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**FIFTH GLOBAL FISHERIES ENFORCEMENT TRAINING
WORKSHOP (GFETW)**

Auckland, New Zealand, 7–11 March 2016



Cover photograph: Courtesy of MPI/New Zealand Navy

Report of the
Fifth Global Fisheries Enforcement Training Workshop (GFETW)
Auckland, New Zealand, 7–11 March 2016

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PREPARATION OF THE DOCUMENT

This document contains the report of the Fifth Global Fisheries Enforcement Training Workshop (GFETW), which was convened in Auckland, New Zealand from 7 to 11 March 2016. The Workshop was organized by the International Monitoring, Control and Surveillance (MCS) Network and the Ministry for Primary Industries of New Zealand, with the collaboration of the Food and Agriculture Organization of the United Nations (FAO). The Fifth GFETW was sponsored by the Australian Fisheries Management Authority (AFMA), Fisheries and Oceans Canada, FAO, the Directorate of Fisheries of Norway, Marine Scotland, the United States National Oceanic and Atmospheric Administration, and the International Seafood Sustainability Foundation (ISSF). The presentations delivered at the Fifth GFETW are available at www.imcsnet.org.

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ABSTRACT

The document contains the report of the Fifth Global Fisheries Enforcement Training Workshop (GFETW) held in Auckland, New Zealand from 7 to 11 March 2016.

The 5th GFETW built on the success of the first four GFETWs convened in Kuala Lumpur, Malaysia in 2005, in Trondheim, Norway in 2008, in Maputo, Mozambique in 2011, and in San José, Costa Rica in February 2014. Previous workshops promoted cooperation between enforcement authorities across national borders and facilitated the introduction of new monitoring technologies. Each workshop has raised awareness of the importance of effective enforcement of fisheries laws.

Enhancing cooperation is a primary focus of the International Monitoring, Control and Surveillance (MCS) Network with a special emphasis on collaboration with developing countries. The 5th GFETW was highly successful in bringing together more than 200 participants from 55 countries, including MCS practitioners from 45 State governments, including 34 developing countries. One regional economic integration organization was represented, and MCS experts of four regional fisheries management organizations also participated in the Workshop. Intergovernmental organizations represented at the 5th GFETW included the Food and Agriculture Organization of the United Nations (FAO), INTERPOL, the Pacific Islands Forum Fisheries Agency and the Indian Ocean Commission.

The Workshop was structured in sessions according to themes, including: Case studies of International and Regional Cooperation; MCS Partnerships, Sponsorship and Technical Assistance; Case Studies of the Utilization of MCS Tools in Indigenous Fishing Communities and Archipelago Nations; MCS Capability and Capacity Building Activities; Preparation for Implementation of the Port State Measures Agreement; Successfully-introduced, Cost-effective MCS Tools; New MCS Technologies and Methodologies; 2nd Stop IUU Fishing Award contest; Global IUU Estimate: Study of IUU Studies; Development of an MCS IUU Risk Framework; FAO presentations on instruments to fight IUU fishing; and Data Analysis and Risk Assessment.

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ABBREVIATIONS/ACRONYMS

ABNJ	Areas beyond national jurisdiction
ACDS	ASEAN Catch Documentation Scheme
AFG	Aboriginal Fishery Guardian (program)
AFMA	Australian Fisheries Management Authority
AIS	Automatic Identification System
ALC	Automatic Location Communicator
ASEAN	Association of Southeast Asian Nations
BFAR	Philippines Bureau of Fisheries and Aquatic Resources
BMU	Beach management unit
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for Conservation of Southern Bluefin Tuna
CCTV	Closed circuit television
CDS	Catch documentation scheme
CFP	EU Common Fisheries Policy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLAV	Consolidated List of Authorized Vessels
CMM	Conservation and management measure
CNMI	Commonwealth of the Northern Marianas Islands
COFI	FAO Committee on Fisheries
DAMUSS	Data and Monitoring Unit for Small Ships
DEVFISH	EU Development of Tuna Fisheries in the Pacific ACP Countries Project
DFO	Fisheries and Oceans Canada
EC	European Commission
EEZ	Exclusive economic zone
EFCA	European Fisheries Control Agency
EJF	Environmental Justice Foundation
EM	Electronic monitoring
ER	Electronic reporting
EU	European Union
FAD	Fish aggregating device
FAO	Food and Agriculture Organization of the United Nations
FCWG	INTERPOL Fisheries Crime Working Group
FFA	Pacific Islands Forum Fisheries Agency
FIMS	PNA Fisheries Information Management System
FLEQRT	Philippines Fishery Law Enforcement Quick Response Team
FSM	Federated States of Micronesia
GEF	Global Environment Facility
GFETW	Global Fisheries Enforcement Training Workshop
GPS	Global Positioning System
GSM	Global System for Mobile Communications
ICCAT	International Commission for the Conservation of Atlantic Tunas
IMO	International Maritime Organization
iFIMS	Integrated Fisheries Information Management System
IGO	Intergovernmental organization
INTERPOL	International Criminal Police Organization

IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IP	Internet protocol
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate IUU Fishing
ISSF	International Seafood Sustainability Foundation
IUU	Illegal, unreported and unregulated (fishing)
JDP	Joint deployment plan
MAGRAMA	Spain Ministry of Agriculture, Food and Environment
MCS	Monitoring, control and surveillance
MPA	Marine protected area
MPI	New Zealand Ministry for Primary Industries
NAFO	Northwest Atlantic Fisheries Organization
NCB	National central bureau
NEAFC	North East Atlantic Fisheries Commission
NFDS	Nordenfjeldske Development Services
NGO	Non-governmental organization
NMMU	Nelson Mandela Metropolitan University
NOAA	United States National Oceanic and Atmospheric Administration
OIML	International Organization of Legal Metrology
PIMPAC	Pacific Islands Managed and Protected Area Community
PLC	Programmable logic controller
PNA	Parties to the Nauru Agreement
PNG	Papua New Guinea
PSMA	Port State Measures Agreement
QMS	Quota management system
REM	Remote electronic monitoring
RFMO	Regional fisheries management organization
RFVR	Regional Fishing Vessels Record
RPOA-IUU	Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing in the Southeast Asia Region
RSA	Research set-aside
SAR	Synthetic aperture radar
SDG	Sustainable Development Goal
SEAFDEC	Southeast Asian Fisheries Development Center
SERNAPESCA	National Fisheries and Aquaculture Service of Chile
SIF	Stop Illegal Fishing
SISESAT	Sistema de Seguimiento Satelital (Satellite Monitoring System)
SMS	Short Messaging Service
SOM	ASEAN Senior Officials' Meeting
SPC	Secretariat of the Pacific Community
SPRFMO	South Pacific Regional Fisheries Management Organisation
SWIOFC	South West Indian Ocean Fisheries Commission
TAC	Total allowable catch
UAC	Unloading authorization code
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
UNODC	United Nations Office on Drugs and Crime
UVI	Unique Vessel Identifier

VIIRS	Visible Infrared Imaging Radiometer Suite
VMS	Vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission
WWF	World Wildlife Fund

INTRODUCTION

1. This document is the official record of the Fifth Global Fisheries Enforcement Training Workshop (5th GFETW), which was held in Auckland, New Zealand from 7 to 11 March 2016. The Workshop was organized by the International Monitoring, Control and Surveillance (MCS) Network and New Zealand's Ministry for Primary Industries with the collaboration of the Food and Agriculture Organization of the United Nations (FAO). The 5th GFETW was sponsored by:

- Australian Fisheries Management Authority (AFMA);
- Fisheries and Oceans Canada (DFO);
- FAO;
- Norway Directorate of Fisheries;
- Marine Scotland;
- United States National Oceanic and Atmospheric Administration (NOAA); and
- International Seafood Sustainability Foundation (ISSF).

2. Many individuals and organizations contributed to the success of the 5th GFETW, but the majority of planning and organizing was carried out by the 5th GFETW Steering Committee, which was composed of International MCS Network member representatives from around the world, including from New Zealand's Ministry for Primary Industries and the International MCS Network Secretariat. A sincere thank you to this dedicated group of individuals for taking the lead and making the 5th GFETW in New Zealand a reality.

3. Similar to previous Workshops, the 5th GFETW was highly successful in bringing together a global community of fisheries MCS professionals to share information and experiences, and to receive training on a broad array of MCS topics. The themes of the 5th GFETW were "Toitu Te Moana" ("Sustaining the Life Force of the Sea") and "Kahore He Wahi Heihuna" ("No place to hide"). The focus of the Workshop was "Regional and global collective efforts in combatting IUU fishing using effective MCS management tools, including enforcement powers to protect the sustainability and cultural and economic viability of all fish stocks." The opening ceremony showcased some cultural practices of New Zealand's indigenous Māori peoples, and a number of sessions also highlighted MCS in indigenous fishing communities—notably Māori fishing communities' customary practices and rights, as well as their journey to self-governance.

4. The 5th GFETW witnessed both cases where measures to stop IUU fishing were not working and cases where concrete progress in effectively combatting IUU fishing activities had been made. Whereas at earlier GFETWs the global task to combat IUU fishing appeared almost insurmountable, at the 5th GFETW professionals reported real progress in implementing effective measures against IUU fishing through enhanced international cooperation in several regions, and many countries' adoption of port State measures. Nonetheless, combatting IUU fishing remains a huge challenge, requiring the sustained enforcement efforts of countries and the forward movement of international measures designed to protect fishery resources and legal fishing activities worldwide.

5. Throughout each session, the 5th GFETW showcased examples of operational level cooperation, where authorities worked together through international partnerships, sponsorships and technical assistance designed to combat IUU fishing activities. This catalysed discussions—in plenary, in small groups and on the margins—about enhancing the effectiveness of combatting IUU activities, *inter alia* through capacity building and participating in joint operations between countries. In one session, international and regional MCS cooperation was illustrated by multiple presenters who described different contributions to stopping vessels that had been fishing illegally for Patagonian toothfish in the Southern Ocean for many years. Under the INTERPOL framework a total of 20 countries

participated in the actions and investigations that successfully stopped the illegal activities of these vessels and resulted in the identification and prosecution of certain beneficial owners.

6. The 5th GFETW presentations also showed how mutual cooperation between States enhances efforts to implement agreed international measures and the deployment of joint MCS operations. Enhancing collaboration with developing states and effectively building capacity are two of the focuses of the International MCS Network. Several presentations at the 5th GFETW pointed to the need to invest additional efforts in developing countries in order to strengthen their capacities to effectively implement internationally agreed measures. These capacity development efforts should address governance, legislation and technical capacities (means and skills).

Workshop background

7. For decades, IUU fishing has proliferated primarily because of the globalization of the fishing industry and increased demand for fishery products. In 2001, FAO adopted the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), which defines IUU fishing activities. IUU activities are a primary obstacle to achieving sustainable fisheries and a threat to food security: they directly compromise livelihoods, and have detrimental effects on the environment. Combatting IUU has become a priority for the international community over the past 15 years, resulting in a number of initiatives by international organizations, governments, non-governmental organizations, civil society and others.

8. IUU fishing activities take place both on the high seas and within national zones and, due to globalization in the marketplace, no region or area is immune to these problems or their harmful effects. Since individual states working on their own cannot solve such an extensive problem, combatting IUU activities requires cooperation among national fisheries enforcement authorities.

9. IUU activities involve a spectrum of activities and are not confined to fishing. They include transport, sale, purchase, processing and other steps in the supply and distribution chain. The amount of IUU activity that occurs and the costs attributable to IUU activities are difficult to quantify due to the covert nature of IUU operations, but, in 2009, the value was estimated to be USD10-23.5 billion annually. This estimation is currently under review, taking into account progress in several areas due to efforts of the international community to combat IUU fishing.

10. The gradual strengthening of the Network, which is made up of dedicated MCS practitioners who know each other personally, has facilitated some of these international efforts and cooperation, including but not limited to exchange of information and best practices, mutual technical and logistical support and joint activities. However, despite the progress made over the last 20 years, there is still a long way to go in combatting IUU activities in all parts of the world.

11. The overarching goal of the International MCS Network is to improve the efficiency and effectiveness of fisheries-related MCS activities through enhanced cooperation, coordination, information collection and exchange among competent national organizations and institutions. As an initial step toward realizing its goal, the Network convened the 1st GFETW in Kuala Lumpur, Malaysia, in 2005.¹ This workshop brought together operational-level MCS professionals from around the world dedicated to resolving IUU fishing issues and provided them with training on a wide range of MCS topics. Participants discussed the latest developments, the different tools available to assist countries in dealing more efficiently with IUU fishing, and methods for applying these tools through legal systems.

¹ - FAO/FishCode. 2007. *Report of the Global Fisheries Enforcement Training Workshop. Kuala Lumpur, Malaysia, 18–22 July 2005*. FAO/FishCode Review No. 18. Rome, FAO. 66 pp. Includes a CD-ROM and a DVD. (also available at www.fao.org/docrep/009/a0962e/a0962e00.htm).

12. As a result of the success of the initial workshop, the 2nd GFETW was convened in Trondheim, Norway in 2008 (FAO Fisheries and Aquaculture Report No. 885)² to further the work of the global community of operational MCS professionals and to offer them a global platform for sharing information and exchanging experiences and best practices. The participants learned about the latest, most effective and innovative tools and methods being used to detect IUU activities and apprehend those who engage in such practices. The outcomes of the 2nd GFETW were recorded in the 2008 Trondheim Declaration, in which participants recognized the serious threat posed by IUU fishing and the need for cooperative MCS. By means of the Declaration, the participants also called for increased training and capacity building and more opportunities for productive international cooperation, as well as encouraging countries to join the International MCS Network and endorsing the continuation of the Network's core services.

13. The 3rd GFETW, convened in Maputo, Mozambique in 2011, expanded on the progress of the first two workshops by adopting a focus on the specific needs of developing countries in successfully implementing MCS programmes. The participants in the 3rd GFETW emphasized the urgent need for expanded cooperation on all levels given that the transactions investigated often span many jurisdictions around the world. They further recognized the need for increased data sharing and discussed the MCS implementation challenges that small-scale fisheries must confront.

14. The 4th GFETW was held in San José, Costa Rica in 2014 (FAO Fisheries and Aquaculture Report No. 1078)³ and focused on the protection of artisanal and regional fishing communities through the promotion of legal, reported and regulated fisheries. Many national laws reserve near-shore areas for local fishing communities, but developing countries have limited resources to devote to MCS and enforcement to protect small-scale fisheries. At the 4th GFETW, low-cost MCS solutions and information-sharing were identified as key at both small-scale and regional levels, as was establishing trust–trust between fishers and government authorities, and trust among various governments. MCS systems that also improve safety at sea can help to incentivize participation and build this critical trust. A number of presentations offered concrete examples of programmes and systems that are working on national and regional scales, providing inspiration for similar cooperative efforts in other communities and regions.

Workshop objectives

15. The main objectives of the 5th GFETW were to offer a global platform enabling MCS professionals:

- to become acquainted with their counterparts in other countries and to build trust through personal relationships;
- to promote the sharing of information and the exchange of experience and best practices;
- to promote, where possible, the initiation of operational cooperation between national fisheries enforcement authorities;
- to enhance understanding of relevant international instruments—notably those adopted by FAO—and the activities of international organizations such as INTERPOL and the Pacific Islands Forum Fisheries Agency;

2 - FAO. 2009. *Report of the Second Global Fisheries Enforcement Training Workshop. Trondheim, Norway, 7–11 August 2008*. FAO Fisheries and Aquaculture Report No. 885. Rome. 70 pp. Includes a CD-ROM. (also available at www.fao.org/docrep/012/i0896e/i0896e00.pdf).

3 FAO. 2015. *Report of the Fourth Global Fisheries Enforcement Training Workshop. San José, Costa Rica, 17–21 July 2014*. FAO Fisheries and Aquaculture Report No. 1078. Rome. 100 pp. (also available at <http://www.fao.org/3/a-i4488e.pdf>).

- to learn about proven, cost-effective MCS technologies, as well as new and emerging technologies and strategies to combat IUU fishing activities.

Participation and Agenda

16. The 5th GFETW was convened for five days, allowing sufficient time for sessions to conclude with interactive discussion and question and answer periods. The programme consisted of ten thematic sessions and three special sessions, including break-out sessions, in addition to three Keynote Addresses and an opening and a closing session. Breaks were held between each session in order to allow participants to continue sharing ideas on the topics presented. Group meals and the Networking Day with optional field trips allowed for additional networking opportunities throughout the week. The Workshop programme is included here as Appendix 1.

17. The 5th GFETW was attended by more than 200 participants from 55 countries, including MCS practitioners from 45 state governments, including 34 developing countries. One regional economic integration organization (the European Union) was represented, and MCS experts of four regional fisheries management organizations (Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR); Commission for the Conservation of Southern Bluefin Tuna (CCSBT); South Pacific Regional Fisheries Management Organisation (SPRFMO) and the Western and Central Pacific Fisheries Commission (WCPFC)) also participated in the Workshop. Intergovernmental organizations represented at the Workshop included FAO, INTERPOL, the Pacific Islands Forum Fisheries Agency, the Indian Ocean Commission, and the Regional Plan of Action to Promote Responsible Fishing Practices including Combatting IUU Fishing in the Southeast Asia Region (RPOA-IUU). At least 7 non-governmental organizations were represented by 15 participants, and there were 20 representatives of other affiliations. Over 50 participants contributed presentations or served as facilitators in the main sessions and special sessions. The List of Participants is included as Appendix 2.

18. Participants in 5th GFETW were asked to complete an evaluation of the usefulness and applicability of the different sessions within the Workshop to their own organizations and work. They were also requested to identify the most useful individual presentations. A total of 62 evaluations were filled out anonymously and returned to the International MCS Network Secretariat, representing a response rate of about 31 percent. The evaluations demonstrated a high degree of satisfaction with the Workshop overall. The evaluation results were synthesized and a summary is included here as Appendix 3.

19. Copies of the PowerPoint presentations given by the speakers have been posted in PDF format on the International MCS Network website, www.imcsnet.org. At the conference, simultaneous interpretation of speeches and presentations was provided in English, French and Spanish.

OPENING SESSION

20. On Monday, 7 March 2016, the 5th Global Fisheries Enforcement Training Workshop (5th GFETW) commenced with a traditional *Māori haka-pōwhiri* (opening ceremony), including a *kai karanga* (welcoming call & reply) and *karakia* (opening prayer). Māori culture is an important part of New Zealand's heritage and the life of the country, and the Māori journey to self-governance and recognition of their customary fishing rights were showcased during later sessions at the 5th GFETW.

21. The *pōwhiri* is a custom associated with the welcoming and hosting of *manuhiri* (visitors) onto a *marae* for a formal gathering. The ceremony, was facilitated by Raniera Bassett, who was the *Kaitiuiti* and Chair *Te Tauaki Puāwai*. In Māori terms, the *pōwhiri* is a sacred act. It is where *tapu* (sacredness) and *noa* (free from tapu and restriction) are given their fullest expression. In Māoridom, the *pōwhiri* is regarded as one of the most stimulating and dignified acts that can be granted to an individual or group. Māori beliefs, values and concepts have been practised in this manner and passed down from generation to generation for centuries.

22. The opening session also included *whaikōrero* (speeches by the host nation and visitors). The Host Nation Ministerial Address was delivered by the Honourable Jo Goodhew, Minister of Food Safety and Associate Minister for Primary Industries of New Zealand, followed by a Host Nation Address by Martyn Dunne, Director-General, Ministry for Primary Industries, New Zealand. An Opening Address was also delivered by Cephas Ralph, Chair, International MCS Network.

23. Minister Goodhew began her address—the full text of which is included as Appendix 4—with a greeting in Māori and a word of thanks to the Ngāti Whatua for the welcoming ceremony. She also acknowledged the hard work of all the Workshop organisers. She noted that at the Workshop participants would also be hearing from one of New Zealand's preeminent Māori leaders about New Zealand's deep association with the sea and the fisheries, which pre-dates European settlement nearly 200 years ago. New Zealand fisheries are not only viewed as *taonga*, or treasure, by the Māori, but also as a significant food source and recreational pastime for a quarter of New Zealand's 4.6 million inhabitants, as well as generating a NZD1.5-billion-dollar export industry. For the past 30 years, New Zealand's fisheries management regime has been underpinned by a quota management system.

24. The New Zealand exclusive economic zone (EEZ) is the fourth largest in the world, and the nation is accountable for maritime areas of about 37 million square kilometres from the Southern Ocean through to the Pacific. Minister Goodhew explained that New Zealand has close relationships with the Pacific island nations, as reflected by the makeup of the 5th GFETW, which included many Pacific island representatives. New Zealand was a founding member of the High Seas Task Force, the precursor to the International MCS Network, and continues to fulfil its international obligations, which now include the implementation of international tools such as port State measures.

25. With regard to enforcement against IUU fishing, New Zealand has taken positive action and cooperated on a number of collective efforts in this ongoing battle. She said that every opportunity must be taken to strengthen our collective efforts through capacity building, intelligence sharing and collective actions. The advent of emerging technologies is a further means to help close the net on illegal operators, and New Zealand is considering transitioning to an integrated electronic monitoring and reporting system.

26. Director-General Dunne delivered the second Host Nation address—included here as Appendix 5—opening with a thanks to Ngāti Whatua for their blessings and a welcome to all GFETW participants. On behalf of New Zealand and the Ministry for Primary Industries, he said they were honoured to host a conference that was crucial in championing international efforts and deterring IUU fishing on both the high seas and within domestic jurisdictions. He highlighted five principles that he recommended be

adopted to stamp out illegal fishing: (1) acknowledge its existence; (2) create and maintain a unity of purpose in targeting offenders; (3) share information, intelligence, and resources; (4) have the ongoing resolve to collectively bring perpetrators to account before the courts; and finally (5) the effective control of nationals.

27. The Director-General also focused on the power of intelligence and the frameworks necessary to share such information and said this is something on which the International MCS Network must focus. Those who hold information must be willing to share that necessary information to enable collective efforts to combat IUU fishing, and domestic legislation must facilitate the sharing of tangible intelligence and information. He said that international efforts to target IUU vessels operating in the Southern Ocean demonstrated the power of coalitions of the willing.

28. New Zealand has developed a very effective framework for catering to the fishery needs of their indigenous Māori communities, noting that all New Zealanders, Māori and Pākehā alike, take pride in that partnership. The conference programme covers this and an interesting array of other topics and could provide participants with opportunities to share technologies, tactics, techniques and approaches from a global perspective to apply to their own crafting of fisheries compliance. He encouraged participants to take the opportunity to develop relationships with their counterparts, emphasizing that the trust and confidence built in Auckland would enable future outreach and cooperation.

29. The next welcoming remarks were delivered by Cephas Ralph, Chair of the International MCS Network, which celebrated its 15th year of existence in 2016. The story of the Network began in 2000 with the Santiago Declaration on Responsible Fishing, which ultimately led to the establishment of the Network in early 2001. The Santiago Declaration was signed by four countries and the European Commission. Today, the Network has 59 member countries, the EU and two Regional Fisheries Management Organizations (RFMOs).

30. One of the pillars on which the International MCS Network is built is that it is informal, voluntary and made up of a global membership of MCS practitioners. The Network is designed to promote cooperation and the exchange of information and ideas to help with capacity building and to develop activities in line with the needs of MCS practitioners. It coordinates training activities, brokers exchanges of MCS equipment, promotes exchange of expertise between countries and links with organizations such as FAO and INTERPOL, and organizes global workshops and the Stop IUU Fishing Award contest.

31. Mr Ralph observed that the interest in the 5th GFETW underlined the vitality of the Network's unique place as a global forum for MCS practitioners. He noted with satisfaction that many colleagues from the Pacific islands and Southeast Asia were in attendance. Looking back to the first GFETW in Malaysia in 2005, he observed that before the Network existed there was a strong case for its formation and that the Network remains increasingly relevant and should be developed by the members as they wish.

32. Towards the end of the last century, the pressure on many high seas fish stocks became so intense that strict new regulations were introduced—yet IUU fishing proliferated and seemed unstoppable. The outlook today is more positive, with indisputable progress in some areas. The efforts of the international community have been instrumental, in particular through FAO and its Committee on Fisheries (COFI), in establishing ever clearer rules for flag states, coastal states and port states. The development of new affordable, technological MCS solutions has also contributed to progress, as have changing attitudes in the industry about legal, well-managed fisheries to support the long-term sustainability of their businesses. The coordinated activities of many fisheries enforcement authorities,

RFMOs and INTERPOL have also played a big role. The Network will continue to bring together, at a global level, the best knowledge and expertise in the field of fisheries enforcement.

33. The group photo session followed; a copy of the photograph is included as Appendix 7.

KEYNOTE ADDRESS: WORKING TOGETHER TO COMBAT IUU FISHING TO ENSURE THE SUSTAINABILITY OF WORLD FISH STOCKS: THE ROLE OF COFI/FAO

34. The first keynote address—the full text of which is included as Appendix 6—was delivered by Fábio Hazin, Chair of the Committee on Fisheries (COFI) of FAO. The address focused on COFI's role and past contributions to fighting IUU fishing and how COFI can work together with the international community to combat IUU and ensure the sustainability of global fish stocks. Mr Hazin provided a comprehensive history of COFI, from its establishment in 1965 to the most recent COFI meeting in 2014, highlighting that it is the only global intergovernmental forum where major international fisheries and aquaculture issues are examined and addressed.

35. After introducing COFI, but prior to discussing specific meetings and global instruments developed under its auspices, Mr Hazin described some key events and agreements adopted alongside COFI efforts over the last few decades. The most important of these was the UN Convention on the Law of the Sea (UNCLOS), which was agreed in 1982, entered into force in 1994 and now has 167 parties. This was followed by the 1995 Agreement for the Implementation of the Provisions of UNCLOS relating to Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, also known as the UN Fish Stocks Agreement. Several provisions, including those in Part VI, relate to the fight against IUU fishing and directly reference monitoring, control, surveillance and enforcement.

36. Every ten years, beginning in 1992, global conferences on sustainable development have taken place in parallel with COFI meetings and initiatives. The outcome documents of these conferences have contained increasingly strong language and commitments to the sustainable harvest of marine resources (defined in terms of ensuring maximum sustainable yield) and to ending IUU fishing. Under the 2015 Sustainable Development Agenda, the current target for effectively regulating harvesting and ending illegal fishing is now 2020 under Sustainable Development Goal 14, which pertains to the sustainable use of oceans, seas and marine resources.

37. Against this background, COFI has taken a number of actions to combat IUU fishing in response to issues raised at COFI's biennial meetings, which have resulted in important instruments such as the 1995 Code of Conduct for Responsible Fisheries and the 2001 International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU). Each of these instruments was adopted only after years of expert and technical consultation pursuant to standard COFI processes. In 2009, the Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing was adopted, and as of February 2016 it requires only three more parties to ratify for it to enter into force. This is expected to happen before the 32nd COFI meeting in July 2016. Two other recently-adopted documents include the Voluntary Guidelines on Flag State Performance and the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries.

38. A key instrument currently under development is the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, to which an important component, the Unique Vessel Identifier, was added a few years ago. The next horizon is market-related measures, which include catch documentation schemes (CDS), the subject of an expert consultation last year and an upcoming technical consultation in April 2016. RFMOs have been setting the example and implementing CDS for many years with respect to selected species. Along with RFMOs, the work of INTERPOL's Fisheries Crime working Group and the UN Office on Drugs and Crime have also contributed greatly to recent international efforts to combat IUU fishing.

39. After emphasizing the importance of capacity building and highlighting the provisions made by agreements and instruments that support capacity building for developing States, Mr Hazin concluded that significant progress has been made in the fight against IUU fishing in the last two decades. The

actions of COFI combined with other international actions, commitments and agreements, have resulted in a comprehensive legal framework and diverse suite of tools to combat IUU fishing, presently available to the international community. However, there are still many challenges ahead of us; the key to success in overcoming these will be to strengthen international cooperation efforts, such as those made possible by the International MCS Network.

SESSION 1: INTERNATIONAL AND REGIONAL MCS COOPERATION

Key lessons from CCAMLR's experience with IUU fishing: commitment and approach, Sarah Lenel, Fishery Monitoring and Compliance Manager, CCAMLR, Australia.

The Global Toolbox: A Case Study into Multinational Approaches to Southern Ocean IUU, Gary Orr, Manager Compliance Operations, Ministry for Primary Industries, New Zealand.

No Place to Hide!, Mario Alcaide, Criminal Intelligence Officer, INTERPOL.

An Integral Approach Against IUU Fishing: Operation Sparrow, Monica Corrales, Deputy Director-General of Legal Affairs, Ministry of Agriculture, Food and Environment, Spain.

40. The first plenary session, facilitated by Cephias Ralph, Chair, International MCS Network, focused on international and regional MCS cooperation. The four presentations within this session were designed to present the challenges and pitfalls facing each player in combatting IUU activities, in relation to a specific case concerning six blacklisted IUU vessels operating in CCAMLR international waters. They explained how certain vessels had been detected, inspected and legally detained and how the beneficial owners of some of the vessels were successfully prosecuted.

Key Lessons from CCAMLR's experience with IUU fishing: commitment and approach

41. The first presentation in the first session was delivered Sarah Lenel, Fishery Monitoring and Compliance Manager, Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). Ms Lenel provided a broad overview of CCAMLR, its experiences with IUU fishing and how international cooperation has been key to combatting it. Her presentation was intended to provide a context for the other presentations in this session, which would elaborate on actions taken against IUU vessels that used to operate in the CCAMLR Convention area.

42. Regional and international cooperation are crucial in combatting IUU fishing, a challenge greater than any single country can handle. CCAMLR's efforts and accomplishments are firmly grounded in international cooperation based on a few key elements, including: a sound institutional arrangement (Antarctic Treaty); a robust management structure; common goals among members; political commitment; patience; hard work; and best available science supporting decision-making—with a special emphasis on patience and hard work.

43. CCAMLR confronts numerous challenges when it comes to achieving effective international cooperation. One of the most difficult is that there are differing interpretations of key provisions of the Convention and the conservation measures adopted by CCAMLR. Although CCAMLR has come a long way in establishing frameworks for receiving and disseminating information and data, it still has some way to go. Other challenges include: balancing the principles of conservation and resource use; the fact that membership does not include all port and flag states; lack of capacity in developing state members, a problem with which the Global Environment Facility is trying to help; a lack of transparency.

44. Antarctic waters are home to unusual and majestic creatures and keystone species such as krill. Scientists in the 1970s feared that exploitation and other human impacts could have devastating and irreversible consequences for Antarctic marine life. Negotiations under the Antarctic Treaty ensued, resulting in the Convention, which was signed by 15 parties in 1981 and entered into force in 1982.

45. The Convention highlights the importance of international cooperation, as reflected in its preambular text and other provisions related to scientific observation and the system of inspection. The Convention applies to all Antarctic populations of fin fish, mollusks, crustaceans and seabirds. It establishes the Convention area: all water south of the Antarctic convergence, covering approximately 32 square kilometres, or about ten percent of the earth's surface.

46. The Commission is the decision-making body that implements the Convention. Composed of 24 member states and the European Union, as well as 11 acceding states, it is advised by a scientific committee. CCAMLR implements 66 conservation measures. Since the 1990s, a number of measures related to IUU fishing have been adopted, encompassing licensing, vessel monitoring systems (VMS), systems of inspection (including at sea), a catch documentation scheme and IUU vessel lists. In 2003, the Commission mapped the extent of historical IUU information, including known and suspected IUU vessels and IUU gear collected in the Convention area.

47. Over the last ten years, it became increasingly obvious that six or seven vessels were persistently engaged in IUU activity in the Convention area, supported by a reefer vessel. However, 2015 was a bad year for the majority of these vessels and we now know for certain that several will never return.

48. The key features of IUU vessels that previously operated in the Convention area were name changes, flags of convenience and reefer support (although the reefer which supported them for many years sank in 2014). These vessels cooperated with each other extensively. They typically used gillnets, which have significant impact in terms of bycatch and their effect on the physical marine environment. Even though many of the vessels are gone, the gillnets they left behind are likely to have an ongoing impact.

49. In addition, other vessels may try to fill the void and begin engaging in IUU fishing, so CCAMLR must remain watchful. As the price of Patagonian toothfish increases, so does the incentive for authorized vessels to undertake IUU activities. CCAMLR is continuing to review and amend its measures and systems in place. One recently-adopted project uses satellite imagery to detect and understand IUU vessels in the Convention Area, and a resolution was adopted encouraging action to be taken regarding vessels without nationality.

The Global Toolbox: A Case Study into Multinational Approaches to Southern Ocean IUU

50. The second presentation was delivered by Gary Orr, Manager, Compliance Operations, Ministry for Primary Industries, New Zealand. His presentation focused on recent actions taken against the Southern Ocean IUU fleet that resulted in the detention of almost all of the vessels and, in many cases, sanctions against those responsible for their operation. The key to unlocking the potential of international efforts to stop IUU vessels operating in the Southern Ocean was the redefinition of certain aspects of IUU fishing as “fisheries crime” by INTERPOL’s Fisheries Crime Working Group.

51. The extraction of vast amounts of Antarctic and Patagonian toothfish by IUU vessels was a problem for over a decade. Much to New Zealand’s frustration, IUU vessels were mostly indifferent to its MCS efforts—efforts that were intensive and could be hazardous in the distant and inhospitable CCAMLR waters.

52. One problem was that it could take weeks or months to get responses from other states to determine whether vessels’ claims to be operating under certain flags were valid. Patrols that located these vessels could not board them if they were uncertain of the legality of doing so, which depends on several factors, namely: the offence(s) suspected; who has jurisdiction for investigation and prosecution; and the capacity of the flag state in these areas. Without boarding, most evidence of illegal fishing is out of reach and the nationalities of those on board are difficult to establish.

53. Even when evidence can be seized, fraudulent documentation often serves to conceal the beneficial ownership of the vessels and the trade routes used to dispose of the catch. The fraud characteristic of a lot of IUU fishing makes it more than just a fisheries matter and could indicate other serious offences.

54. This is why the term “fisheries crime” is now increasingly being used when referring to the activities of IUU vessels, which can include falsification of documents and customs declarations, breaches of maritime laws and human trafficking. These offences are often transnational and fall across several jurisdictions, which can add complexity; however, the nature of the offending is not particularly sophisticated nor difficult to detect and prove in a court of law.

55. Prior to 2015, although a range of MCS tools were available, efforts to detect and deter IUU fishing in Southern Ocean were often fragmented and ineffective, and well-known vessels like the *Kunlun*, the *Perlon*, the *Thunder*, the *Viking* and the *Yongding* operated with impunity. Since IUU fishing was considered strictly a fisheries matter, it was given low priority by other agencies within New Zealand’s national government, such as those responsible for border security. This problem was shared by fisheries colleagues in other jurisdictions.

56. A dramatic shift has occurred in the last few years, which Mr Orr attributed to INTERPOL’s Fisheries Crime Working Group (FCWG) and which he likened to, “a key that opened the door to access to the full range of law enforcement agencies of nations throughout the world.” The FCWG was created in 2012 as one of the three groups supporting the Environmental Compliance and Enforcement Committee, a forum established to enhance cooperation against international environmental crime. The FCWG provided an opportunity for a range of law enforcement officials—police, customs, maritime, taxation, immigration and health agencies—to focus on the full gamut of criminal activity associated with IUU fishing vessels.

57. INTERPOL also supported the global fight against IUU fishing by accepting requests to issue purple notices in relation to fishing vessels and their *modus operandi*. These have generated a wealth of information that has significantly advanced the global investigation of the worldwide IUU fleet. Countries have now begun requesting blue notices in relation to individuals associated with IUU fishing vessels as well.

58. As other agencies began to recognize that IUU fleets were engaged in a range of crimes that result in the theft of resources and income, a “holistic” governmental approach to addressing IUU activity began to develop in New Zealand. At the same time, a growing global awareness of the impact of IUU fishing inspired many countries to implement legislative change to enable regulators to communicate more openly and promptly, and to share information and intelligence. Those changes, along with an increased sharing of resources and joint operational activity, have helped New Zealand make inroads in the fight against IUU fishing.

59. Gaps in legislation clearly still exist. Asking certain questions and thinking about certain scenarios can help countries to realize what they may be missing in domestic legislation. For example, if an authorized vessel operating in your jurisdiction is suspected of IUU fishing on the high seas or within another country’s jurisdiction, what actions can you take under domestic law?

60. The next step is implementation of the Port State Measures Agreement, but Mr Orr observed that countries could adopt and incorporate the principles of the agreement into their routine MCS activity, even if their governments are not yet prepared to ratify the agreement itself. Mr Orr called for an ongoing and growing commitment from all nations in the following areas: (1) cooperation and collaboration; (2) information, intelligence, resources; (3) training; (4) networking; (5) involvement with the IMCS Network, INTERPOL FCWG, RPOAs, RFMOs and NGOs; (6) relationship development and maintenance; (7) ongoing coordination with diplomacy; (8) maintaining the profile of IUU with governments, other agencies and media; and (9) securing continued commitment of resources from governments.

61. Many countries contributed to the demise of the Southern Ocean IUU fleet. Some smaller countries made major contributions that achieved significant results. INTERPOL staff also worked long and hard to support these efforts. Moreover, while law enforcement professionals may not always agree with the Sea Shepherd Conservation Society's approach, this organization undoubtedly raised the profile of Southern Ocean IUU and provided important evidence to the authorities that was used to obtain criminal convictions.

62. Mr Orr concluded that the events of the past twelve months are clear evidence of the strength and value of a network. When nations work collectively, IUU operators can no longer play us off against each other and we become a force to be reckoned with.

No Place to Hide!

63. The next presentation was delivered by Mario Alcaide, Criminal Intelligence Officer, INTERPOL, who focused on the principles and situations that INTERPOL has identified as the main challenges facing its member countries when tackling illegal fishing. INTERPOL has 190 member countries, in which national central bureaus (NCBs) are typically hosted by police departments or Ministries of Justice.

64. To set the stage for his presentation, Mr Alcaide showed an extract from a film depicting a dramatic sequence in which a vessel expertly changes names and flags to avoid inspection. Afterwards, he observed that vessel name changes in real life might be more obvious and even contain errors; nevertheless, the ease with which vessels are able to change their flags is in no way fictional.

65. Mr Alcaide emphasized that countries need to enforce their own laws more effectively, referencing a number of examples of vessels with obvious deficiencies that were allowed to enter into port. Multiple spelling mistakes and a poorly painted name did not prevent one vessel from entering port, for instance; another vessel had its markings displayed on an external panel, which is not legally acceptable under any jurisdiction and therefore no port should allow. Vessels have also been observed changing names using stickers—including while in port—and using erasable markers to write names on life savers to help mask a vessel's true identity.

66. Enforcement officers also make the mistake of accepting copies of certificates and registrations, which can be doctored. For example, key phrases such as “Not Valid for Navigation”, which appeared on original registration documents have been deleted from copies. Inspectors also need to question vague cargo documentation, such as containers marked “frozen fish”, for example. In one such case, the cargo was claimed to be frozen tuna but was subsequently discovered to be Patagonian toothfish.

67. Some vessels have blank documents, signed and stamped, ready for different vessel names to be filled in. Whole kits with stamps and other falsification tools have also been discovered. Some vessels also have piles of flags ready to be used for both pre-planned and instant reflagging. In the past, vessels would toss whole computers overboard to keep data from inspectors, but now they use easily-disposable external hard drives. In one case, a photo of a crew member using an external drive was found on Facebook, which Mr Alcaide noted can be a great site to collect information; crew background checks can sometimes reveal serious crimes. For high-risk vessels it may be advisable for inspectors to ask their NCBs to cross-check crew lists with INTERPOL databases.

68. INTERPOL supports the fight against IUU through Project Scale, which falls under the category of natural resources—one of the three main environmental areas in which INTERPOL is involved. Project Scale is focused on combatting illegal fishing and its areas of activity include: intelligence exchange, support to the Fisheries Crime Working Group and its two projects (intelligence and capacity building), case-specific support through deployment of its investigative support teams and incident response teams,

support to member countries in issuing international notices and alerts facilitation of region- or commodity-specific actions, and capacity building actions. Project Scale is fully supported by the governments of Norway and the United States, as well as the Pew Charitable Trusts.

69. Project Scale's approach to capacity building involves training followed by real operations, which tests the quality of the training and keeps participants more engaged. An upcoming training for investigators of fisheries crime in Vietnam will focus on high-risk foreign vessels, since this is the area where INTERPOL can add the most value.

70. The INTERPOL databases that are most relevant for combatting illegal fishing are the criminal networks, vessels, travel documents and notices databases. INTERPOL issues eight types of notices, including purple notices that seek or provide information on specific *modus operandi*, or the devices used by criminals. Mr Alcaide clarified that purple notices are not arrest warrants, as they are sometimes characterized.

71. Mr Alcaide presented two case studies; first, he briefly considered that of the fishing vessel *Thunder*, which the Sea Shepherd Conservation Society followed for a long time, acting like a VMS by transmitting information regularly. This allowed INTERPOL to run daily calculations of the closest ports and keep them notified. Ultimately the owners, agent, captain and engineers of the *Thunder* were convicted of multiple crimes by a São Tomé and Príncipe court, including damage against nature and forged documents. The beneficial owners were fined over EUR14 million; the captain and engineers were imprisoned for terms of two to three years.

72. His second case study focused on the *Kunlun*, also known as *Asian Warrior*. New Zealand's patrol vessel first detected the *Kunlun* in the Southern Ocean, but boarding was not authorized under international law. The United Nations Convention on the Law of the Sea (UNCLOS) only permits high seas boarding for five reasons: piracy, broadcasting, slavery, stateless vessel, or vessel flying the same flag as the patrol vessel; illegal fishing is not included. In the absence of any applicable RFMO boarding and inspection schemes, states must abide by UNCLOS.

73. However, an Australian patrol found a way to board the *Kunlun* on the high seas during a window in which the vessel was stateless. The boarding produced useful information, as did Sea Shepherd, which followed the *Kunlun* for a time. The vessel was then detained in Thailand for tax violations related to false cargo declarations, but it escaped from port during the night. It was tracked to Senegal, where it transhipped the fish to a cargo vessel and sent it back to Vietnam for processing, but the final port had been warned. As a result of international cooperation, Vietnam was able to seize seven containers of toothfish worth millions as well as collect and share evidence with other jurisdictions that needed it for their legal case files.

