Report of the Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific

17–19 March 2026
Bangkok, Thailand

Training Department
Southeast Asian Fisheries Development Center

TD/RP/276
April 2026

REPORT OF

WORKSHOP ON STRENGTHENING REGIONAL FISHERIES GOVERNANCE AND TECHNOLOGY INTEGRATION TO COMBAT IUU FISHING IN THE INDO-PACIFIC

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TRAINING DEPARTMENT

SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

TD/RP/276 **April 2026**

PREPARATION AND DISTRIBUTION OF THIS DOCUMENT

This document was prepared by Training Department (TD) for the participants of the Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, held from 17 to 19 March 2026 in Bangkok, Thailand. The Workshop was organized with the generous support of the Government of Canada and brought together fisheries officials from ASEAN Member States (AMSs) and technical experts. It aimed to strengthen the foundation for regional cooperation on Monitoring, Control, and Surveillance (MCS) in combating illegal, unreported, and unregulated (IUU) fishing. The Workshop also provided a platform to share information on regional implementation, as well as to demonstrate MCS technologies and innovations for combating IUU fishing. In addition, it sought to promote strengthened technical and institutional cooperation among participating countries and relevant stakeholders in the region. This document is intended for reference and further use by the Workshop participants and relevant stakeholders.

SUGGESTED CITATION

Training Department, Southeast Asian Development Center. (2026*). Report of Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific*. 101 pp.

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Thailand

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REPORT

Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific

17–19 March 2026 in Bangkok, Thailand

I. Introduction

Illegal, Unreported, and Unregulated (IUU) fishing poses a significant threat to fisheries sustainability, weakens governance, and undermines food security in Southeast Asia. Addressing IUU fishing requires strengthened regional cooperation and the adoption of advanced Monitoring, Control, and Surveillance (MCS) technologies.

In alignment with Canada's Indo-Pacific Strategy, this Workshop aims to promote regional dialogue, capacity development, and enhanced collaboration to address these challenges. Hosted by the Southeast Asian Fisheries Development Center, Training Department (SEAFDEC/TD) with financial support from the Government of Canada, the event brought together fisheries officials from ASEAN Member States (AMSs) and technical experts to strengthen the foundation for regional cooperation on MCS in combating IUU fishing.

The SEAFDEC Training Department (TD) organized the "Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific" from 17 to 19 March in Bangkok, Thailand. The Workshop aimed to share information on regional implementation and to demonstrate MCS technologies and innovations for combating IUU fishing. It also sought to initiate strengthened technical and institutional cooperation in this area.

The Workshop was attended by a total of 71 participants, including 64 in person and 7 via online platforms. The delegation included officials responsible for implementing Monitoring, Control, and Surveillance (MCS) measures from Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam. Distinguished representatives from several international and technical organizations also participated, including governmental and intergovernmental organizations such as Fisheries and Oceans Canada (DFO), NOAA, FAO, and the SEAFDEC Secretariat and Training Department, as well as technical and strategic partners such as Canada's Archipelago Marine Research, Global Fishing Watch, the IMCS Network, TMT, C4ADS, Skylight, MDA Space, OceanMind, RPOA-IUU, and Unseenlabs. The list of participants is provided in **Annex 1**.

II. Opening Session of the Workshop

The Opening Session of the Workshop commenced with a statement by *Ms. Ping Kitnikone*, Ambassador of the Embassy of Canada for Thailand, as a representative of the Government of Canada, who highlighted the importance of regional cooperation and continued support under Canada's Indo-Pacific Strategy to address IUU fishing in the region.

This was followed by the opening remarks delivered by *Ms. Sampan Panjarat*, SEAFDEC Secretary-General and Chief of the Training Department, who welcomed the participants and emphasized the significance of strengthening regional fisheries' governance and collaboration among ASEAN Member States. She also delivered a presentation on "Strengthening Regional Fisheries Governance: Measures to Prevent IUU Fishing in Southeast Asia," which outlined key regional initiatives and efforts undertaken by SEAFDEC to combat IUU fishing. Her opening remarks and presentation are provided in **Annexes 2 and 23**.

Subsequently, *Ms. Yanida Suthipol*, Head of the IUU Fishing Countermeasure Section, introduced the objectives of the Workshop and provided an overview of its expected outcomes.

III. Country Presentation on Combating IUU Fishing Efforts

This session provided a platform for AMSs to present and share information on their efforts to combat IUU fishing, including key actions undertaken, technologies applied, and challenges encountered in implementation. Each country delivered a presentation on the implementation of measures and the use of the MCS systems to support efforts in combating IUU fishing in Southeast Asia.

Cambodia (Virtual)

The presentation was delivered by *Ms. Sen Rineth*, Vice Chief of Legislation Office from the Fisheries Administration in Cambodia, virtually. She provided an overview of Cambodia's efforts in combating IUU fishing, highlighting the importance of marine fisheries for food security and livelihoods, particularly for small-scale coastal communities. She also noted the Government's commitment to sustainable fisheries management through strengthened governance and policy frameworks, including the Fisheries Law (2025), Community Fisheries (CFi), and participation in international instruments such as the United Nations Convention on the Law of the Sea (UNCLOS), the United Nations Fish Stocks Agreement (UNFSA), and the Port State Measures Agreement (PSMA).

She further described the implementation of MCS measures, including joint patrols, port inspections, and compliance activities, as well as the establishment of Marine Fisheries Management Areas (MFMAs). She also highlighted the use of technologies such as the Vessel Monitoring System (VMS) and digital data systems to support enforcement. She noted key challenges, including limited financial and technical resources, data management constraints, and coordination among agencies, while emphasizing future priorities on strengthening monitoring systems, enhancing capacity building, and promoting regional cooperation. The presentation is provided in **Annex 3**.

Indonesia

The presentation was delivered by *Mr. Sirman Rajagukguk*, a Fisheries Surveillance Officer from the Directorate General (DG) of Surveillance of Marine and Fisheries Resources in the Ministry of Marine Affairs and Fisheries in Indonesia, who presented Indonesia's countermeasures in addressing IUU fishing. He described the various forms of IUU fishing activities occurring in Indonesian waters, including illegal fishing by both foreign and domestic vessels, unauthorized transshipment, and the use of prohibited fishing methods. He also outlined the country's legal and regulatory framework, including relevant fisheries laws and ministerial regulations governing fisheries management and compliance.

He further explained the implementation of MCS measures, covering monitoring through observer programs and electronic logbooks, control through licensing and regulatory systems, and surveillance through inspections, VMS, air surveillance, and fisheries patrols. He highlighted the strengthening of enforcement mechanisms and the integration of technologies to support fisheries management. He also noted ongoing efforts to enhance patrol capacity and strengthen regional cooperation in combating IUU fishing. The presentation is provided in **Annex 4**.

Lao PDR

The presentation was delivered by *Ms. Anousone Mingmeuangthong*, Fisheries Officer from the Division of Fisheries in the Department of Livestock and Fisheries in Lao PDR, who shared Lao PDR's approach to addressing IUU fishing. She highlighted the significant role of inland fisheries in supporting food security and livelihoods, particularly in rural areas, and emphasized ongoing efforts to strengthen fisheries governance through national policies and regulatory frameworks.

She also outlined key measures undertaken to manage fisheries, including licensing systems, inspection processes, and community-based management practices. Efforts to improve fisheries data collection and monitoring were also presented as important components in supporting effective management. She pointed out several constraints, particularly limited technical capacity, financial resources, and

institutional coordination, while noting the need for continued capacity development and cooperation. The presentation is provided in **Annex 5**.

Malaysia

The presentation was delivered by *Ms. Lim Ai Gaik*, Head of International Section in Policy and Strategic Planning Division from the Department of Fisheries in Malaysia, who presented Malaysia's current initiatives in addressing IUU fishing. She emphasized the country's strategic direction under the National Plan of Action to Combat IUU Fishing (NPOA-IUU) 2.0 (2025–2030), which outlines key principles such as transparency, integrated approaches, and strengthened regional and international cooperation. She also highlighted Malaysia's commitment to aligning national measures with international instruments and strengthening governance frameworks.

She then elaborated on key actions and systems implemented to combat IUU fishing, including stricter licensing requirements, control of transshipment activities, and enhanced MCS operations. The use of technologies such as the Electronic Port State Measures System (E-PSM), VMS, electronic licensing (E-Lesen), and electronic logbook (E-Logbook) was also highlighted to support enforcement and monitoring. She noted several challenges, particularly limited enforcement capacity, technological and skills gaps, and coordination among agencies, while underlining ongoing efforts to strengthen capacity and integrate advanced systems. The presentation is provided in **Annex 6**.

Myanmar

The presentation was delivered by *Mr. Hlwan Moe Zaw*, Director, the Department of Fisheries under the Ministry of Agriculture, Livestock and Irrigation in Myanmar. He introduced Myanmar's regulatory framework for combating IUU fishing, highlighting key laws and directives, including the Myanmar Marine Fisheries Law and regulations on VMS installation and enforcement. He also outlined national measures to control fishing activities, particularly restrictions on unauthorized fishing in Myanmar's Exclusive Economic Zone (EEZ) and actions against illegal fishing vessels.

He then described the implementation of MCS mechanisms, including coordination among the Department of Fisheries, Navy, and regional authorities, as well as the use of VMS to monitor offshore fishing vessels. The presentation also highlighted port inspection systems, vessel identification measures, and enforcement actions in accordance with national laws. He noted ongoing efforts to strengthen regional cooperation, including information sharing through ASEAN mechanisms, while continuing to improve compliance and monitoring systems. The presentation is provided in **Annex 7**.

The Philippines

The presentation was delivered by *Mr. Clint Salvacion Dampor*, Fishing Regulations Officer from the Bureau of Fisheries and Aquatic Resources (BFAR) from the Philippines, who presented the Philippines' efforts in addressing IUU fishing. He highlighted the country's legal and institutional framework, including key fisheries policies and regulations that support sustainable fisheries management and compliance. He also underscored the importance of strengthening governance and enforcement to address various forms of IUU fishing in Philippine waters.

He went on to present the implementation of MCS systems, including vessel registration, licensing, port inspection, and enforcement operations. The use of technologies such as VMS and electronic reporting systems was also noted as part of ongoing efforts to enhance monitoring and compliance. He also pointed to continuing challenges related to enforcement capacity and coordination, while emphasizing the importance of capacity development and regional cooperation. The presentation is provided in **Annex 8**.

Thailand

The presentation was delivered by *Ms. Jitpisut Sanboonpeng*, Fishery Biologist (Professional Level) from the Department of Fisheries, Thailand. She provided an overview of Thailand's approach to combating IUU fishing, with particular emphasis on strengthening regulatory control and improving fisheries monitoring systems. She highlighted the integration of information systems to support fisheries management, including automated verification of vessel registration, licensing, crew certification, and compliance records as part of a comprehensive control framework.

She also presented key MCS measures, including port inspection systems covering vessels, crew, fishing gear, and catch verification, as well as the use of the VMS for tracking fishing activities. Risk-based inspection mechanisms and indicators were introduced to enhance enforcement efficiency, supported by data analysis and coordination among relevant agencies. She further noted ongoing efforts to improve monitoring accuracy and adopt advanced technologies, including artificial intelligence, to strengthen compliance and decision-making processes. The presentation is provided in **Annex 9**.

Viet Nam

The presentation was delivered by *Mr. Vu Van Tam*, who shared Viet Nam's ongoing efforts in combating IUU fishing. He highlighted the country's strong commitment to addressing IUU fishing through the implementation of national action plans and alignment with international requirements, particularly in response to market-related measures and compliance obligations. He also emphasized the importance of strengthening the legal framework and enhancing coordination among relevant authorities.

He outlined key MCS measures, including vessel registration and licensing, port inspection and catch certification systems, and the use of the VMS to oversee fishing activities. Efforts to improve enforcement, ensure traceability of fishery products, and address non-compliance were also presented as priority actions. He noted ongoing challenges in implementation and stressed the need for continued capacity development and inter-agency coordination. The presentation is provided in **Annex 10**.

IV. Regional Cooperation for Combating IUU Fishing

This session explored the benefits, models, and mechanisms for strengthening regional cooperation in combating IUU fishing, bringing together perspectives from global, regional, and national actors, while highlighting the importance of coordinated efforts, shared responsibilities, and the exchange of experiences and best practices, including a summary of best practices in combating IUU fishing and the identification of priority areas and gaps to enhance regional coordination in support of implementation in the region.

Indo-Pacific Partner Supporting Regional Cooperation

The presentation was delivered by *Mr. Dustin De Gagne*, Senior Program Officer of the International Fisheries Enforcement Program under Conservation and Protection, Fisheries and Oceans Canada. He introduced Canada's fisheries enforcement framework, highlighting its structured approach to compliance based on outreach and public engagement, core MCS activities, and specialized enforcement operations supported by intelligence-led decision-making. He emphasized the importance of integrating enforcement with stakeholder awareness to promote voluntary compliance alongside regulatory control.

He also presented Canada's efforts in strengthening both domestic MCS and international cooperation, including offshore patrol operations and the use of coordinated enforcement units to support monitoring activities. In addition, he highlighted Canada's strategic partnerships with international organizations and Non-Governmental Organizations (NGOs) to enhance transparency, intelligence

sharing, and regional MCS capacity, particularly in support of Indo-Pacific partners. The presentation is provided in **Annex 11**.

Global Perspective on Fisheries Governance Frameworks

The presentation was delivered by *Ms. Angela Lentisco*, Fishery and Aquaculture Officer from the FAO Regional Office for Asia and the Pacific (FAO/RAP), who presented a global perspective on fisheries governance frameworks in addressing IUU fishing. She highlighted the importance of strong governance systems, including legal, institutional, and policy frameworks, to ensure sustainable fisheries management and effective compliance. She also emphasized the role of international instruments and guidelines in supporting countries to strengthen their fisheries governance and align with global standards.

She further presented the need for enhanced regional cooperation and coordinated actions among countries, particularly in areas such as information sharing, capacity development, and the implementation of MCS measures. She underscored the importance of integrating governance, enforcement, and technology to improve fisheries management outcomes, while also addressing existing gaps and challenges in implementation. The presentation is provided in **Annex 12**.

Insights from International MCS Cooperation Initiatives (Virtual)

Insights from international MCS cooperation initiatives were shared by *Mr. Youky Susaia*, a representative from the International MCS Network (IMCS Network), a global network that supports fisheries enforcement agencies through information sharing, capacity building, and operational collaboration. He highlighted the role of such networks in strengthening international coordination and enhancing the effectiveness of MCS efforts in combating IUU fishing across regions.

Sub-Regional Cooperation Model and Progress (Virtual)

The presentation was delivered by *Mr. Yudhistira Rizky Abdillah*, Vice Executive Director of the RPOA-IUU Secretariat, who introduced the role of the Regional Plan of Action to Promote Responsible Fishing Practices, including Combating IUU Fishing (RPOA-IUU) in strengthening regional cooperation. He highlighted the platform's function in facilitating coordination among participating countries, promoting responsible fishing practices, and supporting collective actions to address IUU fishing in the region.

He also outlined key initiatives under RPOA-IUU, including information sharing, joint activities, and capacity-building efforts to enhance MCS and enforcement cooperation among member countries. He emphasized the importance of sustained collaboration and regional commitment to effectively address transboundary IUU fishing issues and strengthen overall fisheries governance. The presentation is provided in **Annex 13**.

Regional Technical Organization Facilitating Capacity Building and Collaboration

The presentation was delivered by *Mr. Natthawat Chutiponglapat*, IUU Fishing Countermeasure Officer from the SEAFDEC/TD, who highlighted the role of SEAFDEC/TD as a regional technical organization in facilitating capacity building and collaboration to combat IUU fishing. He outlined SEAFDEC's mandate in supporting Member Countries through technical assistance, training programs, and the development of regional guidelines to strengthen fisheries management and MCS implementation.

He also presented key initiatives undertaken by SEAFDEC/TD, including capacity-building activities, regional knowledge sharing, and the promotion of collaborative mechanisms among AMSs. He emphasized the importance of strengthening technical cooperation, enhancing human resource development, and fostering regional partnerships to effectively address IUU fishing in the region.

Following the presentation, which several key issues were raised by AMSs regarding IUU-related initiatives, including methodologies for estimating IUU fishing losses. SEAFDEC/TD noted that a capacity-building workshop will be organized to develop context-specific approaches in collaboration with Member Countries and the FAO, recognizing that no single methodology is universally applicable. The session also addressed the differences between the FAO Global Record and the Regional Fishing Vessels Record (RFVR), highlighting their distinct scopes and data coverage, as well as the role of Member Countries in updating the information based on their capacities. The importance of strengthening and effectively utilizing existing communication platforms, such as the ASEAN Network for Combating IUU Fishing (AN-IUU), was also emphasized, rather than establishing new systems. Updates on upcoming capacity-building activities were provided, with tentative funding support for 2026, and the session concluded with an emphasis on the need for continuous training to address evolving regulations, high personnel turnover, and emerging MCS technologies. The presentation is provided in **Annex 14**.

Regional Cooperation to Combat IUU Fishing

The presentation was delivered by *Ms. Jitpisut Sanboonpeng* from Thailand, representing the ASEAN Network for Combating IUU Fishing (AN-IUU). She introduced AN-IUU as a regional platform established to enhance cooperation among ASEAN Member States through effective information sharing and operational coordination in combating IUU fishing.

She highlighted the AN-IUU interactive platform, which facilitates the exchange of MCS-related information, including IUU vessel lists, watch lists, and incident reporting among focal points in the region. The platform also supports capacity building and promotes the sharing of best practices to strengthen regional efforts in addressing IUU fishing.

Following the presentation, a question-and-answer session was conducted, during which clarification was sought on the differences between AN-IUU and the Regional Plan of Action to Promote Responsible Fishing Practices, including Combating IUU Fishing (RPOA-IUU). It was noted that while both mechanisms aim to address IUU fishing, they differ in scope and governance, with RPOA-IUU involving both ASEAN and non-ASEAN countries, whereas AN-IUU is an ASEAN-led initiative under the ASEAN Sectoral Working Group on Fisheries (ASWGFi). The Workshop further emphasized the importance of ensuring complementarity between the two mechanisms, while noting that any formal integration would require extensive consultation and approval within ASEAN frameworks. The presentation is provided in **Annex 15**.

V. Technology Showcase and Demonstration: Satellite Vessel Monitoring, e-Logbooks, AI Analytics

In Space-based Radio-Frequency (RF) Technology for Maritime Surveillance and Dark Vessel Detection

The presentation was delivered by *Ms. Agathe Leseur* from Unseenlabs, who introduced the application of space-based radio-frequency (RF) technology for maritime surveillance, particularly in detecting "dark vessels" that disable their Automatic Identification System (AIS). She explained the limitations of conventional monitoring tools, such as AIS, coastal radar, and optical systems, which rely on cooperative signals and are constrained by geographic and environmental factors. To address these gaps, Unseenlabs has developed a satellite constellation capable of detecting and geolocating RF emissions from vessels globally, enabling monitoring across wide maritime areas under all conditions.

She elaborated on the use of RF fingerprinting, where vessels can be identified through unique radio signal patterns emitted from onboard equipment. This approach enables authorities to track vessels over time, even when AIS is switched off, and supports operational applications such as area monitoring, detection of suspicious activities, and investigation of vessels of interest. She emphasized that integrating RF-based intelligence with existing monitoring tools can enhance enforcement capabilities and support efforts to combat IUU fishing.

Following the presentation, participants raised technical inquiries on vessel identification, the reliability of RF fingerprinting, and the system's operational application. It was clarified that while RF fingerprinting can support vessel tracking independently, its effectiveness is enhanced when combined with AIS data and larger datasets over longer monitoring periods. Although the system is not fully real-time, it is already being applied operationally in some regions, with implementation depending on specific objectives, data availability, and operational context. The presentation is provided in **Annex 16**.

Canada's Archipelago Marine Research Ltd: Sustainable Fisheries Programs & Monitoring Initiatives

The presentation was delivered by *Mr. Colin Bishop* from Archipelago Marine Research Ltd, who provided an overview of Electronic Monitoring (EM) initiatives to support sustainable fisheries management. He introduced Archipelago as a global provider of marine resource management services and highlighted the FishVue ecosystem, which integrates onboard hardware such as cameras, GPS, and sensors with analytical software to collect at-sea data. He emphasized that EM helps address the "context gap" in fisheries monitoring by providing verifiable information on fishing activities, complementing satellite-based vessel tracking.

He further presented the application of EM in improving data accuracy and coverage, supported by case studies from Australia, Canada, and the United States. He also highlighted the integration of AI to enhance efficiency through automated species identification, data processing, and measurement tools, while emphasizing the importance of integrating EM with other MCS tools and strengthening local capacity for data analysis and management.

Following the presentation, participants raised technical questions regarding system capabilities and operational processes, including species classification, data transmission, and data processing. It was noted that AI models are developed using various datasets to identify key species, although environmental factors may affect accuracy. While vessel positions can be monitored in near real-time, high-resolution video data is typically reviewed post-trip due to transmission constraints. Data storage, transfer, and application vary depending on national contexts, with EM outputs often used to support fisheries management and reporting. The presentation is provided in **Annex 17**.

Electronic Monitoring/Electronic Logbooks

The presentation was delivered by *Ms. Holly McBride* from the National Oceanic and Atmospheric Administration (NOAA), who provided an overview of electronic technologies used in fisheries monitoring and management in the United States. She outlined the integration of tools such as EM, e-logbooks, VMS, electronic reporting, and observer systems to support data validation and compliance. She also highlighted that EM programs are tailored to specific objectives, with the United States currently implementing multiple programs across different fisheries.

She also discussed key considerations for EM implementation, including data management, confidentiality, and system design, as well as the increasing use of AI and machine learning to improve efficiency in video review and species identification. The importance of stakeholder engagement, clear program objectives, system standardization, and flexible approaches was emphasized to support effective and scalable implementation.

Following the presentation, participants raised questions regarding the application of AI, data integration, and operational challenges. It was noted that while AI can support event detection and reduce the burden of video analysis, manual validation remains necessary. She also highlighted challenges related to multi-vendor systems, including data compatibility and standardization, emphasizing the need for unified data platforms. It was further observed that EM can provide stronger evidence for compliance compared to VMS or AIS alone, and that higher monitoring coverage enhances effectiveness. The presentation is provided in **Annex 18**.

OceanMind

The presentation was delivered by representatives from OceanMind, led by *Mr. Pablo Trueba*, *Mr. Jay Bryan*, and *Mr. Jasper Laurente*, who introduced their implementation support and technology solutions to combat IUU fishing in Southeast Asia. OceanMind, a non-profit organization, utilizes AI and advanced data analytics to provide fisheries intelligence. Their Intelligence and Compliance (I&C) experts primarily use these tools to provide key actionable insights into maritime activities for authorities but also provide bespoke training in fisheries Monitoring, Control and Surveillance (MCS) to partners. They highlighted ongoing projects supporting the implementation of the Port State Measures Agreement (PSMA) in the Philippines and Cambodia, in collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) and the Fisheries Administration (FiA), respectively, with funding support from Canada.

They presented key technology solutions, including the Dark Vessel Detection (DVD) tool and the Port State Measures Analysis Risk Tool (PSMART). The DVD tool integrates multiple satellite data sources, such as Synthetic Aperture Radar (SAR), Electro-Optical (EO), and RF, with AIS and VMS data to detect and track vessels, including those attempting to evade monitoring. Meanwhile, PSMART supports port State authorities by analyzing advance requests to enter port (AREPs) using machine learning to assess risks and support targeted inspections. In both projects, OceanMind I&C experts are conducting capacity building with both BFAR and FiA to support PSMA implementation, technology exploitation and wider maritime domain awareness (MDA), both in country and virtually.

Following the presentation, participants raised questions regarding data sources, system capabilities, and operational applications. It was noted that PSMART utilizes multiple datasets, including AREPs, port records, and AIS data, while the DVD platform integrates broader remote sensing inputs for vessel detection. Clarifications were also provided on the differences between DVD and RF-based technologies, as well as the meaning of near real-time data. The discussion further highlighted challenges related to data integration, legal use of monitoring data, and data confidentiality, with emphasis on secure and country-specific access. The importance of regional information sharing was also underscored to address issues such as vessel identity fraud and strengthen efforts to combat IUU fishing. The presentation is provided in **Annex 19**.

Global Fishing Watch Provides Access to AIS Data, including Inferred Fishing, Fishing-related Activity, and Vessel Classification Analyses to Support Efforts to Combat IUU Fishing.

The presentation was delivered by *Ms. Dhiya Sathananthan* from Global Fishing Watch (GFW), who presented on the use of AI-driven behavioral analytics to monitor fishing activities and assess transshipment risks. She highlighted GFW's approach in promoting transparency in global fisheries through three core components including satellite vessel monitoring, electronic logbooks, and AI analytics. By AIS and VMS data, machine learning models are used to infer fishing activities, distinguish between transit and active fishing, and detect suspicious or dark vessels.

She further elaborated on transshipment risk analysis, where behavioral algorithms are applied to identify loitering events at sea, which may indicate the transfer of catch between vessels. The platform also supports monitoring of marine protected areas and strengthens enforcement through open-access data. The use of AI enables large-scale and near real-time monitoring of global fishing fleets, helping to reduce information gaps and support sustainable fisheries management.

Following the presentation, participants raised questions regarding platform accessibility, accuracy, and data sharing. It was noted that while most platform features are available through free access, there are currently no plans for a mobile application, although user feedback will be considered. Clarifications were also provided on the use of machine learning models to estimate fishing activities based on vessel behavior, acknowledging potential limitations while noting ongoing improvements. The importance of data sharing was further discussed, particularly regarding VMS data, with the view that transparency can be enhanced while managing sensitivities through measures such as delayed or lower-resolution data release. The presentation is provided in **Annex 20**.

Triton Platform for Fisheries Beneficial Ownership Mapping in Detail, and C4ADS's Role, Responsibilities, and Activities to Combat IUU fishing

The presentation was delivered by *Mr. Samuel McGovern*, who introduced the Triton platform developed by the Center for Advanced Defense Studies (C4ADS) to support the analysis of beneficial ownership in the global fishing industry. He outlined how the platform combines vessel, corporate, and individual data to enable network mapping, allowing users to uncover ownership linkages, evaluate fleet-level risks, and identify ultimate beneficial owners associated with fishing activities.

He also demonstrated the application of the platform through a case study, illustrating how the integration of vessel tracking data, corporate records, and other open-source information can reveal complex ownership structures and potential IUU fishing activities. He highlighted the role of open-source intelligence (OSINT), supported by structured search techniques, while noting key challenges such as data limitations, inconsistencies, and regulatory gaps across jurisdictions. The contribution of the Joint Analytical Cell (JAC) in providing fisheries intelligence and analytical support was also emphasized as part of broader efforts to strengthen MCS.

Following the presentation, participants sought clarification on the accessibility of the platform. It was noted that Triton is publicly available, subject to user registration and a vetting process prior to access. Participants were encouraged to explore the platform as a tool to support analysis and enforcement efforts. The presentation is provided in **Annex 21**.

A new User Interface (UI) and innovative tools for combating IUU fishing

The presentation was delivered by *Mr. Youky Susaia* from Skylight, who introduced the Skylight platform as an AI-powered maritime monitoring and analysis tool to support efforts in combating IUU fishing. He described Skylight as a non-profit, data-driven platform that applies advanced algorithms and machine learning to analyze large volumes of maritime data in near real-time. The system integrates multiple data sources, including AIS signals and satellite-based inputs such as synthetic aperture radar, optical imagery, and radio-frequency detections, to identify anomalous vessel behavior and enhance maritime domain awareness.

He further illustrated how the platform translates complex datasets into actionable insights, enabling users to focus on suspicious activities while validating findings with additional information sources. The platform supports vessel tracking, historical data access of up to eighteen months, and integration with partner systems to facilitate operational decision-making. A live demonstration was also conducted to showcase key functionalities, including filtering tools, event detection, and user interface features, while encouraging continued collaboration and feedback to enhance system performance.

Following the presentation, participants raised technical questions regarding data accessibility, system capabilities, and future developments. It was clarified that historical tracking is available but must be accessed through specific platform features, and that current limitations prevent vessel length estimation from synthetic aperture radar, although such estimation is possible using optical imagery. It was also noted that Skylight is continuously expanding its data sources, including selected commercial satellite inputs, to improve detection and support targeted monitoring.

Shares AI-supported enforcement tools and practices used by members MCS agencies worldwide

The presentation was delivered by *Mr. Youky Susaia* from the IMCS Network, who shared insights on AI-supported enforcement tools and practices applied by member agencies. He explained how the integration of machine learning with satellite data enhances the monitoring of large maritime areas, including the use of Automatic Identification System (AIS) and synthetic aperture radar (SAR) to detect dark vessels. He also highlighted the ability of AI models to analyze historical vessel behavior and identify high-risk patterns, enabling more targeted and intelligence-led enforcement actions.

He further emphasized the role of data integration and verification, including the use of global vessel records to cross-reference multi-source information and strengthen vessel identification. The presentation underscored that while advanced technologies improve detection capabilities, effective enforcement relies on strong regional cooperation and data-sharing mechanisms. He also encouraged the adoption of standardized digital reporting to enhance the usability of AI-driven insights across jurisdictions.

Following the presentation, participants sought clarification on the structure and functions of the IMCS Network. It was noted that the Network operates as a voluntary organization with membership at the agency level, requiring a formal expression of interest to join. It was also clarified that while the Network does not maintain its own IUU vessel list, it collaborates with international partners to consolidate and validate information from multiple sources, supporting more effective identification and tracking of non-compliant vessels.

Canadian Space Technology Solutions: Dark Vessel Detection and Synthetic Aperture Radar Satellite Constellations

The presentation was jointly delivered by *Mr. Michel Dion* from MDA Space Ltd. and *Mr. Dustin De Gagne*, who presented Canada's space-based technology solutions for maritime surveillance, including DVD program and Synthetic Aperture Radar (SAR) satellite constellations. They highlighted the limitations of relying solely on AIS data, noting the need to integrate multiple satellite-based sensors to strengthen maritime domain awareness. The system combines SAR data from the RADARSAT Constellation Mission (RCM), electro-optical imagery, RF signals, and Visible Infrared Imaging Radiometer Suite (VIIRS) detections into a unified analytical platform.

They further introduced advancements in satellite capabilities, including the upcoming CHORUS constellation, which is expected to enhance detection frequency and reduce processing timelines. The DVD platform was also presented as a tool supporting enforcement through data fusion, automated detection of dark vessels, geo-fencing, alert systems, and predictive tracking. The integration of wide-area SAR and high-resolution optical imagery enables more targeted monitoring and supports evidence collection for enforcement purposes.

Following the presentation, participants raised questions regarding satellite coverage, legal applicability of satellite data, and detection capabilities. It was noted that current satellite coverage in Southeast Asia is expected to improve significantly with the deployment of new constellations. Clarifications were also provided on the use of satellite data in legal contexts, as well as limitations in detecting small-scale or non-metal vessels, with alternative approaches such as optical imagery, RF signals, and nightlight data suggested to support monitoring. The presentation is provided in **Annex 22**.

VI. Discussion on Feedback on Usability, Relevance, and Adaptation Potential of Technology Showcase and Demonstration

The discussion session was facilitated by *Mr. Kongpathai Saraphaivanich*, Training and Research Supporting Division Head from SEAFDEC/TD and *Ms. Yanida Suthipol*. Following the presentations on various technology showcases, the session gathered feedback from AMSs on the usability, relevance, and adaptation potential of the demonstrated technologies. Satellite-based monitoring was widely recognized for its strong potential in covering large maritime areas, detecting dark vessels, and complementing existing national VMS. However, AMSs also identified key challenges, including high operational costs, data-sharing constraints, and the need for enhanced technical capacity and training to support effective implementation.

Discussion on Usability, Relevance, and Adaption Potential of Technology Showcase and Demonstration

I. Satellite Monitoring

The region views satellite monitoring not just as a technological luxury, but as a critical strategic necessity for maritime and inland water security. While coastal nations (Indonesia, Philippines, Thailand, Viet Nam) focus on vast ocean surveillance and "dark vessel" detection, land-linked nations like Lao PDR see emerging value for reservoir management. The transition from traditional Vessel Monitoring Systems (VMS) to advanced satellite-based "Dark Vessel Detection" (DVD) is the primary regional trend.

1. **Usefulness and relevance as a multi-tiered toolset**

The consensus is that satellite technology is highly relevant, but its application varies by geography.

- **Maritime surveillance** involves countries with extensive coastlines, such as Indonesia, Philippines, and Thailand, which prioritize satellite use for monitoring large areas in real time. It is seen as a way to fill gaps where physical patrols cannot reach.
- **Targeting dark vessels** is a key regional focus, particularly for Malaysia and Myanmar, where detecting vessels that intentionally disable AIS or VMS transponders is critical.
- **Inland and transboundary applications** are relevant for Lao PDR and Cambodia, particularly for monitoring large reservoirs and cross-border movements to ensure compliance.
- **Efficiency gains** are highlighted by long-term users such as Canada, where satellite assets are considered significantly more cost-efficient than traditional aerial or maritime patrols across vast jurisdictions.

2. **Potential for adoption with high interest but significant barriers**

There is strong interest in adopting these technologies, but implementation remains at different stages across countries.

Stage of Adoption	Countries	Key Characteristic
Established	Indonesia, Philippines, Viet Nam, Thailand	Integrated VMS/AIS; now moving toward AI-driven platforms (e.g., C4ADS).
Emerging	Myanmar, Cambodia	Transitioning from basic VMS to incorporating "Dark Vessel" detection technologies.
Niche/Future	Lao PDR	Potential is currently low but increasing for specific freshwater applications.

A key cross-cutting challenge is that nearly all countries identified cost, including subscription and maintenance expenses, as well as data-sharing policies, as major barriers to full-scale adoption.

3. **Required support through a collaboration framework**

To move forward, the region requires a harmonized support system centered on three key pillars.

- **Technical capacity building**
  - Hands-on training is emphasized by Thailand and Philippines, highlighting that software effectiveness depends on the capability of operators. There is a strong need for practical workshops on data analysis rather than purely theoretical demonstrations.
  - Linking data remains a priority, with a need to connect local VMS data with global Maritime Domain Awareness (MDA) detections to establish a single, integrated source of information.
- **Financial and infrastructure support**
  - Affordability is a key concern, particularly for smaller economies that require lower cost integration and more affordable licensing to ensure long-term sustainability.

- Infrastructure investment is needed to support hardware and server capacity required for processing high-resolution satellite imagery.

- **Regional policy and data sharing**
  - Mekong collaboration is specifically requested, including cross-border data-sharing agreements among Mekong countries.
  - Strengthening ASEAN data-sharing mechanisms is essential to effectively track transboundary IUU fishing activities.

II. Electronic Monitoring (EM) and Electronic Logbooks (E-logbooks)

The regional perspectives on Electronic Monitoring (EM) and Electronic Logbooks (E-logbooks). Across Southeast Asia, these technologies are viewed as the "digital backbone" for modernizing fisheries management and closing the data gaps that allow IUU fishing to persist.

1. Regional utility and relevance

There is unanimous regional consensus that moving from paper-based systems to digital platforms is essential for several key reasons.

- **Transparency and verification** are emphasized by Thailand, Malaysia, and Cambodia, where these tools serve as primary drivers for catch verification. They shift fisheries from a self-reporting model to a verifiable data model, reducing underreporting.
- **Operational efficiency** is highlighted by Lao PDR, particularly through the transition to real-time data. Digitalizing databases enables faster management, customized reporting formats, and quicker responses to suspicious activities.
- **Combating dark activity** is a key concern for Myanmar, where these tools support the monitoring of foreign and dark vessels to help prevent the depletion of local fish stocks.
- **Modernizing domestic operations** is a priority for Philippines and Indonesia, which view these technologies as highly relevant for scaling up domestic oversight in line with international standards.

2. Adoption potential with a two-speed implementation pattern

The potential for adoption is high, but a clear distinction exists between distant-water fisheries and small-scale or artisanal fisheries.

High potential or already active	Moderate potential with challenges
Distant-water fleets in Philippines and Thailand already use these technologies for high-seas operations	**Artisanal and small-scale fisheries** face significant challenges due to the large number of small vessels and limited digital literacy among fishers
AI Integration is a priority for Indonesia and Malaysia, with interest in advanced systems such as those developed by NOAA that incorporate AI and machine learning for video analysis	**Infrastructure Gaps** include poor internet connectivity in remote areas and limited stability of database systems
Policy Mandates are emerging, with some countries setting timelines such as 01/07/2026 for mandatory implementation	**Cost Constraints** are cited by Myanmar and Lao PDR as key barriers to scaling beyond pilot programs

3. Harmonized regional requirements for success

To move from potential to full adoption, the region identifies four critical pillars of support.

- **Technology and infrastructure**
  - AI analytics supports the transition from raw data to actionable intelligence.
  - User-friendly tools are essential, with solutions that are affordable and accessible to fishers with varying levels of education.
  - Data safety must be ensured to protect the security and confidentiality of fisheries data.
- **Capacity building and training**
  - Dual training is required for both government officers and fishers to ensure proper operation and effective use of the equipment.
  - Pilot projects are particularly important, with Myanmar highlighting the need to test usability within local contexts before full-scale implementation.
- **Policy and legal frameworks**
  - Standardization is necessary, with Thailand emphasizing the need for clear technical standards and legal frameworks to ensure that electronic data is admissible in court for enforcement.
  - Incentive mechanisms are needed to mandate or encourage adoption, including subsidies or improved market access.
- **Financial and strategic partnerships**
  - Funding is essential to support system maintenance, infrastructure, and licensing costs.
  - Regional collaboration should be strengthened through partnerships with organizations such as SEAFDEC and NOAA to facilitate knowledge sharing and technology transfer.

III. Artificial Intelligence (AI) Analytics

Regional perspectives on Artificial Intelligence (AI) analytics. Across Southeast Asia, AI is viewed as the intelligence layer that converts raw data from satellites and electronic logbooks into actionable enforcement decisions.

1. Regional utility and relevance beyond human capability

The region identifies AI as a transformative force for fisheries management, primarily because it addresses the problem of data overload.

- **Automated detection** is emphasized by Thailand, Malaysia, and Cambodia, where AI enables the detection of suspicious patterns and anomalies, such as erratic vessel movements, that are difficult for human operators to identify in real time.
- **Risk-based enforcement** is highlighted by Lao PDR and Thailand, supporting a shift from random patrols to targeted, data-driven deployment of enforcement resources.
- **Biological compliance** is identified by Lao PDR as a key use case, where AI can be applied to automatically identify fish species in landing photos to ensure compliance with size and species regulations.
- **Efficiency and accuracy** are emphasized by Philippines, where AI reduces human error and provides immediate insights, enabling authorities to distinguish between legal and illegal fishing activities more effectively.

2. Adoption potential from manual to automated systems

While interest is widespread, the region is currently at a crossroads between manual analysis and AI-driven automation.

Current state	Nations or organizations	Key adoption drivers and barriers
Active integration	Thailand, Indonesia	Already integrating AI into VMS platforms to analyze fishing behavior and monitoring results
High potential	Philippines, Malaysia	Transitioning from manual analysis and seeking to use domestic data to support AI-driven insights
Policy readiness	Myanmar	Has established policies to adopt essential IUU-related technologies despite existing infrastructure gaps
Infrastructure limitations	Cambodia, Lao PDR	Adoption potential is constrained by limited availability of large-scale datasets and technical expertise

The "Big Data" gap is significant, as while the desire for AI is high, many countries lack organized, large-scale datasets (historical fishing data) required to train effective AI models.

3. Harmonized Regional Requirements for AI Success

To move toward AI-driven fisheries management, the region requests support in four specific areas.

1. The "Learning" pillar covering data and references
    - AI training sets require access to curated datasets of known IUU behavior to support algorithm learning.
    - Data quality is emphasized by Cambodia and Thailand, noting that AI performance depends on high-quality, integrated data sources.
2. Technical capacity and infrastructure
    - Skilled personnel are identified by Myanmar and Cambodia as a critical need, including technical training in data science.
    - Digital infrastructure requires investment in hardware and cloud processing capacity to support complex AI models.
3. Strategic partnerships
    - Technology vendors are highlighted by Indonesia as important partners for customizing AI tools to the Southeast Asian context.
    - Regional data sharing is noted by Myanmar as essential for tracking migratory "dark" vessels across borders.
4. Legal and ethical frameworks
    - Acceptance of AI evidence is emphasized by the Philippines, highlighting the need for legal frameworks that allow AI-generated insights to be used in fisheries enforcement cases.

Discussion on the most interesting areas and the need for further enhancement in regional cooperation to combat IUU fishing

I. Legal & Policy Frameworks

The overarching theme across the region is the harmonization of standards. Most member states emphasize that while domestic laws may exist, the lack of consistency across borders creates loopholes that IUU operators exploit.

1. Regulatory Harmonization
    - ASEAN alignment reflects a critical need to align national regulations with ASEAN-wide standards to address transboundary fishing effectively.
    - Inland consistency is essential for landlocked or river-sharing nations such as Lao PDR, where harmonizing inland water regulations supports enforcement across shared river borders.
    - Closing loopholes is identified by Myanmar and Cambodia as a primary approach to eliminating legal gaps that allow IUU activities to persist.
2. Information Exchange & Coordination
    - Cross-border communication is highlighted by Malaysia as necessary to improve understanding of neighboring countries' legislation and strengthen coordination and information exchange.
    - Data standardization is emphasized by the Philippines as requiring a unified legal framework for fisheries data harmonization to ensure that information can be legally shared and used across the region.
3. Legal Validity of Monitoring Data
    - Evidence standards indicate a significant technical need for workshops on the legal standing of MCS (Monitoring, Control, and Surveillance) data.
    - Judicial integration requires capacity building to ensure that monitoring results, such as VMS tracks, have the legal validity needed to serve as admissible evidence in court proceedings.
4. Enforcement and Compliance Tools
    - Vessel monitoring highlights the priority of strengthening laws on vessel registration and licensing, including legal mandates for technologies such as VMS on larger vessels, for example, those over 15 meters.
    - Enforcement capacity reveals a gap between "law on paper" and "enforcement in practice," particularly noted in Myanmar, indicating the need for training on legislative implementation.

