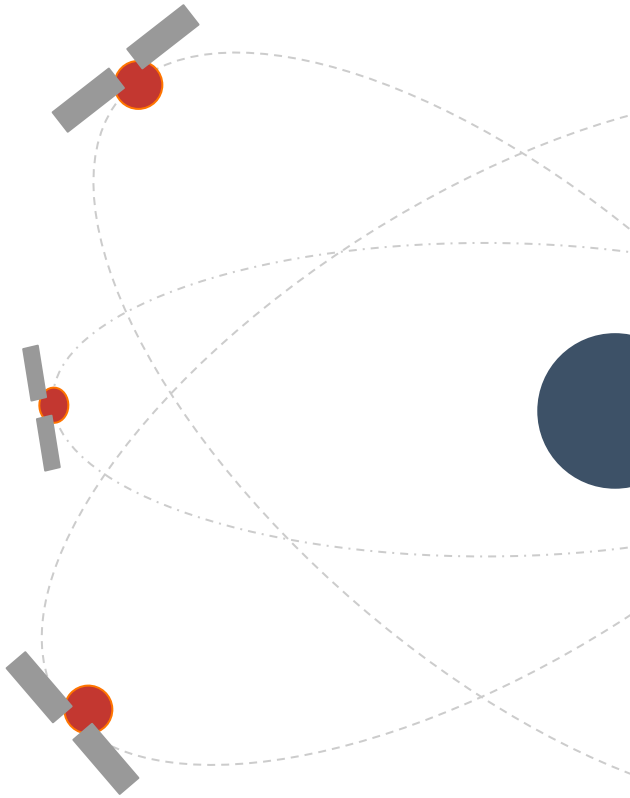
Application of Remote Sensing in Fisheries

Parag Ramteke
Product, CaptainFresh

29th July 2023 - Bengaluru

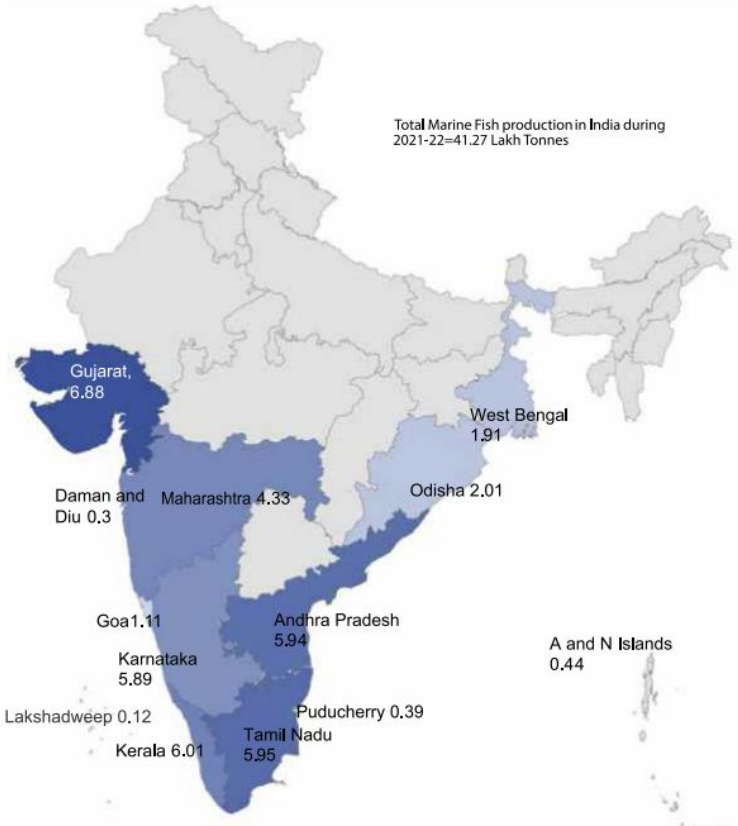


This session…..

- Fisheries Landscape in India - What - Why - How ?
- Sustainability in fisheries - What's the Necessity ? SDG -12, 13, 14
- Challenges for scale and sustainability.
- Remote sensing solutions for monitoring and management of resources.