74. In the ensuing investigation, an INTERPOL investigation support team helped with vessel inspection and the collection of additional evidence in Mauritius, Senegal and the Netherlands, with Spain's Ministry and *Guardia Civil* (national police) also playing major roles. In addition, INTERPOL supported the forensic investigation, which entailed flying in forensic experts from Canada to Amsterdam to examine evidence provided by Sea Shepherd.

75. Mr Alcaide noted that in one investigation, 22 countries had made contributions in different forms. Thanks to these different inputs, investigators are able to assemble the pieces of the puzzle including beneficial ownership, home ports, modus operandi and the fleet involved. This level of international cooperation is possible and is what is required to fight sophisticated, transnational, organized fisheries crime. Further international cooperation is also needed to stop the sixth and last ship in the group of serial IUU vessels, the *Perlon*, which is still at large and for which he called on everyone to help by providing information to locate and inspect.

76. Mr Alcaide ended his presentation by saying that INTERPOL's mission is to facilitate cooperation, assistance and the exchange of police information, and its role begins where national police powers and jurisdictions end.

An Integral Approach Against IUU Fishing: Operation Sparrow

77. The last presentation in the international MCS cooperation session was delivered by Monica Corrales, Deputy Director-General of Legal Affairs, Ministry of Agriculture, Food and Environment (MAGRAMA), Spain. Her presentation focused on Spain's holistic approach to fighting IUU fishing, including the new Spanish legal framework, using the example of Operation Sparrow to illustrate the importance of real legal consequences for IUU vessels.

78. Ms Corrales prefaced her case study with a few remarks on the seriousness of IUU as a global threat. In this regard, she noted that ending IUU fishing, which is called for by Sustainable Development Goal (SDG) 14 (related to oceans), will also help achieve other SDGs related to eradicating poverty and hunger. She said the fight against IUU fishing requires cooperation among all stakeholders: state authorities, UN Agencies, RFMOs, NGOs and industry along with INTERPOL.

79. Noting that Spain is a member of the EU and party to the UN Convention on the Law of the Sea (UNCLOS), Ms Corrales focused on Spain's national legal and institutional framework, which goes further and which enabled Operation Sparrow. The basic law is the 2001 Spanish Fisheries Law, which considers Spain in its four different roles: as flag state, coastal state, port state and market state. The country's most advanced national measures with respect to each of these four different roles were highlighted.

80. With respect to flag state control, the Spanish Monitoring Centre and its system are among the best in the world, and necessary for effective control over a fleet of about 2 000 fishing vessels (all equipped with VMS). Another key to Spain's flag state control is its procedure for the verification of fishing licenses: Spain is the only European nation that requires its distant water vessels to obtain license and payment verification from Spanish embassies in coastal states. Furthermore, Spain is in the process of re-evaluating its Voluntary Guidelines for Flag State Performance; this self-evaluation is to be completed in the next 2 to 3 years, if not sooner.

81. As a port state, Spain considers the Port State Measures Agreement an important tool for the future and looks forward to it soon becoming a legally-binding international agreement. With respect to market state control, Spain is implementing the pioneering EU Regulation 1005/2008, which aims to cut off the commercial flow of illegal fish by requiring catch certificates validated by flag states.

82. The new Spanish legal framework also contemplates Spain in the role of "business state." Under this law business state controls apply to any Spanish nationals who own, operate, manage or work on vessels not flagged by Spain. This amendment to the Fisheries Law, which was adopted in December 2014, defines taking part in the operation, management or ownership of a stateless or IUU vessel as a "very serious infringement", which can incur sanctions of up to EUR600 000 per case. Furthermore, the new law also strengthens the control of markets and inspection measures, and gives fisheries inspectors more extensive investigative powers and tools.

83. The new legal framework helped enable the Sparrow Operations. The name refers to two operations carried out by the Spanish inspection services after months of research and international cooperation, which included contributions from Australia, New Zealand, Malaysia, Cabo Verde, CCAMLR and other RFMOs, and INTERPOL. Belize also provided information in response to a mutual assistance request that helped establish a link between a Spanish enterprise and enterprises associated with four IUU vessels. Sufficient investigative capacity to review evidence was also a key feature of the

Sparrow Operations, which produced thousands of economic and legal documents that needed expert review and analysis.

84. The first Sparrow Operation focused on four IUU vessels, *Kunlun*, *Songhua*, *Yongding* and *Tiantai*, and involved the simultaneous inspection of five companies with alleged links to the vessels and associated shell companies. Investigators obtained 3 000 documents, but many others had been destroyed to cover up links. Despite this, they were able to discover a clear pattern of Spanish nationals and Spanish companies using offshore companies in multiple countries to control IUU vessels. Each company played a distinct role in the scheme. For instance, one company was the owner of the vessel, another was set up specifically for payments to the crew, and a third was the beneficiary of the insurance.

85. In June 2015, MAGRAMA handed down a final resolution imposing sanctions totalling EUR18 million against all of the persons and entities involved in management of the IUU vessels. Other penalties included the disqualification for public loans and subsidies, in addition to a ban on future fishing activities for up to 23 years in some cases.

86. Ms Corrales could not reveal the details of Operation Sparrow II, which is still ongoing, except to say that it is more complicated and involves three times as many documents as Operation Sparrow I. Spain's experiences under both Sparrow Operations demonstrate how an integrated, holistic international response, as well as a legal binding agreement, is needed to face the global IUU challenge.

Discussion, comments, questions and answers

87. Specific comments and questions posed included whether Spain's legislation is singular or if the same changes would be made across Europe. Ms Corrales replied that although measures under the law are derived from EU legislation, but some of these go beyond it, notably the law relating to authorizations. This makes sense for Spain, given the size of its fleet, but it is a resource-intensive undertaking that may not be necessary for countries with smaller fleets.

88. The following question asked whether decisions and penalties imposed by the Spanish courts were appealable. The answer was "yes," as decisions taken by the Spanish administration are subject to judicial review; however, in Ms Corrales's opinion the government's case was strong.

89. Another commenter noted that it was not feasible to dedicate the level of effort described in the presentations to most cases. She asked whether there was a more commonplace, less resource-intensive system that could generate the same kind of information—especially in light of the Port State Measures Agreement entering into force—in order to maximize its potential for success. Answers proposed by the panelists included broach international cooperation, not just on specific cases, expanding the Global Record based on IMO number, and a greater focus on reefer and other support vessels, which would have a wealth of information about vessels with which they interacted. What is more, if attention were focused on them at this stage they may be caught unawares.

90. In response to a question about the importance of political commitment and what impact it has had on the CCAMLR Convention, it was noted that there is the feeling that some states come to the table but then hinder progress. Moreover, there is a degree of politicization to the science, which is a problem because CCAMLR is bound to abide by the best available science.

91. A question about where the illegally-caught toothfish had been going for over a decade could not be fully answered. However, as presenters noted, investigations and evidence collection were ongoing. The commenter also remarked whether the beneficial owners might have been deprived of profits if detection had occurred earlier.

92. An audience member from a coastal developing state asked about the interplay of EU and Spanish regulations, and if Spanish laws would apply to a vessel in coastal waters in the Indian Ocean.

The presenter clarified that the EU legislation establishes the minimum obligations of EU Member States, but Spain goes further in the regulations imposed on its nationals. An EU representative added a further point of clarification regarding EU agreements, noting that EU Member States enforce their laws within the framework of EU legislation, in line with Article 94 of UNCLOS.

SESSION 2: MCS PARTNERSHIPS, SPONSORSHIPS AND TECHNICAL ASSISTANCE

Regional Cooperation Toward Combatting IUU Fishing in Southeast Asia, Somboon Siriraksophon, Policy and Programme Coordinator, SEAFDEC, Thailand.

Regional Cooperation in the Western Indian Ocean, Nicholas Ntheketha, Chair of Fish-i Africa Task Force, Kenya.

Organizing Operational Coordination between EU Member States in relation to Atlantic Bluefin Tuna, Mario Santos, Deputy Head of Unit for Operational Coordination, European Fisheries Control Agency.

The Paper Fish: An Investigative Case Study into Multiagency Cooperation, Steve Ham, Investigations Manager (Central Region), Ministry for Primary Industries, New Zealand.

Effective and Efficient Multijurisdictional IUU Enforcement Operations, Will Ellis, Assistant Director, NOAA Office of Law Enforcement, United States.

MCS Aspects of Electronic Reporting and Electronic Monitoring in FFA Member Countries, Hugh Walton, Chief Technical Adviser, Pacific Islands Forum Fisheries Agency.

93. In the second plenary session, facilitated by Todd Dubois, Assistant Director, Enforcement Operations, Office of Law Enforcement, National Oceanic and Atmospheric Administration (NOAA), United States, each presenter focused on an example of multijurisdictional cooperation, including technical assistance in different regions of the world.

Regional Cooperation toward Combatting IUU Fishing in SE Asia

94. The first presentation in this session was delivered by Somboon Siriraksophon, Policy and Programme Coordinator at the Secretariat of Southeast Asian Fisheries Development Center (SEAFDEC), Bangkok; he focused on regional cooperation to combat IUU fishing in the Southeast Asian region.

95. Mr Siriraksophon's presentation was composed of two parts: first, he described the forms of IUU fishing affecting the Southeast Asian region; second, he explained how several SEAFDEC initiatives are helping Association of Southeast Asian Nations (ASEAN) Member States to combat regional IUU fishing.

96. The first form of illegal fishing common to ASEAN Member States is activities inside of countries, such as unlicensed fishing or the use of prohibited gear. The second form is the landing of catch across borders, typically flowing from countries like Cambodia or Myanmar to Thailand or Malaysia where prices are higher. Vessels engaged in this activity may use "double flags." All ASEAN members also deal with the third form of illegal fishing, which is poaching from other EEZs. The last two common forms of IUU activity in the region are illegal fishing and trading—including that of live reef food fish—as well as IUU fishing in the high seas and RFMO areas.

97. In addition to developing the ASEAN Guidelines to prevent IUU fish entering the supply chain, SEAFDEC has undertaken three other main initiatives towards combatting illegal fishing in its different forms. The first was establishing the Regional Fishing Vessels Record (RFVR) for vessels of 24 metres and over, which is important for tracking and investigating vessels that move between Member State EEZs. Currently only ASEAN members have access to the database which contains the RFVR information.

98. The second initiative is the ASEAN Catch Documentation Scheme (ACDS), which has two objectives: to provide a unified framework to enhance the traceability of fish products and to enhance the credibility of regional products for international trade. Non-ASEAN countries must also use ACDS certificates if they want to export fishery products to the ASEAN region. The ACDS covers both whole

fish and fish meat (raw and processed) but not other fish parts, with the exception of shark fins. The ACDS is not yet mandatory, but they are moving towards that.

99. The third initiative highlighted by Mr Siriraksophon was establishing regional cooperation to support implementation of the Port State Measures Agreement in the ASEAN region. Implementation will require harmonization across ASEAN Member States with respect to restriction levels for entry, use of ports and port services. Once this is accomplished, inspections and enforcement actions will become easier.

100. Alongside these initiatives, SEAFDEC works to enhance high-level support for regional cooperation to combat IUU fishing, in particular at the ASEAN Senior Officials' Meeting (SOM); recently it also helped to produce the first draft of an ASEAN-SEAFDEC Joint Declaration regarding regional cooperation to combat IUU fishing, which will be forwarded to the SOM.

Regional Cooperation in the Western Indian Ocean

101. The second presentation, looking at regional cooperation in the Western Indian Ocean, was delivered by Nicholas Ntheketha, Chair of the FISH-i Africa Task Force, which comprises eight member countries: Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia and Tanzania. The EEZs of these countries span over 5 million square kilometres.

102. The FISH-i Africa Task Force resulted from a 2012 meeting of southwestern Indian Ocean nations, the goal of which was to increase cooperation to fight IUU fishing. The task force is a regional initiative involving eight FISH-i Africa countries supported by Stop Illegal Fishing (SIF), the Pew Charitable Trusts, as well as a technical team which included Nordenfjeldske Development Services (NFDS), SIF, Trygg Mat Tracking, and international experts and relevant regional organizations such as the Indian Ocean Commission (IOC) and the Indian Ocean Tuna Commission (IOTC).

103. FISH-i Africa's objective is to increase compliance, facilitate enforcement action and deter IUU fishing in the region, turning illegal fishing into a high-risk, low-reward activity. The FISH-i Task Force identified shortages of human resources, assets and a lack of finances to operate their assets as barriers to enforcement and information collection in each of the states.

104. To overcome these barriers, task force members agreed to share information and intelligence through a secure web-based platform. Types of information now shared include: fishing vessel license lists; vessel photos, identities and history; vessel movements; suspected IUU activity; INTERPOL notices; and IUU lists from RFMOs and other organizations. Vessel catch data, inspection reports, entry and exit reports, VMS data and port visit data are currently not shared.

105. Through information sharing, quarterly meetings and other cooperation, the FISH-i Africa Task Force is not only successfully fighting against IUU fishing but also progressively building up trust among its members. This demonstrates how much can be accomplished with minimal resources when countries are committed and brought together with clear objectives and goals. The task force concept could be replicated in other regions and could potentially initiate similar cooperation.

106. Although some challenges remain, prospects are good for ever greater cooperation, with the sharing additional types of data, possibly extending the network to new members such as South Africa and France, and the standardization of MCS procedures (e.g. licensing, inspection and observers). If all of the member countries become parties to the Port State Measures Agreement this would further improve the task force's prospects.

107. Mr Ntheketha highlighted one specific example of the FISH-i Africa Task Force's success, which was the repeated denial of port services and licenses to fish to the *Premier* by Kenya and other

member countries, as long as its operators were avoiding sanctions for involvement in IUU fishing activities. He concluded his presentation with the observation that the cheapest tool in fighting IUU fishing is the sharing of information and intelligence through cooperation among all MCS practitioners.

Organizing Operational Coordination between EU Member States in relation to Atlantic Bluefin Tuna

108. The next presentation was delivered by Mario Santos, Deputy Head of Unit for Operational Coordination, European Fisheries Control Agency (EFCA), who spoke about the joint inspection and surveillance activities among EU Member States in relation to Atlantic bluefin tuna.

109. As background to the discussion of the EU's model of regional cooperation, Mr Santos explained that Europe has a Common Fisheries Policy (CFP), which establishes the rules for sustainable management of fisheries resources, and that it is one of the most integrated policies in Europe. The main features are equal access for EU fishing vessels across EU waters, common conservation and control rules, and the EU's role as the contracting party in any agreements with external parties. The CFP control policy, which EFCA deals with the most, establishes both the role of EU inspectors and the common rules to be observed.

110. With the underlying goal of facilitating cooperation between the European Commission (EC) and Member States, EFCA's work focuses on three objectives: compliance, a level playing field and cost-effectiveness. Through operational coordination of joint inspection and surveillance activities and capacity building, EFCA develops common approaches for regional challenges: it pools and organizes limited human and material resources for optimal deployment, which promotes transparency, better risk management and cost-effectiveness.

111. Joint deployment plans (JDPs) are a key type of operational organization support, which also includes training in best practice, common risk analysis, establishment of discard ban compliance programmes, as well as assistance to EU members in developing countries' waters and RFMO areas. JDPs are only implemented in priority regions and fisheries, but all the different basins are covered and EFCA also contributes to regional RFMO control schemes through JDPs. A strategic-level coordination group called a Steering Group (made up of states and the EC) sets the objectives and priorities for the JDP operation, and a tactical level coordination group implements and reports back to the Steering Committee. There are three phases in the continuous JDP regional cooperation cycle: planning, implementation (using a flexible, adaptive approach) and assessment, which is important for the following year's planning.

112. Based on EFCA's experience, the following have been key principles of regional cooperation: (1) joint planning and usage of patrol vessels, (2) exchange of EU inspectors at sea and on land, (3) exchange of information and virtual coordination through FISHNET (an access-controlled web application offering a suite of coordination tools), (4) development of joint procedures for securing evidence for best use in court, and (5) joint workshops and training for inspectors. Each JDP has a Coordination Centre where daily targeting and recommendations are set. EFCA receives and integrates information from the relevant states, such as VMS and ERS data, and sends it to FISHNET, where it is available to the Coordination Centre. In the case of Atlantic bluefin tuna in the Mediterranean, EFCA acts as the Coordination Centre and the coordinators from Member States come to Vigo or videoconference through FISHNET to check the status, adapt their planning and perform related tasks. Last year the Coordination Centre coordinated about 17 000 inspections.

113. Compliance is harder to measure than infringement; this provides only a small part of the story, insofar as infringements are based on factors other than control. EFCA has developed a results-based, multi-indexed approach, including compliance indicators, and with this approach a significant decrease

in the estimates of unreported catches was measured, following the implementation of a JDP. Evidence from external scientific bodies indicated that joint coordination has helped to create a more compliant environment.

114. With respect to capacity building, Mr Santos highlighted tools and training activities provided by EFCA. One of the data systems which EFCA makes available to Member States is MarSurv, which collates multiple sets of data and allows cross-checks, which can be useful when certain information is missing. Referring to training as one of the building blocks of cooperation, Mr Santos noted that EFCA had developed a core curriculum which is available for anyone to download at: <http://bookshop.europa.eu/>. The curriculum is designed from a European perspective but could also be useful for others. EFCA also conducts three training sessions per year in develop countries, in response to specific requests made by the EC. In 2015, training sessions were conducted in Guinea Bissau, São Tomé and Príncipe, and Senegal.

The Paper Fish: An Investigative Case Study into Multiagency Cooperation

115. The fourth presentation was delivered by Steve Ham, Investigations Manager (Central Region), Ministry for Primary Industries, New Zealand, who presented a case study of a recent multiagency, multinational investigation of fraud in inshore fisheries.

116. The title of the presentation, “The Paper Fish”, refers to a type of investigation in which the fraud is located, investigated and prosecuted based on the documentation used to commit the offence. Proving “serious fraud” under New Zealand law requires proof of dishonest activity, the use of deception and actual or potential financial loss. Accomplishing this through a paper investigation is challenging, often messy—and not for the faint of heart.

117. Mr Ham observed that whereas intelligence is useful in commercial fisheries investigations to point investigators in the right direction, robust analysis is what reveals the true picture and enables investigators to answer key questions. A recent multiagency investigation owed its success to regional analysts and an investigator detecting anomalies around the fish landed in a New Zealand provincial port.

118. The specific focus of the investigation, which began in February 2014, was misreporting and underreporting of a species in the bottom, longline fishery called the New Zealand bluenose trevalla. Knowing about the species, the fishery and the market is essential to an investigation. As for the bluenose, it’s found in temperate Southern hemisphere waters and is caught all year round, mainly by longlining but also by trawling in offshore reefs, seamounts and shelf drop-offs. It’s usually landed in a fresh, chilled state. It’s a high-value species in high demand by export markets, including Australia, and comparatively large volumes are exported as compared to those sold domestically.

119. Investigators must also be knowledgeable about the relevant statutory requirements. The bluenose trevalla fishery is sustainably managed by strict quotas that allow a set amount to be taken each year. In the fisheries sector, reporting of data is the single most important factor for scientific testing and sustainable management. All fishers in New Zealand must have permits and are required by law to report all fish caught by species.

120. However, when exporting their product, commercial operators are subject to a different set of statutory requirements under food quality assurance and market access laws. In the export process, the same operators are less likely to underreport volumes of fish for various reasons. The nature of the product itself might preclude falsification, such as when it must be flown out: exporters can’t lie to airlines about weights.

121. Therefore, the export documents became the “source of truth” in the bluenose trevalla investigation, where discrepancies between fisheries and customs data indicated large-scale misreporting. Sometimes the quantities exported to Australia were three times larger than landings reported. In one instance, the landed amount reported to the Ministry for Primary Industries (MPI) was 580 kilograms; the next day, Customs Service records indicated that 2168.2 kilograms were exported. These records matched the freight forwarder's documentation.

122. The next step in the investigation was to recreate the flow of documentation from the fisher through to the end buyer in Australia. The New Zealand investigators identified 18 separate pieces of documentation which were required to accompany the product from the water to the end user. Some of these were statutory documents, some were internal documents (e.g. processing records and chiller records) and some were documents required by third parties such as other government agencies and freight forwarders.

123. Identifying and accessing some of these documents would have been difficult had the investigation been conducted before April 2012, when MPI was formed. MPI can be considered a “super ministry,” since it merged four existing government agencies: the Ministry for Agriculture and Forestry, the Ministry of Fisheries, the Food Safety Authority, and Biosecurity New Zealand (the border component of the Ministry of Agriculture and Forestry). With the merger came business integration tools allowing for cross-referencing and improved traceability. Investigators then had visibility across multiple sectors and became more aware of other legal frameworks. They could also hold multiple warrants, such as fisheries and animal products, which gave them additional powers and access to previously unknown information.

124. As the investigation gained momentum, other external agencies also provided information, including the Asset Recovery Unit of the New Zealand Police, which enforces a key 2009 asset forfeiture law. To identify the assets/benefit in the bluenose case, they needed to investigate the Australian buyer. After first liaising with their Australian counterparts, they decided that a mutual assistance request was needed for evidence collection and other actions to be taken on the ground in Australia. As a result, in September 2014 a series of warrants were issued first across New Zealand and then Australia.

125. Ultimately, 34 separate instances of misreporting were identified and 401 charges have been filed in a case that is still before the court. In light of the ongoing prosecution, Mr Ham did not name the company or any of the entities involved, although he noted that one skipper has already pleaded guilty to his role in the enterprise.

Effective and Efficient Multijurisdictional IUU Enforcement Operations

126. Will Ellis, Assistant Director, Alaska Enforcement Division, NOAA Office of Law Enforcement, United States, delivered the fifth presentation of the session, which focused on increasing capacity and capability in the International MCS Network through joint multiagency training sessions and “Centres of Excellence”—a concept on which he elaborated in the second half of the presentation.

127. Lessons for MCS coordination may be drawn from multiagency and multijurisdictional enforcement in a number of other contexts such as the High Seas Task Force, the United States Federal Bureau of Investigations (FBI) Joint Terrorism Task Force, British Child Protection Services, and the United States Coast Guard Fisheries Enforcement. Effective multiagency enforcement in all of these contexts involves proactive collaboration and communications; three key common practices are (1) task forces, (2) working groups, and (3) training. During his research Mr Ellis focused on training, and in particular the finding of common solutions and establishing Centres of Expertise/Excellence.

128. The High Seas Task Force, formed in 2006 and composed of Australia, Canada, Chile, Namibia, New Zealand and the United Kingdom, made two key proposals to RFMOs. These were Proposal 1 (Strengthen the International MCS Network) and Proposal 4 regarding greater cooperation and information sharing. As to the example of the FBI Joint Terrorism Task Force, it combined domestic and international law enforcement to successfully combat money laundering.

129. Looking at the British Child Protection Services, one of the keys to achieving multiagency coordination (of law enforcement, social services, medical services) was joint/interagency training sessions and establishing the right environment for multiagency practice. Similar lessons can be learnt from the United States Coast Guard Fisheries Enforcement, which has to coordinate two federal agencies and at least one local (state-level) authority to conduct enforcement operations; what is required, therefore, is a mechanism for interagency cooperation that takes into account different workplace cultures, geographical differences and different data systems.

130. A Centre of Excellence consists of a team that promotes collaboration and the use of best practice in a specific area of focus to drive business or customer-valued results. The concept is used extensively in the medical profession and by the United States Department of Homeland Security for cybersecurity training. In the Pacific, there is an example in Hawaii, in the Center of Expertise for Humanitarian Aid and Disaster Relief. Seven key characteristics of these centres include: (1) they work best when they are located near the centre of activity; (2) they are seen as independent or belonging to the larger professional community rather than being associated primarily with one agency or one nation; (3) they are flexible and long-term; (4) they provide training; (5) they develop joint doctrine based on best practice and research, which might establish a common lexicon or reporting system (e.g. the Alaska Incident Management Systems Guide); (6) they encourage ongoing dialogue and build relationships between front-line people early in their careers; and (7) they institutionalize information sharing and collaboration.

131. Because Centres of Excellence need to be independent, obtaining sufficient resources and capabilities is always a challenge. In the United States, the Coast Guard actually has ownership of the five regional fisheries training centres, while NOAA and state agencies contribute to the joint doctrine and support as teaching staff, which brings the centres closer to being true Centres of Excellence. In an RFMO context, the Member Nations could contribute to a regional Centre of Excellence for MCS in order to enhance multiagency coordination and collaborative partnerships, and produce joint doctrine, training and applied research.

MCS Aspects of Electronic Reporting and Electronic Monitoring in FFA Member Countries

132. The final presenter in the sixth session was Hugh Walton, Chief Technical Adviser and Project Coordinator, Pacific Islands Forum Fisheries Agency (FFA). Mr Walton discussed electronic reporting (ER) and electronic monitoring (EM) in the Pacific region by FFA Member States, as well as what ER and EM means for those states, for FFA and for MCS more broadly.

133. Mr Walton began his presentation with an overview of FFA as an organization. The FFA Secretariat is based in Honiara and comprises three divisions (fisheries management, operations and development). Approximately half of the 80 or so employees are technical staff. The region that FFA covers is about 40 million square kilometres and contains the world's largest tuna fishery, most of which falls within the jurisdictions of the 14 Pacific Small Island Developing States. Seventy percent of the annual catch of 2.8 million tonnes is controlled by the eight Parties to the Nauru Agreement (PNA).

134. Mr Walton noted that next week WWF will release a cost-benefit analysis study of ER and EM systems at FFA's 19th MCS Working Group meeting. He remarked on the relevance of his presentation

to the first two aspects of the forthcoming report, which were improved compliance and reporting, as well as improved species sustainability, including EM for non-target species.

135. Both EM and ER are relatively new and fast-evolving technologies. They are potentially significant and integral components of wider fisheries information management systems (FIMS) such as the PNA FIMS and the integrated FIMS (iFIMS) for e-reporting, the FFA Regional Information Management Centre, and the Pacific Community's Tufman II Secretariat.

136. EM occurs in a closed system with cameras on boats, which means that the data cannot be tampered with. By contrast, ER is an open system where the expectation is for skippers and observers to enter data in prescribed formats. EM technology is especially new to the Pacific tuna fisheries. Limited EM use in the Pacific includes a trial conducted in Solomon Islands in 2014-2015 and an early-stage trial in Fiji's longline fishery, during the FAO Common Oceans Areas Beyond National Jurisdiction (ABNJ) Tuna Project. A wider EM roll-out is also under way in Australia.

137. ER advances have been more widespread in the Pacific, notably for logsheets and observers in the PNA purse seine fishery. Within PNA there are now more than 249 purse seine vessels registered to use the FIMS system for logsheet reporting. Early trials are also under way for longline e-reporting, associated with the PNA's Vessel Day Scheme. So far, over 150 observers have used ER on 200 trips and ER training sessions are ongoing and evolving.

138. PNA has sponsored the development of e-forms to replace paper forms and has equipped observers with tablets. Handheld devices called DeLorme inReach communicators can tether to tablets, which allows observers to upload e-forms. The devices also include a helpful feature allowing immediate text messaging in the case of IUU events and/or other emergencies. The data from uploaded e-forms automatically populates regional and national databases in close to real time. This eliminates the need for laborious and costly land-based data entry and creates a paradigm shift for many FFA member countries, away from data collection and entry towards data analysis and investigation.

139. As regards EM in the Pacific, the goal is to complement human observer coverage, which sometimes falls short of the five percent target level for longline, and enhance coverage on high-risk vessels. For purse seine fisheries, there is 100 percent observer coverage in the WCPFC, but parallel EM systems can improve capacity to monitor non-fishing days and the use of fish aggregating devices. Based on the 2014-2015 EM trial in the Solomon Islands, a report by the Secretariat of the Pacific Community (SPC) concluded that EM will help meet all of the minimum reporting standards and data fields for WCPFC; however, a few issues related to monitoring species size still have to be worked out. FFA has also developed draft Boarding Officer Job Kit (e-BOJAK) software, which the Solomon Islands will begin testing soon.

140. The expansion of ER and EM has significant implications for more effective MCS and fisheries management in both the longline and purse seine fisheries. So far, Papua New Guinea is the only FFA member that has moved past early stages, but others are expected to follow at a quickening pace. Over time, these organizations and the roles of staff within them will become more analytical and investigative. ER and EM will also have a deterrent effect and increase voluntary compliance. Laws allowing for the use of electronic data in prosecutions would strengthen this. As a starting point, part of the cost-benefit analysis contained in the forthcoming WWF report is an assessment of the current legal frameworks in place in each country.

Discussion, comments, questions and answers

141. The first comment made in the second session concerned the sharing of data between Fish-i Africa member countries, suggesting that an agreement with the Indian Ocean Commission might help facilitate sharing.

142. Other audience members made comments about other regional and cooperative efforts similar to those presented by the panelists, including a global initiative provisionally entitled Sea Scout, which was working on identifying pilot projects and partners to collaborate internationally to improve fisheries enforcement. A representative from Thailand described sharing experiences with neighbouring countries when preparing for PSMA implementation and establishing marine fisheries policies.

143. A two-part question about data sharing was put to the panel: does SEAFDEC share information with the Pacific Islands Forum Fisheries Agency, and does INTERPOL share information about vessels and people of interest with the Pacific transnational crime units? For SEAFDEC, the answer was “no,” because SEAFDEC is a commitment between the ASEAN Member States. However, ASEAN Member States are currently discussing requests by some countries to share information with the RPOA-IUU Secretariat, which would extend to four non-ASEAN member countries. For INTERPOL, whether it shares information depends on the instructions of member countries who provide the information. Those countries specify the purpose of the information and with whom it should be shared. If INTERPOL determines that the information would affect other jurisdictions, it may contact the country who provided it and request to share with relevant third countries.

KEYNOTE ADDRESS: NEW ZEALAND'S CUSTOMARY FISHING JOURNEY

144. The second keynote address of the Workshop was delivered by Whaimutu Dewes, Chair, Aotearoa Fisheries Limited. Among other accomplishments and seafood-related roles, Mr Dewes was one of the first members of the 10-year Treaty of Waitangi Commission, the forerunner of the Māori Fisheries Trust, during the time when many Māori fisheries businesses were acquired and set up.

145. The focus of Mr Dewes' address and accompanying presentation was Māori customary fisheries, particularly the traditional and legal principles that apply to marine fisheries—which have been confirmed and agreed to by the New Zealand national government. The official title of his presentation in Māori was “Te Ara a Nga Tokanga: Te Aranga Tikanga,” which translates to, “Our Values Pathway: Holding to the Values”; one of the central values is sustainably managing resources for many future generations, not just the next generation.

146. Before elaborating on this theme, Mr Dewes provided some context and definitions of Māori terms, such as “iwi”, the word for tribal groups. According to Māori beliefs, all Māori peoples are descended from *Ranginui* (Sky Father) and *Paptuanuku* (Earth Mother) through one of their seven children (all patron deities of certain Earth elements and resources). Another of the children was *Tangaroa*, the god of marine and sea life.

147. Within this family structure, there are reciprocal duties. It is the duty of the Māori people to be stewards and sustain sea life, but sea life must also sustain the people. In other words, a resource is to be used, not just conserved, and historically they have been put to many uses. In this sense, the modern economic development of marine resources has been a means to an end: to survive, while maintaining the integrity of Māori culture and its values. Each generation determines how exactly the values are best adapted and this integrity maintained. Two hundred years after the signing of Treaty of Waitangi between the Māori peoples and the British Crown they are moving towards this—but they are not quite there yet, hence his emphasis on survival.

148. Mr Dewes paused in the middle of his address to present a 10-minute video recorded by Sir Tipene O'Regan, who was unable to attend the 5th GFETW in person. Mr O'Regan is recognized as a champion of Māori rights who helped establish *iwi* self-governance; he chaired the Ngāi Tahu Māori Trust Board, which made successful claims for customary fishery recognition before the Waitangi Tribunal in 1991-1992, and led the successful negotiations in 1998 which culminated in extensive provision for customary rights in fisheries.

149. In the video, Mr O'Regan explained that one of the greatest challenges the Māori people had to face to get recognition of their fishing rights in New Zealand was dealing with undefined property rights. Since the 1860s, they had benefitted from the protection of Māori rights as set out in the Treaty of Waitangi, but nowhere since then had customary rights been defined, particularly with regard to fisheries. While land property rights were defined at a much earlier stage—and more clearly—when it came to fishing they found themselves having to protest against the erosion of their rights.

150. Mr O'Regan continued, noting that the appeal in the 1986 *Te Weehi* prosecution resulted in an acquittal of the defendant accused of taking undersized paua. The rationale was that the local or regional tribe's authorization was not subject to national regulations. This caused something of a furore, although the New Zealand national government chose not to appeal the decision. Instead, a series of negotiations ensued, occurring contemporaneously with the development of a quota management system (QMS) by the national government. The QMS was designed to convert the fish into a property right and allocate rights based on commercial catch history. Māori rights were given little consideration at all under the 1986 Fisheries Amendment Act, yet this was being pushed through legislature before other discussions

and cases were resolved. Litigation over the QMS found it to be unlawful and inconsistent with the earlier protection of Māori customary rights under the main Parliamentary act.

151. The next key piece of litigation was the finding by the Wellington High Court that customary Māori fishing rights included a commercial component, in addition to non-commercial and recreational rights. Furthermore, a Waitangi Fisheries Commission report found that their rights to the 12 miles of territorial fishing areas were exclusive, and that they were entitled to a percentage of resources beyond those in the EEZ as compensation for the destruction of their other resources. Throughout all of this litigation and attempts at legislation, the New Zealand national government's right to set up some sort of conservation system was never questioned. In fact, advocates on the Māori side came to realize that the QMS could be the means to finally clearly define their own property rights.

152. Among the subsequent challenges they faced were that the rights assigned under the QMS were species-based, while traditional rights were regional. Added to which the species in question overlapped with traditional fishing grounds all over the country. The challenge was to develop a system within the QMS framework that could adequately protect traditional tribal rights in the inshore areas.

153. The resulting model, which was developed with assistance from the Māori Fisheries Commission, incorporated a non-commercial aspect to protect the traditional interests of inshore fisheries. This is probably unique to the Māori people among indigenous communities worldwide. Although scientific and species assessments under the QMS still need improvement, Mr O'Regan concluded that the compromise has been a great success both in terms of the status of overall resources and in clearly defining traditional Māori fishing rights.

154. After the video address concluded Mr Dewes elaborated on the Māori understanding of property rights, which is the focus of their rights. They have endeavoured to put this into practice for 200 years, ever since the signing of the 1840 Treaty of Waitangi, which confirmed and guaranteed all possession of fisheries to the tribes of New Zealand. Subsequent Fisheries Acts kept these rights intact until the 20th century, when the rights began being discounted in legislation and during court cases.

155. Mr Dewes reiterated that one key turning point was the *Te Weehi* case, along with the following case decided by Judge Greig, which showed that Māori rights had a commercial component. By way of epilogue he remarked that the final settlement of all of these cases granted tribal groups approximately 50 percent of the volume of quotas to the commercial fisheries species. Mr Dewes then cited some examples of tribal seafood companies that are structured in such a way as to be efficient but still incorporate and embody the values of how they want to operate.

156. He also noted that some arrangements are working so well that they could possibly be templates for other regions. One example is a set of customary fishing regulations in the South Island, where the local people have taken ownership of the scheme and are working collaboratively with the Ministry. Such cooperation requires constant fine-tuning however, and disagreements are always to be expected. Nevertheless, *iwi* are ready for the challenge, and in it for the long term. Mr Dewes said he believes that by working together they will continue to make good progress.

Discussion, comments, questions and answers

157. Questions were asked about the impact of changes in maritime laws on perceptions of the traditional fishery, about fisheries control and surveillance, and the number of vessels operated by Māori and Aotearoa Limited. In response, Mr Dewes explained that, traditionally, oversight was carried out by the community and this was part of the reciprocal duty to the resources. If you saw someone—even a close family member—taking more than they needed, or out of season, or in violation of a reservation (limited or no take), then you had an obligation to tell them or confront them. Ultimate decisions were made within the family or tribal leadership. Thus, everyone was fisheries compliant back in the 1950s.

Of the companies they own, they have seven deepwater vessels and they charter vessels as needed. About 20-30 percent of those companies' harvest is put on the market. About 30 vessels are contracted to operate in the inshore area (up to 200 metres' depth generally). Nowadays, for compliance in deepwater fisheries they generally rely on the Ministry and the Navy. For inshore, the tribes have greater ownership and capability to oversee; they therefore work with the Ministry to enforce regulations but do not rely on the external support.

SESSION 3: CASE STUDIES OF THE UTILIZATION OF MCS TOOLS IN INDIGENOUS FISHING COMMUNITIES & ARCHIPELAGO NATIONS

Monitoring Māori Customary Fishing Rights, Tom Teneti, District Compliance Manager (Poverty Bay), Ministry for Primary Industries, New Zealand.

MATT and Industry support in Uganda: using partnership and technical assistance, Marcel Kroese, Key Expert, Indian Ocean Commission-SmartFish, Mauritius.

A Case study (PIMPAC) of regional and global cooperation in the field of fisheries enforcement, Mike Lameier, Fishery Biologist (Management) and Regional PIMPAC Coordinator, NOAA Fisheries, USA.

A reflection on Canada's Aboriginal Fishery Guardian Program, Linda Higgins, Acting Chief of Program and Operational Readiness, Fisheries and Oceans Canada.

MCS Tools in Fiji's Coastal Fisheries, Meli Raicebe, Head of the Fisheries Investigation Unit, Ministry of Fisheries and Forestry, Fiji.

Use of MCS Tools: Perspective of an Archipelagic State, Brian Kumasi, Fisheries Manager, National Fisheries Authority, Papua New Guinea.

158. The third plenary session, which focused on indigenous and archipelagic fishing communities from different regions including the Pacific, Africa and North America, was held on the second day of the 5th GFETW and was facilitated by Shane Jones, New Zealand's Ambassador for Pacific Development.

Monitoring Māori Customary Fishing Rights

159. The first presentation in this session was delivered by Tom Teneti, District Compliance Manager (Poverty Bay), Ministry for Primary Industries, New Zealand, who elaborated on the themes of the keynote speech relating to customary, non-commercial Māori fishing and associated monitoring regimes for non-commercial fisheries.

160. To start with, Mr Teneti provided an overview of the regimes for non-commercial Māori fisheries, beginning with the Fisheries Act of 1983 which purportedly protected customary rights. However, the Act was ill-defined, leaving it open to possible inconsistencies with regarding both Māori rights and the authority of the New Zealand national government. A paper-based permit system was set up, enabling Māori authorities to continue to approve fishing for discrete customary purposes. The system also allowed the Ministry to monitor the harvests and provide compliance advice to both the permit authorities and the community. This was intended to be an interim measure until such time as more formalized regulations were developed. This amended measure is still widely practised in New Zealand's North Island, but it does not, in practical terms allow for Māori people to manage customary fishing, or have meaningful input and participation in wider processes of fisheries management.

161. In 1992, the Treaty of Waitangi (Fisheries Claims) Settlement Act gave statutory recognition to Māori customary non-commercial fishing rights. The result was two similar sets of customary regulations: the South Island regulations and the Kaimoana regulations (for the remainder of New Zealand). The South Island regulations apply to both freshwater and marine resources, while management authority devolves to the Māori for customary, non-commercial fisheries and enables them to have an input in the wider management and conservation of New Zealand fisheries.

162. The Fisheries Act provides MCS tools for Māori customary fishing, including *rahui* (temporary closure), *taiapure* (management of an area of water with special cultural or spiritual significance for the Māori) and *matatitai* (reserve over a traditional area that prohibits commercial fishing but allows for customary activities to continue). These also enable the wider participation and input into fisheries

management by the Māori community. The New Zealand national government is obligated to facilitate this participation in wider fisheries strategies, which it does by means of twelve regional tribal forums that work with the Ministry to develop plans for customary non-commercial fishing.

163. It is more of a challenge to implement the Kaimoana regulations in the North Island, where there are more *iwi* (tribal groups), not all of which make a clear enough distinction between commercial and non-commercial aspects. Some notable successes in the Hawks Bay region have adopted the regulations and established *maititai* reserves. The Ministry has also been increasing its own capability and capacity building for engagement with the Māori community. Finally, the Ministry has adopted a graduated compliance and enforcement approach, which has also enabled greater interaction.

164. These customary regulations are a perfect case study for the recognition of indigenous rights, but the system is not perfect and there is no full and final settlement of non-customary fishing rights, as evinced by the disparate situations between the South and North Islands. Resolutions and continued opportunities to participate in management are needed to ensure that future generations will also be able to exercise these customary rights.

MATT and Industry Support in Uganda: Using Partnerships and Technical Assistance

165. The second presentation in the third session was made by Marcel Kroese, Key Expert, Indian Ocean Commission (IOC)-SmartFish. He spoke about the challenges faced by fisheries communities in East Africa and introduced the Multiagency Task Team (MATT), an approach that the IOC-SmartFish programme has successfully used to support MCS activities in Uganda and the United Republic of Tanzania.

166. The MATT and its associated partnerships are being used as MCS tools for indigenous fishing communities because, although there are some situations in which technology can be part of the solution, all situations require a level of human involvement to be successful.

167. In the Tanzanian context, one of the challenges is protecting coral reefs. About 25 percent of fish worldwide live in coral reefs, but these only cover 0.01 percent of the ocean floor. That's about half the surface area of France for all the coral reefs in the entire world. Three-quarters of the world's coral reefs are in imminent danger of collapse; it is therefore extremely problematic that in Tanzania dynamite is being used as one of the main fishing methods.

168. In Uganda, there is an active industry that buys a lot of legal fish; however, the stock is declining and they are losing their market share to pangasius. The government is also hesitant to regulate the largely artisanal fisheries, because of the number of boats (about 40 000) and fishermen (about 200 000) involved, as the latter represent a significant percentage of the voting electorate. Other challenging circumstances in Uganda include the close relationships between local fishermen and certain authorities.

