REPORT

RPOA-IUU FISHERIES INTELLIGENCE TRAINING

RPOA-IUU in Partnership with ATSEA-2

Trainers Supported by

Participated by

DATE :
Tuesday - Friday
April 5-8, 2022

ONLINE PLATFORM :
zoom

OFFLINE VENUE :
Pullman Bali Legian Beach Hotel

WELCOMING REMARKS

Dr. Handoko Adi Susanto – Regional Project Manager of ATSEA

Very good morning to:

- Director General of Surveillance for Marine and Fisheries Resources, Ministry of Marine Affairs and Fisheries of Indonesia.
- Distinguished trainers from Canada's National Fisheries Intelligence Service, NOAA Federal, Center for Sustainable Ocean Policy of University of Indonesia and Indonesia Ocean Justice Initiative.
- Training participants from RPOA-IUU participating countries – Australia, Brunei Darussalam, Cambodia, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste and Viet Nam.
- RPOA-IUU Secretariat colleagues;
- And ATSEA-2 regional and national project team.

A very warm welcome and greetings from the sunny Bali! I hope we're all in good health and excited to participate in the training.

Prior to the training, let me talk briefly about ATSEA-2, especially for those who have never heard about our programme:

- Arafura and Timor Seas Ecosystem Action Phase 2 (2019-2024) or ATSEA-2 is the second phase of the GEF-financed, UNDP and PEMSEA-supported ATSEA programme, building upon the foundational results realized in the first phase (2009-2014).
- It is designed to enhance regional collaboration and coordination in the Arafura and Timor Seas (ATS) region, which includes Indonesia, Timor-Leste, Australia, and with the formal addition of Papua New Guinea as the new country member.

- The ATS region is part of the North Australian Shelf large marine ecosystem (LME), which is a tropical sea lying between the Pacific and Indian Oceans and extending from the Timor Sea to the Torres Strait and including the Arafura Sea and Gulf of Carpentaria.
- The ATS region is extremely rich in living and non-living marine resources, including major fisheries and oil and gas reserves. It has strong connectivity in oceanographic and ecological processes, such as the movement of pelagic and migratory species. Significantly, the ATS region exhibits high productivity that sustains both small- and large-scale fisheries, including several high-value, shared transboundary fish stocks, with industrial-scale fisheries, such as finfish trawl fishery, shrimp trawl fishery, and bottom long-line fishery.
- ATSEA-2 goal is to sustain the flow of ecosystem goods and services from the ATS through a transboundary governance strategy that is rooted in national development priorities, while our objective is to enhance sustainable development of the ATS region to protect biodiversity and improve the quality of life of its inhabitants through conservation and sustainable management of marine-coastal ecosystems.
- To achieve our goal and objective, we have three key focuses: 1) To strengthen regional governance structures, enabling policies and capacities of institutions and individuals in the participating countries, 2) To support the implementation of the priority actions outlined in the ATS Strategic Action Programme (SAP) and National Action Programmes (NAPs), and 3) To cover the five-priority transboundary environmental problems identified by the Transboundary Diagnostic Analysis (TDA).
- The five transboundary environmental problems that should be tackled together by ATS countries are: 1) unsustainable fisheries and decline and loss of living coastal and marine resources, 2) modification, degradation, and loss of coastal and marine habitats, 3) marine and land-based pollution, 4) decline and loss of threatened and migratory species, and 5) impacts of climate change on the ATS.
- In regards to addressing unsustainable fisheries which include IUU fishing, the projects will provide incremental support to the regional and national efforts aimed at reducing IUU fishing, including building upon the national responses to the RPOA-IUU, and also the ramped-up efforts in Indonesia since 2014, when the newly appointed Minister of MMAF spearheaded a nationwide program at combating IUU fishing, with a particular focus on the Arafura Sea. Specifically, at the regional level, ATSEA-2 project will support the implementation of RPOA-IUU.
- From the mid of 2020 until the beginning of 2021, ATSEA-2 had facilitated four studies to understand the current threats and opportunities in the region. The studies covered the loss estimates due to illegal fishing, review of regulations and policies to combat IUU fishing, support for FAO Global Record Initiative and collaborative surveillance best practices and lessons learned against IUU fishing. The first two reports were developed for RPOA-IUU participating countries, while the latter two were developed only for the ATS countries.
- ATSEA-2 is also committed to supporting capacity building to fight IUU fishing. This Fisheries Intelligence Training is the first, but not the last training conducted through joint efforts from both RPOA-IUU Secretariat and ATSEA-2 Project team.

Some of you may ask, why intelligence though? Until now there is still a vital need for improved gathering of intelligence and effective sharing of this information between agencies within and between states. Intelligence can be used to successfully solve cases and prosecute criminals. The need to find and improve channels for gathering information from state and non-state actors and

converting this into actionable intelligence, evidence and witness testimony has never been greater. We see the importance of introducing fisheries intelligence concept and would like to trigger discussion on the need of establishing a fisheries intelligence network amongst RPOA-IUU participating countries, specifically the ATS countries.

That being said, please be active throughout the training. Despite the limitations of virtual training, this is designed not to be a one-way training where participants just sit calmly and listen to the trainers silently. The participants will be given ample time to ask questions and discuss some issues together with the trainers. This is training for adults who have different experiences and perspectives. Therefore, please share your perspectives, experiences, and lessons learned to enrich the discussion and learning process. We believe you can all learn a lot from one another. We hope that after the four-day training, you will have a good understanding of fisheries intelligence, how to build an intelligence network, methods and tools for gathering intelligence and how to make use of the gathered intelligence.

Finally, please enjoy the training. I hope the connection fostered here can be nurtured into a stronger collaboration in the future. Thank you!

Warm Regards,

Dr. Handoko Adi Susanto

OPENING REMARKS

Ir. Suharta, M.Si – RPOA IUU Secretariat Coordinator

Good Morning,

Excelencies,

- RPOA-IUU Coordination Committee
- Director, National Fisheries Intelligence Services, Fisheries, and Oceans, Canada
- Investigative Support and Vessel Monitoring System Program Manager for the NOAA Fisheries Office of Law Enforcement Pacific Islands Division
- Director of Enforcement Support and Access to Justice, Indonesia Ocean Justice Initiative
- Dr. Arie Afriansyah, Center for Sustainable Ocean Policy, University of Indonesia
- Regional Program Manager ATSEA-2 Project;
- RPOA-IUU Secretariat; and
- All Participants from RPOA-IUU Participating Countries.

Distinguished delegates, Ladies and gentlemen.

It is a pleasure to welcome you to the RPOA IUU Fisheries Intelligence Training. This training is a collaboration between RPOA IUU and ATSEA-2 Project with fully supported by UNDP and PEMSEA and supported by remarkable keynote speakers from international agencies and instituions. Thank you to the representative from NFIS, NOAA OLE, IOJI, University of Indonesia, and ATSEA-2 Project and training participant from RPOA IUU for being able to attend to this training.

First of all, I am highly gratefull for your commitment in combating IUUF under the RPOA IUU platform, particularly in the country's effort to implement the RPOA IUU core element. Your valuable and continued support to enhance operation in zone on several occasion such as participation in the RPOA IUU coordination committee meeting, consultative meeting, workshop, and this training.

Distinguished delegates, Ladies and Gentlemen.

As you may aware, fisheries intelligence plays a vital role to predict illegal fishing, behaviour, and increases the effectiveness of enforcement action. In recent years, technology development and technical advances has generally led to more efficient and improve access to resource, including use of technology to track, idientify, and analyse modus operandi of IUU Fishing.

The training will help RPOA IUUF participating countries to have larger participative on how to utilize fisheries intelligence to eradicate IUU fishing. From this training we will hear fruitful presentation and material from each keynotes speaker regarding application of open source intelligent for identifying IUU fishing behaviour and recommendation on how to build the National Fisheries Intelligent for RPOA IUU participating countries.

Exelencies Ladies and Gentlemen,

I am sincerely grateful for ATSEA-2 project for the generous support for the training and also for NFIS, NOAA OLE, IOJI, University of Indonesia for providing qulified trainer and keynote speakers and their contribution to make this training possible.

To conclude my remark, once again I would like to thank you for your continued support and contribution. I formally open the RPOA Fisheries Intelligence Training. I wish you have joyful and useful training.

Thank you.

