

Food and Agriculture Organization of the United Nations

# FAO Regional Workshop to Review the SOFIA Analysis for Area 51

Transparent Assessment Framework Estimates of Stock Status and Introduction to the FAO Questionnaire on Fisheries Management Effectiveness

15 - 19 April 2024 Kochi, India

# **MEETING REPORT**

SIDE EVENT BOBSAN Regional Dialogue on STRENGTHENING INFLUENCE OF SCIENTIFIC EVIDENCE ON FISHERIES MANAGEMENT DECISIONS

14 - 20 April 2024

Organised by





# FAO Regional Workshop to Review the SOFIA Analysis for Area 51

# Transparent Assessment Framework Estimates of Stock Status and Introduction to the FAO Questionnaire on Fisheries Management Effectiveness

15 - 19 April 2024 | Kochi, India

# **MEETING REPORT**

**SIDE EVENT** 

BOBSAN Regional Dialogue on STRENGTHENING INFLUENCE OF SCIENTIFIC EVIDENCE ON FISHERIES MANAGEMENT DECISIONS 14 - 20 April 2024

Organised by



Main Event:	FAO Regional Workshop to Review the SOFIA Analysis for Area 51
	Transparent Assessment Framework estimates of Stock Status and introduction to the FAO questionnaire on Fisheries Management Effectiveness
Concurrent:	Bay of Bengal Stock Assessment Network (BOBSAN) Regional Dialogue on Strengthening Influence of Scientific Evidence on Fisheries Management Decisions
Dates:	14 April – 20 April 2024
Location:	Hotel Taj Vivanta, Kochi, Kerala, India and Zuri Resort, Kumarakom, Kerala
Organisers:	FAO & Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO)

## Background

The FAO's flagship publication "The State of World Fisheries and Aquaculture" Report presents summary updates of the analyses of the current status of fish stocks that have been published regularly since 1971. These assessments are based on a set list of stocks (which account for over 70% of global fish landings) and a well-defined process and methodology that have undergone only modest modifications since the series' inception to promote consistency and comparability throughout time.

Since the 1970s, the fishing industry has experienced a shift in dominating stocks and exploitation techniques. Increased openness and local knowledge are essential for calculating and presenting global sustainability statistics. The UN Sustainable Development Goals Indicator 14.4.1 has led to parallel monitoring systems. To align with national reporting initiatives, increase expert participation, promote transparency, and preserve time series integrity, FAO believes it's time to conduct a methodological update on global fish stocks. The new methodology for the stock assessment process will continue to generate stock status indices at the FAO fishing regions level, where gaps in assessment can be narrowed over time in a process of continuous improvement.

The FAO analysis of the State of the Stocks does not represent or measure the status and trends in fisheries management. Country members have expressed interest in developing a complementary approach to understand how well fisheries are being managed around the world. Thus, FAO is developing a process to monitor Fisheries Management Effectiveness through an index-based approach that uses an expert-based brief questionnaire. It is aimed at providing a broad understanding of the management intensity and effectiveness at the FAO fishing area level.

The focus area of the current meeting is FAO Area 51, also known as the Western Indian Ocean, which is a vast and diverse fishing area encompassing the Red Sea, the Persian Gulf, the

Arabian Sea, and the waters off the east coast of Africa. It is home to a wide variety of marine ecosystems and supports numerous fisheries, both large and small-scale.

The BOBSAN side event's objective was to expose fisheries researchers from the BOBP member countries (Bangladesh, India, Maldives and Srilanka) to the recent techniques in fish stock assessment and to also have interactive online sessions with top researchers in fisheries science in the world.

# Workshop Objectives

- 1) Provide an understanding of FAO stock status methods and reporting processes.
- 2) Progress the development of country-level Reference Lists of stocks.
- 3) Introduce and discuss proposed new approaches for stock status classification and reporting.
- 4) Identify options to improve country-level data and information collation, assessment and stock status reporting.
- 5) Introduce and pilot the Fisheries Management Effectiveness questionnaire.

# **Workshop Participants**

Out of the 27 countries bordering FAO Area 51, 21 country representatives participated (see list of participants in Appendix A) in the workshop. Most countries had multiple participants functioning as a team. Besides, technical representatives from the FAO, BOBP, SWIOFC (Southwest Indian Ocean Fisheries Commission), RECOFI (Regional Committee on Fisheries) and SIOFA (South Indian Ocean Fisheries Agreement) also participated. Dr Rishi Sharma, Senior Fishery Resources Officer, Assessment and Management Team (NFIFM) of FAO led the workshop. He was assisted by Dr Sean Fennessy (South Africa) and Dr Sunil Mohamed (India), FAO Consultants in the region.

# Workshop Agenda

The workshop agenda (Appendix B) was tailored to address the progress in the establishment of a formal reference list of stocks for each country; discuss on the status of fish stocks currently reported; report on lessons learnt and recommendations that will improve the reporting accuracy of stock status by countries for Area 51 and recommend improvement to the pilot Fisheries Management Effectiveness questionnaire.