169. In Tanzania, fisheries authorities were uncertain as to how to regulate dynamite fishing as "fishing gear"—or if it was even part of their remit, given that it is not defined in the relevant legislation. On the other hand, the police pointed out that it is being used to fish. Another challenge is a sympathetic judiciary who see poor fishermen brought before them in court saying they need to eat. Nevertheless, the question remains why they have to use dynamite; it goes without saying that environmentalists and the tourism industry also oppose the blast fishing as dangerous and destructive.

170. In order to achieve effective capacity building in both countries, IOC-SmartFish had to go beyond traditional approaches (such as workshops) and create a space for dialogue and the building of trust. Fisheries officers wanted to be trusted by the fishing industry, which did not trust them. The communities involved were mostly ambivalent and cared principally about the income. The SmartFish approach involved raising awareness of the interdependency of efforts by industry, government and the

community to protect the resource: if any of these broke down, then so would export of Nile perch. It could be caught, but not sold—and there is a limit to the amount of Nile perch you can eat.

171. In Tanzania, IOC-SmartFish had to resolve the issue of whether dynamite could be classified as fishing gear. Dynamite turned out to be a Ministry of Minerals and Energy issue, with the police as a backstop. They had to work on technical support to get the various groups and authorities together. At first, they did not even address specific harm (e.g. dynamite fishing, gillnets) but asked the authorities and stakeholders to acknowledge their roles and responsibilities in relation to the resource.

172. The result of similar facilitation work by SmartFish in Uganda was the acknowledgement by industry and the fisheries department of their respective roles, and the need for mutual trust. The stakeholders formed their own interagency task group composed of the relevant industries, the police, fisheries defence, and ministries, which benefitted from active industry cooperation in terms of financial support and help with operational aspects.

173. In Tanzania, a Multiagency Task Team (MATT) was initiated. Ultimately, six ministries and eleven operational departments participated, and a Ministerial Mandate under the Ministry of Home Affairs ratified the operation. Everyone agreed to contribute financially or in-kind as much as possible and to aggregate resources to address organized environmental crime. Once there was a clear, central point of reference—as opposed to many different silos—the initiative also attracted additional donor funding.

174. Mr Kroese concluded his presentation with a Swahili proverb: “If you want to go fast, you should go alone, but if you want to go far you must go together.”

A Case study (PIMPAC) of Regional and Global Cooperation in the Field of Fisheries Enforcement

175. The third presentation in this session was delivered by Mike Lameier, Fishery Biologist and Regional Coordinator for the Pacific Islands Managed and Protected Area Community (PIMPAC), NOAA Fisheries, United States.

176. Mr Lameier’s presentation was divided into two parts: (1) an overview of PIMPAC and (2) PIMPAC’s collaborative enforcement training activities. PIMPAC is an initiative supported by two of NOAA's line offices: the National Marine Fisheries Service and the National Ocean Service, which includes the Coral Conservation Program, which provides funding for PIMPAC.

177. PIMPAC operates across the Pacific providing services to a strong contingency of partners including Hawaii, American Samoa, Guam and the Commonwealth of the Northern Marianas Islands (CNMI), in addition to the independent island nations of Palau, the Federated States of Micronesia (FSM) and the Marshall Islands. In particular, PIMPAC helps these nations to achieve their national and collective conservation goals under the Micronesia Challenge.

178. The origin of PIMPAC was a 2005 workshop convened by Pacific island managers to discuss the common problems they were facing, notably isolation and lack of coordination. PIMPAC has two aspects: (1) it is a network of protected area managers and conservationists who work with communities to enhance protected area management; (2) it is a long-term, catalytic capacity building programme. As with many networks, the sense of connection and belonging to a community is what drives members of PIMPAC.

179. The Micronesia Challenge is a regional initiative under which Guam, CNMI, FSM, the Marshall Islands and Palau are challenged to work together effectively in order to conserve 30 percent of the marine environment and 20 percent of the terrestrial environment in Micronesia by 2020.

180. Establishing managed areas is one approach to achieving these conservation goals. PIMPAC is focused on providing training to ensure the numerous protected areas are not just protected areas on paper, but genuine and effectively managed areas. In this regard, some of the services provided by PIMPAC include: (1) coordination, (2) training and technical support, (3) learning exchanges, and (4) information sharing through an electronic mailing list (with over 170 members) and a website: www.pimpac.org.

181. PIMPAC is co-coordinated by the Micronesian Conservation Trust, based in Pohnpei, FSM and the Coral Conservation Program. PIMPAC is a network among networks, and its successes can be attributed to the integration and partnerships with other networks. The organization works with networks at the community level, the managerial level (state agencies and NGO partners) all the way up to heads of state (the Micronesia Chief Executives' Summit). In addition to enforcement, PIMPAC conducts training sessions in a number of other areas including adaptive management planning, socio-economic and biological monitoring and climate change adaptation.

182. To introduce the topic of enforcement, Mr Lameier showed aerial photos of a floating surveillance dock anchored in a reef channel in the Nimpal marine protected area in Yap, FSM. This is an example of a simple but effective anti-poaching measure, made possible by dedicated members who man the station 24 hours a day, often sleeping out on the dock.

183. Small Pacific Island States cannot fully protect their waters or even their MPAs on their own, however. A few recent incidents, including the tragic loss of two Palauan inspectors and an American pilot who were pursuing a suspected illegal vessel in 2012, have confirmed the need for greater support and international cooperation.

184. Since 2011, PIMPAC has helped meet this need by supporting a number of protected area law enforcement training sessions through partnerships and collaboration. Mr Lameier acknowledged the contributions of three leading PIMPAC enforcement trainers, including one from Palau and two from Guam.

185. The first training session took place in Palau and was attended by 33 officers from all over Micronesia. Outcomes included the establishment of a network of officers, the drafting of management plans, the planning of a learning exchange between Palau and Guam (executed that summer), discussions about a conservation and enforcement course at Guam Community College. One of the lead trainers described the training as a profound experience and the officers agreed that enforcement training sessions in support of the Micronesia Challenge should continue.

186. Subsequent enforcement training that PIMPAC facilitated included remote atoll training and training with the Pew Charitable Trusts relating to shark sanctuaries. In May 2015 and February 2016, training sessions were conducted with the Alliance of Palau Conservation Officers. Created in May 2013 by resolution of the Governors Association of Palau, the alliance is a voluntary organization of state law enforcement personnel, with the goal and purpose of standardized training of state law enforcement officers and the endorsement of such coordinated activities for the benefit of the marine environment.

187. Finally, the Guam Community College certificate programme begins this summer, based in Guam's Department of Criminal Justice. It is hoped that PIMPAC trainers will participate as instructors and the programme will become institutionalized.

A reflection on Canada's Aboriginal Fishery Guardian Program

188. The fourth presentation in this session was delivered by Linda Higgins, Acting Chief of Program and Operational Readiness, Fisheries and Oceans Canada (DFO); she discussed compliance and

monitoring within First Nations communities in Canada, and specifically the Aboriginal Fishery Guardian (AFG) program.

189. The AFG Program was launched as a result of a landmark decision by the Supreme Court of Canada in 1990, in *Regina v. Sparrow*. The Court held that aboriginal rights such as fishing were protected under the Constitution and could not be infringed without justification. Essentially, infringements are not considered justified unless they are necessary measures for conservation. In response to the decision, the government implemented a programme called the Aboriginal Fisheries Strategy, the goal of which was to develop capacity in Aboriginal communities for fisheries management initiatives, including catch monitoring. The AFG Program became a key component of this strategy.

190. Under the Fisheries Act, the Minister may designate any persons or classes of persons as fishery guardians, granting them limited powers. The activities of Aboriginal Fishery Guardians are mostly focused on monitoring and education. They may have limited powers to search and seize, but their roles are largely to “observe, record and report,” and monitor catch. It’s important to note that they are employed by, and report through, their respective First Nation/Aboriginal organization, although work plans with specific goals are agreed upon annually between the organizations and DFO. In some areas, the AFG Program has become an integral part of the DFO compliance and enforcement programme.

191. Other positive impacts of the AFG Program are that it helps cultivate an open line of communication with the community and the community leadership, which is crucial in times of crisis or disconnect, and it creates positive role models allowing cultural values to help frame community conservation objectives (which persist even when individuals leave the programme). However, ongoing challenges include, among others: (1) stable funding, (2) lack of trust and full engagement in some areas, (3) lack of consistency among diverse communities employing the Program (e.g. salaries, uniforms, equipment, training, patrol methods), and (4) different provincial and territorial legislation.

192. Since 2012, DFO has been trying to improve and rejuvenate the AFG Program by engaging both First Nations and governmental departments in discussions. Canada’s new federal government has committed to a renewed “nation-to-nation” relationship, which should improve this programme and help them to negotiate and move forward in a positive way. However, the AFG Program is not always one of the priorities at the forefront of these discussions.

193. In conclusion, Ms Higgins noted that they are working to refine and improve the AFG Program's goals, to open lines of communications and to increase local training opportunities—which is sometimes hard to do at a low cost. DFO will therefore have to renew relationship-building initiatives, be flexible in its training, be open to negotiations, and have a clear understanding of roles and responsibilities. Ms Higgins said the DFO recognizes the importance of Aboriginal Guardians and working in partnership with them. All Canadians have a vested interest in sustainable fishery resources and must cooperate to make this happen.

MCS Tools in Fiji’s Coastal Fisheries

194. The fifth presenter in the session, Meli Raicebe, Head of the Fisheries Investigation Unit, Ministry of Fisheries and Forestry, Fiji, focused on the MCS tools used to manage Fiji’s coastal fisheries and highlighted some offshore tools that have assisted coastal and indigenous communities.

195. Despite being a small Pacific island state, Fiji is central and easy to reach from major cities like Auckland, Sydney, Singapore, Hong Kong, Seoul and Los Angeles. The Fijian islands are surrounded by a vast EEZ, in which the government has full control over the management and use of marine resources. In contrast, indigenous communities in Fiji have greater rights in the customary internal waters or *qoliqoli*, which include streams, rivers, estuaries and mud flats—all the way out to the reef

slopes. The *qoliqoli* are of great value to Fiji due to the cultural and traditional ties indigenous people have with the sea. There are a total of 140 *qoliqoli* across Fiji's 14 provinces and monitoring so many sites requires resources and continuous collaboration. NGO partners including WWF and the Pew Charitable Trusts, have helped with these activities, which include collection of catch data, background and license checks, and stock assessments.

196. Fiji's Fisheries Act of 1942, as well as the Marine Spaces Act of 1977-1978, were supplemented with an offshore fisheries management decree and regulation in 2012 and 2014 respectively. With the help of FAO, Fiji is now developing its first ever holistic National Fisheries Policy. The policy addresses issues of resource sustainability, profitable economic returns, identifying good management decisions and the protection of indigenous rights.

197. Regarding licensing and control, there is a mandatory license procedure for those fishing commercially (but not those fishing for personal or home consumption). First, they must obtain written consent from indigenous customary owners, then they must apply for a fishing permit with the relevant Provincial Office, which authenticates the consent. The last step is the issuance of a fishing license by the Fisheries Department.

198. Most of these licenses are issued to small fleets composed of small fibreglass or wooden vessels with motors. These licenses impose size limits (for reef fish, crabs and other crustaceans) and prohibit the harvest of protected species. In Fiji, protected species encompass both species that have cultural significance to Fijians and also species identified as endangered by international standards (giant clam, turtles, triton, giant helmet and humphead wrasse). Licenses also restrict mesh size and use of underwater breathing apparatuses and darius roots (to stun fish) as well as explosives—which were used historically but are now controlled.

199. Both the government and communities participate in surveillance and enforcement. The government conducts sea patrols that target fishing hot spots and land patrols that cover landing sites and markets/middle men. Inshore surveillance efforts are assisted by "fish wardens," community representatives who are trained to report violations and who have powers to enforce fisheries laws through a cabinet gazette.

200. Recently, an investigation programme has also been developed with the aim of assisting MCS in both offshore and inshore operations, as well as indigenous areas. This is achieved by, *inter alia*: assessing information reports, identifying the offences and parties involved, intel-gathering projects, maintaining case files and following up on prosecutions.

201. Mr Raicebe listed a number of outstanding challenges and constraints faced by Fiji's MCS efforts but proposed ways forward for each. For instance, with respect to inefficient reporting tools he proposed the formulation of new reporting formats, possibly including electronic reporting. Similarly, lack of financial resources for fish wardens could be mitigated by cost recovery tools. The new National Fisheries Policy will also address some of these problems and hopefully give managers a better platform to make informed decisions and set limits to ensure sustainability. It may also help resolve some important questions about the extent of indigenous rights and control over internal waters.

202. In addition to continuing to work with its own indigenous communities to manage Fiji's resources for future generations, the way forward should include the strengthening of collaboration with neighbouring states on the best practice to protect indigenous and customary fishing areas. Finally, Mr Raicebe noted that Fiji is looking forward to using new MCS tools and continuing to work with regional and international practitioners and partners. In this regard, he particularly thanked Hugh Walton for his work through the EU-funded Development of Tuna Fisheries in the Pacific ACP Countries Project (DEVFISH) and the New Zealand government, especially Pete Southen and Damian Johnson.

Use of MCS Tools: Perspectives of an Archipelagic State

203. The last presentation in the session was made by Brian Kumasi, Fisheries Manager, National Fisheries Authority, Papua New Guinea (PNG), which focused on PNG's perspectives on MCS and fisheries management as an archipelago state, and the reasoning behind the tools PNG has developed for information collection and management.

204. By way of background Mr Kumasi cited Articles 46 to 54 of UNCLOS as giving special prominence to the territorial seas, as well as coastal states' sovereignty over—and right to—serenity in their territorial seas and archipelagic waters by extension of this. The following Articles 55 to 75 grant further rights to coastal states for the utilization and exploitation of marine resources within their EEZs. The two different sets of rights prompt two different sets of responsibilities. Within the EEZ, the duty is to collaborate and cooperate with the international community to manage shared resources. Within archipelagic waters and territorial seas, managers and MCS practitioners have a duty of care to their people to manage and govern their resources.

205. Mr Kumasi then shared an image of a large purse seiner of Philippine beneficial ownership transshipping catch worth millions to a carrier of Taiwanese beneficial ownership, juxtaposed with a small canoe fishing in the foreground. Mr Kumasi observed that the people in the canoe are the owners of the resource, yet they are reduced to paddling around trying to barter fruit in exchange for frozen fish discards. He remarked how emblematic this was of the gap in the resources of harvesters compared to guardians, as well as the cost and burden of MCS. To narrow this gap, PNG began investing heavily in technology, particularly its integrated fisheries information management system (iFIMS).

206. The MCS arena is in a constant state of flux and might be analogized to a chess board. For every move the MCS practitioners make their opponents have a countermove. Added to which, when developing a tool you need to have an endgame in mind, so that your efforts are targeted and cost-effective.

207. In 2008, PNG already had some MCS tools in place including VMS, observers, catch documentation, licensing, port inspections and its own registries—but its databases were outdated. PNG began geo-referencing digital maps as part of its efforts to enforce the Vessel Day Scheme, which was becoming the new management system. Around that time, Microsoft enabled a feature in Outlook which allowed files sent via email to populate an existing database accessible around the world. Because PNG's internet was not always reliable they opted to use satellite communications to assist port operators and observers. Luckily, pre-existing formats for information exchange from the Pacific Islands Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community (SPC) were available. PNG developed an Android application to send these cost-effectively and chose Google Earth as the most cost-effective and user-friendly platform.

208. iFIMS is capable of packaging a lot of information together into a vessel profile, including the vessel name, international radio call sign, time-stamped VMS position and the identification of the observer on board. The system can also document the catch on board the vessel on at the time the data was sent, which is an integration of the electronic catch logs PNG has implemented. A user can click on an option to see more about the vessel and PNG's registry, or find out more about the observer, including any relevant critical events reported for MCS action.

209. In developing these tools, the PNG Fisheries Authority had to look at how it could collaborate with other law enforcement agencies, principally the PNG Defence Force and Royal PNG Constabulary. How to interact with the FFA Secretariat and the wider FFA region in terms of regional surveillance exercises was also the subject of consideration. More recently, the Fisheries Authority has been putting

a lot of work into developing close relationships and data sharing agreements with the National Maritime Safety Authority, the Customs Office and the National Agriculture and Quarantine Inspection Authority.

210. From humble beginnings, iFIMS has developed into an asset-tracking system that tracks more than just vessels; it tracks people, forms, products (from net to landing point), fish aggregating devices (FADS) and vessel registry, as well as performing audits and other related traceability functions.

211. MCS tools must be robust and have the flexibility to cater to the changing MCS landscape. In order to keep up with changes in the environment, they also have to be able to integrate with other data sources. In this case, PNG has to integrate with the FFA and PNA Vessel Day Scheme, the Automatic Identification System (AIS) data, IMO Fair Play, small craft tracking and FAD tracking, crew forms, customs, and PNG's National Surveillance Coordination Centre.

212. PNG is working with companies to integrate satellite imagery and electronic monitoring into the system to enable even broader capability. Finally, a new Fisheries Surveillance Centre is being constructed; this will be housed in a secure environment and feature interactive screens and multiple work stations for officers to collate, package and analyse intel for PNG's law enforcement officers.

Discussion, comments, questions and answers

213. After the facilitator provided a summary of the session, a comment was made by a Tanzanian representative highlighting the establishment of some beach management units, which have helped to reduce the prevalence of dynamite fishing.

214. Another question was posed about the challenges faced by Canada's fishery guardians and in smaller communities in Micronesia. For Canada's fishery guardians it can be difficult to enforce rules against friends and families in small communities and difficult to receive community support when they do undertake enforcement actions; it does however help that several small First Nation groups have strong conservation ethics. In Micronesia some communities control the marine resources, but it is more complicated in other jurisdictions, and regulation and enforcement ranges from good to struggling. It was also noted that in the context of small fishing communities in Africa, the state should not intervene where there are community mechanisms to address issues. However, when serious crimes are being committed there must be a partnership in place thanks to which the state may intervene in order to return the community to stability and remove the elements that are causing instability and destroying marine resources.

215. In Fiji, they are looking at installing VMS on small vessels in the large longline fleet, with hand-held equipment that runs on solar batteries. It is an expensive undertaking but, with more support and a good cost-recovery tool, the government may be in a better position to help these communities manage their areas. In PNG, many of their MCS systems have been based on commercial purse seine fisheries, but these systems are developed in ways that enable them to be scaled down to provincial and community levels. In response to another question about government support for community surveillance, the delegate from PNG said that taxes on the commercial fishing sector helped to support this.

216. Urbanization was recognized as a trend which caused movement out of small communities in both New Zealand and Canada, resulting in deficits of knowledge about customary or indigenous fishing rights and management. With respect to legal and property rights in Fiji, where indigenous communities have customary fishing rights but not ownership rights, there is a need for communities to be empowered to manage and protect coastal areas. Similarly, in Malawi, participation and sustainable fisheries management by local communities depends on how much power they have. Fortunately, the Malawi Fisheries Act allows them to pass by-laws to manage resources in specific geographic areas. One municipality in which SmartFish works has passed by-laws concerning revenue generation, enforcement

and partnerships with the provincial and municipal management. Having yielded positive results for stock size and IUU fishing, this same methodology could be adopted by other jurisdictions.

KEYNOTE ADDRESS: NEW ZEALAND CAPACITY BUILDING IN THE SOUTHWEST PACIFIC

217. The third keynote address was delivered by Shane Jones, New Zealand's Ambassador for Pacific Economic Development, who was introduced as someone with strong *iwi* affiliations and an extensive body of work in New Zealand fisheries. When in Parliament he was an Associate Minister of Fisheries, and he also chaired the Māori Fishing Commission, where he was instrumental in the allocation of deepwater fishing rights.

218. Ambassador Jones said his presentation would paint a broad picture of New Zealand's capacity building for economic empowerment in the Pacific. Before commencing, he acknowledged the presence of senior officials from a number of Pacific island nation states and commented on the quality of the presentations by Fiji and Papua New Guinea in the previous session. He noted that a number of ministers from Pacific Island nations would be visiting New Zealand in April. One of the main reasons that New Zealand and Pacific nation leaders work together so closely is the Pacific tuna resource, which is the largest in the world. The value stretches to billions and the size and growth of the purse seining fleet is evident. However, some key species are approaching economic extinction, if not biological collapse.

219. Ambassador Jones observed that in the end we are measured and remembered by our actions. To date, the actions of the decision makers in the New Zealand and Pacific community have not been extensive enough. Indeed, he noted that there is a long way to go before they arrest the pressure being exerted on key stocks.

220. In interacting with its neighbours, New Zealand is always sensitive to the fact that their partners in the Pacific are sovereign nation states. With only four and half million people, New Zealand itself could be considered a relatively small player in the Pacific, since it typically cannot match the resources of other large industrialized nations. Nonetheless, it is spending a billion dollars over the next three years to improve economic empowerment in the Pacific. This reflects the New Zealand government's deep commitment to sustainability. The Kermadec Marine Reserve is another example of a practical expression of this commitment to sustainability. Establishing the reserve was a difficult and potentially controversial decision that was made at the highest level of government. Those in charge of implementing the decision will therefore find the best way forward.

221. There is a substantial economic benefit in the 3 500 longline vessels and 700 purse seining vessels operating around the Pacific. However, the challenge is to increase the fraction of the profits which reach the populations of the *matuas* of the islands in the Pacific. New Zealand capacity building programmes in the Pacific include practical programmes to help them improve sustainable fisheries management. In addition, New Zealand's naval force and a number of aircraft help the Pacific Islands Forum Fisheries Agency to undertake surveillance activity.

222. The Pacific has an institution called the Pacific Islands Forum where the leaders of Pacific nations meet once a year and discuss three to five key issues. The last theme chosen was the economic livelihoods associated with Pacific fisheries. New Zealand Prime Minister John Key announced a NZD50 million fund with partners in the Pacific over the next three years to gradually move away from the current system of fisheries management and extraction toward a catch-based system. Although this has not been met with widespread acclaim in the Pacific, the leaders of independent island nations have agreed to further explore the possibility with Prime Minister Key.

223. In New Zealand, the property-rights-based approach to fisheries probably emerged because too much effort was being focused on chasing too few fish. This came to a head in the mid-1980s when New Zealand was essentially facing insolvency; one of the changes made in response to this crisis was a rapid transition to a property-rights-based system in fisheries.

224. On the topic of cooperation, Ambassador Jones said New Zealand is part of a cooperative movement that includes a lot of information sharing in the Pacific. The challenge is always to strike the right balance and find clear boundaries. How can a Pacific island maintain a manufacturing sector processing fish when its competition is in the Philippines, Vietnam or Thailand? The cost of electricity and services is higher. However, their proximity to the fish and their ability to allow access to the resource are greater. Under these circumstances, New Zealand is asking how can more wealth be created and what can the country do? While it can't underwrite fishery factories, what it can do is to contribute to the redevelopment of utility services—namely, water and electricity. New Zealand does this as a contribution to economic empowerment, jobs and an increased quality of livelihood in the homes of its neighbours.

225. The structure of fishing in the Pacific also poses a challenge to New Zealand, which provides no subsidies to its fishing fleet while other countries are maintaining said subsidies. Some of the New Zealand fleet has dropped out and commentators have said this must mean they are less efficient. However, subsidies distort economic behaviour and can lead to damaging outcomes if they support fishing beyond the rational economic rate of return.

226. Ambassador Jones also explained that the Parties to the Nauru Agreement (PNA) are a collection of equatorial Pacific Islands that have formed a negotiating block. They have an arrangement called the Vessel Day Scheme and they've been able to raise their revenue from a low figure up to USD400 million. Imposing rental fees has improved returns, though it has rendered New Zealand unable to compete, leaving it with virtually no fleet left in the Pacific. Some vessels have therefore opted to return home instead, where they are making a reasonable profit exploiting domestic fisheries.

227. Ambassador Jones' responsibilities over the last 18 months have involved keeping in step with Pacific neighbours, with an emphasis on the ethical aspects of partnership: whether it's compliance, development or enforcement. He noted that in the absence of genuine partnership, people may say one thing but do another. One of the related aspects of his role is trying to make sure that rhetoric is backed up by action. In many areas he relies on the Ministry for Primary Industries team to deliver services to the Pacific, occasionally in collaboration with France, Australia and the United States. Some recent enforcement actions have been widely reported.

228. On the topic of compliance and enforcement, Ambassador Jones said that inveterate offenders should be subjected to the shame of being publicly outed as flouting international or domestic regulations, because compliance in the absence of enforcement action remains just rhetoric. Likewise, when naval vessels pursue some habitual offenders such events ought to be publicized. This helps people to understand why the government spends money on such pursuits and incurs those costs in pursuit of better compliance outcomes. The "disinfectant" quality of shining a light on offences is as valuable as money spent.

229. In his closing remarks Ambassador Jones acknowledged that New Zealand's goals were ambitious, but he has the backing of a Foreign Minister who has placed greater emphasis on Pacific fisheries than any other Minister in his time. He also reiterated that Pacific Ministers would be convening in Auckland soon, to reinforce the message of sustainability through improved compliance and surveillance, and to share ideas about how a property-rights-based system has worked for New Zealand. The decision as to whether the Pacific will apply these in the long term will be taken by the leaders. Mr Jones said he hoped that they would view what New Zealand had endeavoured to do with respect, especially given that some of the fish are shared stocks.

SESSION 4: MCS CAPABILITY AND CAPACITY BUILDING ACTIVITIES

Global Inventory Capacity Building Needs, Port State Measures Agreement, Matthew Camilleri, Fishery Liaison Officer, FAO.

New Zealand MCS Capability Development Assistance in the Pacific, Pete Southen, Pacific Adviser and Damian Johnson, Pacific MCS Analyst, Ministry for Primary Industries, New Zealand.

Establishment of a Fisheries Law Enforcement Academy, Hendrik van As, Professor, the Nelson Mandela Metropolitan University.

Harnessing Law, Technology and Partnerships for Strengthening Fishery Enforcement: The Philippine Experience, Sammy Malvas, Regional Director, Bureau of Fisheries and Aquatic Resources, Philippines.

Global Cooperation in Fisheries Enforcement: Investigation and Prosecution of Totoaba Traffickers, Michelle Zetwo, Special Agent, NOAA Office of Law Enforcement, USA.

First South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFISH-1), Daroomalignum Mauree, Regional Project Coordinator, World Bank Project, Indian Ocean Commission.

230. The fourth session was facilitated by Dean Baigent, Conference Host, Ministry for Primary Industries, New Zealand, and focused on a range of collaborative activities: from interagency investigations to legal reform, to capacity building for fisheries MCS and enforcement.

Global Inventory Capacity Building Needs, Port State Measures Agreement

231. The first presentation in this session was delivered by Matthew Camilleri, Fishery Liaison Officer, Food and Agriculture Organization of the United Nations (FAO), and focused on the FAO Port State Measures Agreement (PSMA), which is expected to enter into force very soon. To help countries prepare, FAO has been conducting workshops around the globe over the past three years.

232. Mr Camilleri began with a review of the definition of IUU fishing, noting that it often gets shortened to illegal fishing only, but the three components are put together for a reason. The “UU” can have big impacts on fisheries and they should be tackled together with the “I”. Under the 2001 International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) the term is broadly defined, encompassing all of the following activities:

- fishing and fishing-related activities conducted in contravention of national, regional and international laws (illegal);
- non-reporting, misreporting or under-reporting of information on fishing operations and their catches (unreported);
- fishing by “stateless” vessels (unregulated);
- fishing in RFMO convention areas by non-party vessels (unregulated);
- fishing activities that are not regulated by states and cannot be easily monitored and accounted for (unregulated);
- fishing in areas or for fish stocks for which there are no conservation or management measures (unregulated).

233. To address this broad range of activities, four international instruments have been adopted to specifically combat IUU fishing, two of which are binding and two of which are voluntary. The two binding agreements are the 1993 Compliance Agreement, which has helped reduce flag of convenience vessels over the years, as well as, more recently, the PSMA. The two voluntary instruments are the IPOA-IUU, which was developed and adopted in the framework of the Code of Conduct for Responsible Fisheries, and the Voluntary Guidelines for Flag State Performance, adopted in 2014.

234. The purpose of the PSMA, adopted in 2009, is to prevent fish caught by foreign fishing vessels engaged in IUU fishing activities from being landed and entering international markets, thus removing the incentive to engage in IUU fishing. The Agreement is based on the IPOA-IUU and the 2005 Model Scheme on Port State Measures to Combat IUU Fishing.

235. The PSMA will enter into force 30 days after the 25th instrument of ratification, acceptance, approval or accession is deposited with the FAO Directorate General. In the first year in which the PSMA was open for signature, 23 FAO Members signed, including the European Union, which in effect binds all of its 28 Member States. Now 22 Members have ratified or otherwise acceded to the PSMA and many additional Members are signatories. It's expected that the 25-party threshold will be crossed before long.

236. The PSMA applies to foreign vessels seeking entry into a country's port. The PSMA operates on two levels: within the designated port and prior to entry into port. The vessels requesting entry into port must provide a defined set of information, which is reviewed by the port state. If the state is satisfied that the information provided is correct and there is no evidence of IUU fishing, it will authorize entry. When IUU fishing is detected, the port state has two options: (1) it can either deny entry to the vessel, except when entry is necessary for crew or vessel safety and in cases of force majeure; or (2) it can grant entry for the purposes of inspection and other actions, but not for use of the port. It is up to the port state to decide which action to take. If an inspection confirms the presence of IUU fishing, then the vessel will be denied use of the port. For all denials of entry, the port state must notify the flag state, the relevant coastal states, RFMOs and other international organizations. When entry is denied after inspection, there are also other measures which may be taken in line with international law, including measures requested by the vessels' flag states.

237. The PSMA provides the minimum standard for inspections to be carried out: the procedures, inspection results, reports to be submitted, the transmittal of inspection results, and the requirement of electronic exchange of information. A global database is envisaged, into which all of these reports may be uploaded.

238. The entry into force and implementation of the PSMA will not only curb IUU fishing, it will strengthen fisheries management and governance at all levels. It will seek to block fish from IUU-caught vessels from reaching national and international markets. Used in conjunction with the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, catch documentation schemes and other MCS tools, port State measures will be a cost-effective and efficient means of combatting IUU fishing. The PSMA also provides for the needs of developing states and, under PSMA Article 21, there will be a funding mechanism for these to request support to develop their capacity.

239. The implementation of the PSMA depends not only on how good MCS systems are or how well inspectors are trained, but also on effective approaches starting at the policy level. Political will is needed for broad policy decisions regarding legislation and operational procedures; these, in turn, must define institutional arrangements, priorities and responsibilities. This will support capacity building in terms of adequate human and financial resources. All of these steps are necessary to implement PSMA activities.

240. There are several persistent challenges to be addressed in the fight against IUU fishing, including: (1) strengthening legal and governance frameworks at national, regional and global levels; (2) enhancing the capacity of developing states to manage, monitor and control fishing activities, including through MCS systems; and (3) developing globally accepted standards for market access, trade and traceability mechanisms.

241. Over the past three years, FAO has delivered a series of capacity development workshops around the globe with the intention of: (1) facilitating accession to the PSMA in order to bring it into

force as soon as possible; (2) contributing to the development of national capacity in order to maximize the benefits available through the effective use of the PSMA; and (3) promoting bilateral, subregional and/or regional coordination for the effective implementation of PSMA.

242. The results of these workshops will serve to develop the second phase of the global FAO programme. FAO has covered practically the whole globe delivering regional workshops and more than 100 countries have participated. The Organization therefore has a thorough assessment of capacity building needs around the world. Some needs are common to many regions, but some vary in other regions and countries based on their individual situations. For instance, there is sometimes a lack of awareness of the PSMA—even in cases where governments have already adopted or signed the Agreement. In other cases, there is a lack of political will to move forward, or there is concern about the costs or lack of capacity to implement the PSMA. Some countries may think the PSMA is not for them because they don't have foreign fishing vessels coming into port or because they are already bound by RFMO regulations.

243. FAO is now broadening its global capacity development programme to support cohesive PSMA implementation at national and regional levels, and complementary international instruments to combat IUU fishing. The programme is not driven by FAO: the identification, prioritization and planning of interventions are country-led, informed and participatory.

244. One of the biggest challenges is ensuring the sustainability of capacity development programmes. In the past, many development partners—FAO included—have invested significant time and resources in projects that have achieved successful results, but which the host countries are unable to continue or build on.

245. For the next phase of the capacity development programme, the three components on which FAO is focusing are: (1) strengthening national and regional policy as well as legislative frameworks to combat IUU fishing; (2) reinforcing MCS systems, which are a vital support for the effective implementation of port State measures; and (3) developing and enhancing knowledge management systems for the implementation of the PSMA and complementary international instruments.

246. Strengthening policy and legislative frameworks will require increasing global, regional and national appreciation of the benefits of the implementation of the provisions made by the PSMA, in addition to complementary international instruments, regional mechanisms and market measures. It will also require improving the capacity of national entities and regional fishery bodies to develop and adopt the appropriate policies and laws.

247. With regard to the second aspect—reinforcing MCS systems—this will entail the development of norms, procedures, processes and capacities to effectively enforce port State measures, as well as complementary measures to combat IUU fishing. Regional frameworks for combatting IUU fishing will also need to be improved through the harmonization of MCS systems, regional cooperation, coordination and networking.

248. Finally, FAO envisages that developing and enhancing knowledge-management systems will include: (1) centralized national information systems, (2) regionally managed information networks and databases, and (3) global information systems for the dissemination of certified consolidated information.

New Zealand MCS Capability Development Assistance in the Pacific

249. The second presentation in the fourth session was made jointly by Pete Southen and Damian Johnson from New Zealand's Ministry for Primary Industries. Their focus was New Zealand's Pacific Fisheries Management and Development Programme, the goal of which is, "to support Pacific island countries (PICs) to maximize economic developmental benefits through the sustainable management and utilization of their fisheries resources."

250. Mr Southen explained that the programme, which is small in terms of resources, is focused on fisheries management and development, with a strong emphasis on MCS and enforcement to support fisheries' management goals. In fact, the programme hinged on MCS and enforcement being widely accepted in the Pacific. Nonetheless, progress was slow at first, though it has picked up speed more recently. The programme works collaboratively with each Pacific Island MCS team and regional agencies, the Pacific Islands Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community (SPC).

251. Noting that it was difficult to cover all aspects of the Pacific fisheries environment in such a brief time, Mr Johnson described fisheries as a critical component in Pacific economies, as well as being culturally important and synonymous with the communities concerned. Although PICs are often referenced as a group, they are independent sovereign states, each with unique fisheries needs and issues, particularly with regard to coastal fisheries.

252. Managing fisheries can be a complex and resource-intensive process, and management on a regional basis adds another level of complexity. Pacific fisheries staff must balance regional responsibilities—including attendant travel—with other core tasks. Fortunately, significant support is provided by regional organizations; notably, wide-ranging support from FFA in a large number of areas including MCS; from SPC, principally in areas of fisheries management and science; and also from the WCPFC compliance team.

253. The Pacific is blessed with some incredibly capable staff but, historically, support and resources have not filtered down to frontline MCS personnel. Technology is changing and improving quickly, including in the Pacific, as reflected by the progress in electronic reporting and electronic monitoring reported on earlier by FFA. These technological advances mean changes in MCS skills and requirements. A transition to catch-based management—the commitment to which was announced by Pacific leaders last year—would further alter MCS requirements in the Pacific. Small fisheries teams with extensive demands on their time must adapt and continue to perform their important roles.

254. MCS for Pacific fisheries covers a wide range of activities: from coastal gathering to subsistence fishing and small-scale commercial operations; to fishing, transport and supply by large-scale purse seine, longline, transshipment, carrier and bunker vessels. It also includes markets supplying locally, as well as issues around the illegal export of high-value coastal fish stocks such as sea cucumber.

255. Often administrations train people only for them move on; however, if administrations did not train staff, they would remain ill-equipped to do their jobs. The New Zealand programme puts effort into the key areas—as identified by PICs—to develop MCS skill competence enhancement, to build and enhance positive aspects, and to address shortcomings. Pacific colleagues have an amazing capacity for teamwork, which is a key feature of successful MCS.

256. Phase One of the programme ran from 2010 to 2013, during which time Mr Southen was the sole MCS adviser. Although it was initially difficult to generate interest, he was able to build on existing relationships between MCS and enforcement practitioners and gain traction with PICs. The earliest PIC engagement was in the Cook Islands, Samoa and Tonga. However, with the help of those contacts and that of FFA, the programme quickly spread. Key to its success were some simple but meaningful forms

of assistance such as the provision of field uniforms, basic equipment, practical training and skill development opportunities. A more professional image made recipients look and feel more confident and led to tangible outcomes. Through the programme New Zealand also helped conduct boat patrols and practical inspections on the beach, in factories and in markets—including in Samoa, where successful sea cucumber prosecutions have been secured recently. New Zealand also donated a vessel to Samoa specifically for MCS activities.

257. Phase Two of the programme commenced in 2014 with double the staff (from one to two) and resources. It built on the successes, momentum and lessons of the first phase, including the importance of legitimacy for the compliance entity. While a lot of equipment provided seemed simple (e.g. uniforms, vehicles and tools for MCS), it was a big part of generating confidence among the MCS staff in their roles, as well as inspiring the industry and communities to have confidence in them and their work.

258. As MCS practitioners, the goal is to change non-compliant behaviour to compliance: this means the drivers of non-compliance must be addressed, not just the symptoms. In this regard, further development of collaborative delivery is important. The better the problem is understood, and existing solutions and established methods to deliver these are identified, the more useful a product for the Pacific MCS officers can be developed.

259. New Zealand has broadened its support of coastal fisheries MCS with SPC, and also has a great capability development opportunity under New Zealand's patrol activity in the Pacific. Mr Johnson noted that it would be a huge missed opportunity if these two aspects were not linked. The second phase of the programme is over a five-year period (2014-2019), enabling them to take a longer-term approach and be more strategic about the support they provide.

260. Operational application and the opportunity to put skills into practice at the conclusion of training is important. In keeping with the collaborative approach, following the delivery of some content the participants have the opportunity to discuss and apply ideas; this ensures that there is understanding and implementation, and is a vital part of any capacity building effort.

261. Mr Southen highlighted the Fiji Investigations Unit, led by Meli Raicebe, as an example of cooperation based around competent leadership supported by a mix of skills that facilitated a robust investigative process. MPI and FFA supported the Fiji investigation team to develop an efficient unit and have followed up with direct, in-country mentoring as well as targeted attachments in New Zealand. This is a good means of reinforcing the investigative procedure before transferring to it.

262. The programme is now having trouble keeping up with demand and must expand. Future technological advances will bring significant challenges, especially for Pacific islands without large budgets. The programme will aim to continue to supply and support MCS equipment needs and to coordinate with, and complement, other regional support.

Establishment of a Fisheries Law Enforcement Academy

263. The third presenter in the session was Hendrik van As, Professor of Law and Director of the Centre for Law in Action, the Nelson Mandela Metropolitan University (NMMU), located in Port Elizabeth, South Africa. He delivered a presentation focused on the establishment of a Fisheries Law Enforcement Academy, outlining its goals and the development of a training programme under which students will be able to obtain higher-level qualifications.

264. The Department of Fisheries approached NMMU to establish the academy about 18 months ago. The request was based on the previous involvement of the centre's law faculty, which trained officials to crack down on municipal health offences in South Africa.

265. Before elaborating on the academy itself, Mr van As cited an example of using by-laws to address certain fisheries issues. About two years ago, he was approached by a conservation agency regarding a fishing issue in the Breede River, which forms the border between two municipalities and falls under the jurisdiction of the Western Cape Province. South African carp enter the river to spawn in December, and each citizen is entitled to a permit to catch one fish. Whereas the local population is normally about 5 000, during the holiday season this figure rises to 50 000 and breeding carp were being caught by the dozen. The municipality used its local authority powers to regulate the local amenities by establishing a by-law. Citizens from Cape Town who owned holiday homes challenged the constitutionality of the by-laws but lost their case in December 2015.

266. Further to NMMU, the university has been identified by the national government as the key point for the development of the national Blue Economy. It has also established the South African International Maritime Institute, which will help give effect to Operation Phakisa, the the South African government's national development initiative. This means that all faculties are geared towards the Blue Economy.

267. As part of this, the Fisheries Law Enforcement Academy, also called FishFORCE, will train fisheries control officers: (1) to handle increasingly complex investigations and prosecutions of fisheries-related crime and (2) to integrate existing expertise and innovative research to create a permanent education, resource and support centre for fisheries law enforcement officers.

268. With the goal of increasing successful prosecutions, the faculty will endeavour to identify the weak points in the process—whether at the fisheries-control level or the prosecuting authority level, or both—and target training to address these. For instance, prosecutors may be dismissing illegal fishing cases because they do not see them as priorities, or because of poor investigative work. Under that scenario, the training would address these issues and the academy would also work with the national Department of Justice.

269. Their aim is to establish fisheries crime law enforcement as a new and emerging fisheries compliance model. Other key components of the programme are to build capacity while also enabling fisheries law enforcement officers to obtain formal qualifications in their field of expertise. In South Africa and its neighbouring countries they see officers getting ad hoc training without any link to formal training or qualification. As part of the programme, post-training investigative support will also be provided, and one senior prosecutor and an experienced investigator are already on board for this purpose.

270. In preparation for the academy, the faculty has joined a law enforcement training network called LETrainNet, started by the UNODC last year in Azerbaijan. They have already registered some qualifications in criminal justice and are registering others. This will enable students to obtain higher certificates, diplomas and post-graduate diplomas that can eventually lead to masters degrees or doctoral research. In the interim, they have already registered ten short-learning programmes. They are liaising with INTERPOL and Mr van As is also a Steering Committee member of PescaDOLUS, which aims to support, promote and build capacity in law enforcement agencies to address transnational organized crime in fisheries.

271. In order to be successful, the academy will have to harness the technical experience and expertise of others. The NMMU does not have all of that expertise, but it does exist out in the world—including at the 5th GFETW. In particular, fisheries law enforcement officers will need education on some core issues, including: (1) the different national and international legal frameworks, (2) policing tools, (3) investigative techniques, (4) evidence gathering, and (5) crime analysis.