Ir. Suharta, M.Si

KEYNOTE SPEECH

Rear Adm. Adin Nurawaluddin, Director General of Director General of Surveillance for Marine and Fisheries Resources, Indonesia Ministry of Marine Affairs and Fisheries

Good morning,

Excellencies

- RPOA-IUU Coordination Committee
- Director, National Fisheries Intelligence Services, Fisheries, and Oceans, Canada
- Investigative Support and Vessel Monitoring System Program Manager for the NOAA Fisheries Office of Law Enforcement Pacific Islands Division
- Director of Enforcement Support and Access to Justice, Indonesia Ocean Justice Initiative
- Dr. Arie Afriansyah, Center for Sustainable Ocean Policy, University of Indonesia
- Regional Program Manager ATSEA-2 Project;
- RPOA-IUU Secretariat; and
- All Participants from RPOA-IUU Participating Countries.

Distinguished delegates, ladies and gentlemen,

It is a true honor for me to be among all of you, representing the Indonesian Ministry of Marine Affairs and Fisheries. As one of RPOA-IUU participating countries, here I would like sincerely appreciate the RPOA-IUU Secretariat and ATSEA-2 Project for organizing the RPOA-IUU Fisheries Intelligence Training. This training is an important step to improve regional capacity to prevent, deter, and eliminate Illegal, Unreported and Unregulated Fishing.

Distinguished ladies and gentlemen,

According to the Food and Agriculture Organization (FAO) IUU fishing activities are responsible for the loss of 11-26 million tons of fish each year, which is estimated to have an economic value of US$10-23 billion. Moreover, IUU fishing has caused depleting fish stocks, the degradation of marine and coastal ecosystems, jeopardizes food security and disrupting coastal communities'

social cohesion. In addition to that, a study has been conducted by ATSEA-2 Project in collaboration with Center of Sustainable Ocean Policy the University of Indonesia in 2020, on numbers of illegal fishing vessels apprehended by RPOA-IUU participating countries. It concludes that in the RPOA Region alone, the total volume of loss avoided by RPOA-IUU participating countries from IUU fishing activities, during 2015 to 2019 was around 178 thousand tons, equal to US$ 206 million. These data highlight the big loss caused by IUU fishing.

On the other hand, National, and regional efforts to combat IUU fishing face big challenges. Modus operandi of IUU fishing is developed through various way including fake document, double flag, and illegal transshipment. The worst examples of IUU fishing are often connected to transnational crimes, including modern slavery, tax evasion, piracy, and drug, and human trafficking. Fraudulent papers, hidden ownership and a lack of transparency facilitate extraction of fish in a way that is difficult to track.

Distinguished delegates, ladies and gentlemen,

"Challenge today, change tomorrow", we need to change our approach in combating IUU fishing. Effective law enforcement is required to deal with current and future challenges. Fisheries intelligence is one of the new approaches which need to be implemented. We already hear from the Director of National Fisheries Intelligence Service Canada's presentation that fisheries intelligence cycle will lead to better decision making, resulted in more effective and efficient operation and enforcement measures.

Indonesia has been implementing some short of fisheries intelligence activities through the implementation of the Integrated surveillance system. Our surveillance activities at sea already supported by a series of intelligence data analysis from satellite, vessel monitoring system, automatic identification system, and air surveillance, as well as community-based surveillance. Intelligence data analysis helps us to identify how many IUU fishing incidents; and develop effective strategy to intercept IUU Fishing Vessels.

Furthermore, I would like to share our experience in the apprehension of MV VIKING and MV NIKA. You have heard the MV VIKING case in the presentation of the Chief Intelligence, Information, Audit, and Program of Ministry of Fisheries and Ocean Canada. Here I would like to share about MV NIKA. As the result of multi countries and multi agencies intelligence operation, the MV NIKA was suspected conducting IUU fishing activities in the Southern Ocean, and other illicit activities. Indonesia was informed by Interpol and regional bodies the track of the vessel, and prediction of the movement of MV. NIKA minute by minute.

The vessel then arrested by our patrol vessel in Malacca Strait at 12th July 2019. During investigation, Indonesia was also supported by many countries and regional bodies through Multi-Investigative Support Team (MIST) and Regional Investigative and Analytical Case Meeting (RIACM). This case clearly describes the important of fisheries intelligence cooperation in combating IUU fishing. I am sure that the importance of cooperation and collaboration in fisheries intelligence and law enforcement efforts has been highlighted by resource persons in this training.

Distinguished Ladies and Gentlemen,

I heard that there is an idea proposed by RPOA-IUU Secretariat to initiate discussion on more close cooperation among RPOA-IUU participating countries to develop fisheries intelligence

network. This fisheries intelligence training is one of initial step for that vision. Here, I would like to announce Indonesia support on the initiative.

Indonesia is on the view that this network will improve regional effort to combat IUU fishing especially in Southeast Asia Waters. We have several considerations. First, fisheries intelligence is a complement of Monitoring, Control and Surveillance. We believe that it will improve fisheries management and law enforcement. Second, Fisheries Intelligence Network is in accordance with RPOA-IUU Core Element. Third, RPOA-IUU participating countries need to enhance capacity to respond IUU fishing challenges and trend.

Distinguished Delegates, Ladies and Gentlemen,

I will close with a big thank to participants and organizing committee of fisheries intelligence training. I also offer my great appreciation to Atsea-2 Project with support from GEF, UNDP, and PEMSEA for their great support for this training. I would like also to express my gratitude to NFIS Canada, NOAA - OLE, CSOP the University of Indonesia, IOJI for providing qualified resource persons for this training. And last but not least, I would like to thanks to all participants for following this training with very high enthusiasm and actively contribute in discussion during the training. I believe that this training is one step forward to strengthen our capacity in combating IUU fishing. I do believe that under RPOA-IUU, our cooperation will be getting stronger.

Thank you.

Laksamana Muda TNI Adin Nurawaluddin

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GENERAL OVERVIEW

Background

Illegal, unreported, and unregulated (IUU) fishing poses a significant threat to the ocean ecosystem and causes severe loss and damage to the environment. It also has an impact on both economic and ecological imbalance. IUU fishing is categorized as a transnational crime, hence its eradication needs international cooperation among the countries.

To strengthen regional cooperation, the application of advanced technology is a considerably effective approach to deter IUU fishing, particularly in having efficient and convenient public access to updated information on IUU-engaged vessels/activities. In recent years, technological development and technical advances have generally led to more efficient and improved access to resources. Widespread use of technology comes into the utilization of intelligence networks to track, identify, and analyze the modus operandi of IUU Fishing.

In connection with that, RPOA-IUU collaborates with The Government of The Republic of Indonesia and the Arafura and Timor Seas Ecosystem Action Phase 2 (ATSEA-2) Project to conduct training on "Establishing and Strengthening Intelligence Network among RPOA-IUU Participating Countries". Fisheries intelligence training will help RPOA-IUU focal points to have broader knowledge and a better understanding of how to use intelligence networks for fighting against IUU Fishing.

The training is expected to introduce standardized methods and tools for RPOA-IUU participating countries to respond and take action on any suspected IUU Fishing behaviours. Therefore, RPOA-IUU and ATSEA-2 have conducted Fisheries Intelligence Training to deliver materials on developing and managing a multinational fisheries intelligence network.

Objectives

The training was expected:

a. To introduce the concept and importance of fisheries intelligence to RPOA-IUU participating countries
b. To provide examples of existing intelligence models and tools for combating IUU fishing to RPOA-IUU participating countries
c. To facilitate discussion among RPOA-IUU participating countries on determination of the most suitable intelligence model and low-cost innovative tools to detect any IUU Fishing behaviours
d. To enhance the capacity of RPOA-IUU's focal point in using intelligence equipment and tool to combat IUU Fishing

Recordings

Recordings of all 4-days training can be accessed through this link: https://bit.ly/Recording_FIT.

Participants and Moderator

The Fisheries Intelligence Training (FIT) was conducted for four days from 5 – 8 April 2022 in a virtual arrangement. The committee from ATSEA-2 Regional Project Management Unit and RPOA Secretariat conducted the training from Denpasar, Bali, Indonesia.

The training was a closed session which was attended and limited only to RPOA Participating Countries. There were representatives from 10 (eleven) RPOA-IUU participating countries namely

Australia, Cambodia, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam who fully join the 4-days training.

The detailed information of participants who attended the FIT can be seen in Annex 1.

TRAINING ACTIVITY

1st day of the Fisheries Intelligence Training – 5 April 2022

Opening Session

Welcoming Remarks - Regional Project Manager of ATSEA-2, Dr. Handoko Adi Susanto

Dr. Handoko Adi Susanto, Regional Project Manager of ATSEA-2, conveyed the welcoming remarks. He welcomed and acknowledged all trainers and training participants for their participation in FIT. Dr. Susanto stated the importance of combatting IUU Fishing, and fisheries intelligence as tools to support it. Dr. Susanto also elaborated on the importance of FIT as capacity building for the participating countries and set out the expected outcomes from the training.

