



TECHNICAL ASSISTANCE TO IORA FOR THE IMPLEMENTATION AND COORDINATION OF IORA ACTION PLAN ON FISHERIES, AQUACULTURE AND MARINE ENVIRONMENT¹

Webinar on “Initiate a capacity building programme in fish stock assessment (activity 2.1)”

13 July 2021

REPORT

A. INTRODUCTION

Stock assessments provide crucial scientific information to resource managers. They play a key role in the management process by providing the scientific basis for fisheries management setting annual catch targets and limits to ensure that stocks are not overfished, and overfishing does not occur. Stock assessments are a key component of the stewardship of living marine resources to benefit the IORA countries.

To interpret data needed for stock assessment and management, knowledge is needed of resource population processes (e.g., growth, natural mortality, and recruitment), and of the fisheries (e.g., selectivity, catches), and of appropriate data sampling processes to collect information on landings, abundance, recruitment and distribution of the stock in question. Unfortunately, there is a lack of understanding of these aspects for most stocks, and there is a lack of relevant and reliable data needed to assess the status of all stocks. Further, the lack of stock assessment scientists and the consequent lack of directed technical effort are obstacles to assessing all stocks and to improving fisheries management - there is a lack of critical mass due to the specialized nature of stock assessment. This is however not a situation unique to the Indian Ocean, it is a global problem.

One way to start overcoming this is via collaboration among institutions, and IORA is attempting to promote this, following the indication by numerous IORA countries of their need for capacity building in stock assessments as expressed in the IORA Working Group on the Blue Economy. A first step is to determine what stock assessment capacity exists in the IORA region and what institutions can provide capacity building. This was done by preparing a compendium of training and courses on stock assessment in the IORA region together with a collation and examination of responses by Member States (MS) to a questionnaire on their capacity, uses, and needs for stock assessment in their country.

¹ Technical Assistance implemented by COFREPECHE in consortium with SOFRECO.

The sources of information were analysed and provided in two review reports that were circulated to IORA MS for information. The reports found that stock assessment capacity needs are considerable, that stock assessment practitioners are often better formed through graduate and post graduate courses facilitated between IORA members, themselves, and there was a significant need for training of fisheries managers through short-term courses.

Also, it is important to know about the availability of technical support which a major UN Specialised Organization with competence in this domain, provides (e.g., FAO/IOTC). To this end, this webinar will present the two reviews of existing capacity that have been undertaken as part of the IORA Action plan and with the support of the AFD through the Technical Assistance to IORA, and will also present on some of the work that FAO does in this domain.

The general objective of the webinar was to present information on capacity, needs and uses of stock assessment in the IORA region, the training and courses on stock assessment available and some of the support that FAO provides to this domain.

The specific objectives were the following:

- To present the findings of a technical report on “Existing capacity, uses and needs for stock assessment in the IORA region” based on the responses received from IORA MS;
- To present the findings of a technical report on “A compendium on stock assessment training and courses in the IORA region”;
- Present some of the ways that FAO assists countries in building up capacity in stock assessment, and how this could assist the IORA region;
- To interact with participants on the results of these reports and presentations and seek their thoughts on how stock assessment capacity can be increased in the IORA region.

The recording of the webinar can be accessed at:

<https://www.dropbox.com/s/i81o5fodei1oqca/IORA-AFD%20Webinar-20210713%200709-1.mp4?dl=0>

B. OPENING AND SPEAKERS

Opening: **Dr Gatot H. Gunawan**, Acting Secretary-General/Director of IORA

Moderator: **Aubrey Harris**, Main Resident Expert for the AFD technical assistance to IORA implemented by COFREPECHE and SOFRECO

Speakers:

