

Utility and Impact of ESSO-INCOIS Services:

Reflections of Fishers from Andhra Pradesh,
Tamil Nadu, Kerala & Puducherry



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Tamil Nadu, Kerala & Puducherry

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Foreword

The majority of fisher families belong to the artisanal fishing category. They have small boats and go out into the sea without much information on potential ocean conditions. The Tsunami of December 26, 2004 came as a great shock to them and they started getting afraid of going out into the sea. It is under those conditions that the M S Swaminathan Research Foundation and the ESSO-Indian National Centre for Ocean Information Services initiated a programme of knowledge empowerment of fisher communities with reference to potential wave heights at different distances from the shore line. Small scale fishermen also need information on the locations where there are abandoned opportunities for successful fishing. This has enabled us to provide a integrated package of shore to shore based knowledge services – potential fishing zone, species specific forecast, disaster early warning along with OSF. INCOIS provided this kind of very timely and useful information and this was communicated through multiple communication tools including helpline and Android based Fisher Friend Mobile Application.

Now small scale fishermen go to the Ocean for fishing with great confidence since they have information on the possible wave heights at different distances from the shore line and where to locate the fish shoals. The services of ESSO-INCOIS complement each other in fulfilling the knowledge requirements of the fisher communities. Thanks to partnership with ESSO-INCOIS, which generates the timely and relevant information, and it has enabled MSSRF to communicate the scientific information to the right persons at the right time.

The present publication summarises the utility and impact of the partnership between ESSO-INCOIS and MSSRF. I congratulate Ms Nancy J Anabel for her leadership, and express my deep appreciation to Dr. L. Vedavalli and Dr. S. Velvizhi for documenting this very timely and useful publication.

MSSwaminathan

Foreword

ESSO-Indian National Centre for Ocean Information Services (ESSO-INCOIS) is committed to provide the best possible ocean information and advisory services to the seafaring community through sustained ocean observations and constant improvement through systematic and focused research. One of our key user is sea fishing community of India and on daily basis we are reaching more than 0.1 million users. Potential Fishing Zone (PFZ) advisory, provided by ESSO-INCOIS, helps fishing community to locate fishing ground easily and improves livelihood by reducing searching time, fuel consumption, cost of fishing and human effort. Ocean State Forecast (OSF) provides advanced information on sea state on waves, currents, winds, etc. and help community to plan their activities at sea well in advance.

Since its inception, ESSO-INCOIS is widely using Information and Communication Technology (ICT), as most effective mode of dissemination, to disseminate its own services to the end users located in remote coastal areas. In this background, ESSO-INCOIS partnered with M S Swaminathan Research Foundation (MSSRF) for more than a decade now to create more awareness and improve the interpretation capabilities among the user community, in addition to further downstream dissemination and feedback collection. The partnership enhanced the awareness among the users and downstream dissemination of the services through ICT based dissemination methods, such as multilingual audio & text messages, 24x7 Helpline, Android based Fisher Friend Mobile Application (FFMA), Village Resource Centres (VRCs) and Village Knowledge Centres (VKCs), etc. The model received enormous positive response from different level of users and dissemination modes became popular among the fishing community. Along with several capacity building and awareness campaign, this model reaches almost 90,000 fisher folks from 29 districts of Kerala, Tamil Nadu, Puducherry, Andhra Pradesh and Odisha. The credibility of this model is not only providing information/advisory to the users, and also collects the feedback with a focus to assess the accuracy and benefits of the information provided by ESSO-INCOIS and to collect their future requirements that helps us in development of various new services / products.

In this present report, long term feedback, on ESSO-INCOIS services, has been collected from the users of Tamil Nadu, Puducherry, Andhra Pradesh and Kerala to document the advantages of PFZ and OSF services in the context of livelihood improvement and sea safety. The present study elicits that there is a demand from the artisanal fishers to get more PFZ advisories near the coast, demand on more species specific PFZ services other than Tuna, availability of ocean current data along with the PFZ audio advisories, getting services directly onboard through satellite connectivity, and more importantly to ensure price of fish through transfer of technical know-how on post harvest management as the price goes down if the preservation is not up to the market. Scientists from ESSO-INCOIS are working relentlessly, in partnership with academia, government and non-government organizations, to ensure and upgrade the quality of services as per users' requirement and ESSO-INCOIS is committed to meet the demand of valuable users.

With these words, I take this opportunity to thank Ms. Nancy J Anabel, Dr. Velvizhi, and their whole team from MSSRF for their effort towards enabling the reach of services provided by ESSO-INCOIS to the coastal community and also for their support towards quality and accuracy up gradation by collecting valuable feedback. And, I appreciate my entire PFZ team for their continuous coordination with MSSRF to get precious feedback. Our particular thanks go to Dr. Ajay Kumar Parida and Prof. M S Swaminathan for their endless support and to Dr. S. S. C. Shenoi and Dr. Shailesh Nayak for their continuous guidance.

T. Srinivasa Kumar

Acknowledgement

Most of the coastal community dwells in vulnerability and risks and the pragmatic experience of MSSRF in the coastal area did unveil such predicaments of fishers. The paramount issues that cripple most of the fishers from gratifying their livelihood progression are uncertainties, paucity of forewarning, lack of knowledge on scientific know-how on locating fish colonies on sea and technical do-how etc. Such poignant situations baffle fishers from making informed decisions and prevent them from minimizing risks and maximizing economic returns. In the journey of culminating such issue, M S Swaminathan Research Foundation (MSSRF) in collaboration with ESSO-Indian National Centre for Ocean Information System (ESSO-INCOIS) began its interventions to serve the fishing community with timely scientific information on Ocean State Forecast and Potential Fishing Zone along with disaster alerts and early warning, which has grown now to cover larger fishing community across 29 districts spanning 5 states, bridging the gap between lab-land, land-lab, lab-lab and land-land connectivity.

The robust partnership between MSSRF and ESSO-INCOIS and efforts of MSSRF in reaching out the scientific information and knowledge services of ESSO-INCOIS has created huge impact among the coastal community and serve as an engine for socio economic development of the fishing community. This publication bestows a string of success stories, detailing the benefits realized by the fishers.

At this juncture, I wish to express my profound appreciation and deep regards to Dr. S. Velvizhi for coordinating the Fisher Friend Programme with diligence and systemic approach ensuring aftermaths besides documenting this publication. It is my pleasure to extend my profuse gratitude to Dr. L. Vedavalli, who has a unique way of capturing the impact, for documenting this publication. My special thanks and appreciations are due to my colleagues Ms. Suvitha, Ms. Siran Jothi, Ms. Kuyili, Mr.Ramesh Kumar, Mr.Dhanraj, Mr.Veerabhadra Rao and Mr Pradeep for their contribution in bringing about this significant publication. I also thank Mr Kolappadhas for helping in designing the publication

On behalf of MSSRF, I would like to express my sincere and deep gratitude to Dr. T. Srinivasa Kumar and Mr. Nagaraja Kumar, ESSO-INCOIS for their consistent and invaluable support and partnership towards this significant initiative.

Nancy J Anabel
Director,IEC

Introduction

This document is a compilation of case studies of fishers who have benefitted from the programme initiated by the collaborative project of M S Swaminathan Research Foundation (MSSRF) and Indian National Centre for Ocean Information Services (INCOIS).

Enhancing the capacities of the fishers to improve their livelihood opportunities in the coastal villages is the focus area of this MSSRF-INCOIS project. The partnership that was initiated in 2009, aim at building the capacity of the fishers to effectively access and use the scientific information of INCOIS services such as Ocean State Forecast (OSF), Potential Fishing Zone (PFZ) and disaster alerts. This MSSRF-INCOIS endeavour which targeted initially 40 fishing villages across six districts in Tamil Nadu and Puducherry, has today been scaled up to cover 611 fishing villages across 29 coastal districts of five states such as Tamil Nadu, Andhra Pradesh, Kerala, Odisha and Union Territory of Puducherry. This is a reflection of the overwhelming demand for ESSO-INCOIS services from the fishing community. Thus, it is encouraging to find that more than 25000 fisher folks from these 29 coastal districts access the services on a daily basis through various communication tools/ technologies; as of now nearly two lakh fishers have been reached through this Fisher Friend programme. The OSF and PFZ advisories enable the fishers to take critical decisions that help improve their livelihood and ensure safety at sea.

The MSSRF-INCOIS intervention has further been strengthened with other communication tools/technologies for effective dissemination of OSF, PFZ and other important information. The Fisheries Helpline initiated during 2011 is one such tool. It is a 24/7 service- fishers can call the number at any time of the day. The primary objective of this Helpline service is to address the queries and provide necessary clarifications regarding the INCOIS services to the fishing community. This service has gained such wider appreciation and popularity among the fishers that it has expanded to other states to become a multi lingual helpline facility.

Android based Fisher Friend Mobile Application (FFMA) is yet another recent mode of dissemination of information which is gaining popularity among the

fishers. In the context of growing technology development and enhancing the access to such critical information among the fishing community, MSSRF in partnership with Qualcomm has developed this user friendly mobile application, which provides diversified information related to fishing including PFZ, OSF and disaster alerts. It has tremendous scope for scaling up to other coastal states as the features in it found to be common for all.