272. The model is dependent on cooperation and coordination. One preliminary example is that the NMMU is running its first joint course with the Naval Criminal Investigative Service of the United States in early April 2016. It is also foreseen that it will be a regional exercise and they are in discussion with the African Union in this respect.

273. The NMMU intends for the training programme to lead to a career path in a sought-after profession. In the past, a similar initiative was successful for municipal law enforcement officers. This will provide long-term, properly-accredited training with both theoretical and practical content. It is envisaged that the academy will also have different entrance and exit levels, and will eventually conduct basic training for newly appointed fisheries law enforcement officers. The increasing number of difficult and complex cases requires better-trained officials. As new international tools and instruments are developed, fisheries control officers should have the abilities to use and harness these tools.

274. The NMMU has received some funding for the establishment of the Fisheries Law Enforcement Academy and has submitted applications for additional funding. However, whether or not these resources materialize, the university will proceed with establishment of the academy.

Harnessing Law, Technology and Partnerships for Strengthening Fishery Enforcement: The Philippine Experience

275. The fourth presenter in the fourth session was Sammy Malvas, Regional Director, Bureau of Fisheries and Aquatic Resources (BFAR), Philippines. Mr Malvas described how the Philippine government is applying legal and technological approaches to address MCS issues, and highlighted the lessons learned so far.

276. The Philippines' EEZ encompasses 220 million hectares, seven times larger than the country's land area. It has one of the longest coastlines in the world, stretching over 36 000 kilometres. The Philippines' shelf area is over 18 million hectares and contains about 8.81 percent of the world's coral reef cover. The issues faced by the Philippines include (1) non-standardized registries of fishers and boats, (2) IUU fishing, (3) destructive fishing practices, and (4) declining stocks in most major fishing grounds as a result of these destructive practices.

277. Some government responses to address these issues and concerns have made use of technology for monitoring, for national registration of fishers and associated vessels, and for the national stock assessment programme, where information related to the status of the stocks is gathered and analysed. Various technologies have been used, including VMS, AIS and Visible Infrared Imaging Radiometer Suite (VIIRS), which can detect vessels using light to attract fish. Law and policy is also being used to strengthen enforcement, including the creation of a dedicated office for the Fishery Law Enforcement Quick Response Team (FLEQRT).

278. To enhance monitoring, a registry system, BoatR, was created one year ago for municipal fisher folk across the archipelago; to date it contains information on over 1.6 million fishers. Mr Malvas emphasized the importance of the fisher folk continuing to contribute data to the registration system, which the local government can also access and update.

279. The Philippines also has a system for the registration of boats, used nationwide. The centralized database system guides local government in the registration of fishing boats below a certain gross tonnage. They are also using a mobile application for boat registration to validate and transmit information on the fishing vessels being registered. This was created less than a year ago and already 151 550 municipal fishing vessels are registered in the system.

280. Regarding the topic of control, Mr Malvas explained that in February 2015 the Philippines enacted the Republic Act 10654, which amended the 1998 Fisheries Code. This new regulation

strengthened measures against IUU fishing and increased penalties up to PHP45 million (USD1 million), based on gross tonnage. Among other factors, amending the Fisheries Code helped facilitate the April 2015 lifting of the yellow card warning that had been issued to the Philippines by the EU in June 2014.

281. Under Executive Order 154, signed in 2013, the Philippines also has a National Plan of Action against IUU Fishing, consistent with the IPOA-IUU adopted by FAO-COFI in 2001. Some other Fisheries Administrative Orders that have been enacted include temporal closed fishing seasons in major fishing areas in the East Sulu Sea, Visayan Sea, Davao Gulf and Palawan. These are devised in consultation with stakeholders.

282. The VIIRS that BFAR is piloting together with NOAA and the United States Agency for International Development will aid in the implementation of the closed seasons. Thus far the VIIRS pilot project, which enables the detection of fishing vessels in protected areas at night, has yielded promising results.

283. With respect to surveillance, BFAR is strengthening law enforcement—again through advances in law and technology. A dedicated enforcement office as well as quick response teams were established in 2011. By virtue of FLEQRT and these quick response teams, the target is to train 700 law enforcement officers through intensive professionalized training, which will be supported with vessels engaged in a variety of missions.

284. BFAR is also ensuring that all commercial fishing vessels are equipped with VMS. The amended Fisheries Code requires VMS to be phased in, initially with vessels above 30 gross tonnes, particularly vessels operating in RFMO areas, in the high seas and in the EEZs of third countries. The amended Code also mandates a Fishery Observer Programme, which entails the deployment of technical personnel as observers on both local and foreign vessels. Executive Order 57 in 2011 also created the National Coast Watch, which integrates and strengthens Philippine maritime security initiatives and promotes interagency coordination.

285. Mr Malvas stated that at the heart of Philippines' enforcement efforts is good governance towards the voluntary compliance with fisheries laws by stakeholders. Their experience with law and technology is coupled with the operational support and political will to strengthen fishery law enforcement. The government must work with stakeholders to foster stronger partnerships, collaboration and cooperation, and public-private synergy is essential. Nevertheless, a lot of work remains to be done to ensure the sustainable management of their fisheries, within and beyond Philippine waters.

Global Cooperation in Fisheries Enforcement: Investigation and Prosecution of Totoaba Traffickers

286. The next presentation was delivered by Michelle Zetwo, Special Agent, NOAA Office of Law Enforcement, United States, on behalf of a team with which she has been working to facilitate the detection, investigation and prosecution of persons smuggling totoaba swim bladders over the United States–Mexico border. The team included two forensic scientists and a prosecutor from the United States, as well as a scientist from Mexico.

287. Trafficking of totoaba swim bladders can be more lucrative than trafficking cocaine, according to the headline of an article in the South China Morning Post, which Ms Zetwo displayed at the beginning of her presentation.

288. The totoaba is the largest fish in the drum (Sciaenidae) family. They grow to 2 metres in length and 100 kg, and can live up to 30 years. They are found exclusively in the Gulf of California and are primarily in the northern part during spawning (January-April), during which time they are easy targets for illegal fishing activities.

289. Totoaba has been both a targeted and a bycatch species for shrimp and corvina fisheries in Mexican waters. Overfishing led to closure of the fishery in 1975 and a listing in the Convention on International Trade in Endangered Species of Wild Flora and Fauna's (CITES) Appendix I in 1976. Now the totoaba is being targeted and caught illegally, not for the flesh of the fish but for their swim bladders, which are known as fish maw. In this species, the swim bladders grow very large, up to 50 cm. They are used for, among other things, fish maw soup, and said to improve blood circulation and fertility. They are given as gifts to persons of influence in China.

290. The habitat of the totoaba is shared with the vaquita, which is the smallest marine mammal in the cetacean family. This small porpoise is critically endangered, with less than 100 left in the wild. (It is also a CITES Appendix I listed species.) Unfortunately, vaquitas get caught in fishing nets that are targeting totoaba. Mexico's protection efforts include a vaquita refuge that has been in effect for some time and a gillnet exclusion zone that went into effect in April 2015 in order to protect both the totoaba and vaquita. There has also reportedly been an increase in Mexican naval patrols in this area to protect these species.

291. Swim bladders have been discovered during inspections at both of the ports of San Ysidro, the largest port of entry crossing in the United States, and Calexico, which is two hours north of where the totoaba are caught. The bladders are smuggled across the border and then shipped to China via San Diego or Los Angeles.

292. Educating border officers is very important, because they are the first line of defence with regard to the trafficking of an illegal species across an international border. Ms Zetwo showed examples of photos and notices sent to border officers showing how bladders may be concealed in coolers in dry form, fresh with fish on top, or hidden below the lining in trunks of cars. Most of an inspector's focus is usually on drugs or migrants rather than fish or wildlife but, when they are made aware of the value of the swim bladders it may increase their interest in looking for them during inspections.

293. Forensics is important in positively identifying totoaba swim bladders, which are large and have long tubules running the length of the bladder, something which makes their morphology unique. DNA analyses confirm each seized bladder is indeed from a totoaba. After running hundreds of analyses, United States Fish & Wildlife Service forensic specialists released them to a scientist in Mexico who was evaluating the health of the remaining wild population.

294. Ms Zetwo gave some examples of swim bladder seizures, including one of 150 fresh bladders that occurred close to the United States–Mexico border. In that case, the courier was caught and consented to make a controlled delivery to a second target, who was found to have smuggled 270 bladders across the border. He was eventually sentenced to four months in prison and had to pay fines and restitution totalling USD500 000. In another case, a 70-year-old man crossed the border at Calexico with bladders hidden under floor mats in his car. Agents followed him home, obtained a search warrant and discovered bladders drying on surfaces around the house. The result was that 241 bladders were seized, with an estimated value of USD2.4 million, and the house was forfeited to the United States government.

295. In most cases it has been determined that the bladders are being shipped to China, where the approximate value of just one totoaba bladder is USD10 000. In Mexico the approximate value is USD1 500 and in the United States it's USD5 000. Search warrants on emails and cell phones are good tools for evidence collection and for identifying who is involved in the smuggling from start to finish; even bank account numbers have been used on occasion.

296. Once the case is completed it is turned over to a federal prosecutor. Some of the possible charges in totoaba trafficking cases are smuggling, conspiracy, money laundering, false statements and charges

under the Lacey Act or the Endangered Species Act. In many cases a defendant is charged with multiple federal crimes and ends up pleading to one—often smuggling, a felony which can carry 20-year penalty, but for which sentences are usually reduced. The restitution goes to Mexico and helps their enforcement efforts, including the purchase of more fuel for vessel patrols and equipment for surveillance.

297. When making the case for amounts of restitution, it is critical to get a reliable expert witness to ascertain the value of the protected species, because endangered species such as totoaba don't have a legal market value. Thus, in one case, Conal True, a scientist at the University of Baja California in Mexico who runs a captive breeding programme, analysed the seized bladders. He determined that the fish were between 10 to 15 years of age and calculated that the cost to raise one totoaba to one year of age is approximately USD1 100. To raise one to between 10 to 15 years old would therefore cost approximately USD11 000.

298. International cooperation is important for dealing with the trafficking of these and other protected or regulated species, including shark fins and abalone. Countries involved in these cases should be sharing the names of companies and individuals, in addition to methods of transport and other information discovered by investigators. Mexico assisted the United States case by sending someone from the office of the Federal Attorney for Environmental Protection to testify about the laws protecting the fish in Mexico, and Mr True also came to the United States to testify about restitution.

299. Investigations have shown that the primary destination for this species is China. United States officials have been in contact with Chinese officials, who are aware of the problem. NOAA looks forward to working with them in the future to deal with these trafficking cases.

300. Ms Zetwo shared one last case example in which the suspect was the owner of a company that imported furniture from China. He started importing and exporting seafood and then started smuggling abalone, sea cucumber and totoaba. After being caught at the border with 58 totoaba swim bladders, he was tried and sentenced to three years of probation as well as fines and restitution of USD70 000. The court assessed that he would not be able to pay more, but if his capacity to pay had been greater, he would have owed USD638 000 in restitution.

First South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFISH-1)

301. The last presentation in the fourth session was delivered by Daroomalignum Mauree, Regional Project Coordinator, World Bank Project, Indian Ocean Commission (IOC), who presented some highlights of the World Bank project in the South West Indian Ocean region, including an MCS subnetwork component.

302. Mr Mauree provided a snapshot of the World Bank project and how it could sit within the International MCS Network. The project's core focus is the governance and shared growth of South West Indian Ocean fisheries. It's a six-year project, implemented by the IOC because of its track record in the management of fisheries projects and its financial credibility in the management of international funds. The project is also tied to the South West Indian Ocean Fisheries Commission (SWIOFC), because its beneficiaries include five island countries and seven East African coastal countries, all of which are members of SWIOFC.

303. Within the project framework is the concept of shared economic growth. Presently there are two million tonnes of fish and fish products harvested in the region, valued at only USD3 billion. Although the Pacific is the leader in tuna and tuna resources, the potential of the Indian Ocean should not be underestimated, as it contains 23 percent of the world's tuna resources. However, most of the benefits of harvesting these resources are accrued by distant water fishing fleets, with minimum processing activity retained, , aside from facilities in three or four of the countries.

304. This project's programme of action is therefore focused on tuna and tuna-like resources. This involves two key components, the first of which is the minimum technical terms and conditions required to access tuna fisheries in each of the twelve EEZs. This process will take time, but it is on track; once completed, it will ensure a uniformity of approach in terms of governance.

305. The second important component is MCS. If you've heard about the IOC-SmartFish MCS project, you will understand why the World Bank project is associating itself with that, working alongside the Indian Ocean Tuna Commission (IOTC) in the implementation of fisheries management: if you want governance, you need sustainability—and if you want sustainability, you need to fight IUU fishing.

306. So far, seven of the twelve states have officially joined in this unique project focusing on all the activities of the purse seine vessels, with Mozambique hopefully joining soon as well. Moreover, a number of East African countries have ratified the PSMA. Therefore, the strategy will focus substantially on port State control as well as an observer programme, the extension of the regional VMS system, legal and financial studies to facilitate joint patrols cost, and the establishment of a cost-effective regional MCS network as a branch of the International MCS Network.

307. Strategies must be developed to strengthen ties between the regional MCS network and the International MCS Network. The World Bank has funds available for this activity and Mr Mauree noted that he would put this question to the twelve states at the next hearing.

308. The region has done a lot in its quest for prosperity but wants to move ahead and be able to sustain economic growth for the future. This entails fighting IUU to enable sustainable fishery development, economic benefits, social coherence, employment targets and improving regional food security.

Discussion, comments, questions and answers

309. Questions and comments focused largely on interagency cooperation—including through task forces—to combat IUU fishing and related crimes. Money laundering is often involved with smuggling, so cooperation with border and drug agencies may offer access to better databases and information, notably with respect to the movement of money. As far as organized crime is concerned, fish is only one commodity being traded illegally—in addition to drugs and human trafficking, for instance. It was also emphasized that for effective interagency coordination, the different responsibilities between national agencies must be well defined.

310. Panelists also noted that IUU fishing is not taken as seriously as it should be in all places or jurisdictions, that jurisdictions varied in terms of penalties for illegal fishing and whether they classified it as a crime. A question was asked about enforcing fines and penalties. The terms “IUU fishing” and “fisheries crime” were also discussed; while some still have difficulty with the latter, it was acknowledged that INTERPOL's Fisheries Crime Working Group has given participating countries the necessary leverage to access greater capabilities.

311. At the international level, FAO is collaborating more than ever with other organizations such as the International Maritime Organization (IMO), the International Labour Organization, the World Trade Organization and the UN Office on Drugs and Crime. In fact, Mr Camilleri said that a joint FAO-IMO working group on IUU fishing had been established and would probably expand to include the other organizations.

BREAK-OUT SESSION: PANEL DISCUSSION ON THE APPLICATION OF THE PORT STATE MEASURES AGREEMENT

Panelists:

1. Michele Kuruc (World Wildlife Fund)
2. Daniel Schaeffer (The Pew Charitable Trusts)
3. Alejandro Covarrubias (National Fisheries Service, Chile)
4. Andrew Wright (Ministry for Primary Industries, New Zealand)

312. This special break-out session included a panel discussion on the implementation of the FAO Port State Measures Agreement (PSMA), led by a group made up of countries who were already PSMA parties and organizations that have been assisting preparation for the PSMA's entry into force. Michele Kuruc, Vice President, Ocean Policy, World Wildlife Fund (WWF), made an introductory presentation and acted as facilitator for the discussion, the goal of which was to share practical information for PSMA implementation. Each panelist was invited to talk about aspects of the PSMA they felt were important, but the session was also meant to be interactive and other participants were invited to share their views and experiences in the latter part of the discussion.

Panelist 1: Michele Kuruc, World Wildlife Fund

313. Ms Kuruc explained that the PSMA requires that vessels provide certain information when seeking permission to enter a port. This includes information about the vessel, the gear, the catch and where it was caught, in addition to other information that ports need in order to assess whether there is any suspicion of IUU prior to allowing a vessel entry. Annex A of the PSMA contains a form with data fields corresponding to these requirements.

314. She then set forth a scenario of how fish might move through the supply chain. She noted that the scenario might be helpful both for countries that have already ratified PSMA as well as those who have not and may be uncertain about it. In order to “follow the fish,” you need to start in coastal waters where some of the heaviest fishing pressure in the world occurs and see who is doing the catching there. According to FAO statistics, the top flag states for large vessels make up 80 percent of the number of large-scale fishing vessels active today.

315. If you continue to follow the fish, you would next look at the top port states by volume. An important point to note here is that the PSMA refers to “fish not previously landed”: in other words, when and where fish come into port for the first time—or the “points of first landing”—are what are relevant here. The top 15 ports by volume account for 75 percent of the global volumes landed. China is by far the leader with 17 percent of the total and there are other areas of concentration worldwide. After the fish goes through port, it moves into transit and processing, the markets for which are primarily concentrated in Asia. The fish is then shipped to the destination markets. The EU is the single largest destination market, while the United States and Japan are also large destination markets that exert a lot of influence over where the fish ultimately end up. As well as the EU market, the yellow, red and green cards that the EU issues must also be mentioned: the EU's yellow cards have had a significant, game-changing impact.

316. Ms Kuruc displayed a graphic showing global seafood trade flow, based on FAO statistics, that showed the direction of trade both within individual regions and across the world. The vast majority of processed and transited fish comes out of Asia to major destination markets in Europe, North America and Japan. However, trade within regions is also a significant part of the picture. The fish trade is important for virtually every country in the world and therefore so is the PSMA. Whether it's your fish, your market, your processing, your transiting facility or your ships, it touches all of us in one way, shape or form.

317. The countries of the world need to help the RFMOs and FAO be ready, because these will be the key conduits for the information that the PSMA requires to be collected and shared. The Indian Ocean Tuna Commission is looking at the PSMA; other RFMOs are also at the forefront of a number of these sorts of processes. Ms Kuruc concluded her remarks with a reiteration of the need for capacity and cooperation in order to implement the PSMA, emphasizing information sharing as essential for figuring out the systems needed to make it work.

Panelist 2: Daniel Schaeffer, The Pew Charitable Trusts

318. The next panelist, Daniel Schaeffer, Senior Officer, Technology and Enforcement, the Pew Charitable Trusts, delivered his comments in two parts. First, he shared his views on what needs to be done to ensure port State measures and objectives are implemented and put into place; thereafter, he focused on a tool developed by several organizations for needs analysis and developing blueprints for the implementation of port State measures in different countries and regions.

319. Mr Schaeffer remarked that in his view the key to ending illegal fishing is recognizing that it's not just about fish, but rather about national security interests and maritime awareness as well. Effective PSMA implementation will require bridging the interagency gap between fisheries agencies, navies, customs, border immigration and finance agencies. All of these need to be a part of the solution, but in some cases they aren't even part of the conversation. The PSMA should be framed not just as a protection tool for fisheries but make the connection between fisheries and associated crimes, and be the gateway that can put assets and resources into operation, linking them to commitments of navies, coast guards and customs. These same assets and resources can be applied to high-level crimes, as can the training undergone for fisheries and the same operational aspects: this is why a recent regional South Pacific training session placed an emphasis on fisheries officers as enforcement officers.

320. The second topic on which Mr Schaeffer spoke was a publication that provides a guide and methodology for capacity needs assessment, which countries can use to develop their own ways forward. This publication is available online. The methodology identifies several aspects required for effective port State measures including legal authority, sufficiently staffed and adequately trained inspectors, as well as systematic cooperation and information sharing, be it among internal, regional and/or global agencies. Every country must be considered individually to assess country-specific capacity needs. Countries need to honestly evaluate both the strengths and weaknesses of existing systems, identifying gaps that need to be filled that they cannot fill themselves due to insufficient capacity; this refers to fisheries capacity and also interagency capacity. The second question is what resources and tools are available that will enable the country to take the actions needed to effectively implement PSMA-type agreements. The third step is identification of the capacity deficits and the capacity building needs. In the end, the methodology should help a country identify where to look for the additional assistance it needs from regional or global partners as well as national governments.

Panelist 3: Alejandro Covarrubias, Chile

321. The third panelist was Alejandro Covarrubias, Head of International Affairs Unit, National Fisheries Service, Chile (SERNAPESCA), who was introduced by Ms Kuruc as the principal force behind the founding of the International MCS Network. She noted that he was instrumental in arranging the conference that produced the 2000 Santiago Declaration on Responsible Fishing. The declaration served as a statement of intent for many countries who felt there was a lack of cooperation and relationships among law enforcement professionals in this area, which would be critical when confronting increasing levels of IUU fishing.

322. Mr Covarrubias said that the 2009 PSMA has given the world a very powerful tool to control illegal fishing, but that there must first be the will to do it. Many countries already have some form of control measures and some are virtually within the PSMA. However, as officers in different departments enforce the country's regulations, they must step back and consider structural frameworks and responsibilities across organizations and agencies. Another important issue concerns loopholes that can be exploited by reefers and foreign vessels. Although Chile does not have foreign vessels fishing in its EEZ, it is nonetheless eager, along with other states without foreign ships, to cooperate with countries that do experience foreign illegal fishing in order to implement the PSMA and put its procedures into practice. He emphasized that the PSMA contains procedures, not conservation measures—the distinction being that the latter require political negotiation. The purpose of the PSMA is to control foreign fleets entering ports in a uniform way. When we all follow the same procedure, this creates transparency: vessels know what treatment to expect and know that the treatment will be equal.

323. Mr Covarrubias said that if states were to see the PSMA in this way it would have 120 ratifications, not just 22. Furthermore, the PSMA is very likely to be compatible with existing laws in many countries, as was the case in Chile. Since 1991, the Chilean Fishery Law Article 165 has stated that landings, as well as any kind of direct or indirect services may be prohibited to vessels with foreign flags that are found exploiting a resource in violation of the law, or undermining Chileans' rights to the resource. Thus, for 16 years, 90 percent of the procedures Chile has been using are similar to the PSMA, requiring information and either denial of entry or supervised entry when the vessel is suspected of IUU fishing. In 2004, Chile established a policy for the use of its port, under which at least five types of information are required before arriving into port, including: confirmation that the vessel has not operated in the EEZ; the vessel is equipped with VMS; the vessel has a fishing license; the species it was authorized to capture; the fishing area in which it captured the species. Information regarding the species—including if it is a straddling stock—also helps Chile to determine whether to apply any of the provisions made by UNCLOS or the UN Fish Stocks Agreement.

324. The PSMA has five requirements, most of which are being applied widely. Once the ship is in port, it must be supervised or inspected. If there's any infraction or evidence of illegal fishing, it must be told to leave port, or it can be detained and legal proceedings initiated. Chile makes it leave the port, because under Chilean law foreign vessels cannot be prosecuted. However, a law is pending in Chilean legislature to allow legal proceedings against foreign ships, which will enable them to more fully implement the PSMA and control the ships that enter their ports.

325. In October 2015, Chile also organized the second Our Ocean/Nuestro Oceano conference, where President Michelle Bachelet established the policy to combat illegal international sales, which called for collaboration under the PSMA. Consistent with this, Mr Covarrubias has collaborated with FAO, the countries of Colombia and Ecuador, and the non-governmental organization MARVIVA based in Costa Rica, Panama and Colombia. Their process has been to start with a diagnosis and assess whether there are existing institutions to address issues, so that they can distribute tasks accordingly. The legal aspects can be complicated, since legal codes and structures vary. Most Central American countries have legal structures based on institutions, under which they have collateral laws and by-laws that are based on species. However, it is difficult for institutions to know what powers and faculties they have, which is critical in the context of vessel inspections. Under Chilean law, one article provides a list of the powers of each institution, so each one knows what legal and prosecutorial powers they have. Institutions that do not have this must be assisted, or else they won't be able to exercise their parallel international powers—for instance, their state's sovereign right to control their own ports under UNCLOS—and obligations, such as those set out by the PSMA. This is why a legal diagnosis must be made first.

326. Chile has thousands of kilometres of coastline, making it difficult to exercise control over the entire surface of its EEZ. In 1991 Article 165 was added, followed by the policy for the use of ports in 2004. In 2000, Chile convened the Santiago conference with the idea of establishing the International MCS Network as a way of facilitating the cooperation called for by the Code of Conduct for Responsible Fisheries. Fisheries control is a technical topic, which is why the International MCS Network was configured between institutions that control resources. In contrast to diplomatic negotiators, when technicians get together they are able to communicate in a common language, so to speak, and they can solve problems by talking about inspections and strategies they've used to address fisheries issues.

327. In Latin America, Chile has worked with Panama, Costa Rica, Colombia and Ecuador to perform diagnoses of the laws and assess resources needed, which are sometimes more limited or different to those originally thought. In Panama, for instance foreign flagged ships cross the Panama Canal; the institution in charge of the canal was not aware it had the faculties to control fishing resources but in fact they did, which the diagnosis helped to show. Another Panamanian institution has the power to control natural resources, but these two had never looked at associations or talked to each other. Now they have clarified their powers and work together as partners. Diagnoses must also encompass the capacities of different ports within a country, which can be variable.

328. According to Mr Covarrubias, it takes a minimum of five years for a person to become a good fisheries inspector. In this regard, Chile has medium-term plans: the country has trained people for many years, and they are now being sent to university. Mr Covarrubias also recommended that the executives within an agency work with lawyers and operating managers and perform SWOT analyses, which stands for strengths, weaknesses, opportunities and threats. Finally, an analysis of capacity-building procedures must also be conducted, enabling the elaboration of a training plan and a capacity plan. These are two separate plans that are developed with different techniques.

329. Many other Latin American countries are close to joining Chile in ratifying the PSMA. These countries have significant experience in the handling of ports, and NGOs are assisting them to ratify and prepare for implementation. The day that everyone comes together to close ports to illegal fishing will be the day we can say we have finished.

Panelist 4: Andrew Wright, New Zealand

330. The last panelist in the break-out session was Andrew Wright, International Adviser, Fisheries Compliance, Ministry for Primary Industries (MPI), who explained how and why New Zealand became a party to the PSMA and how they implemented port State measures. As background, he showed a map of fishing efforts in the southern longline albacore fishery, which is just north of New Zealand, based on last year's AIS data. The fishery, which is mostly albacore with elements of yellowfin and bigeye, is all high-seas-based and has less than two percent observer coverage. Moreover, aerial surveillance is patchy, and high seas boarding and inspections are infrequent. Mr Wright displayed a graph of the catch-per-unit-effort (CPUE) analysis of the southern albacore fishery, which reflected a progressive decline for all fleets fishing there since the 1980s. The negative impact of so much fishing effort right outside New Zealand's EEZ are exemplified by the Sports Fishing Competition, which used to be called the Yellowfin Fishing Competition back in the 1960s. Nowadays, the participants can no longer catch enough yellowfin for it to be worthy of the name; in 2010, Mr Wright recalled, they did not catch a single yellowfin.

331. In response to this excessive effort in the southern longline fishery, the Western and Central Pacific Fisheries Commission (WCPFC) developed a conservation and management measure (CMM) to reduce overfishing in the fishery. The challenge is to make sure that the CMM is implemented and to verify that people are actually complying with this measure. The CMM lists the usual MCS tools: VMS,

high seas boarding and inspection, observers, in-port inspection, high seas permitting and aerial/surface surveillance. In the southern longline fishery most of these tools were not being used.

332. One approach is high seas boarding and inspection, which is great for general compliance but makes catch verification more challenging. Fisheries officers on the high seas may have to enter freezer holds set to temperatures of -60 °C and packed top to bottom with tuna. Under these conditions, it's difficult to identify fish species, much less to be able to match up what's in the hold against what the logsheet says. In some of the high seas boardings in which New Zealand has been involved, they have seen up to 80 percent misreporting or underreporting. If the numbers can't be verified, they cannot be accurately reported to scientists for them to make rational assessments of the health of fish stocks, which is the underlying principle of fisheries management.

333. That's where port State measures come in. Vessels must come into a choke point at one of New Zealand's designated ports. MPI can have an observer down on the dock or a fisheries officer. They can weigh every single fish that comes out of the hold, allowing the accurate count and measurement of what is in the hold versus what is being reported by the fishers.

334. With respect to IUU fishing, the unreported part is the biggest issue in the Pacific at the moment. In Mr Wright's personal opinion there is quite significant misreporting going on. The problem is that it is hard to verify what the master says; tools and strategies for verification are another key aspect of port state controls.

335. Not many vessels visit New Zealand ports apart from vessels from the southern longline albacore fishery and a few CCAMLR vessels from the UK, Norway, Russia and Korea. Many come for provisions and won't necessarily unload the fish. New Zealand port authorities do not deal directly with those vessels, but always work through an agent, which has proved the best approach. Their goal is to try to inspect 100 percent of vessels. Inspections take about 1-2 hours and are always conducted by a fisheries officer. If a monitor is needed to unload an observer is used, which must be paid for by the company. Inspection can be tricky when the logsheets are in Japanese, Chinese or Spanish, although they can be translated as necessary.

336. In terms of laws and tools needed for PSMA implementation, fortunately New Zealand legislation did not need to be amended since it already contained a section placing obligations on foreign vessels to notify their fisheries monitoring centre in advance of port entry. New Zealand also has a permitting system, which enables them to look at the compliance history of all vessels and informs their decisions about resources dedicated to that vessel inspection. A number of staff perform the inspections, but New Zealand only has one person handling permitting and initial risk assessments, which is sufficient given the number of vessels currently entering their ports. They can also use their observer programme to do monitored unloads—and they were able to achieve all of this through existing baseline funding.

337. For countries endeavouring to implement the PSMA but also manage their workloads, one option is to deny port access to a vessel you think is high risk. Therefore, countries can still implement the PSMA even if they don't have the capacity to carry out an inspection or it would be too difficult. In that case, they can deny port access and make the vessel go elsewhere. For countries that have one or two ports with sufficient capacity for inspection, another option would be to use those particular ports. In terms of reporting obligations, once the PSMA comes into force there will be obligations to notify and report results of inspections to flag states. The PSMA does not actually specify how to quantify the fish in its inspection procedures. One option could be to weigh every single fish that comes off the vessel, but an alternative is to take a sample weight—by weighing every tenth fish, for instance—and then multiplying by the total number for a rough estimate of weight. As a final point, Mr Wright emphasized

cost-recovery tools, reiterating that New Zealand uses observers for monitored unloads and charges a day of observer coverage to the companies—which they should be able to afford if they are making lots of money from the catch.

Plenary Discussion of the Application of PSMA

338. After the panelists shared their experiences and views, Ms Kuruc invited other 5th GFETW participants to do the same by asking questions and outlining their doubts or difficulties with respect to PSMA implementation.

339. The Australian Fisheries Management Authority (AFMA) representative noted that implementation of port State measures had been straightforward for Australia, which actually has very few foreign boats entering its ports. However, AFMA did have to improve its engagement with other agencies, particularly the Maritime Safety Agencies and Customs Agency and develop operational procedures. In his view, the PSMA has been beneficial for the region in terms of increased information flow and the exchange of intelligence and information on fishing vessels. As entry into force nears, countries have requested assistance from Australia for training, which Australia has provided. He also noted that port State measures played a role in stopping vessels from the Southern Ocean Patagonian toothfish fleet.

340. Thailand's Department of Fisheries has worked closely with FAO to prepare PSMA capacity-building training for its staff. In the last year, they have prepared a Royal Ordinance to support the implementation of port State measures. Thailand is also engaged with multiple RFMOs and plans to reach out to its neighbours Malaysia, Myanmar and Cambodia regarding PSMA implementation. Most port landings in Thailand are made by reefers bringing in raw materials to be canned. They also have some fishery landings, especially in the Phuket port, and keep IOTC informed about this.

341. A representative of the Common Oceans Areas Beyond National Jurisdiction (ABNJ) Tuna Project—a large project funded by the Global Environment Facility (GEF) and co-funded by 18 different partners—commented that one aspect of the project is dealing with IUU fishing, and one of its outcomes will be legislative templates to assist countries in the implementation of PSMA provisions, which are almost finalized. These are flexible and can be integrated into primary legislation and laws or into regulations, and provide an easy way to implement the PSMA for those countries who are interested. They will be available on the website and probably as an FAO publication.

342. An EU representative commented on the role of the EU's IUU dialogues, under which yellow, red and green cards are issued. He emphasized that the EU has supported the PSMA process, believing it is the best multilateral tool to fight IUU fishing. In January 2010, the EU incorporated all the PSMA measures into the European legislative framework, and they went further as a member of various RFMOs. In the course of its IUU dialogue, the EU has talked to about 50 countries over the last few years. Based on the EU experience, there are three pillars of effective port State measures. First is the question of legislative framework: most countries cannot simply insert PSMA provisions into their current legislature, but must update their laws and relevant institutional frameworks on how to deal with IUU vessels, and whether and how to impose sanctions; second, administrative frameworks must be updated; and third, cooperation between national authorities is needed. All of this requires training and the EU is helping to promote the change under EU development aid programmes.

343. The delegate from Panama confirmed that there are several agencies in charge of fishing, including the Panama Canal Authority, which are now coordinating more effectively in Panama. The country is also reviewing its laws to be more efficient and to be able to comply with the international requirements of legal fishing. The main law dates back to 1959, but is being reviewed in a process involving lawyers, technicians, industry representatives and other stakeholders, and will be updated to

encompass new technology and current definitions. Panama also hopes to engage other countries at the Central American level, so they can adopt the PSMA and other common rules to combat IUU fishing.

344. In Trygg Mat Tracking's experiences in African coastal states, there are also political challenges associated with the application of port State measures. The speaker noted that countries like Nigeria are large and growing importers, and that the imports of small pelagics there are higher than some places in Europe. As developing country populations grow they need affordable protein, which is a major issue in political dialogue. Another issue is that countries need support and guidance in order to admit vessels to enter ports for the purpose of inspection. Otherwise, they are obliged to turn away vessels not flagged to their country and which weren't fishing in their waters. Yet it would be better for PSMA and MCS purposes if the vessels were brought in and inspected. A rapid action response team would help to assist countries faced with these issues, but a forum for that does not currently exist.

345. A representative of Papua New Guinea observed that the roles of the flag, market and coastal states are interlinked. While many coastal states had received EU yellow cards (and worked to resolve them), very few major flag states have received yellow cards. In the Pacific the resource is very important, so some measures they have implemented exceed the PSMA. However, there is uncertainty over whether port State measures will control IUU in the region, because most of the ports in the Pacific are not used for landing or transshipment.

346. The Western and Central Pacific Fisheries Commission (WCPFC) is trying to get a port State measure passed, but this has been challenging. The WCPFC representative noted that the problem in the Pacific is that many fishing vessels don't come into port, but rather they transship on the high seas. The WCPFC's fishing vessel register details 580 carriers operating in the Pacific; they have a policy of 100 percent observer coverage on carriers, but only have 51 observers, so some carriers don't have observers in practice. Many carriers are legal, but it is hard to tell. Observers for longliners have faced situations where vessels have not kept logbooks at all, which is completely illegal. The WCPFC representative concluded that the PSMA will help, but high seas carriers must also either be stopped or monitored more effectively.

347. The delegate from Malaysia asked if panelists could provide clarification on the effect of PSMA entry into force for both parties and non-parties. She also shared Malaysia's experience with the *Perlon*, which came to their port to transship Patagonian toothfish. Although Malaysia does not have specific port State measures regulation, with the cooperation of all the enforcement agencies, including customs, they were able to apprehend the vessel. They also successfully charged the crew under the Fisheries Act, fined them and auctioned off the fish. Unfortunately, the vessel was ultimately released in the end as there were no legal provisions for confiscation. After thanking Australia for the warning it had provided about the *Perlon*, she endorsed sustained information sharing among countries about IUU vessels.

348. A participant from FAO clarified that states not party to the PSMA can still implement port State measures; however, even after entry into force, non-parties will not be obligated to comply. However, as other states implement the PSMA non-parties may experience an increase of foreign IUU vessels seeking entry into their ports and become vulnerable. The PSMA will become more and more effective as more countries implement it, especially countries in the same region. Furthermore, he noted that one country has embraced the PSMA as an opportunity not only to prevent IUU fish from entering markets, but also to increase traffic of PSMA-compliant vessels. With respect to PSMA capacity building, FAO is developing a comprehensive, global programme with a full menu of options, including for setting policies and legislation, MCS and catch documentation schemes (CDS). While the PSMA also applies to carrier vessels, he acknowledged that transshipping at sea makes inspections difficult. However, port measures could be reinforced by CDS—which would follow the catch through the supply chain—as well as enhanced MCS efforts, which is why all three must be considered together.

349. The representative from the United States underscored three key aspects of the United States experience in preparing to implement the PSMA, including some delays they encountered. The most critical aspect is domestic legislation, ensuring that fisheries officers have the capability and full jurisdiction and power to implement all of the obligations for port State measures. Another critical aspect is interagency cooperation, including between customs and port inspectors. This needs to happen in the port state as well as the other states involved. The third aspect was identifying gaps in training for those fisheries officers who would be conducting the inspections. The United States is finalizing a training programme for its officers and has helped other countries to identify gaps and develop their own training programmes. He said the United States stands ready to provide further technical assistance for inspectors.

350. The representative of Uruguay's National Directorate of Aquatic Resources noted that Uruguay has ratified the PSMA, and if others needed help accessing this agreement Uruguay could offer the support of its technicians from different RFMOs. Although small developing Latin American countries have different histories and visions for the future, they have a lot in common and must cooperate regionally. Furthermore, he noted that countries that are associated should try to tap into each other's experiences, and that Argentina in particular should be engaged in this process.

351. The final commenter, a second delegate from the EU, provided a concrete example of how port State measures could be implemented before accession or entry into force of the PSMA. Both the North-East Atlantic Fisheries Commission (NEAFC) and the Northwest Atlantic Fisheries Organization (NAFO) have schemes for control and enforcement that are binding for contracting members; over the years, they have developed port state control chapters. NEAFC has fully aligned these measures with the PSMA, as of July 2015. Complementary actions by NEAFC in the context of port State measures have also included the transition to electronic forms, redefining benchmarks for inspection so as to be able to inspect all fish –not just frozen– and the development of a set of guidelines for risk management for inspections.

NETWORKING DAY - FIELD TRIPS

352. On Wednesday, the 5th GFETW participants were invited to participate in a Networking Day and choose from three different excursions. The first field trip option was Rotorua, a world-renowned cultural centre for the indigenous Māori people, about a 3-hour drive from Auckland. The field trip to Rotorua included a morning tea stop at the old Kaimai Dairy Factory en route, along with a visit to the Māori Arts and Crafts Institute and a guided geothermal valley walk to see boiling mud pools and geysers. A steam box Hangi lunch prepared by a local tribe was to be followed by some relaxation time at the hot mineral spa.

353. The second option was a day trip to Coromandel, a seaside town up the peninsula from Auckland. This field trip consisted of a boat trip to the mussel farms in the Firth of Thames with lunch, followed by a visit to Miranda Shorebird Centre, home to thousands of shorebirds. The third option open to 5th GFETW participants was Waitakere Rainforest, a native New Zealand forest rich in Māori history closer to Auckland. This excursion included a cultural performance and a guided walk led by cultural experts who explained the historical and modern uses of native plants for food and medicine, as well as ancient cultural fishing practices using the lunar calendar. A traditional (Hangi) earth oven lunch lifted from the ground was followed by a visit to the Gannet Colony at Muriwai Beach, where 1 200 pairs of gannets were nesting in the cliffs and could be photographed.

SESSION 5: SUCCESSFULLY INTRODUCED COST-EFFECTIVE MCS TOOLS

Cost-effective Technology Enablers, Trent Johnson, Intelligence Analyst, NOAA Office of Law Enforcement, United States.

Coastal Fisheries App (electronic reporting system small-scale vessels), Thord Monsen, Head of Section, Directorate of Fisheries, Norway.

Unloading Authorization Code and Mass Balance Tracking, Francisco Blaha, Independent Fisheries Adviser, New Zealand.

Data and Monitoring Unit for Small Ships (DAMUSS), Jeremy Cooper, Chief Executive Officer, New Zealand Paua (Abalone) Council, New Zealand.

Manipulation of Weighing Instruments, Bjarne Schultz, Senior MCS Advisor, Directorate of Fisheries, Norway.

354. The fifth session, focusing on successful and accessible MCS technologies and tools, was facilitated by Jacques Verborgh, Acting Head of Unit, Fisheries Conservation and Control, Directorate General for Maritime Affairs and Fisheries, European Commission.

Cost-effective Technology Enablers

355. The first presentation was delivered by Trent Johnson, Intelligence Analyst, NOAA Office of Law Enforcement, United States, who spoke about cost-effective technology enablers and the decisions that go into choosing and implementing a given piece of technology. Part of this discussion included the aims of using technology, procedures for assessing and applying technology, and the different types of technology that may be used to combat IUU fishing.

356. Mr Johnson began with a high-level overview of different reasons why MCS technology might be adopted and considerations associated with each. The aims of using technology include improving coverage, timeliness and certainty of MCS, as well as widening information gathering capabilities. The key question to consider is what the ultimate use of the information will be. For instance, it might be used to reconstruct historical trends, which can help enforcement officers decide where to send assets such as people and equipment. If the technology is providing information that will be used for operational purposes then timeliness is key. Other considerations might apply if the information will be used for legal purposes, such as for court cases or to create legislation.

357. The first stage is to identify technologies and sources of information that are going to provide answers to help reach defined goals. Based on the results of that research, it's possible to move to the second stage, which is deciding what to do with the technology and where to store it. Mr Johnson listed a series of questions to consider in this regard:

- Will it be in a database in which algorithms may be run against it to check for anomalies?
- Will an analyst be producing Excel spreadsheets?
- Will the outputs be reports, emails or text messages?
- Do you want to be able to view a big screen showing you every fishing vessel in the world with a blinking red light indicating where something is going wrong?

358. Technology to combat IUU fishing includes multiple categories and many different platforms. For instance, in the case of patrols, technology could include vessels and aircraft. With regard to information technology, licensing databases or an IUU blacklist would feature, along with anything on the web that can be used to combat IUU fishing. Mr Johnson emphasized the third category of technology—sensing equipment—which can be broadly broken down into cooperative and non-cooperative technologies. Cooperative sensing equipment is something a vessel knowingly carries onboard, into which information can be inserted. Examples include VMS and electronic reporting

systems. By contrast, non-cooperative sensing equipment includes satellites used to collect photos and information, or AIS, radar or acoustic information used to collect positions.