RPOA-IUU Secretariat Coordinator – Ir. Suharta, M.Si

Mr. Suharta, Executive Secretary of DG Marine and Fisheries Surveillance, Ministry of Marine Affairs and Fisheries, The Republic of Indonesia as RPOA-IUU Secretariat Coordinator delivered his welcoming remarks and open the training. Mr. Suharta conveyed his appreciation for the RPOA-IUU participating countries. He elaborated on the vital role of fisheries intelligence in combatting IUU Fishing.

Session 1: Introduction

RPOA-IUU perspective on fisheries intelligence (PPT can be downloaded here)

Mr. Eko Rudianto, Principal Fisheries Inspector, as Vice Coordinator of RPOA-IUU Secretariat explained RPOA-IUU's perspective on fisheries intelligence. Mr. Rudianto explained the relation of this training with RPOA-IUU Fishing. He stated that the training is directly related to RPOA-IUU core elements, and is part of RPOA-IUU's 2022 annual workplan. Mr. Rudianto proposed an initial idea of RPOA-IUU Fisheries Intelligence Network (FIN). He expected that the training will not only fulfil its purpose of building capacity, but also act as a stepping stone to establishing RPOA-IUU Fisheries Intelligence Network.

Overview of the Training (PPT can be downloaded here)

Ms. Casandra Tania, Regional Biodiversity Specialist ATSEA-2, explained the overview of the training. She reiterated the training objectives and addressed the expertise of each trainer. Ms. Tania also explained the training schedule and training rules.

Session 2: Country Presentation

1. *Australia (PPT can be downloaded here)*

Australian delegation informed the domestic facets of fisheries intelligence in Australia. It follows four major structures: analysis, physical enforcement, technologies, and collaboration. Australia has established a fisheries intelligence service which incorporates technologies and physical enforcement in combatting IUU fishing, whose analysis is renewed annually, and is collaborating with relevant stakeholders, such as state fisheries, CSIRO, and international agencies, to enhance its functions and implementation. The Australian delegation shared their expectation of FIT, as a platform to share knowledge and discuss fisheries intelligence perspectives: its technologies and

techniques, changes in IUU risk related to COVID-19, and identifying opportunities for collaboration.

1. *Cambodia (PPT can be downloaded here)*

The delegation informed that fisheries monitoring, control, and surveillance in Cambodia are based on international regulatory framework and commitment, and Cambodia's domestic legal and policy framework. The Cambodian delegation explained that there are numerous marine fisheries management measures related to combatting IUU Fishing, with many authorities involved, depending on the area. Cambodia retained the National MCS Management team as chair of the IUU Task Force, which led the domestic interagency coordination, involving judicial and military police officers, local enforcement agencies, and other auxiliary agencies.

2. *Indonesia (PPT can be downloaded here)*

Indonesian delegation elaborated on fisheries intelligence tools and methods used by the country, which includes measuring compliance with spatial, time, and transhipment regulatory framework, along with predicting illegal behavior. Implementation of those tools and methods is partly done. The delegation elaborated on the elements involved in the integration of marine and fisheries resources monitoring system in Indonesia, and capacity building and facilities which have been done to improve the fisheries intelligence implementation. Indonesia has several planning agendas on national level to enhance its fisheries intelligence. The delegation stated that the training is expected to contribute to its fisheries intelligence through benchmarking with existing fisheries intelligence services and knowledge sharing on technological advancement, especially on dark vessel detection.

3. *Malaysia (PPT can be downloaded here)*

The delegation informed that Malaysia's department of fisheries is managing and conserving fishery resource through monitoring, control, and surveillance program, where there are 8 main control and inspection activities. These activities involve not only fishing vessel inspection, but also raw materials processed in the country. Malaysian delegation explained that information gathered through registration, licensing, inspections, and electronic vessel monitoring systems are gathered and analyzed, for further action to be taken through domestic interagency coordination, such as data sharing, enforcement and prosecution, and joint operations. Malaysian delegation shared their expected outputs from FIT are knowledge sharing of technology used to detect IUU Fishing, accurate data collection, and data analysis for a broader view of IUU Fishing activities.

4. *Papua New Guinea (PPT can be downloaded here)*

Papua New Guinea has numerous national actions to detect and deter IUU Fishing. These actions are based on data gathered from audits and certification, catch documentation, vessel monitoring system, and compliance notifications. The delegation informed that Papua New Guinea maintained National Fisheries Authority Integrated Fisheries Management Systems to support intelligence driven operations on national, regional, and domestic scales. Papua New Guinean delegation stated their prioritized expected outcomes from FIT, which involved intelligence management and structure, IUU Fishing loss, and knowledge sharing on intelligence services.

5. *Philippines (PPT can be downloaded here)*

The delegation explained that there are several efforts implemented to combat IUU Fishing in the Philippines. Phillippines maintained numerous law enforcement vessels which involved thousands of enforcers. Philippines delegation explained an established system which implements fisheries intelligence: Integrated Marine Environment Monitoring System (IMEMS). Philippines also utilized National Coast Watch System as a means to collaborate and coordinate with relevant agencies,

while IUU Fishing Index and Threat Assessment Tool to detect and deter IUU fishing in municipal water, which also helped provide IUU Fishing understanding in a local context. The delegations are expected to acquire new skills and knowledge from FIT, along with further collaboration and participation in IUU Fishing-related action and meetings.

6. *Singapore*

Singapore delegation explained that the country does not have a separate fisheries intelligence unit now, and the fisheries affairs are handled by Singapore Food Agency, as a statutory board under the Ministry of the Environment and Water Resources, Singapore. The delegation told that the efforts to combat IUU Fishing in Singapore involved vessel monitoring at the port. Singapore delegation was keen to learn more regarding fisheries intelligence, with the expectation to have more knowledge on tools which can be used, especially by optimizing open-source data, and a better understanding of the data analysis.

7. *Thailand (PPT can be downloaded here)*

The delegation explained the implementation of fisheries intelligence based on the Thai fishing vessels in national waters, Thai oversea fishing vessels, and foreign fishing vessels. Thailand used Vessel Monitoring System (VMS) for both Thai fishing vessels in national and oversea waters, which are monitored differently through sea patrol and electronic monitoring, respectively. The foreign fishing vessel is controlled by implementing Port State Measure and its analysis reporting tool. The delegation expected to exchange knowledge and strengthen law enforcement in combatting IUU fishing, and further applied the new technology in the national system, with increasing cooperation between participating countries.

8. *Timor-Leste (PPT can be downloaded here)*

Timor-Leste delegation elaborated on the country's community based IUU and accident reporting system. The system involves hierarchal reporting from fishers on board who witness notable suspicious vessel or action, to the extension officers or chief of village, which will elevate the issue to the higher-ups, and navy officers may take necessary action. The delegation explained further reporting methods, and their benefits and challenges, which led to the use of AQUAPAC in mobile phone, boat register, and dissemination of fisheries law to fishers. Timor-Leste also shared their collaboration experience with Global Fishing Watch and Australia by sharing the available data, to prevent illegal fishing vessels as part of combatting IUU Fishing.

9. *Viet Nam (PPT can be downloaded here)*

The delegation explained varied efforts of fisheries intelligence implementation. Viet Nam has a database for registered fishing vessels registered, which are classified based on the fishing vessel's length, which also determined the VMS device requirements, obligatory for fishing vessels above 15 m in length. Vietnam Delegation also explained the development of Port State Measure Agreement Software, which is currently in the pilot phase. Viet Nam collected their data from different sources, including other countries, and is willing to share their data as well. The delegation expected FIT can be a knowledge sharing platform for participants regarding IUU fishing vessels, and further establish information sharing mechanisms, and cooperation in compiling data for combatting IUU fishing.

Session 3: Illegal Fishing Threats

Illegal fishing threats: case study from 11 (eleven) RPOA-IUU Participating countries (PPT can be downloaded here)

Dr. Arie Afriansyah, Center for Sustainable Ocean Policy, University of Indonesia, explained the findings from Baseline Estimates of RPOA-IUU Participating Countries. It is a 2020 study supported

by ATSEA-2 which calculated loss avoided due to respective law enforcement, through vessel apprehension from RPOA-IUU participating countries between the last five years (2015-2019).

The study estimated the loss based on the data of vessels apprehended for IUU Fishing, vessel trips, and fish weight equivalent. From this estimation, the study found that the total volume loss avoided reached 168.580 tons. Dr. Afriasyah highlighted that this finding is more likely an underestimate, as not every ASEAN country submitted their data, and the data provided from the countries varied in time range. He also underlined that the research is limited to only illegal fishing, as unreported and unregulated fishing does not have any supporting tangible data.