Over a period of time, the implementation of the services convinced MSSRF to develop an integrated shore-to-shore approach to strengthen and add value to the existing interventions for effective realisation of the benefits by the end users. The integrated approach include knowledge services of PFZ, OSF and early warning, training/awareness programmes on GPS handling for navigating to the Potential Fishing Zone and also to reduce carbon emission, Quality control of fish resources for food preservation in a scientific manner for better market price, Marine Conservation for sustainable fisheries, Sea Safety measures for life security etc,. This integrated shore-to-shore approach along with critical information has yielded good results in the project locations.

The primary objective and purpose of the MSSRF-INCOIS intervention which seeks to build the capacity of the fishers to utilise the INCOIS services effectively for their economic development and safe fishing at sea is yielding the intended results. This is evident from the regular feedback gathered from the fishers through collection of case studies, market study, village and district level user interaction meetings. It may be mentioned here, that this is basically done to further improve the information services and fine tune the dissemination of the content appropriate to the needs of the local fishing community.

The fifteen case studies of fishers given in the following pages are few examples which reflect their voices on the utility and effectiveness of the intervention in their lives. They also throw light on certain issues and concerns that need to be addressed in future in order to realise the full potential of the MSSRF-INCOIS services. The case studies comprise of fishers of different age groups (26 years to 65 years) from the states of Tamil Nadu, Andhra Pradesh, Kerala and the Union Territory of Puducherry. These fishers have been using

INCOIS services ever since they registered their mobile numbers for receiving the advisories and these fishermen also provide their feedback on the same. Out of the fifteen fishers with whom we interacted two are fishing boat drivers; the others are boat owners (five are owners of fibre boat, another eight own trawler boats). Of the 15 fishers, two do not know either to read or write.

The respondents find PFZ information very handy and useful as it is location and species specific. It has generally been their experience that fishing in the PFZ definitely yields more than in the non PFZ. It is also learnt through the case studies that the fishers have expanded their area of fishing. For instance, Mr Arumugam from Kasimedu says that the PFZ advisories enable fishers with fibre boat also to go to longer distance where only big trawlers used to fish. Earlier, they used to go up to 1000 *bagam* (Unit of sea depth). But this is not the case now. They even go up to 3000 *bagam*. The fishers from Andhra Pradesh, who have been receiving audio advisories since November 2011 pointed out that prior to receiving the advisories their fishing activity was confined to their traditional fishing grounds. Now that they are getting PFZ information they are going beyond their traditional fishing grounds where they find better catch of fish resources.

From the case studies it is learnt that the fishers have been using the PFZ advisories effectively whenever they find the GPS points suitable for them to carry out their fishing activity. They generally have the confidence that they would return with good catch of fish resources and they would not be disappointed with the catch. Mr Nanthan, a boat owner from Chennai who had used PFZ advisories 18 times during last year (2014) says that on all the days the catch was not less than one tonne. For instance, in two nights (during February, 2014) about two and a half tonnes of Tuna fish were caught between Kovalam and Mahabalipuram fishing ground and sold for 1.5 lakhs; he got a net profit of Rs 60,000/-. He was happy to say that on many occasions he had got more than four tonnes of species like Tuna and Gar, Ray fishes.

Besides increased catch there is overall reduction in the expenses. Fishing has become more economical in the present scenario. Mr Venkatesh from Chennai points out because of this (PFZ) information he is able to cut down his diesel expenses. It has been reduced from 2000 litres to 1500 litres and other expenditure such as ice, salt and food has also been reduced i.e from

Rs. 70,000/- to Rs.50,000/- . This is mainly because search time and the number of days spent in the sea have come down.

Now-a-days, due to the availability of PFZ information the driver's job has become much easier than the earlier times. Previously, the drivers had to spend a lot of time and physical energy in finding a good fish shoal. It used to cause a lot of anxiety. Now they can go straight to the fishing zone. The mental and physical strain has been considerably reduced. Mr Baskar who is a driver of fishing vessel from Chennai says that earlier, on many occasions they had wandered in the sea to find fish shoals. It not only used to take longer time but also used to result in body pain and stress (*munnalem thedi thedi meen pidipom ippo antha nilami illai; apparam drive pannum pothu udambum valikum. Ippa udambu vali anthaalavu illai. Mana ulaichalum kurainju irrukku*). Labourers' and drivers' income have also improved because of the enhanced catch of fish.

The respondents like Sukumar and Suresh Kumar from Nagapattinam and Mr Tata Rao and Mr Veeraraju from Andhra Pradesh were pleased to share with us that they are happy with the catch they got using PFZ advisory. It has improved their economic condition to a certain extent. Mr Sukumar says with the profit he got from his latest fishing trip in January, 2015 he paid some amount towards his bank loan taken for buying mechanised boat. The fishers from Andhra Pradesh could now afford better clothes to their family members and also give their family professional medical care. One of the respondents mentioned that when he could not go for fishing for some time the earnings from the earlier fishing trip helped him to manage the household expenditure without much difficulty.

The fishermen also point out that with the advisories they are able to decide on how much diesel/ ice is to be taken for fishing and duration of fishing days in the sea and tentative return date.

The case studies reveal the importance of OSF information to the fishing community. The end to end information provided through MSSRF-INCOIS intervention is very helpful in their fishing activity; it helps the fishermen in several ways. As the information on wave height and wind speed and its direction is available it is much easier for them to plan the fishing activity. They can save their lives and prevent economic loss by not venturing into the

sea during unfavourable forecast and weather predictions. The family members also feel secure about their kin's safety in the sea.

According to Mr Jayaraj who is a driver of a fishing boat , PFZ information can be best utilised and the yield can be converted into profit only with favourable weather conditions. If the fishers do not get timely messages on OSF when the boat is at sea, all the catch would go waste. He adds to say now that they are getting OSF on a daily basis, the fishermen are able to take necessary precautions and plan the fishing trip. When he needs updates of the forecast he immediately contacts the Fisheries Helpline service. He tells about a recent incident that happened one day during October –November 2014 when the fishing crew of his boat decided not to venture into the sea though they had made necessary arrangement to leave the next day in the early hours. Because, the previous evening he got OSF information that there would be depression in Andaman coast and due to that there would be heavy rainfall and wind. After intimating this to the owner, he and the other crew decided to stay on the shore. He says had he gone to the sea the next morning as planned there would have been a great loss of Rs 30 to 50 lakhs. The crew also would have been affected mentally and physically had they proceeded with their plan that day.

It is learnt through the case studies that Fisheries Helpline service and FFMA tool are valuable to fishermen in their day today fishing activity. They call the Helpline for confirmation and for getting up dates of PFZ information and also OSF especially during the bad weather conditions.

While these reflections are given by way of introduction to the case studies, the following section would elaborate the experiences of fishers in detail.

Name: Krishna Mallikarjuna
Age: 40
Occupation: Fishing
Type of Boat: Trawler
Village: Kakinada-2, East Godavari

“I have been motivated to buy and use gillnets to make use of the PFZ advisory to its full potential”

I am Krishna Mallikarjuna aged 40 years and I belong to Kakinada-2 area in East Godavari District. I have studied up to Class 7. I have a fishing experience of 15 years. Since seven years I stopped going into the sea and now I am engaged in marketing of fish. I employ people for fishing. I own a trawler boat with bottom setting trawl net. In addition to trawl nets I also have gillnets with big mesh size. My fishing craft is equipped with GPS, VHF, echo-sounder, fish-hold, iceboxes, lifebuoys, life jackets etc. Generally my boat ventures for fishing with a crew of six including the driver.

I have been motivated to buy and use gillnets to make use of the PFZ advisory to its full potential. In trawling method, I was not able to realize good yield in PFZ. I also saw my fellow fishers using gillnets getting good yield while fishing in the PFZ. It is since nine months (June, 2014) I started gillnetting.

I have been receiving the advisories from INCOIS through MSSRF from November, 2011. When I was using trawl net I used the PFZ information for seven to eight times. With the kind of trawl net I have, I cannot go for pelagic fishing. We get PFZ advisory for short distance fishing only occasionally. If the advisory fell within 40 km range I use trawling.

In the last nine months I have used 12 PFZ advisories. Each fishing trip was encouraging from the point of harvest of fish. But the rate was not good for the first six months (Rs 45 to 50 per kg). Then it gradually increased to Rs 60-70. On an average we got two tonnes of fish per trip consisting of three days. During the month of December, 2014 I got 1.5 tonnes of Yellow Fin Tuna and sold it for Rs 1,05,000/-. I got a profit of nearly Rs 37,000/- and the crew got around Rs 6000/- each. The fishing expenditure came to around Rs 25,000/-

On an earlier occasion while I was happy with the gillnetting yield I was not satisfied with that of trawling during the same trip. Based on PFZ advisory we received on July 5, 2014 when we went for fishing towards the eastern side we got a good yield of big-sized Croakers weighing 150 kgs (Rs 500 per kg) along with 100 kgs of big Carangids (Rs 100 per kg) after one haul on that night. However, I was disappointed with the following day yield (200 kg of prawns-Rs 150 per kg, 310 kg of Clupeids- Rs 30 per kg, and other fishes species) where we got after three hauls with trawling operation. The rate was also low for prawns.



