



RESEARCH ARTICLE

Alternative Methods for Calculating Catch Per Unit Effort (CPUE) for Fish Catch by Trawl Net in Central Arabian Sea of Srivardhan Fish Landing Centre at Raigad District through Utilization of PFZ Advisories, Maharashtra State

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ABSTRACT

The potential fishing zone (PFZ) advisories received from Indian National Centre for Ocean Information Services (INCOIS), Hyderabad during April, 2012 to, March, 2013 were validated along Srivardhan fish landing centres. The chlorophyll pigments is the food for fishes, on the basis of chlorophyll detected the Potential Fishing Zone is useful for fishermen community in fishing benefitted for trawl is operated for capture of the pelagic fish species. On the basis of chlorophyll the PFZ advisory are found to benefit fishermen with trawl net from within PFZ than outside PFZ. A benefit received through trawl net comparatively very less in outside PFZ. The PFZ data using satellite derived sea surface temperature and chlorophyll has become an important aspect for the fishermen. The data using different media, such as digital display boards, print media, fax and email etc. The study carried out from within PFZ and outside PFZ of Srivardhan major fish landing centres of Raigad district gave positive relationship between PFZ than traditional fishing. The Catch Per Unit Efforts (CPUE) was computed by dividing total fish catch (Kg) divided number of fishing hours.

KEYWORDS

Standardized CPUE, PFZ Forecast, Validation, Srivardhan Coast, TRAWL Boats and Fish Catch

INTRODUCTION

Srivardhan is one of the major fish landing centre situated on the west coast of Raigad district at Maharashtra State. The Raigad coastline is spawning about 240 kms. and the continental shelf is around 36,000 sq. kms., which abound in a variety of commercially important fishes. About 80 Fishermen Co-Operative Societies and one District Fisheries Federation are functioning Raigad district. In Srivardhan total fishing fleet consists of 438 and mechanized fishing boats 320 and 286 non-mechanized boats and over 4,523 fishers are engaged in fishing industries.

The fishermen population is totally dependent on marine fishing. The total fisher population of Raigad district is about 69,047 of which 66,183 belong to in marine fishery sector¹, the application of satellite based remote sensing technique in marine fisheries sector could play an important role for locating PFZ. Therefore, the marine fisheries sector is an important for the study. According to² several remote sensing techniques has been provide information regarding surface circulation features that effect of define fish habitat. Potential fishing zone is a technique of identifying the fish shoals depends upon certain oceanic features of chlorophyll and sea surface temperature³ Availability of food is an important factor which controls fish occurrence, abundance and migration in the sea.

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The classification of water mass appears to be associated with different biological and physical processes. Sea surface temperature (SST) is one of the important parameters which drive the tropical atmosphere-ocean interaction⁴. The validation experiments of potential fishing zones (PFZ) forecast were carried out by using integration of chlorophyll concentration and SST image; through direct fishing efforts jointly by our laboratory with INCOIS, Hyderabad and about 70% increase catch was reported from suggested areas⁵.

MATERIAL AND METHODS

Potential Fishing Zone Advisories INCOIS using integrated maps derived from NOAA-AVHRR sea surface temperature and IRS-P4 borne Ocean Colour Monitor (OCM) derived chlorophyll gradients. IRS-P4 satellite OCM launched successfully by the Polar Satellite Launch Vehicle⁶ from Sriharikota, India⁷⁻¹¹.

The PFZ information is generated from P-4 Ocean Satellite where as the concentration of chlorophyll pigment, ocean color, plenty of food and physico-chemical parameters are favorable for aggregate the fishes.

The IRS-P4 satellite launch on the surface of the sea level for detection of the plenty of food, Sea Surface Temperature and Chlorophyll pigments and other sea water parameters are important for aggregate the fishes.

The PFZ data is analyses from the each major fish landing centres in Bearing, Degree, Direction, Distance, Depth and Latitude & Longitude position. On this location PFZ information sent to the fisher fishermen through Electronic Digital Display Board (EDDB), Email, Fax & Mobile etc. simultaneously commercially fishing vessels hired for trawl fishing from fish landing center. The PFZ advisories used for within PFZ and outside PFZ.

The PFZ data collected from onboard fishing of trawls net during September, October, November, December, January, February, March and April 2012-2013. The data collected on middle of the months on the receipt of PFZ advisories.

