



Project: Sustainable Management of Tuna Fisheries
and Biodiversity Conservation in the ABNJ

ABNJ Workshop Evaluation Report: Atlantic Tuna Harvest Strategies Capacity Building

Accra, Ghana: 30-31 August 2016

October 2016

Partners:



With support of:

Executive Summary



A capacity building workshop was held in Accra, Ghana on 30-31 August 2016 with a goal to create a better understanding among Atlantic Ocean States of the precautionary approach, Harvest Strategies (HSs) and management strategy evaluation (MSE) for sustainable tuna fisheries. Interest in the workshop was underscored by the participation of 35 individuals from 19 countries, representing a diverse range of roles and experience in International Commission for the Conservation of Atlantic Tunas (ICCAT) processes.

The workshop was part of the “Sustainable Management of Tuna Fisheries and Biodiversity Conservation in Areas Beyond National Jurisdiction” (ABNJ Tuna Project). On 5 November 2013, the Global Environment Facility approved the five-year ABNJ Tuna Project, which the United Nations Food and Agriculture Organization (FAO) coordinates.

The workshop featured an agenda of creative interaction and dialogue among participants, aimed at providing hands on opportunities to learn harvest strategy concepts and run mock simulations of management strategy evaluations of harvest control rules. While the presentations and facilitation were given in English, where possible, written materials were provided to participants in French and Spanish. Breakout sessions were conducted in all three languages.

Evaluation results from the workshop indicated that attendees gained an increased understanding of the importance of HSs and significantly increased both their knowledge of HS principles and concepts and also their confidence in being able to apply them in Commission settings. Participants expressed a strong need for Commission assistance for additional resources to enhance in-country training and engagement of managers, fishers and stakeholders, as well as to develop national level science expertise to support Commission level HS processes. There was strong support among workshop participants for sustainable tuna management enabled by deliberate management strategy evaluation of tradeoffs among potentially competing management objectives.

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Introduction

A capacity building workshop was held in Accra, Ghana on 30-31 August 2016 with a goal to create a better understanding among Atlantic Ocean States of the precautionary approach, Harvest Strategies (HSs) and management strategy evaluation (MSE) for sustainable tuna fisheries. Ultimately, a key objective of the workshop was to help accelerate the development of tuna HSs within the Atlantic Ocean via a unique agenda incorporating the key elements of fisheries management issues currently relevant to International Commission for the Conservation of Atlantic Tunas (ICCAT) members. Interest in the workshop was underscored by the participation of 35 individuals from 19 countries and assistance from another 10 resource experts. (Appendix A).

The workshop was part of the “Sustainable Management of Tuna Fisheries and Biodiversity Conservation in Areas Beyond National Jurisdiction” (ABNJ Tuna Project). On 5 November 2013, the Global Environment Facility approved the five-year ABNJ Tuna Project, which the United Nations Food and Agriculture Organization (FAO) coordinates. The overarching project is focusing on three component areas:

- 1) Supporting implementation of sustainable and efficient fisheries management and fishing practices;
- 2) Reducing illegal, unreported and unregulated fishing through strengthened and harmonized monitoring, control and surveillance; and
- 3) Reducing ecosystem impacts from tuna fishing, including bycatch and associated species.

WWF is the lead organization for a number of the ABNJ Tuna Project outputs, including supporting the improved understanding of the application of the precautionary approach through HSs by tuna Regional Fisheries Management Organisations (RFMOs).

The Ghana workshop was part of the first of two rounds of workshops planned for each tuna RFMO over the 5-year life of the ABNJ tuna project.

In accordance with the ABNJ Tuna Project, funding for attendance at the workshop was only provided for participants from developing countries, however the workshop was open to all Atlantic coastal states and ICCAT members.

Ghana 2016 workshop goal, objectives and design

Within this overall project background and context, a specific goal and objectives were developed for the workshop to guide the design of an agenda and approach.

Overall workshop goal

Build capacity of commissioners (primary target audience) so that they can engage in tuna RFMO management decision-making in an informed manner and have a reasonable chance of effectively representing their interests in a way that is also consistent with sustainable resource outcomes – i.e., ‘level the playing field’ so that commissioners from countries with less

sophisticated management systems and technical support can meaningfully participate in RFMO decision making regarding harvest strategies-harvest control rules (HS-HCRs).