Utility of ESSO-INCOIS Services

I feel that the OSF data is accurate. It helps the fishermen in several ways. We can save our lives and prevent economic loss by not venturing into the sea during unfavorable OSF and weather predictions. For clarifications of OSF I always check with Helpline. During HUD HUD I contacted Helpline to know the intensity and its direction. However our area was not affected. The availability of FFMA enables me to view the data for the entire state. It is a very useful application for fishers.

The only difficulty the fishermen face is mobile connectivity; mobile phones have connectivity up to a maximum of 30 kms, and after that it is difficult; there is no communication available except VHF. We fishermen request you to provide direct satellite link for mobiles so that we can receive PFZ data and use it.

We are grateful for the services of INCOIS-MSSRF.

Name: Mr Veerraju
Age: 38
Occupation: Fishing
Type of Boat: Trawler
Village: Bhairavapalem, East Godavari

“It would be useful if we get satellite connectivity to our mobile phones when we are at mid sea”

I am Veerraju, a fisherman from of Bhairavapalem Village of East Godavari District, Andhra Pradesh. I am 38 years old. I have 10 years of experience of fishing in the sea on his trawler boat. With failure in monsoons, fishing has been a difficult occupation.

Previously, we the fishermen did not know about MSSRF & INCOIS. After repeated awareness meetings by MSSRF & INCOIS staff in the village we came to know about their services.

I own trawler boat and trawl nets. I use hook and line also. My boat is equipped with Compass, VHF, GPS, Echo sounder, Life buoys and Life jackets. Generally I go for fishing in the sea with a six member crew. We are getting OSF and PFZ information from November, 2011.

The traditional fishing ground fall between 20-25 km distance from the shore towards East and South East side distance. I used to go for fishing to the same traditional fishing grounds until we started receiving MSSRF- INCOIS voice messages on OSF and PFZ. These days I send my trawler not only to PFZ but also to the traditional fishing grounds in the absence of PFZ.

In our village, the fishing trip was only for a day prior to 2010. After that we decided that we should go for a longer trip to get more income. With the help of GPS we went up to 60 km. With the availability of OSF information like high wave, speed and direction of wind we are able to predict to a certain extent the underwater current.

So far I have received 100 PFZ advisories but I could use it only 20 times. I have used the PFZ data mostly during the months of October to December. I

generally use gill net when I go for fishing in PFZ. If the information is for 100 metre depth we use trawl net. I have used five to six times trawl net. When PFZ information was within our limits up to 40 - 60 km we caught Tuna and other species like Ribbon fishes, Mackerel, Carangids, Seer fishes, Croakers, Pomfrets etc. I earned a profit of Rs 2.5 lakhs from the 20 trips.



Utility of ESSO-INCOS Services

On receiving the PFZ data on August 20, 2014 my boat left for fishing. The information thus received was for below 40 km range. My driver is an intelligent person; he saves the data perfectly in the GPS. He travelled up to the PFZ area and measured the depth, confirmed it and later operated the trawl net and dragged it for three hours. In the first haul we got Ribbon fishes (400 kgs), other fishes like Croakers, Seer fishes, Pomfrets, Cat fishes etc (50 kgs) were also caught. Then, the driver operated the trawl net in the opposite direction and dragged it for 3.5 hours and got Ribbon fishes (500 Kgs), and other fish species consisting of 50 kgs.

The boat returned on August 22, 2014 morning to deliver the Ribbon fish catch to the company dealers. The total in two hauls was one tonne and I sold them for Rs 90,000/-. The expenditure was Rs.30,000/- and I got Rs 30,000/-. Each of The crew got Rs. 5000/- as wages.

When we went on a day fishing the earnings was Rs 600 to 1000/-. Later when we went for multiday fishing we got a profit of Rs 7000-10,000/-. We used to think it was a good amount. But we experience a great increase in our earnings when we fish in PFZ from Rs 10,000/- it has increased to Rs 30,000/-. Compared to olden days the fishing labourers are getting good income; on an average there is an increase of Rs. 500/- to 1000/- per fishing trip. The increase in the earning has helped both the owners and the labourers to provide better education to their children and better health care to their family members.

It would be useful if we get satellite connectivity to our mobile phones when we are at mid sea. During long fishing trips if we were able to access PFZ and OSF information it would save fuel.

Name: Mr D.Tata Rao
Age: 53
Occupation: Fishing
Type of Boat: Fibre Boat
Village: Suryaraopeta, East Godavari

“Fishing in PFZ is more economical; the number of days we spend in the sea has come down considerably and there is reduction in the diesel expenses too”

I am Tata Rao of Suryaraopeta from East Godavari District. I am 53 years old with more than 25 years of fishing experience. I have a fibre boat. My boat is fitted with GPS device and there are other devices like life jacket and life buoys. Generally, my son along with other five persons venture into the sea for fishing. Our traditional fishing grounds include Reliance rigs near Kakinada, Karukutippa Lighthouse area, Pentakota and Pudimadaka rocks where we use mostly hook and line. Depending on our experience, we used to carry out fishing activities in the respective fishing ground. It used to take lot of time in locating fish shoals resulting in waste of time, fuel and physical energy.

With the availability of OSF and PFZ advisories (Since July 2012) from INCOIS through MSSRF. We can now see positive changes taking place in our fishing activity. We are fortunate to get these services, that too free of cost compared to the other fishermen who do not have access to these service. I heard that in other countries, fishers have to pay for these services. We are grateful to MSSRF-INCOIS for helping the fishermen through this valuable intervention. Through OSF we are able to verify or ascertain sea condition, wave height, wind speed and direction and plan our fishing operation accordingly. MSSRF-INCOIS disseminates valuable information on high waves, cyclones, and weather forecast etc which help fishermen in taking decisions before venturing into sea.

Fishing in PFZ is more economical; the number of days we spend in the sea has come down considerably and there is reduction in the diesel expenses too. At the same time we also experience increased catch of fish in that area. Earlier (before getting the advisory) the number of days we spent in the sea was from

five to seven days. As I said we have to spend time to locate the fish shoal. Now- a- days with the PFZ advisory we spend only two to three days in sea. In a similar manner,I have gone for fishing ten times. I must say that the catch I usually get from fishing in the PFZ is more or less the same when I spend seven days in the sea. On all the ten occasions we were satisfied with the fishing venture.



Utility of ESO-INCOIS Services

On the evening of September 5, 2014 I received PFZ advisory. Based on that I ventured in to the sea to carry out fishing using gillnets and I went up to 60 km. After two hauls (each haul consisting of five hours) the boat returned to the Kakinada Fishing Harbour on September 7, 2014. In the first haul we got Yellow Fin Tuna (600 kg) Ray fish (100 kg) Sword fish (200 kg) and Dolphin fish(65kg). In the second haul we harvested 400 kg of Tuna, 85 kg of Sword fishes and 45 kg of Dolphin fishes. The fish were sold at the following prices: Yellow Fin Tuna @ Rs. 80 per kg, other Tuna species @ Rs.55 per kg, Sword fishes @ Rs. 50, Dolphin fishes @ Rs. 60 per kg, and Ray @ Rs.70 per kg The total catch of both the hauls was sold for one lakh. The expenses incurred for the trip was Rs 40,000/-. As the owner of the boat I got 50 per cent (Rs 30,000/-) of the profit. The remaining amount was shared equally among the crew of five.

Due to increase in the rate for fishes particularly Tuna, the fishermen's income has definitely improved. With the earnings that I got,I purchased 30 metres of gillnets worth Rs.12,000/-. I could now afford better clothes for my family members and also give my family professional medical care. Some fishers bought ice boxes either on subsidy or with full payment. The fishing crew was happy with the wages.

Name: Rajkumar
Age 39
Occupation: Fishing
Type of Boat: Trawler
Village: Nagoor Pattinacheryy, Nagapattinam

“The MSSRF-INCOIS Fisheries Helpline service is a great boon to us. We can contact them at any time of the day. It is very helpful particularly during the time of weather uncertainty”

I am Rajkumar, aged 39 years residing in Nagoor Pattinachery, a fishing village. I have had school education up to Class 8. Right from the age of 15 years, I have been engaged in fishing activity. I own a gillnet boat and I use nets such as gill net and hook and line with different mesh sizes. Yellow Fin Tuna and other Tuna are generally harvested through gillnetting. I am engaged in both deep sea fishing and also in shore fishing. Depending on the area of fishing operation I use different fishing gears. I use seven types of fishing nets with different mesh sizes.

While going for deep sea fishing we use gill net (*kora valai* or *soorai valai*) or hook and liner. For inshore fishing we use nets locally known as *kandal valai*, *paarai valai* and *panni valai*. The total expense for one fishing trip is around one lakh. Fishing trip involves a minimum of one week to maximum of 15 days. For one fishing trip consisting of four-five days and if it is within Nagapattinam region a crew of five will go for fishing. In case we go on a longer period of more than 10 days to far off places like Vizag, eight to 12 persons are engaged for wages; we spend Rs 20,000/- on ice and Rs 15,000/- on food. Diesel is a major expense which comes to (approximately 2000 litres of diesel) around Rs 80,000/- to Rs 1,00,000/-.