RESULTS AND DISCUSSION

The total PFZ advisories were received for fishing 34, among the 34 used, 30 resulted advantages in 2012-2013. The CPUE was compared between each of the two major zones, PFZ and outside PFZ for trawl fishing methods. The high CPUE indicates the most favorable oceanographic environment/conditions for fishery resources accumulation and fishing operations in the PFZ. The catch is increased within PFZ and decreased in outside PFZ region during the study period. CPUE⁴ calculated by

Total weight of fish catch (in Kg)

CPUE (Kg/hr)-----

Fishing efforts (hrs)

In the Fig. shows the fishing boats of Trawler fishing from within PFZ and Outside PFZ, the comparative study were done, from these trawl fishing shows the Within PFZ was benefitted than outside PFZ. In trawler fishing the mostly demersal fish was catch by boats.

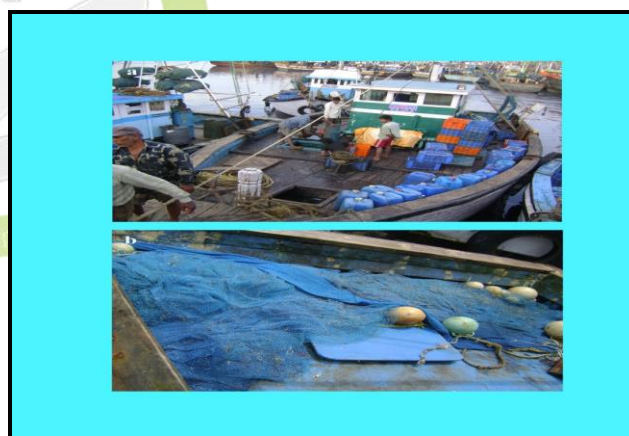


Figure 1: Trawl boat & net

CPUE from Trawl in Srivardhan Fish Landing Centre during 2012-2013

At Srivardhan (FLC), as shown in Table. 1. & Fig. 1, the total six months September, October, November, December, January & February PFZ validations were conducted through the experiments and data collection in prescribed feedback format from the advisory users. In Srivardhan the CPUE was high in September 987 within PFZ and low 677 in outside PFZ, in October 3159 within PFZ and

low 1763 in outside PFZ, while in November 1560 highest within PFZ and lowest 1240 outside PFZ. In December 3805 within PFZ and 2830 outside PFZ, while in January 1623 within PFZ and 1420 from outside PFZ. In February 3300 within PFZ and 2988 outside PFZ CPUE recorded.

Table 1: The CPUE from Srivardhan fish landing centre during 2012-2013

Murud (FLC)	Within PFZ (Kg)	Outside PFZ (Kg)
Sept.	987	677
Oct.	3159	1763
Nov.	1560	1240
Dec.	3805	2830
Jan.	1623	1420
Feb.	3300	2988

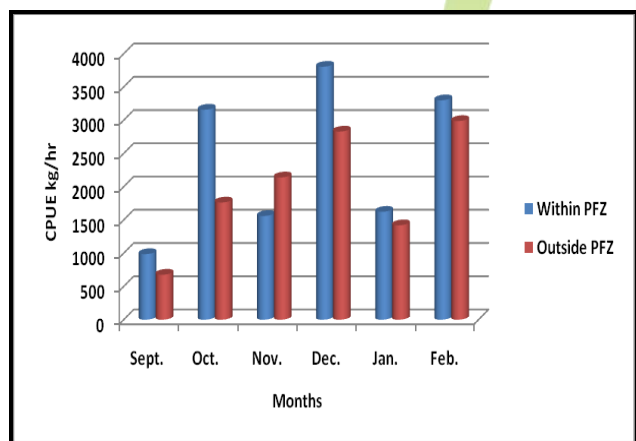


Figure 2: The CPUE from Srivardhan fish landing centre during 2012-2013

CONCLUSION

The fisheries sectors occupy a very important place in the socio-economic development of this Srivardhan. The sector has been recognized as a powerful income and employments generator as it stimulates growth of a number of subsidiary industries and marine fish is a source of cheap and nutritious food. The CPUE is more beneficial to the within PFZ than outside PFZ at Srivardhan fish landing centres within PFZ is higher than

outside PFZ. This indicates that, by using PFZ the fishers get higher fish catch with less fuel, time and increased income in fishing. On an average 40 % fuel and time is saved when the fishermen used the advisories. The PFZ advisories are more beneficial from within PFZ than outside PFZ and the PFZ advisories are also more beneficial for trawl fishing. Due to the trawl operation PFZ advisories beneficial up to the depth of 50m fishing at Srivardhan district coast. In coast the PFZ forecast is more beneficial to the fishermens due to the real time fishing.

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