359. In assessing technologies, considerations include the source and the platform, as well as the pros and cons of using each technology. Some people only want to look at the pros—the benefits of using a type of technology—but it's important to consider the cons as well. Mr Johnson shared a chart showing assessments of different technologies that he produced with a colleague, drawing attention to their assessments of how various technologies may be applied. VMS has numerous pros, notably that it is tamper-evident, it offers global coverage, and provides all the information needed to track a vessel in real time. One of the cons is that the application of VMS evidence in court cases depends on the legislation of the individual jurisdiction. It is also difficult in some countries to pass on VMS information due to restrictions on the sharing of information. With respect to AIS, some of the advantages of using it for vessel tracking include its global coverage and near real-time tracking; it is also easily shareable and, for safety reasons, is mandated by the International Maritime Organization (IMO) for all vessels over 300 gross tonnes (with the exception of fishing vessels). The cons are that it is easy to manipulate, it can be turned off and the identifying information can be changed.

360. Using the same approach to assess Visible Infrared Imaging Radiometer Suite (VIIRS), Mr Johnson noted that the pros included its ability to detect light, which might indicate fishing activity, and the opportunity it offered to gather historical information. By way of background, he explained that VIIRS is technology driven by a satellite that circles the globe looking for visible light. The assumption is that the visible light detected on the oceans originates from fishing vessels using light to attract fish. VIIRS could therefore reveal where fishing vessels have been congregating and if they have been detected in marine-protected areas. The cons include its relatively long latency, insofar as it takes about 4 to 6 hours for an image to be received by the host nation from the time it is taken. Moreover, it does not identify specific vessels or show any identifying markers. However, different information can be overlaid to identify a vessel, including VMS and potentially AIS. Mr Johnson also underlined that VIIRS capabilities are still being developed and improved.

361. As more technology provides information, so it must be processed into a database or have algorithms run against it; using and analysing the data costs money, regardless of whether the monitoring or the fishing entity is paying for it. Moreover, while vessel observation technology can support intelligence-led policing, its employment in prosecutions depends on judicial frameworks and the admissibility of evidence from various technologies; it is therefore advisable to find out about any restrictions in relevant jurisdictions.

362. With respect to platforms which can receive information, Mr Johnson highlighted two projects to watch that collect, process and provide data—Global Fishing Watch and Project Eyes on the Seas. Although these platforms are still being developed and decisions are still being made on how to integrate information, both platforms use AIS data. As a sailor himself, Mr Johnson said he believed that AIS should not be pitched as an enforcement tool, since it is intended to ensure man's safety while at sea. However, he acknowledged the benefit of being able to use AIS information to show vessel position, time and identity.

363. Another recommendation Mr Johnson made was to consider mobile phone technology in its various forms. He explained that FAO conducted a study a couple of years ago which showed that two billion people had access to smartphones: a number that is estimated to rise to about six billion by 2020. This presents an opportunity for technology to be developed, including apps and photos with geocaching, as well as systems to process this information and use it for enforcement purposes. There have been examples of monitoring and enforcement using text messaging—in artisanal fleets in West Africa, among others. In his final list of recommendations Mr Johnson also included VMS, though he

noted it is not always the most affordable technology. Finally, he reiterated his recommendation to watch for emerging open-source platforms.

Coastal Fisheries App (Electronic Reporting System Small-Scale Vessels)

364. The second presentation in the session was delivered by Thord Monsen, Head of Section, Directorate of Fisheries, Norway, who introduced an application for smartphones and tablets originally developed for Norway's coastal fleet to report catch and activity data.

365. Electronic reporting of catch and activity data has already proven to be an effective tool to reduce IUU fishing. Technological developments have now opened up new possibilities to simplify recording requirements, reduce costs and increase the scope and quality of the data. When developing this application, the goal was to make use of available technology. While projections vary, hundreds of millions more smartphone users are expected in the next five years: this means that as a technology smartphones will be increasingly available for use by fishermen.

366. The key aspects of the coastal fisheries app developed by the Norwegian Directorate of Fisheries are that it is simple and cost-effective. It can be run by using application service providers, which means that everything can operate from the cloud and no complicated technical structures are required in one's own administration. The application could therefore easily be made available to many different countries.

367. The first step to access the application is through registration on a website; the application should then be downloaded to your smartphone. However, the website remains relevant, insofar as it is where the user can connect to existing registers or build up a new vessel register. The fisher's identification is verified based on the entry of a code received on the phone and through Global Positioning System (GPS) signals emitted by the device. The fisherman is then ready to report his catch.

368. The app includes a prior notification of landing featuring basic information such as: time of landing, where the fish will be landed, species and quantities. When this information is saved, it is registered and automatically forwarded to the Norwegian Fisheries Monitoring Centre. If the vessel is out of range, the report is forwarded as soon as the smartphone connects again. The system also automatically registers date and time of reporting and vessel position in the background, when the report is submitted, which can assist with data verification. In order to function, the application needs a register of users, vessels, landing sites, buyers of fish and species. If not readily available, a register can be built up and stored in the cloud.

369. Since the ultimate purpose of reporting is to reduce IUU fishing, inspectors can also access the system by using their own smartphones or web access and easily follow reports in their region. To illustrate this, Mr Monsen displayed screenshots from the website to which Norwegian fisheries inspectors have access. Other features of the application include information and links to regulations that are enforced, as well as the ability to contact the Fisheries Monitoring Centre directly, either by email or phone. The developers have also added a map which displays the vessel location based on GPS signals from the phone. Other information of interest can be added such as, for example, all sites with registered buyers. The app may also be used for position reporting—but battery capacity on smartphones has to be improved before this feature goes live. Finally, the app can be useful for search and rescue purposes, by giving search and rescue authorities easy access to a vessel's position.

370. To conclude, Mr Monsen summarized that this solution uses preexisting smartphone technology to achieve high quality data collection. It is user-friendly and low cost, both for the fishers and the MCS authority; it also gives the fishers access to other beneficial services which should incentivize their use

of the MCS tool. Mr Monsen offered to provide a personal demonstration of the application on his phone to anyone who may be interested.

Unloading Authorization Code and Mass Balance Tracking

371. The next presenter was Francisco Blaha, Independent Fisheries Adviser from New Zealand who spoke about several tools which have recently been put into use in the Pacific, known as the unloading authorization code (UAC) and mass balance tracking. These were developed in the Pacific under the EU DEVFISH-II project coordinated by Hugh Walton, to address the EU IUU cards issued to various Pacific islands countries.

372. They took a very fisherman-like approach to the project, deconstructing the process rather like a fisherman would take apart a stent or new gear to understand how it works. Bearing in mind that fish does not become IUU during processing, but is either caught or landed illegally, they developed a concept that mixed two basic elements: (1) the requirements of the Port State Measures Agreement (PSMA); and (2) a Traceability Key Data Element, which follows the fish from its landing through the value chain.

373. To understand the bigger picture with respect to traceability and catch documentation schemes (CDS), it can help to visualize CDS components as an iceberg: people focus on the tip of the iceberg—the catch certificate—but cannot see what’s important, what’s below the surface, which is where you must look to really find out whether the catch is legal. The very base of the iceberg, far below the surface, is where the catch's legality must be determined. This assessment depends on MCS to detect and confirm compliance with national legislation, conservation management measures, bilateral agreements, VMS and observer requirements, as well as port State measures. The next step is “catch accountancy”, taking into account the results of inspections and boardings, volume checks and e-logsheets, as well as mass balance audits.

374. The goal of the UAC system is to integrate all of this and achieve full traceability from catch to market. The first task was to understand the regulatory processes, whereby each element of the chain is usually handled individually by a different department. As a result, the pathway they chose was to tie into port arrival notification (with vessel details, VMS and other information). In the Pacific, they are able to refer to the Pacific Islands Forum Fisheries Agency's (FFA) vessels compliance index in order to evaluate remotely what the vessel has been doing before it enters port.

375. Based on vessel tracking and history, vessels are put into green, yellow or red arrival notification categories, which help the authorities decide whether to conduct an offloading inspection. If everything is okay (or largely okay), the vessel is given a UAC for a certain volume, as declared in the e-logbook. Once the fish has this code, you know that it was landed legally. This code becomes like an initial deposit in a bank account, insofar as there is a certain amount in the account and no more can be withdrawn. The UAC then follows the fish throughout the system either through processing or export. When the fish leaves in any form and its volume is reduced, this needs to be reported and taken into the system at every stage. Since each export can have more than one landing by more than one vessel, the accounting system behind this actually gets quite complex.

376. Next Mr Blaha explained how accountability worked in the system. Once the volume of fish is given clearance and the whole fish goes straight out either onto a carrier, or to a cannery or loining plant, the catch accountancy system shows this. If everything is working correctly, the volumes will match up. In addition, in the Pacific they have access to the Fisheries Information Management System (FIMS), which includes the vessel registers, validation, CDS forms, satellite data, licensing and reporting. Under FIMS, e-forms which enable the vessel to log data in real time have also been developed. This catch reporting goes into great detail, showing not only what a single vessel has done over a period of time,

but what all vessels were doing in that period. The data then flows into integrated FIMS (iFIMS) to FFA, the Secretariat of the Pacific Community (SPC) in addition to other regional organizations and countries. As a result, the person authorizing the arrival can have a lot of information to hand in very close to real time.

377. The observer programme is another important tool and, in this regard, Mr Blaha highlighted the efforts of Papua New Guinea (PNG), which has taken the lead on equipping observers with Android tablets and DeLorme inReach devices for e-reporting. These tablets have a transmitter that links to a satellite connection and iFIMS. This provides a second stream of real-time information to verify the e-logs of vessels and also helps protect the observer's safety. If, for instance, a vessel arrives in port in the Solomon Islands or PNG, they can check VMS, licenses (including licenses across EEZs), logbook e-reporting data and observer e-reporting data. Inspectors have a screen on which they can tick off each element. If everything is okay, a landing authorization code is issued. At this stage, they must assess two sources of data: verified and unverified. The verified set includes data from factories if the product has been processed. The system then provides a sum for mass balance tracking.

378. The fish can also be assigned trade certificates, and almost any trade certificate can be produced using this structure, which incorporates so much data. There are separate trails for “fish as fish” and “fish as food”, but data should come from the same places. Thus, when a request for a certificate is received, either from one side or the other, a check can be run to ensure those volumes match up. Working with a local company, observers can assess how much fish is still there, how much fish has gone and where it has gone (e.g. to Europe). Once the product enters the fish trade customs data can also be integrated through an electronic system, or physically checked with customs. Thus, by virtue of the UAC and mass balance system, in-country traceability is covered all the way up to trade documents.

379. As demonstrated, this system has all the basic elements for a CDS, which is the direction that they are now heading in. To this end, the project team has been involved in FAO technical consultations on CDS and a study on best practices. There is also a limited trial under way between three Pacific countries—PNG, Solomon Islands and the Marshall Islands—in which information is constantly being shared between vessels and administrations.

Data and Monitoring Unit for Small Ships (DAMUSS)

380. Jeremy Cooper, Chief Executive Officer, New Zealand Paua Council, delivered the next presentation, which focused on a joint project between the Ministry for Primary Industries and the Paua Council, called the Data and Monitoring Unit for Small Ships (DAMUSS).

381. Essentially, any small boat can use the DAMUSS, the purpose of which is to capture fishing catch and effort data. The reason that the DAMUSS was developed is that for fisheries such as paua (also known as abalone), rock lobster, sea urchin, sea cucumber and eels, an alternative to an Automatic Location Communicator (ALC) or VMS-type device was required.

382. In the paua industry the fisheries predominantly use divers with snorkels, who dive down to 10 or 15 metres. For decades, they had been trying to measure and monitor on too large a scale. Their goal with DAMUSS is to gather robust data of the right scale and the right timeframe, in order to make informed fisheries management decisions. The scale is a problem because, while the divers are essentially working on a square meterage basis, the paua are not everywhere along the coast; rather, they are found on more of a square hectare basis. Furthermore, the reefs are measured on a square kilometre basis, the statistical areas being reported to are anywhere from 10-40 kilometres long, the strata (the like parts of the fisheries) are hundreds of kilometres long, and the quota management area is thousands of kilometres. Added to which the total allowable catch (TAC) is done by region and there is only one

minimum legal size for paua across New Zealand. The industry and MPI must therefore work collectively to measure, monitor and manage fisheries at these various scales.

383. Two different units have been developed, one for logging catch and the other for logging effort. The data logger records log the time and date at any interval you want. When the diver returns to the boat with a catch bag full of paua, it records the diver and the landing spot, in addition to how much catch the diver has accumulated at the end of the entire dive event. As to the specifications, the battery can last for ten days, is fully rechargeable and can hold a year's worth of data. You can plug a modem and USB uploads into it as well as scales, callipers, shell measuring boards, cameras and other tools. There are about 80 boat unit data loggers operating in paua fisheries, with about 80 units operating in the crayfish industry as well.

384. The second unit, the Diver TURTLE Unit, goes on the diver's back and logs effort. It has no switches on it, because it turns on as soon as it gets wet. While the diver is above water, it records position, log time and date. As soon as the divers goes underwater it becomes a depth, temperature, date and time recorder, but to conserve energy it stops searching for satellites. This way it can last for six days on batteries and will collect a year's worth of data. The robust units are rated up to 50 metres underwater, which is ample since divers only go down to 20 metres. About 160 New Zealand divers have TURTLE units and Australia is also using them.

385. Mr Cooper then showed some examples of the raw data they receive, with dots on the water representing reports at 2-3 minute intervals from TURTLE units, in between which they can create a complete underwater profile including time and depth. Every time the diver lands a catch bag it is recorded by the boat unit, so the catch and effort picture is complete. Both MPI and commercial fisherman can use the system: MPI can zoom into any bay or fishery to see activity and seek to modify that activity and behaviour as necessary, while fishers can download a dashboard from the internet. The system is fed by fully automated data loggers and maps are automatically updated every day. The idea is that at the end of the day the fisher can look at his dashboard and decide where to fish the next day, which spreads catch effort and reduces overfishing and fuel usage.

386. Use of data logging is increasing and every single piece of data is being recorded, which is fantastic. If an area is displayed as red on the map on the dashboard this means it's under review; users can see the catch per hour trends, or look at the average over year-long periods and see, for instance, that a fishery has been overfished when compared to the ten-year average.

387. Moving on to the monitoring aspect of DAMUSS, Mr Cooper explained that the ALC system used by MPI is difficult to use on small paua harvesting boats: the units are too big for the paua boats, they cost too much and have to be switched on for 365 days a year. As a result, a small group from the industry is working with MPI to come up with a different system that does what an ALC system does using today's technologies, including GPS transponders, cloud databases, web browsers and smartphones. MPI has accepted DAMUSS even though it is very different from MPI's ALC/VMS system, which requires automatically- and continuously-transmitted position reports, the capacity for MPI to alter the frequency of position reports or independently poll data, as well as 24-hour functionality, 365 days a year.

388. Before reviewing the whole process, along with the key components that must link up with the system, Mr Cooper clarified that catch and effort databases are kept completely separate from the positioning databases to which MPI has access, and the industry owns those the catch databases; the industry relaxes when they hear this. The way the process works is that the unit is always turned off, except when the dive crews go diving, which is about 50 days a year. They turn the unit on when they get out there; the data goes through the satellite; it gets logged into a third party portal run by Trident

Systems, and a message is sent to the MPI compliance department. A positioning report is then sent up every ten minutes, allowing both MPI and other relevant parties—such as the quota owner—to see it. The satellite modem actually switches on just for the positioning report and then turns itself off again, which is how the batteries are preserved. At the end of the dive event another button sends a message to MPI compliance with the names of the divers, how much they've caught and how far they swam.

389. Their next task is developing statutory forms required to be filled out at the end of the day; all of this needs to be electronic and in real time. A type of search and rescue function is also in development. To conclude, the benefits of DAMUSS are that it is updated every ten minutes (making polling requests unnecessary), it works on smartphones and tablets, and it's cheap to set up and get running. The unit that goes on a diver's back costs just under NZD1 000; the boat logger is about NZD1 500 per unit; the modem is NZD800. The hope is that fisheries officers will soon be able to turn on the app, point their smartphone at the boat and get all the information they need. Mr Cooper noted that the data shown was developed by a company called Dragonfly, Zebratech produced all the hardware, and Trident Systems is responsible for the web viewer and positioning database.

Manipulation of Weighing Instruments

390. The final presentation in the fifth session was delivered by Bjarne Schultz, Senior MCS Advisor, Directorate of Fisheries, Norway; Mr Schultz focused on the unreported aspect of IUU fishing, one of the biggest MCS challenges in the Northeast Atlantic as a result of the manipulation of weighing instruments.

391. Mr Schultz provided an overview of the topics he would cover in his presentation: IUU fishing and fisheries crime at landing; MCS in pelagic fisheries in the Northeast Atlantic; international recommendations regarding weighing instruments; and weighing systems in use, including programmable logic controller (PLC) systems. After that, he would focus on how to address the challenge of weighing system manipulation.

392. With regard to IUU and fisheries crime at landing, the point of landing is critical. The weighing systems in the Northeast Atlantic are vulnerable to manipulation, and for the playing field to be level weights must be accurate. Refrigerated saltwater landings of mackerel, the most valuable species, can be up to 70 tonnes per hour and they are processing directly out of the vessels; if someone cheats the scales for an hour, they can gain significant value unfairly. There is virtually no illegal/unlicensed fishing in pelagic fisheries in the Northeast Atlantic, which are regulated by the coastal state agreements and MCS cooperation between coastal states. There is also a Working Group of Control Experts tasked to focus on issues that can affect quota outtake and disturb the level playing field; manipulation of weighing instruments has been identified as a serious challenge for many years.

393. Mr Schultz explained that the International Organization of Legal Metrology (OIML) is the United Nations body that sets common measurements and standards to enhance the impact of industrial development and economic growth, and to minimize technical barriers to trade. Norway has identified gaps between international recommendations from the OIML for belt weighing systems and what is needed to enforce fisheries laws and regulations, and they are adjusting national regulations to fill these gaps.

394. The type of weighing systems in use include belt weighing systems, used for products that are packed for human consumption. Belt weighing systems are based on the speed of the belt and pressure on the belt, which can be manipulated by changing the movement of the weighing plate. In industrial processes (e.g. fishmeal and fish oil), batch weighing systems are used. Both of these weighing systems are connected to PLCs, which can make them challenging from a law and enforcement point of view.

395. Mr Schultz provided a more detailed explanation of PLC systems, which include industrial computer control systems that steer processing functions based on signals from various sources. Production lines, machine functions or processes can be customized and enhanced using PLC. These systems, which are commonly used in all industries, have the benefits of: (1) the ability to change and replicate the operation or process while collecting and communicating vital information; (2) they are modular and can mix and match types of input/output devices.

396. Unlike the weighing equipment without the internal PLC, which is sealed and less easy to access and manipulate, PLCs are open systems, making it easy to access the programming, change parameters and functions in PLC software and change/bypass weighing functions. The result is that the manipulation of weighing instruments can be carried out remotely using smartphones, tablets or personal computers. Mr Schultz then showed a schematic diagram of PLC systems used to control batch weighing systems, indicating how the sealed weights were obtained and how they became vulnerable when sent through a weight PLC to a main PLC and then to a main control centre. If the information is not stored at the sealed point, then it is hard to detect the manipulation. Another issue is that PLC systems can be updated and upgraded remotely using codes; while this can be convenient, it also means that the system owners or others could misuse these codes.

397. Besides manipulation through PLC systems, the Norwegian authorities see other types of manipulation of in weighing systems including mechanical, electronic and the breaking of seals. Mr Schultz shared a few examples, the first of which was preventing free movement of the weighing bridge using wooden wedges, pieces of plastic or even a broomstick. Another form of manipulation involves interfering with the zero-point settings while the scale is loaded so as to make the zero-tare weight negative. A third example is disconnecting the belt weighing system's stop function, so that it can run without any record of fish passing the weighing bridge, meaning that it is essentially being used as an ordinary conveyer belt. Mr Schultz also showed photos illustrating how the sealing can be broken by tampering with the equipment and wires in a wiring closet.

398. One of the consequences of weighing system manipulation is that these systems can be used to launder quantities of fish in excess of the registered quantities; if the fish is exported, this constitutes a serious violation of fisheries regulations, as well as tax and custom regulations—at the very least it is a violation of OIML recommendations. The manipulation of weighing systems is a wilful economic crime (e.g. fraud) as well as an environmental crime.

399. To conclude, Mr Schultz offered recommendations as to what action to take when manipulation of weighing systems is discovered. First, he said try to “freeze” the situation if you have the legal authority and secure technical evidence, taking photos and recording videos at the very least. Recording is especially important in the context of physical manipulation, such as with a broom handle, before you move or confiscate the broom. In general terms, the investigators should approach the scene like crime technicians, looking carefully for other evidence and “silent witnesses.” Such investigations can be complicated and time consuming, requiring skilled personnel, but they can and have been completed successfully.

Discussion, comments, questions and answers

400. In the context of small-scale fisheries in developing countries, one participant asked how to ensure the quality of the data received through mobile phone technology and applications; specifically, how mis-inputs, whether intentional or unintentional, or non-reporting could be detected. The response was to verify with other sources based on the date, including at landing, since a mobile fisheries app—and any reporting system—always runs the risk of misreporting. MCS work can't be based on an e-

reporting system alone. However, prior reporting of catch and data does help reduce the risk, since they know inspectors will follow up the reports at landing.

401. Further to the deployment of technologies in the developing world, the panelists were asked to provide advice on the best and cheapest solutions for small and less developed countries. The international version of the Norwegian fisheries application, currently under development, was proposed as a potential solution. Depending on the funding and interest from other countries Norway could make this available in a matter of months. Another panelist observed that while there are no easy solutions and everything takes time and money, there are development programmes and south-south mechanisms available to support cost-effective technology in developing countries. He noted the importance of strengthening institutions and recommended that the commenter talk to colleagues from the Pacific who may have more extensive MCS experience.

402. Comments were made about AIS, notably the observation that it was not intended as an enforcement tool; the system has vulnerabilities, and relying heavily on it in an enforcement role may run the risk of pushing boats outside of the AIS system in an attempt to evade the prosecutorial process. In response, the presenter reiterated that in his view open-source platforms incorporating AIS were taking steps in the right direction by at least obtaining some information from fishing vessels out on the sea, even if they do not end up being the ultimate solution. Another commenter expressed a strong preference for VMS over AIS, contending that VMS is actually very cost-effective when measured against the legal problems avoided.

403. In South Africa, where they faced the same challenge with the manipulation of weighing systems as in Norway, the only truly effective response was forensic audits. It was costlier but more reliable, especially since hackers from overseas had actually been brought in to manipulate the data. Despite agreeing about the reliability of audits, Mr Schultz estimated that Norway would need hundreds of inspectors, for which they have neither the resources nor the political will. Fortunately, what they do have is a society built on trust, as well as risk assessment and a court system that amply punishes “hard drivers.”

SESSION 6: NEW MCS TECHNOLOGIES AND METHODOLOGIES

The use of REM and CCTV Technologies in Denmark – The Trial in 2015, Søren Palle Jensen, Senior Fisheries Officer, Danish Agrifish Agency, Denmark.

Eyes on the Seas, Bradley Soule, Senior Fisheries Analyst, Satellite Applications Catapult.

Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, Ari Gudmundsson, Senior Fishery Industry Officer, FAO and Dawn Borg Costanzi, Systems Analyst/Developer – Global Record, FAO.

Outcomes of WWF Emerging Technologies Workshop, Bubba Cook, WCP Tuna Program Manager, World Wildlife Fund.

The FAO/GEF Common Oceans ABNJ Tuna Project, Julien Million, Tuna Fisheries Expert, Common Oceans ABNJ Tuna Project, FAO.

404. The theme of the sixth plenary session, facilitated by Frank Meere, Sustainable Fisheries Management, Australia, also related to MCS technology but focused on emerging technologies, tools and platforms that show potential for implementation or expansion for combatting IUU fishing in the future.

The use of REM and CCTV Technologies in Denmark – The Trial in 2015

405. The first presenter in the sixth session was Søren Palle Jensen, Senior Fisheries Officer, Danish Agrifish Agency,; he provided an update on Denmark's recent experiences with remote electronic monitoring (REM) and closed circuit television (CCTV) technologies.

406. To explain Denmark's 2015 experiences one must go back to 2008, when DTU Aqua conducted its first trial. Since then, the Danish Agrifish Agency has conducted six more trials, and this year's trial will probably be the last. In 2012, their Ministry required every mussel dredger in Denmark fishing within a marine protected area (MPA) to be equipped with a black box to document their fishery. In 2014, every mussels and oyster fishing vessel had to be equipped with this black box; today 54 vessels have an REM system on board to document their fishery.

407. The agency learned many lessons from these trials, including that REM and CCTV technologies are very strong tools for MCS. These technologies enable verification of fishery logbook recordings and the system can be used to ensure reliability in a discard ban—which is helpful in the EU, where a landing obligation applies. The data can be used for scientific advisory work on stock assessments and impact analysers. The agency also learned that it needed to have a system in place to check for non-compliance with CCTV requirements.

408. Challenges faced since 2008 include that the hard drives must be updated manually. Furthermore, Denmark does not impose mandatory dockside inspection, or have designated ports. Early on, the agency realized that monitoring landing obligations with cameras would require better technology. With up to 300 vessels equipped with cameras, it would be too difficult to change the hard drives on all of them. As a result, they began searching for an electronic solution under which the video and photos would be transferred electronically and which would enable troubleshooting and configuration, ensuring no loss of data.

409. Previously the agency had focused on discards. However, in 2015 they broadened the scope of the trial and began looking at the possibilities for transferring data and video footage over 3G or 4G networks or over Wi-Fi, which was installed in one harbour as a test. Thirteen vessels could handle such demands but they had to change their technical setups. The agency also had to develop a system to receive video footage electronically, as well as a black box analyser in order to analyse the video footage.

410. The black box system, VX, is equipped with: a hydraulic sensor, a wind rotation sensor, a box to collect Global Positioning System (GPS) data every 10 seconds, and a box to collect the video footage and internet protocol (IP) cameras. The system can handle up to 16 cameras without losing effect, but Mr Jensen did not recommend using that many. All data is collected on the black box's hard drives (both internal and external), where it can be stored for up to six months. All sensor data is transferred every day thanks to the Global System for Mobile Communications (GSM) when it is within range of a cell tower; if it has been out of range for several days, the data is transferred to the GSM network as soon as it is in range. All video footage must be sent over the 3G/4G network, or through a Wi-Fi server, to the Danish Agrifish Agency's server. The data is analysed by the black box application, to which all authorized inspectors have access.

411. Next, Mr Jensen shared video footage from a vessel equipped with REM and CCTV during the new trials. He explained that the vessel had been fishing east of the Shetland Islands. The interface shows a map displaying tracks and speed, and green marks indicate fishing activity. The vessel shown had six cameras on board but, as Mr Jensen explained, the system allows you to focus on just one. In the video, one could see that the gear had been hauled; when the gear is set and hauled it is recorded. He demonstrated how the speed can be adjusted and how to zoom in on the fish if it is difficult to make out the species. He pointed out that this vessel was a small gillnetter, illustrating that no vessel is too big or too small. For the demonstration the video was bright and high quality, but Mr Jensen noted that as high resolution files are too big to transfer quickly they typically use lower resolution video.

412. Recognizing the need to be able to adjust the video on the vessels, the Danish Agrifish Agency set up a "Live View" mode that operates when a vessel is in harbour and connected to the 3G or 4G network or Wi-Fi. During that time they can log on the ship's computer and run configurations, zooming in, flipping the cameras, changing the frame rate and setting higher video quality. They can also see how fast the system is running, run speed tests and software updates. They can look closely at tracks and discards and if, for instance, the vessel appears to be fishing in an area where discards are greater, they can ask the skipper the reason for this.

413. Achievements in 2015 include the equipping all of their vessels with a new black box. The video is transferred via 3G or 4G but the Wi-Fi access point in the harbour did not function as well as it should have, so they are working to improve that function. All the received data is transferred from the vessels to the server within 15 to 18 hours. They also doubled up the black box analyser and were able to analyse 15 percent of all holds from participating vessels, exceeding the target of 10 percent. The time they spent analysing a haul decreased from 34 minutes to 17 minutes, with all inspectors able to log on and see the reports. The budget cost for the trial in 2015 was EUR375 000, which has not yet been exhausted.

Eyes on the Seas

414. The second presentation was delivered by Bradley Soule, Senior Fisheries Analyst, Satellite Applications Catapult; he discussed how Project Eyes on the Seas is supporting MCS efforts by harnessing new satellite capabilities and applying some basic principles to sort through the large amounts of data and information available.

415. Big data can be both obstacle and opportunity. When we are flooded with information from different systems we have to be able to sort through it. Remote sensing points us in the right direction, but the challenge is putting together the full suite of information as well as putting technology in context (e.g. national regulations and frameworks for application). Under Project Eyes on the Seas, Satellite Applications Catapult has partnered with the Pew Charitable Trusts to build on capacity building aimed at making use of some of these technologies for MCS activities in developing nations, as well as in risk management in seafood supply chains.

416. Their approach consists of looking at all available data and pulling the relevant information together in order to paint a basic picture of identity, location, time and behaviour from port landings, satellites, boats, drones and other technology already deployed. The system correlates information with RFMO lists and other databases. The ultimate goal is to find the vessels that are off the grid, that we know exist but avoid detection.

417. Going through every record is not an efficient approach. Some specific fisheries have automated processes that help them sort through data efficiently, but most agencies are not even able to review and reconcile all logbook data with VMS data. Project Eyes on the Seas applies some basic principles, such as taking into account security (e.g. VMS and analysis) and machine learning to identify abnormalities. In a simple example, if the daily catch limit is 300 pounds and every day the same business lands 299.99 pounds, there's likely to be a problem. The goal is to be able to identify and track the activity that is worthy of further investigation, while working within current assets and resources.

418. Mr Soule explained that there has been a small revolution in the satellite industry, leading to significant growth in satellite capabilities. One high profile example is how new companies are designing reusable rockets: these can lead to significant cost savings and increased satellite capabilities. This also means that the cost of launching objects into space is going to get much cheaper. Furthermore, increasing microprocessor capability is enabling satellites to be both smaller and more effective, which also makes them easier to launch. New internet capabilities such as widespread connectivity from low-earth orbit are also within sight.

419. Mr Soule used AIS as an example of a huge dataset from which information relevant to a port inspector must be extracted. By automating track analysis you can identify the behaviour of interest. As an example, Mr Soule showed certain track information which indicated vessels coming together and track speeds consistent with transshipment given the weather conditions. He pointed out a reefer vessel and a fleet of boats queuing up. As a side note, he said that a reefer may sometimes appear to be alone, but its behaviour may suggest a dark target; synthetic aperture radar (SAR) can help fill in gaps in AIS coverage. In this case, SAR confirmed that two vessels came together and formed a larger profile, representing that a transshipment had started. Having detected an apparent transshipment at sea, the next step was to send out a notification to trigger electrical optical sensors for visual confirmation. As a result, an overhead shot was obtained of a refrigerated cargo ship making an offload to a longliner. A crane off the side was visible, as were identifying characteristics of the vessels, such as the number of masts on the reefer. The limitations of this technology are that certain things are not visible from space, such as radio call signs and fish species. Nevertheless, a strong indication of transshipment like this is a good place to start.

420. Mr Soule provided another example of five vessels detected in a configuration, three of which were not broadcasting. They appeared to be longliners, too near to each other to be setting longline gear, meaning they were probably awaiting the reefer. The reefer proceeded to have several tracks consistent with transshipment without a secondary vessel broadcasting. Such information can help port inspectors when the reefer comes into port because they can ask questions related to abnormalities and likely transshipments, in addition to verifying skipper responses against another source of information. In order to help formulate the pertinent questions, when Eyes on the Seas detects activities like this they must always consider the context: the jurisdiction, regulatory framework, licensing requirements, observer requirements and other pieces of identity information which can be incorporated. Automatic identification is important in all of this, because it's not realistic to ask a port officer on one side of the planet to go look at track activity on the other.

421. AIS is just one of the tools in the box, but it provides a good starting point thanks to its wide usage. Mr Soule showed some estimate percentages of carriers that are accurately identifying themselves

using AIS across tuna RFMOs. Relative to all of WCPFC, AIS usage was much higher on the vessels included on the Pacific Islands Forum Fisheries Agency (FFA) good standing list, which is helpful. Mr Soule observed that AIS usage is probably higher in practice, since these percentages reflected only those vessels that accurately filled out and transmitted their AIS identity messages. In particular, the percentage of bunker vessels using AIS appeared low, particularly when AIS was designed for bunker vessels, which carry hazardous cargoes. Mr Soule also noted that many vessels may be registered with multiple tuna RFMOs. Project Eyes on the Seas is therefore trying to build all this from various sources and make soft matches.

422. The last point Mr Soule highlighted was that although AIS and VMS were created for different purposes, the technologies are blending together, in some respects. There are now AIS units on the market which are tamper-proof and have encoding. There are still issues to be resolved with respect to spoofing and misrepresentation, but AIS is still a very useful tool, especially when paired with VMS. For instance, if a vessel is broadcasting AIS in different areas compared to its VMS, this could raise questions as to what it may be hiding from a national authority.

Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels

423. Ari Gudmundsson, Senior Fishery Industry Officer, FAO and Dawn Borg Costanzi, Systems Analyst/Developer – Global Record, FAO, jointly presented on the topic of the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels. The project is being developed under COFI processes, including a Working Group that has broad participation from members and others. As they move into more a comprehensive system design and a piloting phase, FAO hopes to enhance participation further.

424. Mr Gudmundsson spoke first, introducing the Global Record as one of the latest tools being developed to combat IUU fishing, closely related to the FAO Port State Measures Agreement (PSMA) and the Voluntary Guidelines for Flag State Performance. The Global Record adds value by compiling various pieces of information on fishing vessels and other vessels that support fishing activities. It can be a one-stop shop for identifying the vessel, its owner, fishing operations, surveillance and history. As a tool, its key strength is that it will make certified information from official authorities publicly available on the internet. The main target users are port States who need to carry out risk analyses on foreign-flagged vessels entering their ports to fulfil PSMA-related responsibilities. Flag States might also use the Global Record to detect and avoid double flags and flag hopping, and market States may be interested in the information provided as well, particularly retailers, as well as the general public.

425. In order to be comprehensive and effective, the Global Record includes not only fishing vessels but also other vessels supporting fishing operations, including refrigerated transport and supply vessels, some of which may also be engaged in IUU. Their inclusion helps increase transparency in transshipment at sea and refuelling operations.

426. An estimated 4.7 million fishing vessels exist in the world, it is therefore unrealistic to assume that the Global Record can cover all of these. This is why the FAO technical consultation held in 2010 recommended a phased development and implementation in three parts: Phase 1– vessels of 100 gross tonnage and above, or 24 metres in length and over; Phase 2 – vessels between 50 and 100 gross tonnage; and Phase 3 – vessels between 10 and 50 gross tonnage. It is estimated that the total number of the vessels in the three phases is around ten percent of all fishing vessels, i.e. about 470 000. Phase 1 affects around 64 000 vessels.

427. The FAO Committee on Fisheries (COFI) has repeatedly expressed its support for the development of the Global Record. COFI has also recognized the unique vessel identifier (UVI) as the key component of the Global Record to identify and track vessels. The UVI is global and will be

associated with the vessel for its entire life, even through flag and ownership changes. For Phase 1, COFI suggested that the UVI be applied to vessels of 100 gross tonnes and above. In the meantime, a study recommended that the International Maritime Organization (IMO) Ship Identification Number serve as the UVI. FAO therefore cosponsored the proposal to amend the IMO Ship Identification Number Scheme so that it applies to fishing vessels of 100 gross tonnage and above, which IMO adopted in 2013. In addition, several RFMOs have made or are considering making IMO numbers compulsory, and more than 23 000 fishing vessels already have an IMO number.

428. In preparation for the 2014 COFI meeting, a prototype of the Global Record system was presented, which showed examples of the types of data that could be included, and FAO provided a strategy document on the way forward. The strategy document put forward a five-year proposal to COFI with three components: system development, capacity development and awareness raising.

429. With respect to system development, the goal is to have the first version operational as soon as possible. The Global Record programme has been financially supported by seven donors to date, but it needs to secure a long-term solution. For this and other reasons, Members recognized the need for an advisory committee: this led to establishment of the Global Record Informal Open-Ended Technical and Advisory Working Group.

430. The remainder of the presentation was delivered by Ms Borg Costanzi, who elaborated on the current status and future of the Global Record, as well as future plans. Since the last COFI meeting, FAO has begun a process that involves input from Members at each stage. The Global Record was requested by Members of COFI and is a tool to support their operations. Active Member involvement is therefore necessary for further design and implementation; this will hopefully confer a sense of ownership and lead to greater involvement.

431. The Global Record Working Group followed COFI's advice to set up an advisory body to deal with policy management and strategy issues. The group is informal so it does not take any binding decisions, but it can make strong recommendations to COFI. The Working Group is a forum for considering options such as the scope, policy work plan for the future: a place where representatives can gain a better understanding of each other's systems and put forward suggestions on the most effective data and functions for fighting IUU fishing. It is also a place to identify key issues and the capacity-development needs of States. One of the main recommendations out of the Working Group was to set up core working groups to advise on technical issues. The three core groups that have been set up so far are: (1) data requirements, (2) data exchange and (3) third party data.

432. Over 50 individuals from Member States, RFMOs, NGOs and other international organizations have participated. The core groups, which are called on as issues arise, met for the first time last September and another round of discussions is ongoing. Participation is particularly important at this time, as FAO works out the best design for a Global Record that is consistent with international instruments and effectively combats IUU fishing.

433. The Global Record will contain vessel details, identification, registration, owners and pictures, as well as historical information on changes of names and flags, owners and operators, authorizations, special permits, inspection reports, port entry denials and IUU lists. State administrations are responsible for submitting this information separately from the IUU listings which come from RFMOs. The need to pre-define some standards for data exchange has also been recognized. For now, information can be submitted both manually and through automated systems; however, in either case, timeliness and accuracy are important, including the source and the date of submission. The Global Record is also moving towards linking to external information from Equasis and INTERPOL, among others.

434. There is also a need for capacity development beyond what is currently in place; work will be required to standardize this for long-term sustainability. The core group discussions in this regard will be reviewed by the Working Group during its upcoming second meeting, the outcomes of which will be sent to COFI. At the same time, FAO is also developing a practical and simple system through a pilot project. The output from the core groups and the pilot project will be consolidated in the technical guidelines.

435. The goal of the pilot project is to have an operational version as soon as possible, restricting it to data exchange only, for key Members and RFMOs. FAO is looking for a handful of partners to represent different regions and to report on the needs and capabilities of their members. In the knowledge that many administrations are not yet able to align their systems with Global Record requirements, FAO is offering targeted support in order to get pilot partners on board.

436. The pilot project descends directly from the prototype introduced in 2014, with the additions of the data exchange feature and updates in line with the data requirements recommended by the core groups. The technical transition will not be difficult and the Global Record programme has enjoyed a lot of support from Members and the international community. However, there is still a lack of commitment and participation. The Working Group and core groups are helping to address this by increasing collaboration, including on system design, to make it more accessible and easier for all Members to participate. In addition, the pilot project will hopefully make the benefits and utility more evident and, along with the entry into force of the PSMA, will probably raise interest in the Global Record and make it more sustainable. At that point, the focus will be capacity development to ensure full coverage.

Outcomes of WWF Emerging Technologies Workshop

437. Next, Bubba Cook, WCP Tuna Program Manager, World Wildlife Fund (WWF), delivered a presentation on the results of the second MCS Emerging Technologies Workshop, which was held a few days before the 5th GFETW and attended by a significant number of GFETW participants, especially from the Pacific. The outcomes of that workshop and presentations are available at: http://wwf.panda.org/what_we_do/footprint/smart_fishing/how_we_do_this/good_governance2/transparent_seas_/observers_and_innovations/.

438. Mr Cook explained that the WWF workshop brought together MCS professionals and technology providers from around the world to explore the potential of several new technologies, as well as some more established ones. In addition to providing a common forum, the event was meant to inspire and encourage participants to think creatively about solutions to MCS challenges through the use of technology. They were encouraged to stretch their imaginations, the overall theme being “anything is possible”. However, underlying this theme was the pragmatic recognition that not all ideas and products will come to fruition through implementation.

439. Mr Cook explained the origins of the workshop, its format, the basic concepts around technology adoption, and some of the aims and objectives of technology. As to the workshop's origins, Mr Cook recounted how in 2010, while he was in Papua New Guinea developing a project using tablet computers tethered to satellite transmitters for use by fisheries observers, WWF also began discussions with partners to consider unmanned aerial vehicles (UAVs) as potential surveillance tools. In the course of researching UAVs, Mr Cook was struck by the diversity of other technologies and it occurred to him that incorporating these into the MCS infrastructure could be advantageous. After consulting colleagues in the region, he realized that many were not aware of the whole range of relevant and potentially applicable technologies.

440. Next, he reached out to technology providers, some of whom were not familiar with the MCS environment or fisheries, but most of whom were interested to learn more. In fact, there was a strong interest from both sides to get together and start looking at potential applications of these technologies and how they might fit into the overall MCS infrastructure. The format of the resulting workshop was very basic. First, the issue was framed and given context through presentations of the international and regional MCS authorities and the Pacific Islands Forum Fisheries Agency (FFA) on the state of MCS, in order to give the technology providers a sense of MCS practitioners' current needs. Second, clear objectives for MCS activities and the workshop were established, to give both technology providers and MCS practitioners a clear focus on the implementation goals for these technologies. Third, the technology providers proposed solutions incorporating their technologies to address the MCS practitioners' stated needs.

441. Another feature of the workshop was the vendor booths, which allowed for one-on-one communication between interested and motivated parties to potentially discover collaborative solutions. Fourteen separate vendor booths were set up outside the meeting space. Finally, panel discussions with selected experts provided another opportunity to dig down to the core of the issues surrounding potential technological solutions to MCS challenges.