MSSRF and the Indian Coast Guard conducted a programme in our village where they explained about their services to the fishing community. It was then I got acquainted with MSSRF and registered my mobile number to receive fisheries related messages. Later, I was informed that I cannot avail the SMS service regarding ocean and wind condition and PFZ as my mobile was under

DND (do not Disturb) option. As I am aware of the Helpline services of MSSRF to the fishers I contact them whenever I require their help and assistance before I venture into the sea. So far, I have used the Helpline services more than ten times to know about the details of potential fishing zone. On all these occasions, I caught good catch of fish worth of Rs two to four lakhs.



Utility of ESSO-INCOIS Services

As an example, I would like to share with you one such experience. On July 27, 2014, as usual I contacted the MSSRF Helpline service and got the GPS points for PFZ and set out for fishing. It took nearly 40 hours to reach the particular point which was between Chennai and Mahabalipuram. When I reached that zone, I was happy to see more than 400 fishing vessels in that zone. Presence of many boats was an indication that there would be good fish shoals. So was really happy though I travelled 40 hours to reach the GPS points provided through the helpline service of MSSRF. During the four days we were in the sea, keeping the GPS points (13 37N 80 12E, 13 35N 80 20E, 13 25N 80 29E, 12 00N 80 12E) as the base and depending on the sea current and wind direction we towed the nets for fishing. We got 7 ½ tonnes of fish (Tuna- 6.600 tonnes, Yellow Fin Tuna-400 kilos, 250 kilos and Seer fishes-500 kilos) worth Rs 3.5 lakh. There were eight persons in the boat; I paid Rs 10,000/- each as their wage. I got a profit of Rupees One lakh. As we got a good catch of fish, we returned to the shore three days in advance. I was able to save diesel expenses around Rs 45,000/-.The profit helps us to undertake boat and net repair work without much difficulty.

The MSSRF-INCOIS Fisheries Helpline service is a great boon to us. We can contact them at any time of the day. It is very helpful particularly during the time of weather uncertainty. This gives us confidence and enables us to take a right decision regarding our fishing venture.

Thank you for your services. I request you to continue the information services.

Name: Anandan
Age: 26
Occupation: Fishing
Type of Boat: Fibre boat
Village: Sambathottam, Nagapattinam

“I contact Fisheries Helpline for knowing about PFZ details and also to know about weather and sea conditions”

I am Anandan (aged 26 years) and I have been engaged in fishing since the age of 14 years. I have studied up to Class 7. My father had a non motorised boat with which one can carry out fishing only for six to eight hours. Before moving to Sambathottam Village where we are presently living we were in Nagoor. We lost our house and belongings when Tsunami hit our coast. The government built new houses for the affected fishers' families in various places. We were given a house in Sambathottam and we moved to this place.

I registered my mobile number with MSSRF when they had come to our village eight months ago to explain about their services and activities to the fishing community. They are doing a great service to the fishing community by providing crucial information on wind speed, wind direction and wave height. They also send information on the availability of fish resources in certain location. I have been receiving this information through my mobile phone. I contact Fisheries Helpline for knowing PFZ details and also to know about weather and sea conditions.

On April 5, 2014 I set out to the sea to haul my fishing net based on the PFZ (10 45 N, 80 01 E) information I got from MSSRF. I was accompanied by three fishing labourers. We harvested 96 kilos of *Vanjaram* (Seer fish) fish which I sold for Rs 480 per kilo and I got Rs. 46,000/-; each labourer got an income of Rs 1400/-. I could save four litres of diesel and also we reached the shore four hours in advance. I have taken a loan from a fishing company. Based on the value of fish resources harvested, they recover an amount which would be deducted from the principal. I could pay Rs 4600/- to the company that day.

Recently, during this month (February, 2015) I became anxious while in the sea. That day the wave height was very high and due to that my boat started wobbling. I was in a place not very far off from the backwaters. But still I was scared that my boat would be affected. So I called the Helpline to find out for how long that condition would continue. I was told that only after 24 hours the condition would change for better. So, I immediately decided to anchor the boat in back waters. Then I felt relieved.

We request MSSRF to continue its services of providing advisories through our mobile phones and for providing timely information through Helpline for improving the lives and livelihood of fishers.



Utility of ESSO-INGOIS Services

Name: Suresh Kumar
Age: 35
Occupation: Fishing
Type of Boat: Trawler
Village: Akkaraipettai, Nagapattinam

“...though the catch is good from PFZ sometimes it is frustrating because the market rate is not up to our expectations”

I, Suresh Kumar aged 35 years have been engaged in fishing activity for the past 20 years. I come from a traditional fishing village namely, Akkaraipettai in Nagapattinam district. I had education only up to Class 2. Prior to undertaking fishing activity in Akkaraipettai during 2012, I was engaged in fishing in Andaman Islands for seven years and in Kerala for two years. For the past two and a half years, I have been using MSSRF/INCOIS services. Through my friend, I came to know of the services and activities of MSSRF. He gave me the Fisheries Helpline number and told me that I should contact that number before I venture into the sea. There is no institution like MSSRF in Andaman Islands which is abundant in fish resources.

I contact the Helpline service for getting PFZ points and for other details. So far, I have utilized PFZ information seven times and harvested *Soorai meen* (Tuna fish). Since January, 2015 I have used PFZ advisory two times and on both the occasions the yield was good and satisfactory. The first time I got PFZ points (11 42 N 80 01E, 11 51N 80 07 E, 12 04 80 17E, 12 59 N 80 31 E, 11 57 N 80 13E) was on January, 4. We did not haul the net exactly in the points we received from MSSRF/INCOIS but using the points as a base we hauled our fishing net nearer to the points given in the PFZ advisory. (11 46 N 80 05E, 11 52N 80 10 E, 11 55 N 80 59 E, 12 08 N 80 80 16 E). I got 5 ½ tonnes of *Soorai meen* (Tuna) (Rs 60 per kg). Apart from this, I got *Katta* (Seer fish) 300 kilos (Rs 120 per kg), *Sura* (Shark) 200 kg (Rs 200 per kilo), *Kombu thirukkai* (Hamer head shark) 200 kilos (Rs 40 per Kg). After the expenditure, I got a profit of Rs 1.2 lakhs and I paid Rs 9000/- to each of my 10 fishing crew in addition to the beta of Rs 2000/- On January 16 after obtaining the PFZ points through the Helpline

I ventured into the sea. The points were more or less same as the previous trip. This time the yield was slightly higher than the previous trip - six tonnes of TUNA. The other fish types we got include Katta(Seer fish) 600 Kg (Rs 140 per Kg), Kera (Yellow Fin Tuna) 70 Kg (125 per Kg), *Mayil meen* (Sail fish) 90 Kg (Rs 105 per Kg). After the expenses I got a profit of 1.4 lakhs. I paid Rs 10,000/- to each of my fishing crew and



Utility of ESO-INCOIS Services

Rs 2000/- as beta. On both the occasions I could return to the shore two days in advance. Because of this, I was able to save money on food and fuel and the fishing crew was also happy as they could return to the shore earlier than they had expected.

I am able to plan well my fishing trip as I get information on PFZ and OSF. Based on the points given through the advisory or Helpline I am able to decide as how much diesel should be taken, how much ice is needed. I am able to tell my family when I am likely to return to the shore. I am able to exactly calculate number of days as to how many we would be in the sea.

Normally, a group of boats join together and set out for fishing. I share my traditional knowledge with them. My fellow fishers approach me to get PFZ information and I readily share with them. And, I am happy to tell that many have benefitted by using the PFZ information.

I would like to point out though the catch is good from PFZ sometimes it is frustrating because the market rate is not up to our expectations. Due to lower market rate we are unable to get more earnings though the quality and quantity of catch is good. On the other hand, when the market rate is good the local traders treat even the first grade quality fish as second grade one and give us only lower price.

Name: Mr Sukumar
Age: 38
Occupation: Fishing
Type of Boat: Trawler
Village: Samanthanpettai, Nagapattinam

“I am satisfied with the income I earned by using the PFZ information. It improved my economic condition to a certain extent”

My name is Sukumar. I come from a fishing village namely Samanthanpettai. I have had education up to Class 8. I am 38 years old with 18 years of fishing experience. I am a gillnet owner.

I know MSSRF since 2007. I have been getting audio advisories from a long time ie from 2009. We were worst affected by the Tsunami. After this terrible incident there was always a fear and anxiety particularly during the first few years. Even the slightest change in the sea would create anxiety and fear among the community. We hesitated to venture into the sea. More than the men the women and children would discourage us from going into the sea for fishing. However, this anxiety has drastically come down ever since we started receiving OSF information through MSSRF. This information gives us the confidence to venture into the sea without any hesitation or worry. Now-a-days, our family members are not very much worried about our safety in the sea and they have a secured feeling.