At the outset, the workshop was inaugurated and the workshop objectives were explained by Dr P Krishnan, Director of BOBP. Later the participants were addressed online by the Joint Secretary of the Ministry of Fisheries, Government of India, Ms Neetu Prasad, IAS. She remarked on the necessity of such workshops to help governments take appropriate measures on the conservation and management of fish resources. The following global fisheries experts addressed the workshop participants and short discussions on specific topics were held.

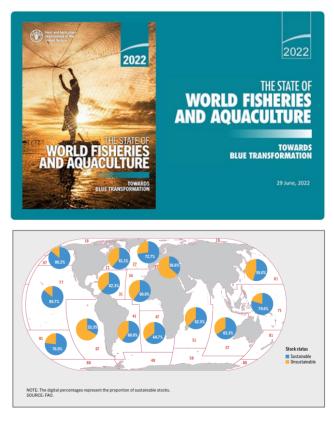
No	Date & Time	Торіс	Experts
1	14 April 2024	Dialogue on strengthening the	Dr. Chris Anderson, Professor, SAFS,
	1700-1945	influence of scientific evidence	Univ of Washington, USA;
		on fisheries management	Dr. Olaf Jensen, Associate Professor,
		decisions	Univ of Wisconsin, Madison, USA
2	15 April 2024	The Smoke Screen: Bridging	Dr. Ricardo Oscar Amoroso,
	2015-2130	Evidence and Implementation - 1	Consultant, Univ of Washington, USA
			Dr. Michael De Alessi, SAFS, Univ of
			Washington, USA
3	17 April 2024	The Smoke Screen: Bridging	Dr. Ray Hilborn, Professor, SAFS, Univ
	2015-2130	Evidence and Implementation - 2	of Washington, USA
			Dr. Michael Melnychuk, Chief Adviser,
			MSC
4	20 April 2024	The Smoke Screen: Bridging	Dr. Beth Fulton, CSIRO, Tasmania,
	0930-1030	Evidence and Implementation - 3	Australia
			Dr. Keith Sainsbury, Institute of Marine
			and Antarctic Studies, Tasmania,
			Australia

# **Overview of FAO SOFIA**

Dr. Rishi Sharma made a presentation that highlighted the role of FAO in reporting on the state of world fisheries and aquaculture every 2 years. He explained that the the concept of Blue Transformation emerged from the Thirtyfourth Session of the FAO Committee on Fisheries in February 2021, and in particular the Declaration for Sustainable Fisheries and Aquaculture, which was negotiated and endorsed by all FAO Members.

He stated that a significant portion of fish stocks are overfished, meaning they're caught faster than they can replenish themselves. The FAO estimates only around 64.6% of global fish stocks are within biologically sustainable levels, down from 90% in the 1970s.

The primary issues with developing countries are that data is limited and capacity is also limited (knowledge-limited, skill-limited, human resource-limited, money-limited).



The following practices may be helpful.

- Follow Good practice in the Data-limited but not Capacity-limited world if possible.
- Apply empirical approaches that require fewer data and low skills.
- Determine the best quality and quantity of data type and focus on one or two DL methods.
- Be cautious of length-based methods as many assumptions may not hold.
- Consider common-sense "management without assessment".
- Consult and collaborate with experts in the data-limited field.
- Encourage experts to make simple versions of the data-limited methods, e.g., executable in Excel, easy-use R packages and to train biologists in developing countries to use these simple tools.

A few general recommendations for fisheries management in the developing world are:

- Control fishing intensity (learning from the Western world).
- Spread fishing pressure across a wide range of usable species by broadening selectivity (in contrast to the western type of high selectivity on a small number of target species).
- Aim to apply fishing mortality rate proportional to stock's productivity.

## **Classification of Fish Stocks**

Currently, three tiers that define the level of quality and availability of data and information will be used to make decisions on the methodology used to derive stock status:

Tier 1: "Traditional" stock assessments are available and deemed reliable. The status of stocks in this tier will be derived directly from these national or regional assessments;

Tier 2: No formal or reliable stock assessments are available, but catch data accompanied by good-quality supplementary information that can be used to infer stock status are available (e.g., effort, CPUE, depletion levels). The status of stocks in this tier will be inferred by Production-type models;

Tier 3: Amount, detail, and/or quality of data are insufficient for either Tier 1 or Tier 2 approaches. The status of stocks in this tier will be categorized by applying a "weight-of-evidence approach<sup>1</sup>" coupled with a rigorous peer-review process.

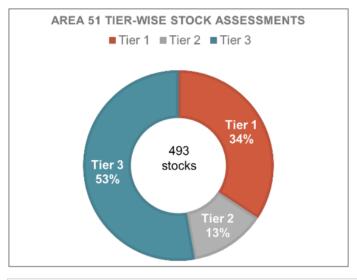
The stocks will be classified into one of the tiers using a clear decision matrix, and the process will be carried out in a well-documented framework, allowing for full transparency of choices and assumptions, peer review, and future revisions (see GitHub; <u>https://github.com/sofia-taf</u>) where the workflow on Tier 2 using life-history appropriate r and k, and datasets on global/local effort are compiled and analyzed by species. As numerous stocks may have limited data, but sufficient local knowledge, we may use Tier 3 as well for classifying some stocks important for this region.