Fisheries in India

Marine Fishes – Production at a glance



- India has about 8118 Km. of coastal line
- Nearly 2 million Sq Km of Exclusive Economic Zone (EEZ)
- 5% of the total Global Marine Fish Production.
- Gujrat, Maharashtra, Karnataka, Kerala, Tamil Nadu and Andhra Pradesh – Major Marine Fish Producing states
- India exports Marine products to 123 nations with USA and China being the largest importers of Indian Marine products.
- US $ 7.76 Billion – Value of Marine Exports in 2022

Source – Dept. of Fisheries, State Govt./UT Administration

Inland Fishes – Production at a glance

Fig 2 : INLAND FISH PRODUCTION: 2021-22 (In Lakh Tonnes)

80% increase in Fish production over 10 years, contributed largely by increase in Inland fish production

- Inland Fish Production – Vital Component of country's overall Fish production.
- Accounts for 16% of Global Inland Fish Production and second after China.
- Largely driven by aquaculture practices, where fish are cultured in ponds, tanks, and reservoirs
- Inland Fish Production is spread across multiple states.
- Andhra Pradesh is the largest contributor
- Major Carps which include species like Catla, Rohu, Mrigal, etc.
- Significantly Contributes to nation's food security and supports rural livelihood.

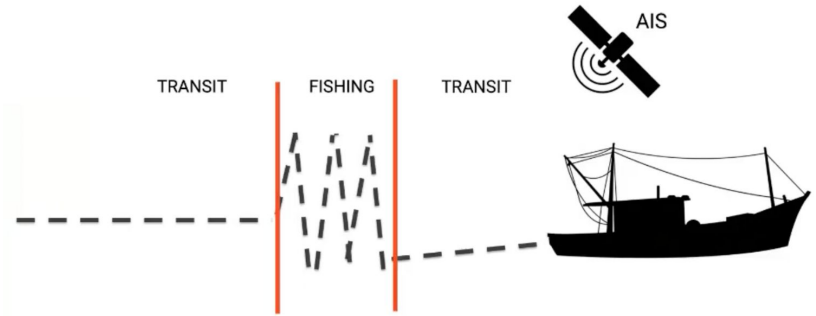
Source – Dept. of Fisheries, State Govt./UT Administration

Sustainability in fisheries - SDG -12, 13, 14

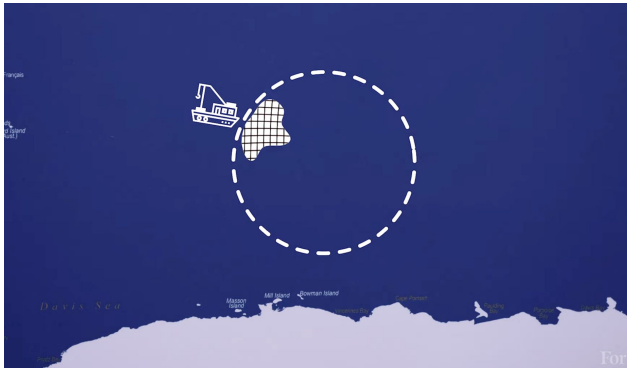
SDGs – call to action

Challenges for Scale & Sustainability

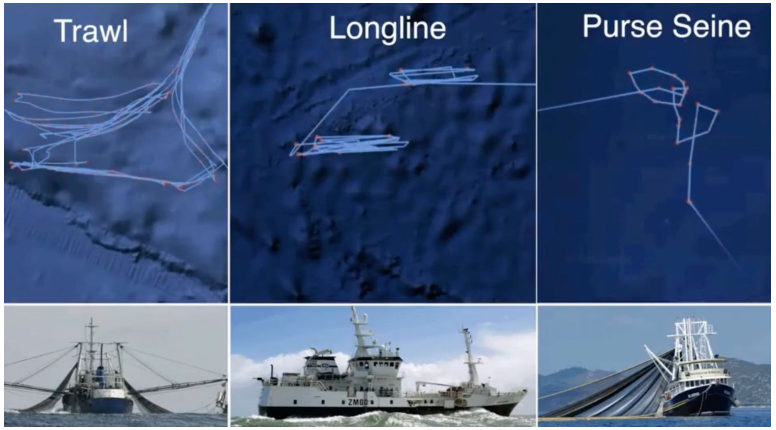
IUU (Illegal, Unreported, Unregulated)