I lost my motorised boat during the Tsunami. In 2007, I bought a new one with government subsidy. I also borrowed some money for the balance amount. Some NGOs provided items such as ice box and fish nets free of cost.

Before I bought my boat I worked as a labourer in others boats. I started venturing into the sea with my own boat after 2007. The labourers used to hesitate to venture into the sea even if there was slight variation in the weather and sea condition. They feared and dreaded to go into the sea in such conditions. During such times I used to tell them about the MSSRF audio advisory giving details of the weather and ocean conditions. I used to assure them that this information was scientific and more or less accurate. Based on

my assurance at least few labourers came forward to go along with me to the sea. The members of family of the other fishermen were very much worried. So those fishermen were not mentally prepared to go into the sea. Under these circumstances we are fortunate to get this information as it gives us a nice feeling of security. I always trusted the information given by the MSSRF. Now everyone realises the validity and importance of the information. I have also taken decisions of venturing into the using FFMA handset. I also contact the Helpline service very often to get OSF and PFZ information.



Utility of ESO-INCOIS Services

As the number of motorised boats increased gradually after the Tsunami there was heavy rush for coastal fishing. These boats can go up to 20 to 50 nautical miles for Seer fishes, TUNA and fishes available in rocky substrate for harvest. Simultaneously, fishing ground has been extended. The information on PFZ mostly covers the area from 10 nautical miles to 45 nautical miles. This information fall within the range of extended fishing ground. So I made use of the opportunity to fish in PFZ. It has become much easier for me to fish in the PFZ.

I am satisfied with the income I earned by using the PFZ information. It improved my economic condition to a certain extent. With the earnings that I got , I was able to repair my house that was damaged due to Tsunami. I was also able to repay the loan taken towards buying the fishing boat.

Up to 2013 I used motorized boat to undertake my fishing activity. Later, I decided to buy a mechanised boat as shore line fishing increased and fish resources also dwindled. The catch was not up to our expectation. Before I bought the mechanized boat many had already bought due to the above mentioned reasons.

I could not use the PFZ information on few occasions due to rough sea current, more boats hauling in the same place and so on. I used the PFZ information whenever it was possible. The catch was very good on four occasions. For example, on January 22, 2015 I contacted the Helpline service and PFZ points for Tuna (11 03N 80 13E, 11 10N 80 11E, 11 22N 80 07E, 11 14 20N 80 10E, 1120N

80 08E, 12 44N 80 38E, 12 41N 80 35E) I gave the points to the boat driver. Based on the points the fishing crew calculated and hauled the net in 11 30N 80 20E, 11 30N 80 42E, 11 30N 80 18E, 11 30N 80 06E, points. They harvested 6300 kilos of Skipjack Tuna. We sold the fish at the rate of Rs 65 per kg. We also got some associated fish resources like Shark-7kg,(total 250 rupees), Seer fishes -100 kg (110/kg), Barracuda-13kg(140/kg), Yellow Fin Tuna-17kg(180/kg).On the whole the fish was sold for Rs Four lakhs. I got a profit of Rupees One lakh. There were 10 labourers in the

boat; each got Rs 10,000/- as their wages in addition to the beta of Rs 2000/-. The profit thus earned helped to me to pay some amount towards the loan taken for the new boat construction.

Due to lack of mobile connectivity we are unable to access the PFZ advisory when we are in the mid sea. We do not get information on the water current. We can overcome these difficulties if Indian Automatic Identification System (IAIS) is introduced soon. I feel this instrument would reduce the problems the fishers face while fishing in the sea. I am confident that this will make fishing more profitable and safe. MSSRF organised an awareness programme on IAIS instrument where I also participated; thus I came to know of this instrument and its utility to the fishers. Your guidance and inputs would be very much useful for us.

Photographs of MSSRF- INCOIS Intervention



Awareness Programme on
INCOIS Services, Andhra Pradesh



Feedback Meeting on
INCOIS Services, Tamil Nadu



Launch of Helpline Services, Kerala



Awareness on Helpline Services, Tamil Nadu



Training on Global Positioning
System(GPS), Tamil Nadu



Awareness Creation and
Demonstration on IAIS, Tamil Nadu

Name: Mr Thiruvalar Selvan
Age: 37
Occupation: Fishing
Type of Boat: Trawler
Village: Akkaraipettai, Nagapattinam

“We don't get good catch in PFZ if there is heavy water current ”

My name is Thiruvalar Selvan residing in Akkaraipettai Village. It is a big fishing village in Nagapattinam district. I have around 15 years of fishing experience. I took a loan from the bank and bought my boat. I use technologies like GPS, Echo sounder and Walkie-Talkie. Two to three boats go together for fishing in the deep sea. Our traditional fishing zone lies between Kodiakarai and Nagapattinam. We go up to 30 *bagam* depth. As we are using gill net we go to Chennai and Andhra Pradesh to carry out our fishing activity these days. Based on water colour and water current we identify the area for fishing. If there is clear water it means we will not have fish in that area. If it is green in colour possibility of getting fish in that area is more. I started using gillnet since two years.

I have been receiving advisories on Ocean State Forecast and Potential Fishing Zone for the past two years from MSSRF. The advisories are useful to the entire fishing community. I also make use of Fisheries Helpline service. During the last one year I received ten PFZ advisories. Out of that I could use them only for five times. We did not have to travel longer distances. PFZ fell within a shorter distance from our shore. We went only up to Marakanam area. All the times the catch was good. The maximum catch I got was four tonne of Tuna fish. On all the occasions I got approximately a profit of Rs 50,000/-. For instance, on January 29, 2014 I got GPS points (11 8N 81 29 E) for PFZ and between Mudasalodai and Parangipettai towards eastern direction I got four tonnes of Tuna. It was sold for Rupees three lakhs. After deducting cost of diesel, ice, food, wages to the driver and labourers, I was able to make a profit of Rs 50,000/- . Usually, we get this quantity of fish only during our fishing venture to far off places like Vizag in Andhra Pradesh.

I can recall another occasion (July 28, 2014). I contacted the Fisheries helpline service and got the GPS points (13 10 N, 81 40 E) for PFZ in South Andhra. I could not go to the sea but I gave the points to the crew of my boat. The boat returned on 4 August, 2014 with Tuna catch worth Rupees three lakh. I gave Rs 10,000/- to each of the 10 crew members. After diesel and other expenses I got a net profit of Rs 50,000/-.



Utility of ESO-INCOS Services

I used the earnings to pay some amount towards my bank loan taken for buying mechanised boat. And, the earnings enabled me to run the family and carry out other activities without borrowing from others. It was helpful when I could not go for fishing for some time and there was no other source of income. I wish I had gone for fishing on all the days when I got PFZ advisory. I could not go for various reasons such as heavy water currents, red crab and personal work. We don't get good catch in PFZ if there was heavy water current. It would be better if fishers are provided with water current details for the PFZ also.

Name: Mr Arumugam
Age: 45
Occupation: Fishing
Type of Boat: Fibre Boat
Village: Kasimedu, Chennai

“It could be more helpful and useful if along with the PFZ information, the water current details for that particular zone is also given”

I am Arumugam, 45 years old, living in Kasimedu. I have been involved in fishing for more than 30 years. I own a Fibre Boat. I undertake fishing with my five crew members. Since November 2013, I am receiving and using MSSRF-INCOIS services like Ocean State Forecast, Potential Fishing Zone, TUNA forecast, Rainfall information and I also use MSSRF-INCOIS Fisheries Helpline services. I am happy to tell you that I have been selected as a Master Trainer from my village by the MSSRF.

These services are critical to the fishing community. We value them. While information on OSF helps us to plan our fishing activity and gives us confidence to venture into the sea without anxiety and sense of insecurity, the PFZ information helps us in improving our economic conditions. We have been benefitting a lot because of such timely and local/species specific advisories and weather and sea condition information.

I am a regular user of Helpline service. I call the Helpline for confirmation and for getting updates of PFZ and TUNA forecast information and also OSF especially during the bad weather conditions. I was introduced to FFMA in December, 2013. When MSSRF gave me the android phone I was motivated to use all the options in the application. Having experienced the benefits of the application I bought an android phone. This is very helpful to know the OSF, PFZ information even when we are in the deep sea. In case there is no network connection, I go to a point where there is network coverage and note down the details of PFZ and OSF and carry out my fishing accordingly. As I am able to view the information for Andhra coast also I share the same with my friends who like to venture in that region. As a tool FFMA gives us more opportunity

to use the services of INCOIS more effectively and confidently. At times we are able to explore nontraditional fishing areas. With the availability of PFZ data we are often going to areas such as Kovalam, Cheyyur and Marakanam which we hardly used to venture prior to receiving PFZ advisories.