<sup>&</sup>lt;sup>1</sup> Stobutzki, I, Larcombe, J., Woodhams, J and Patterson, H. (2015) "Stock status determination: weight- of-evidence decision-making framework" (https://daff.ent.sirsidynix.net.au/client/en\_AU/search/asset/1027248/12).

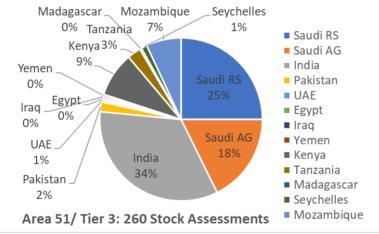
# Status of Fish Stocks in Area 51

Stock status information in the region was collected and collated by FAO Consultants Dr Sean Fennessy (SWIOFC region) and Dr Sunil Mohamed (RECOFI and remaining ++). RECOFI Member countries are Bahrain, Iraq, Iran (Islamic Rep. of), Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates. ++ includes Egypt, Sudan, Eritrea, Djibouti, Yemen, Pakistan and India (Arabian Sea). No recent stock assessments were made from Bahrain, Kuwait, Qatar, Sudan, Eritrea and Djibouti and very few assessments were made from Egypt, Yemen and Iraq.

SWIOFC countries include Somalia, Kenya, Tanzania, Mozambique, South Africa (east coast), Madagascar, Comoros, Seychelles, Mauritius, Chagos (UK), Reunion (France) and Maldives. There are several countries with no or few assessments.



The information collated at the time of the workshop included 493 fish stocks, of which 34% were T1 assessments, 13% T2 assessments and 53% T3 assessments. Regionwise information was presented by the consultants and participants were provided with printed lists for verification and updation by country representatives.





Final Categorization Area 51	UF	MSF	OF	Total	Sust%	Unsust%
Tier 1 stocks –country assessments	95		74	169	56	44
Tier 2 sraplus assessment	38		26	64	59	41
Tier 3 Catch-only assessments	181		79	260	70	30
Total	314		179	493		
Percentage					63.69	36.31

Some of the stock status details presented by the consultants are shown above. Overall, 64% of the stocks were sustainable and 36% of stocks were in unsustainable status. Tier 3 assessments generally showed a higher percentage of sustainable stocks.

# Stock Status from SDG Reporting

Through an online presentation Dr Anne-Elise Nieblas, FAO-Rome showed the status of fish stocks as reported by various Area 51 countries to UN-SDG questionnaires and those included in the GSRF database.

As there was a risk of duplication of stocks, it was decided to carefully screen the stocks before including them in the final Area 51 list. However, SDG stock status from UAE and Qatar which were missed in the consultant list would be included.

## **Breakout Groups: Stock Status and Reference List Updation**

Workshop participants were divided into 2 groups, SWIOFC and RECOFI++ groups. They were tasked with reviewing the stock status presented by the consultants for their region/country. They were also asked to confirm the current list of stocks (reference list) as those which the country will do periodically and report the same to FAO.

Countries that reported updates in the stock status include Iran, UAE, Qatar and Oman from the RECOFI region and Comoros, Reunion, Tanzania and Kenya from the SWIOFC region. Saudi Arabia confirmed reducing their reference stock list from 108 to 17 stocks. The Indian reference list of stocks could not be finalised during the workshop due to the large number of stocks and overlapping regions. The Indian team agreed to update the list within a month (by May 20<sup>th</sup>).

The 2 breakout groups also answered the following questions on fisheries management and data collection in their respective countries.

Discussion points:

- Does your country have an established harvest management system (data collection > assessment > management)?
- What assessment methods are used in your country?
- What is the local technical capacity for conducting stock assessments and for collecting the data they require? Consider the frequency of data collection and conducting assessments.
- What are the challenges to data collection and assessing stocks?
- What are your current country-level systems for reporting to FAO?
- What are your challenges in reporting to FAO?
- What support do you need to improve reporting to FAO?

The results of the breakout sessions were presented by country representatives and discussed.

## **SRA+ Method Demonstration**

Tier 2 fish stocks are those that have been assessed based on FAO catch time series and gross estimates of overall effort. SRAPLUS is an extension of stochastic stock reduction analysis (SRA) which allows users to combine a biomass dynamics model with a variety of data sources (e.g. priors on recent stock status or an index of abundance) to produce estimates of the state of a fishery over time.

Dr Arni Magnusson came online to demonstrate a recent modification called sraplus coded in R which also uses effort data and additional stock information (as priors). The fishing effort data of the region was taken from the global effort database developed by Rousseau et al. (2019). All participants were able to do the trials on their laptops using example data.

## **FAO Data Storage Procedures**

An online presentation was made by Drs Anton Ellenbrook and Pier Francesco of FAO Rome on the data storage processes followed in FAO. The Global Record of Stocks and Fisheries (GRSF) is a web-based system that assigns unique identifiers to fish stocks and fisheries.

The GRSF is designed to support the monitoring of the status and trends of fishery resources and in support of traceability and ecolabelling schemes to connect seafood industries and consumers to the scientific evidence of the status of stocks and fisheries. In a growing datadependent world, with communities seeking the best available scientific evidence to apply the most effective management measures, the GRSF is the digital answer offering key services in support of: 1) stakeholders involved in global/regional/national state of stocks indicators – particularly for SDG 14.4.1 and 2) public and private actors involved in seafood traceability and certification including catch documentation schemes, ecolabelling schemes, food safety, sustainable fisheries. The system is not yet fully operational but is well advanced.