II. Monitoring, Control and Surveillance (MCS) in preventing, deterring, and eliminating IUU

The region is shifting toward a high-tech, integrated approach to fisheries management. While countries like Vietnam and Indonesia are focusing on infrastructure, others like the Philippines and Thailand are prioritizing the "soft" infrastructure of data sharing and inter-agency coordination.

1. Technological Advancement & Digital Integration
    - Next-generation monitoring reflects a strong push to move beyond basic tracking toward satellite analytics, AI, and digital integration, as highlighted by Malaysia, Cambodia, and Indonesia.
    - Mandatory tracking establishes the implementation of Vessel Monitoring Systems (VMS) for larger vessels, such as those over 15 meters, as a baseline requirement, alongside the adoption of electronic logbooks to improve catch traceability, as noted by Viet Nam.
    - Infrastructure development highlights the need for digitally integrated systems to centralize data from multiple surveillance sources, as emphasized by Indonesia.

2. Regional Coordination & Data Sharing
    - Breaking data silos addresses the challenge of MCS data confidentiality, which limits effective regional sharing, with the Philippines identifying the establishment of protocols for sharing sensitive information as a top priority.
    - FMC interconnectivity emphasizes the importance of strengthening coordination between national Fisheries Monitoring Centers to enable real-time information exchange and enforcement, as noted by Thailand.
    - A unified regional approach is stressed by Myanmar and Cambodia, indicating that a well-coordinated regional MCS system is essential to effectively deter transboundary IUU fishing.
3. Localization and Community-Based MCS
    - Inland adaptation highlights the need for countries with significant inland fisheries, such as Lao PDR, to adapt marine-focused MCS principles to community-based models.
    - Village-to-national linkages emphasize the importance of connecting village-level monitoring units directly to national databases so that local data contributes to national enforcement efforts.
4. Addressing Specific Enforcement Challenges
    - Illegal gear and MPAs require targeted surveillance to detect the use of prohibited fishing gear and unauthorized entry into Marine Protected Areas, as identified by Myanmar.
    - Technical capacity building reflects a broader regional need to strengthen expertise so that all ASEAN Member States can effectively operate advanced MCS tools, as highlighted by Malaysia.

III. The importance of traceability in combating IUU fishing, including national experiences and challenges.

The consensus among ASEAN Member States is that traceability is the primary defense against "laundering" IUU fish into the global supply chain. However, the region faces a "digital divide" between large-scale commercial operations and the massive small-scale sector.

1. Strategic Objectives
    - Market access and value are priorities for countries such as Lao PDR and Viet Nam, where traceability is directly linked to increasing export value and meeting international certification standards.
    - Policy and resource management are emphasized by Indonesia and the Philippines, which view traceability data as a vital input for analyzing fish stock status and identifying high-risk fishing zones.
    - Supply chain integrity is highlighted by Thailand and Cambodia, emphasizing that robust systems are essential to prevent IUU products from entering domestic and international supply chains.
2. Digital Transformation & Integration
    - Electronic traceability reflects a clear shift toward Electronic Catch Documentation Schemes (e-CDS), with Viet Nam leading through the development of digital platforms that link catch data directly to Vessel Monitoring Systems (VMS).
    - Interoperability highlights the need for interoperable digital tools, meaning systems that can communicate across borders to track vessels operating in multiple jurisdictions, as noted by Lao PDR and Myanmar.
3. Key Regional Challenges

- Fragmented supply chains are identified by Cambodia as a major obstacle, with limited data systems hindering end-to-end transparency.
- Informal trade remains a challenge in regions with porous borders or inland fisheries, where activities often bypass official checkpoints and weaken traceability, as noted by Lao PDR.
- Small-scale vulnerability is emphasized by Malaysia and Lao PDR, where small-scale fishers often lack the technical capacity or financial resources to adopt complex digital documentation systems.

4. Capacity Building Priorities
    - Technical training is identified by Myanmar and Malaysia as a key need, with emphasis on regional support for training and technology transfer.
    - Verification mechanisms focus on strengthening data reliability through improved validation and cross-checking of digital records.
    - Regional information exchange highlights the need to move beyond national silos and enable sharing of traceability data across ASEAN Member States to track transboundary vessel movements.

IV. Regional and international cooperation mechanisms and strengthening coordination and information exchange among AMSs

Regional needs focus on shifting from passive diplomatic agreements to active, operational collaboration, with priorities centered on real-time data flow, operational synergy, and the building of institutional trust.

1. Operational Synergy and Joint Action
    - Joint operations are specifically requested by Cambodia and Thailand, highlighting the need for shared maritime assets and coordinated enforcement at sea to address transboundary issues.
    - Collaboration with international bodies is emphasized by Myanmar, particularly engagement with specialized organizations such as SEAFDEC and other international partners to leverage enforcement expertise.
2. Real-Time Information Exchange
    - Moving beyond static reports is emphasized by Lao PDR, Cambodia, and the Philippines, highlighting the critical need for real-time information sharing. Data on vessel movements and suspected IUU activity quickly loses value if not shared promptly across borders.
    - Addressing transboundary threats is identified by the Philippines and Cambodia, noting that timely data sharing is essential for tracking IUU activities moving between national jurisdictions.
3. Institutional Strength and Trust
    - Building trust is highlighted by Malaysia as a fundamental requirement among ASEAN Member States, as information sharing is often constrained by confidentiality concerns and requires a culture of transparency.
    - Institutional capacity needs strengthening, particularly for organizations and departments responsible for regional coordination, so they can manage continuous communication effectively, as noted by Malaysia and Indonesia.
4. Knowledge Transfer
    - Sharing lessons learned is emphasized by Lao PDR, noting that cooperation extends beyond enforcement to include regional workshops and knowledge-sharing platforms where countries can adopt successful practices.

- Unified development reflects the broader goal of ensuring sustainable fisheries development across the region, rather than in isolated national efforts.

VII. Closing Session of the Workshop

The Closing Session was delivered by *Ms. Sampan Panjarat*, SEAFDEC Secretary-General, who expressed her appreciation to all distinguished guests, resource persons, and participants from Southeast Asia for their active engagement and valuable contributions throughout the Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific. She highlighted that the presentations and technology demonstrations provided practical insights to strengthen fisheries monitoring, control, and enforcement, while the exchanges among participants contributed to enhanced cooperation in the region.

She also conveyed her gratitude to the Government of Canada for its generous support, as well as to all resource persons for sharing their expertise. Acknowledging the participants' active involvement as a key factor in the success of the Workshop, she expressed hope that the knowledge gained and networks established would contribute to continued regional collaboration in combating IUU fishing. Her closing remarks is in **Annex 24.**

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OPENING REMARKS

By Ms. Sampan Panjarat
Secretary-General and Chief of the Training Department

Distinguished representative from the Canadian Government, Ms. Ping Kitnikone; Representatives of the ASEAN Member States; Esteemed resource persons from the Canadian Government, FAO/RAP, IMCS Network, RPOA-IUU, Unseenlabs, Canada's Archipelago Marine Research Ltd, NOAA, OceanMind, Global Fishing Watch, C4ADS, MDA Ltd, and Skylight; SEAFDEC staff, ladies, and gentlemen. Good morning.

It is a great honor to welcome you to the Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, being held from 17 to 19 March 2026.

Illegal, Unreported, and Unregulated (IUU) fishing continues to pose a serious threat to fisheries sustainability, weaken governance frameworks, and undermine food security in Southeast Asia, and addressing these complex challenges requires not only strong regional cooperation among countries but also the adoption and effective use of advanced Monitoring, Control, and Surveillance (MCS) technologies.

In alignment with Canada's Indo-Pacific Strategy, this workshop aims to promote regional dialogue, strengthen capacity development, and enhance collaboration among countries in the region to address these challenges, and the workshop, hosted by SEAFDEC with funding support from the Government of Canada, brings together fisheries officials from ASEAN Member States (AMSs) and technical experts in order to build a stronger foundation for regional cooperation on the implementation of MCS measures to combat IUU fishing.

Through this workshop, we aim to share updated information on regional efforts to combat IUU fishing, introduce and promote innovative MCS technologies, and strengthen institutional cooperation among countries in the region to enhance the effectiveness of implementation.

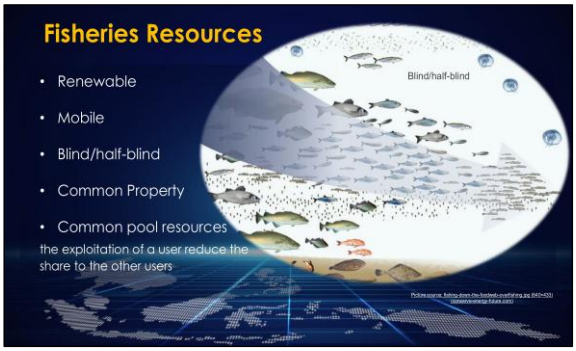
In addition, the workshop will provide opportunities to demonstrate and document various MCS technologies and innovations, including electronic reporting systems, satellite tracking tools, and AI-driven analytics, while also encouraging discussions that can help initiate and strengthen technical and institutional cooperation among ASEAN Member States and relevant partners in advancing regional efforts to combat IUU fishing.

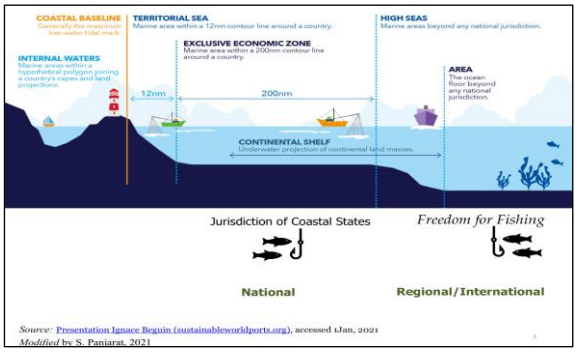
On this occasion, I would like to extend my sincere appreciation to the Canadian Government for its support of the "Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific". I also wish to thank our resource persons from the Canadian Government, FAO/RAP, IMCS Network, RPOA-IUU, Unseenlabs, Canada's Archipelago Marine Research Ltd, NOAA, OceanMind, Global Fishing Watch, C4ADS, MDA Ltd, and Skylight for their invaluable cooperation.

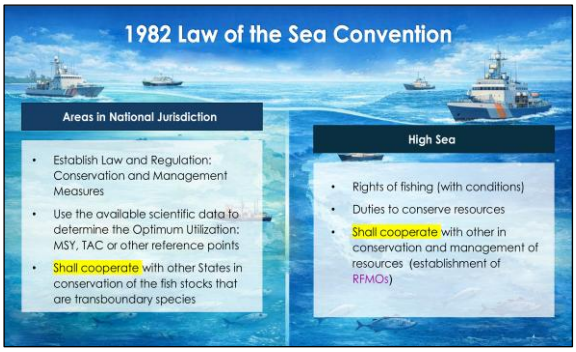
Ladies and gentlemen, I am now pleased to declare this workshop officially open. I wish you all a fruitful and productive experience.

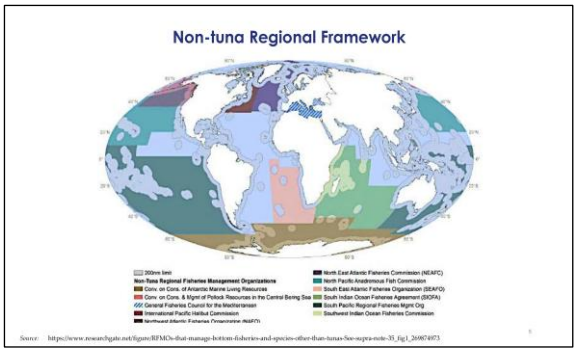
Thank you very much

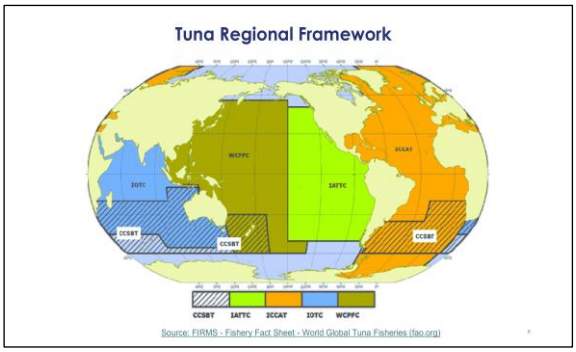

Canada
Strengthening Regional Fisheries Governance: Measures to Prevent IUU Fishing in Southeast Asia
SAMPAN PANJARAT
SEAFDEC Secretary General
Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific , 17–19 March 2026, Bangkok, Thailand


Fisheries Resources
Renewable
Mobile
Blind/half-blind
Common Property
Common pool resources
the exploitation of a user reduce the share to the other users
Blind/half-blind

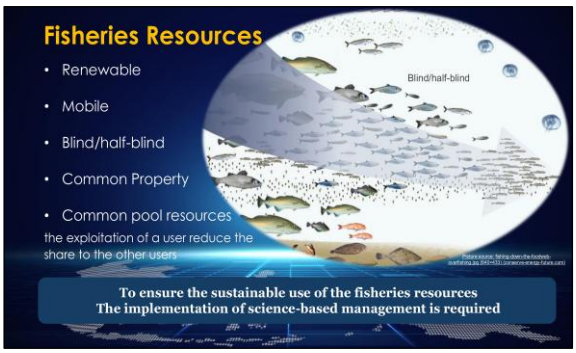

COASTAL BASELINE
Generally the maximum low-water tidal mark.
TERRITORIAL SEA
Marine area within a 12nm contour line around a country.
HIGH SEAS
Marine areas beyond any national jurisdiction.
EXCLUSIVE ECONOMIC ZONE
Marine area within a 200nm contour line around a country.
INTERNAL WATERS
Marine areas within a hypothetical polygon joining a country's capes and land projections.
AREA
The ocean floor beyond any national jurisdiction.
12nm
200nm
CONTINENTAL SHELF
Underwater projection of continental land masses.
Jurisdiction of Coastal States
Freedom for Fishing
National
Regional/International
Source: Presentation Ignace Beguin (sustainableworldports.org), accessed 1Jan, 2021
Modified by S. Panjarat, 2021

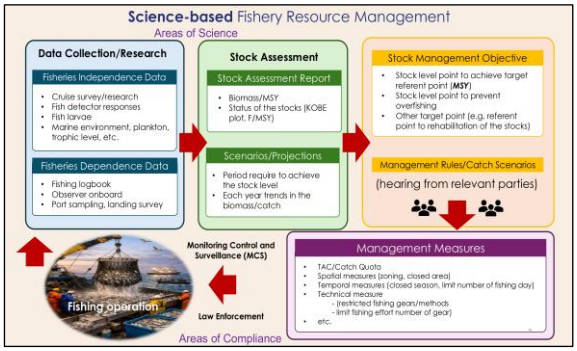

1982 Law of the Sea Convention
Areas in National Jurisdiction
Establish Law and Regulation: Conservation and Management Measures
Use the available scientific data to determine the Optimum Utilization: MSY, TAC or other reference points
Shall cooperate with other States in conservation of the fish stocks that are transboundary species
High Sea
Rights of fishing (with conditions)
Duties to conserve resources
Shall cooperate with other in conservation and management of resources (establishment of RFMOs)

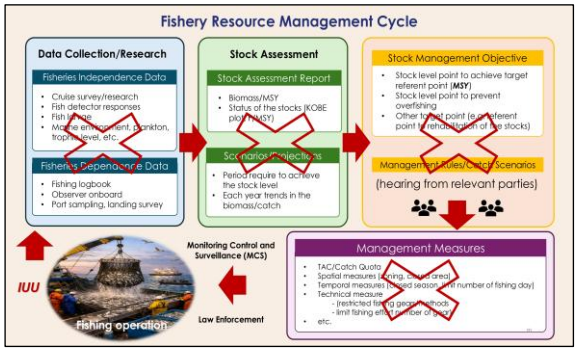

Non-tuna Regional Framework


Tuna Regional Framework
CCSBT
IATTC
ICCAT
IOTC
WCPFC
Source: FIRMS - Fishery Fact Sheet - World Global Tuna Fisheries (fao.org)


Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Target By 2020
14.4 effectively regulate harvesting and end overfishing, IUU fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce MSY as determined by their biological characteristics…
14.6 prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies…


Fisheries Resources
Renewable
Mobile
Blind/half-blind
Common Property
Common pool resources
the exploitation of a user reduce the share to the other users
Blind/half-blind
To ensure the sustainable use of the fisheries resources
The implementation of science-based management is required


Science-based Fishery Resource Management
Areas of Science
Data Collection/Research
Fisheries Independence Data
Cruise survey/research
Fish detector responses
Fish larvae
Marine environment, plankton, trophic level, etc.
Fisheries Dependence Data
Fishing logbook
Observer onboard
Port sampling, landing survey
Stock Assessment
Stock Assessment Report
Biomass/MSY
Status of the stocks (KOBE plot, F/MSY)
Scenarios/Projections
Period require to achieve the stock level
Each year trends in the biomass/catch
Stock Management Objective
Stock level point to achieve target referent point (MSY)
Stock level point to prevent overfishing
Other target point (e.g. referent point to rehabilitation of the stocks)
Management Rules/Catch Scenarios
(hearing from relevant parties)
Management Measures
TAC/Catch Quota
Spatial measures (zoning, closed area)
Temporal measures (closed season, limit number of fishing day)
Technical measure
- (restricted fishing gear/methods
- limit fishing effort number of gear)
etc.
Monitoring Control and Surveillance (MCS)
Law Enforcement
Fishing operation
Areas of Compliance


Fishery Resource Management Cycle
Data Collection/Research
Fisheries Independence Data
Cruise survey/research
Fish detector responses
Fish larvae
Fisheries Dependence Data
Fishing logbook
Observer onboard
Port sampling, landing survey
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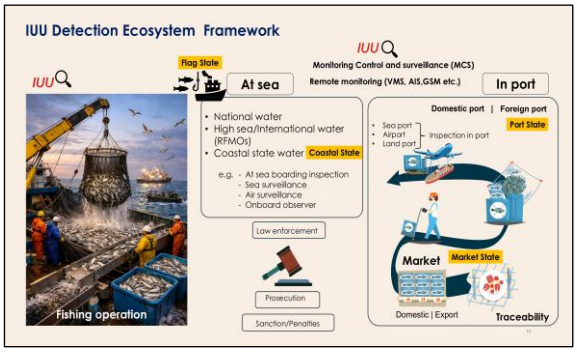
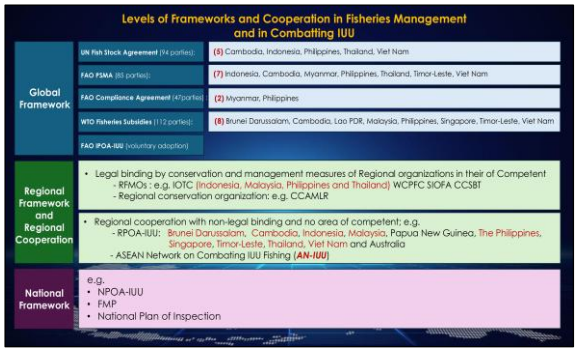
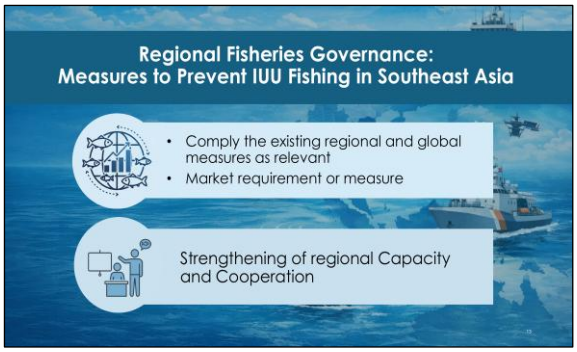
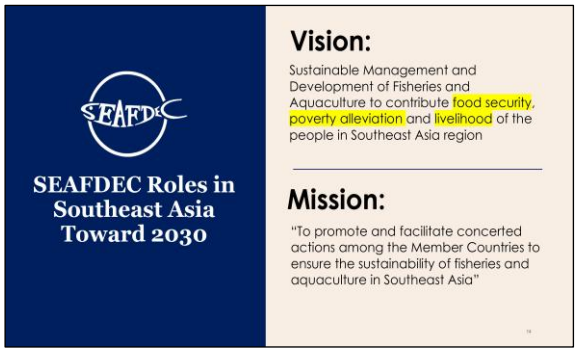
etc.
IUU
Monitoring Control and Surveillance (MCS)
Law Enforcement
Fishing operation

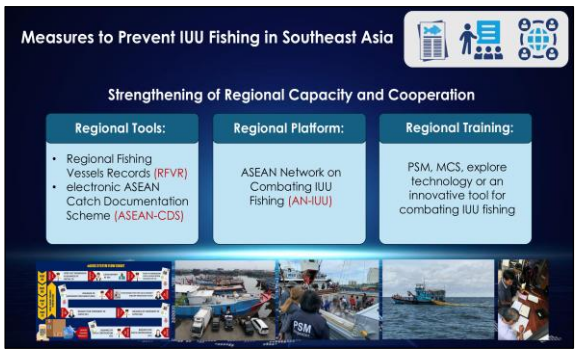

IUU Detection Ecosystem Framework
IUU
Flag State
At sea
Monitoring Control and surveillance (MCS)
Remote monitoring (VMS, AIS,GSM etc.)
In port
National water
High sea/International water (RFMOs)
Coastal state water
Coastal State
e.g. - At sea boarding inspection
- Sea surveillance
- Air surveillance
- Onboard observer
Law enforcement
Prosecution
Sanction/Penalties
Domestic port | Foreign port
Port State
Sea port
Airport
Land port
Inspection in port
Market
Market State
Domestic | Export
Traceability
Fishing operation

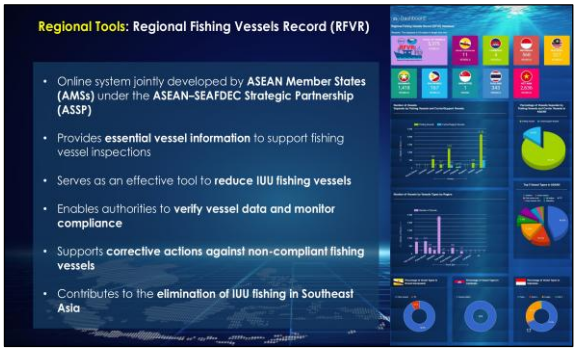

Levels of Frameworks and Cooperation in Fisheries Management and in Combatting IUU
Global Framework
UN Fish Stock Agreement (94 parties): (6) Cambodia, Indonesia, Philippines, Thailand, Viet Nam
FAO PSMA (88 parties): (7) Indonesia, Cambodia, Myanmar, Philippines, Thailand, Timor-Leste, Viet Nam
FAO Compliance Agreement (47parties): (2) Myanmar, Philippines
WTO Fisheries Subsidies (112 parties): (8) Brunei Darussalam, Cambodia, Lao PDR, Malaysia, Philippines, Singapore, Timor-Leste, Viet Nam
FAO IPOA-IUU (voluntary adoption)
Regional Framework and Regional Cooperation
Legal binding by conservation and management measures of Regional organizations in their of Competent
- RFMOs : e.g. IOTC (Indonesia, Malaysia, Philippines and Thailand) WCPFC SIOFA CCSBT
- Regional conservation organization: e.g. CCAMLR
Regional cooperation with non-legal binding and no area of competent: e.g.
- RPOA-IUU: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Papua New Guinea, The Philippines, Singapore, Timor-Leste, Thailand, Viet Nam and Australia
- ASEAN Network on Combating IUU Fishing (AN-IUU)
National Framework
e.g.
NPOA-IUU
FMP
National Plan of Inspection

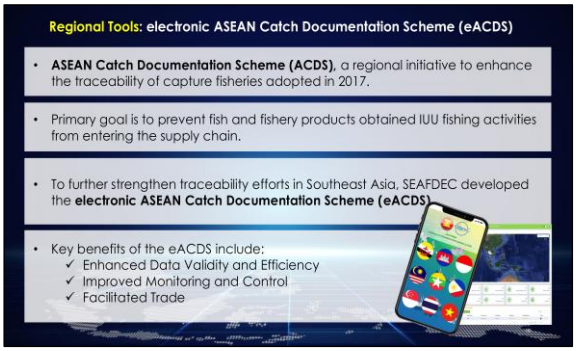

Regional Fisheries Governance:
Measures to Prevent IUU Fishing in Southeast Asia
Comply the existing regional and global measures as relevant
Market requirement or measure
Strengthening of regional Capacity and Cooperation

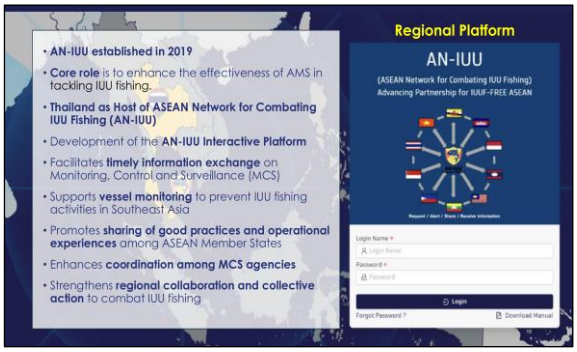

SEAFDEC Roles in Southeast Asia Toward 2030
Vision:
Sustainable Management and Development of Fisheries and Aquaculture to contribute food security, poverty alleviation and livelihood of the people in Southeast Asia region
Mission:
"To promote and facilitate concerted actions among the Member Countries to ensure the sustainability of fisheries and aquaculture in Southeast Asia"


SECRETARIAT
www.seafdec.org
TD
Training Department
www.seafdec.or.th
MFRD
Marine Fisheries Research Department
www.seafdec.org/mfrd
AQD
Aquaculture Department
www.seafdec.org.ph
MFRDMD
Marine Fishery Resource Development and Management Department
www.seafdec.org.my
IFRDMD
Inland Fishery Resource Development and Management Department
www.seafdec.id


Measures to Prevent IUU Fishing in Southeast Asia
Strengthening of Regional Capacity and Cooperation
Regional Tools:
Regional Fishing Vessels Records (RFVR)
electronic ASEAN Catch Documentation Scheme (ASEAN-CDS)
Regional Platform:
ASEAN Network on Combating IUU Fishing (AN-IUU)
Regional Training:
PSM, MCS, explore technology or an innovative tool for combating IUU fishing
PSM


Regional Tools: Regional Fishing Vessels Record (RFVR)
Online system jointly developed by ASEAN Member States (AMSs) under the ASEAN–SEAFDEC Strategic Partnership (ASSP)
Provides essential vessel information to support fishing vessel inspections
Serves as an effective tool to reduce IUU fishing vessels
Enables authorities to verify vessel data and monitor compliance
Supports corrective actions against non-compliant fishing vessels
Contributes to the elimination of IUU fishing in Southeast Asia


Regional Tools: electronic ASEAN Catch Documentation Scheme (eACDS)
ASEAN Catch Documentation Scheme (ACDS), a regional initiative to enhance the traceability of capture fisheries adopted in 2017.
Primary goal is to prevent fish and fishery products obtained IUU fishing activities from entering the supply chain.
To further strengthen traceability efforts in Southeast Asia, SEAFDEC developed the electronic ASEAN Catch Documentation Scheme (eACDS)
Key benefits of the eACDS include:
✓ Enhanced Data Validity and Efficiency
✓ Improved Monitoring and Control
✓ Facilitated Trade


AN-IUU established in 2019
Core role is to enhance the effectiveness of AMS in tackling IUU fishing.
Thailand as Host of ASEAN Network for Combating IUU Fishing (AN-IUU)
Development of the AN-IUU Interactive Platform
Facilitates timely information exchange on Monitoring, Control and Surveillance (MCS)
Supports vessel monitoring to prevent IUU fishing activities in Southeast Asia
Promotes sharing of good practices and operational experiences among ASEAN Member States
Enhances coordination among MCS agencies
Strengthens regional collaboration and collective action to combat IUU fishing
Regional Platform
AN-IUU
(ASEAN Network for Combating IUU Fishing)
Advancing Partnership for IUUF-FREE ASEAN
Login
Download Manual


Regional Training :
Regional capacity-building initiatives conducted to strengthen efforts against Illegal, Unreported and Unregulated (IUU) Fishing in Southeast Asia
Implemented through collaboration among ASEAN, SEAFDEC, and international partners such as FAO
Enhance knowledge and technical skills on Monitoring, Control and Surveillance (MCS)
Training on Port State Measures (PSM) implementation and inspection procedures
Capacity development in Vessel Monitoring Systems (VMS) and fisheries data management
Strengthening regional information sharing and inter-agency coordination
Promoting compliance with international fisheries regulations and standards
Sharing best practices and operational experiences among ASEAN Member States
Supporting harmonized regional approaches to prevent and deter IUU fishing
Contributing to sustainable fisheries management and marine resource conservation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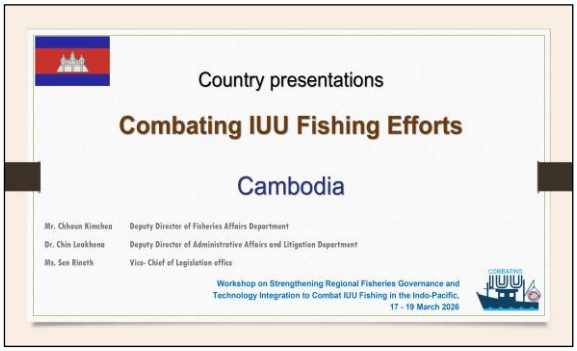
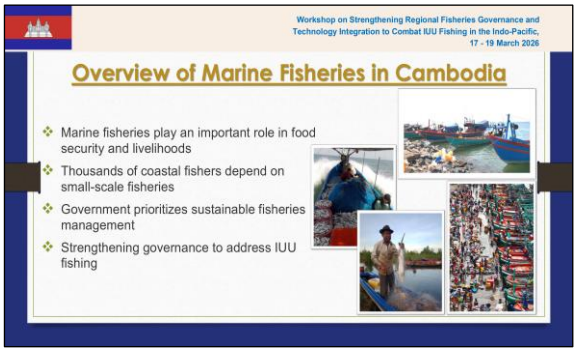
THANK YOU
Southeast Asian Fisheries Development Center


Country presentations
Combating IUU Fishing Efforts
Cambodia
Mr. Chhoun Kimchea Deputy Director of Fisheries Affairs Department
Dr. Chin Laokhena Deputy Director of Administrative Affairs and Litigation Department
Ms. Sen Rineth Vice- Chief of Legislation office
Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, 17 - 19 March 2026


Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, 17 - 19 March 2026
Presentation Outline
1. Overview of marine fisheries in Cambodia
2. Current situation of combating IUU fishing
✓ Key national actions
✓ Technologies used
3. Implementation challenges
4. Future priorities and regional cooperation


Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, 17 - 19 March 2026
Overview of Marine Fisheries in Cambodia
Marine fisheries play an important role in food security and livelihoods
Thousands of coastal fishers depend on small-scale fisheries
Government prioritizes sustainable fisheries management
Strengthening governance to address IUU fishing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Policy and Legal Framework
Fisheries Law (2025) supporting sustainable fisheries management
Sub-decrees and regulations for marine fisheries governance
Community Fisheries (CFi) legal framework
Ratification of International Fisheries Instruments (UNCLOS, UNFSA, PSMA, Fisheries Subsidy, ….)
Alignment with international fisheries management principles
Commitment to combat Illegal, Unreported and Unregulated (IUU) fishing


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Current Situation of Combating IUU Fishing
Improved fisheries monitoring and enforcement activities
Implementation of Marine Fisheries Management Areas (MFMAs)
Strengthening cooperation among national enforcement agencies
Increased focus on sea and in port inspections and monitoring
Enhanced collaboration with regional partners


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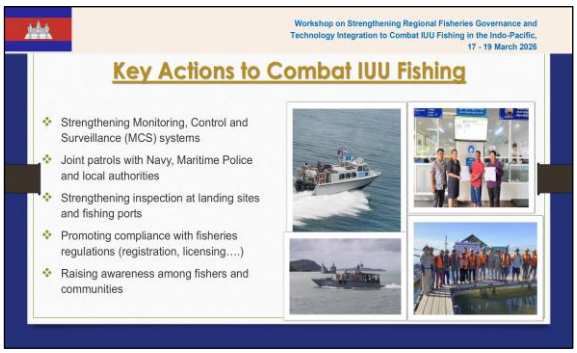
Marine Fisheries Management Areas (MFMA)
Four Marine Fisheries Management Areas established
Management plans developed for priority fisheries (blue swimming crab, mackerel)
Ecosystem-based fisheries management approach
Involvement of local communities and stakeholders
Support for sustainable fish stock management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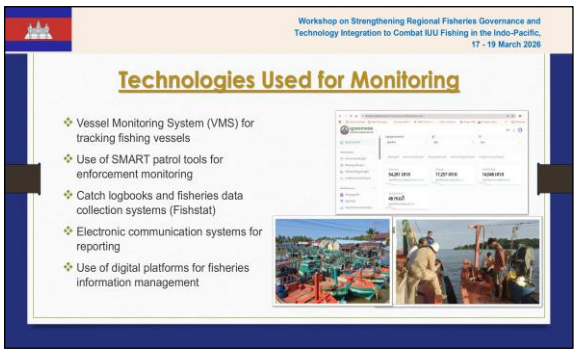
Key Actions to Combat IUU Fishing
Strengthening Monitoring, Control and Surveillance (MCS) systems
Joint patrols with Navy, Maritime Police and local authorities
Strengthening inspection at landing sites and fishing ports
Promoting compliance with fisheries regulations (registration, licensing….)
Raising awareness among fishers and communities


Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, 17 - 19 March 2026
Technologies Used for Monitoring
Vessel Monitoring System (VMS) for tracking fishing vessels
Use of SMART patrol tools for enforcement monitoring
Catch logbooks and fisheries data collection systems (Fishstat)
Electronic communication systems for reporting
Use of digital platforms for fisheries information management

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Port State Measures Agreement (PSMA)

- Designated PSMA port in Kong Kong Province
- Created an official email address (psma_cambodia@maff.gov.kh) and national PSMA webpage
- Developed national SOP for port inspection (PSMA implementation)
- Exchange information through PSMA communication channels, i.e GIES
- Capacity building supported by FAO, OceanMind-Canada and international partners
- Strengthening control of foreign fishing vessels

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Regional Cooperation

- Participation in FAO, RPOA-IUU and SEAFDEC regional initiatives
- Collaboration with sub-regional countries
- Joint activities with international organizations
- Technical cooperation and training programs with AFMA, OceanMind-Canada, IMCS-JAC,
- Information sharing on IUU fishing activities

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Challenges in Combating IUU Fishing

- ✓ Limited financial and technical resources
- ✓ Need for expanded monitoring technologies
- ✓ Capacity constraints in fisheries data management
- ✓ Coordination among multiple enforcement agencies
- ✓ Transboundary fishing and regional enforcement issues

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Opportunities and Future Priorities

- ✓ Strengthening digital monitoring and vessel tracking systems
- ✓ Improving fisheries data and catch documentation
- ✓ Enhancing training for enforcement officers
- ✓ Expanding regional and international cooperation on IUU fishing (bilateral agreement: CM and OceanMind-Canada; AFMA, IMCS/JAC, others)
- ✓ Promoting sustainable fisheries management

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Key Messages

- ✓ Strong governance is essential to combat IUU fishing
- ✓ Technology plays an important role in monitoring fisheries
- ✓ Regional cooperation is critical for effective enforcement
- ✓ Community participation strengthens fisheries management
- ✓ Cambodia remains committed to sustainable fisheries

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Fisheries Administration

No. 186, Norodom Boulevard, Sangkat Tonle Basac Khan Chamcar Mon, Phnom Penh, Cambodia. P.O. Box 582

023 215 470

https://www.facebook.com/fisheries.maff.gov.kh

https://www.maff.gov.kh/fia?lang=kh

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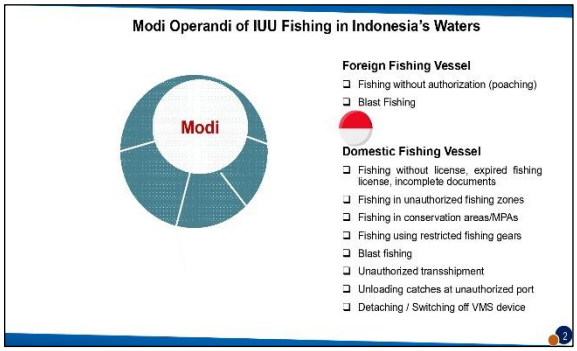
Biodiversity beyond national jurisdiction (BBNJ) in September 2025

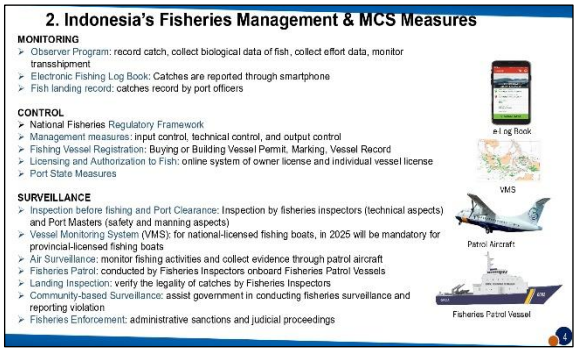
UN Convention on the Law of the Sea in January 2026

MCS Tools	Be.2023	2023	2024	2025	Total
Vessel Registration	1439	1196	1156	35	3826
Fishing vessel license		104	778	751	1633
VMS		125	800	590	1515


THE INDONESIAN GOVERNMENT'S COUNTERMEASURES TO COMBAT IUU FISHING
Delivered by:
Erik Sostenes
Sirman Rajagukguk
Fisheries Surveillance Officer
DG of Surveillance of Marine and Fisheries Resources,
Ministry of Marine Affairs and Fisheries,
Republic of Indonesia
The Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific Bangkok, 17-19 March 2026

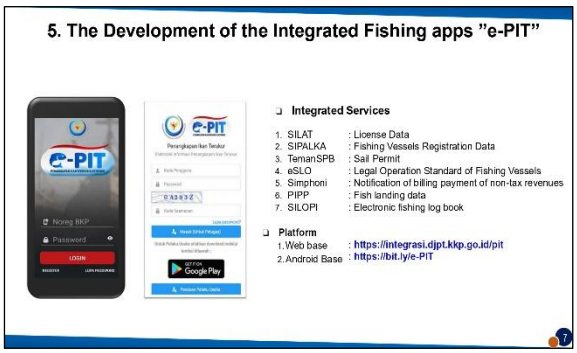

Modi Operandi of IUU Fishing in Indonesia's Waters
Modi
Foreign Fishing Vessel
Fishing without authorization (poaching)
Blast Fishing
Domestic Fishing Vessel
Fishing without license, expired fishing license, incomplete documents
Fishing in unauthorized fishing zones
Fishing in conservation areas/MPAs
Fishing using restricted fishing gears
Blast fishing
Unauthorized transshipment
Unloading catches at unauthorized port
Detaching / Switching off VMS device

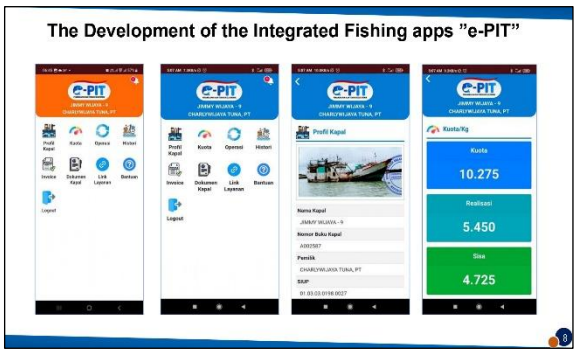

1. Indonesia's Legal and Regulatory Framework for Fisheries
Law No. 45 of 2009 on Amendment to Law No. 31 of 2004 regarding Fisheries.
Law No. 6 of 2023 on the Enactment of Government Regulation in Lieu of Law No. 2 of 2022 regarding Job Creation into Law (Omnibus Law).
MMAF Regulation No. 23 of 2021 on Operational Feasibility Standards and Fishing Vessel Monitoring System.
MMAF Regulation No. 33 of 2021 on Fishing Logbook, Monitoring on Board Vessels, Inspection, Testing, and Marking of Fishing Vessels, as well as Crewing Governance.
Government Regulation No. 11 of 2023 on Measured Fish Catching (Penangkapan Ikan Terukur).

