Food and Agriculture Organization of the United Nations

BOBP

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CMFRI

BOBSAN Regional Dialogue on

Strengthening Influence of Scientific Evidence on Fisheries Management Decisions

14 - 20 April 2024 I Kochi I India

Outcome Document

Organized alongside the
FAO Workshop for the Validation of
Area 51 Stocks, Kochi

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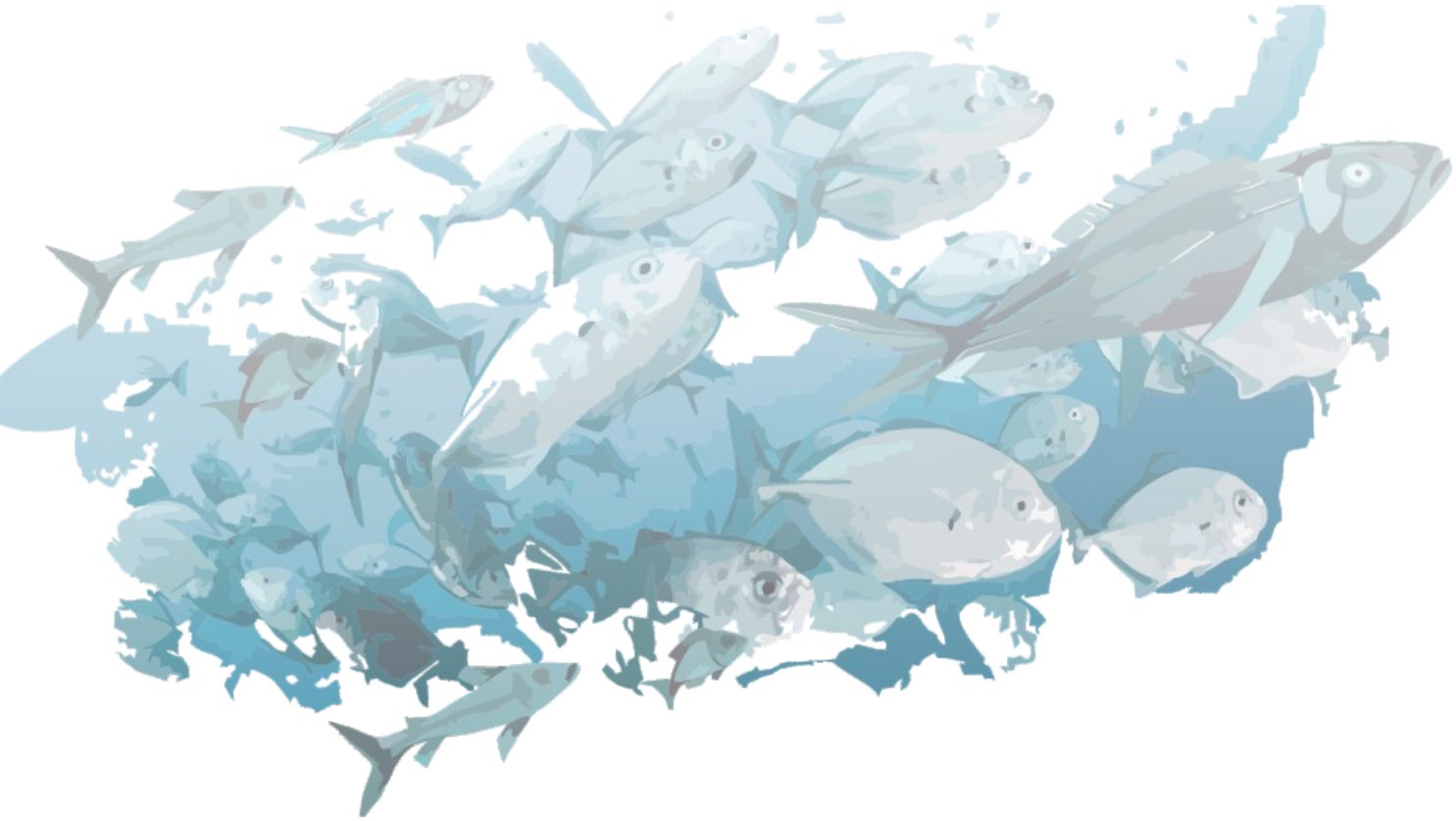

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Foreword

Mr. Dhammika Ranatunga
Additional Secretary
Ministry of Fisheries
New Secretariat, Colombo, Sri Lanka
&
Chair, BOBLME Project Steering Committee

The Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) has been at the forefront of fostering regional cooperation for sustainable fisheries management among its member countries—Bangladesh, India, Maldives, and Sri Lanka. Recognizing the complexities and shared nature of marine resources, BOBP-IGO has established the Bay of Bengal Stock Assessment Network (BOBSAN), a platform dedicated to enhancing stock assessment methodologies and promoting coordinated fisheries management in the region.

The Second Regional Dialogue of the BOBSAN, held from 14-20 April 2024 in Kochi, India, is a testament to the commitment and collaborative spirit of our member countries—Bangladesh, India, Maldives, and Sri Lanka. This dialogue, held alongside the FAO Workshop for the Validation of Area 51 Stocks, has brought together an impressive array of experts, policymakers, and fisheries managers from over 20 countries. The aim was clear: to strengthen the influence of scientific evidence on fisheries management decisions.

The discussions and outcomes of this dialogue underscore the critical need for a unified, evidence-based approach to managing our shared marine resources. By leveraging the collective wisdom and technical expertise of its network, BOBSAN will provide robust data and scientific insights essential for the effective implementation of the BOBLME project's strategies. This collaboration will enhance our understanding of fish stock dynamics, improve regional fisheries management practices, and support the sustainable use of marine resources in the Bay of Bengal.

I would like to extend my heartfelt thanks to BOBP-IGO for their leadership in organizing this dialogue, and to all the participants who contributed their knowledge and expertise. The dedication and active participation of the member countries have been pivotal in making this event a success. Special thanks are also due to the Scientific Advisory Committee (SAC) of BOBSAN for their invaluable guidance and support.

As we look ahead, this report serves as a crucial roadmap for our continued efforts in enhancing regional cooperation and technical capacities. The strategic priorities and action points identified in this dialogue will guide our future initiatives and ensure that our fisheries management practices are sustainable, effective, and adaptive to the changing environmental and socio-economic conditions.