Workshop context, agenda and summary of the sessions

Context

Lack of clearly defined HCRs among tuna RFMOs is a central weakness and threat to maximizing long-term fishery benefits from global tuna management. The most powerful states routinely block effective, progressive management decisions within multi-national tuna RFMOs to protect their perceived harvest allocation interests. Decision processes around HS-HCRs are technically complex. Historically communications between scientists and decision makers have been ineffective at creating sufficient understanding among commissioners for them to effectively engage in and influence the decision process. This workshop was intended to help remedy that gap by increasing understanding of all states to engage, particularly by using simpler and more creative communication and interaction strategies aimed at the target commissioner audience.

Agenda

The agenda is in Appendix B. General design elements included a focus on HS principles and management roles on Day 1, coupled with a Day 2 focus on HCRs and MSE. The agenda was designed to be interactive with emphasis on active dialogue rather than presentations

Day 1

The Ghana Minister of Fisheries, The Hon. Ms. Sherry Ayittey opened the workshop with a welcoming address. After presentations by Dr. Kathrin Hett and Mr. Daniel Suddaby on the ABNJ project and the workshop's context, and a presentation by Dr. David Die on ICCAT process and the need/benefit for sustainable tuna management, the first day was designed in a bookend fashion. David Die introduced harvest strategy principles. This introduction was followed by two interactive, small group breakout sessions designed around storytelling and game strategies to engage participants, in order to create learning through sharing and discussion. To maximise involvement, the participants were broadly grouped into tables where either English, French or Spanish (ICCAT's three official languages) was the primary language spoken. Finally the bookend was completed via a presentation by Dr. Jerry Scott to reinforce information around any HS principles that people seemed to be having difficulty understanding, during which he also played a [short video produced by ISSF](#) on the HS topic.

The first of the breakouts was designed around each group member taking a turn rolling a large die with the following fishery management process roles represented: commissioner, fisheries minister, stock assessment scientist, fisher, RFMO Secretariat, and NGO campaigner (Figure 1). The participant would then tell a story about an experience related to that role in the fishery management process, or if no direct experience, what she or he imagined that role to involve. The central idea here was a tool to get dialogue started at the workshop and to support the objective of helping participants understand different roles in the process and help them clearly envision where and how decision making engagement can effectively occur. Each group reported back on their key learnings or points of interest. The exercise was effective in breaking

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the ice and naturally leading to further discussions. It also highlighted that the understanding of some roles (e.g., RFMO Secretariat) is limited.

Figure 1. Dice used to facilitate small group, breakout sessions and storytelling game at the Ghana 2016 ABNJ workshop.



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The second small group breakout consisted of a game to take 23 harvest strategy principles and arrange/map them on the floor in a way that seemed logical with respect to their interrelationships (Figure 2). The intent was to help build an understanding of these principles by sharing ideas and their rationale. A resource person fluent in the group's language assisted each group to answer questions about particular concepts as the need arose, but with the simple purpose to provide helpful information and not guide or direct the exercise. The exercise generated significant discussion and helped identify gaps in understanding. Each group's map was presented and discussed, and while there were core themes in the mapping, no two groups mapped the principles in the exactly same way.

Figure 2. Arranging harvest strategy principles during small group, breakout session at the Ghana 2016 ABNJ workshop.



Day 2

After an opening recap of Day 1 led by the facilitator, Mr. Ian Cartwright, the agenda was designed to more fully introduce harvest control rules (HCRs) and management strategy evaluation (MSE) aspects of tuna harvest strategies. The comprised a mix of presentation material with small group, breakout sessions where participants would get hands on experience running and 'playing with' a simplified MSE model, coined the '[toy MSE](#)'.

Following Mr. Cartwright's preview of the session, Dr. Gorka Merino provided the introduction to MSE concepts and approaches and led participants into a group sessions using the toy MSE. The first exercise was to examine how different constant catch scenarios affected stock biomass, exploitation rates, and the whether the stock would remain in the 'green zone' of a Kobe plot (where a stock's biomass $\geq B_{msy}$ and the stock is not being overfished (fishing rate $\leq F_{msy}$)). As part of this exercise participants were able to see that despite what the stock assessments showed, the reality of the stock health may be very different. The participant groups were asked to create a list of the reasons why the model predictions and the reality of what might be happening to the stock could differ.