## Infographics on Stock Status in Area 51

Ms. Polina Levontin and Ms. Jana Kleinberg, who were tasked with developing infographics of information about FAO fishing areas made an online presentation of the graphics developed for Area 51. They showed information on the area, stocks, fishing fleets, fishers etc. They invited comments on the data and graphics presented. Participants appreciated the outputs and also requested crosschecking the fishing fleet sizes shown in the graphics.



An example of the draft infographic

# Pilot Fisheries Management Effectiveness Questionnaire & Responses

Towards the end of the workshop, a questionnaire on fisheries management effectiveness developed as a pilot by FAO was distributed among participants. The responses of participants were collated and analysed. The questionnaires contained several questions under the broad heads, fisheries management measures, barriers to effective fisheries management, fisheries management intensity and fisheries management effectiveness.

The top 5 fisheries management measures used in the region were:

- 1) Minimum, mean, or maximum legal size
- 2) Seasonal closures (of the whole fishery)
- 3) Effort limited entry
- 4) Effort limit set by time (seasonal)
- 5) Fixed seasonal (area-specific) closures

In general, most management measures are perceived to perform well and/or as intended. Seasonal effort restriction measures seem to be performing the best. Gear-unit limits, with or without TAC, seem to be the worst performer among the most used. The evaluations were based on subareas, SWIOFC, RECOFI++ and BOB and showed some contrasts in the responses. Participants discussed these inconsistencies and the responses are being analysed in detail by the FAO.

## **Country-wise presentations**

All countries who attended the workshop made a general presentation on the scale of their fisheries, their fisheries assets and their contribution to the national GDP, the laws governing their fisheries and the policies supporting fisheries in their country.

All presentations made during the workshop are placed in a Google Drive by the BOBP for future reference. The workshop came to an end on the 20<sup>th</sup> of April 2024 forenoon.

-----XXXXXXXXXXXX

# APPENDIX A

# Participant list and address

No	Name	Country	Credentials/ Professional details and parent organization details	Email ID
1	Dr. Mohammad Shariful Azam	BANGLADESH	Deputy Project Director, Sustainable Coastal and Marine Fisheries Project, Department of Fisheries, Dhaka, Bangladesh	azam_dof@yahoo.com, sharif@fisheries.gov.bd
2	Dr. AL Mammum	BANGLADESH	Fisheries Quarantine Officer, Marine Fisheries Survey Management Unit, Chattogram	baumamun@gmail.com
3	Dr. Al – Mazrouai Ahmed Mohammed	RECOFI	RECOFI Secretary, Ministry of Agriculture and Fisheries, OMAN	ahmed.almazrouai@fao.org
4	Mr. Fahardine Ahamada Ali	COMOROS	Head, Section Research, Somali Ministry of Fisheries and Marine Resources, Marine Research Unit, Somalia	fahammanga@hotmail.com
5	Dr.Seyed Ahmad reza Hashemi	IRAN	Professor, Offshore Fisheries Research Center, Iranian Fisheries Science Research Institute, Iran	seyedahmad91@gmail.com
6	Dr. Ali Salarpouri	IRAN	Researcher, Iranian Fisheries Science Research Institute, Bandar Abbas, Hormozgan Province, Iran	salarpouri@pgoseri.ac.ir
7	Dr. Farhad Kaymaram	IRAN	Associate Professor, Iranian Fisheries Research Organization Institute (IFSRI), Iran	farhadkaymaram@gmail.com
8	Mr. Sabah Khorshidi Nergi	IRAN	Head of Fisheries Data Collection Group, Offshore Fisheries, Iran Fisheries Organisation, Iran	Skh981@yahoo.com
9	Dr. Ahmed Qasim Naji	IRAQ	Technical Deputy Officer of the Agriculture, Ministry of Agriculture, Baghdad Karrada area Baghdad	gasimnaji73@gmail.com

No	Name	Country	Credentials/ Professional	Email ID
NO	Maine	oountry	details and parent	
			organization details	
10	Dr. Rishi Sharma	ITALY	Senior Fishery Resources Officer, Food and Agriculture Organization of the United Nations, Rome, Italy	<u>Rishi.Sharma@fao.org</u>
11	Ms. Cristiana Fusconi	ITALY	Office Assistant, Food and Agriculture Organization of the United Nation, FAO Rome	cristiana.Fusconi@fao.org
12	Ms. Gladys Barongo Okemwa	KENYA	Senior Research Scientist, Kenya Marine and Fisheries Research Institute, Headquarter & Mombasa Station, Kenya	gladysokemwa@gmail.com
13	Dr. Edward Kimani	KENYA	Researcher, Kenya Marine and Fisheries Research Institute, Headquarter & Mombasa Station, Kenya	edwardndirui@yahoo.com
14	Mr. Mohamed Ahusan	MALDIVES	Senior Research Officer, Maldives Marine Research Institute Maldives (MMRI), Male', Maldives	<u>mohamed.ahusan@mmri.gov.</u> <u>mv</u>
15	Dr. Ahmed Riyaz Jauharee	MALDIVES	Deputy Director General, Maldives Marine Research Institute, Maldives	riyaz.jauharee@mmri.gov.mv
16	Ms. Luvna Caussy	MAURITIUS	Technical Officer, University of Mauritius, Mauritius	luvna_caussy@yahoo.com
17	Mr. Osvaldo Filipe	Mozambique	Oceano Graphier INoM - Instituto Oceano gráfico de Moçambique, Maputo	osvaldfilipe@gmail.com
18	Dr. Sachidananda Dutta	OMAN	Department of Marine Science and Fisheries, College of Agricultural and Marine Sciences, Sultan Qaboos University, Muscat	<u>s.dutta@squ.edu.om</u>
19	Dr. Mohamed Abdulla Ahmed Hasan Almusallami	OMAN	Director of Fisheries, Department Marine Environment Research Centre. UAE	Mohamed.almusallami@ead.go v.ae