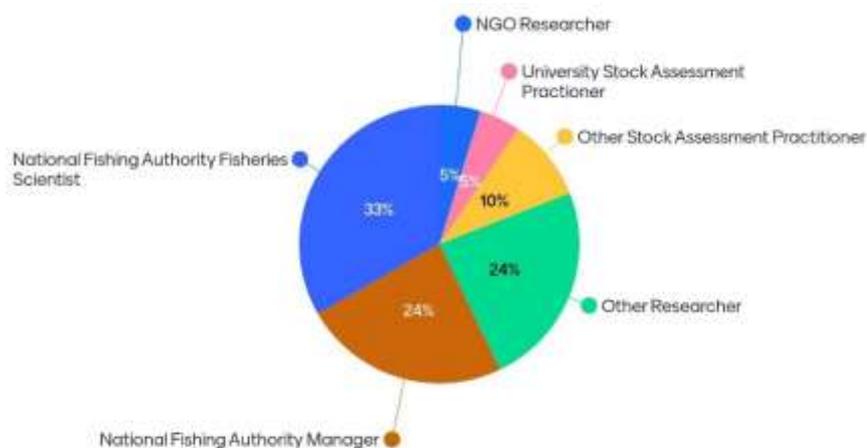
1. **Aubrey Harris**, Main Resident Expert for the AFD technical assistance to IORA implemented by COFREPECHE and SOFRECO, Mahé, Seychelles.
2. **Dr Sean Fennessy**, Assistant Director, Oceanographic Research Institute, Durban, South Africa and Fisheries Management Expert for the AFD technical assistance to IORA implemented by COFREPECHE and SOFRECO.
3. **Rishi Sharma**, PhD, Senior Fisheries Resources Officer, Food and Agriculture Organization of the United Nations (FAO), Rome.

The webinar agenda and the profiles of the Speakers are presented in Annexes I and II.

C. ATTENDEES

A total of 142 persons pre-registered for the webinar. These were from: Australia 2; Bangladesh 8; Egypt 1; France 10; India 1; Indonesia 5; Iran 3; Kenya 7; Madagascar 5; Maldives 2; Malta 2; Mauritius 13; Mozambique 3; Oman 2; Pakistan 1; Seychelles 16; Somalia 14; South Africa 5; Sri Lanka 6; Tanzania 23; Thailand 1; Tunisia 1; Turkey 4; United Arab Emirates 2; United Kingdom 1; USA 2; Zimbabwe 2.

There was a maximum of 83 connections recorded at any one time and 56 connections were recorded one hour after the start of the webinar. On the response to the question “What is your involvement with stock assessment primarily as”, there were 21 answers (44% of the audience of 48 at the time). The response as seen below showed that: 33% were from National Fishing Authority Fisheries Scientists; 24 % from National Fishing Authority Managers; 24% were Other Researchers; 10% were other Stock Assessment Practitioners; 5% were University Stock Assessment Practitioners; and 5% were NGO Researchers.



D. PRESENTATION BY SPEAKERS

1. Presentation by Aubrey Harris, Main Resident Expert, AFD Technical Assistance to IORA implemented by COFREPECHE and SOFRECO: **Existing capacity, uses and needs for stock assessment capacity in the IORA region.**

From responses received from IORA Member States (MS) last year, the presentation provided an analysis of these results. After introducing the approach used, it examined the responses in relation to the existing capacity (numbers of persons, institutional location and technical methods used) and needs expressed, including strengths as well as constraints and threats. It continued in examining how stock assessment information is communicated and used for fisheries management, examples of recent stock assessments in the responding countries, and indicative first estimates of the numbers of persons requiring training in stock assessment before finishing with some concluding observations and comments. A copy of the presentation can be accessed at: https://www.dropbox.com/s/t0me4h5kylehfw/IORA_AFD%20Webinar%20%20presentation%20to%20the%20Stock%20assessment%20webinar.pdf?dl=0

2. Presentation by Dr Sean Fennessy, Assistant Director, Oceanographic Research Institute, Durban, South Africa and Fisheries Management Expert for the AFD technical assistance to IORA implemented by COFREPECHE and SOFRECO: **Compendium of stock assessment training and courses in the IORA region.**

The presentation provided a summary of the availability of the IORA MS capacity to provide stock assessment training at a variety of levels and to a range of stakeholders. The methods used to identify this capacity was first described, followed by a synopsis and evaluation of stock assessment training in the region. This included examples of the various levels of training, the institutions/entities which provide it, and the stakeholders that the training is aimed at. A copy of the presentation can be accessed at:

<https://www.dropbox.com/s/1t57p0eh9guz0ka/Stock%20assessment%20webinar%20Fennessy%20FINAL.pdf?dl=0>

3. Presentation by Rishi Sharma, PhD, Senior Fisheries Resources Officer, Food and Agriculture Organization of the United Nations (FAO), Rome: **An Overview of Stock Assessment Building Programs in SE. Asia with examples on Sri Lanka, Myanmar, and Indonesia.**

The presentation provided a multi-faceted approach on building capacity in the SE Asian Region using online training workshops, and individual programs tailored to meet the country's needs in the region. The key take away was that there is no substitute for good on the ground programs collecting basic data for stock assessment, and repeating capacity building initiatives in the region to improve assessment capabilities in different countries. The approach pursued in a country will depend on the country's capacity and resource availability to address the needs in their region. A copy of the presentation can be accessed at:

<https://www.dropbox.com/s/6krsliacxqqdssm/IORA%20Stock%20assessment%20webinar%20-%20Rishi.pptx?dl=0>

E. QUESTION AND ANSWERS

Muhsan Ali, Assistant Professor, Lasbela University of Agriculture, Water and Marine Sciences, Pakistan:

Why were the stock assessment institutions in Pakistan not included in the Compendium?

Aubrey Harris - The Compendium included only those countries that were Members of IORA.

Anesh Govender, Fisheries Researcher – stock assessment, South Africa:

What is the issue with short courses?

Aubrey Harris – The difficulty arises gathering stock assessment skills is a long process. Sometimes participants can get actively engaged in a short course, but when they return to their countries, they are unable to follow up on the course. Subsequent short courses may not have the same previous participants.

Sean Fennessy – the issue is addressed at regional training where participants aggregate from different countries for a short course then go back home and where the critical mass of practitioners is not available for their support. The capacity does not get developed further. If it is done nationally, and provided it is followed up at postgraduate or more advanced courses, it is not at issue. At regional level having these short courses for multiple countries, participants often don't develop sufficiently afterwards.

Anesh Govender – drew attention to university short courses of stock assessment for Honours students that were useful as bait to capture the interest of a few students who could then be enrolled in a dissertation, with a supervisor. It worked well, so short courses should not be ruled out.

Rishi Sharma – agreement with Anesh of the need to develop that interest and follow up over time nationally. Possibly out of 100 regional course participants, 5 or 6 may continue to further their skills over time.

Paul de Bruyn, Science Manager, IOTC – at regional level, countries send participants hoping that they can conduct their own stock assessments when they return, and that is unrealistic. IOTC is abandoning those kinds of courses in favour of teaching participants what kinds of data go into assessments, how to critically assess the data, and critically assess the results that come out of it. This is a more useful exercise than trying to teach participants how to do stock assessment in a short course. It's the changing nature of the courses we are running.

Narriman Jiddawi, Vice-Chair, Women in Marine Sciences Network, Tanzania – short course and long course. For me a long course is a degree. But within the degree you get a short course in stock assessment. But sometimes you may be invited to a short course in Belgium or in Malta and you do a one-month or two-month short course specifically on stock assessment, and that was very useful. Personally, I've done a degree on fisheries management and then did short course that boosted me up. The definition of a short course has to be clearer.

Aubrey Harris - The short courses being referred to here are rather a regional one-week course in stock assessment, rather than the post-graduate courses that you are referring to.

Jean-Pierre Cauzac, Strategic Project Manager, CLS, France:

In the schematic from EDF, there is a requirement for collecting more data. What practical solutions are available to collect more catch and landing data from thousands of small ports and verify them?

Rishi Sharma - You always start where you are and try and improve over time. You often have information that you may think not useful, but which can tell you quite a lot about the fishery. You really need to look at it in detail, just a CPUE trend from a fleet operative over 15 years, for example. The risk assessment approach that we took showed that the overall abundance declined by some 40% if you believe the assumption of [the relationship of] CPUE and biomass. Information even such as indicators can lead to robust management systems. You have to think of the biology of what you are managing and often with simple indicators you can have robust systems.