This exercise was followed by further instruction from Dr. Merino and introduction of a contest using the 'toy MSE' for the breakout groups to vary maximum allowable fishing rates, limit reference points, and biomass thresholds for triggering harvest reductions in order to maximize average catch while achieving at least a 60% probability of being in the Kobe plot green zone. The idea of this game was to encourage active participant dialogue and experimentation, which could practically frame the concepts of management objectives, HCRs, balancing tradeoffs between competing management objectives, and the precautionary approach.

Participants in each group were then asked to identify their six highest priority management objectives for analysis during a tuna management strategy evaluation process, and to rank these objectives into high, medium and low priorities on colour-coded post it notes. The 'toy MSE' discussion had generated active dialogue about what other objectives besides average catch and probability of being in the Kobe green zone might be important to managers and other stakeholders when evaluating and balancing trade offs in defining HCRs. Each group pasted their priorities on the wall, grouping like objectives from other participant groups (Figure 3) and all participants stood in a circle discussing common themes of each group's work product.

Finally, the workshop was wrapped up with discussions about what went well with the workshop design, what might be improved and what participants might do moving forward to apply the knowledge learned.

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Figure 3. Management objectives exercise: one work group's priority list and whole group discussion at the Ghana 2016 ABNJ workshop.



Workshop evaluation survey feedback

The evaluation form completed by workshop participants (including any resource people who chose to respond) at the end of the workshop. The form's key purposes were to assess ABNJ Tuna Project metrics and help understand how well workshop objectives had been met, particularly whether attendees: (1) gained an improved understanding of HS and HCR principles and tools; which (2) would enable their more effective engagement in tuna RFMO processes designed to adopt related policies and management measures. This section reviews the results of various aspects of the 37 surveys that were completed in writing at the workshop and then subsequently entered into [SurveyMonkey](#) software to assist with analysis.

Who participated at the workshop

The survey included four questions to gather background on the participants with respect to their attendance at RFMO related meetings, their roles, their country/organization affiliations and their experience.

RFMO related meetings attended

A large majority of the attendees (78%) are typically involved in multiple Commission (e.g., ICCAT) related meetings. This includes about 56-61% at Commission meetings, working parties to committees and within country preparatory meetings as well as 36% at related science committee meetings. Those not involved in Commission processes included some of the workshop organizers, consultants and NGOs.

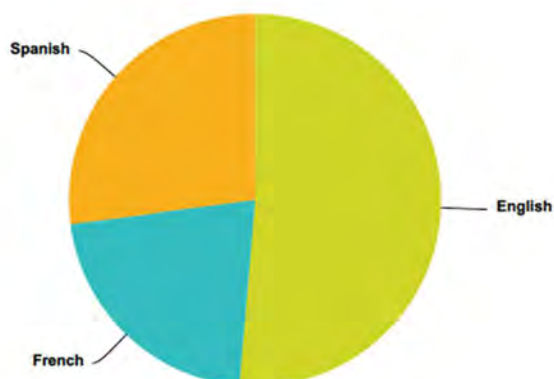
Participant roles

Attendees reflected a diverse mix and sometimes multiple roles among the choices of fisheries manager/director (32%), scientific advice (27%), management advice (27%), policy advice (24%), NGO (18%), and industry member (14%). Another 22% identified other roles that included directorate of a regional fisheries management body, monitoring control, and surveillance staff, marine biologist/technician and FAO.

Country/organization affiliation and language

Participants predominantly identified themselves as being from an ICCAT Contracting Party (88%), developing state (44%), and coastal state (24%), while 3-6% identified with ICCAT observer status, ICCAT Cooperator or developed state. Attendees represented a diversity of languages with English, Spanish, and French significantly present as noted in Figure 4. Some of the respondents who completed the Spanish forms had Portuguese as their native language.

Figure 4. Distribution of language chosen by participants for completing the workshop evaluation survey. .



Years in the fisheries sector

Responses ranged from 3 to 55 years of experience in the fisheries sector, with an average of 18 years and a median of 15 years.

Gender

The survey did not include a question on gender, however gender of participants was noted at the workshop to meet the ABNJ Tuna Project reporting metrics. Of the 35 participants, nine were female (26%) and 26 were male (74%).

Before and after awareness

The survey asked participants how important they considered HS to be as a tool to improve the sustainability of tuna fisheries - before and after the workshop (on a scale of 1 to 5, with 1= not very important at all and 5 = very important). The before workshop responses averaged 4.3, with 59% indicating HS to be very important and 21% indicating only average importance or less. In comparison the after workshop rankings averaged 4.8, with 83% indicating HS to be very important and no responses indicating average or less importance.