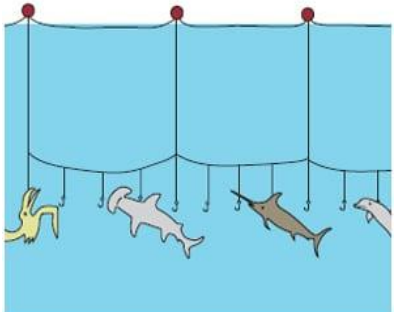


Tracking Boats with AIS (Automatic Identification System)

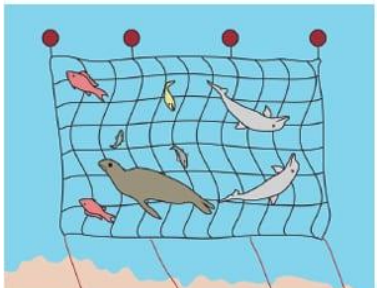


Illegal fishing in marine protected areas



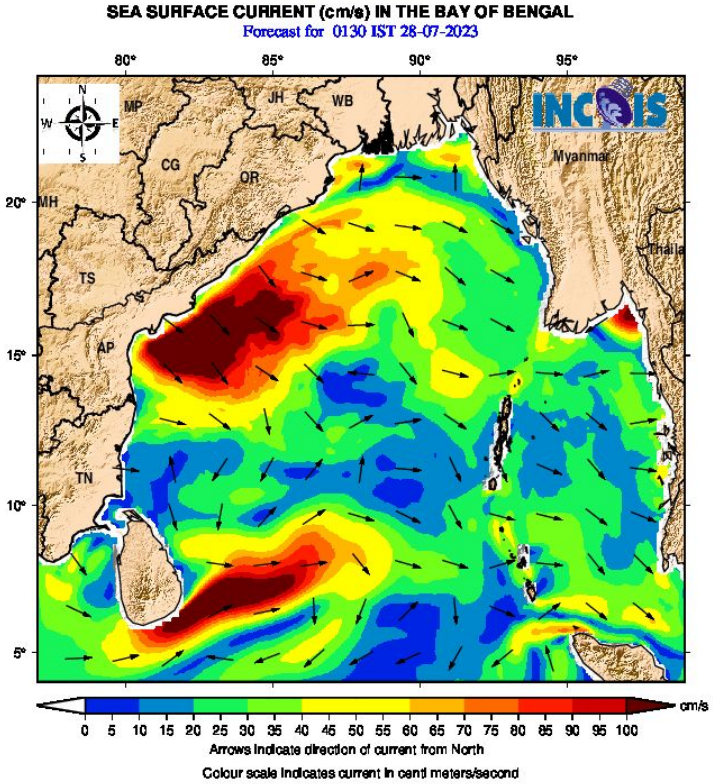


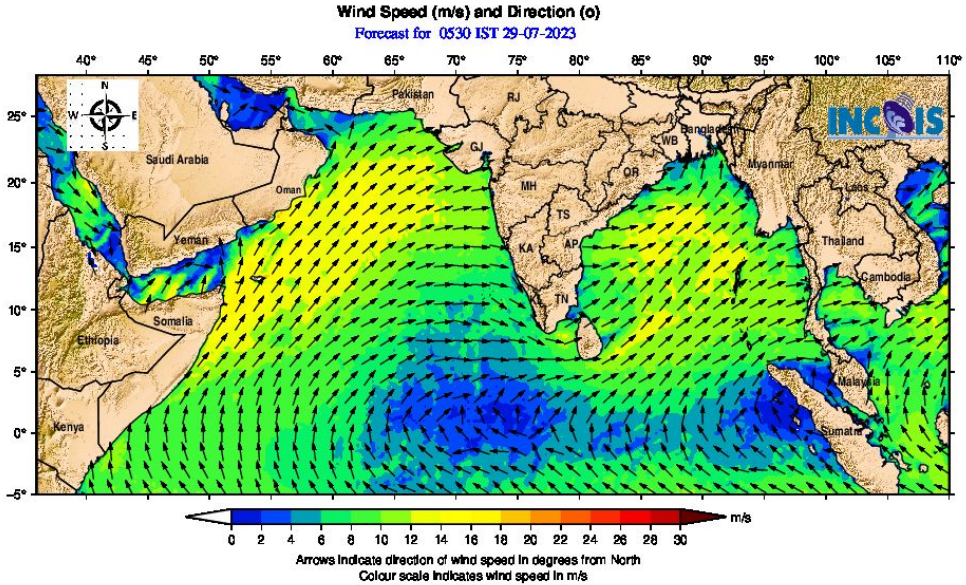
Longline Gear



Gill Net Gear

RS Solutions for monitoring and management - Potential Fishing Zones


SEA SURFACE CURRENT (cm/s) IN THE BAY OF BENGAL
Forecast for 0130 IST 28-07-2023
INCOIS
MP
JH
WB
CG
OR
MH
TS
AP
TN
Myanmar
Thailand
cm/s
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Arrows indicate direction of current from North
Colour scale indicates current in cenit meters/second


Wind Speed (m/s) and Direction (o)
Forecast for 0530 IST 29-07-2023
INCOIS
Pakistan
RJ
GJ
Saudi Arabia
Oman
Yemen
Somalia
Ethiopia
Kenya
MH
OR
WB
Bangladesh
Myanmar
TS
KA
AP
TN
Laos
Thailand
Cambodia
Malaysia
Sumatra
m/s
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
Arrows indicate direction of wind speed in degrees from North
Colour scale indicates wind speed in m/s