Anesh Govender – data poor situations, that is always the problem. Even CPUE may not be available. What I've found is usually available is mean weight at a particular year, so can get this time series, and if you think about mean weight as the total biomass of a particular species divided by the number of fish of that species, some simple indicators can be derived. Must be available in most countries, and that is where the starting point is, and you build up from there and decide where the gaps exist and be clear of the reason for collecting that data. Your technicians or observers are not blindly collecting things and not understanding how it is used.

Farhar Tazim, Scientific Officer, Department of Fisheries, Bangladesh:

How is IORA supporting capacity building by providing funds to attend training programs?

Aubrey Harris - In terms of the project of technical assistance, IORA has many members, what we are trying to do is highlight the facilities that exist in the region, between countries. This is a start towards facilitation and initiation. Countries can then link up with other members and discuss some of the means that they can support each other. Funding of stock assessment courses is not the role of IORA, but countries can meet within working groups [and decide how they can pursue this]. Countries now have the facilities that are available [across the IORA region] and how they can be accessed. You can go to the exact sites.

Daroomalingum Mauree, SWIOFish1 Regional Project Coordinator, Commission de l’océan Indien, Mauritius:

Happy with the presenters, they were of high level. There have been the Fridtjof Nansen cruises in the Indian Ocean. When the questionnaires were prepared, were there references to those cruises. Have the countries mentioned that they have those cruise data for stock assessment data and are working on it as I see Rishi working in Myanmar and Sri Lanka on such data. Secondly, remote sensing data.

Aubrey Harris – Only 12 of the countries responded and there was only a brief mention of Fridtjok data.

Sean Fennessy – Fridtjok Nansen hasn’t visited much of the Southwestern Indian Ocean, other than Mozambique, and there has been, over the years, collaboration between the Fridtjok Nansen and the Mozambique fisheries institute analysing the data, biomasses etc. But that is the only country [in the SWIO] that the vessel has visited often enough to really make something of the data of those surveys. There are some cruises from the 1980s and some follow up of that in Tanzania, and didn’t visit Kenya again [affected by piracy at the time]. [For those reasons], there is little Nansen data that will support formal stock assessment [in the SWIO].

Rishi Sharma – Only other place was Tanzania and Kenya but only a one off. In terms of using remote sensing for chlorophyll content and primary production, it might be an indicator for recruitment, but have to consider biologically how meaningful it is, where you develop your sampling what kind of indicator you use and how you use it for management. You’d have to calibrate it with some real data to see how well it could work. You could then possibly develop an indicator and set up a system based on that.

Helene Gobert, AFD, France

Data limited stock assessment methods are evolving quite quickly - is this challenge part of the training courses that are being produced or is it not sufficiently well addressed?

Rishi Sharma – It's like any field, there is further development. But does not preclude its use today. Often instead of a package or a model, think of how you can develop the model from a biological viewpoint, what kind of information you'd use and how you'd use it in management. Think of the fundamental problem you are trying to solve.

Aubrey Harris - There are situations where you do not have the data and can only use data limited assessments. Remember that under the precautionary principle, this should not make managers averse to taking action. They can for example give some indication of direction that the stock is moving. Absence of high-quality data does not absolve fisheries managers of their responsibility to manage.

E. GROUP EXERCISE AND RESULTS

Six group-orientated questions were provided to understand the participants expectations and concerns about aspects of stock assessment training and fisheries management.

There were on average of about 25 responses across all questions which was about 1/2 of the audience at the end of the webinar.

Question: How have you become familiar with stock assessment?

The responses indicated that the majority of those participants had become familiar with stock assessment by on-the-job experience and it would appear that this would have been as part of their fisheries science training but also for a smaller group as part of post-graduate training and stock assessment specialisation. Interestingly, even though of lower importance, regional workshops had provided more familiarity than international workshops.