The BOBLME project remains committed to supporting these endeavors and working closely with BOBP-IGO and our member countries to achieve our shared goals. Together, we can create a brighter and more sustainable future for the fisheries and communities of the Bay of Bengal.

I, on behalf of the Government of Sri Lanka and also as the Chair of the BOBLME Project Steering Committee, wish the BOBP-IGO and BOBSAN Members all success.

(**Dhammika Ranatunga**)

Contents

1. BOBSAN: An Overview

The BOBP-IGO is a regional fisheries advisory body with Bangladesh, India, Maldives, and Sri Lanka as its contracting parties. It is mandated to enhance cooperation amongst its member- countries and other countries in the region (e.g., Indonesia, Malaysia, Myanmar, and Thailand) for sustainable fisheries management.

Recognizing the need for coordinated effort among the member countries for regional fisheries management, BOBP-IGO has instituted Bay of Bengal Stock Assessment Network (**BOBSAN)**, a network of government-nominated stock assessment practitioners, with BOBP-IGO as its nodal point. BOBSAN aims to leverage the collective wisdom and experiences of its members to enhance stock assessment methodologies and contribute to coordinated regional fisheries management. The network operates on the premise that addressing the complexities of fisheries management in the Bay of Bengal requires a unified effort, with each member contributing to the shared goal of sustainable and effective stock assessment in the region.

The BOBSAN is guided by a **Scientific Advisory Committee (SAC)** comprising leading researchers and practitioners from across the world as under:

- **Dr. Ray Hilborn,** *Professor, School of Aquatic and Fishery Sciences (SAFS), Univ of Washington, Seattle*
- **Dr. Rishi Sharma,** *Senior Fisheries Resources Officer, FAO, Rome*
- **Dr. E. Vivekanandan,** *International* **C***onsultant & Adviser, BOBP-IGO, Chennai*
- **Dr. Chris Anderson,** *Professor, SAFS, Univ of Washington, Seattle*
- **Dr. Michael Melnychuk,** *Professor, SAFS, Univ of Washington, Seattle*
- **Dr. Michael De Alessi,** *Research Scientist, SAFS, Univ of Washington, Seattle*
- **Dr. Olaf Jensen,** *Associate Professor, Univ of Wisconsin, Madison*
- **Dr. Keith Sainsbury,** *Assoc. Professor, Institute of Marine & Antarctic Studies, Univ of Tasmania, Australia*
- **Dr. Beth Fulton,** *Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia*
- **Dr. Ricardo Oscar Amoroso,** *Consultant, Univ of Washington, Seattle*

The SAC of BOBSAN shall:

- **provide** expert guidance and oversight to the activities of the network to advance stock assessment methodologies and foster sustainable fisheries management practices in BOB region.
- **contribute** to build regional perspective in fisheries management based on global experiences.
- **strengthen** the BOBSAN with their rich global experiences in harmonizing data collection protocols, developing regional stock assessment models and managing the fishery based on evidence.
- **enhance** the effectiveness of BOBSAN towards its engagement in strategic planning, policy development, and knowledge dissemination activities in the Bay of Bengal region.
- **align** the regional initiative with global best practices by providing necessary guidance and updates.
- **leverage** the network for implementing specific studies relevant to the region and significant to the global targets, through sensitization and knowledge sharing.

2. Second Regional Dialogue: An Overview

The **Second Regional Dialogue** of the BOBSAN was organised during 14 - 20 April 2024 alongside the FAO Workshop for the Validation of Area 51 Stocks held at Kochi, India during 15-19 April 2024, wherein the stock assessment experts from over 20 countries from among the western Indian Ocean region attended. The dialogue provided for the integration of diverse perspectives, including scientific, ecological, economic factors, leading to more holistic and effective management strategies.

2.1. Objectives of the Dialogue

The objective of the BOBSAN Regional Dialogue was to foster collaboration and enhance the effectiveness of the stock assessment and the decision-making process by addressing shortfalls in technical capacity for sustainable fisheries management and promoting collaboration between scientists and managers for informed decision-making.

This dialogue aimed to:

- Introduce the SAC and the potential that the network can unleash with expert inputs and also explore potential regional studies that can be commissioned in the respective countries under the guidance of the SAC.
- Facilitate understanding between scientists and policymakers regarding their respective roles and expectations in the decision-making process.
- Identify areas for improved communication and collaboration between fisheries managers and stakeholders.
- Implement strategies to build confidence among scientists and policymakers.
- Showcase successful applications of scientific data in fisheries management to inspire best practices.

2.2. Key Issues & Discussion Points

Issue 1: **Limited Technical Capacity for Sustainable Fisheries Management**

The capacity limitation among stakeholders in fisheries management is a significant issue that can impede effective decision-making and sustainable practices. This shortfall in capacity can manifest in various ways i.e., technical expertise, technological infrastructure, data quality and availability, and financial resources.

Issue 2: **Lack of Collaboration Between Scientists and Managers for Fisheries Decision-Making**

The lack of collaboration between fisheries managers and scientists poses a substantial challenge to informed decision-making in fisheries management. This issue is characterised by a deficit in regular and structured communication channels between these two crucial stakeholders. The absence of effective dialogue hampers the seamless integration of scientific insights into management decisions, hindering the development of comprehensive and adaptive strategies for sustainable fisheries practices.

3. Second Regional Dialogue: Opening Session

Dr. P. Krishnan, Director, BOBP-IGO, underscored the significance of regional collaboration in the context and gave an overview of the BOBSAN Regional Dialogue and introduced the participants to the BOBSAN SAC, comprising fishery experts from around the world.

Dr. Rishi Sharma, Senior Fishery Officer, Food and Agriculture Organization of United Nations (FAO) discussed about managing fisheries in a data limited conditions usually prevails in developing countries. He also stressed on the importance of collaborative approaches for management of transboundary stocks in the region.

Dr. J. Jayasankar, Principal Scientist, ICAR-CMFRI provided the opening remarks. He presented an overview of stock assessment work of the ICAR-CMFRI, a leading fisheries institute in the region. He emphasised the importance of quality of data in deriving reliable stock assessment results.

4. Second Regional Dialogue: Technical Sessions

The technical talks were presented by the members of the BOBSAN-SAC. A Panel Discussion to deliberate the issues and strategies for strengthening the influence of evidence on the management decisions, was held on 18 April 2024.

A summary of the presentations is provided below.