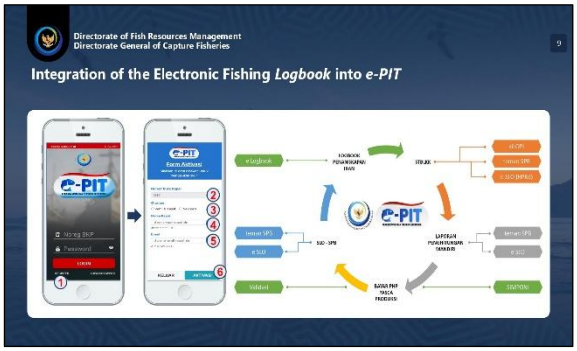

2. Indonesia's Fisheries Management & MCS Measures
MONITORING
Observer Program: record catch, collect biological data of fish, collect effort data, monitor transshipment
Electronic Fishing Log Book: Catches are reported through smartphone
Fish landing record: catches record by port officers
CONTROL
National Fisheries Regulatory Framework
Management measures: input control, technical control, and output control
Fishing Vessel Registration: Buying or Building Vessel Permit, Marking, Vessel Record
Licensing and Authorization to Fish: online system of owner license and individual vessel license
Port State Measures
SURVEILLANCE
Inspection before fishing and Port Clearance: Inspection by fisheries inspectors (technical aspects) and Port Masters (safety and manning aspects)
Vessel Monitoring System (VMS): for national-licensed fishing boats, in 2025 will be mandatory for provincial-licensed fishing boats
Air Surveillance: monitor fishing activities and collect evidence through patrol aircraft
Fisheries Patrol: conducted by Fisheries Inspectors onboard Fisheries Patrol Vessels
Landing Inspection: verify the legality of catches by Fisheries Inspectors
Community-based Surveillance: assist government in conducting fisheries surveillance and reporting violation
Fisheries Enforcement: administrative sanctions and judicial proceedings
e-Log Book
VMS
Patrol Aircraft
Fisheries Patrol Vessel

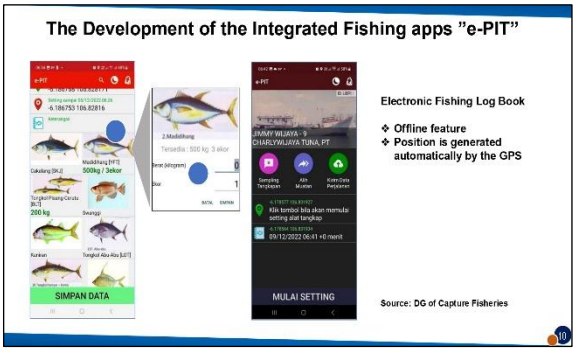

3. Integrated Surveillance System
VMS
RADAR
Patrol Vessels
Fishing Vessel
Ground Station
Fishing Vessel
Command Center
Community Surveillance Groups

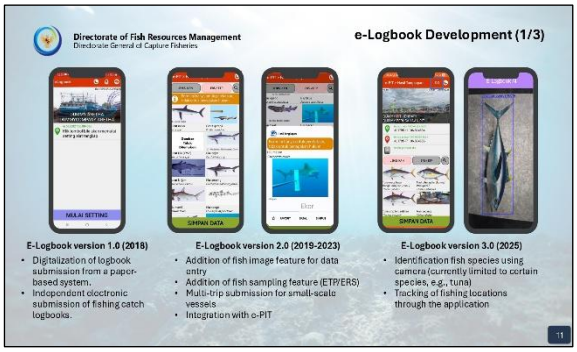

4. The Integrated Maritime Intelligent Platform
Automatic notification to PVs' owners through Whatsapp
Monitoring
Alert
Dashboard

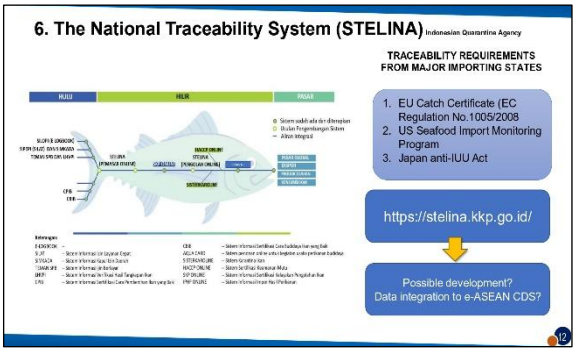

5. The Development of the Integrated Fishing apps "e-PIT"
e-PIT
Integrated Services
1. SILAT : License Data
2. SIPALKA : Fishing Vessels Registration Data
3. TemanSPB : Sail Permit
4. eSLO : Legal Operation Standard of Fishing Vessels
5. Simphoni : Notification of billing payment of non-tax revenues
6. PIPP : Fish landing data
7. SILOPI : Electronic fishing log book
Platform
1. Web base : https://integrasi.djpt.kkp.go.id/pit
2. Android Base : https://bit.ly/e-PIT


The Development of the Integrated Fishing apps "e-PIT"
e-PIT
Kuota
10.275
Realisasi
5.450
Sisa
4.725


Directorate of Fish Resources Management
Directorate General of Capture Fisheries
Integration of the Electronic Fishing *Logbook* into *e-PIT*


The Development of the Integrated Fishing apps "e-PIT"
Electronic Fishing Log Book
Offline feature
Position is generated automatically by the GPS
SIMPAN DATA
MULAI SETTING
Source: DG of Capture Fisheries


Directorate of Fish Resources Management
Directorate General of Capture Fisheries
e-Logbook Development (1/3)
E-Logbook version 1.0 (2018)
Digitalization of logbook submission from a paper-based system.
Independent electronic submission of fishing catch logbooks.
E-Logbook version 2.0 (2019-2023)
Addition of fish image feature for data entry
Addition of fish sampling feature (ETP/ERS)
Multi-trip submission for small-scale vessels
Integration with e-PIT
E-Logbook version 3.0 (2025)
Identification fish species using camera (currently limited to certain species, e.g., tuna)
Tracking of fishing locations through the application


6. The National Traceability System (STELINA) Indonesian Quarantine Agency
TRACEABILITY REQUIREMENTS FROM MAJOR IMPORTING STATES
1. EU Catch Certificate (EC Regulation No.1005/2008
2. US Seafood Import Monitoring Program
3. Japan anti-IUU Act
https://stelina.kkp.go.id/
Possible development?
Data integration to e-ASEAN CDS?


7. Strengthening Patrol Fleet
Strengthening the Patrol Fleet by Receiving two units of Fisheries Patrol Vessels granted by the Government of Japan and Build two units of Fisheries Patrol Vessels and The Government of Spain is providing a foreign loan (soft loan) to the Government of Indonesia for strengthening maritime and fisheries surveillance with the MFISS project (2025-2028)


8. Community-based Surveillance
ROLES OF CSG
Reporting fisheries violation
Assist government in raising people's awareness to improve compliance
Assist government in conducting fisheries surveillance
Willing to give testimony for fisheries enforcement and judicial proceedings
In 2025, MMAF has supervised 3000 community surveillance groups
MMAF provides rewards for community surveillance groups' active participation annually


9. Indonesia-Australia Fisheries Surveillance Forum
Regular meeting and information sharing with Australian Fisheries Management Authority (AFMA) and Australian Border Force (ABF)
Public Information Campaign
Coordinated Patrol GANNET & Jawline-Arafura


Malaysia-Indonesia Coordinated Patrol
Regular meeting, information sharing, and Coordinated Patrol

RPOA-IUU & AN-IUU

RPOA-IUU: 11 participating countries
Regular meeting, information sharing, capacity building

Indonesia active participation as RPOA-IUU Secretariat and member of Arafura and Timor Seas (ATS) & Southeast Asian Seas and Coastal States, Sulu-Sulawesi Seas (SSS) MCS Subregional Group

ASEAN Network for Combating IUU Fishing (AN-IUU)

Sharing information and strengthening regional collaboration against IUU fishing

17

Conclusion

- Indonesia has implemented various measures to combat IUU fishing.
- Indonesia continues to strengthen monitoring systems, law enforcement, and technological innovation.
- Stronger regional cooperation is key to combating IUU Fishing in the Indo-Pacific

18

Ministry of Maritime Affairs and Fisheries
Republic of Indonesia

THANK YOU

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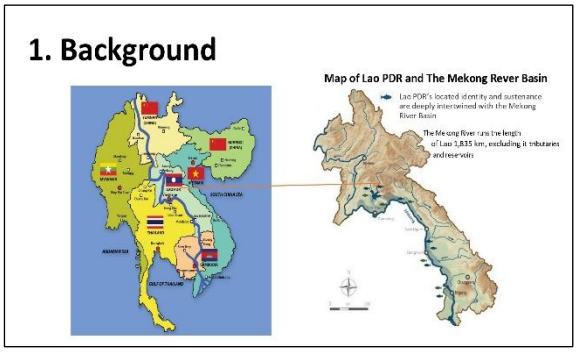
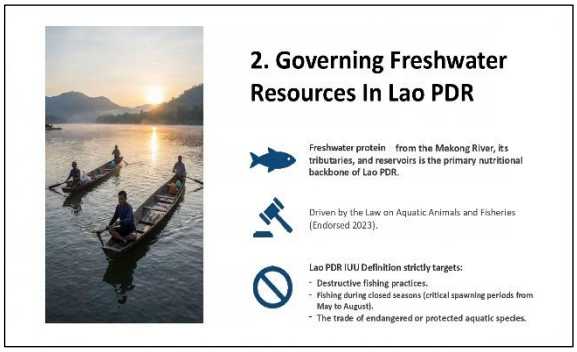
Combating IUU Fishing Efforts in Lao PDR
Strengthening Regional Fisheries Governance and Technology Integration in the Indo-Pacific
Regional Workshop on 17 – 19 March 2026
at Bangkok, Thailand
Division of Fisheries, Department of Livestock and Fisheries, Lao PDR


Presentation Outline
Current Situation
1. Background
2. Governing Freshwater Resources In Lao PDR
Key Actions
Implementation of national policy.
Technology Integration
Modernizing catch data and rapid response enforcement.
Implementation Challenges
Navigating capacity limits and external environmental pressures.
The Way Forward
Regional Cooperation.

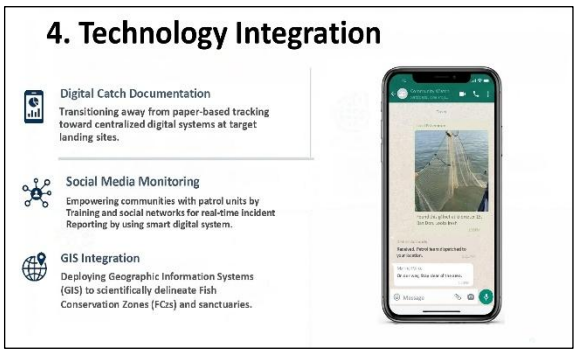

1. Background
Map of Lao PDR and The Mekong Rever Basin
Lao PDR's located identity and sustenance are deeply intertwined with the Mekong River Basin
The Mekong River runs the length of Laos 1,835 km, excluding it tributaries and reservoirs

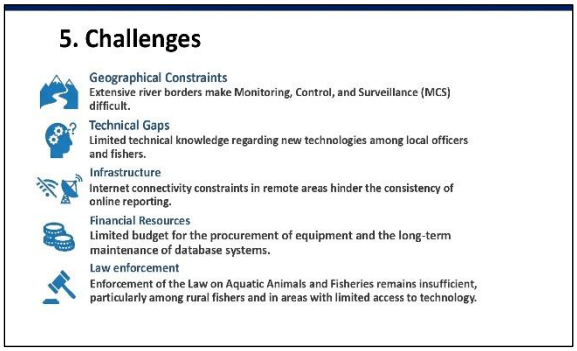

2. Governing Freshwater Resources In Lao PDR
Freshwater protein from the Mekong River, its tributaries, and reservoirs is the primary nutritional backbone of Lao PDR.
Driven by the Law on Aquatic Animals and Fisheries (Endorsed 2023).
Lao PDR IUU Definition strictly targets:
- Destructive fishing practices.
- Fishing during closed seasons (critical spawning periods from May to August).
- The trade of endangered or protected aquatic species.

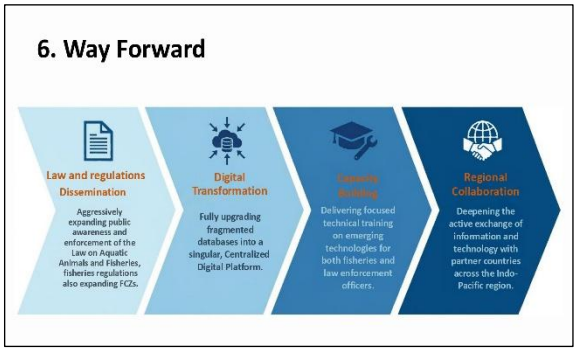

3. Key Actions & Implementation
Strategic Alignment
Operations are intrinsically linked to the National Socio-Economic Development Plan, the Constitution, and the Green Agriculture Strategy.
Community Engagement
Establishing Community-Based Fisheries Management committee To empower local stakeholders As active monitors.
Law Enforcement
Imposing severe measures and publicly destroying illegal fishing gear, specifically targeting electrofishing tools, explosives, and fine-mesh nets.
The ultimate objective is efficient management of good quality, safe aquatic animals while securing food supply.


Empowering the Frontlines of FCZs
Over 1,000 Fish Conservation Zones
Massive scale successful establishment of FCZs in the county.
Inter-Agency Patrolling
Active collaboration between village units, local police, and regional authorities for Coordinated for shared interests.
Stock Replenishment: GOV. Annual Fish Releasing initiatives to maintain biodiversity

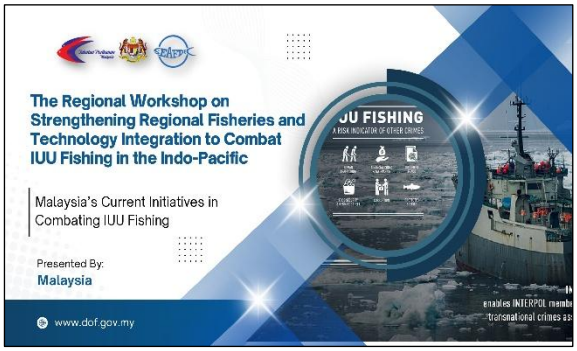

Cultural Integration: The Power of Tradition
Religious Ordination of Waters
Utilizing local beliefs and religious consecration ceremonies.
Establishing sacred no-fishing zones based on traditional regulations.
Achieving high compliance through cultural respect, effectively protecting aquatic Habitats, spawning ground and nursing ground.


4. Technology Integration
Digital Catch Documentation
Transitioning away from paper-based tracking toward centralized digital systems at target landing sites.
Social Media Monitoring
Empowering communities with patrol units by Training and social networks for real-time incident Reporting by using smart digital system.
GIS Integration
Deploying Geographic Information Systems (GIS) to scientifically delineate Fish Conservation Zones (FCzs) and sanctuaries.

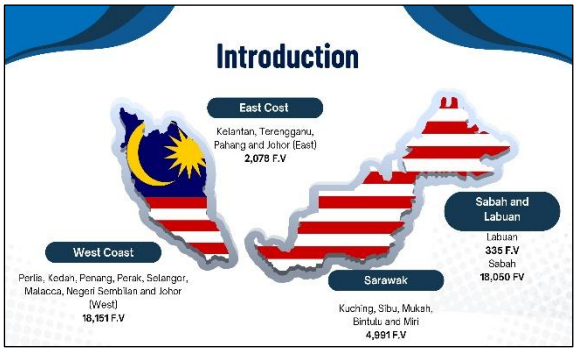

5. Challenges
Geographical Constraints
Extensive river borders make Monitoring, Control, and Surveillance (MCS) difficult.
Technical Gaps
Limited technical knowledge regarding new technologies among local officers and fishers.
Infrastructure
Internet connectivity constraints in remote areas hinder the consistency of online reporting.
Financial Resources
Limited budget for the procurement of equipment and the long-term maintenance of database systems.
Law enforcement
Enforcement of the Law on Aquatic Animals and Fisheries remains insufficient, particularly among rural fishers and in areas with limited access to technology.

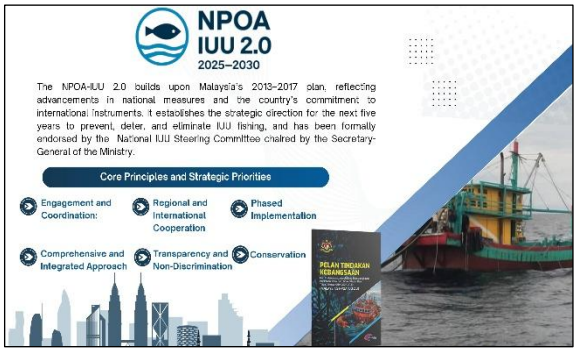

6. Way Forward
Law and regulations Dissemination
Aggressively expanding public awareness and enforcement of the Law on Aquatic Animals and Fisheries, fisheries regulations also expanding FCZs.
Digital Transformation
Fully upgrading fragmented databases into a singular, Centralized Digital Platform.
Capacity Building
Delivering focused technical training on emerging technologies for both fisheries and law enforcement officers.
Regional Collaboration
Deepening the active exchange of information and technology with partner countries across the Indo-Pacific region.

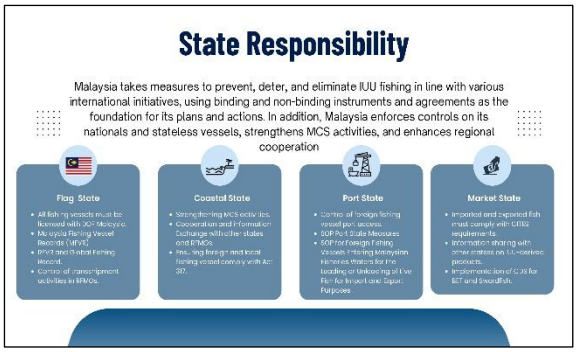

Thank you for your kind attention.
Q&A Session
ฟากถาม-ตอบ


The Regional Workshop on Strengthening Regional Fisheries and Technology Integration to Combat IUU Fishing in the Indo-Pacific
Malaysia's Current Initiatives in Combating IUU Fishing
Presented By:
Malaysia
www.dof.gov.my


DELEGATION
MR. PANG NYUKANG
Diretor of Fisheries Terengganu, Department of Fisheries Malaysia
MDM. LIM AI GAIK
Head, International Section, Policy and Strategic Planning Division, Department of Fisheries Malaysia
MR. MUHAMMAD ASRAF BIN MOHD GHAUS
Fisheries Officer
Fisheries Conservation and Protection Division, Department of Fisheries


Introduction
East Cost
Kelantan, Terengganu, Pahang and Johor (East)
2,078 F.V
Sabah and Labuan
Labuan
335 F.V
Sabah
18,050 FV
West Coast
Perlis, Kedah, Penang, Perak, Selangor, Malacca, Negeri Sembilan and Johor (West)
18,151 F.V
Sarawak
Kuching, Sibu, Mukah, Bintulu and Miri
4,991 F.V


NPOA IUU 2.0
2025–2030
The NPOA-IUU 2.0 builds upon Malaysia's 2013–2017 plan, reflecting advancements in national measures and the country's commitment to international instruments. It establishes the strategic direction for the next five years to prevent, deter, and eliminate IUU fishing, and has been formally endorsed by the National IUU Steering Committee chaired by the Secretary-General of the Ministry.
Core Principles and Strategic Priorities
Engagement and Coordination:
Regional and International Cooperation
Phased Implementation
Comprehensive and Integrated Approach
Transparency and Non-Discrimination
Conservation

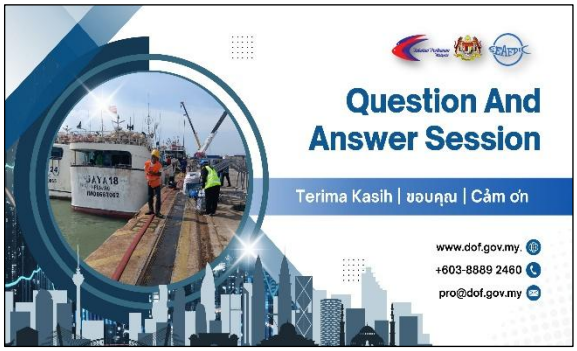

State Responsibility
Malaysia takes measures to prevent, deter, and eliminate IUU fishing in line with various international initiatives, using binding and non-binding instruments and agreements as the foundation for its plans and actions. In addition, Malaysia enforces controls on its nationals and stateless vessels, strengthens MCS activities, and enhances regional cooperation
Flag State
Coastal State
Port State
Market State


Transshipment
The Fisheries Act 1985 (Amendment) 2025 was gazetted with the consent of the Yang di-Pertuan Agong of Malaysia on 16 December 2025 and will come fully into force on 15 June 2026.
Section 10A (New Provision)
" No person shall conduct transshipment activities in Malaysian fisheries waters or on the high seas under any circumstances, except for activities licensed under this Act, unless the person has obtained written approval from the Director-General of Fisheries "


Key Action
1 Track analysis of abnormal local fishing vessel behavior via VMS
2 Establishment of IUU community platform and Focal Points
3 Prevent the entry of fish products originating from IUU fishing activities through National Entry Port
4 Sharing of VMS data analysis with enforcement agencies for the detection of fishing zone encroachments
5 Enhancing MCS capacity and awareness through professional engagement


TECHNOLOGIES USED
Malaysia has strategically integrated advanced systems and technology to strengthen Monitoring, Control, and Surveillance (MCS) operations in a decisive effort to combat IUU fishing.
ePSM MALAYSIA
VMS
E-Lesen
eLOGBOOK
SISTEM E-LOGBOOK
Electronic Port State Measures System (E-PSM)
Vessel Monitoring System (VMS)
Electronic Licensing System (E-Lesen)
Electronic Logbook System (E-Logbook)


Challenges
1
LIMITED ENFORCEMENT CAPACITY
Insufficient assets such as patrol vessels, drones, and monitoring equipment
3
LIMITED INTER-AGENCY COORDINATION
An incomplete delivery system cause multiple agencies may perform similar tasks and wasting resources
2
TECHNOLOGICAL AND SKILLS GAPS
Limited training, experience, and expertise in analyzing VMS data
4
AI-DRIVEN ANYLYSIS
Integrating all existing operational systems with AI-powered analytics for enhanced decision-making.


Question And Answer Session
Terima Kasih | ขอบคุณ | Cảm ơn
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+603-8889 2460
pro@dof.gov.my

Fishing Vessels Management and Combating IUU Fishing in Myanmar

- Mr. Hlwan Moe Zaw, Director
- Dr. Arkar Myo, Deputy Officer
- Ms. Cho Mar Oo, Deputy Officer

Date- 17-19/Mar/2026

Contents

1. Managing Fishing Vessel/ Carrier
2. Monitoring Control & Surveillance
3. Port Inspection & Surveillance System
4. Challenges to combating IUU fishing
5. International Cooperation & Compliance

Vessel Registration and Fishing Licensing System in Myanmar

- Fishing Vessel Registration must be renew every year.
- Currently, no new fishing vessel are allow to be build. Only damaged and sunken vessel can be rebuild.
- License (implement) fee According to the type of fishing gear and number used.

Inshore Fishing Vessel

Boat Owner → Apply for Inshore fishing boat → General Administration Department → • Inspection • Issuing boats registration → Department of Fisheries → Issuing fishing and fish carrier license

Offshore Fishing Vessel

Boat Owner → Apply for offshore fishing boat → Department of Marine Administration → • Inspection • Issuing boats registration → Department of Fisheries → Issuing fishing and fish carrier license

3

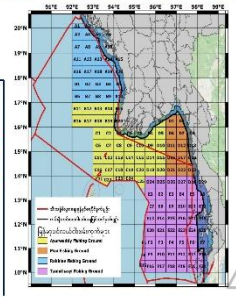
Vessel Identification Marking by Fishing Areas

Myanmar is demarcated 4 fishing ground

Total Fishing Ground Area = 486,000 sq-km
Coastal Length = 2,832 km

Vessel Markings and color coding must be needed according to the place of license issue

Description	Place of Licence Issue	Word color on Line Color of Hull
Off Shore Fishing Vessel	Tanintharyi	White
	Head Office Yangon/Ayeyarwady/Mon	White
	Rakhing	White
Off Shore Carrier	Local Carrier	Red



4

Fishing Vessel Characteristics, and Mesh Sized

In-shore Fishing Vessel (Small Scale)

- < 50 HP engine, < 40 feet length of the vessel,
- Fishing Area - 10 nautical mile from shore

Off-shore Fishing Vessel (Commercial Scale)

- > 50 HP engine, > 40 feet length of the vessel
- Trawl, Purse seine, Surrounding net,
  Drift net, Long line, Stow net & Giant set-bag net.
- Outer area from inshore line to end of EEZ

Mesh Sized Measures

❖ Closed mesh sized for trawl and stow net – not less than 2 inches (Fish)
1.5 inches (shrimp). For Drift Net not less than 4 inches

5

Fishing Vessel Record System

Related Department

- Department of Marine Administrative: Offshore Fishing Vessel Registration and construction Record
- General Administrative Department: Inshore Fishing Vessel Registration Record
- Department of Fisheries: Offshore/ Inshore Fishing License & other relative information

Type of recorded information

- Photo of the fishing vessel
- The Owner's information: photo, name, ID card, address & contact number
- Vessel Information: size, type of vessel, year of build, engine HP, GT (offshore), hull type
- Navigation devices: Sonar, Rada, VMS, AIS etc..

6

Management on Fishing Practices & Methods

- Director General may delegated his powers conferred under the fisheries laws to any officer of the Department
- All DOF officers in Region and States shall carry out fisheries management such as licensing, data collecting and inspection for freshwater, marine water and aquaculture fisheries.
- One Stop Service (OSS) which includes Department of Custom, Port Authority, Marine Administration, Trade, National Registration and Immigration and DOF has formed since 1996

Main Responsibilities

(1) Monitoring Control & Surveillance
(2) Fisheries management regulations
(3) Traceability & Logistic
(5) International Cooperation and Compliance
(6) Capacity Building

7

Monitoring Control & Surveillance System

VMS, Research & Logbook → Measures → Inspection at Port & Sea (Check in, Chick out & Fishing activities)

Logbook

Research

- Closed Area
- Prohibited Gears
- Closed Season
- Closed Species

DOF controlled the marine fishing vessels based on research and data. Based on the research results, measured such as closed season, closed area, closed species and prohibited gears criteria and monitoring and control are carried out. Navy and maritime police force inspected at the sea and One Stop Service team inspected at the port catch data and other requirement documents.

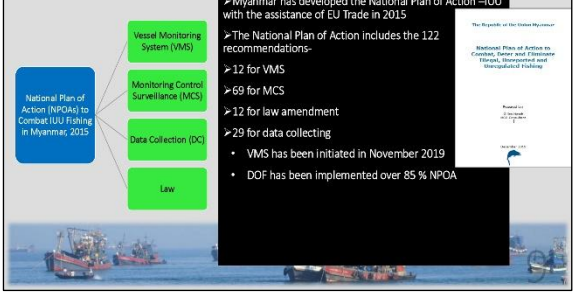
9

National Plan of Action to Combat IUU (NPOA)

National Plan of Action (NPOAs) to Combat IUU Fishing in Myanmar, 2015

- Vessel Monitoring System (VMS)
- Monitoring Control Surveillance (MCS)
- Data Collection (DC)
- Law

- Myanmar has developed the National Plan of Action –IUU with the assistance of EU Trade in 2015
- The National Plan of Action includes the 122 recommendations-
- 12 for VMS
- 69 for MCS
- 12 for law amendment
- 29 for data collecting
  - VMS has been initiated in November 2019
  - DOF has been implemented over 85 % NPOA



9

Vessel Monitoring System in Myanmar

- In 2019, the installation of a Vessel Monitoring System (VMS) on all offshore fishing vessels began to be implemented. Installation began on September 1st, and by January 31st, 2020, all carrier vessels engaged in off-shore fishing were equipped with VMS equipment.

Main, Sub-station & Co-management

VMS Main Control Center (1)	(1) Nay Pyi Taw
VMS Sub-Station (5)	Yangon
	Pathein
	Sittwe
	Mawlamyine
	Myeik
Co-Management on MCS (3)	Navy, Maritime Police Force, Costal Guard Force

10

Managing IUU Fishing Through VMS

- VMS team of DOF watching 24 hour on silence vessels and IUU fishing
- Notification to the vessel owner about silence vessel for more than 4 hour
- Verification and reporting to the team led by the Director General the suspicious fishing vessel information received from Navy and maritime police force
- Reporting IUU fishing regarding fishing laws and VMS rules to the Director General by VMS records
- The MCS team led by the Director General imposes penalties in accordance with the rules by VMS records

11

Myanmar Marine Fisheries Laws , Directives & Regulation

MCS Team (Lead by DG DoF)

- IUU Report from Navy
- IUU Report from VMS team
- IUU Report from State/Regional DoF

Imposing penalties to IUU vessel in accordance with the law & Directive

1. Law relating to the Fishing Rights of Foreign Fishing Vessels (Law No.11/1993)
2. Myanmar Marine Fisheries Law (Law No. 9/1990)
3. Directive on VMS device Installation & Regulation (5/2020)
4. Directive on Penalties by VMS records (3/2023)

12

Port Inspection & Surveillance of Fishing Vessels

- When Fishing vessels want to go-out to the fishing ground, have to apply the sailing order to the DOF.
- The members of OSS (One Stop Service) inspect the fishing vessels just before depart to the fishing ground-

(1) Fishing License
(2) Fisherman Registration Card.
(3) National Registration Card .
(4) Vessel Registration Certificate.
(5) Life Saving Appliance (LSA)
(6) Navigation Certificate.
(7) Mesh size of Fishing Net.
(8) Fishing log book
(9) Communication equipment
(10)Vessel Monitoring Device

13

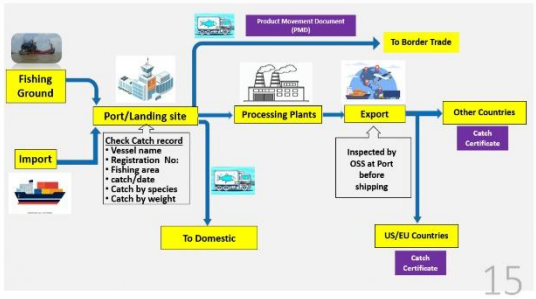
Port Inspection & Surveillance of Export Carrier Vessel

- The members of OSS (One Stop Service) will inspect the following documents of the Export vessels just before Issuing catch certificate-

(1) Catch Certification Application
(2) Carrier Vessel registration.
(3) Carrier License issued by DOF.
(4) Export Declaration.
(5) Package List Invoice
(6) Transshipment record at sea or landing site
(7) Undertaking of Company
(8) Prior Notification
(9) Sailing Order

14

Fish Traceability and Logistic System to Prevent IUU-Catch Fish from Entering Market (Catch Flow System)



15

Challenges of Implementation in Combating IUU Fishing

❑ **Limited Monitoring and Enforcement Capacity**
Fisheries authorities lack sufficient patrol vessels, surveillance equipment, and trained personnel to monitor large maritime areas. As a result, illegal fishing vessels can operate undetected, especially in offshore and remote waters.

❑ **Insufficient Financial and Technical Resources**
As a developing country, government and vessel owner struggle with limited budgets and technical capacity to implement VMS and AIS electronic reporting systems.

❑ **Transshipment at Sea**
Illegal vessels often transfer their catch to carrier vessels at sea. This practice hides the origin of the catch and allows illegally caught fish to enter international markets without proper documentation.

16

Challenges of Implementation in Combating IUU Fishing

Some of the challenges faced in combating illegal fishing after the electronic reporting system is implemented are as follows -

- Deployment of excessive number of fishing gear stationary unit (traps, stow nets, rafts, etc…)
- Fishing with explosive substances, poisons, chemicals, and other substances such as negative impact on marine mammals
- Fishing without license (including copy vessels)
- Fishing with illegal gears (e.g. prohibited fishing gears, small mesh size…)
- Remove Vessel Monitoring System Devices without permission

17

Preventing Poaching in the EEZs of Myanmar

- local fishing vessels are not allowed to fish in High Sea and other country's EEZ.
- Collaboration ASEAN countries to share Information for the blacklist of fishing vessel by using AN-IUU software.
- Myanmar will seizes the fishing vessel which operates without licence in Myanmar EEZ.
- Myanmar supports the data of RFVR and questionaries to SEAFDEC . It will be continued to update annually.
- Myanmar has no multilateral and bilateral agreement with neighboring countries for permission to fish in Myanmar EEZ or other EEZ.

18

International Cooperation and Compliance

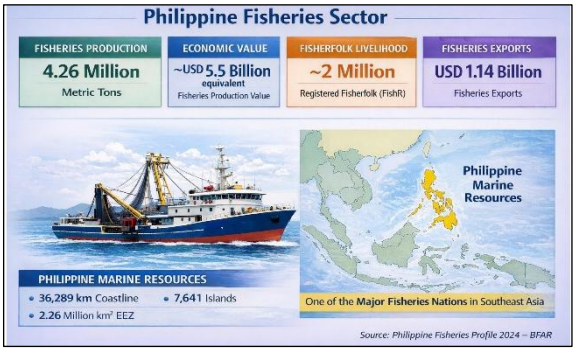
- Myanmar became a member country of Port Stat Measure Agreement (PSMA) in 2010.
- Myanmar is complying with the regulations of the EU and US countries where it exports.
- Myanmar is not yet a member of the RPOA (2017), but is currently cooperating with member countries.
- Thailand and Myanmar have signed MOU and are cooperating in the fisheries sector.
- Myanmar is also working with the FAO to comply with the Code of Conduct for Responsible Fisheries.

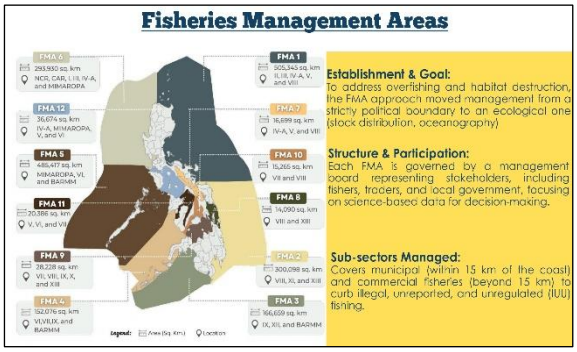
19

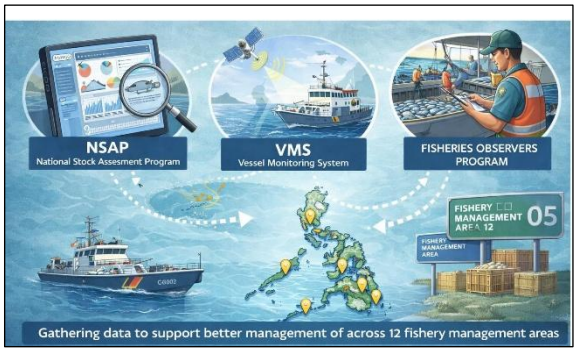
Thank You

Department of Fisheries, Ministry of Agriculture,
Livestock and Irrigation, Office No (36), Nay Pyi Taw.
Phone: +067-408473 / 067-418536
Email; irnp.dof2@gmail.com
arkar.molf2012@gmail.com

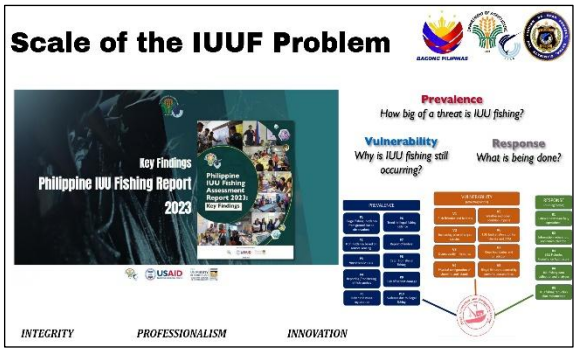

Combatting IUU
Fishing Efforts
in the Philippines

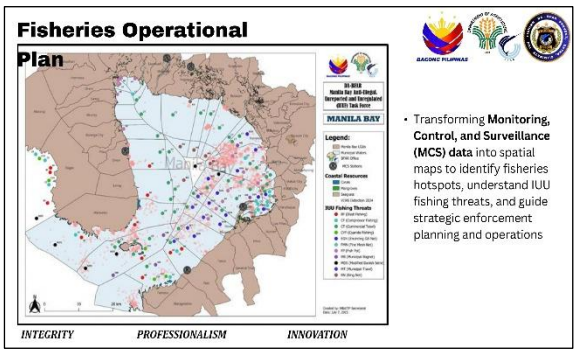

Philippine Fisheries Sector
FISHERIES PRODUCTION
4.26 Million
Metric Tons
ECONOMIC VALUE
~USD 5.5 Billion
equivalent
Fisheries Production Value
FISHERFOLK LIVELIHOOD
~2 Million
Registered Fisherfolk (FishR)
FISHERIES EXPORTS
USD 1.14 Billion
Fisheries Exports
Philippine
Marine
Resources
PHILIPPINE MARINE RESOURCES
36,289 km Coastline
7,641 Islands
2.26 Million km² EEZ
One of the Major Fisheries Nations in Southeast Asia
Source: Philippine Fisheries Profile 2024 – BFAR


Fisheries Management Areas
Establishment & Goal:
To address overfishing and habitat destruction, the FMA approach moved management from a strictly political boundary to an ecological one (stock distribution, oceanography)
Structure & Participation:
Each FMA is governed by a management board representing stakeholders, including fishers, traders, and local government, focusing on science-based data for decision-making.
Sub-sectors Managed:
Covers municipal (within 15 km of the coast) and commercial fisheries (beyond 15 km) to curb illegal, unreported, and unregulated (IUU) fishing.

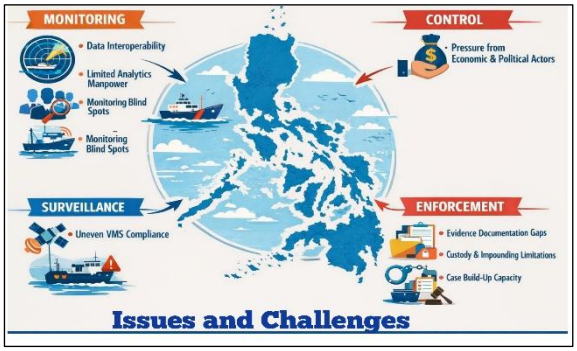

NSAP
National Stock Assesment Program
VMS
Vessel Monitoring System
FISHERIES OBSERVERS
PROGRAM
FISHERY MANAGEMENT AREA 05
FISHERY MANAGEMENT AREA 12
Gathering data to support better management of across 12 fishery management areas


ENSURING COMPLIANCE IN FISHERIES
REGULATIONS & PERMITS
Fishing Licenses
Catch Limits
Seasons & Zones
AT SEA – VESSEL INSPECTIONS
Gear & Catch Monitoring
PORT CONTROL
Catch Documentation
Unloading & Reporting
Inspection & Verification
COMPLIANCE CHECKS
Legal Fishing Practices
• Allowed Species
• Catch Limits
• Fishing Zones
Record Keeping
Logbooks,
Permits, VMS
Enforcement Actions
Violations
Fines • Penalties
Vessel Sanctions
MONITORING & SUPERVISION
VMS • Surveillance • Inspections
DATA & REPORTING
BFAR
Compliance Database
MARKET CONTROL
Traceability
Legal Supply Chain
SUSTAINABLE & LEGAL FISHERIES MANAGEMENT

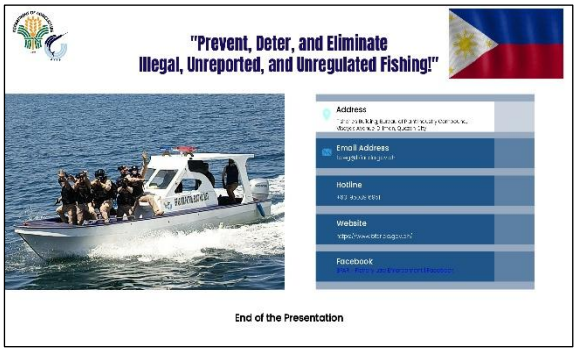

Scale of the IUUF Problem
Key Findings
Philippine IUU Fishing Report
2023
Prevalence
How big of a threat is IUU fishing?
Vulnerability
Why is IUU fishing still occurring?
Response
What is being done?
INTEGRITY
PROFESSIONALISM
INNOVATION


Fisheries Operational
Plan
MANILA BAY
• Transforming Monitoring, Control, and Surveillance (MCS) data into spatial maps to identify fisheries hotspots, understand IUU fishing threats, and guide strategic enforcement planning and operations
INTEGRITY
PROFESSIONALISM
INNOVATION

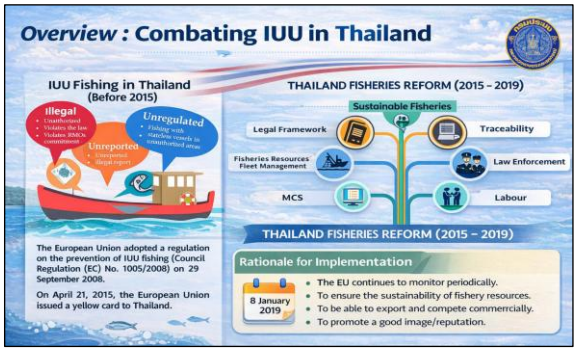

Monitoring, Control & Surveillance (MCS)
SURVEILLANCE & ENFORCEMENT
FishSHIELDS
INTEGRITY
PROFESSIONALISM
INNOVATION


MONITORING
Data Interoperability
Limited Analytics Manpower
Monitoring Blind Spots
Monitoring Blind Spots
CONTROL
Pressure from Economic & Political Actors
SURVEILLANCE
Uneven VMS Compliance
ENFORCEMENT
Evidence Documentation Gaps
Custody & Impounding Limitations
Case Build-Up Capacity
Issues and Challenges


QUESTIONS?
"Technology enables us to see more — but governance and enforcement ensure we act on what we see."
INTEGRITY
PROFESSIONALISM
INNOVATION

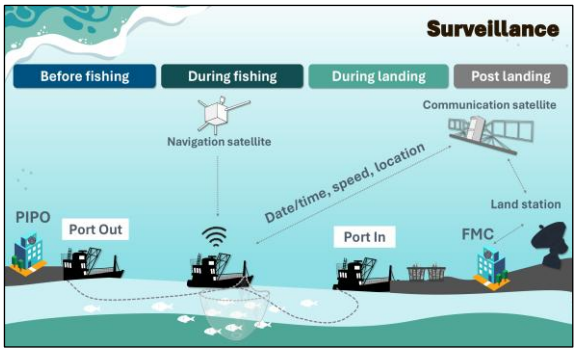

"Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing!"
Address
Email Address
Hotline
Website
Facebook
End of the Presentation


COUNTRY REPORT
Presentations on
Combating IUU
Fishing Efforts
THAILAND
Workshop on Strengthening Regional Fisheries Governance and
Technology Integration to Combat IUU Fishing in the Indo-Pacific,
for 17–19 March 2026 in Bangkok

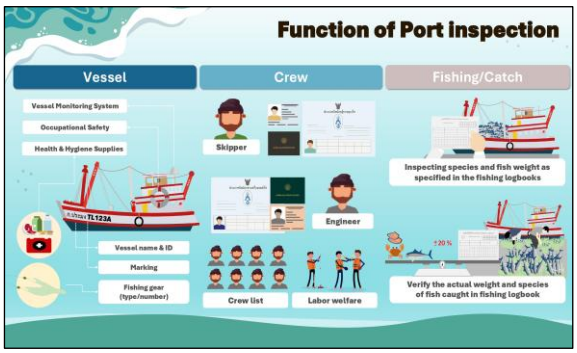

Overview : Combating IUU in Thailand
IUU Fishing in Thailand
(Before 2015)
Illegal
Unregulated
Unreported
THAILAND FISHERIES REFORM (2015 – 2019)
Sustainable Fisheries
Legal Framework
Traceability
Fisheries Resources
Fleet Management
Law Enforcement
MCS
Labour
THAILAND FISHERIES REFORM (2015 – 2019)
The European Union adopted a regulation on the prevention of IUU fishing (Council Regulation (EC) No. 1005/2008) on 29 September 2008.
On April 21, 2015, the European Union issued a yellow card to Thailand.
Rationale for Implementation
8 January 2019
The EU continues to monitor periodically.
To ensure the sustainability of fishery resources.
To be able to export and compete commercially.
To promote a good image/reputation.