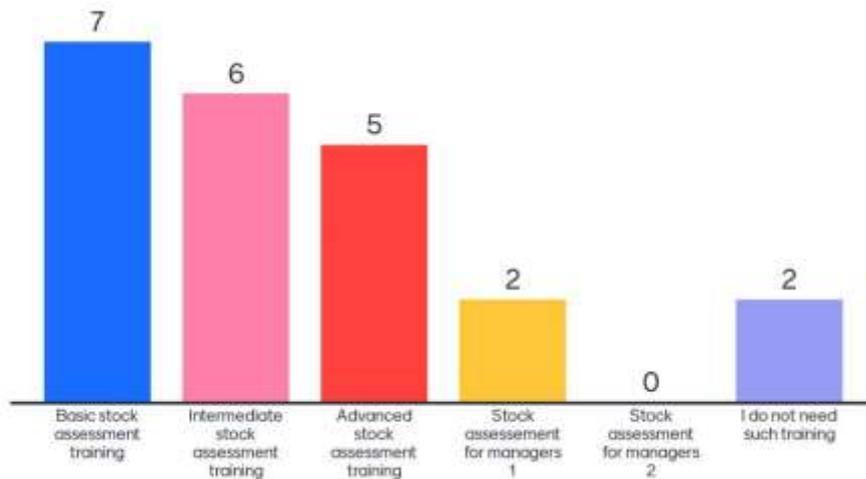


Question: If there were a regional training course that you could easily attend, would it be for?

More of the responses for a regional training course that could be easily attended sought for basic stock assessment training followed by intermediate and advanced in order of priority/need. The least perceived need was for stock assessment level 1 for managers. Nobody scored a need for stock assessment level 2 for managers. A couple of responses showed that some of the participants were already seasoned practitioners and didn't need such courses.

The lack of a perceived need for assisting fisheries managers understand stock assessment in a way that they could properly interrogate stock assessment results differed significantly from the responses that had been received from the questionnaires sent to the IORA member states last year. The high

perceived need for basic stock assessment training, on the other hand, very much reflected the results of the questionnaires.



Question: What are the most important issues for stock assessment capacity in your country?

Participants ranked the most important issue for stock assessment in their countries as “improved fisheries/survey data to enable stock assessment”, followed by “improved ability of the fisheries scientists to undertake stock assessments”. Ranked third in importance was “improved ability of fisheries managers to be able to understand results of stock assessments and make management recommendations”.



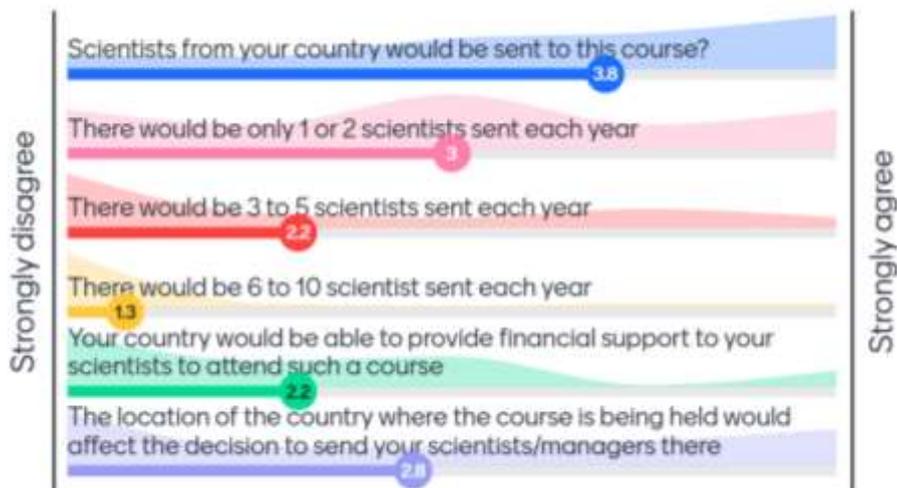
Question: The IORA region has stock assessment training facilities. If your country sends few or no scientists/managers for training, it is because: Please rank

The main reason that participants considered that there are few scientists/managers undertaking stock assessment training was because “they didn’t know about these courses / the courses are not well advertised”, followed by “the courses were too expensive”, followed by “Ministerial permission was not given to scientists/managers to attend courses”. Least ranked as a valid explanation were “there was no interest from scientist/managers to attend courses” and “your country’s scientists/managers have sufficient stock assessment capacity and do not need to attend such training courses”.