The finding showed that policy implementation affected the avoided loss. Papua New Guinea showed a high surge of fishing vessel data across the years, as there were new policy and implementation in the country, which resulted in the rise of illegal fishing commodity apprehension to approximately 4.000 tons.

Dr. Afriansyah highlighted the importance of data collection and data sharing for improved calculation of avoided loss. Data sharing is important not only to improve the study, but also for further detection and deterrent of IUU Fishing, such as cooperation for legal enforcement to avoid more loss from illegal fishing. Timor-Leste representative uttered his agreement with Dr. Afriansyah, and explained Timor-Leste's experience in benefitting from data sharing with Australia, which prevent illegal fishing operation in Timor-Leste's area.

2nd Day of the Fisheries Intelligence Training – 6 April 2022

Opening Session (PPT can be downloaded here)

Dr. Handoko Adi Susanto, Regional Project Manager ATSEA-2, opened the second day of FIT with greetings to participants and trainers. He reiterated the highlights from day 1. He stated the importance of fisheries intelligence to enhance cooperation and information sharing between RPOA-IUU participating countries and predict illegal fishing activities and increase the effectiveness of fisheries enforcement. Fisheries Intelligence Training acted as the first stepping stone to establishing Fisheries Intelligence Network (FIN) for RPOA-IUU participating countries. This is in line with the expected outcomes presented by participating countries, which expected further collaboration in combatting IUU fishing. Presentations from participating countries also showed varied stages of fisheries intelligence implementation. Most countries have used technologies and analysis to enhance action against illegal fishing. There is a vast room for improvement which can be done to the implementation, such as shown by information gathering and specific intelligence unit by Australia.

Session 4: National Intelligence Service (PPT can be downloaded here)

Yves Goulet – Director, National Fisheries Intelligence Services, Fisheries, and Oceans, Canada

Mr. Yves Goulet shared an overview of Canada's National Fisheries Intelligence Service: background, responsibilities, and organizational structure. Canada's conservation and protection directorate is tasked to protect Canada's marine and freshwater species and their habitat against violations. To fulfil this, C&P follows the traditional reactive model, which needed to undergo significant change in 2004, due to budgeting constraints and increasing sophistication of non-compliance activities. Intelligence is considered helpful for the changes needed in C&P, as it works as a tool which improves evidence-based decision making.

The establishment of the National Fisheries Intelligence Service (NFIS) took plenty of time, from the evaluation of the pioneering fisheries intelligence process in 2011, to NFIS staffing process starting in 2015, and it became operational with most positions filled in 2018. Intelligence implementation in fisheries follows the philosophy that every fisheries officer is an intelligence officer, who is obligated to document and inform weaknesses in the management measures. With this significant change of incorporating intelligence for fisheries, the model transformed, where intelligence act as the base of three pillars: education, stewardship, stakeholder engagement; monitoring, control, surveillance; major/special investigations, which will build fisheries compliance.

Mr. Goulet also presented Intelligence and Enforcement Cycles, which assisted priority settings and addressed the gap. NFIS works under national perspectives, with governance team that overview the system, and its recommendations will be disseminated to federal and relevant agencies to support them in developing an operational plan. Marine Security Operations Center is the entity responsible for domain awareness, and implementation of signal intelligence, by analyzing satellite information. Transformation and establishment of NFIS provided deliverables beneficial to its nation's fisheries, such as the list of Fisheries Act violations, addressing important gaps in enforcement activities, ad leading priority enforcement changes.

In the discussion, Mr. Goulet emphasized that intelligence does not necessarily reduce the budget for surveillance but improves efficiency. He gave an example of intelligence implementation in deciding a patrol route. Evidence from intelligence assists this decision making and makes patrol have a higher possibility of encountering non-compliance. Thus, the operation becomes more successful and efficient, with more losses can be avoided.

NFIS establishment also brought cultural changes, which shifted the perspectives of non-compliance in fisheries. Traditionally, it is perceived as a crime at sea, but now it is seen as the whole distribution network of marine resources, which includes the receiving end of the non-compliance, and other fraud and tax crime which supports the crime network. This led to collaboration and joint operations with military entities and police, where navy can support knowledge sharing while police can investigate criminal entities. Considering the transnational criminal entities, NFIS is looking for more international partners to work with.

Session 4: International work and engagement for developing intelligence service (PPT can be downloaded here)

Geoffrey Adcock – Chief, Intelligence, Information, Audit, and Programs – National Fisheries Intelligence Service

Mr. Adcock explained the role of NFIS in the international domain, through its past international work, domestic and international engagement, and the importance of NGOs and academia. Canada has assisted many joint operations through various means. They assisted Operation Driftnet monitoring using their aircraft patrols, digital forensics capacity of salmon migration and ship navigation, the latter used in Operation Spillway 2 through Interpol, which helped catch the criminal fishing vessel. NFIS was involved in the task force to investigate FV Viking, a stateless vessel.

Mr. Adcock emphasized that IUU Fishing is not just fishing, but also involves other crimes across the world. To combat this issue, engagement is important, which should start at domestic level and be supported by international engagement network. Mr. Adcock explained the issue from

Canada's perspective, as it is a fish exporter, which may leave a gap for crime to fulfil greed and get more money involved in the fish sector. Information and knowledge sharing is the first step to seeking indicators of violation and fully understood the problem. Canada established an interdepartmental working group on intelligence led enforcement to support regulatory enforcement, by collaboratively sharing best practices. Canada engaged heavily with three international entities: Interpol, Pacific Fisheries Intelligence Group, and North Atlantic Fisheries Intelligence Group. Canada aimed to contribute especially to Dark Vessel Detection, by fusing several available technologies, which needed partnership to support their operations and receive capability feedback.

Aside from domestic and international engagement, NGOs and academia are important for developing intelligence service. NGOs and academia have shared environmental goals. With their exposure to scientific forum, they have good knowledge which can be passed down and trained to others. NGOs and academia's networking and cultural understanding help shape the fisheries intelligence perspectives. Mr. Adcock stated that Canada got local context on their operations by collaborating with NGO in the Pacific area. Collaboration will maximize the effectiveness, and their networking will help improve the products and offer a new perspective outside the traditional methods. Academic outreach may also help promote and solve problems as an emerging field of study.

In the discussion, Mr. Adcock highlighted the importance of willingness to collaborate. He thought that the willingness to collaborate played a role in FV Viking operation, and it is the first step in building a fisheries intelligence network. Aside from willingness to collaborate, willingness to share data and non-existent data exchange mechanism are often the issues in terms of international cooperation.

3rd Day of Fisheries Intelligence Training – 7 April 2022

Opening Session (PPT can be downloaded here)

Mr. Arif Hidayatullah, RPOA-IUU Secretariat representative, opened the third day of FIT with greetings to participants and trainers. He reiterated the highlights from day 2.

Session 5: Technologies, tools, and software (PPT can be downloaded here)

Remi-Martin Gionet – Chief, Marine Security Operations Centre (East) – National Fisheries Intelligence Service

Mr. Gionet explained the capabilities, tools, and software overview from his role in NFIS. Maritime security, or a nation's ability to control its waters area, is crucial, but the structure and approach may differ. Canada is involving many agencies to ensure its maritime security, including the military. The marine security operation center has a role to share and exchange information which allows for more efficient and effective decision making. Maritime domain awareness is the approach used in Canada, where it layers as much relevant information and is disseminated as one visual with actionable information.

Mr. Gionet elaborated on the tools and software used for monitoring, control, and surveillance in Canada. He noted four main sources: satellite & coastal radar data, aerial surveillance, and others. These data sources have different recurrent rates, and Canada mostly used satellite and coastal

radar data and aerial surveillance which serves real time information. Vessel patrols also have significance if they have radar data when patrolling, as it can be compared with satellite data to understand undetected vessels. He reminded that each data sources and collection methods have their own constraints, and there are other ways to obtain information which can be explored, which will depend on the preference, goal, and constraints of the country.

Those data can have their own visual system or tools, where Microsoft suite is useful to combine and analyze those data. Proprietary and custom tools enable a customized visualization on a built platform where preferred data can be pulled in. GIS software is useful to analyze positional data, such as analyzing fisheries activity and splitting it temporally to see the most crowded time and area, which will help manage surveillance time and frequency to be more effective. Intelligence software such as I2 suite and Palantir can also be used.