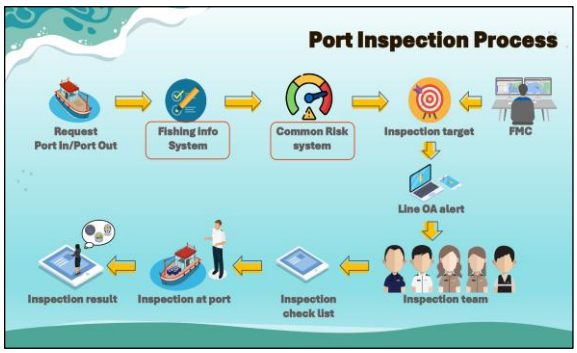

Surveillance tools of
Thai-flagged fishing vessels


Thailand's Surveillance tools
to combat IUU fishing
01
At port inspection
Port In and Port Out Control Center
02
Fisheries Monitoring Center
Vessel Monitoring System (VMS)
03
At sea inspection
Fishery patrol vessel by ThaiMECC, DOF

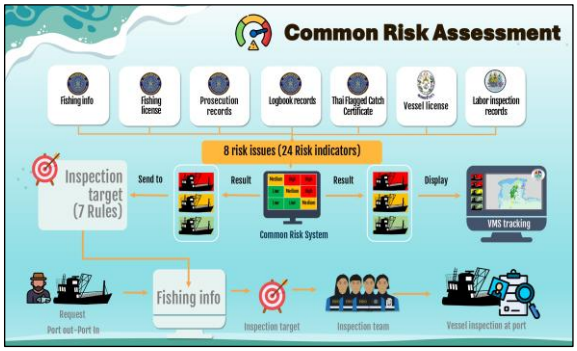

Surveillance
Before fishing
During fishing
During landing
Post landing
Communication satellite
Navigation satellite
Date/time, speed, location
Land station
PIPO
Port Out
Port In
FMC


At port inspection
Port In and Port Out Control Center

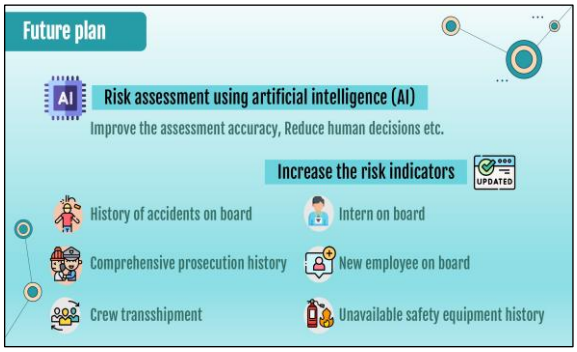

Function of Port inspection
Vessel
Crew
Fishing/Catch
Vessel Monitoring System
Occupational Safety
Health & Hygiene Supplies
Skipper
Engineer
Vessel name & ID
Marking
Fishing gear (type/number)
Crew list
Labor welfare
Inspecting species and fish weight as specified in the fishing logbooks
Verify the actual weight and species of fish caught in fishing logbook

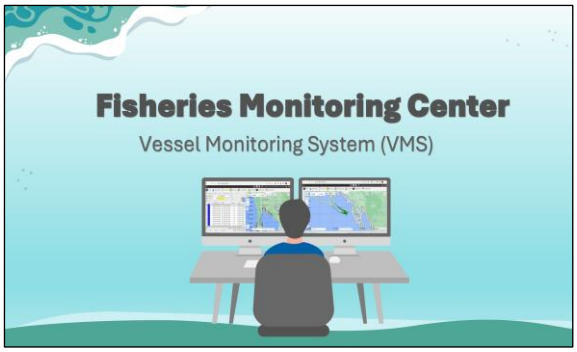

Port Inspection Process
Request
Port In/Port Out
Fishing info
System
Common Risk
system
Inspection target
FMC
Line OA alert
Inspection team
Inspection
check list
Inspection at port
Inspection result

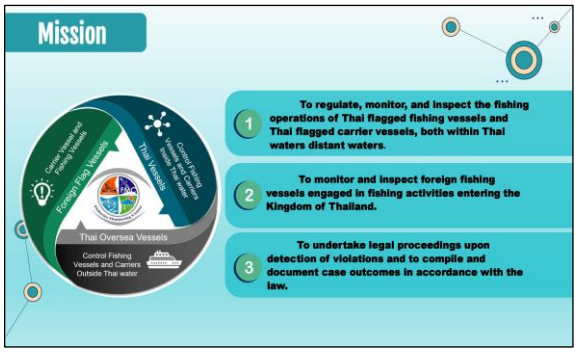

Automatic checking by fishing info system
1. Ship registration
2. Ship operating license
3. Master certificate level
4. Engineer certificate level
5. Ship operating license
6. Vessel lock status
7. Fishing license
8. Vessel Monitoring system (VMS)
9. Remaining fishing days
10. Estimated fishing days
11. Return to port within allowed period (30 days)
12. Vessel Monitoring System (VMS) signal history
13. Fishing port status
14. Offense record data
15. Seabook
16. Work permit
17. Fishing area (Andaman Sea / GOT)
18. Fishing vessel hygiene standard certificate
19. Inspection of fishing equipment standards
20. Objectives of PI/PO notification
21. Types and quantities of catch

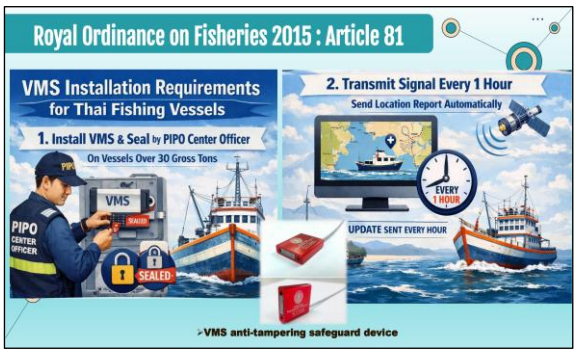

Common Risk Assessment
Fishing info
Fishing license
Prosecution records
Logbook records
Thai Flagged Catch Certificate
Vessel license
Labor inspection records
8 risk issues (24 Risk indicators)
Inspection target (7 Rules)
Send to
Result
Result
Display
Common Risk System
VMS tracking
Request Port out-Port in
Fishing info
Inspection target
Inspection team
Vessel inspection at port

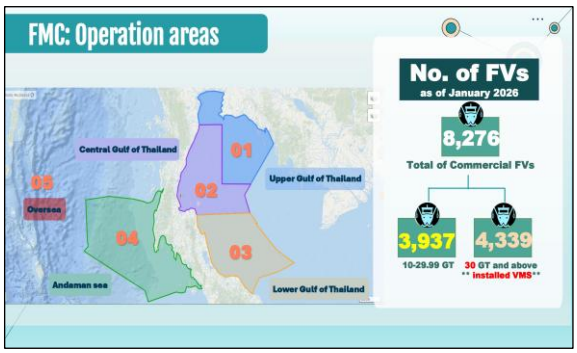

Inspection rules & Risk indicators
Vessel has not reported port departure to the PIPO center in the last three months
VMS signal loss
Landing declaration results for LB and LD differ by more than 20%.
Overseas vessels
Number of fishing days does not match the reported fishing days
Urgent target as suspicious behaviour by FMC
Consistency between the fishing operation position in the logbook and VMS
History of fishing offenses committed by the vessel owner and skipper
History of the ship owner being ordered and committing an administrative offence regarding labor laws
History of discrepancies between the total catch weight in the fishing logbook
Time spent fishing
Change in the actual port of entry from the designated port after advancing port entry notification
History of unstable VMS equipment installation based on PIPO centre port site inspections

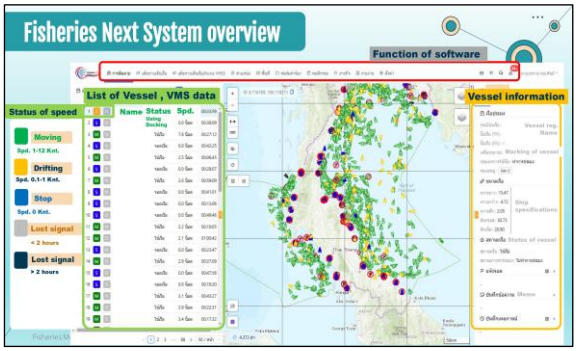

Future plan
AI
Risk assessment using artificial intelligence (AI)
Improve the assessment accuracy, Reduce human decisions etc.
Increase the risk indicators
UPDATED
History of accidents on board
Intern on board
Comprehensive prosecution history
New employee on board
Crew transshipment
Unavailable safety equipment history

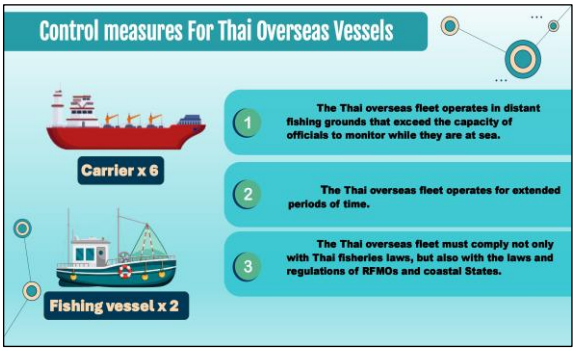

Fisheries Monitoring Center
Vessel Monitoring System (VMS)


Mission
Thai Vessels
Thai Oversea Vessels
Control Fishing Vessels and Carriers Outside Thai water
1 To regulate, monitor, and inspect the fishing operations of Thai flagged fishing vessels and Thai flagged carrier vessels, both within Thai waters distant waters.
2 To monitor and inspect foreign fishing vessels engaged in fishing activities entering the Kingdom of Thailand.
3 To undertake legal proceedings upon detection of violations and to compile and document case outcomes in accordance with the law.


Royal Ordinance on Fisheries 2015 : Article 81
VMS Installation Requirements for Thai Fishing Vessels
1. Install VMS & Seal by PIPO Center Officer
On Vessels Over 30 Gross Tons
VMS
SEALED
PIPO CENTER OFFICER
2. Transmit Signal Every 1 Hour
Send Location Report Automatically
EVERY 1 HOUR
UPDATE SENT EVERY HOUR
VMS anti-tampering safeguard device

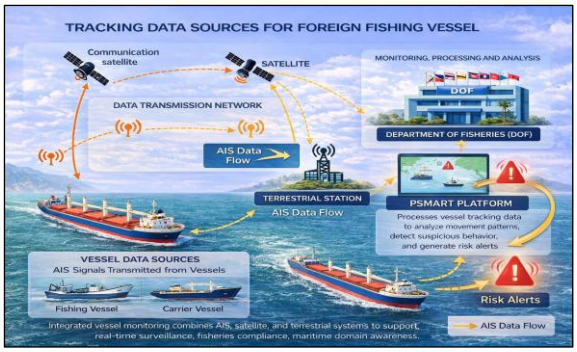

FMC: Operation areas
Central Gulf of Thailand
Upper Gulf of Thailand
Oversea
Andaman sea
Lower Gulf of Thailand
01
02
03
04
05
No. of FVs
as of January 2026
8,276
Total of Commercial FVs
3,937
10-29.99 GT
4,339
30 GT and above
** installed VMS**


Fisheries Next System overview
Function of software
List of Vessel , VMS data
Vessel information
Status of speed
Moving
Drifting
Stop
Lost signal
Lost signal

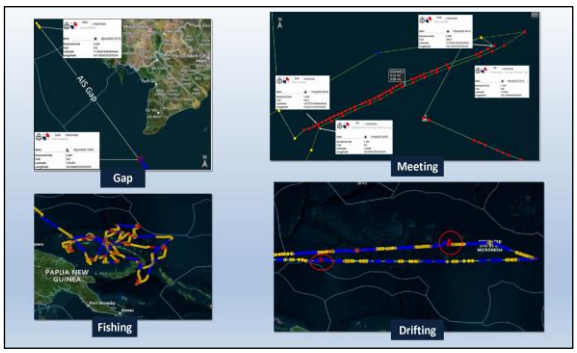

Control measures For Thai Overseas Vessels
Carrier x 6
Fishing vessel x 2
1
The Thai overseas fleet operates in distant fishing grounds that exceed the capacity of officials to monitor while they are at sea.
2
The Thai overseas fleet operates for extended periods of time.
3
The Thai overseas fleet must comply not only with Thai fisheries laws, but also with the laws and regulations of RFMOs and coastal States.

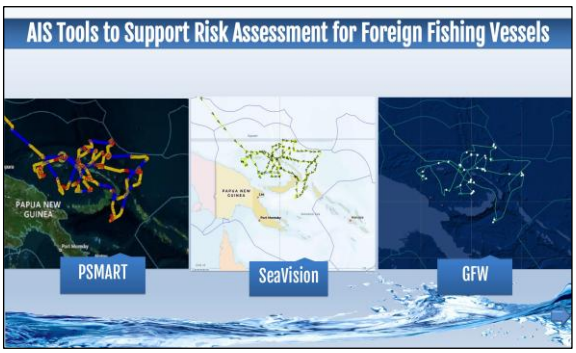

Control measures For Thai Overseas Vessels
Technology involve
Electronic Monitoring system : EM
Footage
Electronic Reporting system : ERS


PORT STATE MEASURES PROCEDURE
Transshipment
Processing Plant
BEFORE ENTRY
CONTROL OFFLOAD
CARRIER VESSEL
FISHING VESSEL
DESIGNED PORT
VERIFICATION
INSPECTION AT PORT


TRACKING DATA SOURCES FOR FOREIGN FISHING VESSEL
Communication satellite
SATELLITE
DATA TRANSMISSION NETWORK
MONITORING, PROCESSING AND ANALYSIS
DOF
DEPARTMENT OF FISHERIES (DOF)
AIS Data Flow
TERRESTRIAL STATION
AIS Data Flow
PSMART PLATFORM
Processes vessel tracking data to analyze movement patterns, detect suspicious behavior, and generate risk alerts
VESSEL DATA SOURCES
AIS Signals Transmitted from Vessels
Fishing Vessel
Carrier Vessel
Risk Alerts
AIS Data Flow
Integrated vessel monitoring combines AIS, satellite, and terrestrial systems to support real-time surveillance, fisheries compliance, maritime domain awareness.


Purse seiner
Carrier
PSMART
FFMD


Gap
Meeting
Fishing
Drifting


AIS Tools to Support Risk Assessment for Foreign Fishing Vessels
PSMART
SeaVision
GFW


Our CHALLENGES
THAILAND'S Efforts to Combat IUU Fishing
CHALLENGES
1. TECHNOLOGY LIMITATIONS
2. STAKEHOLDER INTERESTS
CAPACITY BUILDING NEEDS
1. IUU- INVESTIGATIONS BY EXPERTS.
2. SURVEILLANCE TOOLS FOR
SMALL SCALE (10-29.99 GT)


Thank you

Viet Nam's effort in Combating IUUF

Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific

Vu Van Tam
17-19 March 2026 Bangkok, Thailand

COMBATING IUU FISHING

Vietnam's Commitment Against IUU Fishing

- Urgent & long-term priority for sustainable fisheries
- Shared responsibility: government, agencies, businesses, communities
- Linked to modernizing management, resource protection, and fishermen's livelihoods
- Full compliance with international recommendations & legal frameworks
- Updated laws and regulations (2025) to strengthen enforcement

Improving the legal framework for fisheries management

Vietnam's Fisheries Legal Framework

- **Completed system**: Fisheries Law 2017, 2 Decrees, 8 Circulars
- Covers **fishing activities, vessel control, traceability, violations**
- **Amended & supplemented** to strengthen enforcement
- Aligns with **international commitments & practices**
- Supports **IUU combat & sustainable fisheries development**

MONITORING

Fleet Management

- All fishing vessels registered in **VNFishbase**, linked to **VNeID**
- **No new vessels** allowed in the near future
- Vessels at sea must have **licenses & VMS devices**
- Vessels >15m must have VMS (max 2 if joint fishing)
- Non-compliant vessels will be **strictly monitored**
- By **01/07/2026**, vessels >24m must use **eCDT system**

Control

Port Departure Control

- All fishing vessels must **notify Port Authority 1 hour before departure**
- **Inspectors** (management agencies, Port Authority) check vessel eligibility
- Documents reviewed:
  - Registration & operating license
  - Submitted logbook
  - VMS equipment
  - Ship markings
  - Crew documents

Control

Fishing Port Development

- **86 fishing ports** nationwide now operational
- Ongoing **investment & upgrades** to planned ports
- Enhances **control of fishing vessel operations**

Surveillance

- FMC will provide information to all management/surveillance agencies if the FV loses its position or is operating near the border of other countries.

Surveillance

At-Sea Vessel Inspection

- Inspectors check vessel compliance during operations
- Key items reviewed:
  - Registration & fishing license
  - Submitted logbook
  - Captain's certificates
  - VMS equipment
  - Vessel markings
  - Crew documents
  - Fishing gear
- **Inspection report will be submitted to DOF**

Technology used for combating IUUF

VMS System

- **Satellite communication**: identify location, speed, direction
- **Real-time tracking** of vessels on digital maps
- **Automatic alerts** when entering restricted waters
- **Monitoring routes & activities** of FV
- **Data storage** maintained for 36 months

Central software: managed by Ministry of Agriculture & Environment

Key challenges: VMS disconnection

- **Signal interruptions** during fishing trips are a key **indicator of potential IUU activity**
- **Enforcement difficulty**: hard to distinguish between technical errors (e.g., satellite blind spots) and intentional interference
- Leads to **delays in penalties** and weaker enforcement: Penalty rates at local/provincial level remain lower than detected violations due to burden of evidence

Key challenges: VMS disconnection

Main Causes of VMS disconnection

1. **Technical issues** related to onboard VMS equipment
2. **Signal limitations** in distant fishing areas
3. **Operational capacity of fishers** in using and maintenance the VMS device

VMS Disconnection: Scope and Trends

1. VMS disconnection cases account for a small proportion of monitored vessels
2. Year-on-year reduction of over 80% in VMS disconnection cases
3. Most cases are temporary or technical in nature
4. A limited number of cases show recurrent or intentional patterns

Handling Measures for VMS Disconnection Cases

- Short-term or first-time disconnection:
  → Warning, technical support, corrective actions
- Repeated disconnection cases:
  → Enhanced monitoring, administrative handling
- Suspected intentional interference:
  → Investigation, evidence collection, sanctions
- Serious violations:
  → License suspension; criminal proceedings

Areas for Further Improvement

Ongoing Efforts and Needs

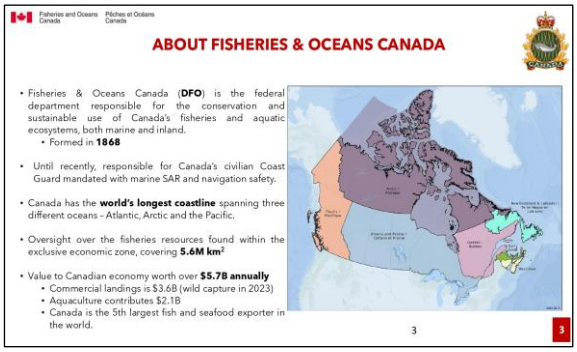
- 1. Improving reliability and standards of VMS equipment
- 2. Clarifying legal treatment of VMS disconnection cases
- 3. Enhancing data integration between VMS and other MCS tools
- 4. Strengthening cooperation and experience sharing at the regional level

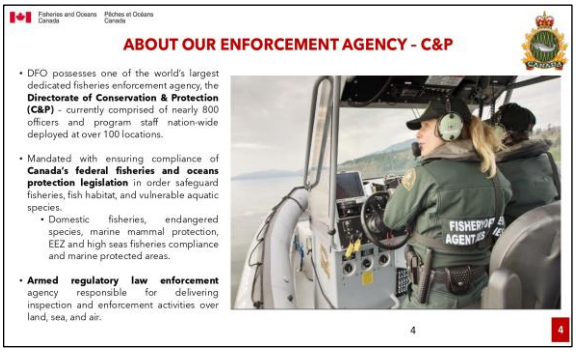
CONTACT US

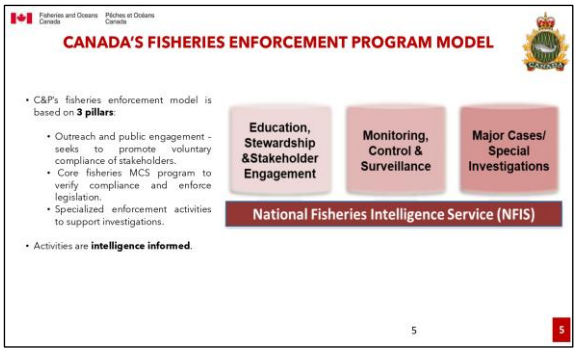
- DEPARTMENT OF FISHERIES AND SURVEILLANCE
- https://tongcucthuysan.gov.vn/en-us/Home


CANADA'S FISHERIES ENFORCEMENT FRAMEWORK: DOMESTIC MCS AND INTERNATIONAL COOPERATION
MARCH 16, 2025 – SEAFDEC – BANGKOK, THAILAND
DUSTIN DE GAGNE - C&P INTERNATIONAL ENFORCEMENT SENIOR PROGRAM OFFICER
Fisheries and Oceans Canada
Pêches et Océans Canada

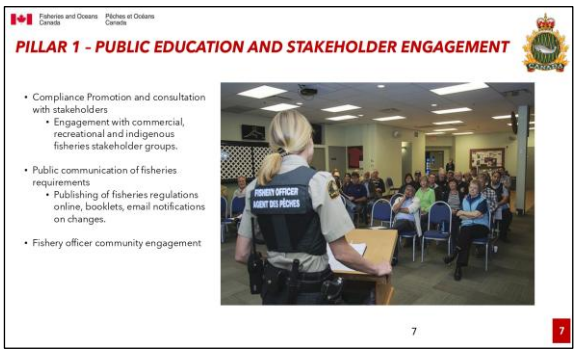

AGENDA
1. About DFO
2. DFO's fisheries enforcement program
3. Our three-pronged approach to promote compliance
4. Canada's international enforcement efforts
5. International Cooperation
6. Indo-Pacific Strategy initiatives

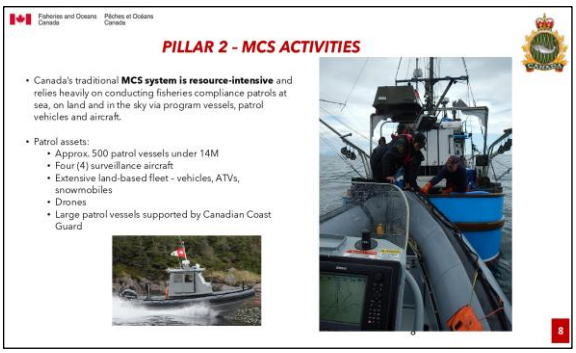

ABOUT FISHERIES & OCEANS CANADA
• Fisheries & Oceans Canada (DFO) is the federal department responsible for the conservation and sustainable use of Canada's fisheries and aquatic ecosystems, both marine and inland.
• Formed in 1868
• Until recently, responsible for Canada's civilian Coast Guard mandated with marine SAR and navigation safety.
• Canada has the world's longest coastline spanning three different oceans - Atlantic, Arctic and the Pacific.
• Oversight over the fisheries resources found within the exclusive economic zone, covering 5.6M km²
• Value to Canadian economy worth over $5.7B annually
• Commercial landings is $3.6B (wild capture in 2023)
• Aquaculture contributes $2.1B
• Canada is the 5th largest fish and seafood exporter in the world.
3
3


ABOUT OUR ENFORCEMENT AGENCY - C&P
• DFO possesses one of the world's largest dedicated fisheries enforcement agency, the Directorate of Conservation & Protection (C&P) – currently comprised of nearly 800 officers and program staff nation-wide deployed at over 100 locations.
• Mandated with ensuring compliance of Canada's federal fisheries and oceans protection legislation in order safeguard fisheries, fish habitat, and vulnerable aquatic species.
• Domestic fisheries, endangered species, marine mammal protection, EEZ and high seas fisheries compliance and marine protected areas.
• Armed regulatory law enforcement agency responsible for delivering inspection and enforcement activities over land, sea, and air.
4
4


CANADA'S FISHERIES ENFORCEMENT PROGRAM MODEL
• C&P's fisheries enforcement model is based on 3 pillars:
• Outreach and public engagement - seeks to promote voluntary compliance of stakeholders.
• Core fisheries MCS program to verify compliance and enforce legislation.
• Specialized enforcement activities to support investigations.
• Activities are intelligence informed.
Education, Stewardship &Stakeholder Engagement
Monitoring, Control & Surveillance
Major Cases/ Special Investigations
National Fisheries Intelligence Service (NFIS)
5
5


CANADA'S REGULATORY FRAMEWORK
• Canada relies on a robust statutory legal framework to ensure compliance with fisheries requirements and provide strong regulatory enforcement powers, including for inspections and investigations, to federal fishery officers, via:
• Federal Legislation - Acts and regulations
• Legally-binding conditions of licence (linked to Acts/regulations)
• All based upon federal legislation – which can result in criminal prosecution if serious.
6
6


PILLAR 1 - PUBLIC EDUCATION AND STAKEHOLDER ENGAGEMENT
• Compliance Promotion and consultation with stakeholders
• Engagement with commercial, recreational and indigenous fisheries stakeholder groups.
• Public communication of fisheries requirements
• Publishing of fisheries regulations online, booklets, email notifications on changes.
• Fishery officer community engagement
FISHERY OFFICER
AGENT DES PÊCHES
7
7


PILLAR 2 - MCS ACTIVITIES
• Canada's traditional MCS system is resource-intensive and relies heavily on conducting fisheries compliance patrols at sea, on land and in the sky via program vessels, patrol vehicles and aircraft.
• Patrol assets:
• Approx. 500 patrol vessels under 14M
• Four (4) surveillance aircraft
• Extensive land-based fleet - vehicles, ATVs, snowmobiles
• Drones
• Large patrol vessels supported by Canadian Coast Guard
8
8

AERIAL SURVEILLANCE

- Canadian-made Dash 8 long-range fisheries surveillance aircraft equipped with advanced surveillance technologies:
  - Advanced radar tracking
  - Integration with onboard data management systems
  - Military-grade optical and thermal sensors
  - High altitude operating capability
- Missions delivered by Canadian contractor PAL AEROSPACE and directed by DFO fishery officers to fulfill fisheries enforcement compliance priorities.

9

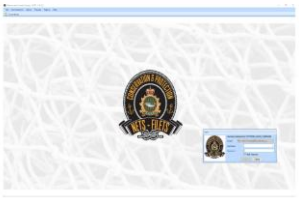
OFFSHORE FISHERIES PATROLS

- DFO conducts persistent mid-shore and offshore maritime patrolling on both Pacific and Atlantic coasts aboard Coast Guard- operated patrol vessels.
- Dedicated maritime patrol units supplement MCS activities of local enforcement detachments.

10

DATA MANAGEMENT SYSTEMS

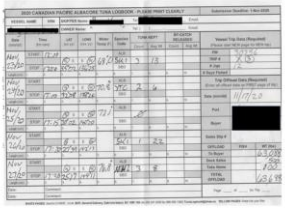
- DFO maintains a national compliance management database to track data on inspections and investigations, supporting in-port and at-sea risk-based decision making by officers through **access to compliance history** of vessels and fishing entities:
  - Real-time support through enforcement dispatch centres to verify compliance history.
- Access for enforcement to internal databases on licenses and authorizations.
- Access to dedicated aerial surveillance mission systems for real-time data on vessel targets.



11

FISHER-DEPENDENT MCS DATA REQUIREMENTS

- Requirements may be fishery-specific, but generally, legally-required record keeping is required to support compliance and enforcement.
  - Logbook Records (e-log or paper)
  - Hail-in and Hail-out Records :
    - Fisher may be required to phone in or digitally submit data on when they embarked and return on fishing trip - may include skipper, crew details, coordinates, and catch reporting information.
  - Fish sales declarations
  - In-transit authorizations for foreign FVs transiting through Canadian fisheries waters



12

FISHER-INDPENDENT MCS DATA REQUIREMENTS

- Generally, Canada relies upon Third-Party contractors to deliver various fisher-independent programs, including:
  - Dockside monitoring data and verification upon catch landing
  - At-sea observer programs
  - VMS
  - Electronic monitoring (EM)
- Non-compliance is reported to C&P for prioritization – including follow-up actions by enforcement personnel such as inspection and investigations.

13

PILLAR 3- SPECIALIZED ENFORCEMENT CAPABILITIES AND SUPPORT

- Canada's Program within C&P is supported by specialized programs, including:
  - Digital forensics teams capable of extracting and analyzing digital data extracted from computers, onboard navigation systems, phones and other digital devices.
  - Dedicated Major or Complex Investigation Teams
  - Intelligence officers and specialized programs capable of conducting covert investigators into serious illegal operators.

14

14

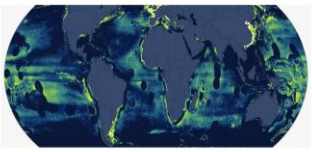
ENFORCEMENT ACTIVITIES INFORMED BY INTELLIGENCE

- Canada's C&P is supported by a National Fisheries Intelligence Service (NFIS), comprised of intel officers and analysts.
- Enforcement officers collaborate with intel officers and analysts to conduct field-reporting on activities deemed to have intelligence-value.
- Program develops intelligence products to support risk-based priority setting for strategic, tactical and operational decision making.

15

CANADA'S INTERNATIONAL FISHERIES ENFORCEMENT PROGRAM

- Canada supports international efforts to combat illegal fishing and protect marine biodiversity globally through several lines of activity delivered from **C&P's International Fisheries Enforcement Program.**
- Primary Function: To coordinate and deliver activities on behalf of Canada to combat **IUU fishing beyond Canada's EEZ** in accordance with international laws and treaties.



16

DFO'S INTERNATIONAL EFFORTS

Our efforts to combat IUU fishing track along the following four (4) lines of activity:

- High Seas Operations
- Partner Technical Assistance
- Partnerships with Expert NGOs
- International Fisheries Management Fora

17

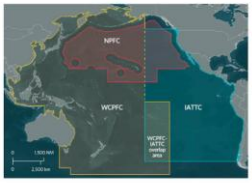
HIGH SEAS ENFORCEMENT OPERATIONS

- Canada has been actively engaged in high seas fisheries enforcement in the Pacific since the 1990s and in the Atlantic since the 1970s.
- First Pacific high seas enforcement missions were conducted pursuant to OPERATION DRIFTNET in 1993, following the 1992 UN ban on large-scale high seas drift nets.
- Since the 90's, several North Pacific coastal states have coordinated their enforcement and surveillance actions to combat IUU fishing activities, including through the North Pacific Anadromous Fisheries Commission (NPAFC) and more recently, through high seas boarding provisions granted through the North Pacific Fisheries Commission (NPFC).

18

HSBI AS A TOOL FOR INTERNATIONAL FISHERIES ENFORCEMENT COOPERATION

- Canada has **increasingly pursued high seas boarding and inspection (HSBI) as a mechanism to increase our cooperation** and coordination with international partners.
  - Grounded in international law such as the **UN Fish Stocks Agreement**, they provide a legal mechanism to not only increase transparency and accountability for high seas fisheries but also strengthen regional and international cooperation – where adopted.
- Canada is actively conducting HSBI in cooperation with international partners within 3 RFMOs – 2 in Pacific/1 in Atlantic
- 3 out of the 4 main Pacific regional fisheries management organizations (RFMO) have adopted **HSBI** framework, permitting member countries to board and conduct inspections of foreign-flagged vessels on the high seas.



19

HSBI AS A MECHANISM FOR INTERNATIONAL FISHERIES ENFORCEMENT COOPERATION

- HSBI and RFMO convention framework promote increased cooperation **between inspecting state and flag state**, both through HSBI mechanisms and Convention obligations that hold flag states responsible for investigating fleets where potential violations are raised.
- Most HSBI frameworks encourage multi-national and joint compliance campaigns.

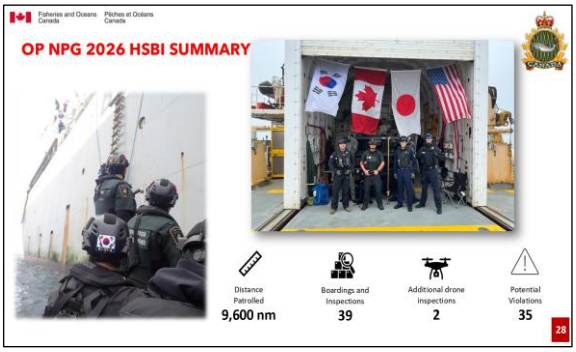
20

OPERATION NORTH PACIFIC GUARD

- Since 2019, Canada has participated in cooperative multinational fisheries enforcement operations under **North Pacific Guard** – working with partner nations to conduct high seas fisheries compliance inspections of high seas fleets on the water, air, and from space using remote sensing satellites.
- US Coast Guard "shiprider" deployments – 2019+
- Close coordination with Japanese Government to facilitate Canadian aerial inspection campaigns.
- Canadian-led HSBI operations – 2023+

21


INSPECTION
DES PÊCHES
Canada


OP NPG 2026 HSBI SUMMARY
Distance Patrolled
9,600 nm
Boardings and Inspections
39
Additional drone inspections
2
Potential Violations
35
28


10

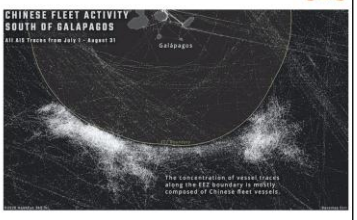

OP NPG 2026 AERIAL SUMMARY
C-FOFR
Number of Flights
33
Distance Flown
47,000 nm
Flight Time
254 hrs
Vessels observed
366
Potential Violations
56
Joint Patrols
8
30


INTERNATIONAL FISHERIES POLICY FORA
• Canada belongs to 9 RFMOs, where it takes a strong position to adopt robust conservation and management measures and compliance regimes, such as HSBI.
• RFMO compliance and commission meetings present ongoing opportunities for collaboration amongst like-minded member states on a host of potential fisheries compliance-related areas that support efforts to curb IUU and promote compliance regimes.
Shark-fishing gear banned across much of Pacific in conservation 'win'
31


REGIONAL INTELLIGENCE COOPERATION
• In recent years, DFO has further prioritized initiatives that strengthen the capacity of international partners to disrupt illegal fishing, addressing both technological and human capacity.
• The development of the Dark Vessel Detection (DVD) platform in 2020 is the highlight of these efforts. It is a satellite-based surveillance system built for the Canadian government by space technology contractor MDA Space Ltd.
North Atlantic Fisheries Intelligence Group
The Five Eyes (FVEY)
TRILATERAL COMMITTEE
NAFO
32

CAPACITY DEVELOPMENT / DARK VESSEL DETECTION

- In recent years, DFO has further prioritized initiatives that **strengthen the capacity of international partners** to disrupt illegal fishing, addressing both technological and human capacity.
- The development of the **Dark Vessel Detection (DVD)** platform in 2020 is the highlight of these efforts. It is a satellite-based surveillance system built for the Canadian government by space technology contractor **MDA Space Ltd**.



2020 Chinese squid fleet activity along Ecuador's EEZ – significant tracking outages and potential incursions detected

33

DARK VESSEL DETECTION BACKGROUND

- It is widely understood that vessels engaged in illegal fishing and other illicit activities extinguish their **AIS** and **VMS** transponders, thereby going **"dark"** and untrackable to maritime monitoring centres.
- DVD addresses this high-risk "dark" activity by providing **unclassified** layered space-based surveillance data, permitting international maritime and fisheries compliance partners to identify and respond to such threats.
- Provides a crucial surveillance tool for Canada's partners in the fight against IUU fishing, providing **near real-time** data on potential IUU fishing activity.
- Current recipient countries supported by DVD include 5 Pacific Latin American, South Pacific Island States belonging to the Forum Fisheries Agency, Philippines and Taiwan.

Canada MDA

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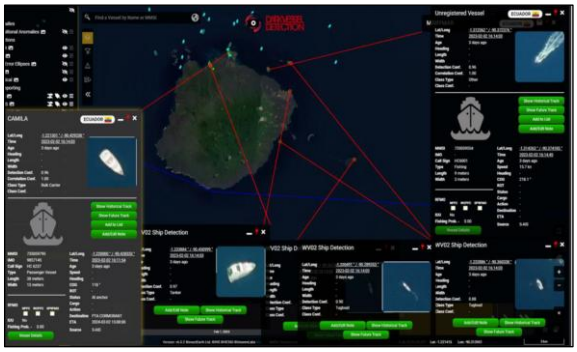
DARK VESSEL DETECTION

- **Multi-source satellite data** (SAR, RF, VIIRs, optical) for ship detection
- Frequent SAR from **Canada's Radarsat Constellation Mission** SAR satellites
- **Auto-correlation** of satellite detections with AIS/VMS; flags dark vessels
- **Analytical tools** including geo-fences, filters, behavior detection, tripwires, alerts
- **Web-based access** (laptop + internet only)
- **Unclassified data** enables easier sharing (with license conditions)
- **Near real-time** (2-4 hours post-collection)

DARK VESSEL DETECTION

35



TECHNICAL ASSISTANCE COOPERATION

- DFO possesses a **range of expertise** on specialized fisheries inspection and investigation techniques, MCS tools, and experience in both domestic and international fisheries operations.
- Department is seeking to expand training course development and opportunities for technical cooperation.
- Ie. Port Inspector Training, HSBI, MDA analysis.

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STRATEGIC PARTNERSHIPS WITH EXPERT FISHERIES COMPLIANCE NGOs

- Recognizing the **value that specialized international NGOs provide** to international efforts to strengthen fisheries MCS capabilities, intelligence and transparency in the fight against illegal fishing, DFO and the Government of Canada have prioritized financial support to facilitate increased support for Indo-Pacific partners and the regional community of MCS practitioners.
- Through Canada's IPS, se have committed to supporting the Joint Analytical Cell (JAC), WildAid, and OceanMind, amongst other partners, in support of fisheries MCS and effective MPA enforcement in the region.

JOINT ANALYTICAL CELL

TMT C4ADS SKYLIGHT

WILDAID MARINE PROGRAM OCEAN MIND

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OPPORTUNITIES FOR FURTHER COLLAORATION THROUGH CANADA'S INDO-PACIFIC STRATEGY

- Recognizing the growing global influence of the Indo-Pacific region, Canada released it's Indo-Pacific Strategy in 2022 in support of deepening engagement with Pacific partners.
- Canada's **Indo-Pacific Strategy** prioritizes stronger partnerships with regional states to support sustainable fisheries, maritime security, and rules-based ocean governance.
- The **Shared Ocean Fund (SOF)** initiative was funded under Canada's **Indo-Pacific Strategy** and led by DFO.
- It is a **5-year initiative** focused on combatting illegal, unreported, and unregulated (IUU) fishing and supporting a healthy marine environment through:
  (1) **governance**; (2) **enforcement**; and (3) **partnerships**

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CANADA'S INDO-PACIFIC STRATEGY

Through the Shared Ocean Fund, Canada is combatting IUU fishing by implementing a three-pronged approach:

1. Governance

Strengthen the rules-based international order by **increasing Canadian-engagement, including in regional fisheries management organizations** (RFMOs)

2. Enforcement

Augment international IUU fishing **surveillance and detection technologies** to enforce domestic and international legal frameworks in the Indo-Pacific region

3. Partnerships

Drawing on Canadian expertise, **leverage bilateral and multilateral cooperation** to combat IUU fishing and to support sustainable use of marine resources

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Fisheries and Oceans Canada
Pêches et Océans Canada
Questions?
Thank for your attention!
Fisheries and Oceans Canada
Pêches et Océans Canada
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Fisheries and Oceans Canada
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Email: Dustin.DeGagne@dfo-mpo.gc.ca
Canada
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Global perspective on fisheries governance frameworks

Ms Angela Lentisco,
Fishery and Aquaculture Officer
FAO RAP

Workshop on Strengthening Regional Fisheries Governance and Technology Integration to
Combat IUU Fishing in the Indo-Pacific
Bangkok, Thailand
17–19 March 2026

Why is IUU fishing a problem?

- **It undermines sustainable resource management:**
  - Prevents the effective fisheries management contributing to overfishing and ecosystem loss
- **It impacts food security and livelihoods:**
  - Depletion of resources, jeopardizing food security and sustainable livelihoods
- **It is fueled by harmful economic practices:**
  - Certain fisheries subsidies may contribute to overcapacity and overfishing leading to IUU fishing
- **It threatens global development goals and bypasses international frameworks**
  - Hinders achievement of SDG14 and other established global instruments (e.g. the FAO Compliance Agreement).

What types of IUU fishing do we have in the Asian region?

Types of IUU fishing (1)

- **Vessel and operational documentation**
  - Fishing without a valid license or using a with falsified/duplicated license
  - Dual-flagging: Registering vessel in two countries to avoid regulations
  - Falsifying vessel identity or registration details to bypass size-based restrictions
- **Catch reporting**
  - Non-reporting: Complete failure to log catches.
  - Misreporting/Under-reporting: Deliberately recording lower volumes or different species to stay within quotas or avoid taxes.