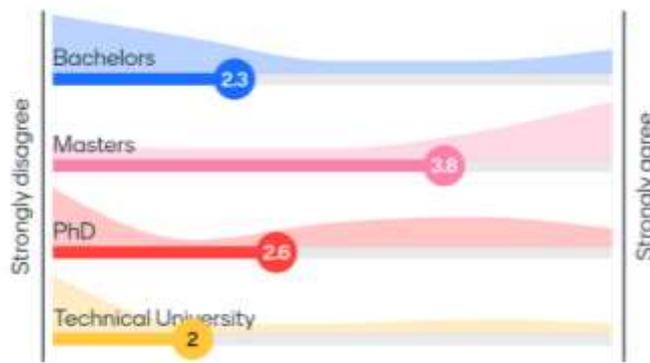
Question: If IORA organized a regular regional post-graduate course in stock assessment:

The response to this question confirmed, at least in the mind of the participants, that 1 or 2 scientists from their country would be sent to a regional post-graduate course in stock assessment if it was organized by IORA. There was not so much confidence that their countries would be able to provide financial support. The response was mixed as to whether the location of the country where the course would be held would affect the decision to send participants to such a course.



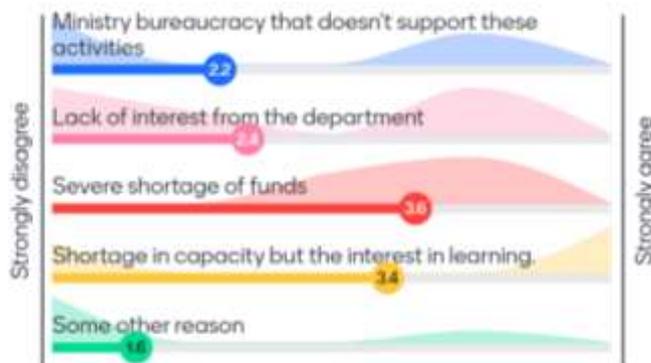
What is the university degree of the average stock assessment practitioner in your country?

From participant responses, stock assessment practitioners in their countries mostly held Masters Degrees, followed by PhDs.



What is the biggest hurdle to building stock assessment capacity in your country?

The biggest hurdle to building stock assessment capacity in the participants countries was seen as “severe shortage of funds”. The view was held by the majority of responses that there was interest in learning stock assessment even through there was a shortage of capacity in the countries. The responses were quite mixed and tending more towards disagreement in relation to ‘lack of interest from the department’ and “Ministry bureaucracy that doesn’t support these activities”. Participants didn’t consider that there was some other reason that had not been presented to them which acted as the biggest hurdle to building stock assessment capacity.



Webinar evaluation:

Participants were asked to score the webinar on: quantity of useful information; speakers’ knowledge of the topic; speakers’ skills/animation; content of slides; expectations of the webinar; and an overall score for the webinar. Generally, all scores were positive: the highest score (4.1) was for the speakers’ knowledge of the topic followed by general content of the slides (3.8) which was also the overall score for the webinar. The lowest positive score was for the participants expectations of the webinar (3.5). Judging from some of the questions asked, this could have been because some participants expected to hear more of proposals of upcoming courses to which they could benefit by attending.



Conclusion:

The webinar provided the opportunity to inform interested persons in IORA (and elsewhere) of the reports that had been produced by the AFD technical assistance on stock assessment capacity in the IORA region and of the training and courses that were available. It also provided an insight of some important stock assessment capacity building that FAO (including through IOTC) had been providing in the IORA region.

Among other things reflected in the questions as well as the response of participants was a distinct need to make knowledge and advertisements about stock assessment courses more visible in the IORA region. In that regard, the publications provided by the AFD technical assistance to IORA on this subject may be seen as an important start of a process that should alert the universities and institutions in the IORA region of the need for them to focus on such possible target groups. Also, of the possibility of perhaps using IORA as a means of increasing the profile of their courses and training.

