


FFA

FORUM FISHERIES COMMITTEE
ONE HUNDRED AND EIGHTEENTH MEETING

Virtual
11 - 14 May 2021

Agenda Item:	12
Paper Number:	FFC118-WP09
Title:	Enhancing tools and partnerships to combat IUU fishing

Summary:

This paper provides an update on the ongoing work of exploring and trialling emerging technologies, in collaboration with partners, to enhance MCS analytics and intelligence support to Members. These updates support outcomes from FFC110 to continue to explore and encourage partnership in emerging technologies to address IUU fishing and build on updates provided at FFC116.

The current partnerships focus on the following key priority areas with partners:

- Dark Vessel Detection (DVD) with Canada
- Satellite Aperture Radar (SAR) with KIOST Korea
- Machine Learning with OceanMind
- Analytical capacity building and intelligence gathering with UNODC and Skylight
- Transshipment and Bunker analysis with GFW.
- IUU analysis with CSIRO Australia.

Recommendations:

The Committee is invited to:

- I. **Note** the update on current collaboration with Partners on emerging technologies;
- II. **Support** the need to share sanitised data and information to support and progress pilot trials of emerging technologies; and
- III. **Note** that advances in technologies have implications on the current approaches to sharing fisheries data and information and to discuss and explore ways to address these issues.

Introduction:

1. This paper provides an update on the ongoing work of exploring and trialling emerging technologies, in collaboration with partners, to enhance MCS analytics and intelligence support to Members. These updates support outcomes from FFC110 to continue to explore and encourage partnership in emerging technologies to address IUU fishing and build on updates provided at FFC116.
2. The current partnerships focus on the following key priority areas with partners:
 - i. Dark Vessel Detection (DVD) system with Canada Department of Fisheries and Oceans;
 - ii. Remote Sensing Technologies (Satellite Aperture Radar) with Korea Institute of Ocean Science and Technology (KIOST);
 - iii. IUU analysis with Australia Commonwealth Science and Industry Research Organisation (CSIRO)
 - iv. Machine Learning with OceanMind;
 - v. Analytical capacity building and intelligence gathering with UNODC and Vulcan Skylight; and
 - vi. Transshipment and Bunker analysis with Global Fishing Watch.

Update on Collaborations***Dark Vessel Detection (DVD) system***

3. Discussions between the Secretariat and Canada Department of Fisheries and Ocean on the DVD system have been ongoing since 2019 and regular updates have been provided to Members on progress of this collaboration. A trial of the DVD system was planned during regional operations in 2020, however, this was impacted by COVID-19 and was rescheduled to 2021. However, limited data sources (SAR and Visible Infrared Imaging Radio Suite (VIIRS)) from the DVD system were used during Operation Kurukuru in 2020.

4. The first operational use and testing of the DVD system was trialled during Operation RAI BALANG (OPRB21) in March 2021. The RFSC correlated vessel detections using the DVD system and the Regional Surveillance Picture (RSP). Potential uncorrelated detections were flagged to Members and relayed to surveillance assets for further verification. During OPRB21, one of the uncorrelated DVD detections was relayed to a Member. This detection was confirmed by aerial flights, resulting in a vessel of interest report provided to the Member and further investigation undertaken by the Member's surface asset.

5. The initial results from the trial during OPRB21 were mixed as some known vessels visible on the RSP were not detected by the DVD systems, whereas some vessels not visible on the RSP were detected by DVD systems. However, the additional data sources from the DVD system provide useful intelligence to support targeted surveillance. This trial will continue during 2021, and the Secretariat will seek cooperation with Members prior to the next Operation regarding use of Members VMS data.

Remote Sensing Technologies - KIOST

6. The first remote sensing project with KIOST (KIOST1), which focused primarily on utilization of SAR imagery concluded in December 2020. SAR images were utilised during regional operations in 2020 to support intelligence-driven surveillance and taskings of surface and air assets. There have been some good outcomes from KIOST1 including enhancing the Secretariat's understanding of SAR acquisition, detection and visualization of potential dark targets.

7. The Korean Government has approved a second KIOST project in 2020 building on the first project. PIFS continues to administer the project with FFA and KIOST as implementation organizations under a signed implementation agreement. The project focuses on multiple remote sensing technologies such as SAR, Optical and VIIRS to support regional Operations. The project will commence in 2021 and will complement the DVD system.

CSIRO

8. The key areas of collaboration are data analytics and training, and member engagement (initially started with the Niue trials). A non-binding Letter of Intent has been signed between CSIRO and FFA in July 2020 outlining the general scope of activities for collaboration. Two areas of data analytics currently being progressed are:

- Person/Vessel of Interest analysis using license registry and other FFA data, also known as link analysis; and
- identifying transshipments, particularly from longliners.

9. Members' indicated at FFC116 that this work uses public domain data first. This work is envisaged to start soon with DFAT providing funding support for this work.