No	Name	Country	Credentials/ Professional details and parent	Email ID
20	Dr. Issam Humaid Mohamed Al Rasady	OMAN	organization details Head of Survey and Fish Stock Assessment Section, Ministry of Agriculture, Fisheries and Water Resources, Marine Science and Fisheries Centre, Muscat	issamalrasady@gmail.com
21	Eng. Khalid Khalfan Al Mahrooqi	OMAN	Ministry of Agriculture, Fisheries and Water Resources Fisheries Development Specialist, Muscat	<u>khalidalmahrooqe1987@gmail.</u> <u>com</u>
22	Dr. Okbi Rejeibi	QATAR	Expert of Stock Assessment and Fishery Management Department, Ministry of Municipality	okbirjeibi@gmail.com
23	Dr. Ismail Mahmoud I Al_ Shaikh	QATAR	Assistant Director of Fish Wealth Department Fish Wealth, Department Ministry of Municipality, Qatar	imsheik@mm.gov.qa
24	Mr. Pierre Peries FRANAISE	SOFIA	Data Officer, South Indian Ocean Fisheries Agreement (SIOFA), Saint -Denis (La Réunion	pierre.peries@siofa.org
25	Dr. Alshwared, Waleed Khaled A	SAUDIA ARABIA	General Manager of Fisheries Research Centre in Eastern region, Ministry of Environment and Agriculture in the Kingdom of Saudia Arabia	<u>E19172@mewa.gov.sa</u>
26	Ms. Maya Maya Aisia Marday	SEYSCHELES	Fisheries Scientist, Seychelles Fishing Authority Seychelles	mmarday@sfa.sc
27	Ms.Stephanie Hollanda	SEYSCHELLES	Fisheries Biologist, Seychelles Fishing Authority, Seychelles	shollanda@sfa.sc
28	Ms. Bernadine Irene Everett	SOUTH AFRICIA	Scientist at SAAMBR Durban, KwaZulu-Natal South Africa	warriorbern@gmail.com
29	Mr.Sean Fennessy	SOUTH AFRICA	Oceanographic Research Institute (ORI), part of The South African Association for Marine Biological Research (SAAMBR); S. Africa	<u>seanf@ori.org.za</u>

No	Name	Country	Credentials/ Professional	Email ID
			details and parent organization details	
30	Dr. Sujeewa Haputhantrige	SRI LANKA	Head, Marine Biological Resources Division, National Aquatic Resources & Research Development Agency	sisirahaputhantri@yahoo.com
31	Dr. Sinesha Karunarathne	SRI LANKA	Assistant Director Department of Fisheries & Aquatic Resources, Colombo Sri Lanka	sineshak@gmail.com
32	Mr. Said Mgeleka	TANZANIA	Senior Fisheries Research Officer, Tanzania Fisheries Research Institute, TAFIRI U. R. Tanzania-Mainland	<u>said.mgeleka@su.se</u>
33	Dr. Abdulla Nassor	TANZANIA	Zanzibar Fisheries Research Institute, ZAFIRI, U. R. Tanzania-Mainland	nassorabdulla@gmail.com
35	Dr. Ebrahim Abdulla Hussain Al Jamali	UAE	Director, Marine Environment Research Centers Department, Ministry of Climate Change and Environment, Dubai	eaaljamali@moccae.gov.ae
36	Dr. Dario Pinello	UAE	Head of Unit - Fisheries Assessment and Research, Terrestrial and Marine Biodiversity, Abu Dhabi, UAE	Dario.pinello@ead.gov.ae
37	Dr. El Sayed Farrag	UAE	Fish Researcher, Fish Research Marine Environment Research Centers Department, Ministry of Climate Change and Environment, Dubai	eefarrag@moccae.gov.ae
38	Dr. J Jayasankar	INDIA	Principal Scientist & Head, FRAEED, Central Marine Fisheries Research Institute (ICAR/CMFRI), Kochi, Kerala	jjsankar@gmail.com
39	Dr. Shoba Joe Kizhhakudan	INDIA	Principal Scientist & Head, Finfish Division ( <u>FFD</u> ), Central Marine Fisheries Research Institute (ICAR/CMFRI), Kochi, Kerala	jkshoba@gmail.com
40	Dr. U Ganga	INDIA	Principal Scientist Shellfish Division (SFD), ICAR – CMFRI, Kochi	gangajagan@gmail.com