Subsequent to the webinar the Main Resident Expert received many requests from participants for the presentations made at the webinar. Links to the presentations were subsequently made available to all the webinar participants, as well as all those other that had registered and who for some reason or other had not been able to attend the webinar.

Annex I: Webinar agenda



TECHNICAL ASSISTANCE TO IORA FOR THE IMPLEMENTATION AND COORDINATION OF IORA ACTION PLAN ON FISHERIES, AQUACULTURE AND MARINE ENVIRONMENT

Webinar on “Initiate a capacity building programme in fish stock assessment” 13 July 2021

0700 hrs (GMT)

Draft AGENDA

6:45 to 7:00

- Arrival and connection to the webinar

7:00 to 7:10

- **Gatot H. Gunawan** (Acting Secretary-General/Director of IORA)
⇒ Opening remarks

7:10 to 7:30

- **Aubrey Harris** (Main Resident Expert, AFD Technical Assistance to IORA)
⇒ First presentation: **Existing capacity, uses and needs for stock assessment capacity in the IORA region.**

From responses received from IORA Member States (MS) last year, the presentation will provide an analysis of these results. After introducing the approach used, it will examine the responses in relation to the existing capacity (numbers of persons, institutional location and technical methods used) and needs expressed, including strengths as well as constraints and threats. It will continue in examining how stock assessment information is communicated and used for fisheries management, examples of recent stock assessments in the responding countries, and indicative first estimates of the numbers of persons requiring training in stock assessment before finishing with some concluding observations and comments.

7:30 to 7:50

- **Dr Sean Fennessy** (Assistant Director, Oceanographic Research Institute, Durban, South Africa)
⇒ Second presentation: **Compendium of stock assessment training and courses in the IORA region.**

The presentation will provide a summary of the availability of the IORA MS capacity to provide stock assessment training at a variety of levels and to a range of stakeholders. The methods used to identify this capacity will first be described, followed by a synopsis and evaluation of stock assessment training in the region. This will include examples of the various levels of training, the institutions/entities which provide it, and the stakeholders that the training is aimed at.

7:50 to 8:10

- **Dr Rishi Sharma**, (Senior Fisheries Resources Officer, FAO, Rome)
 - ⇒ Third presentation: **An Overview of Stock Assessment Building Programs in SE. Asia with examples on Sri Lanka, Myanmar, and Indonesia.**

The presentation will provide a multi-faceted approach on building capacity in the SE Asian Region using online training workshops, and individual programs tailored to meet the country's needs in the region. The key take away is that there is no substitute for good on the ground programs collecting basic data for stock assessment, and repeating capacity building initiatives in the region to improve assessment capabilities in different countries. The approach pursued in a country will depend on the country's capacity and resource availability to address the needs in their region.

8:10 Contributions, questions and answers

8:30 to 9:00 Group exercise on needs and aspects of stock assessment training and communication in fisheries management

- Evaluation questionnaire
- Webinar End

Annex 2: Profiles of the Speakers

Aubrey Harris



Following graduation in marine biology, Aubrey Harris started his working career at the Seychelles Fisheries Division in 1977 as Fisheries Officer working in artisanal fisheries undertaking fisheries surveys and later as Chief Fisheries Officer responsible for administration of the Division and licensing of foreign fishing vessels in the early days of a rapidly developing new tuna fishery. Subsequently he worked in Northern Australia with the CSIRO on the impact of fishing on demersal fish communities, bycatch, impacts of fishing on vulnerable species and the interaction between industrial prawn and artisanal fisheries. Thereafter he moved to the Bureau of Resource Sciences, Canberra, providing advice to the Australian Fisheries Management Authority on a bycatch policy for the northern prawn fishery and critically reviewing non-target species information, issues, and concerns in 14 Australian fisheries that were managed federally (Commonwealth). He joined the Food and Agriculture Organization (FAO) in 1999 as the Senior Fisheries Officer for Southern and East Africa, based in Harare, Zimbabwe, covering also the Western Indian Ocean. In that capacity and among other interventions, he undertook support missions helping countries with training and technical assistance, project formulation and implementation, and development of their management plans, strategies and policies in the fisheries and aquaculture subsectors of Kenya, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, Tanzania, Zimbabwe and SADC. He formed part of negotiations leading up to the formation of the South West Indian Ocean Fisheries Commission (SWIOFC) in 2005 and continued as its Secretary until 2017. As Secretary he advanced the role of the Commission and its support of members through collaboration with funding partners and regional projects. As a result, SWIOFC was one of the FAO advisory Fishery Commissions with the greatest member participation and support, and the only one with its Secretariat hosted and supported by a member country. Aubrey finished his FAO career setting up the SWIOFC Secretariat in Maputo, Mozambique. He now resides in Seychelles providing consultancy services that have included development of the Seychelles Fisheries Policy and Strategy, the Seychelles Management of Bycatch Policy, and implementation of the Mahé Plateau Co-management Plan. Since May 2020, he has been the Main Resident Expert providing technical assistance to IORA on fisheries, aquaculture and marine environment remotely from Seychelles because of the Covid19 travel constraints.