In the discussion, Mr. Gionet and the participants mainly discussed the methods and analysis. Mr. Gionet emphasized the importance of analytical skills as a foundation in MCS, although the previously mentioned tools and software can help. Learning data relevancy, finding trends and patterns from the available data, and developing a suitable thought process is vital in using intelligence for MCS. Mr. Gionet considered satellite data valuable, as they have consistent recurring data, while aerial surveillance and patrol vessels are assets as they can give direct feedback as they patrol.

Session 6: OSINT

Alexander Bruce – Senior Program Officer (OSINT and NVS) – National Fisheries Intelligence Service (PPT can be downloaded here)

Mr. Bruce elaborated the implementation of Open-Source Intelligence (OSINT) and Open-Source Information Collection (OSIC) for Canada's Fisheries and Ocean. OSIC refers to research and data collection from digital environments, while OSINT is more specific to certain data collection, and includes analysis to synthesize intelligence report. OSIC Implementation in Canada started in 2019 and is fully operational as of 2022. OSIC operation involves a governance framework comprised of four aspects: Governance, Training, Tools, and Oversight, which also implemented a tiered approach to information collection, where it differs on the risk.

OSIC application in combatting IUU Fishing involves monitoring, where active monitoring is used for high priority species and fisheries, while passive monitoring is expected to help define the problem. It is done by developing a relevant keywords list, engaging with retailers and social media platforms, and engaging in strategic assessments. OSIC Program team conducts the collection not only from the surface web, but also from the deep web and dark web. The initiatives were taken as deep and dark webs are considered relevant, especially for species with high demand and scarcity, which raise market interest in black market scheme.

A vast amount of information collected should produce valuable recommendations. OSIC Program adheres to its three best practices and strategic approaches. To identify high risk species or fisheries which are likely sold illegally, OSIC Program develops a keywords list. The program also uses several active and passive monitoring tools to search for keywords, such as search aggregator, social media monitoring, and threat detection. Aside from the technical capacity and helpful tools for OSINT/ OSIC program also leverages partners, such as academia and NGOs to highlight the illegal supply chain and hotspots. There are some case studies briefly explained by Mr. Bruce, such as Narwhal Tusk and Eels, which are offered on the surface web.

In the discussion, Mr. Bruce highlighted the usefulness of OSINT, as it is free and easily accessible. He also reminded that there are some constraints which should be remembered, such as the capacity building on the thinking process, legal and privacy limitations, language barrier, and sensitivity of the web as data source. Mr. Bruce also reiterated the importance of understanding the whole supply chain, especially for high-risk species and illegal commodities. Collaboration with international law enforcement and other countries is important but should be done within the specific engagement agreement, while collaboration with NGOs may assist in doing more things, especially those considered sensitive for government to do. Mr. Bruce also reminded internet is fluid with rapid change, thus the delay between training for the team should not be too long, and the team members should try to put their shoes as illegal sellers, to understand their thinking process.

4th Day of Fisheries Intelligence Training

Opening Session (PPT can be downloaded here)

Mr. Arif Hidayatullah, Alternate RPOA-IUU Secretariat Coordinator opened the fourth day by sharing the highlights from Day 3.

Session 7: Application of Remote Sensing (PPT can be downloaded here)

Terry Boone – NOAA FEDERAL

Mr. Boone explained remote sensing utilization for fisheries intelligence based on his experience in NOAA. NOAA used VMS and AIS forensic to assist them in doing monitoring and enforcement action, which need not only the vessel position, but also its activities. Mr. Boone showed varied cases where remote sensing helped determine the compliance of fishing vessels.

Remote sensing can be used to prove domestic law and international rules violations by a vessel. The VMS was sufficient and met US legal standards, and the vessel owner admitted the violation. Mr. Boone also provided two cases of violations by multiple foreign fishing vessels in US EEZs. AIS data aided the analysis of the fishing vessel movement, where their entry to US EEZs is not seen in VMS data. Aside from documenting a violation, Mr. Boone also explained the use of remote sensing to prove non violation. The investigation of suspected violation showed that the fishing vessel did not commit any violation. This conclusion was supported by the finding from NOAA, which compared the initial VMS data with observers and coastline data. Mr. Boone emphasized the importance of understanding the data context, recognizing and learning the inconsistency, and exploring alternatives theory with an open mind.

During the Q&A, participants discussed with Mr. Boone some constraints of the countries. Some of the constraints expressed are difficulties to get data for small vessels and financial constraints. Mr. Boone explained that risk analysis is important, such as understanding the vessels' ability and risk to go to high sea, and understanding the risk of each technical option, along with its accuracy and reliability. He also highlighted the importance of international collaboration for further investigation, data management, and regional data sharing arrangement.

Session 8: Lesson-learned on fisheries crime data processing (PPT can be downloaded here)

Ms. Fadilla Octaviani – Director of Enforcement Support and Access to Justice, IOJI

Mr. Imam Prakoso – Senior Analyst, IOJI

Representatives from Indonesia Ocean Justice Initiative (IOJI), presented the lesson learned on gathering and analyzing fisheries crime data. Ms. Octaviani explained the complexity of fisheries crime, with many big business players, political backups, and extensive supply chain, make fisheries crime more likely to be a transnational crime, which involved not only crime in fishing industry, but also human rights violation. She elaborated on the MV Nika case, which used false identities and exploited fisheries resources without any process license.

MV Nika showed a chain of criminal activities that occurred in multiple countries. This required a multinational investigation team, which involved not only countries where they conducted crime, but also countries with relevant expertise to assist the process. MV Nika was successfully captured in Indonesian seas, carried out by Multinational Investigation Support Team (MIST) and regional investigative and analytical case meeting (RIACM) with support from INTERPOL. MIST was focused on inspection, digital forensic, and evidence analysis during the joint cooperation, which support the drafting and developing of MV Nika's investigation report, shared between the countries.

Mr. Imam Prakoso explained the findings on IUU Fishing in Indonesia, and the tools used. The major threats to Indonesian fisheries include exploration and exploitation rights in Indonesia's EEZ, along with illegal fishing in the outer part of the Indonesian Sea. Gathering and analyzing information is important, which is being done using data from Sentinel-2, AIS, and VIIRS, to provide a better ability to detect IUU fishing threats. Aside from the ability to detect and international collaboration, the ability to respond is vital to combat IUU Fishing.

In the discussion, IOJI explained further regarding international collaboration and technical matters on the ability to detect. Aside from taking action on foreign fishing vessels operating in Indonesia, IOJI also took part in combatting IUU fishing done by Indonesian fishing vessels. IOJI produced a recommendation to enforce Indonesia's fisheries law, where the enforcement will be done by relevant authorities. Vast data from Indonesia and other countries will be beneficial not only for Indonesia, but also for the related country. Mr. Prakoso explained the importance of analyzing the pattern of vessel movement from satellite imagery, which will assist in determining the object, and if possible, it can be layered with AIS. Estimating vessel size from imagery was also done for fishing vessels lower than 15 GT.

Way Forward (PPT can be downloaded here)

Mr. Eko Rudianto led the session by reiterating the training as an initial step to enable future collaboration in starting a fisheries intelligence network for RPOA-IUU participating countries, with a step-by-step path to follow, both at regional and national levels. He asked participants' participation through several open-ended questions, which revolved around country's capacity and readiness to implement fisheries intelligence. Participants explained the current capacity and possible improvement of their fisheries intelligence implementation. They were positive about the Fisheries Intelligence Network (FIN), but highlighted several concerns, such as data confidentiality and practical approach to establishing it. Mr. Rudianto reminded that mutual understanding and interest in FIN are important in establishing FIN.

Closing (PPT can be downloaded here)

Mr. Adin Nurawaluddin, Director General of Surveillance for Marine and Fisheries Resources briefly explained the loss from IUU fishing, which involved not only loss from fisheries, but also violation of human rights. He emphasized the importance of not only law enforcement, but also fisheries intelligence approach for more effective and efficient operation and enforcement measures to combat IUU Fishing. He also stated the importance of international collaboration, considering IUU fishing on large scale is a transnational crime, where he briefly explained the apprehension of MV Viking and MV Nika with the support of many countries. The proposed idea of establishing a Fisheries Intelligence Network was also reviewed and expected to improve regional efforts to combat IUU Fishing. There are a few considerations he stated: fisheries intelligence should be complementary to monitoring, control, and surveillance; FIN is in accordance with RPOA-IUU's core element; and RPOA-IUU participating countries should enhance their capacity to respond to IUU fishing challenges and trends. He expressed his appreciation for the training organizer, trainers, and participants of the training.