Types of IUU fishing (2)

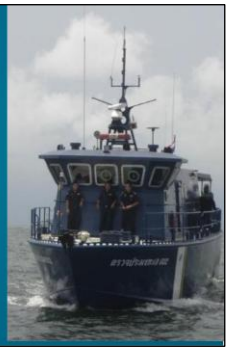
- **Landings and transshipment**
  - Unauthorized landings: avoiding designated ports to bypass inspections.
  - Unauthorized transshipment
- **Destructive Methods and Prohibited species**
  - Use of explosives (blast fishing) or chemicals (cyanide) highly destructive of aquatic ecosystems
  - Targeting or bycatch of protected and vulnerable species (e.g. corals, marine mammals, etc.)

Types of IUU fishing (3)

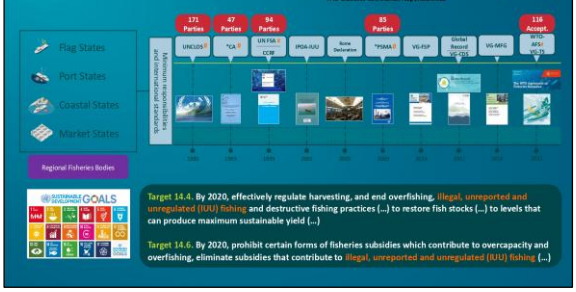
- **Encroachment**
  - Commercial vessels encroaching on nearshore zones reserved for Small-Scale Fishers (SSF).
- **Transboundary "Straying"**
  - SSF or commercial vessels crossing maritime borders, often in disputed or poorly monitored jurisdictions.
- **Governance Disconnects**
  - Poor coordination between provincial (local) and national licensing authorities,

What drives IUU fishing?

- Expansion of **effort & capacity**
  - Post 1945 expansion
  - 1970's intensification (trawling & motorization of SSF)
  - 1990's improved technology & globalization of markets
- Led to **over-capacity** in fisheries & processing
- **Economic opportunity vs Risk**
  - **Large-Scale**: Calculated risk to maximize profit against low access fees.
  - **Small-Scale:** Driven by the "need to make a basic income" (subsistence) where the likelihood of capture is low.
  - **Low Deterrence:** Even when caught, the risk of capture/fines are relatively low – difficult to prosecute



International framework to combat IUU fishing



2009 – Port State Measures Agreement

Adoption of effective port State measures as a means to ensure the long-term conservation and sustainable use of living marine resources.

Applied to:

- foreign vessels when seeking entry to port entry or when they are in the port –
- Exceptions include:
  - **artisanal fishing vessels** of neighboring countries, provided the port State and the flag state cooperate to ensure not engaged in IUU fishing or related activities.
  - **containers vessels** that are not carrying fish, and if they are, it has been previously landed, and no suspecting they are involved in IUU fishing or related activities.

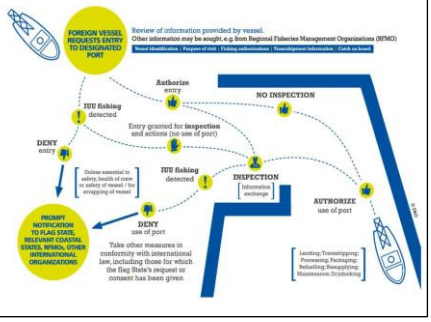
Key responsibilities of Parties

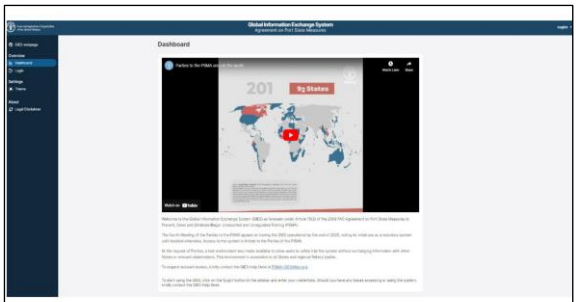
- Deny access to port, except for inspection purposes, to foreign flagged vessels involved in IUU fishing activities.
- Deny use of port to foreign flagged vessels for which inspection results provide clear grounds to believe that the vessel has been engaged in IUU fishing.
- Exchange information with flag and relevant coastal states, RFMOs, FAO and other international organizations.
- Apply equally stringent measures to national vessels.

Status of the Agreement on Port State Measures (PSMA)

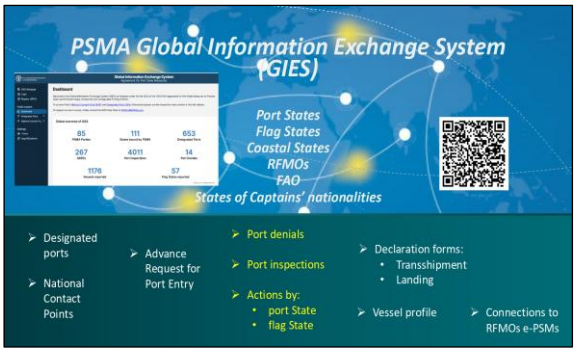
Disclaimer: The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dashed lines on maps represent approximate border lines for which there may not yet be full agreement

How do Port State Measures work?





2023 – Global Information Exchange System –
https://psma-gies.fao.org/ (only for accredited users)



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

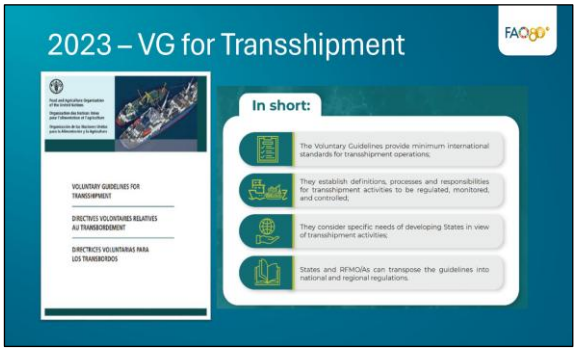
- **Global Record**
  - Combat IUU fishing by gathering and sharing certified information about the world's fleet of fishing (and related) vessels.
  - It closes the global information gap on vessels involved in IUU fishing
  - Promotes **transparency, traceability and dissemination** of on the global fishing fleet and its operations

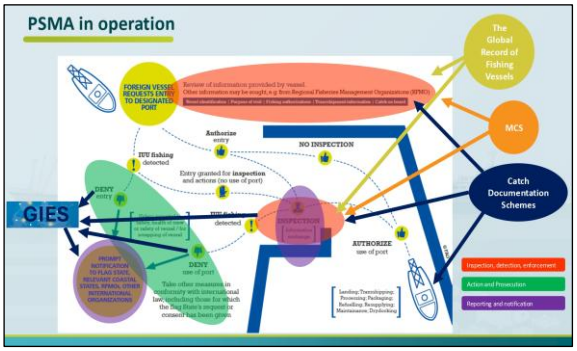
VG Marking of Fishing Gear

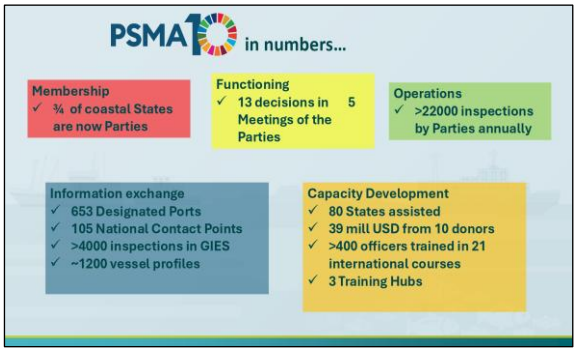
- Address issues related to **abandoned, lost or otherwise discarded fishing gear (ALDFG)** and facilitating the identification and recovery of such gear.
- Assist fisheries management and help address IUU fishing activities

VG Catch Documentation Schemes

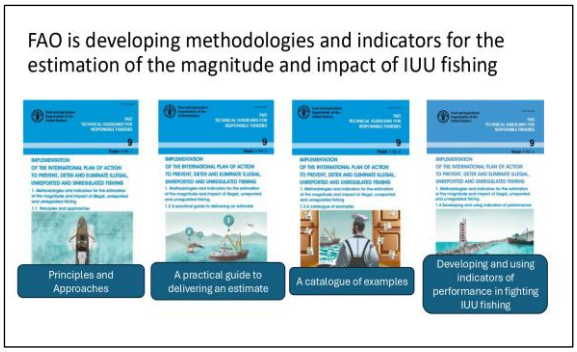
- System to help determine throughout the supply chain whether fish originate from "legal and sustainable" catches


2023 – VG for Transshipment
In short:
The Voluntary Guidelines provide minimum international standards for transshipment operations;
They establish definitions, processes and responsibilities for transshipment activities to be regulated, monitored, and controlled;
They consider specific needs of developing States in view of transshipment activities;
States and RFMO/As can transpose the guidelines into national and regional regulations.


PSMA in operation
The Global Record of Fishing Vessels
MCS
Catch Documentation Schemes
GIES
NO INSPECTION
AUTHORIZE
Inspection, detection, enforcement
Action and Prosecution
Reporting and notification

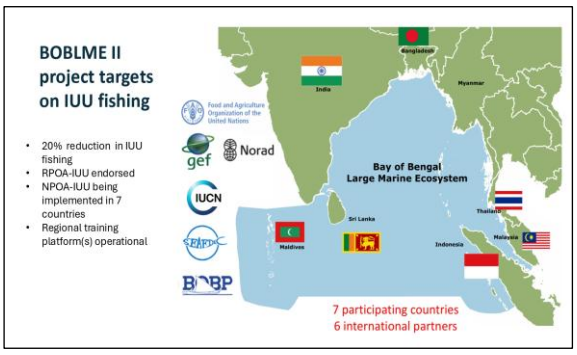

PSMA in numbers...
Membership
✓ ¾ of coastal States are now Parties
Functioning
✓ 13 decisions in Meetings of the Parties 5
Operations
✓ >22000 inspections by Parties annually
Information exchange
✓ 653 Designated Ports
✓ 105 National Contact Points
✓ >4000 inspections in GIES
✓ ~1200 vessel profiles
Capacity Development
✓ 80 States assisted
✓ 39 mill USD from 10 donors
✓ >400 officers trained in 21 international courses
✓ 3 Training Hubs

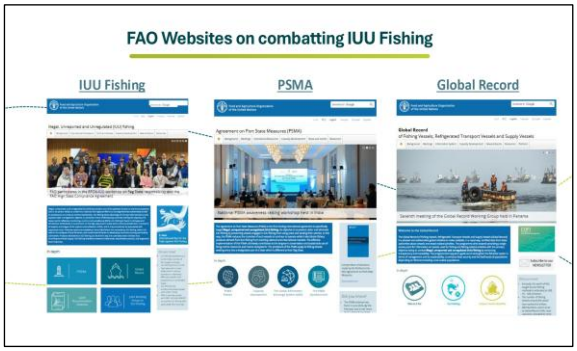

Key results so far
• Enhanced cooperation among States
• Unique information exchange system
• Strengthened control of fisheries
• Enhanced culture of compliance
PORT STATE MEASURES AGREEMENT
COMBATTING IUU FISHING
Looking ahead
• Monitoring implementation by Parties
• Measuring impact in preventing, deterring and eliminating IUU fishing
• Supporting the implementation of other ocean Treaties


FAO is developing methodologies and indicators for the estimation of the magnitude and impact of IUU fishing
Principles and Approaches
A practical guide to delivering an estimate
A catalogue of examples
Developing and using indicators of performance in fighting IUU fishing


Checklists and Technical Guidelines to Combat IUU Fishing


FAO website on IUU fishing
https://www.fao.org/iuu-fishing/en/


BOBLME II project targets on IUU fishing
• 20% reduction in IUU fishing
• RPOA-IUU endorsed
• NPOA-IUU being implemented in 7 countries
• Regional training platform(s) operational
Bay of Bengal Large Marine Ecosystem
7 participating countries
6 international partners


FAO Websites on combatting IUU Fishing
IUU Fishing
PSMA
Global Record


PSMA
Contacts
FAO-IUU@fao.org
PSMA-Secretariat@fao.org
PSMA-support@fao.org
PSMA-GIES@fao.org
FAO-Transshipment@fao.org
NFI-Global-Record@fao.org


Thank you!
Angela.Lentisco@fao.org

SUB-REGIONAL COOPERATION MODEL AND PROGRESS

Delivered by:
Yudhistira Rizky Abdillah
Vice Executive Director of the RPOA-IUU Secretariat

Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific

OVERVIEW OF RPOA-IUU

Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region (RPOA-IUU)

1. The RPOA-IUU is **a voluntary instrument** and takes its core principles from international agreements and instruments for promoting responsible fishing practices
2. Agreed on 4 May 2007, Bali-Indonesia, by 11 Ministers related to fisheries **(Australia, Brunei Darussalam, Cambodia, Indonesia, Malaysia, Papua New Guinea, The Philippines, Singapore, Thailand, Timor-Leste, and Vietnam)**
3. The objective of the RPOA-IUU is to enhance and strengthen the overall level of fisheries management in the region and to optimize the benefit of adopting responsible fishing practices. The actions cover: conservation of fisheries and their environment; managing fishing capacity; and combating illegal, unreported and unregulated (IUU) fishing.

RPOA-IUU MCS SUB-REGIONAL GROUPS

History:

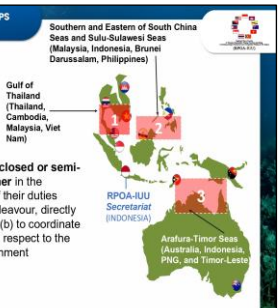
During the MCS Workshop **on March 2008**, the Coordination Committee agreed to establish a regional and sub-regional MCS Networks which

- **Malaysia** is the chair of sub-regional for the Southern and Eastern of SCS and SSS
- **Thailand** is the chair of sub-regional for the Gulf of Thailand Sub Regional Group
- **Australia** is the chair of sub-regional for the Arafura and Timor-Seas

RATIONALES FOR ESTABLISHING MCS SUB-REGIONAL GROUPS

Rationales:

- **Article 123 of UNCLOS**: states bordering an **enclosed or semi-enclosed sea should cooperate with each other** in the exercise of their rights and in the performance of their duties under this Convention. To this end they shall endeavour, directly or through an appropriate regional organization: (b) to coordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment
- Shared ocean and fish stocks
- Cross-border *illegal fishing* incidents



MCS SUB-REGIONAL GROUPS ROLES

Roles :

- Strengthen cooperation among sub-regional member countries.
- Facilitate information exchange and coordination of MCS operations.
- Support joint risk analysis and collective action to address transboundary IUUF hotspots.
- Nominate and select candidates for MCS training courses to support targeted capacity building.

GULF OF THAILAND MCS SUB-REGIONAL GROUPS

- The latest sub-regional meeting was held on 20 June 2024 to discuss Monitoring, Control and Surveillance (MCS) needs and gaps under the RPOA-IUU framework.
- Participating countries exchanged views and experiences to strengthen cooperation in the Gulf of Thailand.
- The meeting produced the "2025 Recommendations and Way Forward for the Sub-Regional Gulf of Thailand." The document outlines priority actions to improve coordinated MCS implementation and combat IUU fishing.

GULF OF THAILAND MCS SUB-REGIONAL GROUPS

PROGRESS

Key MCS Issues/ Challenges Identified	Way Forward
4. Information on stock assessment of transboundary species and harmonized framework of transboundary management	Participate + implement the activity under the GOTFish Project.

The GoTFish project focussed on regional transboundary fisheries governance and management. The GoTFish Project is currently in its Inception Phase, has obtained country signatures from Thailand and Cambodia and is awaiting from Malaysia and Viet Nam.

GULF OF THAILAND MCS SUB-REGIONAL GROUPS

PROGRESS

Key MCS Issues/ Challenges Identified	Way Forward
7. Enhance knowledge on MCS for Fisheries Officers	Participate in MCS training or officer exchange component under the SEA-IUU Program.

Fisheries Officer Exchange program was held in Bangkok, from June 23 to 27, 2025, supported by the Australia's Combating IUU fishing program and attended by five RPOA-IUU countries (Indonesia, Malaysia, the Philippines, Timor-Leste, and Viet Nam).

Key MCS Issues/ Challenges Identified	Way Forward
8. Estimation of losses due to IUU Fishing	Propose estimation study on the losses in all aspect due to IUU fishing with possibility assistance from experts under the SEA-IUU program or other possibility donors

This proposal has included in the RPOA-IUU Work Plan endorsed at the 17th CCM in November 2024. The RPOA-IUU Secretariat, in coordination with Australia, agreed to proceed with a pilot study in the Gulf of Thailand to develop a methodology for future assessments, with Malaysia considering participation.

SOUTHERN AND EASTERN OF SOUTH CHINA SEAS AND SULU–SULAWESI SEAS MCS SUB-REGIONAL GROUPS

Based on presentations from each member country in the 8th Sub-Regional Meeting on the SESCS SSS which is held in 13 November 2025, six main IUU fishing issues were identified within the sub-region:

- encroachment by foreign fishing vessels
- fishing without valid licenses or with misused gear licenses/violated fishing conditions
- the use of prohibited gears such as cyanide and blast fishing, or illegal mesh sizes and fishing techniques
- fishing in restricted zones
- unauthorized use and placement of Fish Aggregating Devices (FADs)
- illicit fish transshipment to/from foreign fishing vessels.

As follow-up actions, the Secretariat of the SESCS and SSS RPOA-IUU Sub-regional Groups will establish a discussion platform (e.g., WhatsApp group) to improve coordination. Member countries are also encouraged to seek technical assistance and capacity building from partners such as Australia's SEA-IUU Program to address key issues.

ARAFURA AND TIMOR SEAS MCS SUB-REGIONAL GROUPS

- The Arafura and Timor Seas (ATS) Sub-regional Group noted that illegal fishing in the ATS is largely driven by economic pressure.
- Member countries are working to better understand prosecution requirements among countries, including strengthening information sharing and regularly updating focal points.
- In 2025, progress included the Indonesia–Australia Fisheries Surveillance Forum for information exchange and joint patrols under Operation Jawline Arafura in September 2025, followed by high-level meetings.
- For 2026, the Action Plan includes holding the next Sub-regional Group meeting in Indonesia, continuing coordinated patrols, sustaining education initiatives, enhancing information sharing, and exploring new capacity-building opportunities.

REMARKABLE ACHIEVEMENT: COLLABORATIVE FISHERIES ENFORCEMENT AGAINST FV. RUN ZENG 03 & RUN ZENG 05

REGIONAL INITIATIVES

Focus Group Discussions (FGDs) on Market Measures and Traceability (CDS_CDT)

- RPOA-IUU, in collaboration with the USAID-SuFia TS, organized the Focus Group Discussion (FGD) on Market Measures and Traceability held on September 9 - 10, 2024 via Zoom Platform
- The FGD aimed to exchange experiences on market measure traceability, promote the inclusion of small-scale fisheries in traceability systems, and develop a lesson-learned book documenting best practices and implementation status among RPOA-IUU participating countries.
- Countries are encouraged to strengthen traceability systems, develop capacity-building proposals for Australia's SEA RIFF Program, while the RPOA-IUU Secretariat will collect CDT/CDS updates and continue regional traceability initiatives.

RPOA-IUU MCS Sub-Regional Workshop

- The workshop is part of SEA-IUU fishing program support organized by the Australian Government and RPOA-IUU Secretariat and aims to improve and strengthen MCS sub-regional capacity
- One of the key lessons learned from the activity is that advanced technology can help countries strengthen their MCS capacity.
- Strengthening MCS Sub-Regional Groups can be supported through virtual engagement, national budget commitments, standardized coordination, and facilitation by the RPOA-IUU Secretariat to enhance collaboration and partner support.

REGIONAL INITIATIVES

Advanced Fisheries Intelligence Training

- The training, held from February 20 to 23, 2024, was attended by 42 participants from 11 countries, including 3 speakers from Canada's DFO, 4 speakers from the Joint Analytical Cell, and 2 speakers from INTERPOL
- The training successfully achieved its objectives, strengthening countries' intelligence capabilities for fisheries data analysis, enhancing practical skills of fisheries officers for intelligence-led actions against IUU fishing, supporting effective decision-making through intelligence-led approaches, and establishing an information-exchange platform for sharing effective measures to combat IUU fishing.

WAY FORWARD

- **Strengthen sub-regional cooperation mechanisms** to enhance coordination in Monitoring, Control and Surveillance (MCS)
- **Promote capacity building and technical collaboration** with regional and international partners.
- **Sustain regular sub-regional engagement** to review progress and address emerging IUU fishing challenges.

THANK YOU

"The most effective weapon against crime [IUU Fishing] is cooperation"

J. Edgar Hoover- First FBI Director

Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing (RPOA-IUU)

RPOA-IUU Secretariat

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Jl. Medan Merdeka Timur No 16 Jakarta Pusat 10110 Indonesia

Phone : +62-3519070 ext 4062
Email : rpoa_operator@yahoo.com
secretariat@rpoaiuu.org
Website : www.rpoaiuu.org

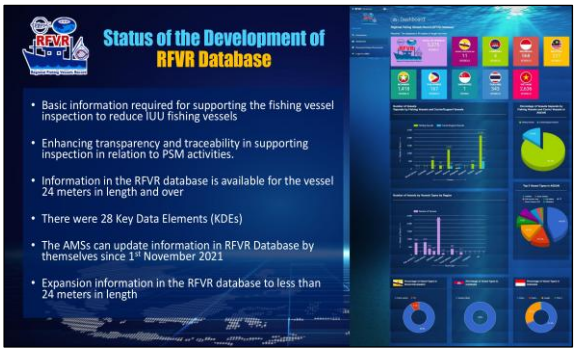

Canada
Regional Technical Organization Facilitating Capacity Building and Collaboration
By
SEAFDEC Training Department
Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific
17–19 March 2026 in Bangkok, Thailand

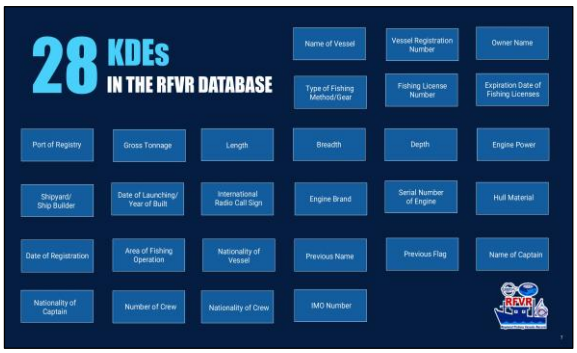

The Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2030
SEAFDEC policy framework and priority actions to combat IUU Fishing
RES 8.
Strengthen cooperation among AMSs and with international and regional organizations in combating IUU fishing and management of fishing capacity to balance available resources
POA 28.
Strengthen the implementation of measures and activities to combat IUU fishing by ensuring compliance with national laws and regulations, and with the provisions of relevant international instruments; encourage the development and implementation of national plans of action to combat IUU fishing; promote inter-agency coordination for effective implementation of laws and regulations; and enhance awareness and understanding of applicable international and regional instruments and agreements through information dissemination campaigns


Key Aspects
of Programs and Activities by
SEAFDEC for Combating IUU Fishing
in Southeast Asia


3
Key Aspects
of Programs and Activities by
SEAFDEC for Combating IUU Fishing
in Southeast Asia
1. Strengthening Coordination and Cooperation among AMSs and Other Agencies
2. Increase Capacity and Awareness on MCS to Combat IUU Fishing
3. Support Implementation of Effective MCS Measures


1. Strengthening Coordination and Cooperation among AMSs and Other Agencies
Establishment of technical collaborative platforms for information sharing among AMSs
Regional Fishing Vessels Record (RFVR)


Status of the Development of RFVR Database
Basic information required for supporting the fishing vessel inspection to reduce IUU fishing vessels
Enhancing transparency and traceability in supporting inspection in relation to PSM activities.
Information in the RFVR database is available for the vessel 24 meters in length and over
There were 28 Key Data Elements (KDEs)
The AMSs can update information in RFVR Database by themselves since 1st November 2021
Expansion information in the RFVR database to less than 24 meters in length


28 KDEs
IN THE RFVR DATABASE
Name of Vessel
Vessel Registration Number
Owner Name
Type of Fishing Method/Gear
Fishing License Number
Expiration Date of Fishing Licenses
Port of Registry
Gross Tonnage
Length
Breadth
Depth
Engine Power
Shipyard/ Ship Builder
Date of Launching/ Year of Built
International Radio Call Sign
Engine Brand
Serial Number of Engine
Hull Material
Date of Registration
Area of Fishing Operation
Nationality of Vessel
Previous Name
Previous Flag
Name of Captain
Nationality of Captain
Number of Crew
Nationality of Crew
IMO Number


1. Strengthening Coordination and Cooperation among AMSs and Other Agencies (cont.)
Providing regional instruments for developing a common approach to combating IUU fishing in the region such as
ASEAN Guidelines for Preventing the Entry of IUU Fish and Fishery Product into the Supply Chain
Regional Guidelines in Traceability System for Aquaculture Products in the ASEAN Region
ASEAN Catch Documentation Scheme for Marine Capture Fisheries

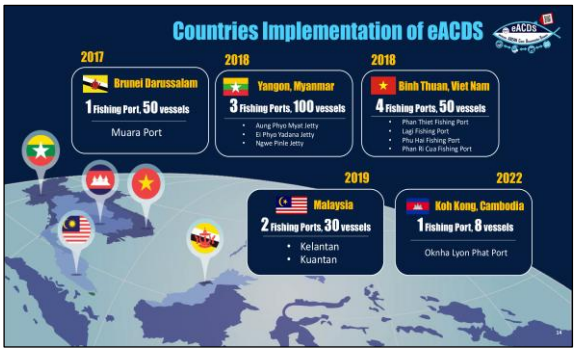

1. Strengthening Coordination and Cooperation among AMSs and Other Agencies (cont.)
Coordination and cooperation with national/regional/international agencies as partners
JICA
giz
IMCS NETWORK
SKYLIGHT
FRA
Global Fishing Watch
Canada


2. Increase Capacity and Awareness on MCS to Combat IUU Fishing
A series of capacity-building programs for AMSs to enhance their ability in MCS to combat IUU fishing
MCS
Traceability
PSM
Law and Regulation

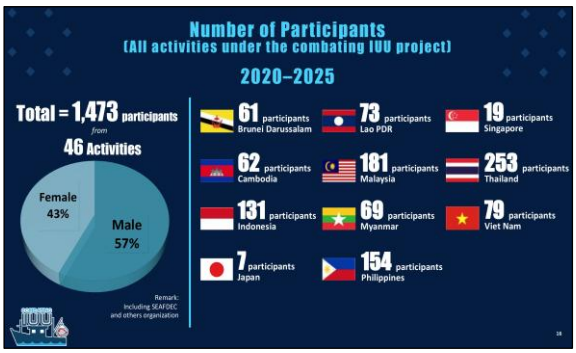

3. Support Implementation of Effective MCS Measures
Development and promotion of electronic ASEAN Catch Documentation Scheme (eACDS) application as prototype for traceability of fish and fishery products
eACDS


What is eACDS ?
A prototype software for enhancing a traceability of fish and fishery products from fishing to plate
Implementing eACDS required good governance in fisheries management: port control, catch reporting, recording movement of fish in the supply chain, export-import, etc.
CD
MD
SC
CC
Fishing
Landing
Processor
Import
Plate


eACDS Applications
eACDS on Web-based Application
eACDS on Mobile Application
Vessel Owner/Fishing Master
Request Port-out and Port-in
Processor
Request Statement of Catch
Request Catch Certificate Document
Officer
Approve Port-out / Port-in and Verify Weight
Issuance Catch Declaration (CD)
Issuance Movement Document (MD)
Issuance Statement of Catch (SC)
Issuance Catch Certificate Document (CC)
View Reports and Manage KDEs
eACDS-Catch Report App.
Fishing Master/ Vessel Owner
eACDS-Market App.
Seller and Buyer


Countries Implementation of eACDS
2017
Brunei Darussalam
1 Fishing Port, 50 vessels
Muara Port
2018
Yangon, Myanmar
3 Fishing Ports, 100 vessels
Aung Phyo Myat Jetty
Ei Phyo Yadana Jetty
Ngwe Pinle Jetty
2018
Binh Thuan, Viet Nam
4 Fishing Ports, 50 vessels
Phan Thiet Fishing Port
Lagi Fishing Port
Phu Hai Fishing Port
Phan Ri Cua Fishing Port
2019
Malaysia
2 Fishing Ports, 30 vessels
Kelantan
Kuantan
2022
Koh Kong, Cambodia
1 Fishing Port, 8 vessels
Oknha Lyon Phat Port


Achievement of eACDS Implementation
Training and demonstration on the practical eACDS application for trainers to the effective implementation of eACDS and transfer their knowledge and understanding to relevant stakeholders.
Participating countries trial on the use of eACDS application and successfully installed the application on its server.
Viet Nam developed its electronic catch documentation and traceability (eCDT) based on the eACDS demonstration.


Number of Participants
(All activities under the combating IUU project)
2020–2025
Total = 1,473 participants from 46 Activities
Female 43%
Male 57%
Remark: Including SEAFDEC and others organization
61 participants Brunei Darussalam
73 participants Lao PDR
19 participants Singapore
62 participants Cambodia
181 participants Malaysia
253 participants Thailand
131 participants Indonesia
69 participants Myanmar
79 participants Viet Nam
7 participants Japan
154 participants Philippines

Priority Areas for Future Action to Combat IUU Fishing in Southeast Asia

The Regional Workshop on the Project End of Strengthening Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia
20–21 March 2024

1 Vessel Monitoring

Priority Areas	Regional Actions
❖ VMS system ❖ Sharing VMS information between AMSs ❖ Application of VMS for middle-scale and small-scale fishing	❖ Develop SOP/Guideline on VMS information sharing ❖ Explore appropriate application/system for small-scale fisheries

2 Strengthening MCS for Commercial-scale, Small-scale Fisheries and Community-based Fisheries

Priority Areas	Regional Actions
❖ Enhancing and capacity building on MCS ❖ Identification and risk assessments of IUU fishing vessels ❖ Introduction of new technology for support MCS	❖ Capacity building on MCS ❖ Identification of IUU fishing vessels to avoid double flag

3 AMSs/Regional Cooperation on IUU Information

Priority Areas	Regional Actions
❖ Cooperation and sharing of information on IUU among countries via existing platform ❖ Expand and strengthen regional/bilateral dialogues between neighbors around shared IUU issues	❖ Explore the willingness of countries to establish hotlines ❖ Strengthening understanding of global instruments and their application in cooperation with FAO, IMO, ILO ❖ Encouragement AMSs to update information on RFVR database ❖ Continue to develop RFVR database smaller than 24 meters in length in focus of carrier vessels for utilization between neighboring country

4 Encroachment of Foreign Vessels

Priority Areas	Regional Actions
❖ Medium, and large-scale foreign vessels ❖ Enforcement	❖ Sharing information on best practices of action against the encroachment of foreign vessels

5 Strengthening Traceability of Fish and Fishery Products

Priority Areas	Regional Actions
❖ Study and communicate the market state requirements, align to global, and additional work on how to incorporate SSF ❖ Strengthen port landing information, catch landing sources	❖ Capacity building on the market requirements, the use of CDS ❖ Sharing experiences on the implementation of the national CDS

6 Development of National/Regional Estimation of IUU Losses

Priority Areas	Regional Actions
❖ Estimation of losses due to IUU fishing ❖ Provide knowledge on fishery intelligence as it is an effective tool to eliminate IUU fishing ❖ Linkage to stock assessment to assess impacts through improved information on transboundary species and harmonize framework	❖ Formulation of ASEAN guideline on how to estimate IUU losses ❖ Conduct a national assessment of the estimation of IUU losses through sharing the results

Strengthening Evidence and Procedures Prosecution to Improve the Deterrence Effect

Priority Areas	Regional Actions
❖ Raise awareness within and across the agencies ❖ Improve the efficiency of the use of maritime MCS/patrols	❖ Sharing information on the evidence and procedures and secure effective prosecutions to improve the deterrence effect

Monitor Transshipment Activity

Priority Areas	Regional Actions
❖ Understanding carrier vessels	❖ Strengthen port inspection at both coastal states and flag states including establishing bilateral arrangements to understand carrier vessels ❖ To implement the certification form for transshipment developed by FAO ❖ Regional review on carrier definition

Legal Reform

Priority Areas	Regional Actions
❖ Updating and/or amending national legal frameworks ❖ Development/Updating of NPOA-IUU	❖ Sharing best practices on laws and policies through the development of the comprehensive NPOA-IUU

Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)

Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)

1 Vessel Monitoring

VMS analysis to support port inspection

1 Activity | 37 Participants

Partners: SKYLIGHT, IMCS NETWORK, Global Fishing Watch

Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)

2 Strengthening MCS for Commercial-scale, Small-scale Fisheries and Community-based Fisheries

Strengthening MCS capacity, promoting MCS innovation, and responsible fishing technologies

261 Participants | 10 Activities

Partners

Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)

3 AMSs/Regional Cooperation on IUU Information

RFVR database development and promotion, regional information-sharing workshops, and technical consultations

7 Activities | 471 Participants

Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)

5 Strengthening Traceability of Fish and Fishery Products

Implementation of regional and national training for strengthening the traceability system

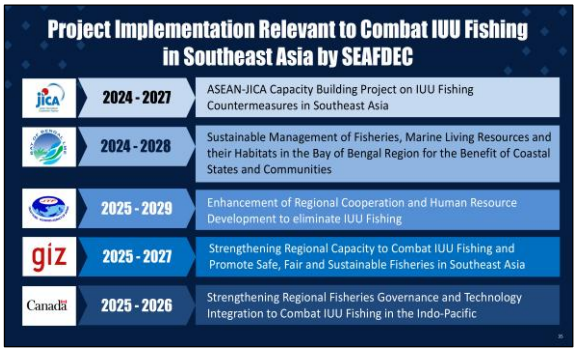
24 Activities

547 Participants

Partners: JICA, IMCS NETWORK, FRA

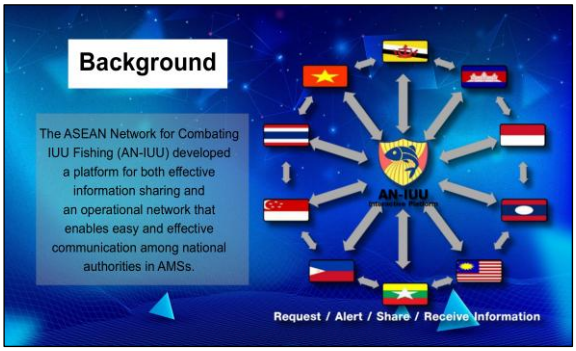

Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)
8
Monitor Transshipment Activity
Regional policy workshop on transshipment management
1 Activity
22 Participants
Partners:


Capacity Building in the 9 Priority Areas to Combat IUU Fishing (2020-2025)
9
Legal Reform
Capacity-building training on NPOA-IUU implementation, UNCLOS application
3 Activities
135 Participants
Partners:


Project Implementation Relevant to Combat IUU Fishing in Southeast Asia by SEAFDEC
2024 - 2027
ASEAN-JICA Capacity Building Project on IUU Fishing Countermeasures in Southeast Asia
2024 - 2028
Sustainable Management of Fisheries, Marine Living Resources and their Habitats in the Bay of Bengal Region for the Benefit of Coastal States and Communities
2025 - 2029
Enhancement of Regional Cooperation and Human Resource Development to eliminate IUU Fishing
giz
2025 - 2027
Strengthening Regional Capacity to Combat IUU Fishing and Promote Safe, Fair and Sustainable Fisheries in Southeast Asia
Canada
2025 - 2026
Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific

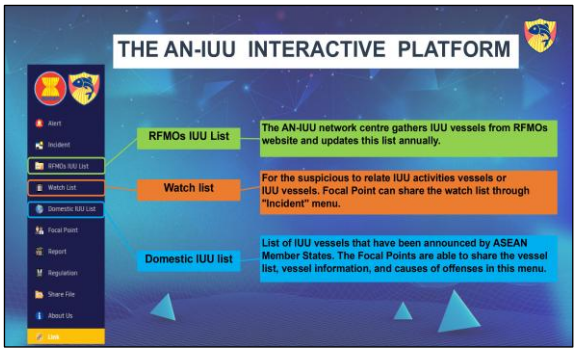

Thank You For Your Kind Attention

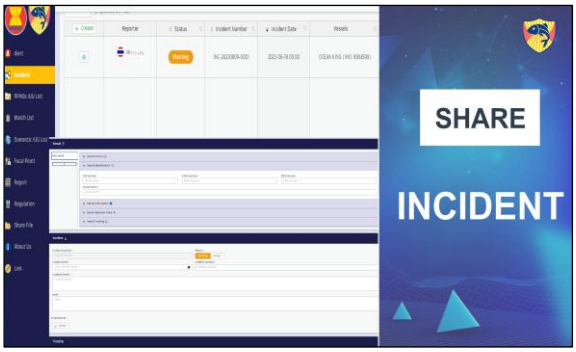

ASEAN Network for Combating
IUU Fishing (AN-IUU)
Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in Indo-Pacific , Bangkok, Thailand

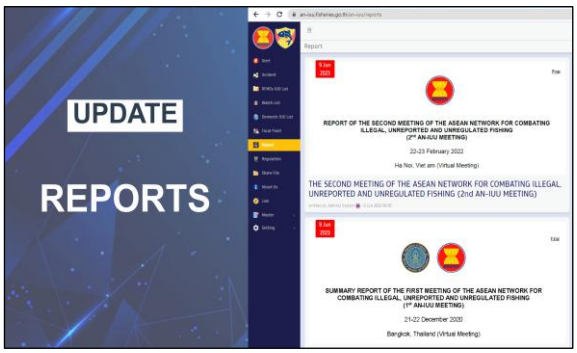

Background
The ASEAN Network for Combating IUU Fishing (AN-IUU) developed a platform for both effective information sharing and an operational network that enables easy and effective communication among national authorities in AMSs.
AN-IUU
Request / Alert / Share / Receive Information

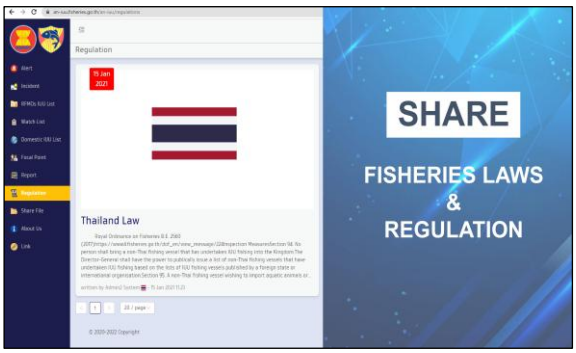

Objective
AN-IUU Interactive Platform
To Support MCS
To enhance regional cooperation on information sharing through an online interactive platform, as well as on the use of Monitoring, Control and Surveillance (MCS) information
Capacities building
To enhance capacities and capabilities of ASEAN Member States (AMS) in the fight against IUU fishing through the dissemination of best practices, especially on MCS surveillance and investigation activities and experiences.


AN-IUU FOCAL POINTS
Philippines
Brunei Darussalam
Thailand
Cambodia
Singapore
Indonesia
Vietnam
Laos
Malasia
Mynmar

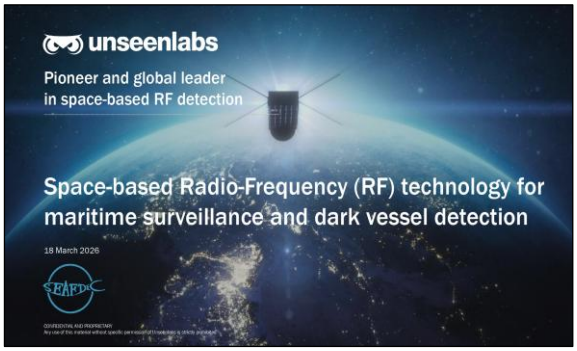

THE AN-IUU INTERACTIVE PLATFORM
RFMOs IUU List
The AN-IUU network centre gathers IUU vessels from RFMOs website and updates this list annually.
Watch list
For the suspicious to relate IUU activities vessels or IUU vessels. Focal Point can share the watch list through "Incident" menu.
Domestic IUU list
List of IUU vessels that have been announced by ASEAN Member States. The Focal Points are able to share the vessel list, vessel information, and causes of offenses in this menu.