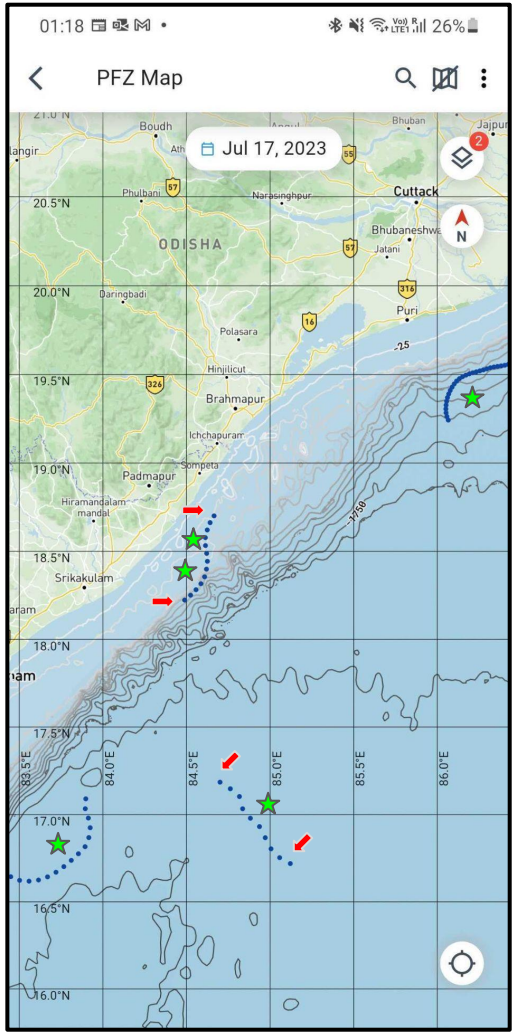


Figure 1

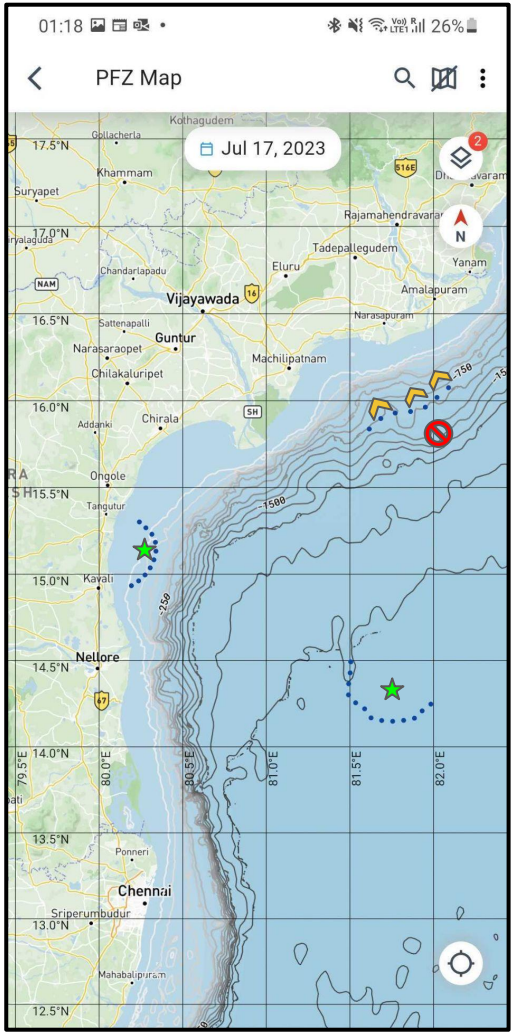


Figure 2

Figure 1:

When PFZ is in form of a line (dark blue), then the fishing at the center (green) of the line will give the maximum catch. Fishing at the end (red) of the PFZ advisory will give a smaller catch.

Figure 2:

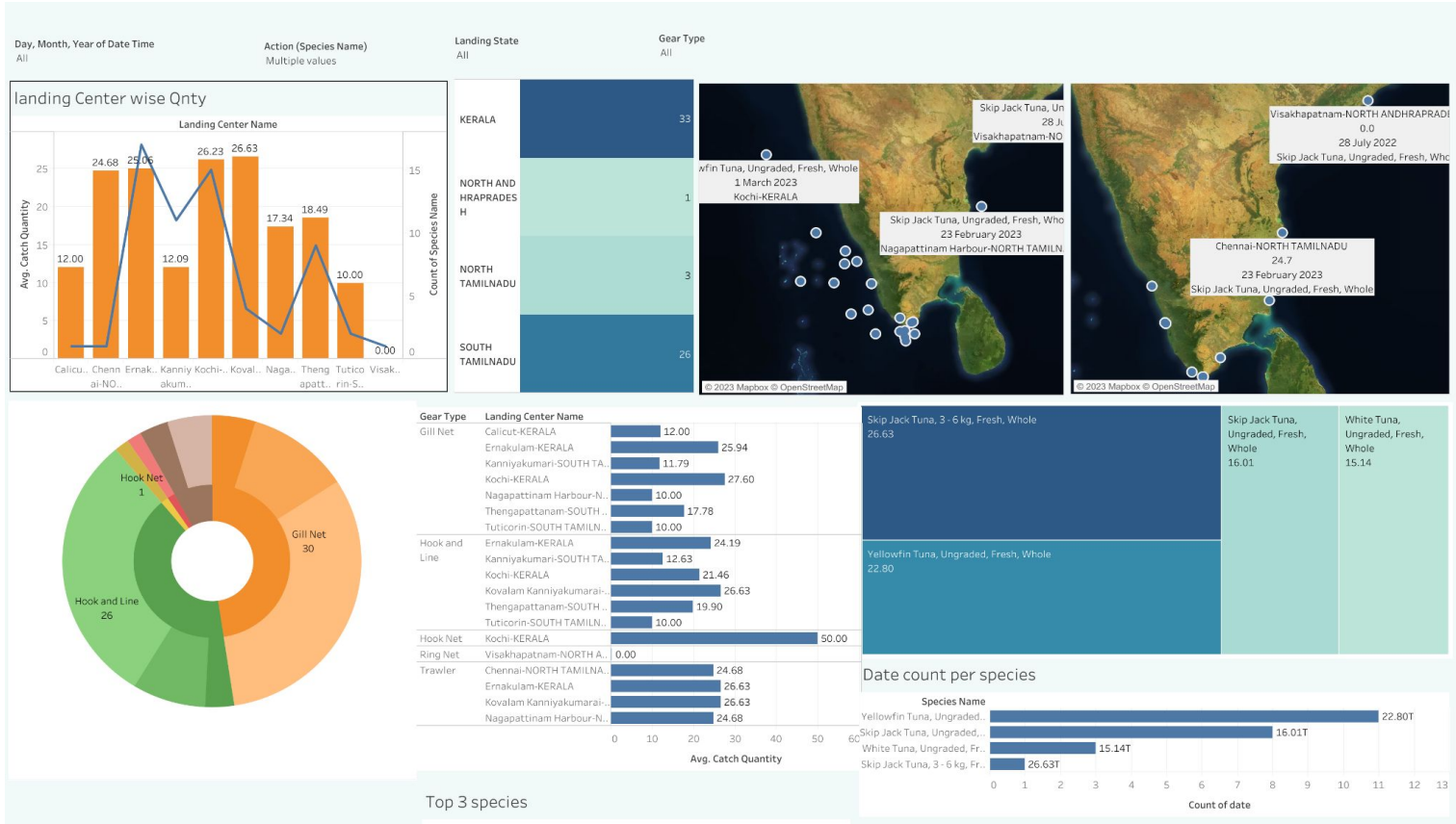
a.) If the PFZ is shown as a curve (dark blue) then fishing inside the curved area (green) will yield maximum catch.
b.) Use judgement on changing wind velocity to estimate the direction (yellow) in which the fish shoal will move for the next two days. This can help you get a good substantial catch even after the second and third day after receiving the PFZ.
c.) Fishing on the opposite direction of the shift (red) is likely to give a much lesser catch or no catch at all.