TRAINERS

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ANNEX 1. PARTICIPANTS AND COMMITTEE LIST

Participants

Name	Country	Institution
Ms. Megan Charley	Australia	Australian Fisheries Managament Authority
Mr. Nathan Clough	Australia	Murray-Darling Basin Authority
Ms. Olivia Noonan	Australia	N/A
Mr. Sokleang Chhorn	Cambodia	Marine Fisheries Administration Inspectorate, Fisheries Administration
Mr. Donny Muhamad Faisal	Indonesia	Ministry of Marine Affairs and Fisheries
Mr. Fauzan Hidayat	Indonesia	Ministry of Marine Affairs and Fisheries
Mr. Ichsan Nur Fajar, S.Pi	Indonesia	Ministry of Marine Affairs and Fisheries
Ms. Isnanisa Woro Charity, S.Tr.Pi	Indonesia	Ministry of Marine Affairs and Fisheries
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Mr. Emil Sihono	Papua New Guinea	National Fisheries Authority
Ms. Glenda Barry	Papua New Guinea	National Fisheries Authority
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Ms. Jaruwan Songphatkaew	Thailand	Department of Fisheries
Ms. Gabriela dos Santos Gonçalves	Timor-Leste	Directorate General of Fisheries, Aquaculture and Marine Resources
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Mr. Pedro Antero Maria Rodrigues	Timor-Leste	Directorate General of Fisheries, Aquaculture and Marine Resources
Ms. Mai Huong Nguyen	Vietnam	Directorate of Fisheries
Ms. Nguyen Nhung	Vietnam	Directorate of Fisheries

Committee

Name	Country	Institution
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Mr. Arif Hidayatullah	Regional	MMAF, RPOA IUU Regional Secretariat
Ms. Erlinda Qurrotu Aina	Regional	MMAF, RPOA IUU Regional Secretariat
Ms. Dita Primaoktasa	Regional	MMAF, RPOA IUU Regional Secretariat
Mr. Prasetya Gunung	Regional	MMAF, RPOA IUU Regional Secretariat
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Mr. Handoko Adi Susanto	Regional	ATSEA-2, Regional Project Management Unit
Ms. Casandra Tania	Regional	ATSEA-2, Regional Project Management Unit
Ms. Deti Triani	Regional	ATSEA-2, Regional Project Management Unit
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Ms. Vivekananda Gitandjali	Regional	ATSEA-2, Regional Project Management Unit

ANNEX 2. QNA SESSION

Day 1 – Session 3

Q: Is this the first research to calculate loss avoided from vessel apprehension? Where does the idea come from?
A: In 2009, there is also study made by ATSEA phase 1 (by Mr. Wagey). The study is available online. Also, regarding the formula, we based on the previous study that published in a scientific journal. However, the formula that was published in 2018 is quite complicated and has many variables that needs to be fulfilled. After discussion among team and technical experts, we come up with the current formula that represents significant data, the vessels, the fish, and trip(s). With this apprehensive data we can know how many vessels that being apprehended and estimate the catch. In that way, we can have more reliable data to show.

Q: The study relies heavily on vessel apprehension data. In your opinion, what will be the best way to address the lack of data used to calculate the estimates?
A: This available data can be shared. It is the one that can improve the estimates. When we have all of this set of data, we can know that in the area, we have the amounts of fish that being caught and this can be how many we can save. How many fish can contribute to the calculation. We were able to calculate with the full series of valuable data, the policy will follow to adjust the regulation as the response.

Q: What kind of boundaries prevent data sharing among countries, and what kind of data that expected to be shared?
A: Coordination regarding data sharing is easy to say but difficult to implement. The data can help to calculate the potential lost to adjust the policy.

Q: In this formula, is there any condition like if the vessels couldn't catch as many as they should get or the vessels couldn't catch as full as they should?
A: The condition of vessels such as volume of storage or compartment was not taken into account.

Q: It would be interesting to extend the study to FV incursions estimate loss too especially of vessels that we monitor
A: The vessel that being apprehended, we call it as illegal fisher. Regarding expanding the study, it depends on how intense your country is doing the monitoring in the area. The more intense and wider the area to cover will give more comprehensive data. Also, it depends on the law enforcement policy of each country

Day 2 – Session 4 part 1

Q: Could you please give us an example of how fisheries intelligence activity can reduce the budget for surveillance operation?
A: Intelligence doesn’t necessarily reduce the budget for surveillance if we are talking about patrols here, but it makes the patrol more efficient. What we do now, we tell the fisheries officer where they should go if they want to be successful. For example, in Quebec region, we produced a document for the fishery officer, so they can have more efficient strategy with specific information against illegal activity such where the harvester unloads their fisheries product. So the government could get more violation and more money back to the government.

Q: What has changed very significantly regarding the compliance of fisheries stakeholders in Canada? Can you describe, then how to achieve that?

A: It's difficult to know now that we have really significant impact on the compliance at large in the fisheries. Because we just started. But we are more efficient in our operation. We are helping and protecting species that really required protection. The change is more cultural. We used to work a lot at sea and underwater, and there is an understanding that fisheries crime is not only at sea, in the waters. It is about distribution network. We need to look at the efforts and organized crime.

Q: How do the information and documentation flow from officers or employees to the desk of the policy makers?
A: To be honest it doesn't flow really well. We are really trying to improve. We have improved the information that we have, and we focus a lot on law enforcement in the region. We try to improve the documentation of decision to policy makers. We will try to create a specific product to be sent to policy makers on regular basis. So, they are well-informed about the update of our investigation and analysis. My chief is going to be fully involved as client relation to ensure the information are going to be passed to the policy maker. But it's still ongoing progress.

Q: Do you measure the effectiveness of NFIS operation to increase stakeholder compliance, periodically?
A: We are able to measure some aspects of compliance. For example, the export company should prove how sustainable they are. But, since my program is a bit new, we need to see for some more years to see its impact on stakeholder compliance.

Q: Do NFIS cooperate with the navy, police, and other relevant agencies? How does it work?
A: Cooperation is one of our deliverables. We improve our relationship with the police corps such as the Royal Canadian Mountain Police and also the provincial police department. We ask them to tell us about every fisheries crime, and then have investigation with some information from them about criminal entities who were involved in fisheries. A lot of my intelligence officers were former corps too. We also cooperate with wildlife officers that work for the provinces, because they do some capacities and deal with fisheries issues. But with the military, we don't really have much work with them, but we have agreement on satellite images. We want to try to cooperate more with international partners to exchange information and lesson learned.

Q: Does the data and information collected from the intelligence activities can be used as proof in court or does it need to be followed by further formal investigation?
A: The role of intelligence is to improve decision making process. We are consciously looking for evidence when we go to court. What we do is we provide them what is the issue and information, and they need to do the work as further major investigation and bring it to court. Sometimes our information can be used in court, but we refrain to do investigation itself to go to court.

Day 2 – Session 4 part 2

Q: You mentioned collaboration with Indonesia and other relevant state in MV Viking case, can you elaborate on key factors for the success of the collaboration?
A: I wasn't around for that time, but in general the factors for any successful collaboration are understanding of the problem, what strengths and weaknesses of organization has to bring into the table and the willingness to work together, and passion for the environment across time zones, across nonfunctioning technology sometimes, but still working together

Q: How significant using VIIRS to do a DVD? And for a vessel that doesn't use light, what kind of data that we can use beside radar remote sensing to do a DVD?
A: It would be better for me to arrange a session with the expert if you want to talk about this further. So, VIIRS is one of the sources of satellite. If you are familiar with electronic intelligence,

like anything about radio frequency, you can pinpoint using certain things. You can be successful by combining as many sources as possible. We also still use AIS, etc.

Q: From an intelligence perspective, what parameters can be used to build a FIN? Exp: data exchange, how the collaboration will work and how to get international engagement?
A: The first thing is to show up and gather information as much as possible. And regarding the data exchange, you will be there. Data open for service available. We also have an agreement with maritime security to track the vessels that are moving in a certain area, vessels that are under suspicion for dealing drugs and anything else.

Q: Based on your experience, what is the main challenge when nurturing international cooperation? (Extended from moderator: beside money)
A: In an organization, you have people that are coming in and out for a position, some people with a huge knowledge is retire or move on somewhere else, and then you have somebody brand new that comes into, and then you have to re-teach them, the basics, the understanding, especially if they don't have any fisheries background experiences. The challenge in Canada, if information is collected by the military and they consider it secret, we can't share it, use it, or share it with NGO. So, it is more of a challenge with certain partners. Only the issues that are brought to court can be disclosed.