4.1. Leveraging the BOBSAN Framework

Dr. Chris Anderson
SAFS, University of Washington, Seattle.

"FPI is a cost-effective method for the region to assess fisheries management strategies"

Assessment with the Fishery Performance Indicators

Fishery Performance Indicators (FPIs) is a rapid assessment tool designed to evaluate the sustainability of a fisheries system across the 'triple bottom line' dimensions of ecology, economics, and community. It comprises 68 output and 54 input metrics, organised into 5 components and 15 dimensions, providing a comprehensive assessment of a fisheries value chain. FPIs measure the benefits generated from fishery resources, evaluate the status of the current fishery regime, and identify key points for designing effective management strategies. FPIs are particularly useful in data-limited situations, as they rely on expert assessments to rate various metrics on a 1 to 5 scale. This approach, while not always precise, allows for accurate evaluations based on available data, including old surveys or surveys of different scopes. The FPI structure is frequently used as a criterion for evaluating development and investment projects.

BOBSAN can utilize FPIs to implement a broad-based monitoring process, including baseline evaluations, measuring improvements in enabling factors, and tracking outcome improvements. FPIs facilitate a 'triple bottom line' perspective, helping link scientific inputs to specific outcomes with empirical support. This tool offers a feasible and affordable way to assess the health of fisheries, extending beyond simple performance descriptions to evaluate management strategies, inform theory of change development, and characterize fish stocks through the complementary Fisheries Performance Assessment Toolkit App. With approximately 180 case studies already completed, FPIs can be tailored to specific research objectives or embedded within regional project designs, making them a versatile and valuable tool for fisheries management.

Video Link for the talk available at:
https://drive.google.com/file/d/1_ePrMzk9-wwAbCmH3PvBQ0N-PCl5MSok/view?usp=drive_link

Assessing and Managing Climate change Impacts on Fish Stocks

Dr. Olaf Jensen
University of Wisconsin, USA

"Climate change vulnerability assessment is a necessary step towards precautionary approach in Fisheries Management"

The Global Sea Surface temperature (SST) is increasing rapidly over past decades, and it is increasing rapidly than predicted. Except, in the few areas of North Atlantic, there is a change in the SST. Number of impacts have been seen around the world, one of them is the changing fish distribution towards the poles and to the deeper waters, as mechanism to find the environment conducive for the species. Ocean Adapt is a website which tracks and visualizes change in the distribution of marine animals using scientific survey data for North America and is managed by Rutgers university. Global Sea Level Rise is impacting juvenile rearing habitats of fish worldwide, the shallow nearshore habitats are highly inundated, making it difficult for juveniles. In the last couple of years, world has witnessed several coral bleaching events around the globe. Studies also show that there is change in phenology with respect to climate change, but the changes are not consistent with the species. A few big questions for fisheries and climate changes are: *How has ocean warming influenced fisheries productivity; What determines whether productivity has been positively or negatively influenced by ocean warming; and What does climate change mean for global fisheries productivity?*

Biomass dynamic models can be used to identify the temperature dependent fisheries productivity. Marine Fishes can be positively (or) negatively impacted by climate change / global warming. A climate vulnerability assessment helps identify the impacts of climate change on ecosystems and species without extensive monitoring. It is adaptable, allowing for various knowledge sources, and can highlight key uncertainties, aiding in the prioritization of conservation efforts. However, this method might not always reflect true climate impacts on productivity, requires a good understanding of biological sensitivity to environmental variables, and often uses arbitrary weighting of metrics. This information can help in defining buffers for scientific uncertainty, allowing managers to set precautionary margins to account for gaps in knowledge and unpredictable environmental changes. It also guides targeted research and monitoring, focusing efforts where climate impacts are likely to be most significant. Moreover, climate vulnerability data can aid in developing management agreements for shifting stocks, as species may migrate in response to changing climate conditions.

Video Link for the talk available at:
https://drive.google.com/file/d/1ERtS4nfnfk6oxbFtjznvk9l7bvVw2BMY/view?usp=drive_link

Fisheries Management Index: Development and Applications

Dr. Michael Melnychuk
Chief Adviser, Marine Stewardship Council

"Management policies analysis and Population ecology assessment help evaluating sustainable harvesting outcomes"

The Fisheries Management Index (FMI) is a crucial tool for assessing the effectiveness of management systems in achieving their objectives for individual fish stocks. To evaluate these systems, fishery experts from various countries participated in a survey that examined several management attributes, including research, management practices, enforcement, socioeconomics, and stock status. FMI data and surveys have been instrumental in evaluating the effectiveness of management practices for high seas tuna stocks, assessing the intensity of management in global groundfish stocks, and associating data with predictions for global fishery reforms. These data sources provide a comprehensive overview of both state-managed and unmanaged fisheries in the United States, helping to characterize the status of fisheries under varying degrees of oversight. FMI data also play a significant role in stock status and management overviews by FAO regions, offering valuable insights into regional fishery trends. Furthermore, these datasets are used as prior information in Stock Reduction Analysis (SRA+) models. The FMI index is particularly useful for predicting the impacts of implementing fishery reforms and for categorizing stocks into 'managed' and 'unmanaged' groups. Worldwide FMI data indicate a positive association with the qualitative stock status index. However, there is a less pronounced relationship between FMI and fishing pressure, primarily due to limited data availability.

Video Link for the talk available at:
https://drive.google.com/file/d/1mCWZuUQwZtfMLh4LwiabaBiOwis6xHMG/view?usp=drive_link

4.2. The Smoke Screen: Bridging Evidence and Implementation

Bridging Evidence and Implementation: Setting Context

Dr. Ricardo Oscar Amoroso
Consultant, University of Washington

"Model free management procedures may still be the effective and best for a given situation"

In fisheries management, success is typically gauged by the extent to which specific objectives are achieved. These management objectives can be established at various levels and may be either explicit, with clear, well-defined goals, or implicit, inferred from broader policies or practices. One of the goals of effective management is to keep stocks within a specific range of abundance. Harvest and management strategies in fisheries rely on a set of core elements like a monitoring program, fishery indicators and harvest control rule to ensure sustainability and ecological health. Stock assessments often generalize a depletion model to estimate fish populations. This approach relies on knowing the catch and observing an indicator that reflects changes in the fish population. The fundamental concept is to remove a known amount of biomass from the fishery and simultaneously track an index of abundance, such as catch-per-unit-effort (CPUE). By analysing these changes, the depletion model helps infer population dynamics and assess the impact of fishing on stock levels, allowing managers to make informed decisions to maintain sustainability. The increasing availability of computing power has made it easier to conduct a variety of stock assessment types, even in data-poor contexts. However, these methods are highly sensitive to the data and underlying assumptions. In many cases, the critical role of these data and assumptions is not thoroughly examined, potentially leading to inaccuracies or misinterpretations in the assessments. Despite the sophistication that modern models bring, model-free management procedures—those that rely on simpler, more straightforward rules and less on complex modelling—can still be the most effective and appropriate approach for a given situation. These procedures can offer greater flexibility and resilience in the face of data uncertainty, emphasizing the need for adaptable management strategies in fisheries.