Before and after knowledge

Participants were asked to rank their knowledge of 'course content' from a before and after workshop standpoint related to three topical areas: (1) harvest strategies and reference points; (2) processes within ICCAT for further development and implementation of harvest strategies and conservation measures; and (3) Management Strategy Evaluation (MSE) to compare trade offs among achieving different fishery objectives. In all categories responses indicate sizable increase in knowledge as summarized in Table 1.

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Table 1. Before and after knowledge indicated by Ghana 2016 workshop participants in three key areas discussed. Based on a ranking scale of 1 to 5, where 1 = limited and 5 = very good.

| TOPICAL AREA | BEFORE | | AFTER | |
|--|-----------------|--|-----------------|--|
| | Average ranking | Percentage of above average responses (i.e., 4 or 5) | Average ranking | Percentage of above average responses (i.e., 4 or 5) |
| Knowledge of the use of harvest strategies and reference points for management of tuna stocks | 3.0 | 32% | 4.0 | 81% |
| Knowledge of the ICCAT processes to further development and implementation of harvest strategies and conservation measures | 3.4 | 51% | 4.1 | 84% |
| Knowledge of Management Strategy Evaluation (MSE) to compare trade offs among achieving different fishery objectives | 3.2 | 46% | 4.1 | 78% |

Effectiveness of workshop content

The evaluation survey was designed to gather information on the workshop's possible impact of the participants' level of understanding of key harvest strategy principles and concepts, and whether that understanding would support the use of these ideas and a confidence to engage in Commission dialogues surrounding development and implementation of HS-HCR type management measures. The results from these queries is summarized below.

Improved understanding

Participants were asked whether they had a similar or improved level of understanding after the workshop surrounding nine topical areas, which included various harvest strategy principles, how these principles are used by ICCAT, the roles of different actors in the Commission process, types of management objectives, an understanding of trade offs among objectives and why harvest strategies are tested with simulation models. Responses indicated that over 75% of the attendees (ranging from 76% to 90%) had an improved understanding for all topics except two: the precautionary approach, for which 66% of responses indicated an improved understanding, and roles of different actors (73% improved).

Expected use of knowledge

When asked if they would use the knowledge gained at the workshop in each of the preceding nine topical areas, over 80% respondents replied 'yes', with the range from 81 to 97%.

Confidence to engage in management process dialogues

Participants were asked to rank their confidence to engage in dialogues around the implementation of sustainable tuna management including the formulation of harvest strategies, from a before and after workshop standpoint. Respondents noted a significant increase in confidence to do so after the workshop as summarized below in Table 2.

Table 2. Before and after confidence in engaging in management dialogues indicated by Ghana 2016 workshop participants. Based on a ranking scale of 1 to 5, where 1 = not confident at all and 5 = very confident.

| TOPICAL AREA | BEFORE | | AFTER | |
|--|-----------------|--|-----------------|--|
| | Average ranking | Percentage of above average responses (i.e., 4 or 5) | Average ranking | Percentage of above average responses (i.e., 4 or 5) |
| Confidence to engage in dialogues around the implementation of sustainable tuna management including the formulation of harvest strategies | 3.1 | 41% | 4.2 | 81% |

Workshop delivery

The survey included questions about the amount and level of content presented and discussed. Over 90% of the respondents indicated that the quantity of material was 'good' (on a 1 to 3 scale from 'not enough' to 'too much'). Similarly attendees rated the level of content 'good' (on a 1 to 3 scale from 'too simplistic' to 'too complicated').

Written comments on the questionnaires added some additional thoughts to these ratings, a number of which were echoed in workshop discussions. First, the central reliance on English presented some real challenges for a number of native French, Spanish and Portuguese speakers in fully comprehending the material presented. Suggestions for future workshops included simultaneous interpretation, country or region level workshops in common languages, and split screen visual presentations using all languages.

While the level of content was rated as 'good' there were some comments that scientists should be mindful that managers benefit from simplified language and explanations. Some noted that interactive, breakout sessions were very useful for uptake of information (as compared to presentations only), and several suggested that distribution of more technical material in advance of the meeting would help people digest it and be better prepared to engage. Finally there was some discussion about the potential need for a longer than 2-day meeting given the complexity and depth of material, noting financial constraints.