Utility of ESSO-INCOIS Services

From January 2014 to December 2014 I received 147 PFZ and TUNA advisories and only 83 advisories were suitable for me. Out of that I used only 20 advisories. I would like to share one of my fishing ventures. On January 17, 2014 around 8 PM I received TUNA forecast information from MSSRF through Voice SMS for four landing centres in North Tamil Nadu between Chennai and Cheyyur. We chose to go to the Chennai landing centre because it is much closer to us. The advantage of FFMA mobile is that it helps us to view the shortest route on the GPS. On the very next day in early morning I set out for fishing with my crew members and directly reached the exact location of TUNA fishing ground (81 01.57 E; 12 56.38 N) around 4:30 PM. By 5 PM we released the net for catching fish and after five hours we got 1700 Kg of fish worth Rs 1,10,000/-. After fuel and labour expenses I got a profit Rs 50,000/- Out of the 1700 kg, 1000 kg was Tuna and the others were Ray fish, Gar Fish, Trevally fish. Quality of fish was also very good, i.e the weight of the fish was around five to eight Kg. *The fishing community's livelihood would improve to a great extent if we make profits like this regularly (intha mathri labam ovarumuraiyum kadacha engaloda valvatharam selipa erukum).*

I am happy to share with you that other fishermen with whom I shared this information on PFZ also earned more than Rs 20,000/- on that day and they returned to the shore two days in advance. They were glad about it because they could save time and also earn more income. Normally I share the PFZ information with my fellow fishers of at least 20 persons.

The PFZ advisories enable fishers with fibre boats also to go to longer distance where only big mechanized boats used to fish. Earlier, we used to go up to 1000 *bagam*. But this is not the case now. We even go up to 3000 *bagam*.

We are thankful to MSSRF-INCOIS efforts towards improving the livelihood of fishers. Both the advisories-OSF and PFZ- are of great use in our day—to-

day fishing activity. However, though we get regularly PFZ advisories sometimes we are unable to use it. The main reason is the connectivity problem. If we go for deep sea fishing we will be generally out of coverage area. Only on the first day of venturing into the sea, we would be able to access the information. In case we want the following advisory on PFZ it is possible to get the information only from the next group of our fishers leaving for fishing a day or two later. The other reasons include heavy water current, red crab movement (during September –October. Fishers generally avoid going into sea during these months in the east coast because of the red crab movement. There is no economic value to this species and more over it also damages the fishing net) and weather condition. We get PFZ advisories during the months of November and December but we cannot use it always because of the rough weather condition.

It was quite uncommon to get more than one tonne of fish in our traditional fishing area even after spending five days in the sea. With PFZ information I am able to get a minimum of two tonnes within four days. In case we had to return after a day's fishing the catch would normally be one tonne; we have never got less than one tonne after using the PFZ advisory.

I would like to mention that prior to receiving the PFZ advisory the quantity of fish would be less but the market rate was quite okay. During that time the profit per trip would only be from Rs 10,000-Rs 20,000/-. The profit increased to Rs 40,000 - Rs 50,000/- per trip when we started using the PFZ data. There was a time when quantity of the fish was more and the rates for the same were also high. However, in recent times since August, 2014 (ie after the ban period) there has been a sudden fall in the market rate. Though the quantity of fish harvested is generally more we are not able to get good profit due to the lower market rate for the product. There is no gain or loss now. We were interested in knowing the processing technology for Tuna and we even asked training on this from MSSRF. But looking at the market situation we are not very keen on that now. However, if MSSRF conducts such training we will participate and learn the technology. It will definitely be of great use to us. We also feel that if the Government undertakes the export of Tuna the market rate would be standardized based on its grade. It is not just my view this is the view of the Kasimedu fishing community.

Helpline service and FFMA tool are valuable to fishermen as they give more assurance and boost their confidence. It could be more helpful and useful if along with the PFZ information, the water current details for that particular zone is also given. If the information is disseminated through FM radio this would enable fishermen to use it on daily basis.



Name: Mr Baskar
Age: 44
Occupation: Fishing
Type of Boat: Trawler
Village: Kasimedu, Chennai

“We do not generally have to waste our time searching for fish shoals. It saves our time and energy. And, the income is reasonably good. At least we do not incur losses”

I am Baskar living in Kasimedu, Chennai district. I am working as a driver of a fishing boat for the past 16 years. I came to know of MSSRF when one of my colleagues (Mr Kamalesh) told me that he had registered his mobile number for receiving the forecast information like Potential Fishing Zone (PFZ), Ocean State Forecast (OSF), Weather and Rainfall via voice SMS from MSSRF. Similarly, I came to know of Fisheries Helpline service from my other peer fisher folks who have already been accessing it and also got benefitted through it. So, I was also motivated to use the MSSRF/INCOIS services.

Since November 2013, I am effectively using the Helpline service for my fishing activity. So far (till October, 2014) I have used PFZ information for more than six times. On all those occasions we have had a very good catch of fishes like Tuna, Carangids, Croakers, Ray fish and Indian Sailfish. The maximum quantity of the catch we have had so far was around 14 tonne of Tuna fish and the minimum was four tonnes. Due to the market rate fluctuations, I am unable to tell you the monetary worth of the fish. However, the income from the catch was good.

Our nearest place of fish harvest is off Thiruvannamiyur and the long distance is between Puducherry and Cuddalore. As I am working in a big trawler which can go up to 300 nautical miles we have gone up to Vizag (in Andhra Pradesh) for fishing using PFZ information.

We are confident of getting a good catch of fish if we use the PFZ information properly. We straight away go to the area mentioned in the advisory. We do not generally have to waste our time searching for fish shoals. It saves our time

and energy. And, the income is reasonably good. At least we do not incur losses. Sometimes we stay in the same point for more than two days; during that time also we get good catch.

Prior to getting to PFZ advisory we used to spend a lot of time in locating the fish shoals. We used wander in the sea searching for an area with fish aggregation. It used to cause a lot of anxiety and physical pain. Our shoulders and body used to hurt a lot. We used to feel physically exhausted on many occasions. Now we do not experience such pain. Thanks to INCOIS PFZ information. Moreover, we feel safe to venture into the sea as we get OSF information regularly. Our family members feel secure and comfortable about our safety in the sea. Earlier on many occasions we had wandered in the sea to get a better catch of fish. It not only used to take longer time but also used to result in body pain and stress (*munnalem thedi thedi meen pidipom ippo antha nilami illai; apparam drive pannum pothu udambum valikum. Ippa udambu vali anthaalavu illai. Mana ulaichalum kurainju irrukku*). Boat owners get good profit. Depending on the profit we also get our wages. That way we are fortunate to get the PFZ information. The boat owners are now getting more profit than the earlier times. This means that we are also getting better wages now. For the boat owner it may be an additional source of income. For me it is the only source of income.

On regular basis we are getting PFZ advisories. But we are not in a position to use it always as we go for deep sea fishing. We do not have mobile coverage when we are in the deep sea. We thank to M S Swaminathan Research Foundation and INCOIS for providing this wonderful service for fishermen's well being.



Utility of ESO-INCOIS Services

Name: Mr Venkatesh
Age: 41
Occupation: Fishing
Type of Boat: Trawler
Village: Kasimedu (Nagoorarthottam), Chennai

“The end to end OSF information provided by you is very helpful in our fishing activity”

I am Venkatesh (aged 41 years) residing in Nagoorarthottam near Kasimedu, Chennai District. I own a trawler boat. My fishing crew includes two boat drivers and nine labourers. I came to know of the Potential Fishing Zone (PFZ), TUNA forecast, Ocean State Forecast, Weather, Rainfall information and Helpline services through my crew members, who participated in INCOIS awareness meeting conducted by MSSRF during November, 2013. Subsequently, I also registered my mobile number for receiving the audio advisory.

Since December 2013, I am receiving the audio advisory on OSF and PFZ regularly. I also contact helpline for confirmation of the PFZ information or for clarifications. Likewise I have contacted Helpline for more than seven times and also used audio advisory information on PFZ for more than 17 times (till December, 2014). Once I receive the PFZ information I immediately pass it on to my crew members. On all occasions I got a very good catch of fish especially TUNA and other fishes like Indian Sail fish and Rays etc., The maximum quantity of TUNA fish caught was about five tonne and minimum was around two. Though the advisory is valid for one day we generally find that there is sufficient catch for the next three days also. Here, I would like to say, because of this information that I receive I am now able to cut down my diesel expenses. Consumption of diesel has been reduced from 2000 litres to 1500 litres and other expenditure like ice, salt and food has also been reduced i.e from Rs. 70,000/- to Rs.50,000/-. Also, number of fishing days has been reduced considerably. Time and money have been saved. The drivers are also happy that they do not have to undergo mental and physical strain of locating the fish shoals. The income of the labourers and drivers has also improved because of

the enhanced catch of fish. I would have got more quantity if the mesh size of fish net is bigger than the ones I have now. If the length of the net is 13 metre the catch would be two tonne per haul. This information I have shared with my peer fisher folks via walkie talkie and they too have benefitted lot. The OSF information is very useful particularly during rough weather condition. The end to end information provided by MSSRF is very helpful in our fishing activity. It is local specific. We receive regular updates on the density and intensity of the sea conditions. Helpline service is of great help to us during such unfavorable climatic conditions. The INCOIS-MSSRF Fisheries Helpline is a 24X7 service. Such intervention enables the fishers to take decision and safe guard the fishing assets. We are able to avoid human loss. I would like to thank MSSRF and INCOIS for providing such services and I also request to continue the same for our betterment.