No	Name	Country	Credentials/ Professional	Email ID
			details and parent organization details	
41	Dr. Eldho Verghese	INDIA	Senior Scientist, Central Marine Fisheries Research Institute (ICAR/CMFRI), Kochi – 682 018, Kerala	eldhoiasri@gmail.com
42	Dr. Geetha Sasikumar	INDIA	Principal Scientist, Fisheries Division (FFD), ICAR/CMFRI, Kochi – 682 018, Kerala	gs.pallath@gmail.com
43	Dr. Gyanaranjan Dash	INDIA	Senior Scientist. Shellfish Fisheries Division, FC ICAR CMFRI, Puri	gyanranjandashcmfri@gmail.co m
44	Dr. Rajan Kumar	INDIA	Scientist Veraval RS of ICAR-CMFRI Veraval	Rajmartyn007@gmail.com
45	Dr. Bhendekar Santosh Naganat	INDIA	Scientist Mumbai RS of ICR-CMFRI Mumbai	Santucofs@gmail.com
46	Dr. Anulekshmi Chellappan	INDIA	Senior Scientist & SIC Calicut RS of ICAR-CMFRI, Calicut	anulekshmic@gmail.com
47	Dr. C. Babu	INDIA	Senior Scientific Assistant Fishery Survey of India Fishing Harbour Complex, Fishing Harbour, Royapuram, Chennai, Tamil Nadu 600013	<u>babufsi@gmail.com</u>
48	Dr. John Chembian	INDIA	Scientist Fishery Survey of India Chennai, Tamil Nadu 600013	jchembian@gmail.com
49	Mr. GVA Prasad	INDIA	Scientist Fishery Survey of India Visakhapatnam Base of FSI Visakhapatnam, Andhra Pradesh	gummadiprasad09@gmail.com
50	Dr. Solly Solomon	INDIA	Senior Scientific Assistant Fishery Survey of India Cochin - 682005, Kerala	Solly.solomon@fsi.gov.in lazarsolly@gmail.com
51	Mr A E Ayoob	INDIA	Fishing Gear Technologist Fishery Survey of India Cochin - 682005, Kerala	ayoobmanikfan@mail.com
52	Ms Anju Joseph	INDIA	Jr Fishing Gear Technologist Fishery Survey of India Cochin - 682005, Kerala	anjujoseph1992@gmail.com
53	Dr. P. Krishnan	INDIA	Bay of Bengal Programme Inter Governmental Organisation (BOBP-IGO) Chennai 600018	krishnanars@bobpiro.org

No	Name	Country	Credentials/ Professional details and parent organization details	Email ID
54	Mr. M. Krishna Mohan	INDIA	BOBP-IGO, Chennai 600018	krishnamohan@bobpigo.org
55	Ms. V. Cheryl	INDIA	BOBP-IGO, Chennai 600018	v.cheryl@bobpigo.org
56	Dr. K Sunil Mohamed FAO Consultant	INDIA	Principal Scientist (Rtd), ICAR-CMFRI, Kochi, Kerala	ksmohamed@gmail.com
57	Dr. T.V. Sathianandan FAO Consultant	INDIA	Principal Scientist (Rtd), ICAR-CMFRI, Cochin, Kerala,	tvsedpl@gmail.com



### **APPENDIX B**

# Agenda and Timetable

## DAY 1: Sunday, 14 April

09:30-13:00	ARRIVAL OF GUESTS &
	CHECK-IN AT HOTEL TAJ VIVANTA, MARINE DRIVE, ERNAKULAM
16:30-17:00	WELCOME HI-TEA
17:00-19:45	BOBSAN REGIONAL DIALOGUE ON STRENGTHENING INFLUENCE OF SCIENTIFIC EVIDENCE ON FISHERIES MANAGEMENT DECISIONS : <u>INAUGURATION &amp; EXPERT TALKS</u>
	Dr. A. Gopalakrishnan, Director, CMFRI
	Dr. Chris Anderson, Professor, SAFS, Univ of Washington
	Dr. Olaf Jensen, Associate Professor, Univ of Wisconsin, Madison
	Programme Schedule Overleaf; FAO Workshop Participants are welcome to participate)
19:45- 21:00	NETWORKING DINNER