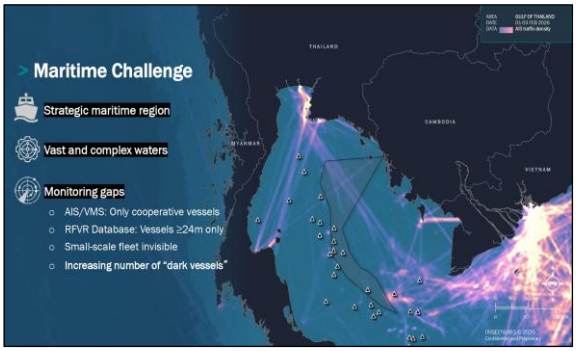

SHARE
INCIDENT

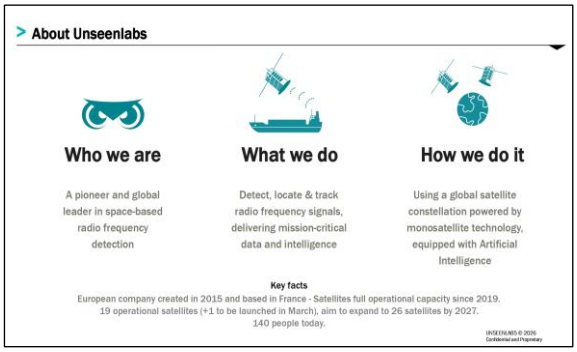

UPDATE
REPORTS
REPORT OF THE SECOND MEETING OF THE ASEAN NETWORK FOR COMBATING ILLEGAL, UNREPORTED AND UNREGULATED FISHING (2nd AN-IUU MEETING)
SUMMARY REPORT OF THE FIRST MEETING OF THE ASEAN NETWORK FOR COMBATING ILLEGAL, UNREPORTED AND UNREGULATED FISHING (1st AN-IUU MEETING)

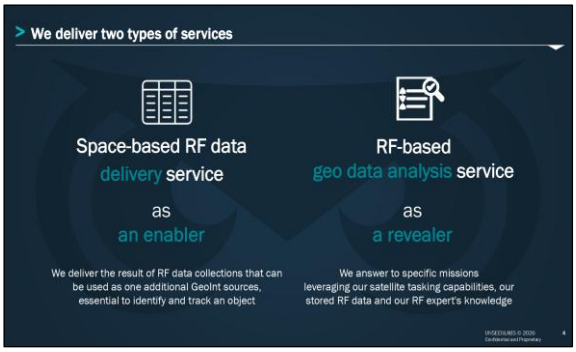

Thailand Law
SHARE
FISHERIES LAWS
&
REGULATION

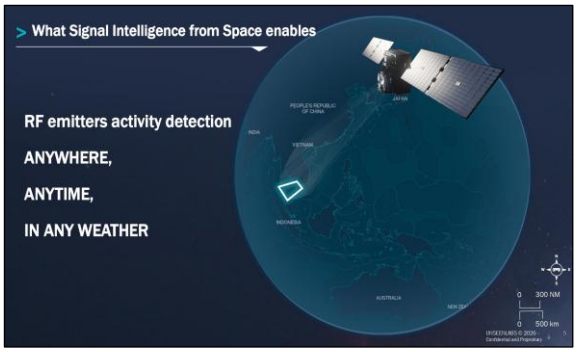

THANK YOU
FOR YOUR ATTENTION

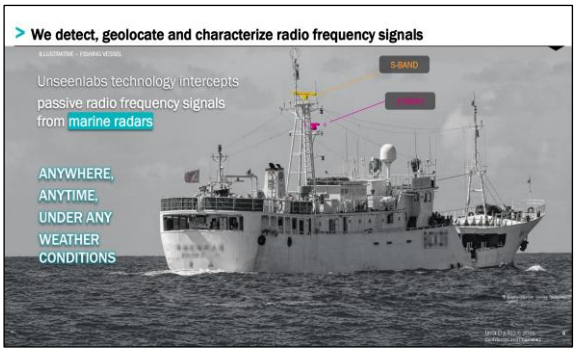

unseenlabs
Pioneer and global leader
in space-based RF detection
Space-based Radio-Frequency (RF) technology for maritime surveillance and dark vessel detection
18 March 2026

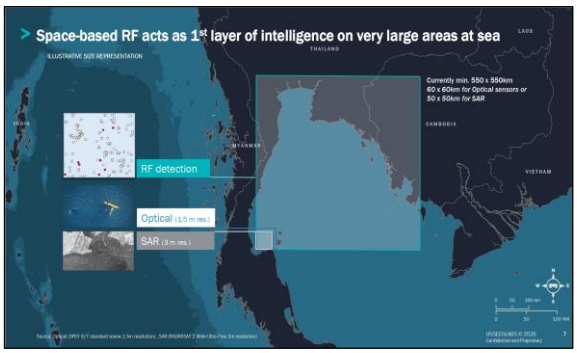

Maritime Challenge
Strategic maritime region
Vast and complex waters
Monitoring gaps
AIS/VMS: Only cooperative vessels
RFVR Database: Vessels ≥24m only
Small-scale fleet invisible
Increasing number of "dark vessels"

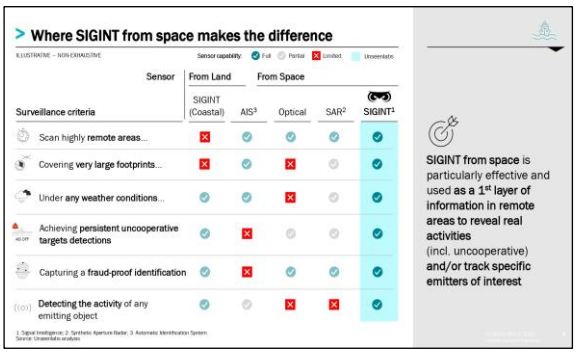

About Unseenlabs
Who we are
A pioneer and global leader in space-based radio frequency detection
What we do
Detect, locate & track radio frequency signals, delivering mission-critical data and intelligence
How we do it
Using a global satellite constellation powered by monosatellite technology, equipped with Artificial Intelligence
Key facts
European company created in 2015 and based in France - Satellites full operational capacity since 2019.
19 operational satellites (+1 to be launched in March), aim to expand to 26 satellites by 2027.
140 people today.


We deliver two types of services
Space-based RF data delivery service
as
an enabler
We deliver the result of RF data collections that can be used as one additional GeoInt sources, essential to identify and track an object
RF-based geo data analysis service
as
a revealer
We answer to specific missions leveraging our satellite tasking capabilities, our stored RF data and our RF expert's knowledge


What Signal Intelligence from Space enables
RF emitters activity detection
ANYWHERE,
ANYTIME,
IN ANY WEATHER

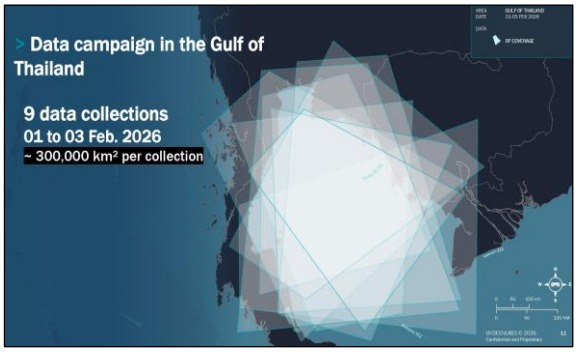

We detect, geolocate and characterize radio frequency signals
Unseenlabs technology intercepts passive radio frequency signals from marine radars
S-BAND
ANYWHERE,
ANYTIME,
UNDER ANY
WEATHER
CONDITIONS

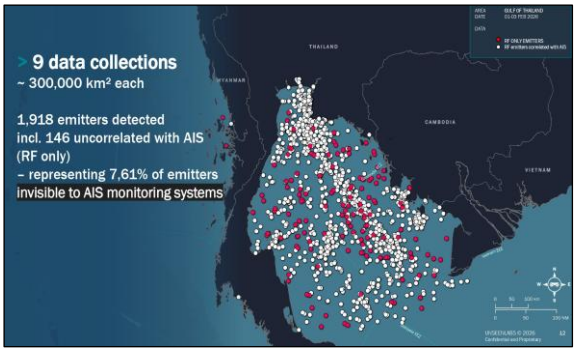

Space-based RF acts as 1st layer of intelligence on very large areas at sea
RF detection
Optical
SAR


Where SIGINT from space makes the difference
Surveillance criteria
SIGINT (Coastal)
AIS
Optical
SAR
SIGINT
Scan highly remote areas...
Covering very large footprints...
Under any weather conditions...
Achieving persistent uncooperative targets detections
Capturing a fraud-proof identification
Detecting the activity of any emitting object
SIGINT from space is particularly effective and used as a 1st layer of information in remote areas to reveal real activities (incl. uncooperative) and/or track specific emitters of interest

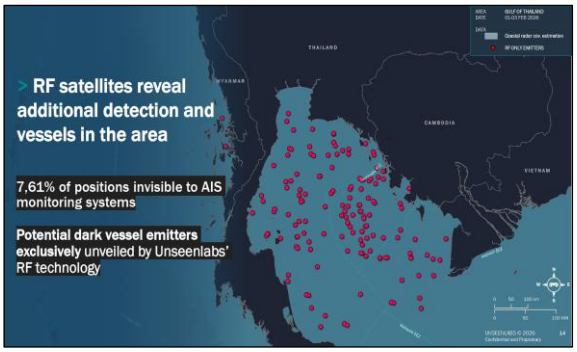

> Gulf of Thailand Use case

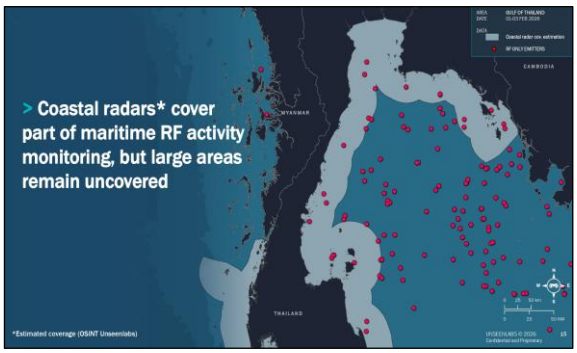

> Seasonal Fishing Closure in the Central Gulf of Thailand
Implemented by the Thai Department of Fisheries
Three management zones covering areas in Prachuap Khiri Khan, Chumphon, and Surat Thani
Two closure periods
15 February – 14 June 2026
CAMBODIA
MYANMAR
THAILAND
1
2
3


> Data campaign in the Gulf of Thailand
9 data collections
01 to 03 Feb. 2026
~ 300,000 km² per collection

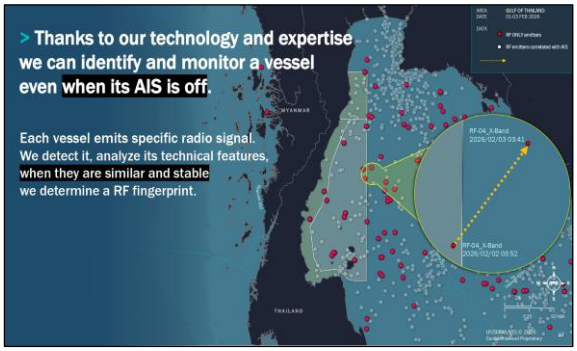

> 9 data collections
~ 300,000 km² each
1,918 emitters detected
incl. 146 uncorrelated with AIS (RF only)
– representing 7,61% of emitters invisible to AIS monitoring systems
THAILAND
MYANMAR
CAMBODIA
VIETNAM


> A clear traffic maritime corridor
with fishing activity primarily located in the Vietnamese and Thai EEZs
THAILAND
CAMBODIA
VIETNAM


> RF satellites reveal additional detection and vessels in the area
7,61% of positions invisible to AIS monitoring systems
Potential dark vessel emitters exclusively unveiled by Unseenlabs' RF technology
THAILAND
CAMBODIA
VIETNAM

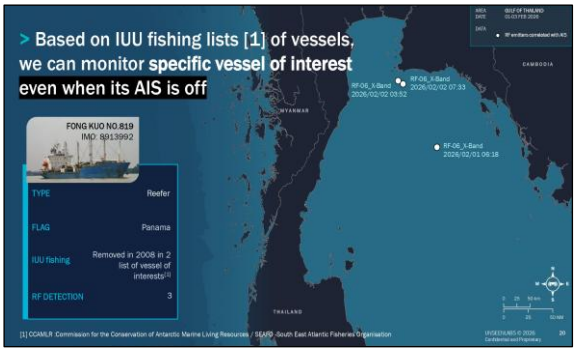

> Coastal radars* cover part of maritime RF activity monitoring, but large areas remain uncovered
CAMBODIA
MYANMAR
THAILAND
*Estimated coverage (OSINT Unseenlabs)


Focusing on the 3 management zones, we see that more than 9% of emitters are uncooperative.
Space-based RF area monitoring fills these coverage gaps, enabling persistent surveillance of maritime activity in key fisheries zones.
MYANMAR
THAILAND
1
2
3

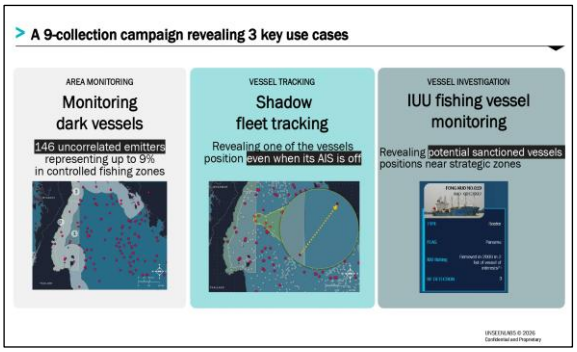

> Thanks to our technology and expertise we can identify and monitor a vessel even when its AIS is off.
Each vessel emits specific radio signal. We detect it, analyze its technical features, when they are similar and stable we determine a RF fingerprint.

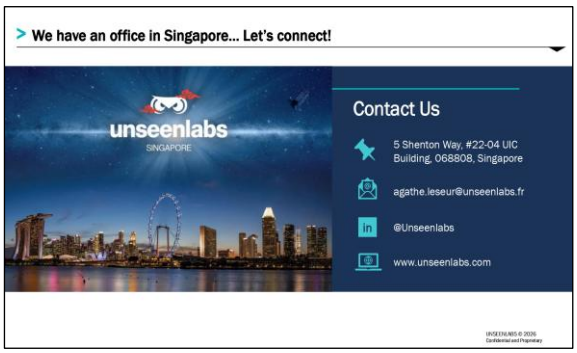

> By detecting a vessel RF fingerprint and correlating it to AIS information, we can identify and monitor a vessel no matter its size, flag ownership or activities
RF fingerprint + AIS correlation
=
Vessel identification
Cargo PA PRIX – MMSI : 352003015


> By detecting a vessel RF fingerprint and correlating it to AIS information, we can identify and monitor a vessel no matter its size, flag ownership or activities
RF fingerprint + AIS correlation
=
Vessel identification
Fishing TH HOR TAWATCHAI 8 – MMSI : 567254464 detected, tracked & identified


> Based on IUU fishing lists [1] of vessels, we can monitor specific vessel of interest even when its AIS is off
FONG KUO NO.819
IMO: 8913992
TYPE Reefer
FLAG Panama
IUU fishing Removed in 2008 in 2 list of vessel of interests[1]
RF DETECTION 3


> Key Takeaways Strategic Insights & Operational Leverage


> A 9-collection campaign revealing 3 key use cases
AREA MONITORING
Monitoring dark vessels
146 uncorrelated emitters representing up to 9% in controlled fishing zones
VESSEL TRACKING
Shadow fleet tracking
Revealing one of the vessels position even when its AIS is off
VESSEL INVESTIGATION
IUU fishing vessel monitoring
Revealing potential sanctioned vessels positions near strategic zones


> We have an office in Singapore... Let's connect!
unseenlabs
SINGAPORE
Contact Us
5 Shenton Way, #22-04 UIC Building, 068808, Singapore
agathe.leseur@unseenlabs.fr
@Unseenlabs
www.unseenlabs.com


archipelago
Monitoring Initiatives
Supporting Sustainable Fisheries


archipelago
Table of Content
01 About Archipelago
02 Context Gap
03 EM in Action
04 New Tools
05 Implications for MCS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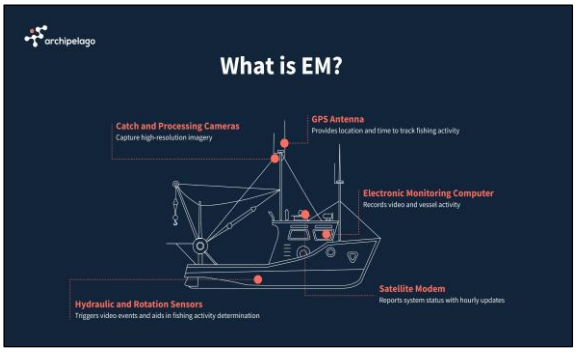
Archipelago
Introduction
Global provider of marine resource management products and services. Serves Asia Pacific operations with a dedicated organization (AAP) and product engineering team (PE-Can) to deliver and support EM deployments at scale.
Vision
To improve the sustainability of our natural resources for generations to come.
Mission
To collect and deliver data that informs sound decision-making for the health of our natural resources.
Established in 1978 in Victoria, BC, Canada.
100+ Team members across Canada, United States, and Australia
Pioneered Electronic Monitoring in 1999 20+ years of EM experience and 75+ EM projects worldwide.
1,500+ EM systems deployed establishing more EM sea days than any other service provider.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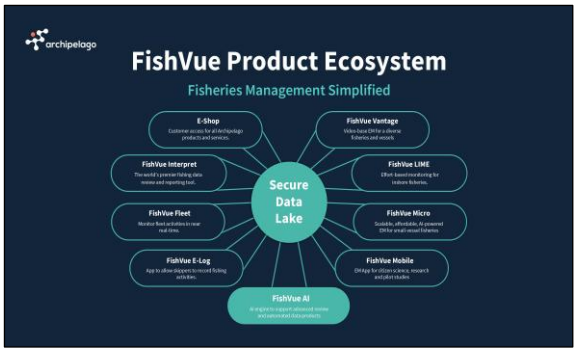
What is EM?
Catch and Processing Cameras
Capture high-resolution imagery
GPS Antenna
Provides location and time to track fishing activity
Electronic Monitoring Computer
Records video and vessel activity
Satellite Modem
Reports system status with hourly updates
Hydraulic and Rotation Sensors
Triggers video events and aids in fishing activity determination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FishVue Product Ecosystem
Fisheries Management Simplified
E-Shop
FishVue Vantage
FishVue Interpret
FishVue LIME
Secure Data Lake
FishVue Fleet
FishVue Micro
FishVue E-Log
FishVue Mobile
FishVue AI


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Electronic Monitoring Devices
FishVue Mobile
Quickly gather data related to fishing activity and catch.
Video provides essential data on retained and discarded catch, plus catch handling.
FishVue LIME
Low-cost data collection that monitors effort-based fishery activities in real-time.
A minimal footprint makes it ideal for smaller vessels and large deployments.
FishVue Micro
Groundbreaking low-cost intelligent and connected video EM system. Designed from the ground up to enable an entirely new category of at sea monitoring at a scale which was previously impossible.
FishVue Vantage
Flagship electronic monitoring (EM) system, collects multi camera video and sensor data across a variety of fisheries.


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EM Software Products
FishVue FLEET
Fleet delivers actionable data from fishing vessels—live and historical—to support sustainable practices, ensure compliance, and streamline operations.
FishVue FLOAT
FishVue FLOAT is Archipelago's custom electronic fishing log application. Float allows vessel operators to enter and submit their fishing log information electronically.
FishVue Interpret
Interpret allows efficient review of video and sensor data to find important fishing events. Reviewers can follow vessel tracks, check gear use, and confirm retentions and discards. Efficient review workflows ensure cost-effective analysis
FishVue AI
AI based multi-step analysis model that sees fisheries data pass through numerous AI tools and then outputs into Archipelago's Interpret data analysis application.


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02
Science & Compliance
Why EM Matters

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The Context Gap

Fisheries Surveillance Requires Context and Data

- Satellite systems can answer who is fishing and where, at unprecedented scale
- Landing and Market Controls (e.g. PSMA) provide traceability in the value chain

EM Offers a Scalable Ground-Truth

- Verifiable Fishing Effort
- Species Caught, Retained and Discarded
- Gear Deployment
- MARPOL and Transshipment
- Crew Welfare

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Program Spotlight (Australia)

Eastern Tuna and Billfish Fishery (ETBF)
Gillnet Hook and Trap (GHAT)

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EM Drivers

At-Sea Discards
Discarded catch cannot be verified through landing inspections.

Observer Limitations
Observer coverage was costly and difficult to scale across dispersed fleets.

Logbook Validation
Need to independently verify fisher-reported catch and interactions.

ETP Risk
Longline and gillnet gear posed risks to protected species.

Social License
Independent monitoring improved confidence in responsible fishing practices.

Compliance
Limited patrol and inspection resources to meet MCS objectives

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Products Deployed

FishVue FLEET
Fleet delivers actionable data from fishing vessels—live and historical—to support sustainable practices, ensure compliance, and streamline operations.

FishVue Vantage
Flagship electronic monitoring (EM) system, collects multi camera video and sensor data across a variety of fisheries.

FishVue Interpret
Interpret allows efficient review of video and sensor data to find important fishing events. Reviewers can follow vessel tracks, check gear use, and confirm retentions and discards. Efficient review workflows ensure cost-effective analysis

FishVue AI
AI based multi-step analysis model that sees fisheries data pass through numerous AI tools and then outputs into Archipelago's Interpret data analysis application.

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Program Structure

Comprehensive VMS
Mandatory VMS in all Commonwealth fisheries

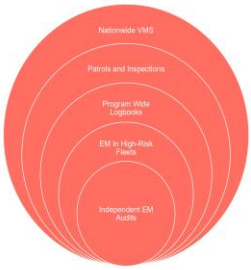
Mandatory Logs
Daily shot-level reporting of effort and ETP interactions

Maritime Patrols
AFMA, Border Force and other agencies undertake IUU patrols

EM on High-Risk Sectors
GHAT and ETBF Fisheries deemed high risk of ETP interaction, justifying EM

EM Audit
10% of events are audited against Logbook data

Independent Structure
Independent monitoring verifies fisher data collection



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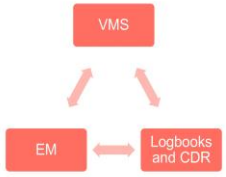
Program Successes



Logbook Accuracy
EM significantly improved self-reporting of protected species interactions.

Targeted Management
EM Coverage on high-risk fleets allowed improve compliance resourcing

Catch Composition
EM enabled verification of discard practices and investigation of potential high-grading

Risk Indicators
EM data enabled spatial and operational risk indicators through retrospective analysis.

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Program Spotlight (Canada)

Groundfish, Hook and Line, Trap Fishery (GHLCMP)

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EM Drivers

Compliance
Early concerns over high-seas transshipping and gear theft

Scalability
As fishing power grew, a scalable compliance solution was needed

Catch Accounting
Discards at sea were not captured by dockside validation

Conservation
Yelloweye rockfish bycatch mortality became a major program driver

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Products Deployed

FishVue FLOAT
FishVue FLOAT is Archipelago's custom electronic fishing log application. Float allows vessel operators to enter and submit their fishing log information electronically.

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AI based multi-step analysis model that sees fisheries data pass through numerous AI tools and then outputs into Archipelago's Interpret data analysis application.

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Program Structure

Transferrable Quotas
Limit catch while creating secondary markets

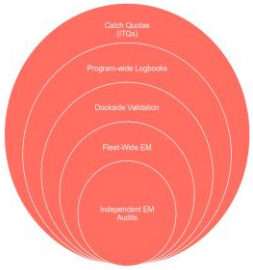
100% EM Coverage
All GHLCMP vessels carry EM systems, which must be functioning every trip

EM Audit
10% of events are audited against both landing and logbook data

Mandatory Logs
Event- and Catch-level reporting of retained and discarded species

Dockside Validation
All landings monitored to provide an independent record of landed catch items.

Independent Structure
Archipelago operates independently of both regulator and industry



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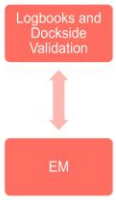
Program Successes



Full Catch Accountability
Traceability from catch to landing across EM, logbooks and dockside

Targeted Management
Accurate catch data enables species-specific management measures to develop over time

Catch Composition
Halibut catch changed dramatically as lower-risk practices adopted

Risk Indicators
EM enabled more effective compliance resource allocation

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Program Spotlight (Dungeness Crab)

Washington and California State Dungeness Crab

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Program Drivers

Scalability
~1000 vessels across the Pacific Coast

Gear Conflicts
Gear theft a key program driver

Logbook Compliance
Existing logs either not submitted, or too coarse to be actionable

Marine Mammals
Additional drivers in whale entanglement mitigation

Marine Spatial Planning
Limited insights across large management areas and sparse reporting

Fishing Effort
Number of gear items and soak time not captured

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Products Deployed

FishVue LIME
Low-cost data collection that monitors effort-based fishery activities in real-time.

Well suited to coastal fisheries.

FishVue FLEET
Fleet delivers actionable data from fishing vessels - live and historical - to support sustainable practices, ensure compliance, and streamline operations.

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Program Structure

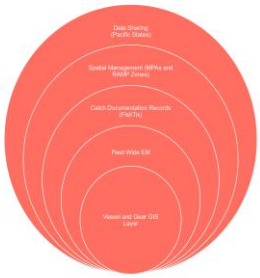
Area-Based Management
Effort-limited management areas

FishTix
Landing declaration made by crab buyer

No Imagery
Video not required to meet management objectives

Jurisdictional Collaboration
Data managed through Pacific States Marine Fisheries Commission for coordinated management

Skipper Install Model
Large-scale deployment required simplified deployment model



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Program Successes

Patrols

EM

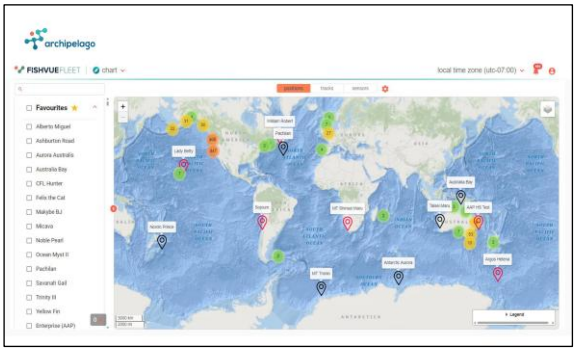
Market Data

Transparency
Crews have access to their own EM data

Data Timeliness
Regulators access effort reports in real-time, compared to bi-weekly logbooks

Targeted Patrols
Compliance Officers use EM data to coordinate field officers in real time

Spatial Management
With better effort resolution, more precise area management reduces impact on fishers



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AI-Assisted Review

Lowering Program Costs

- Fish-in-Frame Prioritisation
- Human-in-loop Deployment Model
- Sovereign Model Development

Improving Time to

- Identify Fishing Events
- Verify catch
- Issue Trip Reports

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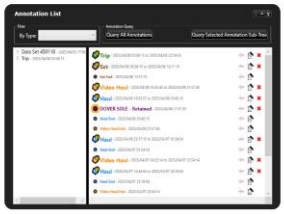
Defining 'Review'



Audits
Verify data quality, consistency, and adherence to program rules

Trip Profiling
Characterize each trip (vessel, area, timing, gear, target fishery)

Fishing Gear Set & Haul Occurrences
Document when, where, and how each set and haul takes place

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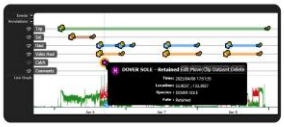
Defining 'Review'

Handling
How fish are brought on board and managed

Sizing
Length / size measurements



Catch composition
Target species & bycatch

Fate
Kept, discarded, released, or lost

Sorting & Storage
How catch is sorted, binned, and stored

Counts
Number of individuals by species / category

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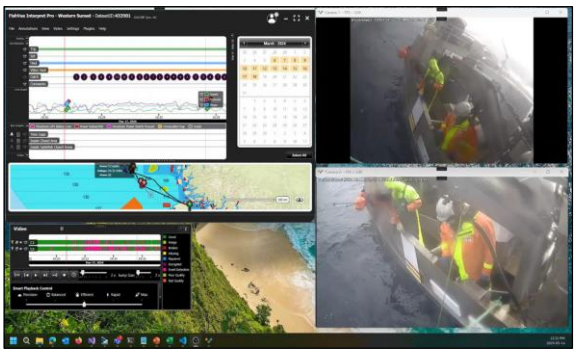
Defining 'Review'

Gear Monitoring

Counts
Number of hooks, pots, nets, or other gear units deployed

Compliance
Alignment with regulations and program requirements

CPUE
Catch Per Unit Effort is the catch relative to time and gear used



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Model Classes

Detection	Fish/No Fish	Person In Frame	Dynamic Privacy	…
Classification	Longline Major Species	Endangered, Threatened, Protected	Event-Driven Review	…
Tracking + Counting	Fate Classification	Trap Tracking	Trawl Enumeration	…
Depth + Length	Longline Demographics	Gear Segmentation	Trap and Trawl Demographics	…

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Species Classification

Binary Species and Popular Species Classification

- Growing library of accurate species classification
- Rockfish Identification
- Sablefish differentiated from other fish
- Halibut, Tuna, Toothfish

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Anonymity and Trap

Privacy and Gear Tracking

- Human faces cropped out
- Some false positives but none on traps
- Active traps are followed with a high level of precision
- Stationary traps tracked independently

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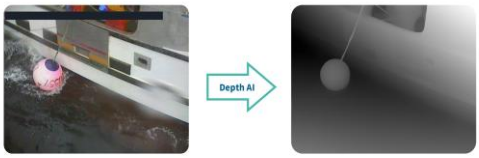
Monocular Length

Automated Length measurement with a single camera



Original Frame

Relative depth map
(lighter pixels are closer)

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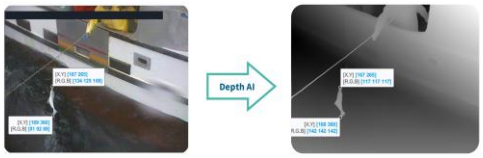
Monocular Length

Automated Length measurement with a single camera



Original Frame
Estimated fish length: 36 cm

Relative depth map
(lighter pixels are closer)

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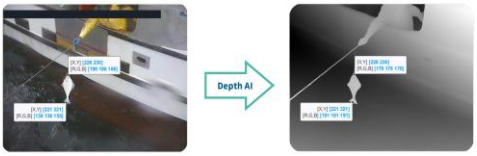
Monocular Length

Automated Length measurement with a single camera



Original Frame
Estimated fish length: 35 cm

Relative depth map
(lighter pixels are closer)

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05

Lessons

For Program Designers

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Identify Context Gaps

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Identify MCS Multipliers

Combine Technologies to Strengthen MCS Objectives

Seek Complementary Technologies
- Audit models → Improve Log Accuracy
- EM Data → Validates Remote Sensing

Risk-Based Enforcement
- Segment high-trust and high-risk vessels

Augmenting Dockside Validation
- Ensure bycatch and discard data feed into landing data

Ground-Truth Spatial Risk Indicators
- Strengthen evidence of spatial violations

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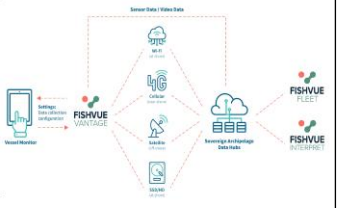
Integrate Data

Insights Demand Common Standards

Standardise Data Structures
- Align data types across technologies to realise multiplier effects

Partial Coverage Efficiencies
- Audit structures reduce ongoing cost while boosting integrity
- Apply EM insights to other positional data

Align Data Timeliness
- Seek out technologies that deliver insights at the same frequency to maximise awareness



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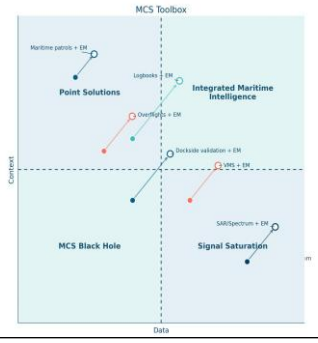

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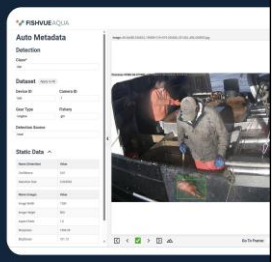
Prioritise Sovereignty

Develop Local Review and Training
- Identify tools that enable existing staff to train advanced models
- Partner with universities and NGOs to build review capacity
- Protect your fishing data

Address Local Needs
- Local data review staff understand local practices
- Develop high-skilled roles to support fisheries sector
- Train models on species native to your waters
- Drive value for your fishing industry



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THANK YOU

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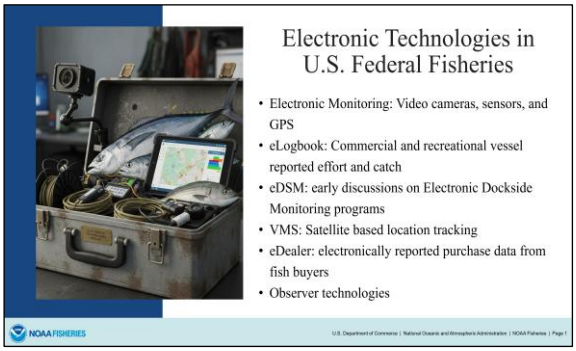
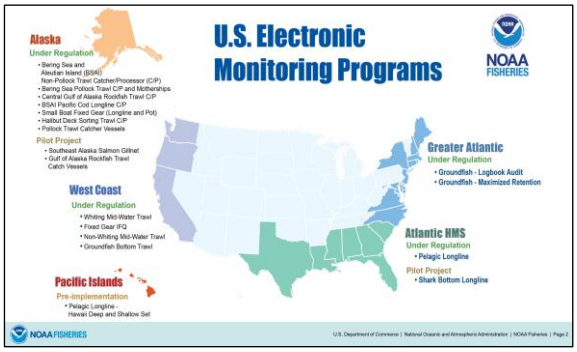
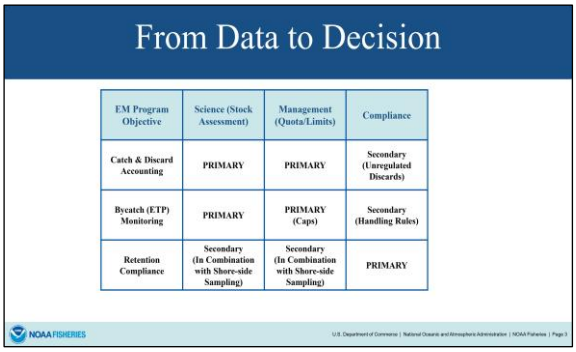
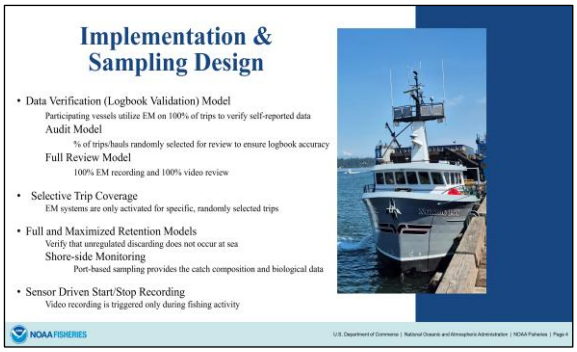
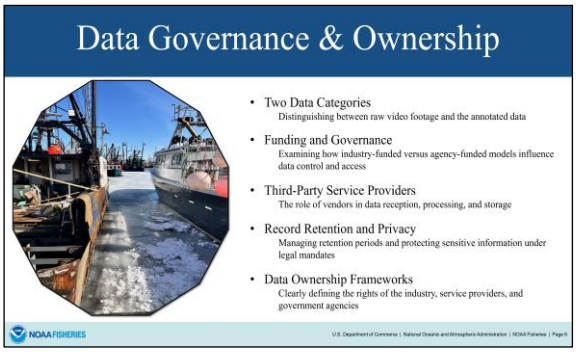
NOAA
FISHERIES
Electronic Technologies in U.S. Fisheries
MARIAH
Holly McBride
Electronic Technologies Coordinator
Office of Science and Technology
NOAA Fisheries
March 18, 2026

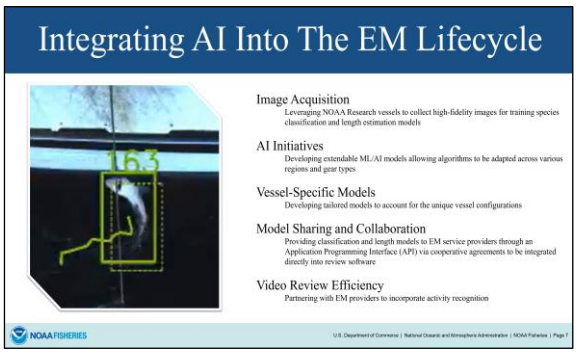

Electronic Technologies in U.S. Federal Fisheries
• Electronic Monitoring: Video cameras, sensors, and GPS
• eLogbook: Commercial and recreational vessel reported effort and catch
• eDSM: early discussions on Electronic Dockside Monitoring programs
• VMS: Satellite based location tracking
• eDealer: electronically reported purchase data from fish buyers
• Observer technologies
NOAA FISHERIES

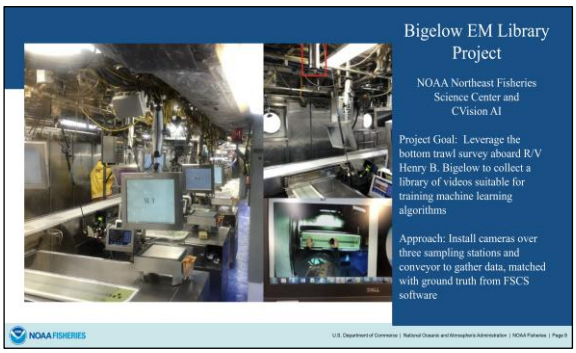

U.S. Electronic Monitoring Programs
NOAA FISHERIES
Alaska
Under Regulation
Pilot Project
West Coast
Under Regulation
Greater Atlantic
Under Regulation
• Groundfish - Logbook Audit
• Groundfish - Maximized Retention
Atlantic HMS
Under Regulation
• Pelagic Longline
Pilot Project
• Shark Bottom Longline
Pacific Islands
Pre-implementation
• Pelagic Longline - Hawaii Deep and Shallow Set
NOAA FISHERIES

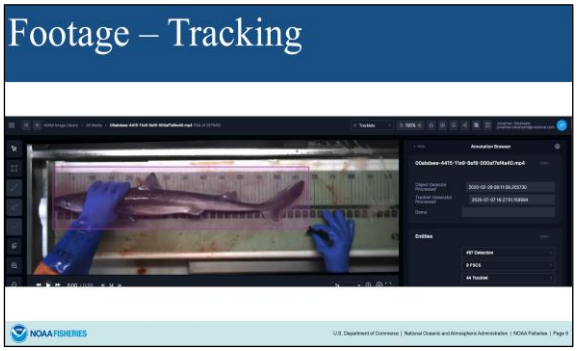

From Data to Decision
EM Program Objective | Science (Stock Assessment) | Management (Quota/Limits) | Compliance
Catch & Discard Accounting | PRIMARY | PRIMARY | Secondary (Unregulated Discards)
Bycatch (ETP) Monitoring | PRIMARY | PRIMARY (Caps) | Secondary (Handling Rules)
Retention Compliance | Secondary (In Combination with Shore-side Sampling) | Secondary (In Combination with Shore-side Sampling) | PRIMARY
NOAA FISHERIES

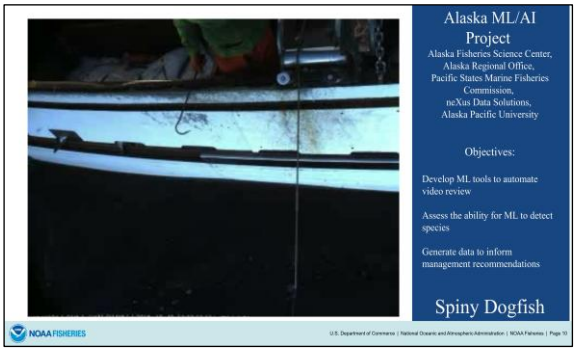

Implementation & Sampling Design
• Data Verification (Logbook Validation) Model
Participating vessels utilize EM on 100% of trips to verify self-reported data
Audit Model
% of trips/hauls randomly selected for review to ensure logbook accuracy
Full Review Model
100% EM recording and 100% video review
• Selective Trip Coverage
EM systems are only activated for specific, randomly selected trips
• Full and Maximized Retention Models
Verify that unregulated discarding does not occur at sea
Shore-side Monitoring
Port-based sampling provides the catch composition and biological data
• Sensor Driven Start/Stop Recording
Video recording is triggered only during fishing activity
NOAA FISHERIES

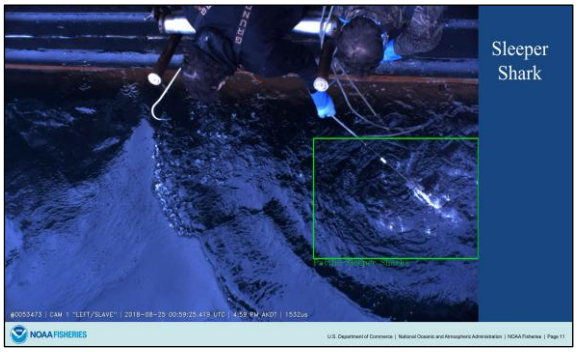

Data Governance & Ownership
• Two Data Categories
Distinguishing between raw video footage and the annotated data
• Funding and Governance
Examining how industry-funded versus agency-funded models influence data control and access
• Third-Party Service Providers
The role of vendors in data reception, processing, and storage
• Record Retention and Privacy
Managing retention periods and protecting sensitive information under legal mandates
• Data Ownership Frameworks
Clearly defining the rights of the industry, service providers, and government agencies
NOAA FISHERIES

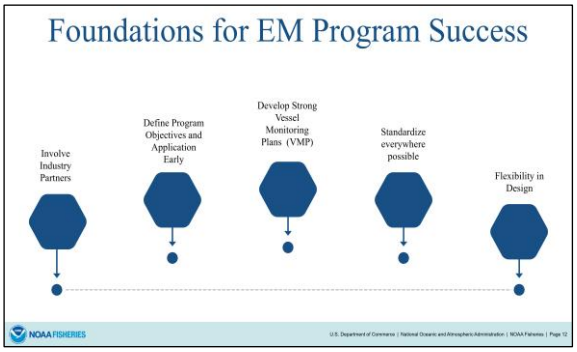

Integrating AI Into The EM Lifecycle
Image Acquisition
Leveraging NOAA Research vessels to collect high-fidelity images for training species classification and length estimation models
AI Initiatives
Developing extendable ML/AI models allowing algorithms to be adapted across various regions and gear types
Vessel-Specific Models
Developing tailored models to account for the unique vessel configurations
Model Sharing and Collaboration
Providing classification and length models to EM service providers through an Application Programming Interface (API) via cooperative agreements to be integrated directly into review software
Video Review Efficiency
Partnering with EM providers to incorporate activity recognition
NOAA FISHERIES

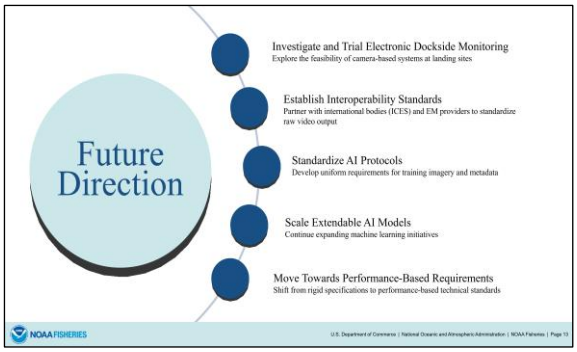

Bigelow EM Library Project
NOAA Northeast Fisheries Science Center and CVision AI
Project Goal: Leverage the bottom trawl survey aboard R/V Henry B. Bigelow to collect a library of videos suitable for training machine learning algorithms
Approach: Install cameras over three sampling stations and conveyor to gather data, matched with ground truth from FSCS software
NOAA FISHERIES

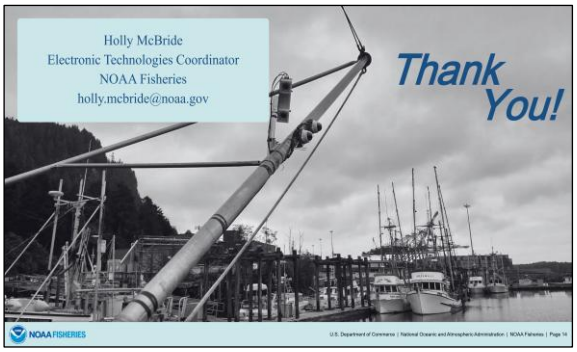

Footage – Tracking
NOAA FISHERIES


Alaska ML/AI Project
Alaska Fisheries Science Center, Alaska Regional Office, Pacific States Marine Fisheries Commission, neXus Data Solutions, Alaska Pacific University
Objectives:
Develop ML tools to automate video review
Assess the ability for ML to detect species
Generate data to inform management recommendations
Spiny Dogfish
NOAA FISHERIES


Sleeper Shark
NOAA FISHERIES

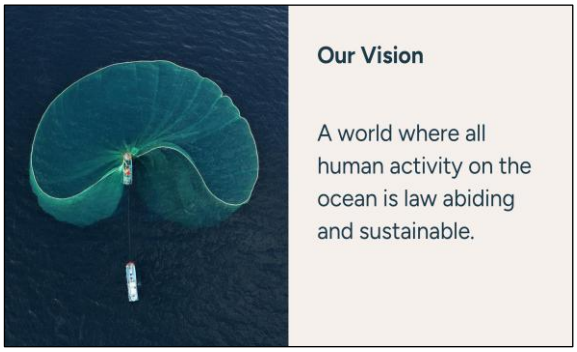

Foundations for EM Program Success
Involve Industry Partners
Define Program Objectives and Application Early
Develop Strong Vessel Monitoring Plans (VMP)
Standardize everywhere possible
Flexibility in Design
NOAA FISHERIES


Future Direction
Investigate and Trial Electronic Dockside Monitoring
Explore the feasibility of camera-based systems at landing sites
Establish Interoperability Standards
Partner with international bodies (ICES) and EM providers to standardize raw video output
Standardize AI Protocols
Develop uniform requirements for training imagery and metadata
Scale Extendable AI Models
Continue expanding machine learning initiatives
Move Towards Performance-Based Requirements
Shift from rigid specifications to performance-based technical standards
NOAA FISHERIES


Holly McBride
Electronic Technologies Coordinator
NOAA Fisheries
holly.mcbride@noaa.gov
Thank You!
NOAA FISHERIES


SEAFDEC
Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific
Pablo Trueba, Jay Bryan, Jasper Laurente
Bangkok, Thailand – 18th March 2026

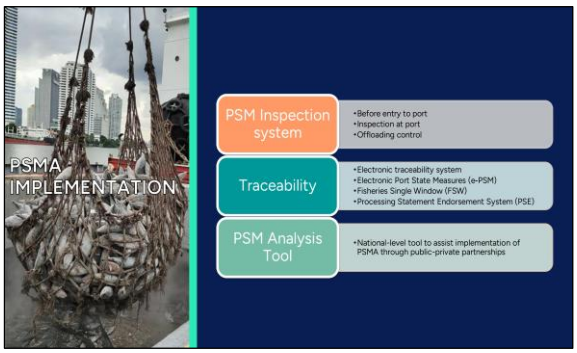

ABOUT us
A tech-enabled global change maker, using AI and data solutions to create a thriving equitable and sustainable future for all

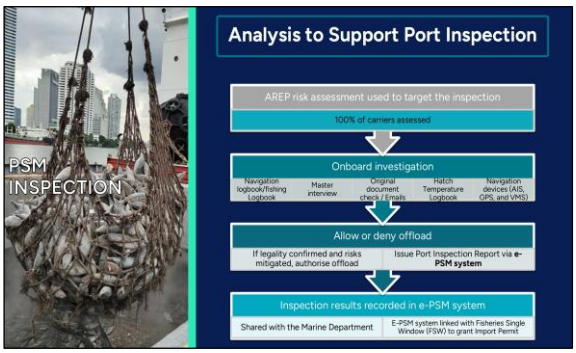

Our Vision
A world where all human activity on the ocean is law abiding and sustainable.