fishgram

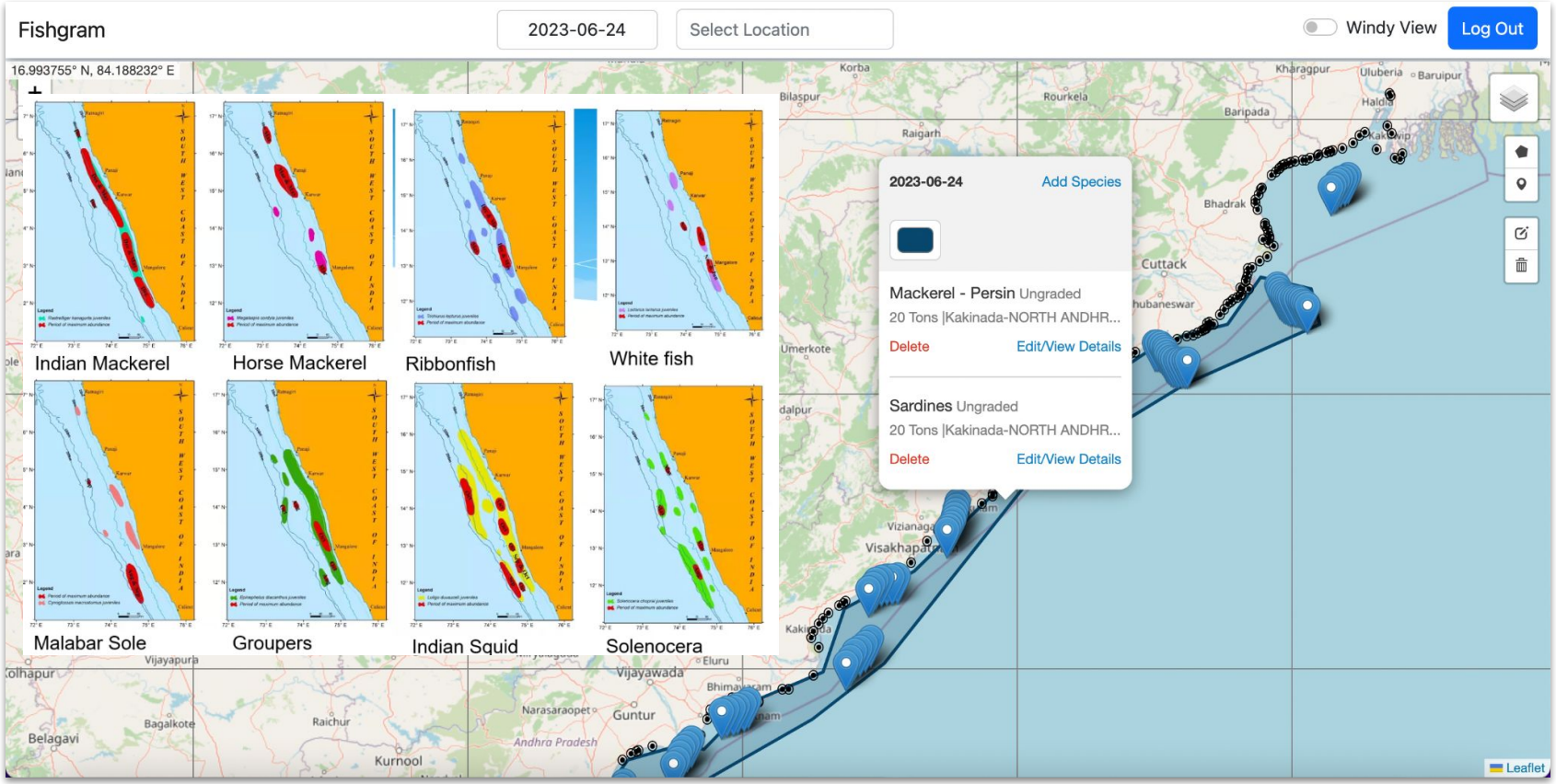
Potential Fishing Zones (PFZ) forecasts are updated by INCOIS daily on fishgram.