Other insights: future workshops and Commission process

Besides the evaluation survey results summarized above, considerable feedback was received from workshop participants during the Day 2 wrap-up and through one-on-one discussions.

Wrap-up highlights from participants

A number of important ideas were expressed by the participants that have implications for future workshops and Commission processes. A few of these are highlighted below:

- **English language a barrier for a number of native French and Spanish speakers, as well as Portuguese who relied on these languages –**

Multilingual resource people assisted during each breakout session and participants were organized to take best advantage of this assistance. But the challenge was a key impediment. Solutions suggested included simultaneous interpretation and workshops held in individual countries or regions where material can be tailored to local language.

- **Increased capacity building needed in various developing and coastal state regions –**

Beyond the language issue, this was driven simply by the complexity of material and need for more exposure. This was not only expressed at the management level, but also as a need for in-country local stock assessment expertise and knowledge to assist with HS, HCRs and MSE engagement. Participant discussion noted one possible action was for CPCs to ask ICCAT directly for this kind of capacity building support. One idea proposed was to develop a work plan within ICCAT to invest in MSE expertise among national scientists. The workshop identified the need for training and engagement resources.

- **Science can't make decisions but must provide direction; diverse approach needed, including better stakeholder involvement in Commission processes and for in-country preparation –**

This first surfaced as a common theme during the dice/ storytelling game around fishery management roles and was recurrent throughout the workshop. Resources are needed to do things differently - everyone has a role in collective decision making toward an improved fishery management model. Outreach materials are needed. Another idea from the Central American participants was their intent to take these ideas back home to ensure understanding among Commissioners, managers and stakeholders, and also to incorporate them into policy integration efforts ongoing within the region. They expressed a potential need for technical help - while intent on sharing information and tools, one workshop doesn't make them experts.

- **Positive feedback on interactive nature of workshop with emphasis on dialogue –**

A number of comments supported the practical nature of the workshop. Some people thought additional role playing would be helpful, while some felt the dice game would be better if people could choose roles to talk about that they were familiar with. One comment noted the improvement from the philosophical nature of the Panama workshop to the practical orientation in Ghana. Breakout sessions assisted uptake of information.

Appendix materials

Appendix A. Attendee list: ABNJ Atlantic tuna harvest strategy workshop, Ghana 2016

Participants

| Name | Organisation | Country |
|-----------------------------------|--|--------------|
| ARHAB AZEDDINE | | ALGERIA |
| MERCELLAH MOHAMMED RAFIK | | ALGERIA |
| DANIEL SIMBA | | ANGOLA |
| TANIA MANDINGA BARRETO | Direcção Nacional de Pescas e Aquicultura | ANGOLA |
| DELICE PINKARD | Belize High Seas Fisheries Unit, Ministry of Finance, Government of Belize | BELIZE |
| ROBERT ROBINSON | Belize High Seas Fisheries Unit, Ministry of Finance, Government of Belize | BELIZE |
| CAMILA HELENA DA SILVA CAMILO | Ministry of Agriculture, Livestock and Supply | BRASIL |
| LETICIA BRUNING CANTON | Fisheries and Aquaculture National Council / Conselho Nacional de Pesca e Aquicultura - Conepe | BRASIL |
| DATTE JACQUES YAO | | COTE DIVOIRE |
| SHEP HELGUILLE, JR | Le Ministre des Ressources Animales and Halieutiques | COTE DIVOIRE |
| JUAN JOSE OSORIO GOMEZ | Fisheries and Aquaculture General Directorate | EL SALVADOR |
| JEAN FULBERT OBAME MEBIAME | Ministere de la Peche | GABON |
| CHRISTOPHER ACKON | European Union | GHANA |
| GODFREY BAIDOU-TSIBU | Fisheries Commission | GHANA |
| MATILDA QUIST | Fisheries Commission | GHANA |
| PAUL BANNERMAN | Fisheries Commission | GHANA |
| SENY CAMARA | | GUINEA |
| BERNAL ALBERTO CHAVARRIA VALVERDE | Dirección General de Pesca y Acuicultura | HONDURAS |
| BLAS NORBERTO QUESADA | | HONDURAS |
| BRAD BROWN | International Seafood Sustainability Foundation (ISSF) | ISSF |