# DAY 2: Monday, 15 April 2024

09:00-09:30	1. Welcome and introduction of participants (Rishi Sharma)
09:30-09:45	2. Workshop goals & overview (Rishi Sharma)
09:45-10:00	3. FAO statistical areas and Area 51 (Rishi Sharma)
10:00-10:30	<ol> <li>Overview of FAO SOFIA &amp; introduction to the historical FAO approach to stock status reporting. (<i>Rishi Sharma</i>)</li> </ol>
10:30-11:00	Tea Break
11:00-11:30	Continue Session 4.
11:30-12:15	5. Overview of SDG14.4.1 reporting & linkages with SOFIA (Anne-Elise Nieblas)
12:15-12:30	6. RECOFI region (Sunil Md. , and AE)
12:30-13:30	Lunch
<b>12:30-13:30</b> 13:30-13:45	Lunch7. FAO stock assessment tiers and uncertainty definitions ( <i>Rishi S</i> )
13:30-13:45	7. FAO stock assessment tiers and uncertainty definitions ( <i>Rishi S</i> )
13:30-13:45 13:45-14:30	<ul> <li>7. FAO stock assessment tiers and uncertainty definitions (<i>Rishi S</i>)</li> <li>8. FAO &amp; FAO Revised stock status estimation for Area 51 (<i>Sunil and Sean</i>)</li> </ul>
13:30-13:45 13:45-14:30 14:30-15:15	<ul> <li>7. FAO stock assessment tiers and uncertainty definitions (<i>Rishi S</i>)</li> <li>8. FAO &amp; FAO Revised stock status estimation for Area 51 (<i>Sunil and Sean</i>)</li> <li>9. The new approach to stock status estimation (<i>Sunil and Sean</i>).</li> </ul>
13:30-13:45         13:45-14:30         14:30-15:15         15:15-15:45	<ul> <li>7. FAO stock assessment tiers and uncertainty definitions (<i>Rishi S</i>)</li> <li>8. FAO &amp; FAO Revised stock status estimation for Area 51 (<i>Sunil and Sean</i>)</li> <li>9. The new approach to stock status estimation (<i>Sunil and Sean</i>).</li> <li>Tea Break</li> </ul>
13:30-13:45         13:45-14:30         14:30-15:15         15:15-15:45         15:45-16:00	<ul> <li>7. FAO stock assessment tiers and uncertainty definitions (<i>Rishi S</i>)</li> <li>8. FAO &amp; FAO Revised stock status estimation for Area 51 (<i>Sunil and Sean</i>)</li> <li>9. The new approach to stock status estimation (<i>Sunil and Sean</i>).</li> <li>Tea Break</li> <li>Session 9 Continues</li> </ul>

### 17:00-17:30 **12.** Break out group session (RECOFI and SWIOFC groups) (*Facilitators: Rishi, Sunil & Sean*)

#### Discussion points:

- What are the relative strengths and weaknesses of each approach?
- How accurate are FAO catch data?
- $\circ \quad \textit{How accurate are assessments using each method?}$
- Are there missing data and/or assessments at the country level?
- Are the species representative?

#### 18:45-19:00 ASSEMBLY & SESSION RECAP

19:00-20:15 BOBSAN REGIONAL DIALOGUE ON STRENGTHENING INFLUENCE OF SCIENTIFIC EVIDENCE ON FISHERIES MANAGEMENT DECISIONS : <u>EXPERT TALKS</u> The Smoke Screen: Bridging Evidence and Implementation - 1 Dr. Ricardo Oscar Amoroso, Consultant, Univ of Washington

Dr. Michael De Alessi, SAFS, Univ of Washington

20:15 - 2130 WORKSHOP DINNER

### DAY 3: Tuesday, 16 April 2024

09:00-9:30	Reference lists of stocks (Sunil and Sean)				
9:30-10:15	1. Break out group session (RECOFI and SWIOFC groups) (Facilitators: Rishi, Sunil and Sean)				
	- Discussion points:				
	<ul> <li>Does your country/territory have a formal reference list of stocks?</li> </ul>				
	<ul> <li>How was it established?</li> </ul>				
	<ul> <li>Are current Area 51 stocks relevant to your country?</li> </ul>				
	<ul> <li>Are current country-level species assessments likely to meet the FAO criteria? Are they representative as indicator species for all fisheries?</li> </ul>				
	What are the barriers/challenges for your country to identify your own reference list of stocks?				
10:15-10:45	Tea Break				
10:45-11:15	2. Assessment methods (by Area 51 sub-regions) (Sunil and Sean)				
11:15-11:55	<b>3.</b> Break out group session (RECOFI and SWIOFC regions) ( <i>Facilitators: Rishi, Sunil and Sean</i> )				
	- Discussion points:				
	<ul> <li>Does your country have an <u>established</u> harvest management system (data collection &gt; assessment &gt; management)?</li> </ul>				
	<ul> <li>What assessment methods are used in your country?</li> </ul>				
	<ul> <li>What is the local technical capacity for conducting stock assessments and for collecting the data they require? Consider the frequency of data collection and conducting assessments.</li> </ul>				
	<ul> <li>What are the challenges to data collection and assessing stocks?</li> </ul>				
11:55-12:00	Summarizing results ( <i>Rishi Sharma</i> )				
12:00-13:00	Lunch				
13:00-13:10	Recap of Discussions (Sean and Sunil)				
13:10-13:45	4. Break out group reports (Sean and Sunil)				

13:45-14:00	5.	Country reporting to FAO ( <i>Rishi Sharma</i> )
14:00-14:30	6.	Break out group session (RECOFI and SWIOFC groups) (Facilitators: Rishi, Sean & Sunit
	-	Discussion points:
		<ul> <li>What are your current country-level systems for reporting to FAO?</li> </ul>
		<ul> <li>What are your challenges in reporting to FAO?</li> </ul>
		<ul> <li>What support do you need to improve reporting to FAO?</li> </ul>
14:30-15:00	7.	Break out group reports ( <i>Rishi Sharma</i> )
15:00-15:30	Te	ea Break
15:30-16:00	8.	Introduction to FAO resources and support options (Rishi Sharma)
16:00 -16:15	Su	mmary of options available ( <i>Rishi Sharma</i> )
16:15-16:30	9.	VRE (Anne Elise)

