

Smartphone Applications in Fishing Technology

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SUMMARY

Numerous apps are available in the field of Fishing Technology. There are apps which give periodic information on oceanographic condition such as water depth, tides, winds, waves, current, sea surface temperature, chlorophyll content of surface water, Apps are also available to update knowledge on Navigational aids such as Nautical charts, Nautical almanac, lifesaving appliances, Electronic Navigational equipments besides weather forecast reports. Apps guiding internationally standard operating procedure such as rules of the road day time flag signals and night time light signals to be shown during sea voyage. Seamanship related apps are available on knots, bends and hitches to be used under different situations on board the fishing vessels.

INTRODUCTION

Smartphone is an electronic device used throughout the world to enable the users to surf the Internet and access wide range of mobile applications such as youtube, twitter, facebook, instagram, whatsapp, messenger, google map, shareit etc. Nowadays mobile apps are used in every field of specializations starting from gaming, business, job search, Medical, Engineering, Agriculture and Veterinary – Fisheries is not an exception to this phenomenon. These apps mainly facilitate to acquire updated knowledge on the field of science in which we are interested. Numerous apps have been developed in the field of fisheries science including fishing technology. With the rapid spread of mobile phone utility in the society in the recent years they have indispensable part of modern life. Smartphone applications become commonly encourage the collection and dispersal of information. Accessibility of mobile apps is continually increasing and about 1.85 million apps can be currently accessible for download within the iOS App store and nearly 2.56 million apps are accessible through the Google Play store from Android phone during the year 2020. The prospective use of mobile applications in commercial fishing has been well recognized globally. However, in India recently the use of mobile apps are getting momentum and it can help to bridge the technology gap prevailing in the deck related equipments of mechanized fishing vessels.

Mobile Apps and their Major Applications

There are many apps which helps fishermen in their day to day life at sea. The apps starting from updating their knowledge on oceanographic condition, navigational aids, weather forecast, rules of the road day, and seamanship related information were used by the fishermen under different situations on board the fishing vessels are discussed below:

Whatsapp, Facebook, Instagram and Twitter – These are the world wide used social media platforms which are used for spreading many fisheries information. Many fisheries based state and central institutions are spreading their publications, technology and extensions works through these application to get international visibility.

Matsya Setu – it is a virtual learning app of ICAR-Central Institute of Freshwater Aquaculture (ICAR-CIFA), Bhubaneswar, Odisha and it has many detailed recorded video lectures on commercially important fish breeding fish and culture.

A Fisher Friend Mobile Application (FFMA) – It is an app developed by **M S Swaminathan Research Foundation** in collaboration with **Qualcomm** as part of its Wireless Reach Program. This app serves as a knowledge Partner and providing vital scientific information to small scale fishermen. The app provides dynamic information such as weather data, Potential Fishing Zone data besides information on emergency contact numbers, sea safety information and disaster warnings to the fishers.

CIBA Shrimp app – it is developed by **ICAR-Central Institute of Brackish water Aquaculture (CIBA)**: It is an innovative communication channel that provides technical support to shrimp farmers, entrepreneurs and extension personnel and connect them with the scientific community.

mKRISHI Fisheries – It is mobile app a developed by **Tata Consultancy Services (TCS) Innovation Lab – Mumbai**, in collaboration with **ICAR – Central Marine Fisheries Research Institute and Indian National Centre for Ocean Information Services (INCOIS) Hyderabad** of this app facilitates the commercial fishermen to identify the potential fishing zones with the help of remote sensing data received from satellites based sea surface temperature, and the phytoplankton content which is of sea water. Information on PFZ helps to reduce the running time of fishing vessels for fishing shoal and helps to reduce fuel usage in fishing. This app is available in nine Indian languages

CIFT Lab Test App – ICAR – CIFT developed an innovative mobile application intended for providing information related to different types of sample testing and analysis of various fish and fishery products, packaging materials, fishing gear materials and microbiological analysis of fish and water samples.