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| | | |
|----------------------------|--|--------------|
| WILLIAM Y BOEH | Ministry of Agriculture | LIBERIA |
| RAMADANN ATTEA SALEH ALI | General Corporation for Agriculture, Animal and Marine Resources | LIBYA |
| HYACINTH ANEBI OKPE | Fisheries Department | NIGERIA |
| JOSHUA KUHIYEP BOBAI | | NIGERIA |
| ENRIQUE ESPINOSA | PRONAOB | PANAMA |
| VASCO FRANCO DURAN | | PANAMA |
| MIRIAN M.V.G CRAVID | Minister de Cooperation International | SAO TOME |
| OUSMANE NIANG SEYE | Direction de la Protection et de la Surveillance des Pêches (DPSP) | SENEGAL |
| JOHANNES DE GOEDE | Department of Agriculture, Forestry and Fisheries | SOUTH AFRICA |
| PUKA RONALD ZAKO | Department of Agriculture, Forestry and Fisheries | SOUTH AFRICA |
| GUILLERMO MORENO RODRIGUEZ | OPAGAC Fisheries Improvement Project | SPAIN |
| ORIANA VILLAR | NOAA Fisheries | USA |
| RACHEL O'MALLEY | National Marine Fisheries Service, NOAA | USA |
| RISHI SHARMA | NOAA | USA |
| SHANA MILLER | The Ocean Foundation | USA |

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Presenters/resource people

| | | |
|----------------------|---|-----------|
| DANIEL SUDDABY | | WWF |
| DAVID DIE | Miami University | USA |
| FREDDY AROCHA | Universidad de Oriente | VENEZUELA |
| GORKA MERINO CABRERA | AZTI | SPAIN |
| IAN CARTWRIGHT | | AUSTRALIA |
| JERRY SCOTT | International Seafood Sustainability Foundation (ISSF) | USA |
| KATHRIN HETT | Food and Agriculture Organization of the United Nations | ITALY |
| KATHRYN READ | | WWF |
| PAPA KEBE | ABNJ Project | SENEGAL |
| RICH LINCOLN | Ocean Outcomes | USA |



**Project: Sustainable Management of Tuna Fisheries
and Biodiversity Conservation in the ABNJ**



Smart Fishing Initiative

Areas Beyond National Jurisdiction: Atlantic Ocean Tuna Management Workshop

**30 and 31 August 2016
Accra, Ghana**

Workshop Aims

The goal of this workshop is to create a better understanding among Atlantic Ocean States of the precautionary approach, Harvest Strategies (HSs) and management strategy evaluation (MSE) for sustainable tuna fisheries in the context of tuna fisheries. Ultimately, the objective of this workshop is to accelerate the development of tuna HSs within the Atlantic Ocean by creating a unique agenda that considers some of the key elements of fisheries management issues currently relevant to International Commission for the Conservation of Atlantic Tunas (ICCAT) members. Participation in this workshop will empower coastal states to engage meaningfully in the developments that are occurring with Atlantic Ocean tuna management over the coming two-four years.

Workshop Program

The Event

The workshop program will include discussion of Harvest Strategy frameworks and the principles of sound fisheries management. This workshop will provide the platform and background knowledge for participation in the Atlantic Ocean regional level MSE work, and will explain how MSEs contribute to the development of robust harvest strategies that are most likely to meet the objectives of the ICCAT members and stakeholders.

International experts, with specific experience and expertise in the Atlantic, will present on these management themes both generally and in the context of the Atlantic Ocean. The Ghana workshop will provide an introduction to: the precautionary principle, the process of HS development; the expected elements of a HS, for example management objectives, scope and levels of risk; the use of MSE to evaluate harvest control rules; and the application of HSs. Throughout the workshop, participants will also break out into small groups, to discuss relevant needs and issues specific to the Atlantic Ocean and allow for more in-depth understanding of how the concepts and tools presented in the workshop may assist in addressing them. On the second day of the workshop participants will embed their learning through MSE simulation exercises.

Workshop context

The workshop is part of the “Sustainable Management of Tuna Fisheries and Biodiversity Conservation in Areas Beyond National Jurisdiction” (ABNJ Tuna Project).