Video Link for the talk available at:
https://drive.google.com/file/d/1rWrQZ6l9i8wNmGTF6Is-qPVoAowpEG_G/view?usp=drive_link

Dr. Michael De Alessi
SAFS, University of Washington, Seattle

"Incentive-based management approach is a better option for sustainable management"

Sustainable fisheries, while rooted in ecological principles, are also deeply intertwined with social and economic sustainability. A critical aspect involves the livelihoods of fishermen, ensuring they have stable income and work conditions. Additionally, social cohesion within fishing communities plays a significant role in fostering a sense of belonging and mutual support among those who rely on fishing for their sustenance. Achieving these social and economic goals requires effective cooperation and coordination among various stakeholders, including fishery managers, community leaders, and fishermen. The New Zealand lobster fishery is as an effective example of sustainable fisheries, showcasing effective integration of property rights, strong industry leadership, and a commitment to scientific research. The fishery operates under the Individual Transferable Quota (ITQ) system, which was implemented in 1990, focusing on limiting harvests rather than fishing effort. In 1992, a management group was established to oversee the fishery's operations, and the following year saw the launch of a voluntary logbook program to collect data on lobster catches. By 1997, the fishery had established a contract with the Ministry of Fisheries for comprehensive data collection. Biological sustainability is further ensured through evolving harvest models designed to increase the likelihood of sustainable harvests, providing quota owners with a structured approach. The economic sustainability of the fishery is also bolstered by the agreement among quota owners to use these models to achieve stability and abundance. In the coming years, Indonesia wanted to implement quota in the Indonesia waters except nearshore fisheries (within 12nm of shore) and internal waters. One major problem is limited data for implementing the quota system in Indonesia. Fishery management should be guided by 'informed judgement' to establish prudent controls over the risky aspects of fishing, like unrestricted catches, the number of fishers, and the number of vessels.

Video Link for the talk available at:
https://drive.google.com/file/d/1ToyaJ8B2Z8cAGg8JWkMnY52n7KS9u-5w/view?usp=drive_link

Practical Management Advice for Stock Assessment Practitioners and Fishery Managers in South Asia

Dr. Ray Hilborn
SAFS, University of Washington, Seattle

"There is no substitute for visiting the vessels and talking to the fishers to understand your fisheries"

Appropriate fishery management helps in reducing fishing pressure and rebuild fish stocks. Good fisheries management depends on clear objectives, continuous performance measurement, and a deep understanding of fishery dynamics. It requires a variety of tools to maintain sustainability, along with active collaboration with industry stakeholders. To define your fisheries management objective, consider whether to prioritize food security, employment, profit, or environmental protection. Measuring performance in fisheries management requires a robust science program. While estimating total catch is crucial, understanding trends in catch and fishing effort provides deeper insights into the health of fish stocks and the success of management strategies. This involves tracking the catch per unit effort (CPUE), conducting scientific surveys, monitoring the size distribution of fish, and analysing trends across different fishing fleets. Understanding your fisheries requires your science team and managers to engage directly with fishing fleets by visiting vessels and speaking with operators to gain firsthand knowledge of their practices and challenges. To determine which tools to use in fisheries management, consider methods like allocation of catch, regulating fishing effort through fleet size or gear limits, enforcing size limits on fish or equipment, implementing time or area closures, and ensuring you have sufficient enforcement capacity to support compliance. Effective implementation of TACs requires a reliable stock assessment and rapid and effective in-season measurement of catch. This is almost impossible with large number of fishing vessels in many landing locations. Mixed stock fisheries must be managed as complex systems, regulating fishing effort to achieve the optimal species mix, even if this means some species may be overfished while others are underexploited. Collaboration with industry is crucial in successful fisheries management, as industry stakeholders often possess invaluable knowledge about the fishery. Decentralizing management through community-based approaches or devolving responsibilities to administrative levels lower than national governments can enhance this collaboration. In the U.S., for instance, many fisheries management decisions are made at eight different regional management councils. In fisheries management, the U.S. succeeded by decentralizing decision-making, establishing a robust science and enforcement program, and fostering significant collaboration with the fishing industry. However, issues arise where the focus shifted to stopping overfishing instead of optimizing fishery benefits, with too much micro-management at the national level, inappropriate use of total allowable catches (TACs) in mixed-stock fisheries, and mandatory rebuilding timelines. Additional criticisms include the imposition of area closures through administrative decisions lacking scientific justification, such as in the case of some Marine Protected Areas (MPAs).

Video Link for the talk available at:
https://drive.google.com/file/d/1-vKIUEos4_Nf-lI5yBr4xkdaKQDhJqg3/view?usp=drive_link

Shifting Baselines in the BOB Region: Messages for the Managers

Dr. Beth Fulton
CSIRO, Australia

"Single species fisheries science is really misleading for in a multi-species scenario"