Sagara App – It is the initiative by the Department of Fisheries and NIC Kerala for ensuring Fishermen security, mainly focused on monitoring the fishing vessels and registering the crews going for fishing operations. Further, to keep an up-to-date on active exit and entry of vessels and fishermen venturing in to sea.

MatsyaKiran - The mobile app has been developed for the benefit of fish farmers of Telangana State which are clubbed in 6 main heads such as fish culture practices, farm management practices, post-harvest practices, modern fish farming techniques, state specific fisheries information and marketing of fish.

FisherMobile – It is a secure app developed to enable the reporting of commercial fishing activity by authorized fishers in Australia

ELOG- It is an electronic log book for commercial fishers in Canada.

eCatch - an electronic logbook solution for New Zealand fishers. ELOG, eCatch - Instead of relying on phones GPS an app may link into positional hardware already on-board a fishing vessel to provide locational information.

Deckhand Pro- It is a logbook app that utilizes a phone's GPS to automatically map trips and activity in relation to recorded catch information.

PescaData in Mexico and Our Fish in Honduras, Belize and Myanmar- This app provides ways to collect fisheries data that can be used by individual fishers or to support decision making within fisheries.

BATmap in Scottish fisheries- This app provides guideline to avoid unwanted catches of cod and spurdog

Machli app- specifically providing information in eight Indian languages and the PFZ advisory app and

Trap Tracker app It is specifically designed app to control EdgeTech's ropeless fishing gear.

Ropeless Fisher It is a generic application that allows the position of ropeless gear to be logged throughout the world

FishRight in Sweden and NSS Mobile in Norway – This app has been specifically designed to keep fishers up to date with quota availability.

SCraMP – This app utilizes the GPS and accelerometer on the smartphone to produce data related to a vessel's stability, highlighting any threat of capsizing for smaller vessels.

ABALOBI - It is an Android app originally developed in South African fisheries to improve monitoring, traceability and transparency in SSFs now has greater than 5000 downloads and its reach is growing.

FishGIS – It is a mobile phone camera which can be used to upload pictures of catch report, vessels involved in illegal activity, scan QR codes to log

Blue Lobster, Straight Of The Boat, SaiEkvira Fishery – This app uses monetary payment software to enable selling of fish direct to the public Restricted access

FisherMobile, eCatch, Nelpin, NOAA Fish online - Only approved users are able to access the app

mFish - The mFish app initiative was originally sponsored by the US State Department to promote sustainability and responsible practices amongst artisanal fishers around the world.

SkippersMate Pro, This app has been designed by the Irish Fishing Industry for the Fishing Industry for the use by mate and skipper.

FisheriesApp, eReporting, OlracMDDL - It is a Customizable application and can be tailored to meet the needs of multiple agencies

ODK, Shiny4SelfReporting- It is a open source code supplied app so that others can use an app in a format that suits their fisheries.

Nautical almanac – This app helps in calculating azimuth, height and other celestial almanac information for Sun and Moon, primary navigation stars and navigation planets: Venus, Mars, Jupiter, and Saturn. In addition, it also

helps in the estimation compass error such as variation and Deviation. The calculation of variation is based on the latest World Magnetic Model.

Marine traffic, ship finder, vessel finder – This facilitates in updating the positions of movements of vessels fleets in selected areas or ports relevant to the observer.

Advantages of mobile applications

- They updates technical knowledge on fishing and fishing related accessories time to time
- They reduces the amount of time spent on searching of fish is in sea
- They teach the fishermen workloads, as their search times are shorter, and they can catch more fish at faster rate.
- They helps to reduce the fuel consumption of fishing boat
- They lower the fishing expenses while raising revenue.
- They help to reduce the duration of fishing trip
- They help to choose right design, type of fishing gear and their accessories
- They regularly update dynamic conditions of sea like waves, current, weather pattern etc.
- They aid the fishermen to know their current location, route they travelled and store the information on potential fishing grounds for future use
- They assist the fishermen to locate fishing nets
- They helps the fishermen to locate nearby fishing vessels
- They support fishermen to save their lives at sea at critical circumstances