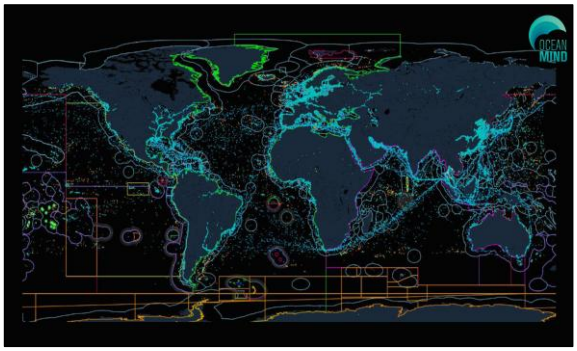

WHAT we do
ZEROinFIVE - OceanMind
1
Actionable data intelligence
2
Specific recommendations + action plan
3
Localized implementation support
4
Regional + fleetwide collaboration
5
Global scalability + capacity


Funded by the Government of Canada
Canada
Strengthening Regional Governance and Technology Integration to Fight IUU
OCEAN MIND


Funded by the Government of Canada
Canada
PSMA Implementation
Cambodia – Fisheries Administration (FiA)
OCEAN MIND

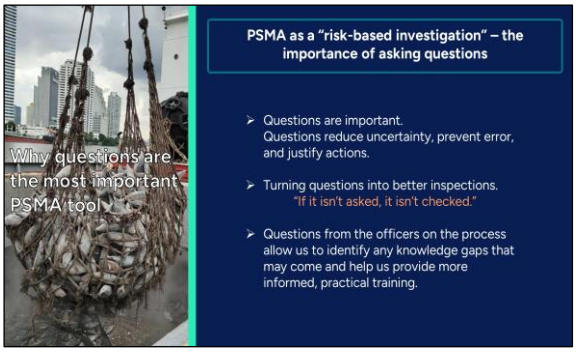

PSMA IMPLEMENTATION
PSM Inspection system
•Before entry to port
•Inspection at port
•Offloading control
Traceability
•Electronic traceability system
•Electronic Port State Measures (e-PSM)
•Fisheries Single Window (FSW)
•Processing Statement Endorsement System (PSE)
PSM Analysis Tool
•National-level tool to assist implementation of PSMA through public-private partnerships


PSM INSPECTION
Analysis to Support Port Inspection
AREP risk assessment used to target the inspection
100% of carriers assessed
Onboard investigation
Navigation logbook/fishing Logbook
Master interview
Original document check / Emails
Hatch Temperature Logbook
Navigation devices (AIS, GPS, and VMS)
Allow or deny offload
If legality confirmed and risks mitigated, authorise offload
Issue Port Inspection Report via e-PSM system
Inspection results recorded in e-PSM system
Shared with the Marine Department
E-PSM system linked with Fisheries Single Window (FSW) to grant Import Permit


OCEAN MIND


Value of coaching sessions
Our focus has been on aiding Cambodia Fisheries Administration with coaching sessions:
Understand and implement the process of the "investigative mind"
Improve knowledge on officer's role in the PSMA cycle
Understand the types of data available
Interpret and question the available data and recognise inconsistencies in vessel identity information and interpret risks
Process risks associated with vessel behaviour and submitted AREP data

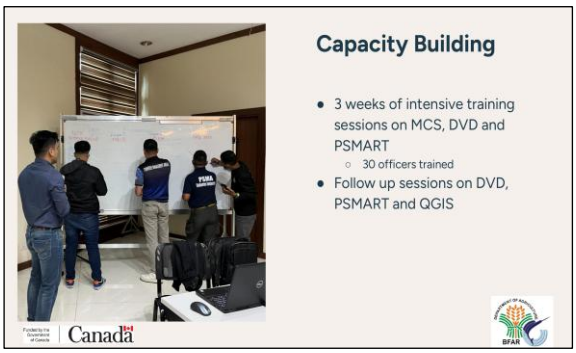

What are the INVESTIGATIVE SKILLS that will assist officers?
Key skills for an Investigative Mind:
Active listening
Questioning
Analysing
Interviewing
Note-taking
Summarising
Reporting


Why questions are the most important PSMA tool
PSMA as a "risk-based investigation" – the importance of asking questions
Questions are important. Questions reduce uncertainty, prevent error, and justify actions.
Turning questions into better inspections. "If it isn't asked, it isn't checked."
Questions from the officers on the process allow us to identify any knowledge gaps that may come and help us provide more informed, practical training.

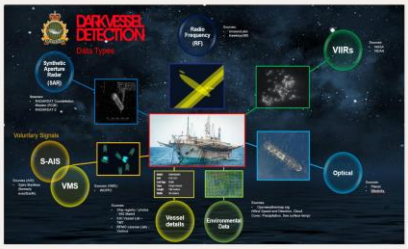

Funded by the Government of Canada
Canada
PSMA Implementation
Philippines – Bureau of Fisheries and Aquatic Resources (DA-BFAR)
OCEAN MIND
BFAR


Introduction
OceanMind
Unbiased, independent monitoring, verification and validation.
Capacity building and international cooperation.
Work with governments and authorities, NGOs, seafood industry and academia.
Support fisheries Monitoring, Control and Surveillance (MCS).
Target Illegal, Unreported and Unregulated (IUU) fishing.
Canada
BFAR


Background
The Philippines is one of the world's major seafood processing countries supplying product into the USA, EU, and Japanese markets. With both the Western and Central Pacific Fisheries Commission (WCPFC) and the Indian Ocean Tuna Commission (IOTC) facing IUU fishing, there is significant risk of both IUU and the resulting catch entering these markets.
Provide MCS data, tools and training to increase Marine Domain Awareness.
Provide PSMA implementation support to have a long-lasting positive impact.
Expand target inspections to maximize enforcement resources and assets.
Support the officers to independently identify risks and disseminate risk assessments in the form of AREP reports for onboard inspections.
To prohibit IUU catch from entering international supply chains.
Canada
BFAR


Capacity Building
3 weeks of intensive training sessions on MCS, DVD and PSMART
30 officers trained
Follow up sessions on DVD, PSMART and QGIS
Canada
BFAR

Dark Vessel Detection Tool (DVD)



Port State Measures Analysis Risk Tool (PSMART)

- Concept for a national-level tool to assist implementation of PSMA through public-private partnerships
- Online service to enable governments, seafood suppliers, processors and retailers quickly and easily understand the compliance risks of foreign-flagged vessel deliveries
- Compliance risks identified using the pre-arrival AREP analysis

Outputs

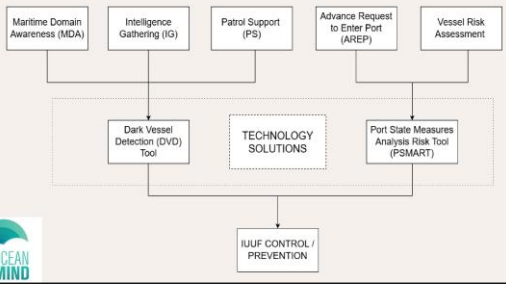
- 34 AREPs created using PSMART
- 9 Intelligence Gathering reports
- Patrol support reporting
- DVD & PSMART used for all above
- Officer Training Self-Assessment

Impact

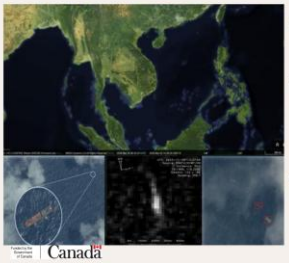
- 1 vessel refused entry in Davao
- Significant increase in officer capacity to process AREPs using multiple tools
- Incidence of requesting information from flag states due to enhanced AREP processing
- Delay of unloads due to AREP documentation request outstanding

Conclusion

TECHNOLOGY SOLUTIONS FOR FIGHTING IUUF: OVERVIEW



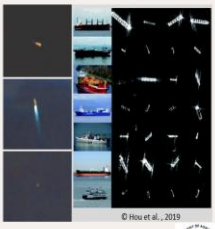
DARK VESSEL DETECTION (DVD) TOOL



- Is a platform used to detect, identify, classify, and track vessels in near real time.
- Integrates commercial and Canadian government satellite assets, plus AIS and VMS (if available), to provide a comprehensive view of vessel activities.
- Helps enable intelligence-led enforcement and patrol operations.

DARK VESSEL DETECTION (DVD) TOOL

- Automatic correlation of all satellite detections (SAR, EO, VIIRS, RF) with AIS and VMS (if available) transmissions– dark targets highlighted automatically.
- Near real-time provision to data.
- Philippine Government (BFAR, PCG, NCWC) has access to this platform.



HOW DOES DVD SUPPORT THE FIGHT AGAINST IUUF?

- DVD is purpose-built to provide extensive satellite data in a platform that allows for rapid assessments of vessel behaviour and associated risks.
- The data in DVD can be used to identify "dark" vessels from above, assisting partner countries in investigating and enforcing against IUUF.
- This tool can enable MDA and IG analysis, to support partner countries.

PORT STATE MEASURES ANALYSIS Risk TOOL (PSMART)

- Concept for a national-level tool to assist implementation of PSMA through public-private partnerships
- Online service to enable governments, seafood suppliers, processors and retailers quickly and easily understand the compliance risks of foreign-flagged vessel deliveries
- Compliance risks identified using the pre-arrival AREP analysis

PSMART USER GROUPS

Suppliers

Simplified way to enter information.

Incorporate other information on labour, health, and customs.

Update inputs to validate claims.

Port State Governments

Distribute automated indicators of non-compliance to authorities.

Inspectors can use risk profiling to target inspections.

Notification of arrivals that have not been declared.

Flag / Coastal State Governments

Method to securely communicate and receive additional information.

Must be aligned with PSMA information exchange mechanism.

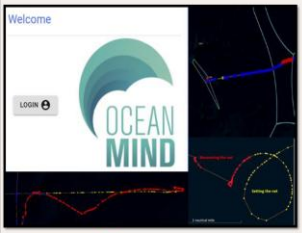
Receivers/ Processors/ Retailers

Receiver knows the risks.

Claims validated.

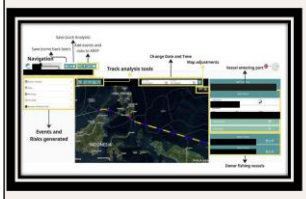
Access to the risk assessments provide 3rd party validation.

PORT STATE MEASURES ANALYSIS RISK TOOL (PSMART)



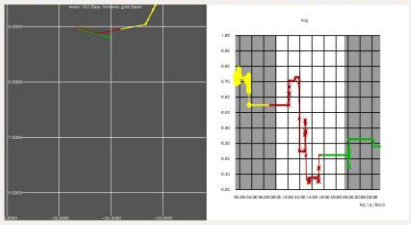
- PSMART is a reporting tool which aims to assist the partner countries to analyze and conduct risk assessment on Advanced Request to Enter Port (AREP).
- It automates vessel track analysis and identify vessel risks.

HOW DOES PSMART SUPPORT THE FIGHT AGAINST IUUF?

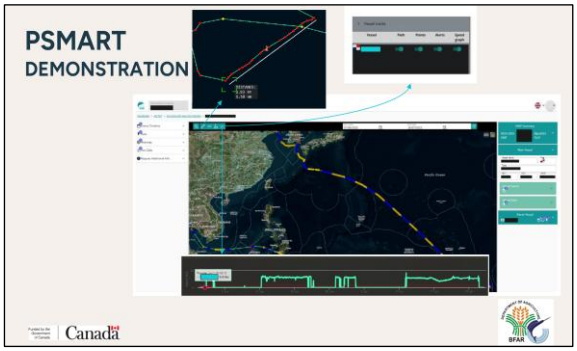


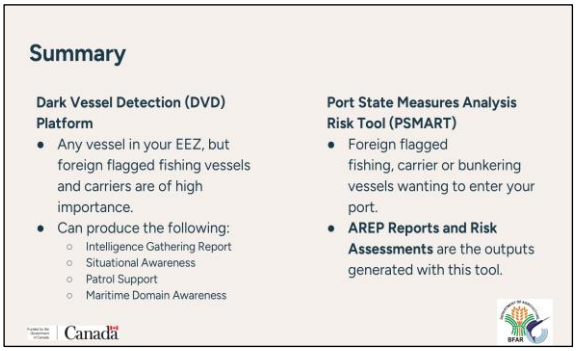
- PSMART is use to analyse port entry requests and review the vessel's activities before permission to enter port is granted.
- Government officers analyse and interpret the computational results of the system to produce risk assessments and analysis reports, which include a detailed analysis of vessel activity and history as well as investigation and inspection recommendations.

PSMART TECHNOLOGY – MACHINE LEARNING FOR RISK ASSESSMENT



PSMART DEMONSTRATION


PSMART
DEMONSTRATION
Canada

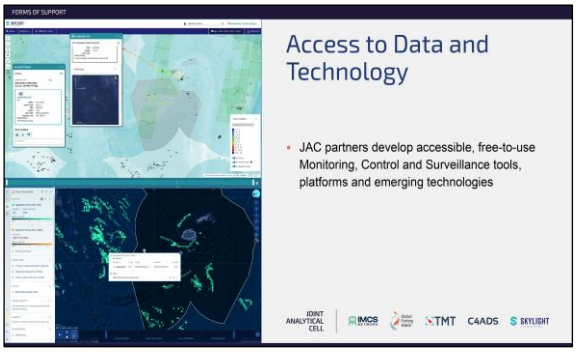

Summary
Dark Vessel Detection (DVD) Platform
Any vessel in your EEZ, but foreign flagged fishing vessels and carriers are of high importance.
Can produce the following:
Intelligence Gathering Report
Situational Awareness
Patrol Support
Maritime Domain Awareness
Port State Measures Analysis Risk Tool (PSMART)
Foreign flagged fishing, carrier or bunkering vessels wanting to enter your port.
AREP Reports and Risk Assessments are the outputs generated with this tool.
Canada


Thank you
Questions
www.oceanmind.global
ZEROinFIVE - OceanMind
analysts@oceanmind.global


JOINT ANALYTICAL CELL
IMCS NETWORK
Global Fishing Watch
TMT
C4ADS
SKYLIGHT
Introduction to the Joint Analytical Cell
Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, 17-19 March 2026, SEAFDEC (in association with DFO, Canada), Bangkok, Thailand


WHAT IS THE JAC
JAC: Five organisations working collaboratively
IMCS NETWORK
Leads on Monitoring, Control and Surveillance (MCS) capacity building and training, works to ensure the Joint Analytical Cell (JAC) output is tailored to support MCS practitioners.
Global Fishing Watch
Provision of tools and data powered by satellite tracking, remote sensing and machine learning to support analysis of fishing-related activity.
TMT
Human analysis of a wide range of data sources, focused on vessel and company intelligence.
SKYLIGHT
A maritime monitoring and analysis software platform providing MCS practitioners with a near real-time tool to identify suspicious vessel behaviour and take action, including access to commercial remote sensing data.
C4ADS
Focus on beneficial ownership and corporate network analysis.

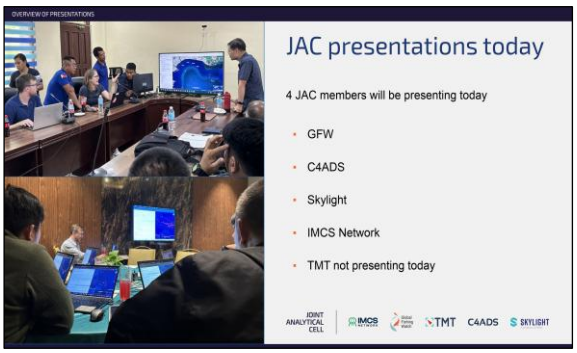

THE JAC APPROACH
JAC approach
Each JAC organisation has unique skills and expertise
Working collaboratively enables our countries and organisations we partner with to access the full range of expertise across the five organisations


FORMS OF SUPPORT
Access to Data and Technology
JAC partners develop accessible, free-to-use Monitoring, Control and Surveillance tools, platforms and emerging technologies


FORMS OF SUPPORT
MCS Capacity Building
The JAC is involved in capacity development and targeted technical training and assistance with fisheries enforcement agencies, networks and other partners including educational institutions
Focus is to build capacity to apply data and technology to fisheries Monitoring, Control and Surveillance (MCS)
Approaches include: Train the trainer, mentoring, and in-person and on-the-job training


FORMS OF SUPPORT
Patrol Support
Combined JAC expertise, data, and tools has been used to support patrol planning, execution, and post patrol lesson learning and follow ups
Improves targeting of and efficiency of patrols


FORMS OF SUPPORT
Port State Measures (PSM) Support
PSM capacity building
Facilitating exchange of information between relevant PSM States


OVERVIEW OF PRESENTATIONS
JAC presentations today
4 JAC members will be presenting today
GFW
C4ADS
Skylight
IMCS Network
TMT not presenting today


Global Fishing Watch
Using open access data and tools to help combat IUU fishing
Global Fishing Watch
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Today's Session Covers
Who is Global Fishing Watch (GFW)?
Our platform, data & tools
Cooperation with governments and key actors
Case studies and demonstration of the Global Fishing Watch platform
Global Fishing Watch


Who is Global Fishing Watch?
Founded via collaboration between Google, Oceana, and SkyTruth 2015
Established as a nonprofit in 2017
Largely grant funded by philanthropic foundations
Plus a small amount of government funding
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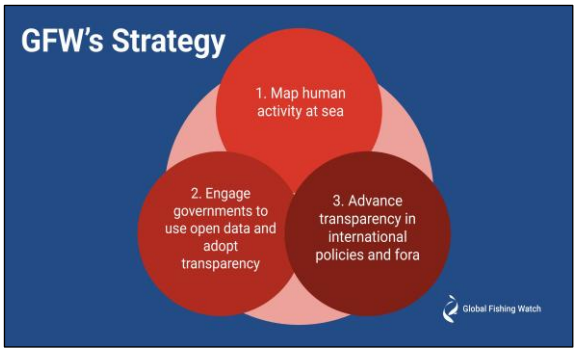
GFW's Mission
"Global Fishing Watch seeks to advance ocean governance through increased transparency of human activity at sea by creating and publicly sharing map visualizations, data and analysis tools that enable scientific research and drive a transformation in how we manage our ocean."
The High Seas Treaty is now in force — transparency will determine its success
Global Fishing Watch data used for breakthrough study on whale-ship collisions
New research harnesses AI and satellite imagery to reveal the expanding footprint of human activity at sea

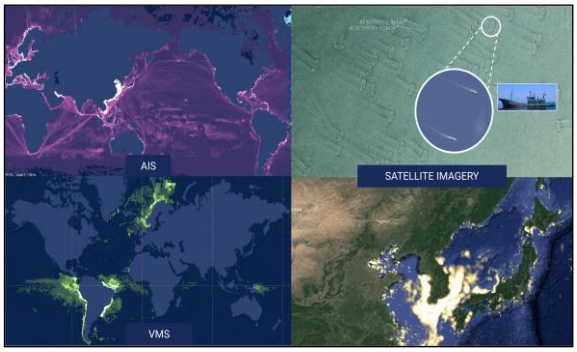

GFW's Strategy
1. Map human activity at sea
2. Engage governments to use open data and adopt transparency
3. Advance transparency in international policies and fora
Global Fishing Watch

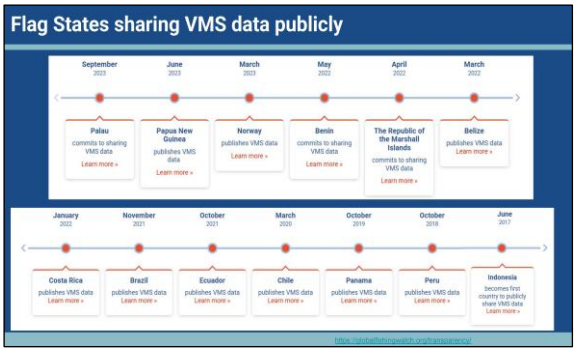

Technology and engineering
Research
Policy
Analysis and capacity development
Team composed of approximately 120+ people; 30 Countries

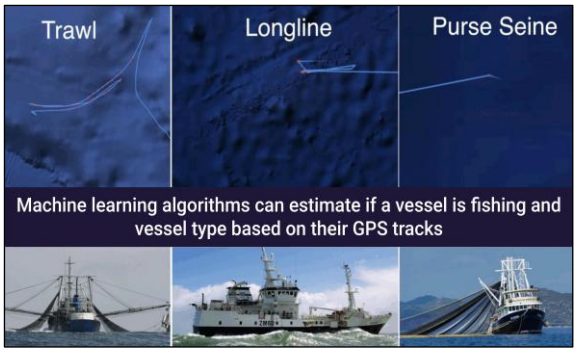

Global Fishing Watch Platform

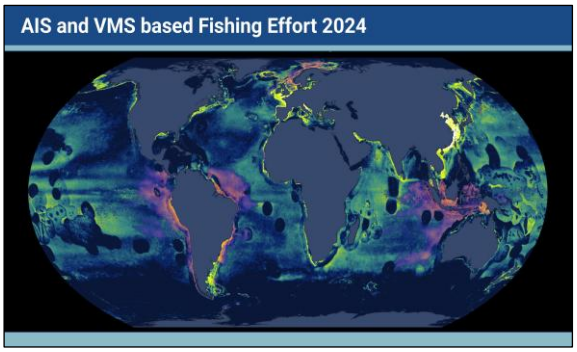

The Global Fishing Watch Platform
Open-access online tool for visualization and analysis of vessel-based human activity at sea.
Global Fishing Watch
https://globalfishingwatch.org/our-map/

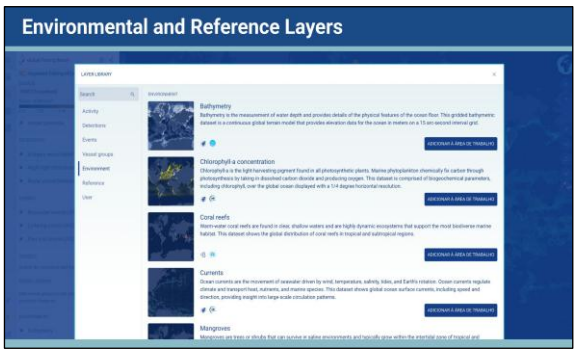

GFW Platform:
Data Layers


AIS
SATELLITE IMAGERY
VMS

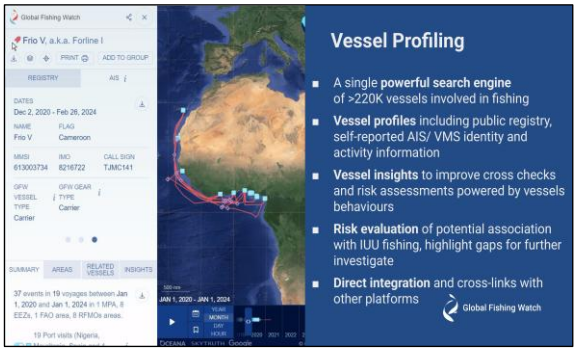

Flag States sharing VMS data publicly
September 2023
Palau
commits to sharing VMS data
Learn more »
June 2023
Papua New Guinea
publishes VMS data
Learn more »
March 2023
Norway
publishes VMS data
Learn more »
May 2022
Benin
commits to sharing VMS data
Learn more »
April 2022
The Republic of the Marshall Islands
commits to sharing VMS data
Learn more »
March 2022
Belize
publishes VMS data
Learn more »
January 2022
Costa Rica
publishes VMS data
Learn more »
November 2021
Brazil
publishes VMS data
Learn more »
October 2021
Ecuador
publishes VMS data
Learn more »
March 2020
Chile
publishes VMS data
Learn more »
October 2019
Panama
publishes VMS data
Learn more »
October 2018
Peru
publishes VMS data
Learn more »
June 2017
Indonesia
becomes first country to publicly share VMS data
Learn more »


Trawl
Longline
Purse Seine
Machine learning algorithms can estimate if a vessel is fishing and vessel type based on their GPS tracks


AIS and VMS based Fishing Effort 2024

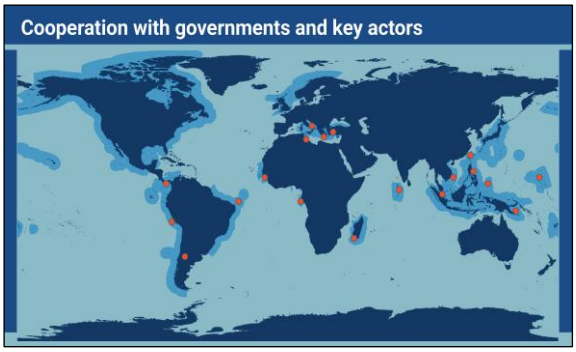

Environmental and Reference Layers
Bathymetry
Chlorophyll-a concentration
Coral reefs
Currents
Mangroves


GFW Platform:
Vessel Profiles


Vessel Profiling
A single powerful search engine of >220K vessels involved in fishing
Vessel profiles including public registry, self-reported AIS/ VMS identity and activity information
Vessel insights to improve cross checks and risk assessments powered by vessels behaviours
Risk evaluation of potential association with IUU fishing, highlight gaps for further investigate
Direct integration and cross-links with other platforms
Global Fishing Watch

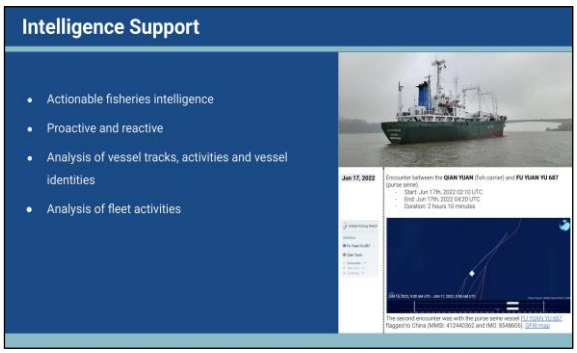

Pioneering technology for effective MCS
Historical data
Several years of data across all datasets from 2012 until the last 72 hours - apparent fishing, encounters, vessel detections, tracks and identity
Dynamic analysis
Conduct fleet and area based analysis for up to 1000 vessels at a time, create and share dynamic reporting
Easy to use
Designed with both experts and non-experts in mind
Open and free
Free to anyone with an Internet, mid-level computers
Global Fishing Watch

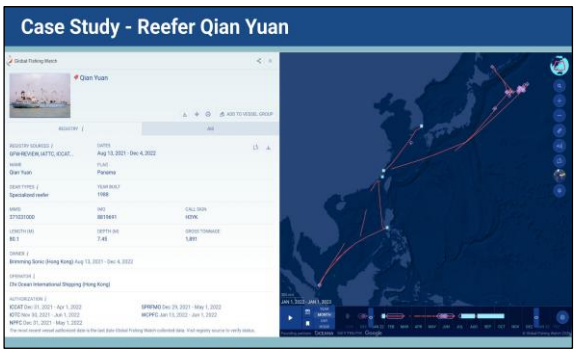

Working with Partners


Cooperation with governments and key actors


Capacity development and Policy Support
Types of capacity development and policy support GFW has offered to date include:
Structured Monitoring, Control and Surveillance Course Modules
Informal mentoring & coaching in workplace
Review of Policy and decision making processes
Developing protocols (e.g. Standard Operating Procedures - SOPs)
Learning collaboratives/ Knowledge Exchange (sharing information)


Example Partnership Events in Indo-Pacific Region
Madagascar (GFW) | Sep 2025 | MCS training modules
Philippines (JAC) Supported by DFO Canada | Feb 2026 | Data analysis and intelligence creation using various MDA tools including the GFW Map
Papua New Guinea (GFW) | Aug 2025 | Regional Knowledge Exchange between The Philippines and Papua New Guinea on implementing the Port State Measures Agreement (PSMA)
SEAFDEC (JAC) | Sep 2025 | Regional training course for fisheries inspectors in implementation of PSMs (ASEAN)


Intelligence Support
Actionable fisheries intelligence
Proactive and reactive
Analysis of vessel tracks, activities and vessel identities
Analysis of fleet activities

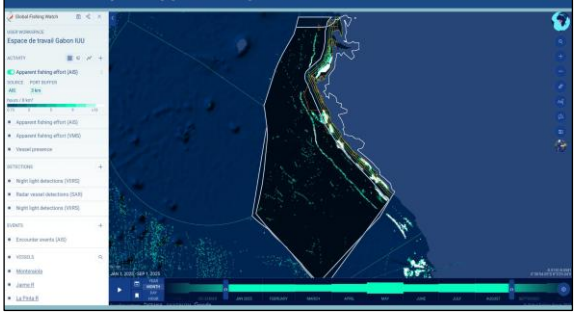

Case Study - Reefer Qian Yuan

Patrol Support

- Use a combination of open source data and tools to support patrol planning through analysis of historical trends
- Improve targeting of and efficiency of patrols

Global Fishing Watch

Case Study - Support to Operation Albacore in Gabon



Key Messages

- **Global Fishing Watch** is one of 5 organisations that work collaboratively & globally as the Joint Analytical Cell (JAC)
- Each JAC partner brings its unique strengths; Working together creates better actionable insights
- GFW's platform provides free-to-access to tools and data powered by satellite tracking, remote sensing and machine learning to support analysis of fishing-related activity (72-hour delay)
- GFW supports partners to use our platform and tools to help combat IUU fishing

Global Fishing Watch

JOINT ANALYTICAL CELL

IMCS NETWORK | Global Fishing Watch | TMT | C4ADS | SKYLIGHT

About the Joint Analytical Cell:

The Joint Analytical Cell (JAC) is a unique collective of organizations that provides maritime authorities with high quality fisheries intelligence, technology, data analysis and capacity building to combat illegal, unreported and unregulated fishing (IUU). Together, the JAC members, IMCS Network, Global Fishing Watch, TMT, C4ADS and Skylight, harness innovative technology and complementary expertise to improve the effectiveness of fisheries monitoring control and surveillance, and foster cooperation to build insights and capacity that support and enhance fisheries management.

Contact: jac-coord@tm-tracking.org

| www.imcsnet.org | www.globalfishingwatch.org | www.tm-tracking.org

Questions?

Global Fishing Watch

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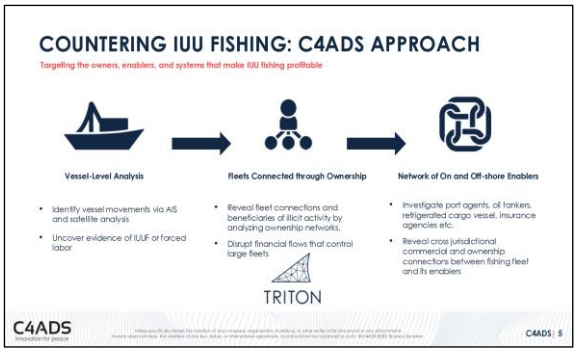
JOINT ANALYTICAL CELL
IMCS NETWORK
Global Fishing Watch
TMT
C4ADS
SKYLIGHT
C4ADS- BENEFICIAL OWNERSHIP AND NETWORK ANALYSIS
SEAFDEC March 2026
Funded by / Financé par :
Fisheries and Oceans Canada
Pêches et Océans Canada

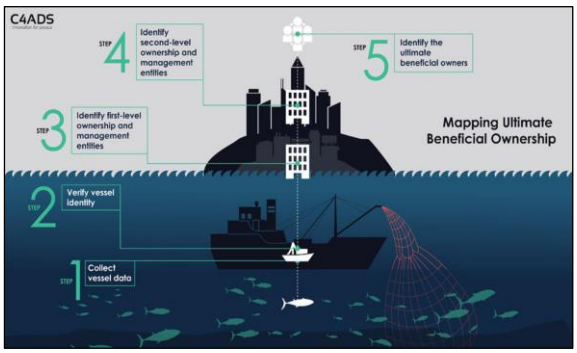

C4ADS
OUR MISSION IS TO SUPPORT GLOBAL EFFORTS TO DETECT, DISRUPT AND DEFEAT ILLICIT NETWORKS.
Powered by cutting-edge data science, innovative technology applications, and evidence-driven analysis, we work to coordinate effective global solutions to the illicit networks that drive conflict, instability, environmental crime, and human rights abuses around the world.

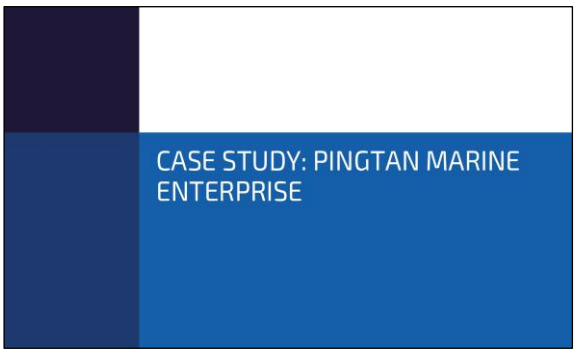

C4ADS
WILDLIFE & NATURAL RESOURCE SECURITY
Advance the sustainable use of natural resources and the protection of wildlife by exposing where illicit activity enters supply chains, identifying the networks that enable it, and building frontline capacity to disrupt it.
WILDLIFE CRIMES
IUU FISHING
ILLEGAL LOGGING
ILLEGAL MINING


IUU FISHING PORTFOLIO
Targeting the Full System to Counter IUU Fishing


COUNTERING IUU FISHING: C4ADS APPROACH
Targeting the owners, enablers, and systems that make IUU fishing profitable
Vessel-Level Analysis
Identify vessel movements via AIS and satellite analysis
Uncover evidence of IUUF or forced labor
Fleets Connected through Ownership
Reveal fleet connections and beneficiaries of illicit activity by analyzing ownership networks.
Disrupt financial flows that control large fleets
TRITON
Network of On and Off-shore Enablers
Investigate port agents, oil tankers, refrigerated cargo vessel, insurance agencies etc.
Reveal cross jurisdictional commercial and ownership connections between fishing fleet and its enablers
C4ADS
C4ADS | 5


THE IMPORTANCE OF BENEFICIAL OWNERSHIP
Ultimate Beneficial Owner (UBO) is a term used to describe the person or people who ultimately control or own a company
Network Analysis
Identify companies and people associated with vessels of interest.
Identifying Risks Within Fleets
Examine fleets as a whole and other associated risks or behavior of the fleet
Accountability
Identify those responsible or benefiting from illicit activity
JOINT ANALYTICAL CELL
IMCS NETWORK
Global Fishing Watch
TMT
C4ADS
SKYLIGHT


C4ADS
STEP 4
Identify second-level ownership and management entities
STEP 5
Identify the ultimate beneficial owners
STEP 3
Identify first-level ownership and management entities
Mapping Ultimate Beneficial Ownership
STEP 2
Verify vessel identity
STEP 1
Collect vessel data

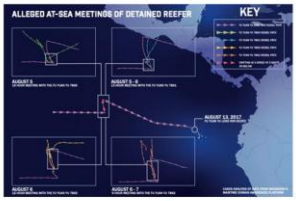

CASE STUDY: PINGTAN MARINE ENTERPRISE

CHINA-FLAGGED REEFER DETAINED: THE EVENT

On August 13th 2017, the Fu Yuan Yu Leng 999 was detained in the Galapagos Islands with over 300 tons of catch and 6,600 sharks, including newborn sharks, shark fins, and CITES-protected hammerheads

August 5 - August 6, the Fu Yuan Yu Leng 999 **met with four fishing vessels** before being detained in the Galapagos Maritime Sanctuary on August 13th, 2017.

The Fu Yuan Yu Leng 999, owned and operated by Hongkong Ocean Fishing Co. Ltd.

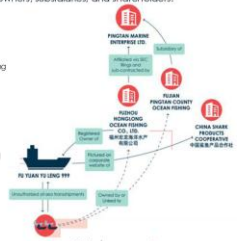


CHINA-FLAGGED REEFER DETAINED: THE VESSEL

We first identified associated vessels, registered owners, subsidiaries, and shareholders.

VESSEL IDENTIFICATION & FLEET BUILDOUT

- Vessel Registries (RFMO vessel authorization lists Global Fishing Watch)
- Vessel Authorizations and vessel licenses
- PME's official website
- Maritime Intelligence Platforms (IHS Markit / Equasis)
- Corporate registries (China, Hong Kong, and Indonesia, BVI)
- Stock exchange filings
- Chinese Ministry of Commerce overseas investment data (MOFCOM)



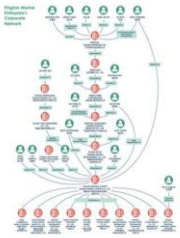
CHINA-FLAGGED REEFER DETAINED: THE OUTCOME

- PME has a **proven history of IUU fishing**, with grave implications for vulnerable coastal countries like Indonesia, Timor-Leste, and Ecuador.
- PME is comprised of a broader corporate network of subsidiary and linked companies in mainland China, Hong Kong, and Indonesia..
- C4ADS identified **fourteen forced labor incidents**, involving over 80 fishermen, onboard the company's vessels. Each of these incidents fell into one of two overlapping categories: 1) forced labor and exploitation, or 2) severe injury and death.
- PME is linked to and completely dependent on the Chinese state through subsidies, partial ownership, loans, and political affiliations amongst its directorship.

By May 9, 2023

1st ever designation of a Chinese fishing company

1st ever SEC de-listing of a PRC domiciled company in the USA



METHODS AND LIMITATIONS

VESSEL OWNERSHIP RELATIONSHIPS

Global Fishing Watch | Equasis: Vessel level management info | Company fleet information

CORPORATE DATA SOURCES

opencorporates

- CATALOGUE OF RESEARCH DATABASES
- Opencorporates

New Zealand

Vietnam

LIMITATIONS

Corporate records are not always easily available and vary in required information.

Secrecy

In some jurisdictions, corporate records are not made public or are only partially public.

Non-digitization

In some jurisdictions, corporate records are publicly available, but only by actual individuals arriving on site, limiting utility.