Fisheries can be broadly categorised into multiple single species fisheries, mixed species fisheries, and multispecies fisheries. Multiple single species fisheries, accounting for about 50% of global landings, serve as the basis for many legal frameworks and are the most assessed due to their focus on individual species. However, most of the fishery in the world are not single species fishery. In contrast, mixed species fisheries involve different species caught in the same gear, often due to shared habitats or ecological overlaps. Multispecies fisheries further embrace biological and technological interactions among species, requiring a broader approach to understanding the complex relationships within ecosystems. Although mixed and multispecies fisheries are more common, particularly with the impacts of climate change, they necessitate a systems perspective to ensure sustainable practices. More information on the catch composition helps us to understand the fishery and supports implementation of EBFM. Catch composition provides valuable insights into how management decisions and fleet changes affect fishing patterns and overall system dynamics, with shifts in catch patterns serving as indicators of regulatory, technological, or fleet-based influences on the fishery. Changes in internal structure often signal shifts in function, with structure being easier to measure and serving as the basis for many reliable indicators. The Ecosystem Traits Index (ETI) offers a system-level indicator that integrates various factors, including catch composition, internal structure, and management cues. The ETI score offers insights into the status of an ecosystem, helps identify the need for management actions, and can be responsive over time, allowing it to be used in a forecast mode to anticipate changes and support proactive decision-making. Plotting fishing pressure on an ecosystem against its unfished profile gives you a range of acceptable harvest rates. Traditional management schemes that focus on single-species reference points often overlook the intricate trophic relationships among different species and the technical interactions between various fishing gears. This narrow approach can disconnect management goals from the broader ecosystem or socioecological context in which fisheries operate. In contrast, aggregate approaches offer a practical means of estimating sustainable extraction rates at an ecosystem-wide level for multispecies fisheries. By focusing on a collective perspective, these approaches avoid the inconsistencies and conflicting guidance that can arise from single-species management methods, providing a more practical and operational step toward ecosystem-based fisheries management.

Video Link for the talk available at:
https://drive.google.com/file/d/1w5aj3azN80jsOSHZ_HO6ZZK7EVkxHwaJ/view?usp=drive_link

EAFM and multi-species approaches and indicators for managing fisheries sustainably

Dr. Keith Sainsbury
Institute of Marine and Antarctic Studies,
University of Tasmania, Australia

"Lack of data does not hinder the implementation nor the success of EAFM"

The move toward sustainable fisheries management has seen a growing focus on ecosystem-based approaches, driven by international agreements like UNCLOS, CBD, the Fish Stocks Agreement, and the FAO Code of Conduct, all of which increasingly prioritize ecosystem considerations. These developments have spurred efforts to create a management framework that aligns with these broader objectives. As part of this ecosystem-oriented shift, a range of indicators has been developed to measure ecological, economic, institutional, and social aspects of fisheries management. However, many of these indicators focus primarily on ecological elements, with less emphasis on economic, institutional, and social factors. While the indicators available can be both qualitative, like the EAF implementation tool, and quantitative with varying degrees of complexity, they often examine specific elements of fisheries without offering a comprehensive view of the entire ecosystem's structure and function. To address this limitation, a new project aims to develop ecosystem indicators that better encapsulate the overall state of fisheries, providing a more holistic perspective on sustainable management practices. The developed ecosystem indicators are for topology, resilience, food-web distortion and ecosystem traits index. These indicators can be used alone or in combination, also at a single point in time or in a time series.

The five fisheries (SE Australia, East Berring Sea-USA, Kerala-India, North Central Chile and Gulf of Thailand) under consideration in the project demonstrated a diverse array of analytical capabilities, including single species modelling for some species, ecosystem modelling like Ecopath with Ecosim (EwE), descriptive analyses such as species cluster analysis, and estimated ecosystem indicators. Although data limitations were noted by all, they weren't significantly impeding progress, and each fishery had the technical expertise to implement Ecosystem Approach to Fisheries Management (EAFM). A general multispecies harvest strategy was proposed, which combines selected single-species assessments with broader ecosystem assessments, offering a flexible approach applicable across various systems. However, this strategy demands considerable responsibility from the fisheries, as the indicator species must represent the full spectrum of fishery objectives, covering ecological, economic, and social goals, and including both target and depleted species. Ecosystem indicators can aid in this process, but a key challenge is the clear identification of the target ecosystem, a step often overlooked. The success of this multispecies strategy depends on a comprehensive understanding of the ecosystem and the careful selection of indicators that align with the holistic objectives of the fishery.

Video Link for the talk available at:
https://drive.google.com/file/d/1w5aj3azN80jsOSHZ_HO6ZZK7EVkxHwaJ/view?usp=drive_link

4.3. Panel Discussion: Strengthening Influence of Scientific Evidence on Fisheries Management Decisions

This Panel Discussion was led by Dr Krishnan, BOBP-IGO. Science-based fisheries management was identified as the way forward in achieving sustainability in the fisheries sector. The hypothesis put forward was that scientific evidence does not drive the policy and management decisions, and are largely common sense driven, adopting precautionary principles, and do not wait for evidence. Most often scientific evidence ends up proving the 'successful outcome' of management decisions taken based on common sense/precautionary principle, which sustains status quo.

The participants were divided into two groups, one representing fishery managers and the other representing fisheries researchers. The areas of cooperation and disagreement between the two groups were widely discussed. Participants also identified potential solutions to overcome disagreements.

Panel discussion held onboard a Houseboat on Vembanad Lake, Kochi.

Issues

- The lack of / inadequate collaboration between fisheries managers and scientists poses a substantial challenge to informed decision-making in fisheries management.
- Institutional mechanisms for exchange of evidence are largely need-based & not fully formalised.

Scientists' Perspective

During the panel discussion, the scientific community emphasised the critical importance of understanding the stock status of fisheries for effective management. Many researchers are actively working on this, but there's a concern about how much of this data informs regulatory decisions. The need for a formalised communication channel to bridge this gap was stressed, advocating for a stronger integration of scientific findings into management policies. Additionally, scientists highlighted the tendency for the scientific community to focus on publications rather than direct policy-making, indicating a disconnect between research outcomes and actionable decisions. They called for policymakers to prioritize scientific evidence in decision-making processes, emphasizing the importance of putting fish populations first in management strategies.

Managers Perspective

The fisheries managers emphasised that they play a crucial role in translating scientific evidence into actionable management plans. However, challenges such as uncertainty in data availability and the complexity of stock assessment analyses were acknowledged. Managers expressed the need for real-time answers and data-driven insights to address the concerns of fishermen effectively. Collaborative decision-making involving scientists, policymakers, experts, and stakeholders was highlighted as essential for sustainable fisheries management. The panel recognised the success stories from countries like the Maldives and Oman, where collaborative efforts between scientists and managers have led to stronger fisheries management practices. The managers emphasised that the evidence provided by the scientists need to be supplemented with clear and actionable recommendations and they also need to assure that the evidence will be available periodically with great certainty.

Plenary Discussion

The Panel discussed the issues confronting fishing sector, advocating for better support for fishermen and integration of scientific recommendations into policy decisions. Lack of direct evidence guiding policy-making was highlighted, with policies sometimes influenced by socio-economic factors rather than scientific evidence. Accurate and up-to-date data are essential for informed decision-making, emphasizing the importance of basing policies on scientific evidence.

