has already been expanded during second phase of implementation to 56 societies having 2681 mechanized and motorized fishing crafts.

**Keywords:** Energy savings, TCS Mobile Agro Advisory System, m-KRISHI®, Potential Fishing Zone, safety at sea.