Q: To what extent the NFIS is cooperating with the NGOs?
A: With NGOs, not only using their information because we have folder of lots of NGO products, we actually give money to NGOs to work in specific areas, and then we did our own work and we connect those two afterwards. They work differently and have different connections. So, we can have a better understanding of what is actually going on. Also, NGO works across the border, and it improves us an organization. We are looking forward to it as well as with academia.

Q: What does the future hold for automated DVD based on phytoplankton movement?
A: (speaker is not familiar with that area and will try to find an expert to answer that).

Day 3 – Session 5

Q: For countries with limited resources, what kind of surveillance methods are considered to be a must have?
A: The most basic and easiest is the AIS. It is only in the larger fleet but it is easily accessible. There is a site like Global Fishing Watch or vessel traffic.com where you can access AIS data. They provide extra analytics also. Other than AIS, you can use more expensive means like RADAR to get consistency and airplane for the monitoring.

Q: With that many capabilities, how to ensure all data/information received is addressed efficiently?
A: Efficiently in order to get all of the data, brought in and organized, collided properly, and visualized, you need people to only manage the database. But, from personal perspective, bringing it back to analyst, knowing which data which relevant to the current case and what message that is trying to portray, pulling out the data from different systems, organizing it in simply in excel, and visualizing the data using simple tools like google earth are important.

Q: How many days or hours for the staff or analyst to process the data information until is ready to be followed up?
A: During the exercise with staff, it takes less than 20 minutes. There 5 different datasets in it, using 5 or 6 software to export. It is intimidating at the start and took weeks sometimes to develop the process. Repetition makes perfect.

Q: Is there any formula to determine the number of patrol vessels & stations needed to effectively monitor the vast area of Canada's water territory and EEZ?
A: I don't know the formula. I know that people doing the enforcement will always need more and having more people on the water will definitely be easier. The best way I think is to approach different systems in monitoring like AIS, VMS and Radar.

Q: What is the most valuable capability (or combination of capabilities) you use?
A: From an analysis perspective, obviously AIS and VMS. I can get a recurring position hourly at at certain time. Data is more consistent. But from enforcement perspective is aerial assets. Especially for ground-truthing to complete the information from the data that you get from AIS or VMS.

Q: To determine the fishing activities, do you have specific algorithms or formulas to detect which position of the boat that fishing?
A: The only thing that I have been able to find is certain patterns of what type of fishery they are doing such as trawling, longlining, the pattern will be very specific to each other. Every fishing type has a specific pattern. I also use vessel's speed to analyze specific fishing activity.

Q: Any recommendation from your side on which is the most valuable capability (or combination of capabilities), especially for developing countries?
A: Not so much from capability perspective but those are really expensive and fast. The best thing is you can make it with the best data that you have. The biggest win here is Google Earth, or looking into ArcGIS using open-access resources, the biggest value to improve analytical skills and developing this process is that you build yourself or learn from others, and produce it from management or decision-making perspective.

Q: How long did it takes for MSOC for example, to analyze and process all the data and information? How long this system to be established?
A: The process takes a whole year and then we review it every few years, update of data and tools always evolving. So, we can get a new AIS contract that keep changing every few years. Depends on the challenge you want to tackle to establish each case.

Q: Timor-Leste doesn't have specific tools for surveillance, only use the Community-based IUU Reporting system, so what is your opinion on this?
A: So, using those data you can have a pattern from such a specific time. Any data you can analyze. If it contains position data, you can drop it in google earth to know the location. Picture from the phone could have geolocation. You can analyze the trend based on time and location, the visual of the vessel.

Q: In using this capability, how do we determine within a given data set of information to identify fisheries trans-national crimes?
A: It's only on positional data without knowing whether it is a trans-national crime until you really get there to see what kind of activity that they are doing. Vessel speed and direction are also important. Looking at the anomalies, determine the transferring activity. Different crime, different method of analysis.

Day 3 – Session 6

Q: What kind of infrastructure do you need to run OSINT?

A: Using computer, you can run any information that you get, derive OSINt by adding value, in creating intelligent product. If you using government computer, please make sure the sensitivity, and establish an organized group. But anyone can do it with any computer and mobile internet.

Q: Is it a common thing to see such an illegal activity to be found on surface web?
A: Facebook is the example. You can use whatever keywords.

Q: Since when has OSIC been established as part of C&P?
A: Officially 2009. But for how long we have been actually collecting information online, maybe in 2000.

Q: How big is OSIC team?
A: 3 people. We have about 50 people that really collecting information and still growing.

Q: Have you had any experience in OSINT/OSIC collaboration with international law enforcement such as interpol, or with partner countries as the receiving market?
A: Since last year in the strategic report, we did actual work in number of countries and more apparently with trans-national organization and with INTERPOL, and with NGOs too.

Q: How long does it takes for intelligence officer to complete all those trainings?
A: Realistically 1 year, but we are always trying to upgrade the capabilities because internet is always growing.

Q: Are most cases of Illegal Fishing Activities related to exploitation of protected species? How often you identified the high-risk species sold using the keywords (Facebook).
A: We are doing a scoping exercise now, maybe it's like 200 cases, more or less. You can collaborate traditional intelligence using human and internet.

Q: Both fish swim bladder and eel fisheries are on the increase in SEA. What potential IUU issues should we consider for both fisheries.
A: Understanding the illegal supply chain is the biggest thing. A lot of countries are playing a role. Where do they come from and where are they going.

Q: With OSIC, is there any traceability of elicit fishery products smuggled out of Canada considering IUU?
A: That is exactly what we are looking for. The high-risk species and few others, talking about traceability-wise, I think Canada is one of the tops in the west. We can see the end of supply chain. OSIC still play an important role as a compliment in looking at an end goal or end result, but not really in other areas.

Q: Keyword translation sometimes is an issue when searching for info on the Internet. Any great OSINT tools to overcome this challenge?
A: There is some native language processor, you can find a number kind of tools. Example of that sentence and try to find whether the sentence makes sense to me.

DAY 4 – Session 7
Q: In term to decide if the boat was fishing or not from VMS, do you use solely based on VMS or there's a further step like confirmation from the boat's captain?
A: My office that I work is built between 2 sections, enforcement side and support and investigation side. When I detect something in VMS, we always refer to enforcement side who then interview the captain or observer. Most of the time in my experience when I interview the captain,

they are totally understandable, or they didn't know anything about the rule or regulation. Compilation of VMS or AIS data to try to persuade the vessel owner instead of operator to subtle the case before going to the court.

Q: When it's shown that there's illegal vessel within US EEZ, what is the usual follow-up?
A: For us is important to reach out to the flag-state foreign vessel that fishing in our EEZ and we use that list of our network (RFMO) to reach out to the flag-state.

Q: Since the remote sensing data doesn't contain any information about the identity of the boat, what steps did you take to get more information about the boat?
A: Focus on the definition of remote sensing data, some experts will not see VMS as remote sensing data because they view it as passive data. But I use the definition that I'm reffering VMS and AIS as non-passive data that have been transmitted.

Q: Have you ever had cases of vessels spoofing or falsifying their location data? If yes, what happened if it was proven to be the case?
A: I consider it a kind of urban legend. Commonly help misperception that VMS data may be spoofed or falsified. It's not impossible, but It's really difficult. Honestly, I've been doing this for a very long time. And I have never seen one. There is an interesting implication with AIS, AIS is not only easily spoofed, but it also easily malfunctions. The data standard for AIS is much less tightly overseen. My opinion is that more likely or not some of the issues were either human error or mechanical malfunction. So, check first if it does really look unusual in AIS.

Q: Who will have access to VMS data? and in regards to data sharing for regional or regional intelligence purposes, what kind of data should (or not) be shared?
A: There is sensitivity like fishing sensitivity. The evolution that I have seen, the very successful model (it does have limitation), but most reasonable compromises on data was WCPFC data sharing. Managing data appropriately is super important.

Q: How high is the confidence level of using AIS data especially when facing a suspicious boat? We found some cases like a duplicated MMSI, the location spoofing, etc.
A: I would say AIS data is a valid source. We always start our sceptical. If we get VMS data that is associated with AIS data somewhere, we can collaborate those two.

DAY 4 – Session 8
Q: How to determine what can and can't be shared for data intelligence when incorporate with many institutions from different countries?
A: Based on my experience in the task force, we believe that any intelligence information could only be shared between countries, government to government, with remarks that any shared data as much confidential before having approval from the government. We can share with country that will support or provide assistance, for example for MV Nika case, we shared to Australia and the USA so they can provide assistance for the investigation.