## DAY 4: Wednesday, 17 April 2024

09:00-10:45	1. SRA+ Overview (Arni Magnusson)	
10:45-11:15	Tea Break	
11:15-12:15	2. FAO data storage procedures (Anton Ellenbrook/PierFrancesco)	
12:15-13:15	Lunch	
13:15-14:00	3. Infographic (Jana and Polina)	
14:00-14:30	4. Using Github ( <i>Rishi Sharma</i> )	
14:30-15:00	<ul> <li>5. Break out group session (RECOFI and SWIOFC) (<i>Facilitators: Rishi, Sunil and Sean</i>)</li> <li><i>Discussion points:</i></li> </ul>	
	<ul> <li>Countries discuss their potential for using Github and resources.</li> </ul>	
	<ul> <li>Groups/countries to document their position and any requests for further support and provide to facilitators.</li> </ul>	
	Countries to critically assess their capabilities and resources to use these tools.	
15:00-15:30	Tea Break	
15:30-15:45	6. Group discussion of the latest Area 51 stock status report ( <i>Rishi Sharma</i> )	
	- Report Outline and Discussion	
	- Finalizing comparisons and lists	
	7. Finalizing results for SOFIA 2026 and beyond	
15:45-16:15	Open Discussion: Endorsements/Next Steps (Rishi Sharma)	

# 18:45-19:00 ASSEMBLY & SESSION RECAP

19:00-20:15	BOBSAN REGIONAL DIALOGUE ON STRENGTHENING INFLUENCE OF SCIENTIFIC
	EVIDENCE ON FISHERIES MANAGEMENT DECISIONS : EXPERT TALKS
	The Smoke Screen: Bridging Evidence and Implementation - 2
	Dr. Ray Hilborn, Professor, SAFS, Univ of Washington
	Dr. Michael Melnychuk, Chief Adviser, MSC
20:15 - 2130	WORKSHOP DINNER

## DAY 5: Thursday, 18 April

08:30-09:00	CHECK-IN AT HOTEL TAJ VIVANTA, MARINE DRIVE, ERNAKULAM
09:00-10:30	TRAVEL TO KUMARAGAM
10:30-11:00	ASSEMBLY AT HOUSE BOAT
11:00-11:30	WELCOME HI-TEA
11:30-13:00	PANEL DISCUSSION: STRENGTHENING INFLUENCE OF SCIENTIFIC EVIDENCE ON
	FISHERIES MANAGEMENT DECISIONS

13:00-14:00	Lunch	
14:00-14:45	<ol> <li>Global monitoring the status and trends in fisheries management: a review (Rishi Sharma)</li> </ol>	
14:45-15:30	2. Introduction to the pilot Fisheries Management Effectiveness questionnaire ( <i>Rishi Sharma</i> )	
15:30-16:00	Tea Break	
16:00-16-25	Session 6 Continues	
16:25-16:30	Final comments/close for the day ( <i>Rishi Sharma</i> )	

## 18:30-19:00 CHECK-IN AT ZURI RESORT, KUMARAGAM

## DAY 6: Friday, 19 April 2024

09:30-09:40	1. Welcome and recap of Day 4 (Rishi Sharma)
09:40-10:30	2. Selection of sub-sample (if needed) of stocks from reference list and definition of
	fisheries to be scored ( <i>Nicolas Gutierrez</i> )
10:30-11:00	Tea Break
11:00-12:30	3. Scoring process ( <i>Nicolas Gutierrez</i> )
12:30-13:30	Lunch
13:30-14:00	Continue with Session 3
14:00-15:00	4. Presentation of scores and feedback on the questionnaire (Nicolas Gutierrez)
15:00-15:30	Tea Break
15:30-16:20	5. Discussion on how to modify or improve the questionnaire or process ( <i>Nicolas Gutierrez</i> )
16:20-16:30	Meeting close ( <i>Rishi Sharma</i> )

## DAY 7: Saturday, 20 April 2024

09:15-09:30	ASSEMBLY & SESSION RECAP
09:30-10:30	BOBSAN REGIONAL DIALOGUE ON STRENGTHENING INFLUENCE OF SCIENTIFIC EVIDENCE ON FISHERIES MANAGEMENT DECISIONS : <u>EXPERT TALKS</u>
The Smoke Screen: Bridging Evidence and Implementation - 3	
	Dr. Beth Fulton, CSIRO, Australia
	Dr. Keith Sainsbury, Inst. of Marine & Antarctic Studies, Univ. of Tasmania, Australia
10:30-11:00	TEA BREAK
11:00-12:30	BOBSAN REGIONAL DIALOGUE: <u>CLOSING SESSION</u>
12:30-14:00	LUNCH





Bay of Bengal Programme Inter-Governmental Organisation 91, Saint Mary's Road, Abhiramapuram, Chennai - 600 018, India Tel: #91 44 42040024; www.bobpigo.org; Email: info@bobpigo.org