The scientific evidence in decision-making is important and managers need to seek advice from scientific committees and rely on data-driven analyses to inform policies and regulations. The Panel called for open dialogue between managers and stakeholders to collectively address challenges, involving community organizations.

The panel highlighted the need for the following measures:

- Formalised communication channel between scientists, managers, policymakers, and stakeholders in the fishing industry. This channel should prioritize scientific evidence, real-time data access, and collaborative decision-making processes.
- Investment in data analysis, policy implementation, and community engagement initiatives. This was deemed crucial for the long-term sustainability of fisheries.
- Integration of scientific recommendations into policy decisions and fostering open dialogue to address challenges effectively.
- Holistic approach that considers the perspectives of all stakeholders involved. This is essential for ensuring the health and resilience of fisheries ecosystems.
- Continual improvement in fisheries management, emphasizing collaboration between scientists, managers, and stakeholders, and the integration of scientific recommendations into decision-making processes.
- Building capacity of the scientists to share more practical and usable evidence; that of managers to appreciate the value of evidence & use effectively.
- Demonstration of success of management decisions taken based on scientific evidence.

- Engagement with the fishing community and stakeholders is important to understand their perspectives and engage them towards sustainable fishing practices.
- Use of current data in decision-making and avoiding reliance on outdated information influenced by political factors.

Earlier, a SLIDO poll was conducted among participants about strengthening the scientist-fisheries manager interface: profiling perceptions of scientists and stock assessment practitioners. Results from the poll shows the followings:

1. Key management decisions taken on a routine basis by fishery managers for sustainable fisheries management include closed season (for some species), decisions on seasonal bans for some overfished stocks, decisions on gear criteria and specifications, licensing, ensuring efficient collection of landing data, defining minimum legal size of fish at time of catch, biologically sustainably exploiting stocks while ensuring food security, employment and income for communities and implementation of TED (turtle excluder device) and protection of turtle breeding grounds
2. Management decisions that fisheries managers want to take but are constrained due to lack of data include length-at-first maturity of major species, spawning season, full closure of the fisheries in the common spawning season, lack of information on size at maturity for several species, reducing days at sea for active fishing fleets, conversion of bottom trawling to midwater trawl and setting catch and effort limits of sea cucumber and chank fishery and lobster fishery.
3. Evidence that the scientist-manager looked for taking decisions were data on fish spawning season, fish catch length, simplistic, easy-to apply stock assessments; availability of better quality data, more details on stocks and their exploitation, status (B/Bmsy, F/Fmsy, SPR) of individual stock based on strong time series catch data and LF data, biological evidence, effort data, biomass estimation, catch data, MSY and MAC, scientific data and reports and publications, including government publications, feedback on fisheries and local ecological knowledge of fishers
4. Under capacity development needs for managers, global best practices and significance of data for fisheries management with illustrations were accorded high priority.
5. Participants agreed that the institutional mechanism / channel for sharing evidence / communication between scientists and managers is quite robust, that the expectations from the scientists are communicated to them clearly; and that it is important to seek the guidance of the stock assessment practitioners even when management decisions are taken under data limited situations based on precautionary principle. They were reasonably confident with scientific evidence and recommendations while making management decisions and agreed (50%) that these decisions were welcomed by the fishing community.'
6. The recommended actions are difficult to implement' was something that bothered many. Primary concerns with scientists/ stock assessment practitioners include scientists not exposed to ground realities and clarity in communication.
7. A number of challenges were perceived in using the evidence such as whether the management decision is acceptable to the fishery societies, socio-economic aspects for fishermen, improper understanding, bureaucratic procedures, legislative procedures etc., lack of funds and manpower and politics.
8. Advancements in resource management techniques were prioritised for capacity development needs of practitioners. Inadequate funds for surveys / focus for resource management scored high on issues with respect to the generation of scientific evidence / advice and on their use. A primary concern with managers was that they worked in their own realm and are not adequately responsive.

5. BOBSAN Concluding Session: Leveraging BOBSAN Framework: Prioritizing Actions for Strengthening Collaborations

The concluding session of BOBSAN was held on 20 April 2024. Dr. Krishnan presented a report on the outcomes of the deliberations during the event and set the context for the final session, where the next steps for BOBSAN were collectively charted.

5.1. Remarks of the Chief Guest

Dr. Rishi Sharma, Senior Fishery Officer, FAO underscored the need for continual improvement and adaptability in fisheries management, emphasizing the integration of scientific recommendations and resolution of data gaps. He highlighted the importance of collaborative efforts between scientists, managers, and stakeholders in decision-making processes.

Dr. Sharma said that a strategic approach to capacity development in fisheries management, focusing on long-term programmes with institutionalization, leadership identification, and regional knowledge sharing. Tailoring training to local contexts, languages, and technical levels while promoting adaptability and accessibility are key principles guiding FAO's efforts in fostering resilient fisheries sectors worldwide. The FAO's capacity development efforts in fisheries management span 19 regions worldwide, with a primary focus on Small Island Developing States (SIDS), Southeast Asia, and select parts of Africa. To ensure lasting impact, a strategic approach is imperative.

Dr. Sharma presented a brief on the FAO's Capacity Development Rules in Fisheries Management.

- Rule 1 emphasizes the need to design and implement long-term Capacity Development Programs (CDPs), with rigorous follow-ups after each training event.
- Rule 2 advocates for the institutionalization of CDPs, fostering collaboration with national agencies and local institutions while minimizing dependency.
- Identifying leaders and motivated individuals is the focus of Rule 3, essential for successful train-the-trainer initiatives and institutionalization efforts.
- Rule 4 encourages the replication of successful models throughout the region, establishing regional networks for knowledge sharing.
- Rule 5 highlights the importance of implementing a modular approach to training, catering to varying technical and information levels among trainees.
- Rule 6 stresses the necessity of conducting training in local languages, facilitated by interpreters or local experts.
- Rule 7 underscores the need to tailor training to local contexts, considering cultural, technical, and data-specific nuances.
- Rule 8 emphasizes adaptability, allowing for adjustments in pace and technical levels during training.
- Rule 9 suggests balancing user-friendliness with complexities when designing training tools and processes, promoting the development of accessible applications. Lastly,
- Rule 10 emphasizes accessibility by making all training materials downloadable, ensuring widespread availability and utilization.