On 5 November 2013, the Global Environment Facility approved the five-year ABNJ Tuna Project, which the United Nations Food and Agriculture Organization coordinates. The overarching project will focus on three component areas:

- 1) Supporting implementation of sustainable and efficient fisheries management and fishing practices
- 2) Reducing illegal, unreported and unregulated fishing through strengthened and harmonized monitoring, control and surveillance

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3) Reducing ecosystem impacts from tuna fishing, including bycatch and associated species

WWF is the lead agency for a number of the ABNJ Tuna Project outputs, including supporting the improved understanding of the application of the precautionary approach through HSs by tuna Regional Fisheries Management Organisations (RFMOs).

The Ghana Workshop is part of the first round of two rounds of workshops for each RFMO planned over the 5-year life of the ABNJ tuna project.

Agenda

DAY ONE – 30 August 2016

| | | |
|-------------|--|--|
| 0800 – 0850 | Registration | |
| 0900 – 0940 | Opening <ul style="list-style-type: none"> · Official Ghana welcome · Workshop connection with ICCAT · ABNJ project overview | The Hon. Ms Sherry Ayittey David Die Kathrin Hett, Daniel Suddaby |
| 0940 – 1030 | Context setting overview Why we are here: benefits Harvest strategy concepts Wrap up and stage setting | David Die David Die Ian Cartwright |
| 1030 – 1100 | Break | |
| 1100 – 1230 | Small group session 1 – The Roles of Actors in developing harvest strategies: exploring participants’ perspectives – breakouts | Ian Cartwright |
| 1230 – 1330 | Lunch | |
| 1330 – 1500 | Small group session 2 – Harvest strategy concepts: exploring and sharing participants’ understanding – breakouts | Ian Cartwright |

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|--------------------|---|----------------|
| 1500 – 1530 | Break | |
| 1530 – 1600 | Session 2 continued – what did we learn? – Facilitated discussion | Ian Cartwright |
| 1600 – 1645 | Concepts: going deeper – strengthening key concepts and providing more depth: presentation and facilitated discussion | Jerry Scott |
| 1645 – 1700 | Day 1 wrap up – Facilitated discussion | Ian Cartwright |
| 1700 | Close Day 1 | |

DAY TWO – 31 August 2016

| | | |
|--------------------|--|----------------|
| 0900 - 0910 | Opening: Day 1 reflections, Day 2 overview | Ian Cartwright |
| 0910 - 0930 | Management Strategy Evaluation (MSE) Concept Overview · Role of management strategy evaluation (MSE) | Ian Cartwright |
| 0930 - 1030 | Demonstration of MSE tool – Presentation and facilitated discussion · What we do now · How to test decision choices on key management inputs · Simple automatic harvest control rule | Gorka Merino |
| 1030 - 1100 | Break | |
| 1100 - 1230 | Small group session 3 - Demonstration of MSE concepts – breakouts · Hands-on testing of harvest control rule options | Gorka Merino |
| 1230 - 1330 | Lunch | |
| 1330 - | Session 3 (Continued) | Gorka Merino |

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| | | |
|--------------------|--|----------------|
| | <ul style="list-style-type: none"> · Discussion of tradeoffs among different harvest control rules | |
| 1500 - 1530 | Break | |
| 1530 - 1615 | Decision maker roles and concepts - <ul style="list-style-type: none"> · Changed perceptions resulting from workshop | Ian Cartwright |
| 1615 - 1645 | Wrap up <ul style="list-style-type: none"> · Sharing self reflections and workshop evaluation · Closing thanks and send-off | Ian Cartwright |

Abbreviations/Acronyms

| | |
|-------|---|
| ABNJ | Areas Beyond National Jurisdiction |
| FAO | United Nations Food and Agriculture Organization |
| HS | Harvest Strategy |
| ICCAT | International Commission for the Conservation of Atlantic Tunas |
| MSE | Management Strategy Evaluation |
| RFMO | Regional Fisheries Management Organization |

Facilitator

Mr. Ian Cartwright – Thalassa Consulting

Ian Cartwright has worked in fisheries and fisheries management since 1975. He specialises in the development of fisheries policy and fisheries management arrangements including management plans. He provides a range of advice to governments, aid agencies and fisheries organisations in Australia and overseas. This work involves operating at the interface between industry, fisheries managers, researchers and NGOs and the brokering of mutually acceptable solutions to management issues. Past international work includes serving as the Deputy (Executive) Director of the Forum Fisheries Agency, facilitation of harvest strategy development for the Western and Central Pacific Fisheries Commission and the development of national and state fisheries policies.

Ian is currently a Commissioner of the Australian Management Authority and Chair of a number of fisheries management committees.