442. When considering new technologies, Mr Cook explained that it was important to know about the theory of diffusion of innovation, and how ideas and technologies spread through cultures. This theory holds that four main elements influence the spread of a new idea or product: (1) the innovation itself, (2) communication channels, (3) time and (4) the social system. Intuitively, the innovation must become widely adopted in order to become self-sustaining. There is a point at which the rate of adoption reaches a critical mass and then a peak, after which it becomes self-sustaining. Mr Cook displayed a graph showing adoption rates with early adopters, the early majority, the late majority, and the laggards. He noted that the transition between the first and second groups is the most difficult, as illustrated by the gulf on his chart between early adopters (the visionaries and technology enthusiasts) and the early majority (the pragmatists), two distinct groups which have different sets of expectations. Strategies for marketing, pricing and distribution must address these different expectations.

443. Alongside this, Mr Cook introduced the concept of “disruptive technologies” that displace established technologies and shake up the industry. While these are groundbreaking they may lack refinement, have performance problems or appeal only to a limited audience (e.g. the early adopting technology enthusiasts). On the other side are continuous technologies—but disruptive and continuous are not always easy to distinguish; sometimes the disruption is in its application rather than the technology itself. It remains to be seen whether some of the technologies presented at the workshop, ranging from UAVs, to laser technology, to genetics, will be disruptive technologies. On the other hand, some continuous and even mature, proven MCS technologies still face resistance to adoption; here, the biggest obstacle in some cases is a lack of institutional and political will.

444. In the fisheries-related MCS context, where the biggest threat is IUU fishing, the key drivers for technology adoption include economic and food security, social and cultural resilience, improved stewardship leading to economic returns, and conservation of our shared ocean heritage. There is a growing collective sense across all cultures that we have a responsibility to conserve our oceans for the future, so that our children and our children's children may enjoy the resources in the same way we have.

445. Mr Cook reiterated that the workshop objectives were to understand current gaps in the MCS infrastructure and to learn about emerging MCS tools, in order to see how they might integrate into the current infrastructure to achieve a more efficient and effective MCS system. The workshop met these objectives by giving both MCS authorities and technology providers the platforms to present their issues

and products, in order to then discuss and build the foundations for collaboration. Twenty-one presenters from all over the world delivered presentations to approximately 120 participants from a variety of MCS backgrounds. Some of the technologies were very new and innovative, such as using laser scanning as an MCS tool. However, Mr Cook observed that other so-called new technologies, such as electronic monitoring (EM) are not so new anymore and, in his view, should be moving out of the piloting phase into wider implementation.

446. MCS is generally under-resourced, but as a market it is becoming increasingly important, which might be an incentive for retailers to pay a greater share of costs and minimize their brand risk. Leadership from the fishing industry is also important, as is collaboration: collaboration between MCS authorities and the seafood industry as well as among the technology providers themselves. This is already happening in some cases. Previously, it was primarily companies that serviced EM, but now companies are providing complete service packages with satellite, ER and EM included.

447. Mr Cook displayed some images of what the future of MCS technology implementation could include. The photos depicted a boarding officer wearing a Pegasus laser scanning backpack, carrying a satellite-connected computer aid. The officer was wearing smart glasses with a “heads up” display, while using a drone tethered to a wrist controller to maintain his eyes on potential hazards, or activity on the blindside of a ship. An inspector with this equipment would be able to conduct a full forensic scan of the vessel, which could be cross-referenced against a ship’s records to determine the hold volume and contents. This would include hidden compartments used for contraband. If 360-degree cameras were permanently installed on board a vessel, the enforcement agent of the future could simply put on a virtual reality headset and be instantaneously transported to that vessel where the agent could see everything as if he or she were actually standing on the vessel. Vidar, an automated video scanning tool, could revolutionize the use of UAVs for surveillance purposes. Surveillance centres making use of the latest in computing and data processing technology are already being set up, as evinced by Papua New Guinea’s Fisheries Surveillance Centre, discussed in Brian Kumasi’s presentation.

448. For effective MCS, improvements in computing capacity are needed; these can only be accomplished through the big data solutions which can provide the answers to our questions, as well as answers to further questions we hadn’t even thought to ask. These solutions are available now, advancing rapidly and becoming increasingly affordable. For instance, a company in New Zealand is currently producing 3D-printed carbon fibre rockets that will allow you to send a satellite of your own design into space for USD77 000. As little as five years ago that would have cost USD5 million. There are AIS tracking units that are essentially the size of a half litre bottle of water. There’s virtually no part of the planet not under satellite coverage today. At the workshop, a genetic analysis kit was presented which runs off an iPhone and can provide a return on your genetic ID in just a couple of hours. Not all of this technology is realistic at this stage, but it provides an exciting preview of what technology has to offer for the future.

449. In his closing remarks Mr Cook noted that WWF has a cost-benefit analysis for the electronic fisheries information systems that would be made publicly available, and he acknowledged MPI, FFA, the International Seafood Sustainability Foundation (ISSF) and the Environmental Defense Fund for their support of the workshop.

The FAO/GEF Common Oceans ABNJ Tuna Project

450. Julien Million, Tuna Fisheries Expert, Common Oceans Areas Beyond National Jurisdiction (ABNJ) Tuna Project, FAO, gave an overview of the ABNJ Tuna Project, including the relevant activities in which the International MCS Network has been invited to be involved.

451. The ABNJ Tuna Project is part of a global programme called Common Oceans, which aims to promote the efficient and sustainable management of fisheries resources and biodiversity conservation in areas outside of national jurisdictions. The programme is a partnership between the Global Environment Facility (GEF), the funding agency, and FAO, the executing agency, as well as the World Bank, the UN Environment Programme, Conservation International, the Global Ocean Forum, the World Wildlife Fund (WWF) and the International Union for the Conservation of Nature. It is divided into four major projects, in addition to the tuna project, including: the sustainable fisheries management and deep-sea biodiversity and ecosystem project; the World Bank-led ocean partnerships for sustainable fisheries and biodiversity conservation; and the strengthening of global capacity to effectively manage ABNJ, a capacity project led by FAO and the Global Ocean Forum.

452. The tuna project is funded by GEF with a grant of USD27 million over five years. Co-funding from the different partners amounts to USD151 million, making it a very large project. FAO is the implementing agency and there are 17 different executing partners including the five tuna RFMOs, in addition to some countries like Fiji and Ghana, and a number of NGO and industry partners. This project builds on the priorities defined by the tuna RFMOs during the 2007 FAO Committee on Fisheries (COFI) process.

453. The objective is to achieve both sustainability and efficiency in tuna production and biodiversity conservation, through a systematic application of the precautionary and ecosystem approaches in tuna fisheries. The main activities are: (1) improving management, (2) combatting IUU fishing and (3) protecting biodiversity. The first deals with improving management in tuna RFMOs through the adoption of harvest strategies, ecosystem approach plans and science-based management dialogues; the third activity relates to protecting biodiversity by mitigating bycatch, integrating shark management plans and working with some fisheries that are not well covered, such as gillnet fisheries in the Northern Indian Ocean.

454. The second strand of the ABNJ Tuna Project, combatting IUU fishing, is the most relevant to the work of the International MCS Network. Through this project the aim is to provide some tools for tuna RFMOs and their members to fight IUU fishing. The first part focuses on capacity building and MCS networks thanks to the development of a compilation of MCS best practices. To this end, input and assistance will be sought from MCS practitioners of tuna RFMOs and their members. Once finalized, the best practices will be presented to tuna RFMOs with action plans for implementation. To realize these plans, the project intends to create an MCS network focused on tuna fisheries, building on the existing structure of the International MCS Network. While the IMCS Network deals with a wider range of issues and entities, the envisioned subnetwork would deal largely with tuna fisheries. In addition to the main subnetwork another smaller scale network could be established for the sharing of more sensitive information and risk assessments.

455. Finally, the project is working on a comprehensive curriculum for MCS practitioners. MCS training is often provided in a broad way to members and developing countries, but often on an ad hoc basis and focused on one MCS component only, such as VMS or port State measures. Through the development of a comprehensive curriculum and a certification-based course, clear career paths will be available for MCS officers. Similar efforts are under way with the South African Law Enforcement Academy, as seen in the earlier presentation by Hendrik van As. The most recent course that FAO

organized was at the University of the South Pacific and FAO will be looking to link further with that university and other institutions.

456. MCS tools, including a legislative template, are also being developed as part of ABNJ Tuna Project's combatting IUU activity. The legislative template will assist countries to integrate the requirements of the Port State Measures Agreement (PSMA), as well as the Indian Ocean Tuna Commission (IOTC) resolution on port State measures, into their own legislation, regulations or other instruments. This is the first, necessary step for the implementation of the PSMA and IOTC resolution. The project is also supporting the testing of an electronic port State measures module for IOTC, which encompasses all of the requirements (such as advance notifications and requests from vessels to enter port, submissions of documents and port responses). They also support training programmes for the IOTC, as these relate to its resolution and the extension of catch documentation schemes (CDS). Further to CDS, after a year and half of global assessments FAO will be publishing a document on best practices for CDS to close supply chains on IUU products, which will be presented to different tuna RFMOs. With respect to the Consolidated List of Authorized Vessels (CLAV), a tuna RFMO initiative put forward in 2007, the ABNJ Tuna Project supported the automation of real-time updates to the record. The CLAV is now fully updated and available at all times on the tuna.org website.

457. In order to further develop MCS tools in different contexts, the project is running two pilot projects, one in Ghana and one in Fiji. In Fiji they are deploying 50 electronic monitoring systems on 50 Fijian longliners; in Ghana the systems are being set up on the eleven purse seiners which compose the whole Ghanaian fleet. They are looking to expand the pilot to two purse seiners in the Seychelles. As Hugh Walton mentioned, the project is also supporting an integrated MCS system for the Pacific Islands Forum Fisheries Agency (FFA) relating to its fisheries information management system, as well as the preparation and circulation of intelligence reports and threat assessments. Finally, the project provides direct support to tuna RFMOs for compliance with conservation and management measures through support missions and e-Maris, the new compliance module that IOTC is preparing.

458. In his closing remarks, Mr Million provided additional details of the envisioned tuna RFMO MCS subnetwork of the International MCS Network. The objective of this subnetwork would be to share information and experiences among MCS practitioners dealing with tuna issues and to do this on a regular—possibly even daily—basis. This would imply the development of some communication tools, such as a mailing list or a moderated forum. In addition to further discussions with the IMCS Network, the project would engage in wide consultation with tuna RFMOs and their members on the right modality to ensure the subnetwork meets their expectations. Smaller networks could also be anchored in the subnetwork. As far as the sharing of more sensitive information is concerned, rules, restrictions and procedures must be developed. We have already seen successful examples of similar subnetworks, such as Fish-i Africa and components of FFA. Hopefully, the experience of a tuna MCS subnetwork can be shared and expanded to other similar initiatives all over the world.

459. After the Session 6 presentations concluded too little time remained for a discussion, but the facilitator invited participants to speak with the presenters at lunch or later on in the day.

SPECIAL SESSION: THE SECOND STOP IUU FISHING AWARD CONTEST

460. The Stop IUU Fishing Award contest recognizes MCS innovations being employed in both small and large-scale fisheries that demonstrate creativity, success and tangible solutions. These can be high tech, low tech, or based on local or traditional knowledge, as reflected by the winners of the 2nd Stop IUU Fishing Award contest, who received their awards and delivered presentations in this special session.

461. Before the winners were announced Michele Kuruc, VP Oceans Policy, World Wildlife Fund (WWF) and the contest's lead judge, explained the origin of the Stop IUU Fishing Award. A few years ago, the Network realized that many wonderful and innovative things were happening in the MCS world, which were addressing real-life problems. By establishing a contest, the Network aimed to encourage even more advances and honour those in the MCS community for the meaningful, inventive, pioneering work that they are doing—work from which others can also benefit.

462. The contest is made possible by the loyal sponsorship of the International Sustainable Seafood Foundation (ISSF) and the contributions of the experts on an international judging panel, who had the difficult task of evaluating the entries and selecting the winners. The entries were judged according to the following criteria: innovation, pilot potential, educational value, tangible impact in reducing IUU, feasibility and cost.

463. Entries in this second contest reflected a stronger alignment with fisheries MCS, which may be a reflection of the contest's growing renown. The impressive array of entries included conservation drones, satellite imaging and a variety of new, web-based apps—and those were not even winners. The judging panel was impressed by all of the entries, a number of which came complete with videos explaining their designs. However, the judges unanimously agreed on a first place winner, the Indian Ocean Commission's tagging system for small-scale vessels, which reflected an innovative, ingenious and very low-cost solution to one of the fundamentals of MCS work.

464. After Ms Kuruc spoke, Mr Pedro Rodrigues, Chief of the Fishing Port of Timor-Leste's National Directorate of Fisheries Resources Management gave a brief summary and update on Timor-Leste's "Community-Based IUU Reporting System," the winner of the inaugural Stop IUU Fishing Award contest in 2014.

465. Central to Timor-Leste's winning programme was a device called SPOT tracker, a personal GPS locator beacon used recreationally by hikers, which automatically transmits positions every 15 minutes in near to real time, via satellite. Under the Community-Based IUU Reporting System one of the tracker's two buttons was repurposed to report illegal fishing, while the other can be pressed in an emergency to emit a distress signal: this identifies the boat's exact location, and an international monitoring centre sends an SMS to the mobile phones of the heads of police and inspection departments. The innovation in this programme lay in its simplicity and the working relationship it helped to build between small-scale fishers and the government, which loaned them the SPOT trackers. The fishers' safety at sea has improved and, in exchange, they use the devices to report in real time on any illegal fishing activities they see in the areas they fish.

466. The programme was born out of the Regional Fisheries Livelihoods Programme for South and Southeast Asia; however, since 2014, Timor-Leste's National Directorate of Fisheries has received a budget allocation to continue the programme and ensure its sustainability. As of last year, there were fishermen in 11 counties participating in the programme and 16 SPOT trackers currently operating in the field. The repurposed buttons have been pressed many times since 2014, and yet the government has been unable to take immediate action in most cases because of a lack of facilities. Internal coordination

on how to enhance the programme's implementation is ongoing, as is the constant coordination between fishers and the government on complementary ways to share information about IUU fishing.

467. After Mr Rodrigues' presentation, Cephas Ralph, Chair, International MCS Network announced the winners for third, second and first prize and presented them with their awards. After photographs were taken, each delivered a presentation on their respective winning project.

Third Place Winner: Peru's SISESAT SMS Application

468. Daniel Collachagua, Director of Technology for Monitoring, Ministry of Production, Peru accepted the third place prize on behalf of the Ministry's Sistema de Seguimiento Satelital (SISESAT) Short Messaging Service (SMS) application.

469. The SISESAT SMS application permits both accredited inspectors of the Ministry of Production and fishing vessel operators to consult the latest position of their fishing vessels in real time. This means fishing vessels can be located in, or near to, prohibited or reserved zones. Coupled with fines for those found in violation of these, the SISESAT application can have a dissuasive effect on IUU fishing. The way the programme is implemented allows not only inspectors but also fishing companies, fishers, scientists or any other registered persons, to request and access information about a vessel position by means of an SMS. This function is triggered when the user sends a text message with the numerical license of the vessel in a prescribed format. Any cellular device with the option of sending and receiving SMS texts can be used.

470. By way of background, the SISESAT Control Centre began operating in March 2015, under the Directorate of Technology for Monitoring, itself part of the Vice Ministry of Fishing of the Ministry of Production. The function of the Control Centre is the monitoring of fishing vessels in maritime areas to avoid incursions into reserved or prohibited areas. This surveillance is carried out through the processing of satellite information emitted by beacons installed in each vessel, remitted through the services of authorized satellite companies. The centre has new satellite control software, as well as state of the art equipment, offering both security for the monitoring information and providing a more efficient consultative system on the functioning of fishing vessel beacons.

471. On 1 April 2015 the SISESAT Regulation went into effect, approved by a Supreme Decree for fishing vessels that encompassed new technical specifications for satellite monitoring equipment, alert messages, emissions latency, transmission means, reception and data security, and satellite communication services to SISESAT's Control Centre.

472. The application enables users to see the last location of fishing vessels within 15 seconds, complementing the service provided by the satellite control operators at the centre who provide information through telephone communications and operate with a delay of 10 to 30 minutes. Information returned by SMS response includes: (1) the name of the fishing vessel, (2) the license number of the fishing vessel, (3) the name of the satellite service provider, (4) the fishing vessel's beacon code, (5) the date of the fishing vessel's latest position, (6) the distance to the coast in nautical miles, (7) the coastal reference, (8) the latitude of the fishing vessel, and (9) the longitude of the fishing vessel.

473. When fully functioning, the application can provide information on 1 180 fishing vessels at the national level, including on 852 large size vessels, 164 smaller vessels and 164 artisanal vessels. To date, the application has been used over 13 400 times and the Ministry expects that 25 000 inquiry messages per year will be made through the SISESAT application. Information requests through the SISESAT SMS application are answered 24 hours a day.

474. One of the principal advantages of the SISESAT SMS application is its cost-effectiveness, since sending text messages is economical and receiving messages is free. It is a tool that reinforces MCS of

fishing vessels by rapidly and precisely transmitting the information requested by an inspector and anyone in an area with cellular coverage (fishing vessels, disembarking areas, shipyards) who is registered and has received a code from the Supervision Technology Administration. It allows for easy data interpretation by sending an SMS text message in a specific form, thereby avoiding miscommunications.

475. The Ministry of Production intends to develop the application further and to promote public participation in fishing management. The goal of all of these efforts is the empowerment of small-scale fishing communities and fishers, the scientific community and regional authorities, as well as all the stakeholders who need to effectively collaborate in MCS activities for the sustainability of aquatic resources.

Second Place Winner: Multiagency Task Team (MATT) against Blast Fishing

476. The Indian Ocean Commission (IOC)-SmartFish programme was the recipient of both first and second place prizes for two different projects in East Africa. Before Marcel Kroese, Key Expert, IOC-SmartFish, delivered separate presentations on the two projects, he and Toky Rasoloarimanana, MCS Communications Officer, IOC-SmartFish, accepted the awards on behalf of the team. Ms Rasoloarimanana and Jude Talma, MCS Coordinator for the Indian Ocean, IOC-SmartFish, also both offered their remarks.

477. The purpose of the IOC-SmartFish programme on blast fishing in Tanzania, awarded second place in the 2nd Stop IUU Fishing Award contest, was to build capacity through partnerships aimed at eradicating these severely destructive fishing practices. The activities conducted by the programme focused on a collaborative process to incorporate all those involved in the explosives and fishing value chains, and to put in place a cohesive strategy to address blast fishing.

478. Mr Kroese briefly provided some background on blast fishing in the Tanzanian context, notably that it was known to occur in Tanzania from the 1960s onwards: by the 1980s and 1990s, the practice was rampant. After an intervention by the Tanga Coastal Zone Conservation and Development Programme and the Navy, blast fishing decreased until roughly 2004. From 2005 until the present, blast fishing has become an epidemic, with every fishing village along the entire coastline using explosives to fish on shallow reefs and offshore. Fisheries law enforcement is currently losing the battle against blast fishing; what is more, they are seeing a move away from home-made to commercial explosives.

479. The issues which generate the environment which facilitates blast fishing are interlinked; they include the decline of coastal fishing resources and the availability of explosives—from a mining industry for instance—and chemicals from which to fashion explosives. The challenge of the decline of the coastal fishing resources is being dealt with through the twin processes of fisheries management support, fisheries policy and MCS support. Addressing the availability of the explosives remains a challenge for the fisheries department.

480. The initial response was standard procedures: find and arrest the blast fishers and confiscate the materials (boats, scuba tanks, compressors). Several operations were undertaken, with numerous arrests and confiscations made: in one year, more than 50 boats, 7 compressors, 100s of scuba tanks and 500 kilograms of explosives were seized, none of which reduced the use of dynamite fishing in Tanzania. The investigation had to move beyond the scope of fisheries and fisheries officers. A direct appeal was made to the Inspector General of Police in Tanzania to assist in the matter, based on evidence relating to the ease with which explosives were being bought and distributed.

481. The import and use of explosives is primarily the domain of the Ministry of Finance and the Ministry of Energy and Minerals; it does however affect a myriad of departments, such as ports

authorities, customs authorities, revenue authorities, mining engineers, and mining resources and permits. Thereafter there is the transport of explosives to be considered—which requires police escorts and the storage of explosives—as well as technical regulations and control. What became clear was that everyone in the legal trade and import of explosives to Tanzania “owned” a piece of the value chain, but no one had a complete picture of it.

482. A relatively straightforward solution was devised: the provision of a platform for all players in the explosives value chain to have a common understanding and benefit from information on what is happening in terms of import and trade. This was facilitated through the formation of a Multiagency Task Team (MATT), the first such mechanism used in Tanzania to address the destruction of natural resources.

483. A terms of reference document was developed for the MATT through a consultation process with stakeholders to establish a mechanism which would address the organization of blast fishing. However, it soon became apparent that the scope of this should be broad enough to include other organized crimes relating to forestry, wildlife and fisheries, as well as minerals.

484. The current membership of the MATT includes: the Tanzanian Police Force the Ministry of Livestock and Fishery Development, the Ministry of Energy and Minerals, Ministry of Natural Resources and Tourism, Tanzania Intelligence Security Service, the National Security Council, the Tanzanian Immigration Authority, the Tanzanian Revenue Authority, the Tanzania Peoples Defence Force, the Office of the Director of Public Prosecutions, the President’s Office, the National Environmental Council, and the Vice President’s Office tasked with Environmental Affairs.

485. The innovation was to “house” all operations and prosecution within the MATT, ensuring it could serve as a clearing house for information as well as a coordination centre (with a secretariat) endowed with investigation and prosecutorial abilities; it is essentially the “one-stop shop for organized environmental crime” for Tanzania. The MATT was field-tested for almost a full year in the country and the secretariat held regular meetings where information and updates were shared between MATT members. This information was then converted into intelligence and finally led to the formulation of projects tasked with certain aspects of the organized environmental crime.

486. The MATT is successful because information is shared between the stakeholders—and more importantly, acted on—and feedback is provided to the stakeholders at the monthly MATT meetings. Moreover, it is successful because all the relevant parties are involved at the operational level and can provide particular expertise on specific projects. In the project aimed at eliminating blast fishing, a mining engineer contributes to technical aspects of the storage, use and transport of explosives, as well as permits associated with mining operations; customs officials provide information about the importer, exporter and end-users; and a prosecutor contributes the legal aspects of each of the various pieces of legislation, so as to put together a case that satisfies the legal definition of “organized” and the security of the evidence chains. Thus, everyone has an important role to play and the links developed grow stronger as trust is established between a variety of state organs.

487. Finally, its success is also attributable to the fact that the MATT mechanism does not involve additional funding, apart from investigations and operations: there is virtually no cost associated with having meetings and sharing information. The various departments contribute in cash or in kind to operations if their members participate, which provides much-needed support to police investigation teams.

First Place Winner: Small Pelagic Fishing Vessel License Pilot

488. Mr Kroese also delivered the presentation on the judges' unanimous choice for first place in the 2nd Stop IUU Fishing Award contest: IOC-SmartFish's small pelagic fishing vessel pilot project, in Tanzania. The purpose of this project was two-fold: (1) to improve the detection of compliant vessels through visual means when fisheries officers and/or community fisheries management groups are undertaking patrols; (2) to increase the revenue streams of local fisheries departments tasked with licensing, registrations, fisheries management and fisheries MCS.

489. As Mr Kroese explained, the problem they faced was low levels of vessel and fisher registration and licensing, with a delinquency rate of up to 70 percent. In 2009 alone, low levels of compliance resulted in an estimated loss of USD128 200. This was limiting the revenue streams to local government authorities, resulting in insufficient funding to support effective fisheries management by district fisheries officers and the beach management units (BMUs). They needed a "win-win" for the local government authorities and the Fisheries Department.

490. Therefore, since 2013, IOC-SmartFish has been supporting a pilot vessel registration and licensing programme in Tanzania. The programme aims to help identify compliant vessels in the marine small pelagic fishery, most of which (over 95 percent) are less than 11 metres in length, and to address the low level of compliance with vessel registration and licensing.

491. Why is visual detection important? Principally because the current legislation requires that vessels be identified by displaying a name and a unique license number. Virtually all vessels simply paint on the name and licensing number, but many paint on a number that appears to be official when in reality it is fraudulent.

492. Due to the paper-based nature of the administrative process for licensing the official licenses are recorded in a book, which remains in the office. Previously fisheries officers therefore had to first inspect a vessel and then determine later whether or not the boat was in fact licensed. By the time they returned to the vessels in question most had usually already departed. Furthermore, when a vessel was licensed in an adjacent district and only passing through, a fisheries officer would have to contact the other district for confirmation.

493. An initial study was conducted to determine whether a mobile phone registration system could resolve the low level of licensing compliance; however, while the Fisheries Department could meet the technical and software challenges, they projected that the long-term sustainability of mobile phone systems and their IT software support would erode most of the financial gains.

494. After exploring several other options, a pilot project was launched that used optically detectable, inexpensive, non-transferable coloured plastic security tags (USD0.05 per tag), similar to security cable ties used to prevent unauthorized access to goods while in transport. These tags can be individually marked with an alphanumeric code that conforms to requirements for vessel registration and licensing under fishing regulations. The tag markings ensure that the vessel owners can be individually identified.

495. Based on the current licensing and registration procedures, two tags are required. The first tag denotes the vessel registration, while the second tag shows that the vessel is compliant with the annual license requirements. The tags are located in conspicuous places on the vessel, making it easy for compliance officers to identify which vessels have been registered and licensed for the year. The colour of the license tag can be changed on an annual basis, enabling the compliance officers to rapidly establish which vessels have been licensed for a particular year.

496. What made the pilot project successful was that it was cost-effective and easy to implement. For installing tags, fisheries officers can carry a tagging kit with them when they undertake fisheries patrols

on the beach or at sea, and they can license and register vessels in remote locations. For monitoring and inspection purposes, the tags provide an immediate visual clue that the vessel is compliant (at least in terms of licensing and registration) and it is easy to verify whether the vessel has a license for the district in which it is fishing (colour coding and/or unique district three-digit alphanumeric code).

497. The programme provides a substantial revenue in exchange for very little investment and very minor increase in the administrative burden of fisheries officers. There is no expensive software or training modules, the practical training takes 30 minutes and village fisheries management bodies such as BMUs can implement the process on behalf of local government.

498. The small vessel registration pilot programme succeeded with support from compliance officers (marine police) to ensure that the vessel owners understand that failure to register and license their vessels will result in fines or their vessels being confiscated. The officers also have to return to landing sites on a regular basis to ensure that all vessels have been registered. Community education and ensuring a high level of motivation among district fisheries officers were also fundamental to the project's success

SESSION 7: GLOBAL IUU ESTIMATE: STUDY OF AVAILABLE IUU STUDIES

499. The seventh plenary session focused on international and regional MCS cooperation, and the “Global Review for FAO of studies to estimate levels of IUU fishing”, which is the review process for all IUU estimates and methodologies. Harm Koster, Executive Director, International MCS Network, provided the introduction for Graeme Macfadyen, Director of Poseidon Aquatic Resource Management Limited and FAO Consultant, who is currently leading a study of studies of IUU fishing estimates.

500. Mr Macfadyen started his presentation by outlining the context of the study of IUU fishing studies (hereafter referred to as the ‘study of studies’), which Poseidon is carrying out under a contract with FAO. FAO and in particular its Committee on Fisheries (COFI) has been the leading body in combatting IUU fishing. Over the last decades FAO has adopted, among others: the Compliance Agreement, the International Plan of Action against IUU (IPOA-IUU), the Port State Measures Agreement (PSMA), the Guidelines on Flag State Performance, the Guidelines for Small-Scale Fisheries, and it is developing the Global Record. These instruments have triggered further action by the international community at national, regional and global levels, including the establishment of the International MCS Network.

501. In 2009, a paper by Agnew *et al.* estimated that IUU-caught fish in 2003 amounted to between 11–19 percent of reported catches, representing 10–26 million tonnes of fish, valued at USD10–23 billion. These eye-catching figures helped to further mobilize international, regional and national efforts to combat IUU fishing, which had been gaining pace since the mid-1990s and early 2000s. Many other studies have also been completed in recent years to estimate levels of IUU catches and these have used a range of different methodologies.

502. In February 2015, FAO convened an expert workshop in Rome to consider methodologies for estimating IUU fishing at the global level. The underlying premise for this workshop was that a new global estimate of IUU catch would be useful, as the 2009 paper estimating IUU-caught fish was outdated, both in terms of the 2003 estimate it provided and indeed the changed international, regional and national contexts now influencing levels of IUU fishing. Concerns had also been expressed over the wide range between the upper and lower estimates in the study, along with some of its methodological aspects, notably the multiplying factors used to generate the global estimate.

503. In considering how methodologies for estimating IUU fishing could be improved and standardized to facilitate a global estimate of IUU catch, the February 2015 workshop suggested that FAO should: (1) coordinate a Study of Studies to categorize and review the strengths and weaknesses of the different methodologies being used to estimate IUU catches; and (2) lead a process to develop technical guidelines for future studies so they could be conducted in a way that would allow for estimates to be combined, in order to contribute to a global estimate. The workshop also suggested that FAO should consider indicators of IUU fishing for inclusion in the biennial FAO State of World Fisheries and Aquaculture publication, such as a global estimate of IUU catches, for instance.

504. In completing the study of studies, the relevant studies were collected through: (1) literature searches for relevant peer-reviewed articles published in scientific journals, (2) web-based searches to collect project reports and other relevant studies, (3) requests through FAO to RFMOs for relevant studies and (4) participation by the consultants at the 5th GFETW. A total of 89 studies, journal articles and research reports were collected and reviewed. Forty-four of these studies actually estimated levels of IUU fish catch, and for each one a half- to one-page summary was prepared to outline the key information from the study that had been reviewed. A further 35 studies did not estimate IUU catch but instead reported solely on compliance levels or individual IUU fishing events.

505. Mr Macfadyen said that in his opinion it would not be possible to derive a global estimate from existing IUU fishing studies. Studies of IUU catches range in geographical scope from those focusing on very local contexts, to national and regional studies, to those attempting to estimate IUU catch at a global level. The sub-global estimates cannot be combined to generate a global estimate as they do not cover all fisheries or ocean areas. Added to which, they tend to focus on marine industrial IUU fishing (often by foreign fleets), in some cases overlap in their geographical coverage—but with different estimates of IUU catch being produced—and employ different methodologies which cannot be compared. With respect to a number of studies providing global estimates, these tend to have especially high levels of uncertainty over the estimates produced: as the scale of these studies increases, so they either lose accuracy or granularity because of the assumptions that they have to make concerning elements for which there is no data.

506. A number of global (or regional) studies estimate ‘missing or unknown catch’, rather than catch which is specifically IUU. This is important as such studies have a limited biological focus/objective; while there are benefits to this approach, it fails to recognize that IUU fishing is not only a biological problem but also an economic and social one, in terms of its impact on fish stocks and the reliability of stock assessments based on known catches.

507. The inclusion of the three different aspects of IUU fishing in the estimates are not consistent, nor is the definition of IUU fishing in the IPOA-IUU consistently applied. The studies demonstrate considerable confusion about what illegal catch is, what unreported catch is, and what unregulated catch is, often grouping unknown catches under a single IUU umbrella.

508. The studies use a wide range of different sources of information including: surveillance data and compliance levels, remote sensing (e.g. VMS, AIS), logbooks, expert judgment based on experience, interviews with fishermen and enforcement agencies, observer data, onboard cameras, stock assessment models and trade data. These sources of information have different applications in terms of the different methodologies used to generate estimates of various aspects of IUU fishing activity.

509. Mr Macfadyen added that many of the studies are insufficiently transparent about the sources of information, do not disclose potential weaknesses in the methods used, and make a large number of assumptions that lead to inevitable questions over the accuracy of the estimates produced. To conclude, Mr Macfadyen pointed out a number of questions for the 5th GFETW:

- Is a global estimate of IUU fishing important/useful?
- To what extent can IUU risk assessment frameworks contribute to making estimates of IUU fishing?
- What are appropriate indicators of IUU fishing and the mechanisms for data collection?
- How can FAO support future uniformity of action on estimating IUU?

Discussion, comments, questions and answers

510. One comment from the audience focused on the global estimate of IUU fishing and whether the existing estimate should be updated; this comment triggered several other reactions from other participants on the same topic. A representative of WWF strongly supported an update of the existing global estimate of IUU fishing, the existing estimate having been very useful to increase awareness. The figure has generally been accepted and used by governments and international institutions as well as private organizations in order to provide an indication of the extent of the IUU fishing problem. Furthermore, it would be of utmost importance to establish an accepted global estimate in the near future, so as to represent the seriousness of the IUU fishing threat. Other participants argued that the global estimate does not take into account the progress achieved in some areas in combatting IUU fishing and that FAO should adopt a process that showed both the seriousness of the problem and the progress made.

SESSION 8: DEVELOPMENT OF A HIGH-LEVEL IMCS IUU RISK FRAMEWORK

511. The eighth session consisted of two parts: first, a presentation and introduction, followed by facilitated discussions in break-out groups representing different regions. During the introduction, Andrew Wright, International Adviser, Fisheries Compliance, Ministry for Primary Industries (MPI), New Zealand, presented an exemplar from the Southern Ocean region that had been developed by MPI. In the subsequent break-out discussions, participants could choose to join groups focusing on the Atlantic, the Pacific and Southeast Asia, or the Indian Ocean. All groups were given a set of questions to answer related to aspects of developing global IUU risk framework.

512. As Mr Wright explained, New Zealand produced the Southern Ocean IUU risk framework exemplar to aid discussions by regional groups at the GFETW on what kind of process the International MCS Network could consider adopting in the future. The exemplar was a starting point for consideration not a final product, he noted, and they would welcome feedback on it, because a product only improves when informed by a variety of different perspectives. The purpose of the example was to present IUU risk hot spots in the Southern Ocean in order to inform collective discussions on IUU threats in a particular ocean region and identify which MCS tools could mitigate these threats.

513. The information which made up the framework was derived from a questionnaire recently sent out to a small group of Southern Ocean IUU experts. The creation of the exemplar followed 6 steps: (1) defining IUU (referring to the FAO definition); (2) defining the geographic area (FAO Ocean Areas 58, 48 & 88); (3) researching what current IUU threats exist, including mailing the questionnaire out; (4) researching what current MCS tools exist that could mitigate IUU threats (observers, VMS, PSMA); (5) applying a basic risk algorithm to calculate IUU risk (using the formula threat/mitigation = risk); and (6) mapping risk. The next step would be for the GFETW to discuss the framework and potentially make recommendations on additional MCS measures to put in place, such as market state measures, emerging technologies and increased port State measures.

514. Mr Wright displayed a map showing FAO ocean regions within the CCAMLR Convention area, which provides the basis for CCAMLR's statistical areas, along with the results of sample analyses of responses from five questionnaires. From these, MPI had derived a risk level for each separate aspect of IUU fishing in each FAO area. The calculation was based on likelihoods, which were assigned numerical values, and an assessment of MCS tools available, also synthesized into a numerical value. Using a multiplier, the risk level was calculated for each aspect (illegal, unreported and unregulated) in each area. Mr Wright explained that the range of -15 to -5 represented low risk, while -4 to 4 was medium risk and 5 to 15 was high risk. MPI then superimposed the calculated risk levels back onto maps of the FAO regions within the CCAMLR Convention area for a geographical perspective.

515. Next, instructions were provided for the break-out sessions. GFETW participants would be invited to break out into three different regions: Atlantic, Pacific and Southeast Asia, and Indian Ocean. When discussing the issues they should refer to the FAO definition of IUU fishing and keep in mind that there are already IUU Risk Frameworks in existence used by RFMOs. The goal would be to devise a recommendation to FAO on how a global IUU risk assessment could be achieved. Outcomes from the group discussion would be reported back to plenary in Session 10.

516. The questions provided to guide the groups' discussions included:

- Are the FAO Statistical areas appropriate?
- Who conducts gap analysis of where IUU Risk Frameworks are not in existence?
- How and who should fill the gaps (RFMO, IMCS Network, INTERPOL)?
- Is the exemplar a sufficient starting point or should a new approach be considered?

CONFERENCE DINNER AND RECEPTION

517. On the evening of Thursday, 10 March 2016, the host nation arranged a dinner and reception featuring many aspects of New Zealand and Māori cultural practice and beliefs. The Host Nation Pre-Dinner Address was delivered by Andrew Coleman, Deputy Director-General, Ministry for Primary Industries, New Zealand, after which Cephas Ralph, Chair, International MCS Network also delivered some remarks. The event was fully supported by New Zealand's Ministry for Primary Industries, which also distributed small cultural gifts to all participants in the form of *matuas* and a *kete taonga* made of kiekie, a native plant. An explanation of their significance was also provided: the *matua* is a hook made from bone; for the Māori, the *Hei matau* and what it symbolizes is a cultural treasure. It denotes the importance of fishing to the Māori and their relationship to *Tangaroa*, God of the Sea. Māori legend holds that Maui, a great ancient mariner, hooked up the North Island of New Zealand using only a woven line and a hook made from his grandmother's jaw bone.

SESSION 9: DATA ANALYSIS AND RISK ASSESSMENT

518. The facilitator of the ninth session, which focused on methods for risk assessment, risk management and measuring outcomes, was Randy Jenkins, Director, National Fisheries Intelligence Service, Fisheries and Oceans Canada.

Assessing IUU and Measuring Compliance

519. The first presentation in this session was delivered by Tim Green, Compliance Statistics and Systems, Western Australia Department of Fisheries, who introduced a joint agency preliminary study on assessing IUU and measuring fisheries compliance outcomes. Before beginning, he acknowledged his co-authors Sebastian Lambert and Todd Spencer, as well as the Fisheries Resource and Development Corporation for sponsoring the project.

520. Before discussing the project, Mr Green provided background on domestic fisheries compliance in Australia, which has the third largest fishing area in the world, with a gross domestic product of more than AUD2.4 billion per year. More than 8 000 people are employed in the commercial fishing sector alone and there are more than 92 Commonwealth-managed fish stocks across 21 fisheries. Jurisdiction between the State and the Commonwealth is a complex matter.

521. The main focus of the study was domestic compliance, meaning inshore fisheries fleets; Australia has 545 employees dedicated to fisheries compliance and an annual budget of about AUD76 million. Numerous inshore vessels are supported by specialist capabilities such as: VMS, undercover physical and technical surveillance, training units dedicated to compliance skills, intelligence units, forensic IT, and risk assessment—which underpins everything they do. Their legal frameworks are based on ecologically sustainable development. They have powers under law to search, enter and seize equipment used in fisheries offences; other deterrents include license cancellation, as well as significant penalties of up to ten years in prison and ten times the value of the catch involved in the offence.

522. One of the reasons why they are focusing on measuring fisheries compliance outcomes is that governments are applying increasing pressure for the justifications of expenses. It is no longer enough simply to measure the number of inspections or the number of offences detected. You must measure compliance outcomes that demonstrate the beneficial impact on society and the public value of services. Government, industry, the community and, increasingly, NGOs want proof of positive influence. Government auditors are not necessarily familiar with the specialised nature of fisheries compliance, which only complicates the task.

523. Next Mr Green demonstrated the connection to IUU fishing, displaying the graph of a hypothetical fishery. The bottom axis represented compliance effort, with a black line representing offences detected (increasing with compliance effort initially, then plateauing and decreasing slightly), and a plummeting red line representing the total amount of offending. The red line was still above the black line, separated by a gap. The assumption underpinning this work is that compliance actions have beneficial impacts, but the total amount of offending—the red line—is unknown. The more effort they put in, the more offences they detected, which caused the black line to rise initially; this was surprising given that in general terms the aim of compliance is to try to reduce offending. Until the gap is closed between the red line and the black line, the black line (detected offences) may still go up. For the purposes of combatting IUU, the red line is what we want to know more about.

524. Mr Green explained how the study classified some of the types of offending observed, first considering offender capability, their intent to commit those offences and the ultimate harm to stocks. The majority of offences they detected fell into the recreational fishing category where the offender

capability, including their knowledge and resources, was low to moderate. Their intent to break rules was also low: the product of a lack of knowledge and/or laziness, rather than deliberate violations; nor they did not put much effort into evading authorities. The harm to stocks was also low. However, recreational IUU can be cumulative and begin to have a moderate to high effect on the stocks.

525. The second category analysed was syndicated illegal fishing committed by groups, involving more serious activities like illegal sales of fish and trafficking. In this context, the knowledge and resources put into committing these offences is moderate to high; offenders will spend time getting to know what the authorities do, and the intention to get away with the offences is also high. The harm to stocks is only moderate here, but in the absence of Australia's compliance programmes, that would probably not be the case.

526. Unreported fishing represents one of Australia's toughest challenges, especially in the commercial sector, where offending consists of the high grading of catch, exploiting bycatch limits, transhipments, falsifying catch records and species substitution. This type of offending involves an active opponent who is trying to subvert Australia's efforts to maintain management frameworks. Therefore, not only is it hard to detect, but it can be very harmful for stocks, because it undermines the very data that scientists and managers are using to set frameworks and manage extraction.

527. Examples of actual offences detected based on this framework include one northern rock lobster fisher in South Australia who falsified catch and overinflated mortalities, doing this solely to undermine the total allowable commercial catch calculations. Another example was an elaborate syndicate selling rock lobster and shellfish in Victoria; as is typical of black market activity, they were taking and selling low quantities, but on a regular basis. In that case fourteen people were arrested, some receiving custodial sentences, while twelve vehicles were seized and forfeited. In Western Australia they penetrated the black market in wet fish using undercover operatives, who witnessed catch valued at AUD52 000 being ordered illegally in just two weeks—this is about a third of the total allowed commercial catch. In the iconic, recreational blue swimmer crab fishery more than 6 000 offences a year are detected—this refers to the black line on the graph displayed, not the red line. Interestingly, they discovered very low recidivism but estimated that the illegal recreational take is over ten percent of the total allowable commercial take, which greatly concerns fisheries managers.