These rules collectively pave the way for effective and sustainable capacity development in fisheries management, aligning with FAO's commitment to fostering resilient and inclusive fisheries sectors worldwide.

5.2. Remarks from BOBSAN members

The BOBSAN

members from Bangladesh, Sri Lanka, Maldives and Sri Lanka actively participated in the discussion. They complemented the BOBP-IGO for this initiative and recognised that the BOBSAN has immense potential to leverage the spirit of collaboration and cooperation, as envisioned in the FAO Framework for Regional Collaboration.

Bangladesh highlighted the need for capacity development in fisheries law and policy, sharing regional success stories, assessing OCEM potential, and emphasizing evidence-based management. They also focused on skill management through training, harmonizing data collection at national and regional levels, developing management plans and assessment reports, and enhancing capacity building in research, policies, and management. Additionally, Bangladesh noted the lack of monitoring in management and stressed the importance of the Fisheries Management Effectiveness Index (FMEI) and Ecosystem Approach to Fisheries Management (EAFM) or co-management strategies.

India emphasised identifying states for shared resources, reducing fishing effort, and collaborating on regional management involving institutions. They advocated for training trainers and sharing training materials, integrating CMFRI and FSI data, and creating a common mechanism for unified data collection with a detailed manual.

The Maldives focused on managing tuna-specific resources, assessing reef fish due to depleting stocks, and offering short courses for trainers. They proposed creating an online repository with lectures and video clips explaining best practices, sharing region-specific examples, and addressing data limitations in multi-gear, multi-species fisheries. The Maldives also emphasised identifying stakeholders for training on reef, Hilsa, and tuna fisheries, developing templates for all, and creating a data census.

Sri Lanka highlighted the need to strengthen data collection in coastal fishing, gather biological data, and collaborate with Japanese scientists using menu-driven analysis. They stressed the importance of data harmonization, moving from country-level to regional management, and training regional experts like BOBSAN-II. Sri Lanka also suggested developing guidelines for stock status studies for national research, exploring open-source data possibilities, and conducting case studies for regional fisheries management. They underscored the need for a strong management-scientific interface, workshops for data collection, financing data collection, assessing species vulnerability, understanding the impact of stock assessments, and considering the social aspects of EAFM and co-management.

The Members collectively prioritised the following action points for the BOBSAN to pursue in the ensuing period.

(1) **Document Regional Success Stories:** BOBP-IGO shall develop a template on how the success are to be monitored, illustrative cases - data collection, analysis, VMS, stakeholder engagement, resource recovery and implementation of fisheries management programs like EAFM, fishing regulations and MCS, Framework for data organization; Manual on data collection; strengthening interface between the scientists.

(2) **Documentation of Fisheries OECMs:** Other Effective Conservation Areas (OECMs) are among the area-based management tools (ABMTs) defined under the CBD, to which the member countries are party. FAO has published a manual detailing how to assess and identify a fisheries management area as fisheries OECM. BOBP-IGO shall conduct an online sensitization workshop on the methodology for the nominated officials from the member countries and the BOBSAN can contribute to identification and description of potential OECMs from the respective countries.

(3) Collective Regional Studies: The SAC of BOBSAN had provided specific leads on studies that can be conducted by BOBSAN as a group by networking with the national scientists. BOBSAN prioritised the following areas for possible joint research, for which BOBP-IGO shall provide necessary technical support.

a. Assessing Fisheries Management Effectiveness Index for specific fishery

b. Profiling the Fisheries Performance Index

c. Assessing the vulnerability of the stocks to develop management action plans.

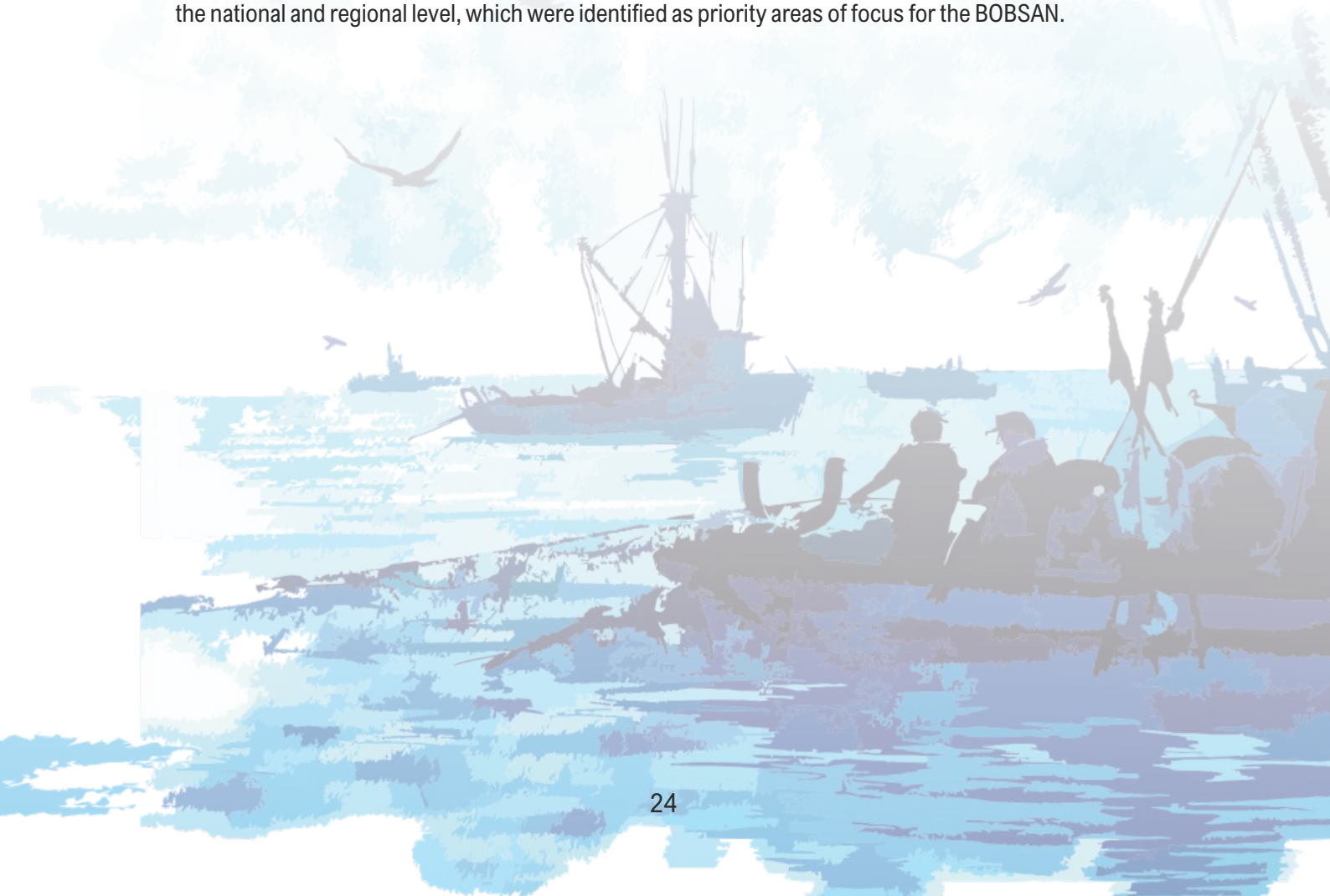
d. Tracking the impact of climate change on major commercially shared fish stocks.