Utility of ESSO-INCOIS Services

Name: Nanthan
Age: 65
Occupation: Fishing
Type of boat: Fibre Boat
Village: Kasimedu, Chennai District

“I always encourage my association members to pay attention to the advisories send from MSSRF-INCOIS”

My name is Nanthan and I started going into the sea since the age of 15 years. I belong to Kasimedu, a fishing village in Chennai district. I am President of Double Engine Fibre Boat Association. I own three fibre boats and gill net of different mesh sizes; out of the three boats I own, one was damaged due to an accident in the month of August 2014. Luckily the five fishers in that boat were saved. I employ eight to 10 persons for my fishing activity if we go for longer distances. The fishing trip extends up to five days at sea and the catch normally includes fishes like Tuna varieties, Shark, Seer fish, Gar, Ray fish and sometimes prawns. Since February 2014 I have been receiving PFZ information from MSSRF and using it. I have harvested fish resources up to a maximum of 4 tons in one single trip. Earlier, the harvest of fish hardly crossed one tonne even if we were at sea for five days.

Ten years ago we were able to predict the type of fish we would get in a particular area and haul the net by looking at the colour of the water and its current. This is not the case now. In recent fishing trips, my peer fishers caught a red crab (with no economic value and only destroys the gears) which is unusual to find during the month of September.

During December 2013, I heard through my friend (who is a member of another Fishers Association from the same village and user of MSSRF's services) that MSSRF is providing PFZ information to fishers. Then I requested MSSRF to conduct awareness programme on INCOIS services like OSF and PFZ to our association members. We registered our mobile numbers for receiving the information. I have used PFZ information nearly 18 times between February and December 2014. As soon I receive the PFZ information I convey the same to my fishing partners and my association members. We always found that catch in the PFZ is more than a tonne; there were days when we had catches of four to five tonnes of species like Tuna, Gar fish and Ray

fishes, etc. To mention a specific incident: during the month of February, 2014 after receiving PFZ information, my fishing partners set out for fishing. They travelled for 9 hours and reached the particular zone (12 39 76 N; 80 54 05E, 12 45.20 N; 80 58 96 E, 12 59 29 N, 81 05 03 E) between Kovalam and Mahabalipuram fishing ground. In two nights we caught about two and a half tonnes of Tuna and sold for 1.5 lakhs and got a net profit of Rs 60,000/-.



Utility of ESSO-INCOIS Services

After the ban period, we received PFZ information near to the shore of Krishnapattinam, Kondur etc. So we could not make use of it. Only gillnet with mechanised boat could use the given GPS point.

Another recent bulk catch was during the month of December 2014. We received PFZ information which was closer to the coast of Tiruvanmiyur and Sadras (12 28 10 N 80 58 7 E, 12 21 21 N 80 55 50 E, 12 39 9 N 80 58 1 E, 12 44 23 N 80 55 18 E, 12 34 6 N 80 59 2 E) and caught two tonnes of Yellow Fin Tuna fish and Gar fish in four nights. After returning to the shore we sold it for Rs 1,04,000/-. After expenses I got a profit of Rs 30,000/- from this fishing trip. I would have got more profit if the market rate was little high. The market rate at that time was low.

OSF information is equally helpful and useful. It is in fact a life saving. When the sea is rough (like during June 2014) when the wind speed and wave height were high we avoided going to longer distance.

Another important service provided by MSSRF is helpline service. During the month of July 2014 my brother's boat drifted near Puducherry coast. My brother immediately called me to inform this and I at once contacted fisheries helpline for help who in turn without delay informed the Indian Coast Guard and rescued my brother's fishing partners. But we could not save the boat as it was damaged. MSSRF was in constant touch with the Indian Coast Guard till the fishers reached the shore. I was touched by MSSRF's gesture and the responsibility they took in saving the fishers.

I am very much thankful to MSSRF and INCOIS for providing useful information on PFZ and OSF. And I always encourage my association members to pay attention to the advisories send from MSSRF-INCOIS.

Name: Jayaraj
Age: 50
Occupation: Fishing
Type of Boat: Trawler
Village: Kasimedu, Chennai

“Now that we are getting OSF on a daily basis, we are able to take necessary precautions and plan our fishing trip”

I am Jayaraj aged 50 years. I hail from Kasimedu Village and I have been engaged in fishing for more than 30 years. I can neither read nor write. I have never gone to school. Presently I am working as a driver in a trawler boat. I participated in an awareness programme organised by MSSRF in our village during 2013. During that programme the staff of MSSRF explained about the services of INCOIS on Potential Fishing Zone, cyclone alert, weather information, wave height, wind speed and its direction. I also came to know of the Fisheries Helpline service which I find really helpful to the fishers in many ways.

I did not pay much attention or took interest to hear the audio advisories on PFZ and weather information until one of my friends spoke high of its utility and advantages. I find PFZ information very handy and useful. It is location and species specific. I have used this PFZ information for more than 15 times (from January 2014 -December 2014). We venture into the sea only twice a month consisting of 10-12 days. We concentrate our fishing activity in the PFZ for the first three days. The following days we keep the given GPS points as centre of our fishing activity and depending on the water currents, we move around that region for hauling. This way we are able to predict the fishing ground to a great extent. Due to this we do not waste much time in locating the next fishing ground. During each fishing trip we got good quality catch and good profit too. Our stay-in fishing period which used to last for 10 days earlier, now, after the use of the PFZ information, has been reduced to five days only. Thus we are able to save much time; search time has come down; spending on diesel has significantly been reduced. Fish catch has been enhanced considerably. The quantity and size of fish catch is very good. Because of this information we are able to harvest a minimum of four tonne and a maximum of 10 tonne. During one trip we caught four tonnes of Yellow Fin Tuna, $\frac{3}{4}$ tonne of

Ray fish and ¾ tonne of Gar fish. During another trip in December, 2014 we had caught 10 tonnes of Skipjack Tuna and associated species like Yellow fin Tuna 200 Kg and Gar fish 400 kg. The wages of the drivers and the labourers are decided based on the profit obtained from the catch. I must also share with you that when the PFZ advisory was not provided (June–July) the expenses were on higher side. However it was compensated later when we started getting the PFZ advisory.



Utility of ESSO-INCOIS Services

I share the information with my peer fishers who are also happy with the catch. Now-a-days the driver's job has become much easier than the earlier times; previously, the drivers had to spend a lot of time and physical energy in finding a good fish shoal. Due to the availability of PFZ information we can now go straight to the fishing zone. So, I personally feel this information is very useful for the drivers. The mental and physical strain has been considerably reduced. Therefore, my owner and I are very happy about the earnings and the profits generated.

According to me, the PFZ information can be best utilised and the yield can be converted into profit only with favourable weather conditions. If we don't get timely messages on OSF when the boat is at sea, all our catch is would go waste leading to loss of income. Now that we are getting OSF on a daily basis, we are able to take necessary precautions and plan our fishing trip. When I need updates of the forecast I immediately contact the Fisheries Helpline service. For example, if we receive information that wind speed is above 50 km per hour I call the Helpline and get clarifications like for how long this kind of weather would continue. Based on this, we plan our fishing trip. I can tell you about a recent incident that happened one day during October –November 2014 when we decided not to venture into the sea though we had made necessary arrangements to leave the next day in the early hours. Fortunately, the previous evening I got OSF information that there would be depression in Andaman coast and due to that we would experience heavy rainfall and wind. When I saw this forecast, I intimated the owner about it and we decided to stay on the shore. Had we gone to the sea the next morning as planned there would have been a heavy loss of Rs 30 to 50 lakhs. We would also have been affected mentally and physically had we proceeded with our plan that day.

At this juncture I would like to thank MSSRF and INCOIS for this.

Name: V. Sebastian Adimai
Age: 32
Occupation: Fishing
Type of Boat: Fibre Boat
Village: Vizhinjam, Thiruvananthapuram

“In my lifetime fishing, this was the only time that I harvested maximum quantity of fish with minimum expenses”

I am Sebastian Adimai residing in Vizhingam Village of Thiruvananthapuram District, Kerala. I own a Fibre boat with double engine and use hook and line. I have been engaging in fishing activity for more than 15 years now. I go for day fishing with my brother and my friend. Since April 2014, I regularly receive early warning and potential fishing zone information from M S Swaminathan Research Foundation. These services facilitate the fishers to plan their fishing activity. OSF information is very useful to us in taking decisions during unusual weather conditions. I find the information on OSF is almost accurate.