528. The Australian Fisheries Management Authority (AFMA) has a programme based on the “Show Cause” model, which shifts the burden of proof to the operator to explain suspect activity if they wish to avoid being taken to court. In 2010, AFMA modified that legislation and introduced the Navigation Regulation, removing the need to prove fishing took place during an incursion into closed waters, and saw incursions drop from 17.8 to 1.1 boats per month.

529. As part of the project to assess IUU and compliance outcomes, Mr Green and his colleagues surveyed 12 domestic and international fisheries agencies; they found that the inputs and outputs of compliance measures are well understood and widely used, but outcome measures less so. Outputs are what you get out—offences, inspections—while outcomes refer to the beneficial impacts. Out of ten outcome measures there was an uptake of only about 30 percent for each of those measures in the agencies sampled. A workshop was held to bring everyone together to review the findings of a literary study on IUU fishing, which will feature in the final report. The workshop also revealed that it is not simply about sustainability, but also about the delivery of marine services like marine safety, biosecurity and marine park work: while these can sometimes distract from the fisheries focus, they also impact on the way we deliver services.

530. Mr Green summarized the lessons learned from the project so far. Before they began they had suspected that measuring compliance outcomes would be difficult; this was confirmed. It was difficult

to find responsive data and to demonstrate outcomes in biological systems that are slow to react—too slow for you to actually make operational decisions. There are three types of outcome measures: immediate, intermediate and final. Immediate measures are things like non-compliance rates or the total amounts of illegal catch, but those go stale very quickly. Intermediate measures are changes in the immediate measures. AFMA’s “Show Cause” requirement is an example of an intermediate measure which demonstrates a change in behaviour. They are still trying to demonstrate the final outcome: showing that changes in behaviour have beneficial impacts on stock status and fisheries.

531. The next step in that direction is to map compliance frameworks, allowing everyone who measures outcomes to do so in a structured way. By mapping your goals and business processes to your outcomes, you may realize that you have a lot of the data you need. Their aims include finding measures which reflect the behaviour that underlies IUU and to find suites of outcome measures. One outcome measure alone is not enough, nor is one measure of illegal catch. Furthermore, while detecting illegal activity is important, preventing illegal activity in the first place is preferable and there is room to expand the scope of fisheries compliance in that regard.

Risk Assessment of non-compliance in West Indian Ocean fisheries

532. The next presentation was delivered by Per Erik Bergh, Project Coordinator, Stop Illegal Fishing (SIF); he focused on risk assessment in developing countries and how to simplify the methodology, including by determining likelihoods that risks will be realized, based on SIF’s experiences in East Africa.

533. After playing an amusing movie clip about the consequence of failure to perform a risk assessment (i.e. the downfall of the Third Reich), Mr Bergh turned to the question of risk assessment in the developing countries in which he works. These countries are often data-poor, with relatively small MCS units. Both resources and political support are limited and the MCS budget is not proportional to the value of the fishery. In this context, a basic and simple risk assessment methodology was needed.

534. The purposes of risk assessment are sustainability and trying to maximize the country's benefits. In SIF’s methodology, a major focus was to assess whether policy, law and strategies are implemented. Awareness-raising was another a key aspect, since risk in fisheries is not known at the political level in many countries. SIF tries to target resources to where it matters, which is important because the very valuable, high-risk fisheries are not always given sufficient attention. In mainland Africa the value of the coastal fisheries is enormous compared to the large pelagic. In Kenya, for instance, the direct value of the large pelagic fishery was about USD1 million, whereas the coastal fishery is worth about USD10 million. About 50 people are involved in the offshore fishery, while a million people are directly or indirectly supported by the coastal fishery. About 25 percent of MCS resources are allocated to the offshore, with about 45 percent allocated to the coastal. A new patrol vessel is about to arrive in Kenya, which means the allocation of MCS resources to the offshore facility will probably increase to about 90–95 percent.

535. The methodology they employed was essentially a simplification of other existing models, consisting of a preparatory phase, the risk assessment phase and the risk reduction strategy. In the preparatory phase they look at which fisheries to assess and how to gather the background research and identify the participants; wide stakeholder participation is needed to make this credible. In phase two, the possible risk and likelihood of risk are evaluated, with the impact or consequence of the risk assessed and the overall risk allocated. Determining the likelihood of the risk occurring may help create a simpler methodology: this should include both risk and MCS responses, merging the two, which is actually more consistent with the way fisheries work. A workshop can create a good forum and produce a sense of ownership of the actual risk assessment. To identify strategic areas, they used the workshop technique

in which everyone is invited to write down whatever they can think of and the ideas are sorted. In this regard it is useful to invite participants to consider risks under different categories, such as excess of illegal fishing capacity or effort, non-compliance, post-harvest sectors, the management system, and environmental and ecosystem.

536. The next step is building an inherent risk matrix, given the likelihood and the consequences of the risk. This analysis incorporates assessment of the management system and the effectiveness of the legal framework, in addition to the management authority and MCS operations. The matrix consists of five degrees of likelihood, ranging from almost certain to rare and five degrees of severity of consequences, ranging from insignificant to serious. Another matrix, the residual risk matrix, can be used to compare the adequacy of MCS in place to the inherent risk.

537. Mr Bergh shared another example from Kenya to illustrate where they had looked at non-compliance in the post-harvest sector. The total risk was both high (likelihood) and severe (consequences); it was therefore a high-risk fishery. When comparing all the fisheries, it could be seen that the coastal fishery, the most valuable in Kenya, was at enormous risk. Graphic presentations like these help to raise awareness among senior management and at political levels in the country. Of course, the core of the challenge is frequently lack of available resources, so SIF is raising awareness in the hope that resources will be allocated to MCS operations.

538. Looking at the risk assessments SIF has been doing—including a few with IOC-SmartFish and the World Bank—one can see that they involve many different stakeholders. This confers a better understanding across many different departments and it brings together operational and management staff, which increases the ownership of the risk assessment. Risk assessment puts national objectives into context, and it improves both the level of understanding and the gaps of understanding in fisheries. It's a great tool to improve dialogue, understanding and decision making. The process allows MCS operational staff the opportunity to demonstrate the challenges they face, which is important because fisheries issues are not always at the top of a ministry's agenda. Another benefit of risk assessment is that it identifies priority areas for management and MCS operational attention. In light of SIF's positive experiences with these risk assessments, Mr Bergh noted that if they were repeated annually they would reflect progress and indicate the sources of greatest improvements.

Case Study of Illegal and Unreported Summer Flounder Harvested under the Research Set-Aside (RSA) Program

539. Todd J. Smith, Criminal Investigator, NOAA Office of Law Enforcement, United States, delivered the next presentation, which centred on a case involving the unlawful landing, sale and misreporting of summer flounder.

540. Summer flounder, also known as fluke, was part of a research set-aside (RSA) programme administered by NOAA, which annually auctioned up to three percent of the coast-wide quota of federally regulated species, with proceeds going towards scientific research to promote sustainable fisheries. Fishing vessels participating in the RSA Program would buy quotas that could be harvested and sold in addition to any predetermined quota—otherwise known as trip limits. Four vessels that were awarded the summer flounder RSA quota were found to be landing thousands of pounds in excess of the New York landing limit and failing to attribute it to their RSA quota. Three dealers were found to be working in collusion with the vessels to hide the illegal, unreported landings and sales of summer flounder.

541. To illustrate the methods used to conceal the illicit activity in this case, Mr Smith showed a copy of a fishing vessel trip report—a form required for federally-permitted fishing in the region—showing the harvest by the fisherman and the vessel. One particular vessel, the *Norsemen*, made use of two hidden

compartments to conceal the excess catch: one was a void behind the steering wheel and the other a void under the deck of the wheelhouse. Paperwork uncovered through the course of the investigation indicated collusion between the dealers and the fishermen. Under the Northeast United States fisheries management scheme, the first person to buy the fish has to be a permitted dealer and they have to report those purchases. On one such form, the dealer had provided figures on the top portion of the form. However, annotations made by the fisherman on the back contradicted the dealer's numbers. The dealer had indicated five containers with 70 pounds per container of fluke—350 pounds, in other words—and one container of 60 pounds of bluefish. By contrast, the fisherman's notes indicated that 77 boxes of 70 pounds of fluke were landed, as well as four boxes of black sea bass and 1 box of bluefish.

542. One method Mr Smith used to successfully document these illegal, unreported landings of summer flounder was personal observation. For instance, he recorded a video with a handheld camera in the middle of the night, about 60 feet away from the boat, showing that the fisherman had his illegal fish in plastic black garbage bags, which is how they were stowed in the hidden compartment. When the fisherman made it into port without being checked by law enforcement, he would then empty the bags into baskets and ultimately pack the fish into boxes for shipment to market. A video recorded with very basic technology was thus the very first step in documenting the illicit activity.

543. Another method used was remote video surveillance. Overhead pole camera footage was important in this case, because it documented the dealer and the fisherman transferring paperwork and cash, which was another component of this scheme. Though grainy, the video clearly showed the offloading of summer flounder for shipment into the back of a truck. NOAA did not have access to the paperwork related to where the primary dealer sells his fish. However, by first following the dealer they were able to determine where he was taking the illegal fish; they could then follow up at a later date to gather additional evidence, including paperwork.

544. The next method employed was trash collection: literally going out in the middle of the night when trash was placed on the roadside and taking the bags. After bringing it back to the office and sorting through it, the investigators found a note detailing the illegal fish landed by the boat on a given trip; the list was even broken down into different grades of fish with box counts, weight, price per pound and total weight. Furthermore, it included a cheque and a cash value: this was very helpful because a cash component typically makes a transaction more difficult to track.

545. The next method they employed was affixing GPS tracking units to the dealer's van, for which they first obtained a search warrant. This was not legally required at the time, though soon after their investigations a landmark Supreme Court case mandated getting a search warrant for this type of surveillance; the fact that the investigation team had exercised caution by establishing probable cause and obtaining a search warrant reflected well on them in the end.

546. The final method used to successfully document the illegal activity was simply to ask the fisherman for photos once he had agreed to cooperate. This request was made in front of his attorney. Not only did he accede to the request, he actually remembered the exact date and location, against which they could match the evidence they had of how much illegal fish was caught. Roughly 10 000 pounds of unreported summer flounder were caught on one trip, and the fisherman's photos clearly showed a large volume of illegal catch.

547. Mr Smith concluded his presentation with the lessons learned from this investigation. First, long-term investigations are very time and resource consuming; investigators need to be organized to be able to keep track of, and sort through, large amounts of evidence. They should think "outside of the box" when seeking evidence to establish probable cause. He also advised getting the prosecutor's office involved as early as possible and keeping them informed; it is possible the prosecutor won't know much

about fish, so be prepared to educate him/her and make your case. Likewise, courts may be unfamiliar with fish-related cases which, among other problems, could impede obtaining search warrants. Investigators should always check secondary outlets for records of fish type and the amount of unreported fish harvested. He also recommended checking financial and tax filings, noting that many fishing businesses have had legal trouble with the United States Internal Revenue Service in the past and they do not want to risk those penalties again. Finally, after prosecution is complete, letters of support from stakeholders can help ensure appropriate sentencing.

548. The final results of the case of the unreported summer flounder harvested under the RSA Program was the documentation of 591 500 pounds of illegal summer flounder, with a wholesale value of just over USD1 million, over 50 000 pounds of scup with a wholesale value of USD28 000, and roughly 12 000 pounds of black sea bass with a wholesale value of USD32 000. A total of 24 felony charges have been filed to date: 11 for falsification of federal records, 9 for wire fraud, 2 for mail fraud and 2 Lacey Act counts. Three companies and six individuals pled guilty to charges relating to this case. The total dollar amount of fines, penalties and court special assessments was USD840 000, with restitution totalling USD1.5 million and community service payments totalling USD170 000.

Regional Risk Management

549. The final presentation in the ninth session was made by Mario Santos, Deputy Head of Unit for Operational Coordination, European Fisheries Control Agency (EFCA), who spoke about regional risk management. He noted that the ultimate reason for risk management is the sustainable exploitation of fisheries resources. To help facilitate this EFCA has put in place a regulatory framework, but it requires compliance to work.

550. To ensure compliance, EFCA organizes inspections and increases control efforts and sanctions. Economic factors play a role in the dynamics of compliance, as do normative and social factors, such as initiatives to promote voluntary compliance and ensuring regulations are appropriate to give them legitimacy. The common constraint is limited resources; the solution is risk management.

551. In a typical fishery, most fishermen and vessels comply with rules, but there are some non-compliant operators. A risk-management strategy increases the rate of detection of offenders as compared to a general inspection policy. This enables an analysis and evaluation of the system; added to which, by looking back over historical patterns of behaviour, non-compliant behaviour in the future can be projected and deterrents established. As a result, the fishery will have less non-compliant behaviour, which is beneficial both for the vessels playing by the rules and the resource.

552. Next Mr Santos explained EFCA's generic framework, its cooperation with EU Member States and its regional risk management procedures. He noted that some elements of the system were based on standard risk management theory and processes, and were not necessarily fishery-specific, notably assessment, treatment and evaluation. The generic framework is applicable to all fisheries; new and emerging threats may be adapted to those situations. One important element is that it is fact based, providing all assessors with background knowledge based on objective facts about the scope and the fisheries. A principle of non-discrimination against flags or citizens is also incorporated into the framework.

553. EFCA works through its joint deployment plans (JDPs), which Mr Santos discussed in his first GFETW presentation earlier in the week. There is a pre-existing level of risk management carried out mostly by the European Commission (EC) together with Member States, in which priority fisheries are selected for joint control operations. There is therefore already a first-level selection of priority areas, on top of which EFCA adds three more levels: the first is the strategic planning of JDPs, in which they assess all threats on regional fisheries (e.g. active and passive gears and integration). Second, they

pinpoint the priority, non-compliance risks to be examined in more detail, by more specific fleet segments. The third level is the short-term sharing and coordination of targets for tactical deployment.

554. Strategic planning is done on an annual basis by convening Member States to set out the common control plan for the next year. Daily activities, such as targeting vessels to inspect, are decided primarily by the Member States alone, as they are the most competent to do the short-term risk analysis. A couple of examples of the supporting tools EFCA offers include: identification of possible threats (with the threats given a score from highest to lowest), misreporting of catches, non-compliance with landing obligation and gear offences. EFCA can also perform special and temporal analyses of the fisheries, and evaluate where fishing activities are occurring. Once a threat is selected then resources are prioritized. In addition to risk assessment and risk treatment, an important final element is evaluation in order to learn from the processes of previous years.

555. Within the initial identification of the threat there are a series of steps to be followed; they have found that first establishing the scope, then breaking down fisheries into segments with similar characteristics, helps to facilitate the exercise. Following fleet segmentation they develop fact sheets for assessors to have a common understanding of the fishery segments being evaluated. Mr Santos displayed an example of the fact sheet information including spawning stock biomass, maximum sustainable yields, catches the sector takes, countries participating and fluctuations in catch throughout the year. The last two steps are risk characterization and a review of the previous risk assessment.

556. The third step is evaluation, using a model similar to those described by other speakers in this session, focusing on the likelihood of a threat and impact. Mr Santos noted that likelihood is usually the product of exposure and deterrence. EFCA evaluates impacts in terms common to fisheries and what is it they are trying to achieve, which is maximum sustainable yield. Stock status and magnitude are therefore important to this calculation: tracking a fishery segment that takes 10 kilograms of fish is different from tracking a fishery segment that takes 10 000 kilograms of fish. A compliance indicator is desirable when determining likelihood—and it can inform the likelihoods of occurrences in a repeatable way. Mr Santos recalled another speaker saying that compliance indicators are difficult and he agreed with that statement; however, he observed that every time one completes an evaluation of the likelihood that the threat is occurring, one is also already performing a compliance evaluation.

557. Mr Santos provided an example of the evaluation process in the context of a recent exercise conducted with Member States on the threats related to landing obligations and the discard ban. EFCA tried to provide assessors with a description of what “very high” and different numerical scores should mean. In the landing obligation exercise likelihood, a degree of estimation is involved with regard to discards. For impact, we have the definition of “stock status” which is supported by the graphic presented on the fact sheets. Again, the compliance indicator can be quite important in that area, so Mr Santos read out what was expected of discards taking place that are high risk. The compliance indicator is based on when inspections of vessels are conducted; an inspector sees how much small fish a vessel has from its last haul—and which they must keep on board—and then compares it to how much fish found globally when there are no inspections.

558. These indicators can be of a diverse nature. In terms of the misrecording of catch, most inspectors have probably witnessed catches which appear to be miraculously higher than on other fishing trips. This type of comparison can also assist in establishing some type of indicator of misrecording. If an inspector is looking for blinders, it can be useful to look at size composition as well as sales notes, and to check if some individual vessels have smaller fish. After likelihoods and impacts are assessed, the outcome will be a list or register of the risks ranked according to their significance. The resulting risk basis can be used to decide where to concentrate MCS resources, or the inspection and surveillance strategy which is best deployed in order to mitigate risk.

559. Most vessel targeting is performed by states as part of their day-to-day operations, but EFCA must select possible targets for patrol vessels under JDPs. EFCA uses regional compliance indicators and analyses data from electronic reporting, which enables the comparison of catch profiles in real time, in order to decide which vessels to inspect. They also have a system where Member States can share targets.

560. Lessons learned include that guidelines for step-by-step risk assessment are essential: they standardize approaches and provide a structure for assessment reports, which are the bases for future assessments. Written background information, such as EFCA's fishery fact sheets, can also help facilitate the work between assessors. Risk characterization is a key element to establish a common basis for determining likelihood and identifying potential risk treatment measures. Scoring groups in the assessment can facilitate the consensus between assessors; a common basis for scoring is therefore needed. Finally, Mr Santos said that EFCA still faces challenges, notably with respect to risk treatment and evaluation, but it is an open-ended process and EFCA hopes to continue to progress together with Member States and the EC.

Discussion, comments, questions and answers

561. A question was asked about the impacts of unreported fishing versus syndicate fishing. In Indonesia the latter makes combatting illegal fishing and discovering beneficial owners difficult; Indonesia also has to monitor and control wide spaces—including more than 17 000 islands—and the delegate asked if this would be a variable in the risk assessment. One panelist replied that each jurisdiction may face a different level of risk from different sources, and he recommended that the Indonesian delegate undertake that exercise in her jurisdiction, ideally with a risk assessment framework underpinning it. With regard to Indonesia's geography, it was observed that risk assessments could be done on each island, or broken down to whichever unit was preferred, including by fishery or by fisheries in the region.

562. The question was raised as to whether the sustainability of fisheries might be too ambitious as an objective for risk management and beyond the scope of the risk of IUU, since sustainability also has to do with legal and economic factors, the way you come up with the standards, and sometimes political will. The same commenter noted additional elements that would influence the impact being greater or smaller and that the likelihood would be higher or lower as a consequence. In response, the presenter explained that by mentioning the sustainable use of resources he meant only to introduce this as an overarching principle, one which guides the whole process to which risk management indirectly contributes. The immediate objective is to assess the pool of control mechanisms and strategy options to develop a plan of operations. He said that it was possible to include other considerations, though with respect to social factors, for instance, it is not always easy come up with simple, objective criteria.

563. Another question pertained to how EU countries were each controlling IUU in their own fisheries and, if their fleets are fishing in other waters, what were the associated risks and controls that were in place. The response was that while Europe has 28 different countries they have one Common Fisheries Policy (CFP): this policy sets a common basis for their actions and their control system. At a joint EU level, they can see the areas, threats and fleet segments that should be addressed and where to deploy joint operations. Thereafter, it is up to the individual Member States to see the targets to be identified by reviewing catch reports, asking about positions of patrol vessels, etc.

SESSION 10: REGIONAL GROUPS REPORT BACK ON THE DEVELOPMENT OF AN IMCS IUU RISK FRAMEWORK

564. Session 10 was divided into two sections. First, representatives of each of the three break-out groups (Atlantic, Pacific and Southeast Asia, Indian Ocean) reported back on their group discussions on the development of an IUU risk framework. The second part of the session was a panel discussion on the next steps, based on the results of those break-out group discussions. Since fisheries are a worldwide industry, local risks are connected to regional and global risks. Although the GFETW is not a forum for adopting conclusions or recommendations, the majority of the MCS professionals present at the Workshop expressed the feeling that an IUU risk framework could be valuable; outlining the widely shared views of MCS professionals on the main risks (at the global, regional and local level) could enhance the effectiveness of combatting IUU activities and facilitate international cooperation.

Report from the Atlantic Region Group

565. With respect to the first question, “Are the FAO areas appropriate?”, the representative for the Atlantic discussion group reported that they felt the FAO areas were a good starting point for many of the fisheries and/or risk assessment frameworks. However, further refinement would probably be necessary. In a risk assessment approach, the differentiation between high seas and areas of national jurisdiction, or the delineation of RFMO areas would be needed—as well as the identification of ports, if there were port issues in the risk assessment. The group also thought that the geographic risk framework might be too limiting, insofar as geography should not be the sole basis for determining where your hotspots are or your IUU risk; a fishery, or gear type, or specific RFMO closed areas, should be considered along with threats, units of analysis, stocks, fisheries and fleets, because the risk is likely be different across different sectors. As to the second question, “Who conducts the gap analysis?”, they thought FAO should start by assessing what risk assessments and frameworks already exist.

566. As to who fills the gaps and how, while the answer might seem obvious, it completely depends upon what gaps are identified as needing to be filled and on the capacity of the organizations involved. If the International MCS Network or INTERPOL or RFMOs are the entities that are identified as having a part to play in filling the gaps, it would depend on the capacity of those organizations. There should also be an evaluation and prioritization of the gaps. FAO would be the best placed to create a dedicated, informal working group or global forum of fisheries MCS practitioners for discussion of the risk framework methodologies and to clarify responsibilities. As to whether the exemplar presented a good starting point, the group believed New Zealand’s method for establishing best practices and benchmarking could facilitate a systematic development of the risk framework. Expansion to some other fleets and fisheries might be a little more complicated—such as the Atlantic tuna fishery, for instance—given the variety of species and threats. A technical working group could be created to support such expansion and development. The group concluded that any framework that is developed to consider risks would need to be objective, evidence-based, transparent, drawn from multiple sources of information, and subject to continuous self-evaluation and development.

Report from the Pacific and Southeast Asian Region Group

567. The representative of the Pacific and Southeast Asia group reported that group members agreed that the purpose of the global IUU risk framework needed to be clearly defined. The group acknowledged that there is a genuine need for an updated quantification of IUU, with the work undertaken by a globally recognized and credible organization. A global IUU framework could have potential for operational uses, but this should not be the principal purpose for doing the work. The FAO statistical areas are reasonably cost scaled, but the concern remains that the outcomes could be used to identify states with lower quality MCS measures, which might cause countries to perceive this as a

“name and shame exercise”. Another concern was its possible misuse by IUU operators to identify ports of opportunity. Funding for the work was another important preliminary issue they identified. In response to the first question, “Are the FAO areas appropriate?”, the group’s view was: (1) no model will be perfect, but the use of the FAO statistical areas will allow for cross-referencing against other studies; and (2) FAO statistical areas can form the basis of the framework with state or regional areas can be overlaid, acknowledging that states bear the responsibility for risk assessment within their own zones or EEZs.

568. With respect to the second question, as to who would conduct the analysis of gaps or where IUU risk frameworks do not exist, the group agreed that FAO would be an appropriate entity to conduct this work. Existing risk assessments need to be identified and collated, and a common standard for assessment would be preferable. In response to the third question, “How and who should fill the gaps?” they thought FAO had the global footprint and credibility required to coordinate the development of absent IUU frameworks with the support of states, RFMOs, regional plans of action, IGOs and NGOs; it would then be up to the states to decide whether to share the data required to complete an analysis. In that regard, it also needs to be clarified whether specific data would need to be shared or simply the level of risk identified. Candid assessments would be essential to identifying risks and any solution must not be politicized but focus on achieving results.

569. Although the benefits of a global risk framework were acknowledged, the group did not think that the simple exemplar presented would withstand scientific scrutiny. A more robust methodology or algorithm would need to be identified or developed. In this regard, the group's representative noted that FFA would release outcomes of a project that quantifies IUU and FFA countries in adjacent and high seas waters at the Pacific Islands Forum Fisheries Agency (FFA) MCS meeting next week. Finally, since GFETW delegates had not come to this meeting with a mandate for resolutions, any decision by the IMCS Network to support the development of a global IUU risk framework by FAO needed to be worded in such a way that it was not a formal resolution. Nevertheless, it would need to reflect delegates’ acknowledgment of the need for such a framework and that FAO is best suited to undertake this work, with support from the IMCS Network Member States through a working group.

Report from the Indian Ocean Region Group

570. The representative from the Indian Ocean group noted that group members were divided over the question of FAO statistical areas. One member thought that they were inappropriate as they did not cover the EEZ of coastal states. A second member remarked that whatever was decided upon, it should be consistently applied across the globe. A third one noted that all UN Members are also FAO Members, and perhaps the FAO statistical areas are indeed appropriate given that they represent everyone. An RFMO representative stated that the FAO statistical areas would not work for them as their management remit was for a species rather than a geographical area. A number of group members remarked that perhaps the scope employed in the High Seas Task Force could be used.

571. With regard to the second question, a number of members agreed that RFMOs would not be as helpful, as they do not consider a coastal state’s EEZ; one person suggested that instead of RFMOs, regional organizations like ASEAN might be engaged. A number of members also agreed that whichever entity is chosen, it should be as independent as possible. There appeared to be a consensus that the FAO Committee on Fisheries (COFI) would be best placed to make this decision if it was presented to them; as to how gaps should be filled and who should fill them, most members did not believe it was appropriate for the International MCS Network to fulfil this role, as they are not resourced to do this type of work and the membership does not include all coastal states. INTERPOL was not considered appropriate either because they have a different focus which tends to be centred solely on illegal fishing

rather than the whole IUU spectrum. There appeared to be consensus on the idea that both RFMOs and regional fisheries bodies could be engaged to provide information, because their membership would most likely contain the subject matter experts for the relevant regions; FAO was posited as being the best-placed organization to undertake this engagement. As to the method used in the exemplar, one member suggested that its approach was too simplistic and that the areas were too large to be able to consider recommendations for intervention. The process itself had to gain support, but it was more focused on coastal states; the number of respondents also had to be a lot higher to ensure greater rigour. Finally, experts from the region needed to be engaged as much as possible when considering which process to decide upon.

Panel Discussion on Next Steps

572. After the three regional groups had presented their reports, a panel composed of representatives from New Zealand, the International MCS Network, FAO, Norway and CCAMLR led a discussion on next steps. The panel elaborated on what the purposes of a global MCS IUU risk framework could be, addressing questions raised by the break-out groups and by other participants during the discussion. The organizers also clarified that while the idea would hopefully be carried forward, no commitment or endorsement was being sought by the GFETW or any of its members. As reflected in the group reports, the overall sense was that there would be value in a global IUU risk framework, with panelists and audience members alike proposing options for next steps.

573. At the outset, the panel addressed the question of mandates, raised by one group and another commenter concerned by the idea that a formal approach would be adopted. It was therefore clearly stated that participants in the GFETW are not expected to enter into agreements or binding resolutions: this is not the purpose of the GFETW nor the International MCS Network, both of which are forums for discussion and the exchange of ideas. However, that does not preclude GFETW participants as a group from making a recommendation or adopting what they think is a plan to carry an initiative of this kind forward.

574. Multiple commenters asked the panelists to clarify the overall purpose of producing the framework further and how it would be used. One commenter observed that knowing the purpose (e.g. to influence policy or operations at a national, subregional, regional or global level) would dictate the amount of detail required and whether the FAO statistical areas were appropriate.

575. In response, the panelists observed that a risk assessment could serve many purposes for an MCS practitioner who is trying to secure a resource. A series of risk assessments can show a trend in the absence of any other reliable data, or show that efforts are having an impact in particular areas. A global risk assessment would enable practitioners to see how bad things are in various places and what the direction of movement was, so as to be able to gauge their relative success in this regard. One commenter observed that a framework could highlight areas of risk and track them over time; another commenter said that regional risk assessments could be useful for the same reasons (comparisons, tracking) in their region in order to map key problems. In response, the panelist agreed that in practice the global picture would probably comprise a collection of reasonably sized regional pictures.

576. One commenter made the case that risk analyses needed to include both EEZs and international waters. In order to avoid any perception of blame or causing offence to any countries, approaches might include a selective presentation of the results; alternatively, the risk analysis could be done in overlapping zones—as in the New Zealand example of the Southern Ocean—or done in bigger areas for certain countries. The commenter pointed out that risk analysis is a tool which allows authorities to prioritize their work, and since the sector is heavily “globalized,” it would be beneficial to coordinate their work on a global scale and therefore try to make it more compatible.

577. Regarding potential ways forward, the panelist from FAO noted that the timing was right for them to submit topics to the Committee on Fisheries (COFI) for its further consideration. These would not be formal recommendations, but rather be presented in the context of the report that must be submitted to COFI on all intersession activities, including collaboration with states, RFMOs, NGOs and networks like the IMCS Network. Should COFI express interest in the initiative, practical ways forward could include a formal expert consultation to address and come up with a global IUU risk framework; COFI may in fact request such a consultation. As to where development of the framework could fit into the work FAO does, one option would be under the Code of Conduct for Responsible Fisheries, as part of which FAO has developed 29 technical guidelines. It is appropriate for FAO to draft additional guidelines to address particular issues, including an IUU framework. Such technical guidelines would provide a standard, as well as a point of reference for countries or regions around the world to be able to conduct their own risk framework. It would not be appropriate for FAO to actually undertake the gap analysis or to decide who should fill the gaps: FAO would therefore stop at providing a framework. Another option for practical work would be through the FAO umbrella programme to address IUU fishing: FAO could include the development of a global IUU risk framework, with the gaps analysis and other aspects, into the global programme.

578. One panelist noted the potential relevance of the work of RFMOs, such as the scheme of the Northeast Atlantic Fisheries Commission, which contains an appendix giving guidelines for risk assessment. Another panelist contended that even if the GFETW does not adopt or approve conclusions, the technical ideas and results from the Workshop needed to be forwarded to FAO, so that technical studies could occur under the FAO umbrella and possibly produce results of use to practitioners. She said that FAO could decide what to include, but Network members could continue to submit information and ideas. A commenter agreed that the initiative should be directed towards FAO to produce some sort of guidelines on how to focus on the risk topic; in this way countries could come up with their own methodologies, given that they all have different political, social and economic realities to incorporate. Noting the complexities and many different ideas being raised, another commenter proposed forming a working group to further discuss and refine the concept before agreeing on how to move forward and bring it to the attention of FAO: the group could discuss methodology and purpose, and explore what they wanted to come out of it in the future.

579. Finally, it was also clarified that a global IUU risk framework would not be intended to produce a global estimate of IUU fishing; the possible links to an ongoing study of IUU studies and methodologies were however noted. A panelist summed up the relationship between a global IUU estimate and a global risk assessment, stating that while estimating overall quantity is different from an attempt to estimate the risk they are complementary pieces of information which, if done in a time series, would be extremely informative.

580. In summary, the panelist from New Zealand concluded that the GFETW's general consensus was that development of an IUU risk framework would be valuable. He observed that a subgroup within the IMCS Network had expressed its support and willingness to contribute to said framework, should any request or expression of interest come out of the COFI meeting. He confirmed that the meeting notes would reflect only the non-binding discussion and different ideas proposed.

PROGRAMME

The Fifth Global Fisheries Enforcement Training Workshop

7–11 March 2016

The Langham

Auckland, New Zealand

Toitu Te Moana

Kahore He Wahi Heihuna

*‘Working together to combat IUU fishing to ensure
the sustainability of world fish stocks’*

Monday, 7 March 2016 – Morning

- 09.00–10.30 ***Haka – Pōwhiri*** (Opening/Welcoming Ceremony)
Facilitator – Raniera Bassett, ‘Kaituitui and Chair Te Tauaki Puāwai’
Kai Karanga (Welcoming call & reply), ***Karakia*** (Opening prayer),
Whaikōrero (Speeches – host & visitors)
Hosting Nation Ministerial Address
 Hon. Jo Goodhew, Minister of Food Safety and Associate Minister for
 Primary Industries, New Zealand
Host Nation Address
 Martyn Dunne, Director-General, Ministry for Primary Industries, New
 Zealand
GFETW Opening Address
 Cephas Ralph, Chair, International MCS Network
- 11.00–11.30 **5th GFETW Group Photo**
- 11:30–12:00 **Media Conference**

Monday, 7 March 2016 – Afternoon**Keynote Address: Fabio Hazin, Chair, FAO-COFI**

‘Working together to combat IUU fishing to ensure the sustainability of world fish stocks: the role of COFI/FAO.’

Introduction – Cephas Ralph, Chair, International MCS Network.

First Plenary Session: ‘International and Regional MCS Cooperation’

Facilitator – Cephas Ralph, Chair, International MCS Network.

1. *Key lessons from CCAMLR's experience with IUU fishing: commitment and approach.*
Presenter: Sarah Lenel, Fishery Monitoring and Compliance Manager, CCAMLR, Australia.
2. *The Global Toolbox: A Case Study into Multinational Approaches to Southern Ocean IUU.*
Presenter: Gary Orr, Manager Compliance Operations, Ministry for Primary Industries, New Zealand.
3. *Nowhere to Hide!*
Presenter: Mario Alcaide, Criminal Intelligence Officer, INTERPOL.
4. *An Integral Approach Against IUU Fishing: Operation Sparrow.*
Presenter: Monica Corrales, Deputy Director-General of Legal Affairs, Ministry of Agriculture, Food and Environment, Spain.

Questions & Answers

Second Plenary Session: 'MCS Partnerships, Sponsorships & Technical Assistance'

Facilitator – Todd Dubois, Assistant Director – Enforcement Operations, NOAA – Office of Law Enforcement, USA.

1. *Regional Cooperation toward Combating IUU Fishing in Southeast Asia.*
Presenter: Somboon Siriraksophon, Policy and Programme Coordinator, SEAFDEC, Thailand.
2. *Regional cooperation in the western Indian Ocean.*
Presenter: Nicholas Ntheketha, Chair of Fish-i Africa Task Force, Kenya.
3. *Organizing operational coordination between EU Member States in relation to Atlantic bluefin tuna.*
Presenter: Mario Santos, Deputy Head of Unit for Operational Coordination, European Fisheries Control Agency, EU
4. *The Paper Fish: An Investigative Case study into Multiagency Cooperation.*
Presenter: Steve Ham, Investigations Manager (Central Region), Ministry for Primary Industries, New Zealand.
5. *Effective & Efficient multijurisdictional IUU Enforcement operations.*
Presenter: Will Ellis, Assistant Director, NOAA – Office of Law Enforcement, United States.
6. *MCS aspects of electronic reporting and electronic monitoring in FFA member countries.*
Presenter: Hugh Walton, Chief Technical Adviser, Pacific Forum Fisheries Agency (FFA), Solomon Islands.

Questions & Answers

Tuesday, 8 March 2016 – Morning

Keynote Address: Whaimutu Dewes – Chair Aotearoa Fisheries Limited, New Zealand

'New Zealand's Customary Fishing Journey'

Introduction – Tom Teneti, District Compliance Manager (Poverty Bay), Ministry for Primary Industries, New Zealand.

Third Plenary Session: 'Case Studies of the Utilization of MCS Tools in Indigenous Fishing Communities & Archipelago Nations'

Facilitator – Shane Jones, New Zealand Ambassador for Pacific Development, New Zealand.

1. *Monitoring Māori Customary Fishing Rights.*
Presenter: Tom Teneti, District Compliance Manager (Poverty Bay), Ministry for Primary Industries, New Zealand.
2. *MATT and Industry support Uganda: using partnership and technical assistance.*

Presenter: Marcel Kroese, Key Expert, Indian Ocean Commission-SmartFish, Mauritius.

3. *A Case study (PIMPAC) of regional and global cooperation in the field of fisheries enforcement.*

Presenter: Mike Lameier, Fishery Biologist (Management), NOAA Fisheries, USA.

4. *A reflection on Canada's Aboriginal Fishery Guardian Program.*

Presenter: Linda Higgins, Acting Chief of Program and Operational Readiness, Fisheries and Oceans Canada.

5. *MCS Tools in Fiji's Coastal Fisheries.*

Presenter: Meli Raicebe, Principal Fisheries Officer (Offshore), Ministry of Fisheries and Forestry, Fiji.

6. *Use of MCS Tools: Perspective of an Archipelagic State.*

Presenter: Brian Kumasi, Manager Fisheries Management, National Fisheries Authority, Papua New Guinea.

Questions & Answers

Tuesday, 8 March 2016 – Afternoon

Keynote Address

Shane Jones, Ambassador for Pacific Economic Development, New Zealand

'New Zealand Capacity Building in the Southwest Pacific'

Introduction – Dean Baigent, Conference Host, Ministry for Primary Industries, New Zealand.

Fourth Plenary Session: 'MCS Capability and Capacity Building Activities'

Facilitator – Dean Baigent, Conference Host, Ministry for Primary Industries, New Zealand.

1. *Global Inventory Capacity Building Needs, Port State Measures Agreement.*

Presenter: Matthew Camilleri, Fishery Liaison Officer, FAO, Italy.

2. *New Zealand MCS Capability Development Assistance in the Pacific.*

Presenters: Pete Southen, Pacific Adviser and Damian Johnson, Pacific MCS Analyst, Ministry for Primary Industries, New Zealand.

3. *Establishment of a Fisheries Law Enforcement Academy.*

Presenter: Hendrik van As, Professor, the Nelson Mandela Metropolitan University.

4. *Harnessing Law, Technology and Partnerships for Strengthening Fishery Enforcement: the Philippine Experience.*

Presenter: Sammy Malvas, Regional Director, Bureau of Fisheries and Aquatic Resources, Philippines.

5. *Global Cooperation in Fisheries Enforcement: Investigation and Prosecution of Totoaba Traffickers.*

Presenter: Michelle Zetwo, Special Agent, NOAA – Office of Law Enforcement, USA.

6. *First South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFISH-1)* Presenter: Daroomalignum Mauree, Regional Project Coordinator, World Bank Project, Indian Ocean Commission.

Questions & Answers

Break-out Session: Panel discussion on the application of the Port State Measures Agreement

Facilitator – Michele Kuruc (Vice President – Ocean Policy, WWF)

Panelists – Michele Kuruc, Daniel Schaeffer (Senior Officer, Technology and Enforcement, The Pew Charitable Trusts), Alejandro Covarrubias (Head of International Affairs Unit, National Fisheries Service, Chile), Andrew Wright (International Adviser Fisheries Compliance, Ministry for Primary Industries, New Zealand)

Tuesday, 8 March 2016 – Evening

Side meetings

Discussion: the application of remote sensing technology in Indonesia and Philippines

Facilitator – Ann Mooney, Senior International Program Specialist, NOAA – Coral Conservation Program, USA.

International MCS Network Business Meeting

Wednesday, 9 March 2016 (Networking Day – Field Trips)

Thursday, 10 March 2016 – Morning

Fifth Plenary Session: ‘Successfully Introduced Cost Effective MCS Tools’

Facilitator – Jacques Verborgh, Head of Unit DG MARE European Commission, Belgium.

1. *Cost-effective Technology Enablers.*
Presenter: Trent Johnson, Intelligence Analyst, NOAA – Office of Law Enforcement, USA.
2. *Coastal Fisheries App (electronic reporting system small-scale vessels).*
Presenter: Thord Monsen, Head of Section, Directorate of Fisheries, Norway.
3. *Unloading Authorization Code and Mass Balance Tracking.*
Presenter: Francisco Blaha, Independent Fisheries Adviser, New Zealand.
4. *Data and Monitoring Unit for Small Ships (DAMUSS).*
Presenter: Jeremy Cooper, Chief Executive Officer, New Zealand Paua (Abalone) Council, New Zealand.
5. *Manipulation of Weighing Instruments.*
Presenter: Bjarne Schultz, Senior MCS Advisor, Directorate of Fisheries, Norway.

Questions & Answers

Sixth Plenary Session: New MCS Technologies and Methodologies

Facilitator – Frank Meere, Sustainable Fisheries Management, Australia

1. *The use of ‘REM’ and ‘CCTV’ Technologies in Denmark – ‘The Trial in 2015’.*
Presenter: Søren Palle Jensen, Senior Fisheries Officer, Danish Agrifish Agency, Denmark.
2. *Eyes on the Sea.*
Presenter: Bradley Soule, Senior Fisheries Analyst, Satellite Applications Catapult, United Kingdom.
3. *Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels.*
Presenters: Ari Gudmundsson, Senior Fishery Industry Officer and Dawn Borg Costanzi, Systems Analyst/Developer – Global Record, FAO.
4. *Outcomes of WWF Emerging Technologies Workshop.*
Presenter: Bubba Cook, WCP Tuna Program Manager, WWF, New Zealand.

5. *The FAO/GEF Common Oceans ABNJ Tuna Project.*

Presenter: Julien Million, Tuna Fisheries Expert, Common Oceans ABNJ Tuna Project, FAO.

Questions & Answers

Thursday, 10 March 2016 – Afternoon

2nd Stop IUU Fishing Award Ceremony

Facilitators – Michele Kuruc, Vice President – Ocean Policy, WWF and Cephas Ralph, Chair, International MCS Network.

Presentations by Winners:

1. Third place winner (To be announced)
2. Second place presentation (To be announced)
3. Third place presentation (To be announced)

Questions & Answers

Seventh Plenary Session: ‘Global IUU Estimate: Study of Available IUU Studies’

Presentation: Graeme Macfadyen, Poseidon.

Introduction: Harry Koster, Executive Director, International MCS Network.

Eighth Plenary Session: ‘Development of High-Level IMCS IUU Risk Frameworks’

Facilitator – Dean Baigent, Conference Host, Ministry for Primary Industries, New Zealand.

Presentation of the New Zealand led development of a Southern Ocean Exemplar.

Andrew Wright, International Adviser – Fisheries Compliance, Ministry for Primary Industries, New Zealand.

‘Development of Regional IMCS IUU Risk Frameworks (Pacific, Atlantic, Indian Ocean)’

Pacific (Break-out Room: Gallery 4)

Atlantic (Break-out Room: Crystal 2)

Indian Ocean (Break-out Room: Gallery 2)

5th GFETW Conference Dinner

Host Nation Pre-Dinner Address

Andrew Coleman, Deputy Director-General, Ministry for Primary Industries, New Zealand

GFETW Conference Dinner Address

Cephas Ralph, Chair, International MCS Network.