Q: The accuracy of the data is critical especially when collaborating with other countries. Did you guys analyze the level of accuracy of each information that was shared?
A: Yes, in my experience, if there is any information from INTERPOL, we have to check and verify it. For example, for MV Nika, we check the AIS by ourselves. If not, it will affect the afterward process of the investigation

Q: Is there any possibility for Indonesia to share information of its fishing vessels to its neighboring countries to monitor and control IUU activities?

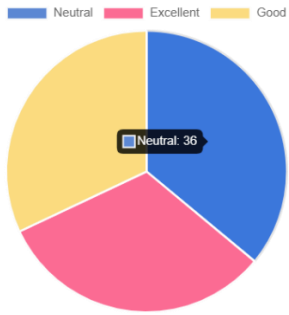
A: I believe if there is commitment to combat illegal fishing, I think each country can collaborate to exchange some information.

Q: Did sentinel data can determine the fishing gear too? How to detect the flag and fishing gear if the vessel doesn't have AIS?
A: No, but we can learn from its pattern and overlay it with AIS. And we can detect the size of vessels from US satellite images, we depend on the resolution (pixel) to predict the size.

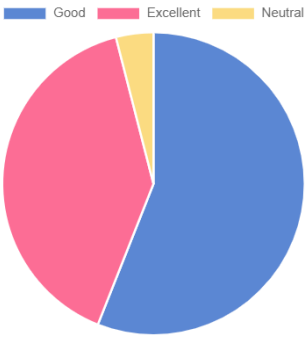
Q: There's any tools or platform to share intelligence data specially for fisheries sector. For example, Interpol has i24/7 platform
A: I'm not sure about the fisheries sector. But based on the experience, the exchange of intelligence information really depends on commitment and willingness of the countries to data sharing.

ANNEX 3. TRAINING FEEDBACK AND PRE-POST TEST RESULT

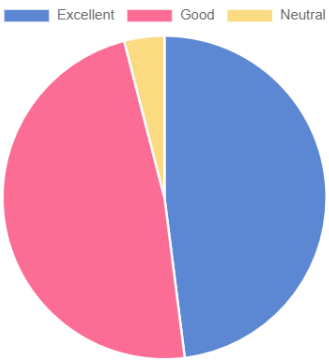
Pre-Training (i.e Invitation, Confirmation, Email Reminder, etc.)



The variety of topics presented at the training

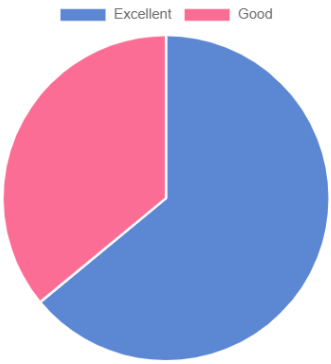


Training Organizer

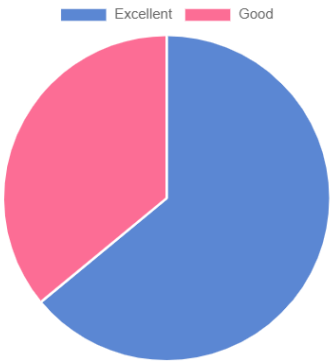


Moderator

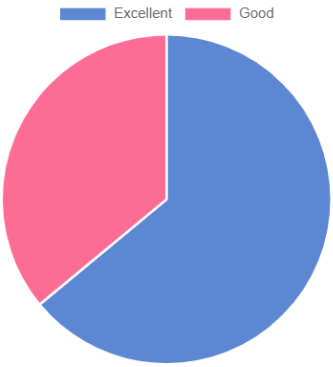
Day 1



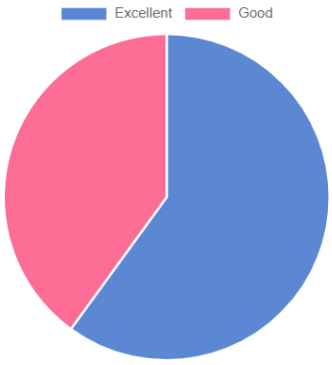
Day 2



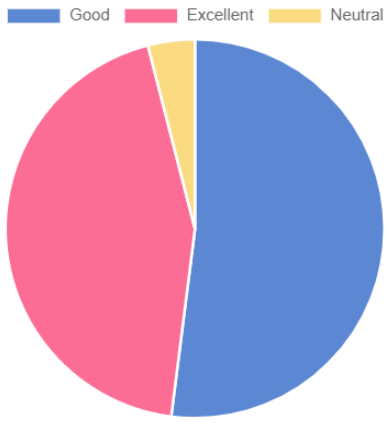
Day 3



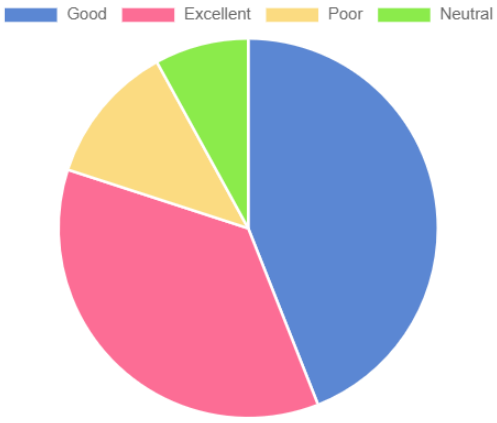
Day 4



Duration of content/presentation



Duration of QnA session



Which topic should be covered in the next training?

Value	Frequency	Percentage
Capabilities - Tools - Software in Fisheries Intelligence	20	80
Remote Sensing Fisheries Intelligence	15	60
Open-Source Information Collection	14	56
Others	2	8

Training Satisfaction (1 to 10, with 10 is the most satisfied)

Mean	Median	Mode
8.48	9.00	9.00

To summarise, based on pre-and post-tests, more than fifty per cent of training participants had improved knowledge of fisheries intelligence. Based on the feedback form, the majority of the participants provided positive responses to the training. All participants scored the training highly (i.e. scores range from 7 to 10 with 10 being the highest score. Ninety-two per cent of the participants wrote that the training met their expectations. Most wrote they attended the training because they wanted to learn more about fisheries intelligence and exchange knowledge on the practice of fisheries intelligence among RPOA-IUU participating countries. Many highlighted the importance of data sharing and corroborating data from different sources.

ANNEX 4. DOCUMENTATIONS

Day 1

Day 2

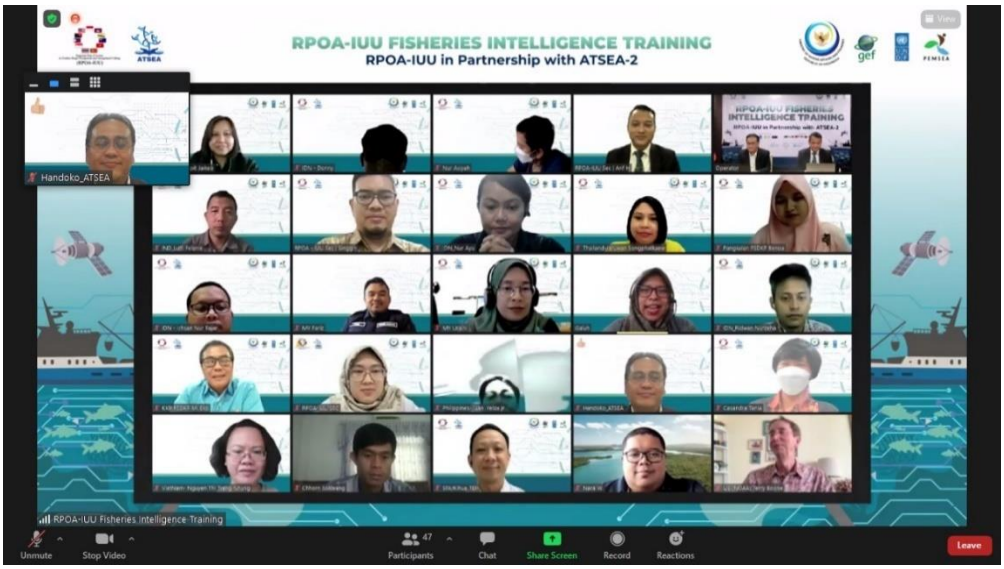

EXIT
RPOA-IUU FISHERIES
INTELLIGENCE TRAINING
RPOA-IUU in Partnership with ATSEA-2


ATSEA-2

Day 3


EXIT
RPOA-IUU FISHERIES
INTELLIGENCE TRAINING
RPOA-IUU in Partnership with ATSEA-2

Day 4



More photos can be accessed at:
https://www.dropbox.com/work/CKM/Image%20Bank/RPOA%20Intelligence%20Training.

ATSEA-2

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