Fishgram, the super app for fishermen bridges the supply demand gap in fish and seafood industry. The app is available on android and iOS for download.

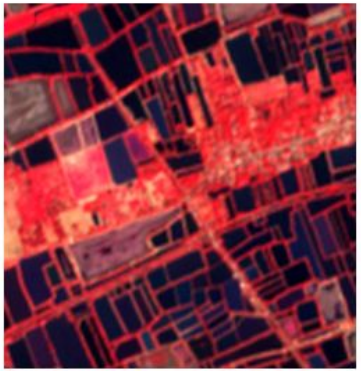
Fishgram Analytics

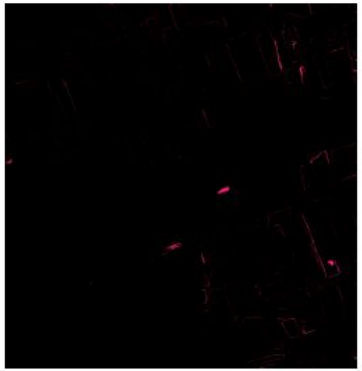


Fish Improvement Programme

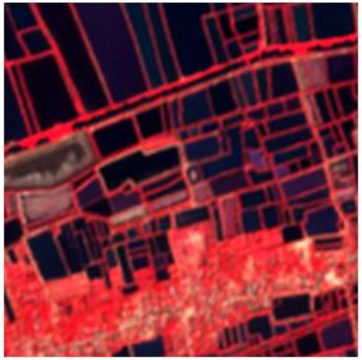
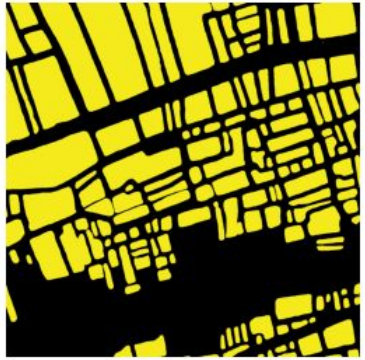


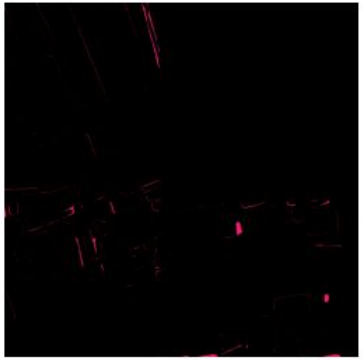
Aquaculture - Resource Estimation



Boundary Detection of aquaculture ponds in coastal Andhra Pradesh- IoU - 96%



Use Cases:

- Area, Yield and Production est.
- BFSI
- Underwriting risks