Scarcity

In some jurisdictions, corporate records are simply not available or not available to the public in a reasonably accessible manner.

Lack of common standards

Individual jurisdictions may offer excellent access, but without common global standards, it is tough to get a true picture of ownership.

LIMITATIONS

Three significant limitations preventing full visibility into onshore ownership networks.

Data Variance

No universally agreed upon definition or standard for ownership reporting. This hinders wide scale ownership mapping and allows owners to exploit gaps to disguise their activities.

Data Accessibility

Onshore ownership information is not readily accessible and **requires combining data from multiple sources, creating a high analytical burden**, particularly for under-resourced fishing enforcement agencies.

Regulatory Loopholes

Gaps in reporting requirements **allow owners to conceal their histories and mask foreign investment**. This makes identifying true owners more difficult.

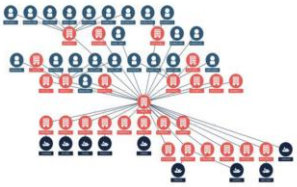
TRITON WALKTHROUGH

TRITON

by C4ADS

A platform for regulators, enforcement, and civil society to explore beneficial ownership data behind the world's industrial fishing fleet

- Search through ~180,000 entities industrial fishing vessels, companies, and individuals
- Identify the vessel, companies and individuals within a network
- Narrow searches based on compliance, registration, and geography
- Download network entity identifiers
- Partner with the JAC / C4ADS for in depth information and additional analytical support



COUNTER IUU WITH PUBLICLY AVAILABLE INFORMAITON

Publicly Available Information Verticals

Serious cases can have thousands of subordinate sources that piece together a comprehensive investigation

General Guidelines

When conducting investigations, good evidentiary standards are crucial to the credibility of your conclusions.

(Some of) C4ADS's Analytical Standards:

- Stay objective and non-partisan
- Explain uncertainties
- Identify assumptions
- Explain changes
- Understand your sources

Stay skeptical!

Keep track of your process!

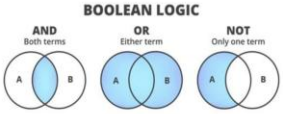
Cite your sources!

Why Bother with Searches?

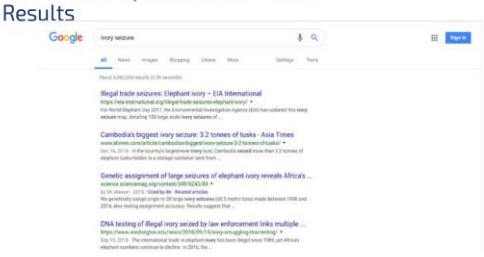
- The Google Search index contains hundreds of billions of web pages and is well over 100,000,000 gigabytes in size. The same is true for other search engines!
- Making this data useful means giving your search engine the clearest instructions possible as to what you are looking for, ensuring you have the best chance of finding your answers in a more limited set of results

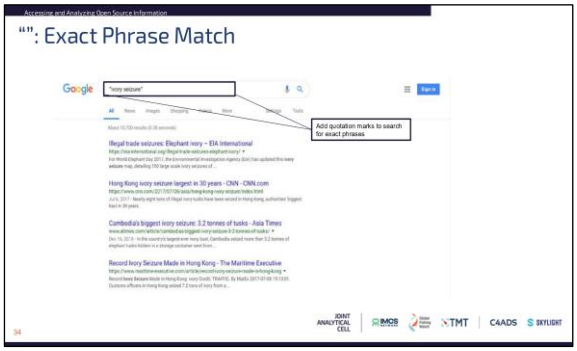
Boolean Searches

Boolean terms are ways to specify to Google which phrases or words in your search are most important and how they relate to each other.



No Boolean Operators - 3 Million Results




Accessing and Analyzing Open Source Information
"": Exact Phrase Match
Add quotation marks to search for exact phrases
JOINT ANALYTICAL CELL
IMCS
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C4ADS
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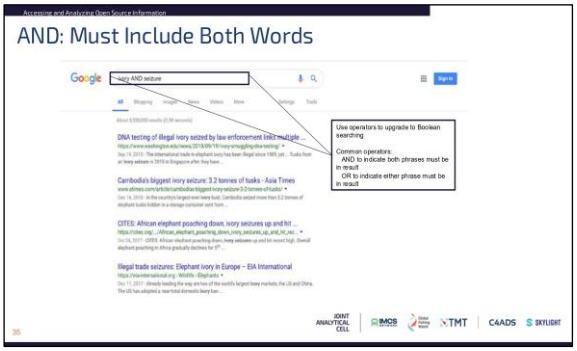
Accessing and Analyzing Open Source Information
AND: Must Include Both Words
Use operators to upgrade to Boolean searching
Common operators:
AND to indicate both phrases must be in result
OR to indicate either phrase must be in result
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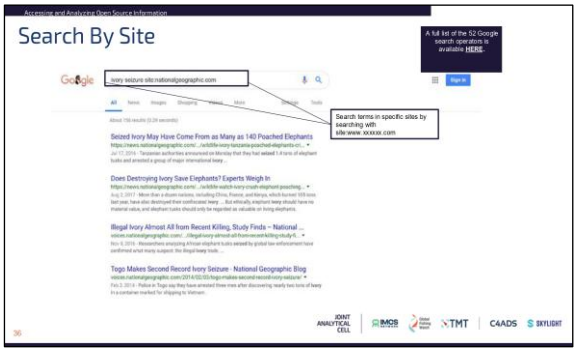
Accessing and Analyzing Open Source Information
Search By Site
A full list of the 52 Google search operators is available HERE.
Search terms in specific sites by searching with site:www.xxxxx.com
JOINT ANALYTICAL CELL
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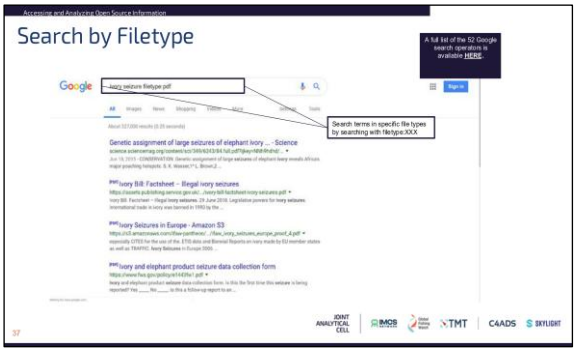
C4ADS
SKYLIGHT


Accessing and Analyzing Open Source Information
Search by Filetype
A full list of the 52 Google search operators is available HERE.
Search terms in specific file types by searching with filetype:XXX
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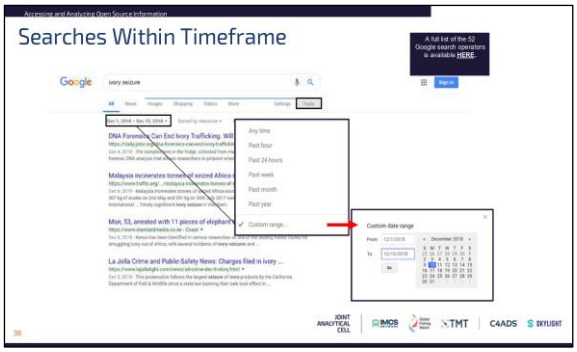
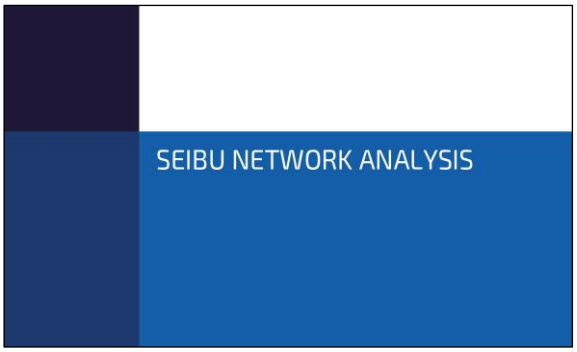
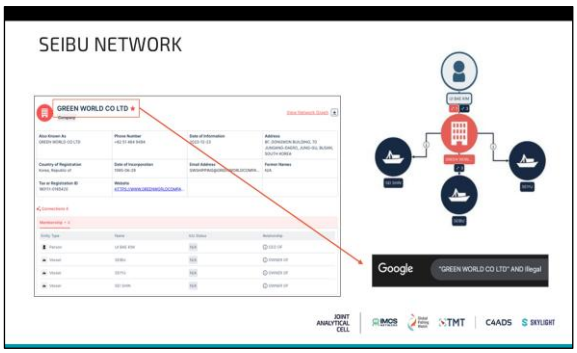
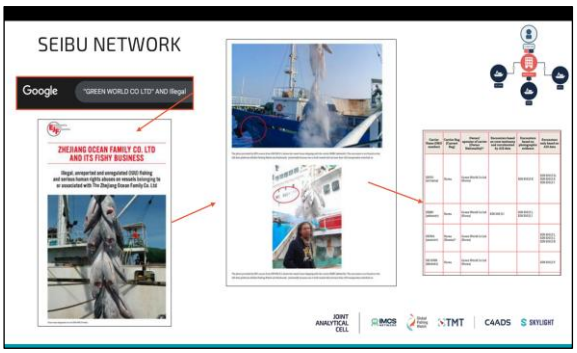
IMCS
TMT
C4ADS
SKYLIGHT

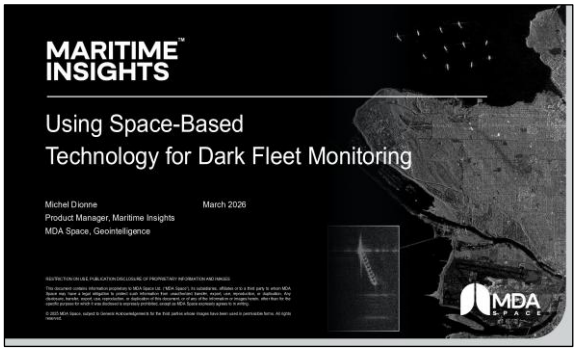

Accessing and Analyzing Open Source Information
Searches Within Timeframe
A full list of the 52 Google search operators is available HERE.
JOINT ANALYTICAL CELL
IMCS
TMT
C4ADS
SKYLIGHT

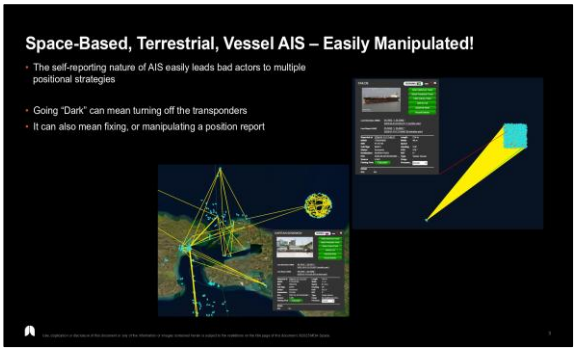

SEIBU NETWORK ANALYSIS

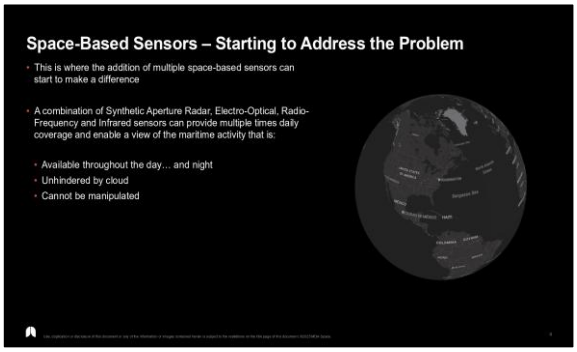

SEIBU NETWORK
GREEN WORLD CO LTD
Google
"GREEN WORLD CO LTD" AND Illegal
JOINT ANALYTICAL CELL
IMCS
TMT
C4ADS
SKYLIGHT


SEIBU NETWORK
Google
"GREEN WORLD CO LTD" AND Illegal
ZHEJIANG OCEAN FAMILY CO. LTD AND ITS FISHY BUSINESS
JOINT ANALYTICAL CELL
IMCS
TMT
C4ADS
SKYLIGHT

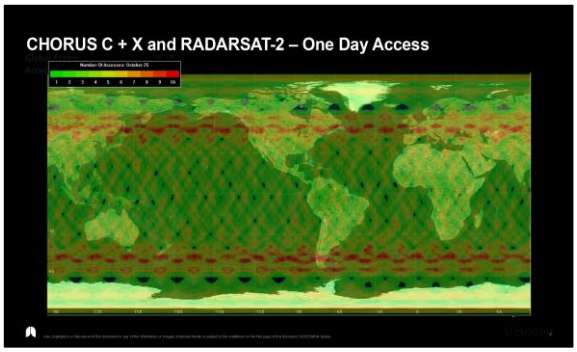

JOINT ANALYTICAL CELL
IMCS NETWORK
Global Fishing Watch
TMT
C4ADS
SKYLIGHT
About the Joint Analytical Cell:
The Joint Analytical Cell, or JAC, provides authorities with fisheries intelligence, data analysis and capacity building to help combat illegal, unreported and unregulated fishing. Founded by the International Monitoring, Control and Surveillance Network, Global Fishing Watch and TM-Tracking, the initiative harnesses innovative technology and the complementary expertise of its collaborating organizations to improve the effectiveness of fisheries monitoring, control and surveillance. By fostering cooperation among State and non-State partners, the JAC seeks to build insights and capacity that will help enhance fisheries management.
Contact:

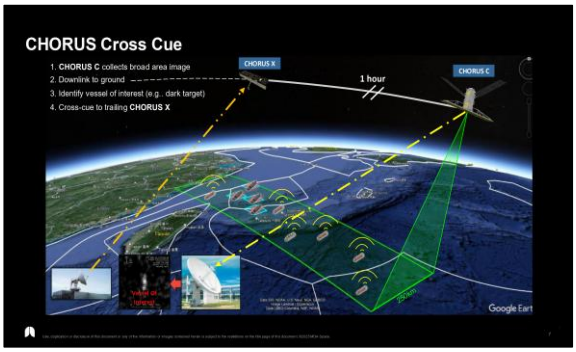

MARITIME™
INSIGHTS
Using Space-Based
Technology for Dark Fleet Monitoring
Michel Dionne
Product Manager, Maritime Insights
MDA Space, Geointelligence
March 2026
MDA SPACE

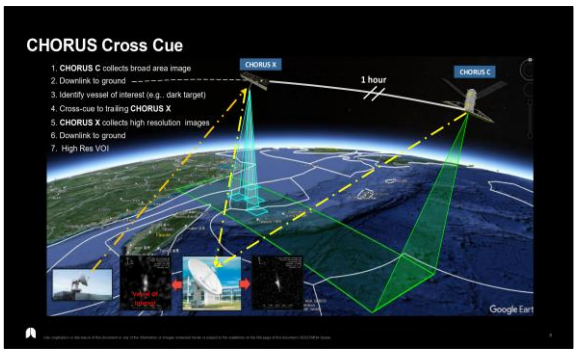

Space-Based, Terrestrial, Vessel AIS – Easily Manipulated!
The self-reporting nature of AIS easily leads bad actors to multiple positional strategies
Going "Dark" can mean turning off the transponders
It can also mean fixing, or manipulating a position report

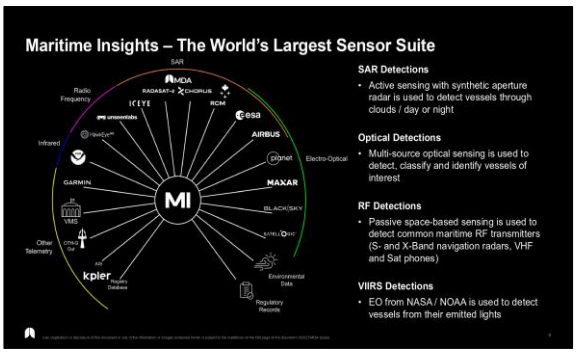

Space-Based Sensors – Starting to Address the Problem
This is where the addition of multiple space-based sensors can start to make a difference
A combination of Synthetic Aperture Radar, Electro-Optical, Radio-Frequency and Infrared sensors can provide multiple times daily coverage and enable a view of the maritime activity that is:
Available throughout the day… and night
Unhindered by cloud
Cannot be manipulated

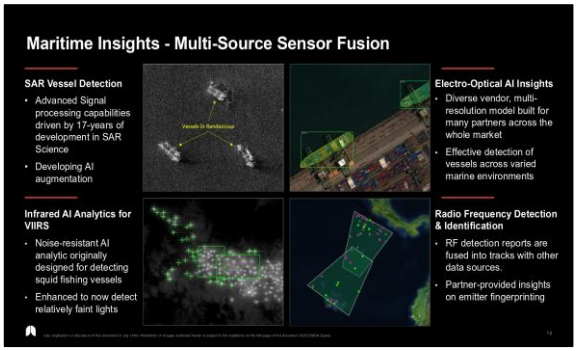

CHORUS - Changing How & When you see the World
Dual Satellites:
X-Band & C-Band in an inclined orbit; cover age +/-62 deg coverage day/night; all weather
Innovations:
More coverage; better access; revisit; less noise; faster data rates; 20 mins duty cycle
Near-Real Time:
Shorter tasking timelines and low latency; Global Network, with AI for automation
Multiple Use Cases & Flexible ConOps:
Maritime, Land Monitoring; both systematic and taskable collections
Next Generation SAR constellation empowering effective Land and Maritime surveillance in support of addressing critical operational issues


CHORUS C + X and RADARSAT-2 – One Day Access

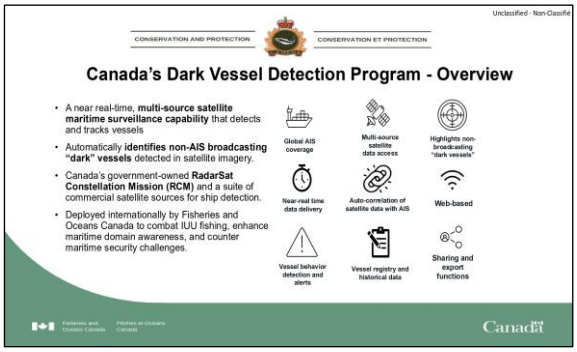

CHORUS Cross Cue
1. CHORUS C collects broad area image
2. Downlink to ground
3. Identify vessel of interest (e.g., dark target)
4. Cross-cue to trailing CHORUS X
CHORUS X
1 hour
CHORUS C

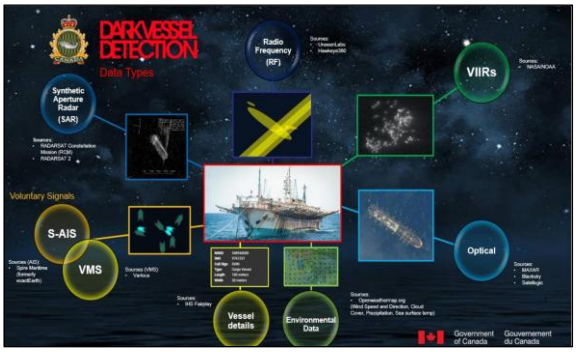

CHORUS Cross Cue
1. CHORUS C collects broad area image
2. Downlink to ground
3. Identify vessel of interest (e.g., dark target)
4. Cross-cue to trailing CHORUS X
5. CHORUS X collects high resolution images
6. Downlink to ground
7. High Res VOI
CHORUS X
1 hour
CHORUS C

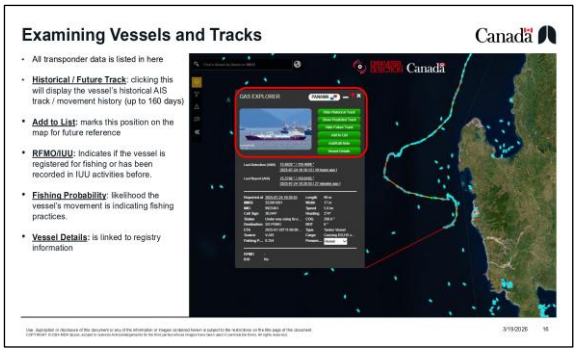

Maritime Insights – The World's Largest Sensor Suite
SAR Detections
Active sensing with synthetic aperture radar is used to detect vessels through clouds / day or night
Optical Detections
Multi-source optical sensing is used to detect, classify and identify vessels of interest
RF Detections
Passive space-based sensing is used to detect common maritime RF transmitters (S- and X-Band navigation radars, VHF and Sat phones)
VIIRS Detections
EO from NASA / NOAA is used to detect vessels from their emitted lights
MI

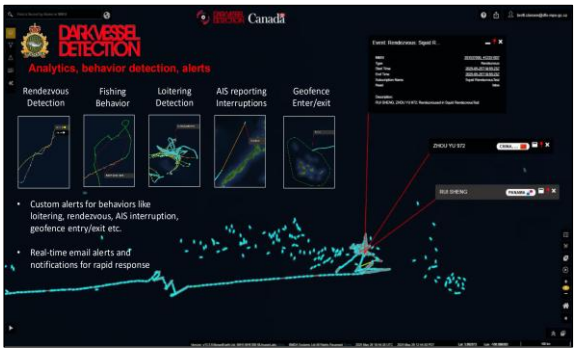

Maritime Insights - Multi-Source Sensor Fusion
SAR Vessel Detection
Advanced Signal processing capabilities driven by 17-years of development in SAR Science
Developing AI augmentation
Electro-Optical AI Insights
Diverse vendor, multi-resolution model built for many partners across the whole market
Effective detection of vessels across varied marine environments
Infrared AI Analytics for VIIRS
Noise-resistant AI analytic originally designed for detecting squid fishing vessels
Enhanced to now detect relatively faint lights
Radio Frequency Detection & Identification
RF detection reports are fused into tracks with other data sources.
Partner-provided insights on emitter fingerprinting


DARKVESSEL DETECTION Canada
DFO International Fisheries Enforcement
Canada – Dark Vessel Detection Platform Overview
Dustin De Gagne
Senior Program Officer
Government of Canada
Gouvernement du Canada

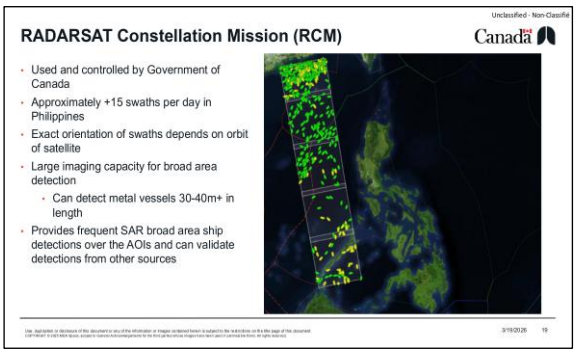

Unclassified - Non-Classifié
CONSERVATION AND PROTECTION
CONSERVATION ET PROTECTION
Canada's Dark Vessel Detection Program - Overview
A near real-time, multi-source satellite maritime surveillance capability that detects and tracks vessels
Automatically identifies non-AIS broadcasting "dark" vessels detected in satellite imagery.
Canada's government-owned RadarSat Constellation Mission (RCM) and a suite of commercial satellite sources for ship detection.
Deployed internationally by Fisheries and Oceans Canada to combat IUU fishing, enhance maritime domain awareness, and counter maritime security challenges.
Global AIS coverage
Multi-source satellite data access
Highlights non-broadcasting "dark vessels"
Near-real time data delivery
Auto-correlation of satellite data with AIS
Web-based
Vessel behavior detection and alerts
Vessel registry and historical data
Sharing and export functions
Fisheries and Oceans Canada
Pêches et Océans Canada
Canada

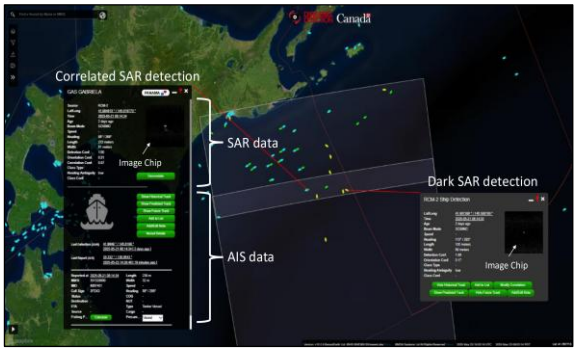

DARKVESSEL DETECTION
Data Types
Radio Frequency (RF)
VIIRs
Synthetic Aperture Radar (SAR)
Voluntary Signals
S-AIS
VMS
Optical
Vessel details
Environmental Data
Government of Canada
Gouvernement du Canada

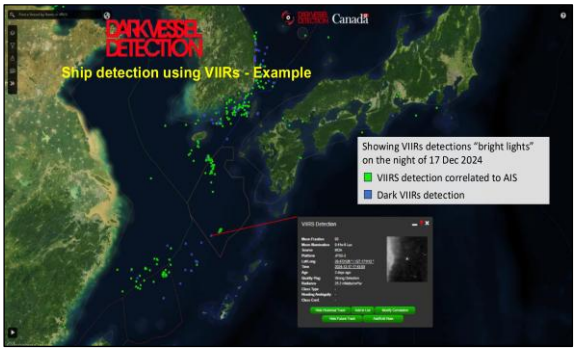

Examining Vessels and Tracks
Canada
All transponder data is listed in here
Historical / Future Track: clicking this will display the vessel's historical AIS track / movement history (up to 160 days)
Add to List: marks this position on the map for future reference
RFMO/IUU: Indicates if the vessel is registered for fishing or has been recorded in IUU activities before.
Fishing Probability: likelihood the vessel's movement is indicating fishing practices.
Vessel Details: is linked to registry information
DARKVESSEL DETECTION Canada
GAS EXPLORER
3/19/2026
16

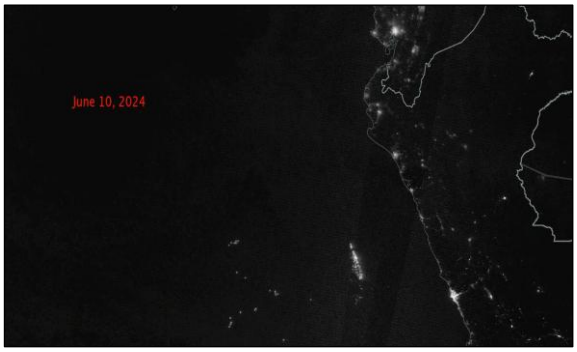

DARKVESSEL DETECTION
Analytics, behavior detection, alerts
Rendezvous Detection
Fishing Behavior
Loitering Detection
AIS reporting Interruptions
Geofence Enter/exit
Custom alerts for behaviors like loitering, rendezvous, AIS interruption, geofence entry/exit etc.
Real-time email alerts and notifications for rapid response

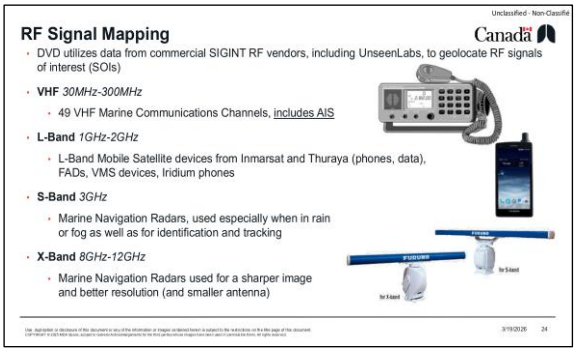

Unclassified - Non-Classifié
SAR sources in DVD
Canada
RADARSAT Constellation Mission (RCM)
RADARSAT-2
ICEYE
3/19/2026
18

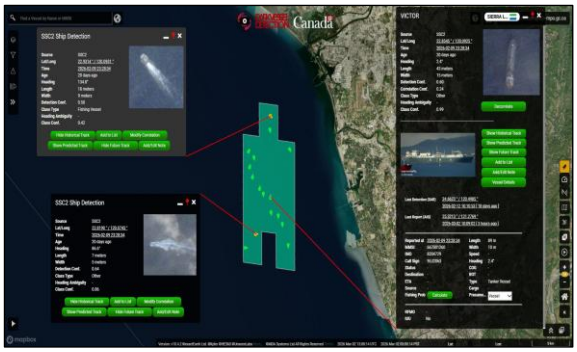

Unclassified - Non-Classifié
RADARSAT Constellation Mission (RCM)
Canada
Used and controlled by Government of Canada
Approximately +15 swaths per day in Philippines
Exact orientation of swaths depends on orbit of satellite
Large imaging capacity for broad area detection
Can detect metal vessels 30-40m+ in length
Provides frequent SAR broad area ship detections over the AOIs and can validate detections from other sources
3/19/2026
19


Correlated SAR detection
SAR data
Image Chip
Dark SAR detection
AIS data
Image Chip

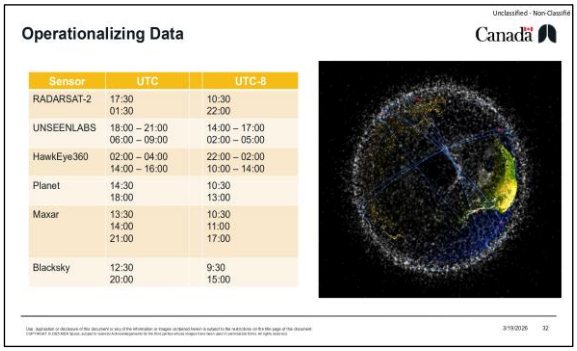

DARKVESSEL DETECTION
Ship detection using VIIRs - Example
Showing VIIRs detections "bright lights" on the night of 17 Dec 2024
VIIRS detection correlated to AIS
Dark VIIRs detection

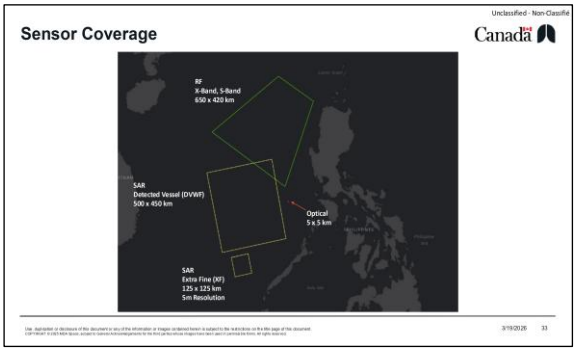

June 10, 2024

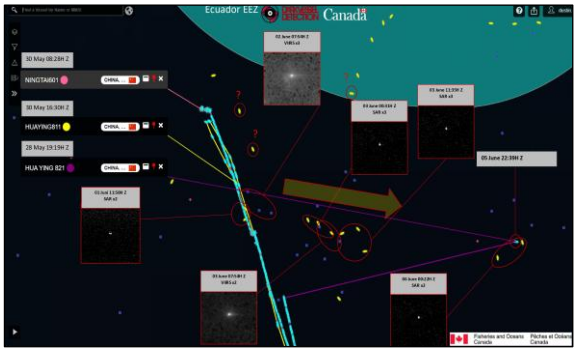

Unclassified - Non-Classifié
RF Signal Mapping
Canada
DVD utilizes data from commercial SIGINT RF vendors, including UnseenLabs, to geolocate RF signals of interest (SOIs)
VHF 30MHz-300MHz
49 VHF Marine Communications Channels, includes AIS
L-Band 1GHz-2GHz
L-Band Mobile Satellite devices from Inmarsat and Thuraya (phones, data), FADs, VMS devices, Iridium phones
S-Band 3GHz
Marine Navigation Radars, used especially when in rain or fog as well as for identification and tracking
X-Band 8GHz-12GHz
Marine Navigation Radars used for a sharper image and better resolution (and smaller antenna)
3/19/2026
24

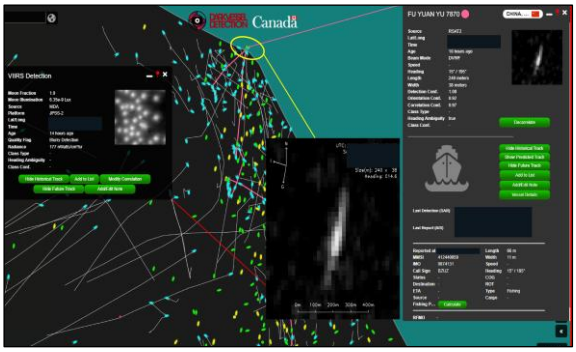

Canada
SSC2 Ship Detection
SSC2 Ship Detection
VICTOR

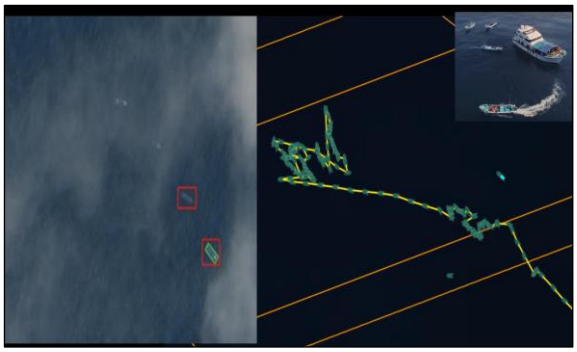

DARKVESSEL DETECTION
Fisheries and Oceans Canada
Pêches et Océans Canada

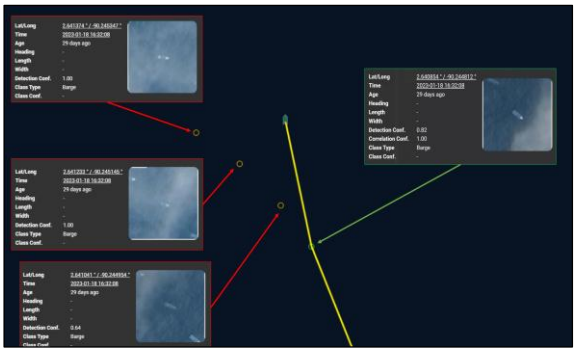

Unclassified - Non-Classifié
Operationalizing Data
Canada
Sensor | UTC | UTC-8
RADARSAT-2 | 17:30 01:30 | 10:30 22:00
UNSEENLABS | 18:00 – 21:00 06:00 – 09:00 | 14:00 – 17:00 02:00 – 05:00
HawkEye360 | 02:00 – 04:00 14:00 – 16:00 | 22:00 – 02:00 10:00 – 14:00
Planet | 14:30 18:00 | 10:30 13:00
Maxar | 13:30 14:00 21:00 | 10:30 11:00 17:00
Blacksky | 12:30 20:00 | 9:30 15:00


Unclassified - Non-Classifié
Sensor Coverage
Canada
RF
X-Band, S-Band
650 x 420 km
SAR
Detected Vessel (DVWF)
500 x 450 km
Optical
5 x 5 km
SAR
Extra Fine (XF)
125 x 125 km
5m Resolution

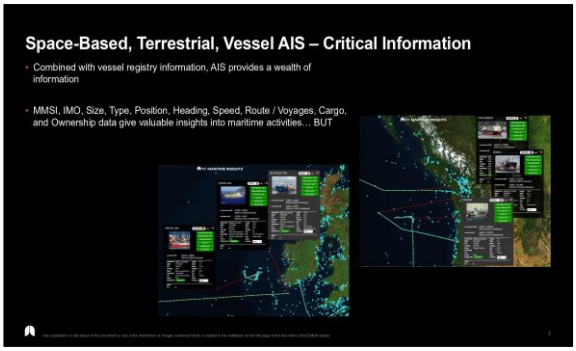

Ecuador EEZ
Canada

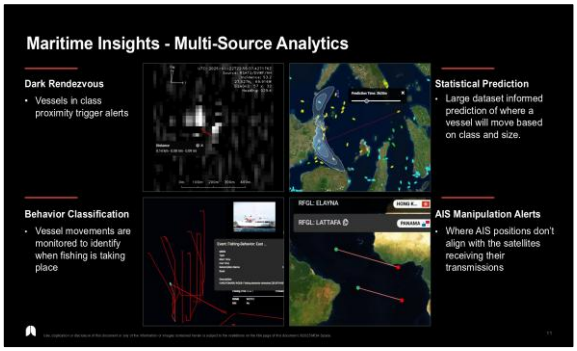

Canada
VIIRS Detection
FU YUAN YU 7870

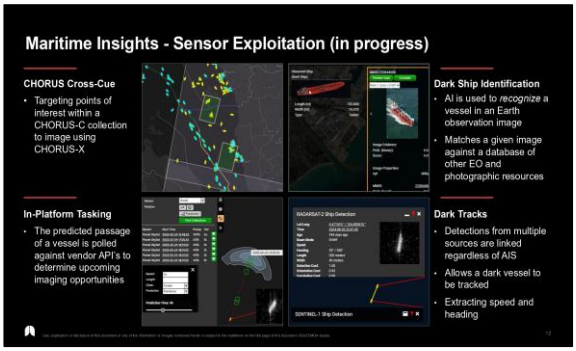




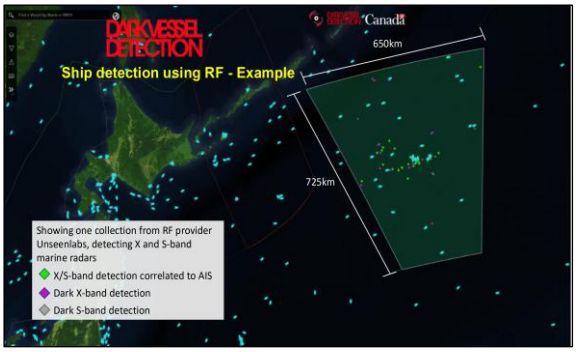

Thank you!

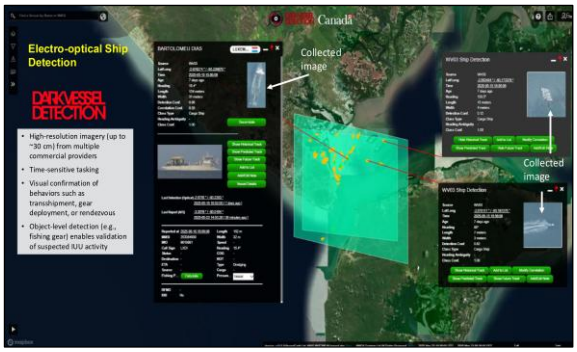

Space-Based, Terrestrial, Vessel AIS – Critical Information
Combined with vessel registry information, AIS provides a wealth of information
MMSI, IMO, Size, Type, Position, Heading, Speed, Route / Voyages, Cargo, and Ownership data give valuable insights into maritime activities… BUT

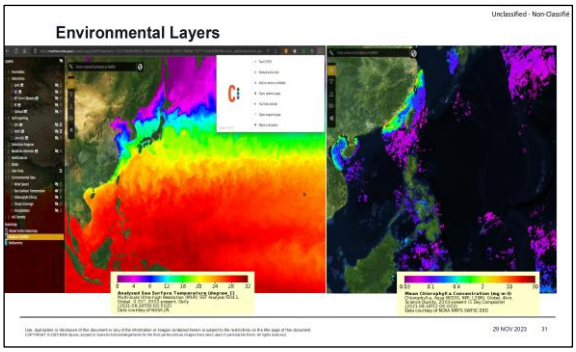

Maritime Insights - Multi-Source Analytics
Dark Rendezvous
• Vessels in class proximity trigger alerts
Statistical Prediction
• Large dataset informed prediction of where a vessel will move based on class and size.
Behavior Classification
• Vessel movements are monitored to identify when fishing is taking place
AIS Manipulation Alerts
• Where AIS positions don't align with the satellites receiving their transmissions


Maritime Insights - Sensor Exploitation (in progress)
CHORUS Cross-Cue
• Targeting points of interest within a CHORUS-C collection to image using CHORUS-X
Dark Ship Identification
• AI is used to recognize a vessel in an Earth observation image
• Matches a given image against a database of other EO and photographic resources
In-Platform Tasking
• The predicted passage of a vessel is polled against vendor API's to determine upcoming imaging opportunities
Dark Tracks
• Detections from multiple sources are linked regardless of AIS
• Allows a dark vessel to be tracked
• Extracting speed and heading


DARKVESSEL DETECTION
SAR Detections - Use Case
EDISON
UNITED ...
Uncorrelated SAR contacts – "Dark" Vessels
ANTONIO H
ECUADOR
SPIRIT OF MELBOURNE
ISLE OF ...


DARKVESSEL DETECTION
Canada
Ship detection using RF - Example
650km
725km
Showing one collection from RF provider Unseenlabs, detecting X and S-band marine radars
X/S-band detection correlated to AIS
Dark X-band detection
Dark S-band detection


Canada
Electro-optical Ship Detection
DARKVESSEL DETECTION
• High-resolution imagery (up to ~30 cm) from multiple commercial providers
• Time-sensitive tasking
• Visual confirmation of behaviors such as transshipment, gear deployment, or rendezvous
• Object-level detection (e.g., fishing gear) enables validation of suspected IUU activity
Collected image
Collected image


Unclassified - Non-Classifié
Environmental Layers
29 NOV 2023
31

CLOSING REMARKS

By Ms. Sampan Panjarat
Secretary-General and Chief of the Training Department

Distinguished delegates from the ASEAN Member States, resource persons, ladies and gentlemen.

As we come to the end of the Workshop on Strengthening Regional Fisheries Governance and Technology Integration to Combat IUU Fishing in the Indo-Pacific, held from 17 to 19 March 2026, I would like to express my sincere appreciation to all participants for your active engagement and valuable contributions throughout the past three days.

During this workshop, the demonstrations and presentations from our distinguished resource persons have also provided valuable insights into emerging technologies and practical approaches that can support fisheries monitoring and enforcement efforts, while the discussions among participants have helped strengthen technical dialogue and institutional cooperation among countries in the region.

On this occasion, I would once again like to express my sincere appreciation to the Government of Canada for its generous support in organizing this workshop. I would also like to thank our resource persons from the Government of Canada, FAO/RAP, IMCS Network, RPOA-IUU, Unseenlabs, Archipelago Marine Research Ltd., NOAA, OceanMind, Global Fishing Watch, C4ADS, MDA Ltd., and Skylight for sharing their expertise and valuable insights.

I would also like to thank all representatives from ASEAN Member States for your active participation and constructive discussions, which have greatly contributed to the success of this workshop.

Ladies and gentlemen, I hope that the knowledge shared and the connections built during this workshop will further strengthen our regional cooperation and support continued efforts to combat IUU fishing.

With that, I would like to officially declare this workshop closed.

Thank you very much, and I wish you a safe journey home.

Training Department
Southeast Asian Fisheries Development Center
www.seafdec.or.th