Sean Fennessy



Dr Sean Fennessy has undertaken marine research since 1989, based at a unique research organization - the Oceanographic Research Institute - widely recognized for its contribution to applied marine science in South Africa and the wider western Indian Ocean region. His expertise has been requested with assessments and reviews of marine resources for the World Wide Fund for Nature, the Food and Agriculture Organization of the United Nations, and the Marine Stewardship Council. He was closely involved in several research-based components of the South West Indian Ocean Fisheries Project (SWIOFP) and is similarly involved in its successor (SWIOFish). He participates in the United Nations' SWIO Fisheries Commission Regional Working Group meetings on demersal and small pelagic fishes. In South Africa, his research experience with crustacean trawl fisheries supports input at the local Prawn Fisheries Development Association, as well as the management advice and decision support he provides to the national Department of Forestry, Fisheries and Environment. He has

undertaken basic stock assessments of several species, and lectures on stock assessment at the University of KwaZulu-Natal where he is an Associate Professor.

Rishi Sharma



Rishi Sharma, PhD, is the most recent recruit in FAO as a Senior Fisheries Officer. He is currently the Lead Technical Officer for the ABNJ Projects and the EAF Nansen Projects in FAO. He is also the lead developer on evaluating the global stock status metric for FAO on sustainable fisheries, and is also involved in various other activities related to stock assessment and capacity building in FAO. Prior to that he was at the Conservation Biology team at the NWFSC (Northwest Fisheries Science Center, NOAA, Seattle, WA) from August 2017 to September 2019. He moved from the Highly Migratory Stocks (HMS) team at SEFSC (Southeast Fishery Science Center) in Miami where he had been since February of 2016 working on large pelagics and as the lead scientist on the Atlantic Ocean Yellowfin Assessment in 2016 and Bluefin Assessment in 2017.

Prior to this, he was the Chief Stock Assessment Scientist for the IOTC, in charge of assessments of tuna, tuna like species and sharks in the Indian Ocean between 2012-2015 where he led the development of Management Strategy Evaluation (MSE) across tropical tunas, including over 20 assessments of tropical tuna, temperate tuna, billfish, swordfish and neritic tuna. Rishi also served as the Scientific Coordinator of research on small pelagics and sharks in the Bay of Bengal Large Marine Ecosystem Project for FAO in Thailand between 2010 and 2012. Between 2000-2010, he was a biometrician for the Columbia River Inter Tribal Fisheries Commission (CRITFC), where he worked mainly on Chinook salmon issues in the US-Canada Pacific Salmon Treaty. During that time, he chaired international scientific commissions (e.g., the Chinook Technical Committee for the PSC) supporting Pacific salmon research in the Pacific Northwest and Alaska. He returned to CRITFC briefly in 2015 to complete an analysis on threats to lamprey and eulachon populations on the Columbia River due to climate change, as well as provide scientific advice related to the upcoming fishing and water-rights treaty negotiations between the US and Canada. Rishi has over 20 years of experience in population ecology, ecological statistics and stock assessment, with some 40 peer-reviewed journals on the subject, as well as over 100 grey literature reports on these topics.