Moderators

Dr. David Die - Associate Professor, University of Miami

Dr. David Die is an Associate Professor of Marine Biology and Fisheries at the University of Miami, Florida, and Associate Director of the Cooperative Institute for Marine and Atmospheric Studies. This Institute is a partnership between the US Government agency, the National Oceanic and Atmospheric Administration (NOAA) and all Florida Universities.

David's work focuses on the development of mathematical and statistical models (both for prediction and estimation) to support natural resource management. He has a special interest in developing an understanding of the mechanisms that are key to the sustainability of fisheries. For 30 years, David has worked on research devoted to the assessment and management of tropical fisheries worldwide (Oceania, Asia, Latin America and Africa) and his research has been key in the development of major management changes (fishing closures, fleet capacity reductions) in several fisheries. He is currently working in the assessment of tuna, billfish and reef-fish fisheries in the Atlantic and Pacific Oceans, and is serving as Chair of the ICCAT Standing Committee for Research and Statistics.

Dr. Gorka Merino – Fisheries Consultant, AZTI

Dr. Gorka is a fisheries scientist in AZTI (Spain), a centre of excellence in research, development, innovation and technological transference in the fields of Oceanography, Marine Environment, Fisheries, and Food Technology. In the last few years he has been engaged in the Management Strategy Evaluation processes of the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Indian Ocean Tuna Commission (IOTC), developing numerical methods, participating in the dialogue with stakeholders, and evaluating Harvest Control Rules. Gorka also participates in the scientific tuna fisheries assessments for ICCAT and the IOTC.

Previously, his research focused on the interaction of environmental and socioeconomic drivers and their impact on the sustainability of marine resources. First, during his PhD period at the Instituto de Ciencias del Mar (CSIC, Spain) he developed bioeconomic models to understand fishermen's economic

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behaviour and the performance of Mediterranean fisheries. Second, he worked in the Plymouth Marine Laboratory (UK, 2008- 2012) aiming to understand the feedbacks between the direct impacts of climate change and suboptimal management of reduction resources in a high volatility marine commodity market environment at a global scale.

Dr. Jerry Scott – Fisheries Consultant

Dr. Jerry Scott is an international consultant on fisheries issues and serves on ISSF's Scientific Advisory Committee. He has extensive experience, spanning more than 30 years, conducting quantitative stock assessment research on a diverse set of resources including Atlantic tunas and tuna-like species, marine mammals, coastal migratory pelagic and reef resources. In a former life, Jerry served as a director and senior advisor for the US NOAA-Fisheries Southeast Fisheries Science Center's (Miami, Florida) resource assessment research programs, conducting stock assessment research to support domestic and international management decisions on Atlantic, Gulf of Mexico, and Caribbean fisheries resources. From 2005 to 2010, he served as the elected chair of ICCAT's Standing Committee on Research and Statistics and was previously the chief US scientist to ICCAT.

Dr Kathrin Hett – Monitoring and Evaluation Officer, Common Oceans ABNJ Program, Food and Agriculture Organization of the United Nations

Dr. Kathrin Hett joined the Common Oceans ABNJ Program in its early times starting in 2012. She started her work with FAO's Fisheries and Aquaculture Department in 2010 where she worked on aquatic genetic resources in collaboration with the Secretariat of the Commission on Genetic Resources for Food and Agriculture. Previously, Kathrin was working as a scientist addressing evolutionary questions in different fish families.

Curriculum Development

Mr. Rich Lincoln – Ocean Outcomes

Rich Lincoln has over 40 years of varied experience in fisheries research, management and policy in the North Pacific and working on global fisheries sustainability. He is Founder and Senior Advisor of Ocean Outcomes, an international nonprofit that specializes in working with communities and industry to improve the sustainability of globally significant fisheries. Prior positions included Wild Salmon Center Program Director, International Policy Director for the Marine Stewardship Council in London, UK, and a long association with the Washington Department of Fish and Wildlife in various research, management and policy leadership roles. These roles included serving as bilateral chair of the Pacific Salmon Commission's Fraser Panel under the U.S.-Canada Salmon Treaty and developing co-management plans with Pacific Northwest treaty Indian tribes. Rich has advised the UN's Food and Agriculture Organization on its adoption of international fisheries ecolabelling guidelines, is member of the Pacific Fisheries Management Council and serves as a U.S. advisor to the North Pacific Anadromous Fish Commission.