In addition to the audio advisories, I also make use of MSSRF Fisheries Helpline service-8593840666. During January 4, 2015 around 6 in the evening I received PFZ information from MSSRF. I found that the information fell within our regular fishing zone. I called the MSSRF - INCOIS Helpline to get detailed information on the GPS points. They provided the necessary details of GPS points and the distance (between 55 to 60Km) from the Mariyanadu landing centre. I discussed with my brother and friend whether we should venture into the sea for fishing in the given points or not. We felt we should go ahead as the GPS points provided were well within our reachable area. Most of the PFZ advisories received previously were quite far from the shore. Based on our previous experiences we predicted that it would take nearly three hours for us to reach the specified zone. Next day early in the morning, we set out for fishing and reached the PFZ in two hours. Just two kilo metres before reaching the said GPS points we noticed dolphin movement. This is generally an indication for us that if we find dolphin movement that then one can be sure of

getting a good haul of Tuna fish. So we started to hook before two km itself and we reached the given GPS points where we hooked 95 numbers of small Tuna fish and one Yellow Fin Tuna which weighed around 25kg within five hours. On the same day we returned to the shore and sold the catch for Rs 37,000/-. After all the expenses of Rs 7,000 (including a person's wage) I got a net profit of Rs 30,000/-. The income was

double the amount of what I used to get before. I have got good catch of fish (two to three times) like this earlier times also but with heavy expenses; after investing Rs 7,000/- to 10,000/-, net profit would be up to Rs 10,000/- to Rs 15,000/- In my lifetime fishing, this was the only time I harvested maximum quantity of fish with minimum expenses. Usually, 13 fibre boats would go for fishing from our village. But that day only six boats ventured into the sea. Of the six boats we got more catch than the others. This was only because we had used the PFZ information for fishing on that day.



Utility of ESSO-INCOS Services

Name: Mr. Prakash
Age: 31
Occupation: Boat Owner
Type of Boat: Trawler
Village: T. R. Pattinacherry, Karaikal

“This income enabled me to buy a new fish net and I replaced the old diesel engine with a new one”

I am Prakash aged 31 years. I hail from a traditional fishing family from the village of T. R. Pattinacherry, Karaikal district. My village is located 10 km away from the Karaikal fishing harbour. Fishing is the main source of income for my family. I own a trawler boat and I am the Panchayat leader. I have completed I.T.I.

Four fishers from Karaikal were taken by MSSRF when INCOIS Electronic Display Board was installed in Pillayarkuppam near Puducherry in 2005. I was one of the four members. This has helped me to become aware of EDB facility and its utility to the fishers. This is how I came to know about MSSRF. Since then, whenever MSSRF conducted any programme related to fisheries I used to participate in them. Initially (2008) we received advisories as text messages in English. I was a Panchayat leader then. After some days my fellow fishers gave feedback that they were unable to use the advisories as they were sent in English. They felt it would be better if it was in Tamil or voice SMS. I conveyed this message to MSSRF and they immediately took necessary efforts in this regard and the fishermen started receiving information through voice SMS in the local language.

In our village, MSSRF conducted training programmes such as on-board hygienic handling of fish resources, diesel engine mechanism and GPS handling and awareness programmes on marine conservation. I mobilised people for all these programmes and participated in all of them. I have been using Helpline service since 2011. I must have contacted this number for more than 55 times mainly to know OSF during the times of cyclone and formation of depression in the sea.

As I am the Master trainer, I received Fisher Friend Mobile Application from

M. S. Swaminathan Research Foundation on 23 January, 2014. From that day onwards I have been using this FFMA application for getting information. I came to know that information on potential fishing zone (PFZ), wind speed, wind direction, high wave alert and wave height, weather information, government entitlements, IMBL alerts and important contact numbers, Global Positioning System (GPS) option have been incorporated in this. In addition to that, market information of nearest landing centers is also given in FFMA mobile. This device serves various purposes related to fisheries. My fellow fishers and me find them very useful. I can view the information every day through FFMA. I have also installed the application on three of my friends' android phones. Being the master trainer I have created awareness on the use of FFMA and motivated the fishermen using android phone to install FFMA in their device.



Utility of ESSO-INCOIS Services

I am very happy to use this FFMA mobile application. I received PFZ data on 30 March, 14 with GPS point of 10 45 900 N, 80 03 800 E. I went to that location and harvested around 500 kg of *Sankara* (Red snapper) fish. I sold and made a profit of Rs 10,800/-. Similarly I had got a good catch of Pomfret during the first week of April 2014 using PFZ advisory. As my village is away from the main market centre, all the catch that we got, we usually sold them to three of the local agents. The rate for the fish is fixed by them. We cannot bargain with them. But, now I am in a position to bargain with them. As we can access market rate for different varieties of fish by viewing the FFMA. I bargained with the local agents for more rate than fixed by them. In the market, agents asked for Rs.430/- per kg but the market rate for Pomfret fish displayed in the FFMA was Rs 465/- per kg . I negotiated with market agent and I got reasonable earnings of Rs. 17500/-. I am in the habit of viewing market information regularly and have been getting a better price for my catch.

The advisories are very useful. However, most of the advisories were for deep sea fishing. In the last three months I have received nearly PFZ 10 advisories. Only four advisories were useful to us. The other advisories were not of use as they were only suitable for deep sea fishing. Only two times I could use it. On both the occasions I got a profit of Rs 50,000/- . This income enabled me to buy

a new fish net and I replaced the old diesel engine with a new one.

Because of MSSRF-INCOIS intervention, all the crucial information comes directly to our hands (*Swaminathan araichiniruvananthal technologyum thagavalum engaludaiya kaikke neradiyaga varugudu*). It would be of help if PFZ advisories are given for small craft fishers also.



Focus Areas for Future

It is evident from the case studies that the MSSRF-INCOIS partnership has contributed significantly in improving the lives and livelihoods of fishing community. The fishers appreciate the services of INCOIS in providing Ocean State Forecast and Potential Fishing Zone advisories. There is unanimous view about the benefits of such services in helping them improve their economic conditions and in ensuring safety at sea. They are of the view that OSF information is almost accurate and help them plan their fishing activity and safe guard their lives and fishing assets. However, in spite of the utility and benefits of the PFZ information, there are some concerns and issues which need to be addressed at various levels to realise the benefits to its full potential

PFZ for small craft fishers: Fishermen, particularly operating small craft fishing vessels are unable to use the PFZ advisories though they get it regularly. This is because the PFZ advisory given on most of the days is for deep sea fishing. The small craft fishers generally carry out their fishing within short distance from the shore and they can go up to a certain distance which normally does not come under PFZ. So, the fishers feel if INCOIS provides PFZ advisory for their regular fishing zone it would enable them to use the advisory effectively.

Information on sea water current: The fishers expressed that many a times that they were not able to use PFZ advisory due to the heavy sea water current. It restricts their fishing activity. So, they are unable to realise the benefits inspite of the availability of PFZ information. They expressed that it would be very useful if along with PFZ data, sea water current forecast information is also disseminated to the fishers. It must be pointed out here that though INCOIS provides information on sea water current, MSSRF does not disseminate the same to the fishers. MSSRF which earlier had been disseminating the sea water current information along with the PFZ advisory later decided to restrict itself to disseminate only PFZ advisory through short text messages. MSSRF took this decision when it got feedback from the fishers that they found variations in the information provided on water current. It is difficult to provide details of sea water current as it is influenced by various factors such as wave height, wind speed and other oceanic factors. Moreover, as the fishers go to different areas on different times for fishing it is not feasible

to give individual specific sea water current details to all the registered fishers. However, the fishers have been encouraged by MSSRF to contact Fisheries Helpline service to get real time information on sea water current specific to their fishing ground and distance from the shore.

Species specific information: While the fishers are happy that they are getting Tuna forecast there has also been a common request from them for other species specific information like Mackerels, Carangids, and Croakers and so on.

Technical know-how for preservation: The increased catch does not always mean increased income for the fishers. On most of the days the fish catch in the PFZ, particularly Tuna and related species is good. However, their lack of knowledge and techniques on Tuna fish processing and preservation prevent them from getting a good price for their fish resources. Due to this, often the quality of the fish brought to the shore is not good; the traders consider them as second grade and pay lower rate to the fishers. Quality of the fish should be good for the fishers to get a fair rate.

Ensure minimum support price for fishers: Another important reason for not getting the desired earnings from the catch is due to the lower market rate for the fishes. If the market rate is high the traders treat even the quality fish resources as second grade and pay less.

Creation of storage facilities for small craft: Small fishing craft vessels do not have proper storage facilities. As a result the fishers are unable to maintain the quality; the fishes get damaged and results in wastage. Consequently, this affects the fishers' income.

Ensuring mobile/FM connectivity: The fishers pointed out that they are unable to access PFZ advisory due lack of mobile connectivity while in the sea. They expressed that if satellite connectivity is given to their mobiles that will help them use the PFZ advisory while engaged in deep sea fishing. Dissemination of information has already been initiated through FM radio. This should be strengthened. This is also expressed by the fishers because it would be useful in deep sea fishing.

Introduction of Indian Automatic Identification System: Along with the services of INCOIS, Indian Automatic Identification System (IAIS)

instrument/equipment should be introduced and provided soon to the larger fishing community. This will go a long way in improving the lives and livelihood of the fishers. MSSRF has already started creating awareness on the functioning and utility of this instrument to the fishers in Tamil Nadu.

In order to promote the lives and livelihoods of fishers, MSSRF shall continue to strengthen and expand its commitment in enhancing the technical/scientific knowledge and skills of fishers in using modern/new fishing technologies as well as in processing and value addition of fish. In addition, MSSRF shall cover a larger area for dissemination of INCOIS advisories.

For more information, please contact

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Utility and Impact of E

Reflections of Fishers
Tamil Nadu, Kerala