Table 1. Common mobile applications and their use in Promoting Fishing Technology

S.No.	Applications	Development agency	Usage
1.	Whatsapp	Jan Koum and Brian Acton are the founders of WhatsApp. The headquarters of WhatsApp is in Mountain View, California, US.	They are social media platforms used by many international institutions for spreading many fisheries information through their official pages
2.	Facebook	Menlo Park, California	
3.	Instagram	Kevin Systrom (born December 30, 1983) is an American computer programmer and entrepreneur and head quarters is at Holliston, Massachusetts, U.S.	
4.	Twitter	Twitter, Inc. is an American social media company based in San Francisco, California.	
5.	Matsya Setu	ICAR-Central Institute of Freshwater Aquaculture (ICAR-CIFA), Bhubneswar, Odisha, India	Provides video lectures on the breeding and culture of many important commercial fish species.
6.	Fisher Friend Mobile Application (FFMA)	M S Swaminathan Research Foundation is collaborating with Qualcomm and Indian National Centre for Ocean Information Services (INCOIS)	Provides dynamic information such as weather data, Potential Fishing Zones data besides information related to emergency contact numbers, sea safety and disaster
7.	CIBA Shrimp app	ICAR-Central Institute of Brackishwater Aquaculture (CIBA), India	Provides technical support to shrimp farmers, entrepreneurs, and extension personnel Connects them with the scientific community.
8.	mKRISHI Fisheries	TCS Innovation Lab – Mumbai with ICAR-CMFRI and INCOIS	Provides information on Potential Fishing Zones data

9.	CIFT Lab Test	ICAR-CIFT, Cochin, India	Provides information related to different types of sample testing Analysis of various fish and fish-based products, fishing gear materials, packaging materials, microbiological parameters, quality parameters of water.
10.	Sagara App	Department of Fisheries and NIC Kerala, India	Monitors the fishing vessels and registering the crews going for fishing operations.
11.	ELOG	Australia	It Enables in reporting of commercial fishing activity
12.	eCatch	Canada	serve as a log book for commercial fishers
13.	Deckhand Pro	New Zealand	Used as an electronic logbook solution for fishers.
14.	PescaData	Mexico	Utilizes a phone's GPS to automatically map trips and activity in relation to recorded catch information.
15.	OurFish	Honduras, Belize and Myanmar	
16.	BATmap	Scottish fisheries	Provides ways to collect fisheries data that can be used by individual fishers or to support decision making within fisheries.
17.	Machli app	India	It provides information like Ocean State Forecast and Potential Fishing Zone information to users in eight Indian languages
18.	Trap Tracker	United States of America	Indicates the position of ropeless gear to be logged throughout the world
19.	Ropeless Fisher	United States of America	The app logs trap deployment locations then displays those location to other fishermen when operating within a "visibility radius" of your traps that you define.
20.	FishRight	Sweden	It utilizes the GPS and accelerometer on the smartphone to produce data related to a vessel's stability, highlighting any threat of capsizing of small fishing vessels.
21.	NSS Mobile	Norway	
22.	SCraMP	South Africa	Helps to improve monitoring, traceability and transparency in SSFs now has greater than 5000 downloads and its reach is growing.

23.	ABALOBI	South Africa	Uses monetary payment software to enable selling of fish direct to the public restricted access
24.	Fisher Mobile	India	Provides vessel trip reporting. Users must set up an account and access the app using their user ID and password
25.	NOAA Fish online	USA	
26.	mFish	Singapore	It is a seafood traceability app used to ensure it is legal, reported, regulated, safe, authentic and responsibly produced,

CONCLUSION

The use of smart phone and their apps getting popular among the fishermen around the world day by day and Indian fishermen are no exception. However, usage of smart phone apps related to fishing among the Indian fishermen needs to be promoted still further so that the fishermen can reach out various apps that related to fishing. Further, development of apps specific to commercial fishing in vernacular languages will help the fishermen to get benefited still more. Eventually, these apps would help to boost earnings of fishermen and their livelihood.

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