The fishery/ fishing method pertaining to the shared fishery resource among the member countries will be prioritised and specific studies will be commissioned to contribute to policy making.

BOBP-IGO will leverage the members of the Bay of Bengal Policy Research Group (BOBPRG) members including research scholars to support in this endeavour. BOBP-IGO shall facilitate in developing collaborative research projects with suitable funding sources, in consultation with the BOBSAN.

(4) Aligning National Stock Assessment to FAO's global effort: In agreement with the FAO's global effort to strengthen and harmonize stock assessment practices, BOBSAN shall publish guidelines on methods of stock assessment for the benefit of the national agencies including the universities and independent researchers. The guideline will also include listing of the fish stocks shortlisted for prioritised stock assessment by FAO for reporting biennially in its flagship publication State of Fisheries and Aquaculture (SOFIA). The guideline would be of particular interest to the doctoral student who can use it as compass for contributing to the global stock status information.

(5) Database on catch and stock status: BOBSAN shall work with the member countries, subject to the concurrence of the concerned governments, to develop a database to report catch data (species wise, gear wise, craft wise geo-tagged catch data), which will be accessible to the researchers to carry out and report stock assessments results. The Oman model will be comprehensively reviewed for this purpose and a framework suitable for the BOB region will be developed based on the existing data collection and dissemination policies. This will contribute to faster research and policy inputs for fisheries management at the national and regional level, which were identified as priority areas of focus for the BOBSAN.



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Programme Agenda

14 April 2024 (Sunday)

IST 1630 - 1700	**Welcome Hi-Tea**	
	Session 1: BOBSAN Opening Session	
IST 1700 - 1715	Opening Remarks and BOBSAN Activities	**Dr. P. Krishnan** *Director, BOBP-IGO*
IST 1715 - 1730	Expert Comments on Entry Point Activities	**Dr. Rishi Sharma** *Sr. Fisheries Resources Officer, FAO*
IST 1730 - 1800	Potential actions for strengthening collaborations	**Country Reflections**
IST 1800 - 1815	Chief Guest Remarks	**Dr. A. Gopalakrishnan** *Director, CMFRI*
	Session 2: Leveraging the BOBSAN Framework	
IST 1830 - 1855 **Seattle 0600 - 0625**	Assessment with the Fishery Performance Indicators	**Dr. Chris Anderson** *Professor, SAFS, Univ of Washington*
IST 1855 -1920 **Madison 0825 - 0850**	Methodological approach for assessing climate impacts on stocks	**Dr. Olaf Jensen** *Associate Professor, Univ of Wisconsin, Madison*
IST 1920 – 1945	Interaction	**Participants**
IST 1945 - 2100	**Welcome Dinner**	

15 April 2024 (Monday)

IST 1845 - 1900	**Session Recap**	
	The Smoke Screen: Bridging Evidence and Implementation - 1	
IST 1900 - 1925 **Seattle 0630 – 0655**	Bridging Evidence and Implementation: Setting Context	**Dr. Ricardo Oscar Amoroso,** *Consultant, Univ of Washington*
IST 1925 - 1950 **Seattle 0655 - 0720**	Case Studies: Strong Scientist – Manager Interface	**Dr. Michael De Alessi** *SAFS, Univ of Washington*
IST 1950 - 2015	Interaction	**Participants**
IST 2015 - 2130	**Workshop Dinner**	

17 April 2024 (Tuesday)

IST	**1845 - 1900**	**Session Recap**	
		The Smoke Screen: Bridging Evidence and Implementation - 2	
IST **Seattle**	**1900 - 1925** **0630 – 0655**	Practical management advice for stock assessment practitioners and fisheries managers in South Asia	**Dr. Ray Hilborn** *Professor, SAFS, Univ of Washington*
IST **Seattle**	**1925 - 1950** **0655 - 0720**	Fisheries Management Index: Development and Applications	**Dr. Michael Melnychuk** *Chief Adviser, MSC*
IST	**1950 - 2015**	Interaction	**Participants**
IST	**2015 - 2130**	**Workshop Dinner**	

20 April 2024 (Saturday)

		The Smoke Screen: Bridging Evidence and Implementation - 3	
IST **Hobart**	**0930 - 0950** **1500 - 1520**	Shifting baselines in the BOB region: Messages for the managers	**Dr. Beth Fulton,** *CSIRO, Australia*
IST **Hobart**	**0950 - 1010** **1520 - 1540**	EAFM and multi-species approaches and indicators for managing fisheries sustainably	**Dr. Keith Sainsbury,** *Inst. of Marine & Antarctic Studies, Univ of Tasmania, Australia*
IST	**1010 – 1030**	Interaction	**Participants**
IST	**1030 – 1100**	**Hi-Tea**	
		BOBSAN Concluding Session	
IST	**1100 – 1215**	**Panel Discussion: Way forward: Leveraging BOBSAN Framework: Prioritizing Actions for strengthening collaborations.** **Country Representatives discuss:** • New Study Area: Climate/FMEI/FPI • Constituting Working Groups & Defining Roles • Collaborative Stock Assessment / Regional Projects • Harmonization of Data collection protocols - Reporting Mechanisms	
IST	**1215 – 1230**	Concluding Remarks	**Dr. Rishi Sharma,** FAO **Dr. P. Krishnan,** BOBP-IGO
IST	**1230 – 1400**	**Lunch**	

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