Friday, 11 March 2016 – Morning

Ninth Plenary Session: ‘Data Analysis and Risk Assessment’

Facilitator – Randy Jenkins, Director, National Fisheries Intelligence Service, Oceans and Fisheries Canada.

1. *Assessing IUU and measuring compliance.*

Presenter: Tim Green, Manager, Compliance Statistics and Systems, Western Australia Department of Fisheries, Australia.

2. *Risk Assessment of non-compliance in West Indian Ocean fisheries.*

Presenter: Per Erik Bergh, Coordinator, Stop Illegal Fishing, Botswana.

3. *Case study of illegal and unreported summer flounder harvested under the Research Set-Aside (RSA) Program.*

Presenter: Todd J Smith, Criminal Investigator, NOAA – Office of Law Enforcement, USA.

4. *Regional Risk Management Approach.*

Presenter: Mario Santos, Deputy Head of Unit, for Operational Coordination, European Fisheries Control Agency, EU.

Questions & Answers

Tenth Plenary Session

11.00–12.15 **‘Regional Groups Report Back on the Development of IMCS IUU Risk Frameworks’**

Facilitator – Cephass Ralph, Chair, International MCS Network

Atlantic, Pacific, Indian Ocean

Panel Discussion on Next Steps

Panel members: Cephass Ralph, Todd Dubois, Dean Baigent, Bjarne Schultz, Randy Jenkins, Matthew Camilleri, Sarah Lenel and Harry Koster.

Closing Ceremony

‘Poroporoaki’ (Closing/Farewell Ceremony)

Facilitator – Raniera Bassett, Kaitiuitui and Chair Te Tauaki Puāwai

Host Nation Closing Address

Andrew Coleman, Deputy Director-General, Ministry for Primary Industries

GFETW Closing Address

Cephass Ralph, Chair, International MCS Network

Karakia (Closing Prayer)

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EVALUATION BY PARTICIPANTS

5th GFETW participants were asked to complete an evaluation of the usefulness and applicability of the eleven sessions within the Workshop to their own organizations and work. A total of 62 evaluations were filled out anonymously and returned to the International Monitoring, Control and Surveillance (MCS) Network Secretariat, representing a response rate of about 31 percent. A copy of the questionnaire appears at the end of this summary.

CONTENT

Question 1 of the Evaluation Form was: “What three sessions were the most useful to your country or organization?” Out of eleven options, participants were asked to rank the most useful sessions from 1-3, which most of them did accordingly. A few indicated the three most useful sessions without ranking them. From both types of responses, we calculated scores and extrapolated the following graph, which shows that every session was identified as among the most valuable by at least a few participants. This reflects the wide spectrum of interests and perspectives represented at the 5th GFETW.

Figure 1 . The twelve Workshop sessions (including 2 special sessions) listed in the order they were convened Monday to Friday, 7-11 March 2016. Sessions 8 and 10 both centred on the IUU Risk Framework and have been combined. See Appendix A for the full programme including details of the four to six presentations in the regular sessions (and one to five presentations in each special/break-out session).

The two sessions that were ranked highly by the most participants were “Successfully Introduced Cost Effective MCS Tools” and “New MCS Technologies and Methodologies.” Thirteen participants ranked “Successfully Introduced and Effective MCS Tools” the most useful session overall and it received by far the highest score. This is consistent with evaluations of the previous GFETW in Costa Rica in 2014, where sessions pertaining to new and cost-effective MCS methods and technologies were also ranked the top two most useful. These two sessions were held back-to-back before lunch on Thursday, 10 March 2016.

The third most useful session according to participant rankings was the first plenary session, “International and Regional MCS Cooperation.” Eleven participants identified this as the #1 most useful session overall, which was more than ranked “New MCS Technologies” first (but the latter was ranked second and third more frequently, earning it a higher combined score.) Other sessions that scored highly with participants in terms of usefulness were the third session on “Case Studies of the Utilization of MCS Tools in Indigenous Fishing Communities & Archipelago” and the break-out session discussion on “Application of the Port State Measures Agreement”.

The evaluations also asked the participants to list which 3 individual presentations (out of about 35) they found to be the most useful. The presentation that was ranked first the most frequently was *No Place to Hide!* by Mario Alcaide of INTERPOL; this was the third presentation during the first session, “International and Regional MCS Cooperation.” The second most popular presentation was *Global Inventory of Capacity Building Needs, Port State Measures Agreement*, delivered by Matthew Camilleri of FAO during the “MCS Capability and Capacity Building Needs” session.

All five presentations within the most-preferred session, “Successfully Introduced Cost-Effective MCS Tools” were identified as the top three in multiple evaluations. The presentation in this session that was ranked in the top three the most was *Data and Monitoring for Small Ships (DAMUSS)* by Jeremy Cooper, although the presentation *Unloading Authorization Code and Mass Balance Tracking* by Francisco Blaha was identified as the overall #1 by a higher number of participants (3).

Other presentations featured in the top three most useful by at least five participants included:

- Steve Ham, New Zealand (*The Paper Fish: An Investigative Case Study into Multiagency Cooperation* - Session 2);
- Application of Port State Measures Agreement Break-out Discussion;
- Marcel Kroese, Indian Ocean Commission (*Multiagency Task Team against Blast Fishing – Special Session: Stop IUU Fishing Award*);
- Thord Monsen, Norway (*Coastal Fisheries App (electronic reporting system small-scale vessels)* – Session 5);
- Tim Green, Western Australia (*Assessing IUU and Measuring Compliance* – Session 9).

Some specific comments about these presentations included that the blast fishing presentation showed what is possible with coordination. The same commenter noted that the Global IUU session was important, since he/she is concerned about this methodology. Another respondent remarked that he/she found the case called Paper Fish presented by New Zealand very useful, because it presented a comprehensive look at the detection of illegality.

Other presentations singled out multiple times (3-4 times):

- Monica Corrales, Spain (*An Integral Approach Against IUU Fishing: Operation Sparrow* - Session 1);
- Hugh Walton, Pacific Islands Forum Fisheries Agency (*MCS Aspects of E-Reporting and E-Monitoring in FFA* – Session 2);
- Tom Teneti, New Zealand (Monitoring Māori Customary Fishing Rights – Session 3);
- Pete Southen and Damian Johnson, New Zealand (*New Zealand MCS Capability Development Assistance in the Pacific* – Session 4);
- Hendrik van As, Nelson Mandela Metropolitan University (*Establishment of a Fisheries Law Enforcement Academy* – Session 4);
- Michelle Zetwo, NOAA (*Global Cooperation: Investigation and Prosecution of Totoaba Traffickers* – Session 4); and
- Bradley Soule, Satellite Applications Catapult (*Eyes on the Seas* – Session 6).

The questionnaire also asked participants to identify the three sessions of lowest value to their countries or organizations. About half of respondents declined to identify sessions of low value or replied that all the sessions were useful. Participants were not asked to explain why certain sessions were less useful, but by their very nature certain sessions were less universal and therefore less likely to be relevant to all participants’ circumstances. Some of the sessions with the largest amount of “least useful” votes were the same as those ranked highest by other 5th GFETW participants, again reflecting the diversity of interests represented.

General comments on the quality and usefulness of content overall, included:

- Each presentation was informative and educational to varying degrees.
- Presentations covered a range of topics, and even those not particularly relevant to our work were interesting to follow.
- The sessions were not only informative but led to critical thinking in order to solve problems in different areas, such as strengthening the PSMA and tackling IUU fishing.
- In general, the workshop met my highest expectations; it made me evaluate our country's MCS system and its shortcomings.
- This was an extremely valuable and informative week. The opportunity to engage with panel members gave regional context to their presentations. Both the PSMA and the IUU risk frameworks were particularly useful in raising the profile of these important subject areas.
- This is an important forum, the only global gathering that fosters networks between continents.
- Very well-organized event, great venue, excellent facilitators. The informal networking/contact building opportunities are just as important as the formal aspects.
- I appreciated the quality of the presentations, as well as the hard work and time the presenters put into their presentations.
- Very informative. Provided updates and a snapshot of the different initiatives being undertaken in different parts of the globe in relation to MCS and the fight against IUU fishing.
- Good, high-level discussion.
- Extremely informative and thought-provoking. I am now able to return to my island state and adopt some feasible MCS tools/options appropriate in the local context.
- As a developing country representative I also value the pedagogical/teaching dimension of this workshop.
- Very effective, good mix of information. While interesting, I'm glad the work was not focused solely on new technology and providers.
- Congratulations to the organizers and presenters for the best fisheries conference I have had the privilege of attending.

Regardless of specific topic or theme, participants also expressed interest in seeing more case studies highlighting lessons learned. On the other hand, at least one participant noted that he/she did not always find the experiences of others relevant, and therefore more general lessons and best practices should also be emphasized.

Comments in this regard, included:

- Some presentations were too general; I expected more about real experiences.
- As MCS experts we understand the issues, problems and initiatives and don't need to hear about specific problems in individual countries or an overview of the PSMA; I recommend focusing more on new initiatives and programmes related to MCS that can make a positive difference and promote improved cooperation and coordination.
- Plenaries focused too heavily on the achievements of each country or FMO without addressing the holes in their systems: the GFETW would be far more successful if the participants could learn from the mistakes and challenges identified in the methodologies/technologies.
- Very informative conference, but I think there should be more focus on regional rather than national initiatives.

- There should be more case studies, examples of success stories and examples of what went wrong, hearing from mistakes.
- Conduct more panel and small group practice cases.
- The use of technology should be strengthened, since it is a tool that will facilitate and give value to the activities undertaken. On the subject of risk, you should go deeper into methodology and a practical framework, not theory.
- Some presentations were much too detailed with information not relevant for the purpose.

Other constructive criticism focused on making the conference themes—and the conference itself—more accessible to developing country representatives from different regions. In terms of content, it was suggested that practical solutions and cost-effective technology should be emphasized over theory and cost-intensive solutions. One participant wrote that developing countries should be encouraged to participate in the preparatory process and suggest topics for presentations.

Other comments related to developing country engagement and representation included:

- For cases of introducing MCS strategies, comparative analysis for countries with fewer resources should be shown. Basic documents to implement control strategies and examples of legal framework could be provided.
- The presentations should have been divided by area, for example: (1) monitoring/inspection on subsistence fishing; (2) monitoring/inspection of local commercial fishing; (3) monitoring/inspection for global fishing—all with examples and cases on the ground.
- More sophisticated technological issues should be included and the opportunity given to American countries (their representatives and presenters) to share experiences of the control and surveillance of fishing in their countries.
- The technology must go hand in hand with improvements in each country.
- The workshop was useful for my country if we can put it into practice. However, technology that costs money like e-monitoring in particular may be too slow to be implemented in my country.
- I found that plenaries which included a cost analysis and outcome/output comparison when discussing an MCS tool that has been implemented were the most beneficial. Tools that could be implemented by a small nation without a large budget are the tools that create the greatest change. Potentially include a future session on low-labour/low-cost solution and tools (such as the plastic tag registration system).
- Everything was perfect, but involve African Atlantic coastal states more.
- Developing country case studies need to be given greater priority.
- Being a global organization there should be a better balance of presentations/participation from all regions.

The questionnaire did not specifically ask what additional themes or topics would be useful, but a few participants made suggestions, including:

- Drivers for offending.
- Changes to world fisheries/population trends that affect us all (e.g. forecasting population growth and urbanization issues).
- Dealing with endangered/high demand fish such as shark fins, sea cucumbers, toadfish, swim bladder fish. Can we educate people/cultures to influence change?

- Dealing with differing legal systems and how can we develop better penalty regimes that simplify processes and enable prosecutions.
- Indian Ocean fisheries—particularly the status of IUU for the industrial tuna fishery.
- Collection of evidence and handling of exhibits.
- Bad fishing methods within the Atlantic Ocean for small-scale fisheries.
- Fisheries management within the Atlantic, Indian Ocean and Pacific.
- Ethics of inspectors and observers in the context of small-scale and industrial fisheries.
- A holistic approach to fisheries: damage being done to ecosystems from widespread rubbish/plastic/waste going into the ocean, combined with IUU fishing, growing populations and overfishing.
- How to engage with China and Taiwan.
- What can now be done with flag state responsibility post-PSMA?
- How to deal with corruption in fisheries.
- Specific sessions on each ocean.

Sessions 8 and 10 focused on the development of a high-level IUU Risk Framework, notably through break-out groups by region. Feedback on the structure and execution of the break-out sessions (the first ever at a GFETW) was mixed, and is included below. As to Session 10, the high-level panel on next steps towards an IUU Risk Framework, at least one participant wrote that this session brought everything together and gave more context and meaning to the break-out sessions.

STRUCTURE AND DELIVERY OF CONTENT

While participants on the whole responded that the structure of the 5th GFETW was effective, many thought that the quality of discussions and exchanges could be improved. Participants had different views on how to achieve this. One common recommendation was that Q&A periods should be longer. One participant felt that there were too many statements during these periods and not enough time to ask the panelists questions. Furthermore, participants indicated that many of the 15-minute presentations packed in too much information, but they disagreed as to whether presentation times should be longer or speakers should be more concise.

Others suggested more break-out group discussions and appreciated that the organizers of the 5th GFETW planned these during Session 8 (Development of High-Level IMCS IUU Risk Frameworks). However, despite supporting both the format and the concept underpinning the exercise, a number of participants suggested improvements for future break-out sessions.

Some general praise for the structure of the conference included:

- Format was extremely effective; presentations were well-grouped and had a natural flow.
- There was lots of good information and in most sessions the presentations flowed together well.
- The networking opportunities were invaluable and were the most rewarding part of the workshop.
- The periodicity is just right for the level of data presented and attendees.

Constructive criticism in terms of the timing of presentations and Q&A periods, included:

- The format was good, but I would suggest reserving time after presentations specifically for questions/discussions. Whilst the facilitators did a very good job of keeping presenters on time, due

to some overrunning presentations, a couple of the more interesting sessions did not have enough time for questions.

- The schedule was slightly rushed at times. Some sessions did not have adequate Q&A time.
- If possible, the sessions should be limited to 4 presentations.
- The only aspect of the format that didn't work so well was that many people took the opportunity during question time to make statements about their own country's situation; maybe the policy for this needs to be clarified.
- There should be closer adherence to the presentation timing and possibly shorter coffee breaks.
- 15 minutes is way too short for presentations; allow 30 minutes.
- There needs to be more time for discussion during the plenary sessions and fewer presentations with very strictly managed time limits (e.g. 5 min) because people will always go over.
- Less crowding of individual presentations would have permitted more engagement/discussion with panel members.
- I would have liked more time for Q&A.
- More time should have been given to presenters who often concluded their presentations early and were therefore probably not able to portray the whole story. Could have done away with Q&A in each sessions and had Q&A during the final hour of each day.
- Maybe the number of presenters could be reduced, but the time allotted for each presentation should be increased. I felt that other important points were overlooked by the presenter because of limited time.
- For good and interesting topics please consider time extension.
- A couple of sessions had too many speakers, affecting time and limiting discussion.
- Breaks are important too; I'd suggest stricter time limits for sessions or the Q&A period, which ate into coffee breaks.
- There were too many comments/statements rather than insightful questions during the Q&A periods.

Many participants emphasized the importance of sufficient time for discussion, including in break-out groups, for example:

- There should be more interaction and breakout sessions to get the entire group engaged.
- It might be good to reduce the number of presentations and increase discussions.
- More exchanges through Q&A or small groups (20 people) would enhance discussion.
- Have more break-out sessions, which could focus on particular problem sets and take advantage of the experts in attendance, and fewer presentations.
- Would suggest more break-out sessions to facilitate interaction between workshop participants, and more time for discussion in plenary too, so that the most important conversations are not all happening on the side.
- Conduct more panel and small group practice cases.
- The workshop was informative, but lots of being talked at as opposed to interactive dialogue.
- The break-out sessions stimulate more discussion and there should be more of them.
- Could there be a special "expertise" break-out session to facilitate development of best practices?
- Break-out sessions should be held early in the day instead of towards the evening when everyone is tired.

- Further meetings by regions seeking to strengthen operational links should be encouraged and a full day should be dedicated to this.

With respect to the small group break-out session to discuss the development of an IUU Risk Framework, specific feedback included:

- Break-out session by regions made sense, but the groups should contain fewer people so they can better compare problems and solutions.
- The break-out exercise was in the right direction but needed to focus more on specific topics.
- Break-out sessions needed more targeted outcomes, structure and guidance.
- Plenary sessions were informative, but I found the break-out session on regional IUU risk frameworks a bit confusing.
- For the break-out session, it was hard to come up with a conclusion as different jurisdictions have different policies, systems, regulations and social considerations.
- It does seem as though all nations are “re-inventing the wheel” and trying to achieve the same thing, spending large amounts of money developing the same strategies to gather the same information. It is a shame there is not an international “umbrella” organization to create these programmes (collaboratively) and tailor them to different nations’ needs. I think more case study presentations from other nations would be valuable.
- The risk assessment break-out (for Atlantic) was especially good.

One singular suggestion for improved networking from day one was to conduct “a presentation activity” (a roll call), either individually or by countries or agencies represented. The same commenter also suggested that “homework” could be given to the participants to reach out to neighbour countries or national agencies to motivate them to participate. Others suggested better use of the conference website for sharing participant lists and evaluations and/or using Google forms or other platforms for evaluations and other data collection. At least one participant requested copies of presentations in advance where possible.

With respect to the Networking Day, which included field trip options, a number of participants noted how important this aspect of the conference was and others said they appreciated the break mid-week; one suggested the break could be earlier or later in the week. Many participants praised this year’s excursions as well organized and enjoyable. The cultural aspects of both the field trips and the opening ceremony impressed participants, with more than one person describing them as memorable/unforgettable. The reception held on Thursday was described as wonderful.

One participant recommended that an alternative or additional offsite activity “could include a field demonstration session for vessel patrols, new MCS technologies, etc.”

TECHNICAL/FACILITIES

Many respondents wrote that the logistics of the 5th GFETW and the conference venue (the Langham Auckland) were “fantastic” and “outstanding” and congratulated New Zealand’s Ministry for Primary Industries for being an excellent conference host. One participant complimented the hotel staff at the Langham (“extremely friendly”), noting that the conference room was always clean, with plates cleared promptly and water and mints replenished regularly. The meals were also praised as good, diverse and well presented. One comment regarding technical aspects of the conference was simply “amazing coordination – seamless,” which was also a testament to Staging Connections (which was responsible for the conference's audio-visual aspects) and On-Call Interpreters, companies selected by the Ministry for Primary Industries.

To be noted: halfway through the week, a third screen was erected on a side wall at the request of panelists who could not see the screen behind them; this also provided a better view for some participants seated at the rear of the auditorium. Remote participation of presenters via Skype, which had not been successful in the past, was not attempted during the 5th GFETW.

Other comments about the facilities, including some areas where technical improvements could be made were noted, including:

- Consider welcoming more exhibitors from participating countries in the future.
- If possible, select a venue with more outside space next time.

OTHER COMMENTS

- A final document should be delivered, compiling all the presentations and all questions and answers given.
- With reference to the 2nd Stop IUU Fishing Award: there should be 3 winners, but not as 1st, 2nd and 3rd place. The countries have different situations, so ideally aspects to be evaluated would be according to the reality of each country.
- Cross-country training workshops for fisheries compliance officers should be undertaken for those managing a shared resource such as WCPFC tuna, with trainers from each country. The nation hosting these trainings should have front-line officers to feed information in to the GFETW, bringing ground experience and knowledge to the group.
- Provide assistance in terms of capacity building for inspectors regarding the management of MCS in developing countries, including countries of the Atlantic Ocean, so the fight against IUU fishing becomes a concern.
- Please organize the next meeting in a visa-free country.

Figure 2. Questionnaire distributed to participants in the 5th GFETW in Auckland, New Zealand 11 March 2016.

OPENING SPEECH BY MS JO GOODHEW
Minister of Food Safety and Associate Minister for Primary Industries, New Zealand

E aku Rangatira tena Koutou katoa, ka nui te hari ki te mihi ki a koutou. (Greeting in Māori)

This is a wonderful opportunity for me, and I feel very privileged to be standing in front of you. I would like to begin by acknowledging the assistance and welcoming us to this conference and to this place from Ngāti Whatua. I thank them for their way of welcoming.

I would like to acknowledge Cephas Ralph, the Chair of the International Monitoring, Control and Surveillance Network, Fábio Hazin, chair of the FAO Committee on Fisheries, our Director-General, Martyn Dunne, from the Ministry for Primary Industries, and Ambassador Shane Jones, my former colleague who was elected to Parliament on the very same day as I was. There are many distinguished amongst you. You are all distinguished guests. I thank you for your presence at this conference. Lastly, I wish to acknowledge all of those who work with us at the Ministry for Primary Industries for their attendance and for the work they do on behalf of New Zealand.

It is a great privilege and pleasure to be able to welcome you on behalf of the New Zealand government to this, the 5th Global Fisheries Enforcement Training Workshop. As a maritime nation, New Zealand's association with the sea and the fisheries that we utilize predates European settlement nearly 200 years ago. You will hear from one of New Zealand's preeminent Māori leaders on the deep association between Māori and Tangaroa, the Māori god of the sea, how rights have been enshrined in our nation's founding document, the Treaty of Waitangi and how that is now legislated for today.

New Zealand fisheries are not only viewed as *taonga*, or treasure, by Māori, but as a significant food source and recreational pastime for a quarter of our 4.6 million peoples as well as generating a NZD1.5 billion-dollar export industry. The New Zealand EEZ is the fourth largest in the world. That makes us accountable for maritime responsibilities reaching from the Southern Ocean through to the Pacific and comprising some 37 million square kilometres. That's equivalent to a full 12 percent of the world's surface.

Our close relation with the Pacific island nations is reflected by the makeup of this conference where our Economic Ambassador Shane Jones and members of many Pacific island nations are represented. To you, our neighbors, I bid you welcome.

New Zealand is immensely proud of its fisheries management regime, which, for the past 30 years, has been underpinned by our quota management system. While management systems are usually associated with the nation's own EEZ, New Zealand is also equally proud of its work in international fisheries jurisdictions. New Zealand was a founding member of the High Seas Task Force, the precursor to your International Monitoring Control and Surveillance Network which continues to fill its international obligations through the regional fisheries management organizations, through international fora and through the implementation of international tools such as port State measures.

In regard to enforcement of illegal, unreported and unregulated fishing, New Zealand believes it is recognized for its affirmative action in combatting this ongoing battle. You'll hear a number of examples during the conference that highlight these collective efforts that New Zealand has contributed to as part of the international community of like-minded nations. Combatting IUU operators is both a dynamic and

evolving challenge. Every opportunity must be taken to strengthen our collective efforts through capacity building, intelligence sharing and collective actions. The advent of emerging technologies is a further avenue to help close the net on operators that undermine country's food security and national prosperity.

I'm pleased to advise that New Zealand intends to further strengthen its fisheries management framework by examining the transitioning to an integrated electronic monitoring and reporting system. While the benefits of such an initiative are far reaching and its implementation challenging, it's an undertaking that New Zealand is willing to take to maintain the integrity of its fisheries management regime and meet societal expectations of sustainable utilization of our treasured fisheries resources.

I know that the organizing committee has prepared an interesting programme that includes internationally recognized experts in their field. Many of these are experts from professional from within the network. I want to acknowledge the work of the organizing committee, thank them for that and thank them for bringing representatives for more than 60 countries to our shores. On behalf of the New Zealand government, I know you will enjoy your conference. I hope that you go home and take a little piece of your understanding of New Zealand, of our fisheries, of our *taonga*, of our place in the world. I thank you for your time here today.

No reira. Tēnā koutou, tēnā koutou, tēnā koutou katoa.

OPENING SPEECH BY MR MARTYN DUNNE
Director-General, Ministry for Primary Industries, New Zealand

Tuatahi kua tautoko nga mihi kua mihia ki a ratou ma haere, haere, haere atu ra koutou, kia tatou te hunga ora Tihei Mauriora. Ka mihi nui ake ki a Ngati Whatua i korowai nga manaaki nei tenei hui, me nga manuhiri tuarangi no nga topito o te ao tena koutou. He huihuinga tangata he pukenga korero ki a u, kia ita kia tutuki pai.

Na reira tena koutou, tena koutou, tena koutou katoa.

What I said in there in Māori is essentially following on from what Raniera Bassett and Otene during the opening ceremony have said: to welcome you, to acknowledge the distance you've travelled, and, of course, returning to the world of the living. Salutations, this is the breath of life.

I acknowledge and thank the Mana Whenua, Ngāti Whatua for their blessings upon this *Hui*, or this meeting, and welcome all the visitors and esteemed guests. I look forward to the discussions and the exchanges of the ideas to strengthen the work that we all do both locally and internationally. Therefore, I welcome you thrice with: *Tēnā koutou, tēnā koutou, tēnā koutou katoa.*

To the Honorable Jo Goodhew, the Minister for Food Safety and Associate Minister for Primary Industries, to Shane Jones, our Ambassador-At-Large in the Pacific, to Fábio Hazin, Chair of the FAO Committee for Fisheries, to Cephas Ralph, Chair of the International Monitoring, Control and Surveillance Network, to our distinguished guests and you the compliance practitioners who make up the International MCS Network, welcome to New Zealand and to the 5th Global Fisheries Enforcement Training Workshop.

The Ministry for Primary Industries, on behalf of New Zealand, is honoured to have been selected to host this conference. This conference is crucial in championing international efforts and deterring illegal, unreported and unregulated on both the high seas and in domestic jurisdictions. No nation is immune to illegal fishing activities. We must all work together, be it under bilateral, regional or international frameworks to target and eliminate what is internationally recognized as environmental crime. For many nations fishing is a significant form of sustenance and wealth.

In order to stamp out IUU fishing there are five principles I believe we should adopt: (1) acknowledge its existence, (2) create and maintain a unity of purpose in targeting offenders, (3) share information, intelligence and resources, (4) have the ongoing resolve to collectively bring perpetrators to account before the courts, and finally (5) effective control of nationals.

I'd like to focus on the power of intelligence and the frameworks necessary to share such information. This is something that this network must focus on to achieve the intent of deterring and eradicating the IUU threats to our oceans. Domestic legislation needs to be aware of the need to share information in a timely and meaningful way. It's been my experience that all too often there are those who hold information and are unwilling to share that necessary information to enable the collective efforts to combat IUU fishing. When dealing with legal frameworks, the means are as important as the ends. However, this requires us to ensure that domestic legislation does not inhibit the sharing of tangible intelligence and that information.

The conference programme will show some case studies where intelligence has been shared collectively and nations have established the necessary legal frameworks as an outcome. This approach coupled with

the international instruments such as port State measures has seen significant success. The case study regarding international efforts in targeting IUU vessels operating in the Southern Ocean is testament to these coalitions of the willing, fulfilling international obligations and working collectively for the common outcome.

To all those nations involved, you should be proud of what you've achieved; and to those of you representing your nations today, I thank you. Often these conferences focus on technologies and the capabilities of developed nations in combating national issues. In hosting this conference, New Zealand wants to highlight the significant steps being taken by developing nations and acknowledge the investment and efforts that these nations are making.

While not unique around the world, New Zealand has developed a very effective framework for catering for the fishery needs of our indigenous *tangata whenua*, the Māori. This morning's *haka pōwhiri* is reflective of the pride of all New Zealanders, Māori and Pākehā alike, take in our partnership with the *tangata whenua*. Tomorrow you will receive a keynote address from Whaimutu Dewes, a respected Māori elder, on the journey of establishing New Zealand's customary fishing regime.

Equally, the conference programme covers an interesting array of topics and provides you with the opportunities to share technologies, tactics, techniques and approaches from a global perspective in your craftsmanship of fisheries compliance. Attendance of those with the desire to address the global scourge of IUU is critical to the success of these meetings as it allows you to share experiences, successes and learnings with like-minded people.

The final point I would make is: don't underestimate the power of a network. A network is a collective body of individuals linked through a common purpose. The relationships you forge here are critical to achieving success and the ability to personally contact counterparts whose trust and confidence has been established through such conferences is often more effective than prolonged informal channels that can limit timely action. Enjoy your conference. Take the opportunity to develop those relations, learn from each other and experience the hospitality our country has to offer.

Namehi kapa. Tēnā koutou, tēnā koutou, tēnā koutou katoa. Ka huri.

KEYNOTE ADDRESS BY MR FÁBIO HAZIN**Chair, Committee on Fisheries, Food and Agriculture Organization of the United Nations****“Working Together to Combat IUU Fishing to Ensure the Sustainability of World Fish Stocks: The Role of FAO-COFI”**

Hello and good afternoon to you all. It is a great pleasure for me to be here and an honour to address such an audience. My thanks to the organizers of this event for inviting me and for providing me with this opportunity to talk about the ways the Committee on Fisheries of the Food and Agriculture Organization of the United Nations (FAO) can work together with the international community to combat IUU fishing and to ensure the sustainability of the world’s fish stocks.

I will start by explaining what the Committee on Fisheries is and provide a bit of history. The first important fact is that FAO was founded in 1945. Twenty years after that, in 1965, the FAO Committee on Fisheries (sometimes referred to as COFI) was established as a subsidiary body of the FAO Council. After its first session in 1966, meetings were held annually, which later changed to biennially. The Committee on Fisheries has held 31 sessions, the most recent of which was held in June 2014 and the next of which will be held in July 2016.

Since its foundation, the Committee on Fisheries has been the only global intergovernmental forum where major international fisheries and aquaculture problems and issues are examined and addressed on a worldwide basis. COFI has also been the main forum in which global agreements and instruments related to fisheries and aquaculture have been negotiated.

At the last COFI meeting 110 countries were represented and almost 100 participants from 27 NGOs were present. With IGOs and other observers from different UN agencies, the total number of participants was more than 600, which is a very big audience. It’s by far the largest meeting related to fisheries and aquaculture in the world. In the last 20 years, the number of countries participating in the meetings has been above 100, fluctuating from 110 and 120 countries.

The following are the tasks of the Committee on Fisheries: to review the FAO work programmes in the field of fisheries and aquaculture including implementation; to conduct periodic general reviews of international fishery problems, like IUU fishing, and examine possible solutions through national, FAO, and intergovernmental programmes; and finally, to review specific matters relating to fisheries referred to it by the FAO Council or the Director-General, or at the request of any FAO Member Nations, and to make recommendations based on these assessments. The Committee on Fisheries has two subcommittees: the first one is the Subcommittee on Fish Trade, which was established in 1985, and the second is the Subcommittee on Aquaculture, which was established in 2001.

Before discussing what COFI has done to combat IUU fishing so far, some further background and context is needed. In this regard, the first and most important international instrument related to fisheries is the 1982 United Nations Convention on the Law of the Sea (UNCLOS). Presently UNCLOS has 167 parties, making it an almost universal instrument. It entered into force in November 1994, right before 1995, which, as we’ll see, was a key year in terms of the international legal framework related to fisheries and aquaculture. UNCLOS has several articles directly related to the fight against IUU fishing, including duties of the flag state, cooperation among states, and enforcement by port states.

As we look back at events and history since then, we can see how global perspectives have evolved over time. In May 1992, there was the international conference on responsible fishing held in Cancun, which was part of preparation for the 1992 conference on environment and development that was held in Rio. It was there in Cancun that the international community, for the first time, clearly raised its concerns about problems affecting the sustainability of the world fish stocks, such as IUU fishing and flags of convenience, and committed to collectively solve them.

Next, in December 1992, the United Nations General Assembly decided to hold a conference on straddling fish stocks and highly migratory fish stocks. This decision led to the 1995 Agreement for the implementation of the provisions of UNCLOS relating to the conservation and management of straddling fish stocks and highly migratory fish stocks, what we call the United Nations Fish Stocks Agreement. The Agreement contains several provisions, including Part VI, which relates to compliance and enforcement, and therefore to the fight against IUU fishing, directly referencing monitoring, control, surveillance and enforcement. It's important to note that there have already been two conferences to review the Fish Stocks Agreement, and the third will be held in New York in May of this year.

Ten years after the 1992 conference in Rio de Janeiro, the 2002 World Summit on Sustainable Development was held in Johannesburg. There, a new declaration on sustainable development was adopted, which included, in paragraph 31, the commitment to maintain or restore stocks to levels compatible with the maximum sustainable yield (MSY) by 2015. That deadline passed last year, and I believe that we can all agree that, unfortunately, we have not been successful in meeting the target.

In 2012, the World Summit on Sustainable Development was convened for a third time, in Rio de Janeiro again. The outcome document, entitled "The Future We Want", fully recognized the importance of fisheries and aquaculture for food security and nutrition. In addition to this important achievement, the international community also recommitted itself to eliminate illegal, unreported and unregulated fishing at that time. The next key event was the adoption of the 2015 Sustainable Development Agenda, which enumerates 17 goals to transform our world. Through Goal 14, which relates to the conservation and sustainable use of the oceans, seas and marine resources, we once again committed ourselves to effectively regulate harvesting and end IUU fishing - now with a target of 2020.

As an international community we have made many bold commitments, but, unfortunately, the international community sometimes behaves much like a shrewd politician - being more efficient at making promises than at fulfilling them.

With that background, let's look at the specific actions the Committee on Fisheries has taken to combat IUU fishing, the first of which was 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. With only 40 parties, this agreement has never had broad adherence. However, insofar as it included an Article III directly related to flag state responsibility, it was one of the first instruments drafted in the context of the Committee on Fisheries to deal with the fight against IUU fishing. That was followed by the 1995 Code of Conduct for Responsible Fisheries, a document that we all know and which FAO recently celebrated on its twentieth anniversary. The Code includes several provisions directly related to the fight against IUU fishing, including paragraph 8.2.7 related to flag state responsibility.

In 1999, during the 23rd Committee on Fisheries, in response to the problem of IUU fishing again being raised, the Committee on Fisheries reached an understanding that RFMOs should get together and cooperate in the fight against IUU fishing. The decision was then taken to hold an expert consultation, followed by a

technical consultation, to draft an instrument to combat IUU fishing, which was adopted in 2001, during the 24th meeting of the Committee on Fisheries. We all know this as the International Plan of Action (IPOA) to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. This included not only national plans but also a broad set of measures to combat IUU fishing, with a 2004 target for implementation. There is clearly still a lot of work to be done in this regard, including with respect to the necessity to eliminate subsidies that contribute to IUU fishing, which was another aspect of that document.

The issue of port State measures was the next to be raised. This had already started with IPOA on IUU fishing, where it had an entire section containing 13 articles (Articles 52 to 64) related to port State measures. The development of the Port State Measures Agreement (PSMA) can be described in two phases. The first phase, following the IPOA on IUU fishing, was an agreement in 2002 to hold an expert consultation, then a technical consultation (as per the standard COFI process), which resulted in the drafting of the Model Scheme on Port State Measures to Combat IUU Fishing.

The second phase began with the decision to move towards a binding instrument by an international community that wanted something stronger. Therefore, an expert consultation was held to draft a legally-binding instrument on port State measures, followed by the technical consultation, culminating in the adoption of the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing in 2009 by the FAO Council. At present, 22 parties have ratified the PSMA out of the 25 needed for it to enter into force. Entry into force is expected to happen before the next COFI meeting in July, in which case we'd be able to celebrate another very big step forward in the fight against IUU fishing conducted under the auspices of the FAO Committee on Fisheries.

The discussion of guidelines for flag states started back in 2007 during the 27th meeting of the Committee on Fisheries. The issue was revisited in 2009 and a decision taken to hold an expert consultation the same year, followed by a technical consultation lasting until 2013. Finally, during the last COFI meeting in 2014, we adopted the FAO Voluntary Guidelines for Flag State Performance. At that same meeting, the Committee on Fisheries also adopted the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries, another important instrument.

Now that the international community has addressed issues related to port states and flag states, one of the final frontiers to close the fence against IUU fishing is market-related measures. In terms of legal instruments that could better address market-related measures that can be adopted by the international community, everything is still much open. A directly related topic, about which I will talk a bit later, is catch documentation schemes.

Meanwhile, another important instrument under development in the last ten years was the Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, the so-called Global Record. It was first addressed by the Committee on Fisheries in the context of a 2005 Ministerial meeting and related declaration. FAO conducted a feasibility study in 2006 and the Committee supported an expert consultation, held in 2008. Results were presented and a technical consultation followed. In 2011, the Committee noted the recommendation of the technical consultation and reiterated its support for the development of the Global Record as a useful tool to combat IUU fishing.

In 2014, the reiterated commitment to the Global Record included an additional component: recognition of importance of the development of a Unique Vessel Identifier. At the 2014 COFI meeting, Spain announced a contribution of 250,000 Euros supporting the establishment of the Global Record. Additional financial support to develop this work is needed, which has been a hindrance. A working grouping was created to

address this problem and also to meet the need for an advisory committee. The group met twice last fall and will meet again later this month. The Global Record is a work in progress, but, together with other instruments, it will certainly become one of the most important tools available to the international community to fight IUU fishing.

Cooperation throughout all this time has been absolutely crucial, including amongst Regional Fisheries Management Organizations (RFMOs). The tuna RFMOs have been the ones first to set the example. They had an important meeting back in 2007 where they agreed on a course of action to cooperate including with a view to combat IUU fishing. One of the decisions was for them to create a joint list of vessels authorized to fish under their convention areas as well as a list of IUU vessels identified to operate in their convention areas. Both of these lists have also become important tools in the fight against IUU fishing.

One result of this cooperative effort is the joint website, “tuna org,” which contains updated lists of tuna vessels that have been identified in the five tuna RFMOs—CCSBT, ICCAT, IOTC, WCPFC and IATTC. They’ve also had three meetings: in 2007 in Kobe, in 2009 in San Sebastian, and in 2011 in La Jolla. Since then, this process has become kind of dormant, but the cooperative work is ongoing. Other lists have also become available, including one that has been provided as a result of combined lists of nine different RFMOs that is maintained and provided by Trygg Mat Tracking, an organization based in Norway.

RFMO contributions are not limited to joint lists. They also include the adoption of catch documentation schemes (CDS), which are another one of these very fundamental tools to combat IUU fishing. ICCAT was one of the first to adopt a CDS, in the form of a statistical document for bluefin tuna back in 1992. Statistical documents for bigeye tuna and for swordfish were adopted later (in 2000), and a more formal and detailed CDS for bluefin tuna was introduced in 2007. Another RFMO at the forefront with respect to catch documentation is of course CCAMLR, with reference to its Patagonian toothfish CDS adopted in 2000.

The importance of catch documentation schemes as a tool to combat IUU fishing was recognized during the 2014 COFI meeting, where the Committee decided to hold an expert consultation on CDS. That happened in July 2015, and the technical consultation is scheduled for April 2016, next month. The Committee on Fisheries will review the result of the consultation and decide how to proceed based on the work then achieved.

In parallel, and with the understanding that CDS has a close relationship with traceability, FAO has done an analysis of gaps and inconsistencies in the seafood traceability standards and norms. That was released in February and discussed and evaluated by the FAO Committee on Fisheries Subcommittee on Fish Trade. It will be further discussed in detail at the next meeting of the Committee on Fisheries.

The United Nations Office on Drugs and Crime and INTERPOL have also played key roles in very important developments in terms of international cooperation against IUU Fishing. Both organizations have undertaken actions that demonstrate the importance of developing and sharing of intelligence fight against IUU fishing. Additionally, at the 5th Conference of the Parties to the Convention Against Transnational Organized Crime, IUU fishing was recognized as one the international environmental crimes. Meanwhile, the work of INTERPOL’s Fisheries Crime Working Group and the purple notices that have been issued since 2013 have also become fundamental contributions to international efforts to prevent and to combat IUU fishing.

Finally, capacity building is another key issue in the fighting against IUU fishing that we cannot forget, because it’s usually needed by developing states to effectively implement international agreements and

instruments. Many of the documents I have mentioned today address this need for capacity building. The United Nations Fish Stocks Agreement has an entire section dedicated to the requirements of developing states, including the Part VII Assistance Fund, which I believe has helped several delegates from African and Central American countries to be here today. The Port State Measures Agreement also has a Part VI dealing specifically with the requirements of developing states. Similarly, the Voluntary Guidelines for Small-Scale Fisheries also has a section dealing with capacity development, and the Voluntary Guidelines on Flag State Performance contains an entire section dealing with cooperation and assistance to developing states, with a view to enhancing their capacity.

To review, we've seen a lot of progress since late 1994, when the United Nations Convention on the Law of the Sea entered into force. Back then, there were no tools for the international community to address the problem of IUU fishing in any meaningful way. In the following 20 years, multiple commitments were made and strengthened, in Rio de Janeiro, in 1992, in Johannesburg, in 2002, in Rio again, in 2012, and finally with the Sustainable Development Goals, last year. As a result, we now have a suite of tools and a comprehensive legal framework that includes several instruments such as UNCLOS, the Fish Stocks Agreement, the Compliance Agreement, the Code of Conduct, the IPOA on IUU, the Port State Measures Agreement, the Voluntary Guidelines on Flag State Performance, the Voluntary Guidelines on Small-Scale Fisheries and, most recently, the Global Record of Fishing Vessels and the Unique Vessel Identifier.

All of these instruments have been implemented or have been pursued or followed by an also diversified institutional framework, which includes not only the United Nations General Assembly, but also the FAO Committee on Fisheries, the United Nations Office on Drugs and Crime, INTERPOL and the several RFMOs (of which we now have about 50 around the world.)

To close, I'll borrow a sentence written by Harry Koster, the Executive Director of the International MCS Network, in a recent email. "In the fight against IUU fishing, if one looks back to the past, one may be indeed impressed by the progress achieved, but if one looks to the future, one still might be frustrated by the challenges that still lie ahead."

Despite the progress made over the last two decades, there is no doubt that a huge amount of work does still lie ahead of us. However, I'm convinced that cooperation will be the key to success. This is why the International MCS Network and the 5th Global Fisheries Enforcement Training Workshop are so important.

Thank you very much.

GROUP PHOTO



This document contains the report of the Fifth Global Fisheries Enforcement Training Workshop, which was held in Auckland, New Zealand, from 7 to 11 March 2016.

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