Machine Learning with OceanMind

10. Collaboration with OceanMind has been ongoing since 2019 and mainly focuses on Machine Learning (ML) tools. Discussion between the Secretariat and OceanMind was towards the demonstration of capabilities of ML aided analysis through a pilot trial on transshipment on the high seas in the region involving analysis of single vessel track using AIS data. The trial is expected to run in January 2021 and cost UD\$62,000 with an organization known as Ocean 5 pledging to provide funding support for the trial.

UNODC Vulcan Skylight

11. The FFA Secretariat participated in a series of virtual analytical training on Maritime Domain Awareness and use of the AIS source system to enhance monitoring of high risk vessels delivered by the Global Maritime Crime Programme (GMCP) of UNODC based in Bangkok in 2020. GMCP supports capacity building of maritime law enforcement capability in UN member states.

12. As part of this collaboration, UNODC facilitated three logins for the Secretariat to access the Skylight system to support Members through enhanced MDA in the region. The Skylight system uses live AIS feed to monitor and verify vessel movement proximity alerts. The Skylight tool was a useful means to visually identify potential transshipments and complements other transshipment detection tools such as the RFSC Transshipment and Bunkering tool and the Global Fishing Watch Carrier portal. Overall, Skylight is a useful MDA tool and the Secretariat is investigating means of feeding such data sources into the RSP so as to reduce the manual correlation between the various web based tools.

Global Fishing Watch (GFW)

13. The Secretariat has used the GFW Carrier Vessel Portal since its launch in July 2020. Preliminary results indicate vessel interactions detected on the high seas and in-zone are difficult to verify due to the unavailability of data (i.e transshipment and bunker notifications) at RFSC to verify those potential detections. These challenges are similar to limitations experienced for the Regional Surveillance Picture (RSP) Transshipment/Bunker Tool. However, the tool is useful to verify the RSP analysis and WCPFC non-public domain data' made available during FFA Regional operation windows. While further work is required, the tool adds value to the assessment of vessels in close proximity at the national level.

Key Issues

Approach to exploring emerging technologies

14. The current approach to exploring emerging technologies includes:
 - i. Identification of partners with specific area of expertise;
 - ii. Inception meeting to consider areas of mutual interest;
 - iii. Ongoing discussion to identify focus areas of collaboration;
 - iv. Agree on focus areas of collaboration and consider formal arrangement;
 - v. Consider pilot trial of technology if required; and
 - vi. Evaluate outcomes and consider long term investment.

15. The above approach has worked well for some collaborations but it does raise few challenges in advancing the exploration of emerging technologies. These includes:
 - **MCS Data sharing** - Data sharing with third parties remains a significant issue. Members agreed that where a pilot trial of technologies is identified, regional data covering high seas that does not require Member authorisation will be used. Members are encouraged to authorise use of sanitised data to support pilot trials.
 - **Use of multiple web based tools and systems** - Four technological systems (DVD, KIOST, GFW and Skylight) were trialed during 2020 which were accessed using their own platforms. There were challenges relating to analysis of data on multiple systems with additional manual processes required to review and correlate data. There is a need to consider correlation through auto-feed into current FFA systems to avoid multiple logins and manual correlation.
 - **Emerging Technology Policy** - The Secretariat noted that policy guidance through an emerging technology framework is important to provide guidance and structured approach to engagement with potential emerging technologies providers and to evaluate long term investment in technologies.
 - **Funding** - Two partners, i.e. CSIRO and OceanMind have indicated associated costs involved in their services. The Secretariat has sought possible funding from projects and through core funding sources to support trials. However, a challenge remains in sustaining these partnerships.

Data Sharing with third Parties

16. One of the key considerations for advancing emerging technologies is sharing of data and information with third parties to support these collaborations. The Secretariat has consulted Members in the past on data and information requirements for these collaborations and Members have been concerned about sharing data and information citing commercial sensitivity of these data and information and the need for clear articulation of data management governance as the paramount concerns.

17. The approach that the Secretariat took in identifying data and information requirements and sharing arrangements for these collaborations is that in the first instance, a pilot trial of the technology is undertaken for an agreed period, using regional data that does not require Member authorisation or a sanitised version of authorised data and information from Members. The outcomes of the pilot trial, including evaluation of benefits to Members, will inform whether complete national level data is required and the Secretariat will consult with Members for authorisation to use the national level data. This process is consistent with the requirements of the FFA ISMS policy. Members at the 24th MCS Working Group meeting in March 2021 agreed to share sanitised data and information to support and progress pilot trials of technologies. This can be facilitated through the MCS data and information access authorisation under the ISMS Policy.

Data Sharing and advances in technologies

18. A key principle in the ISMS policy is - sources of data are considered the “data owners” and they authorise or revoke authorisation for data users regarding use of their data. The principle works well for data and information collected through national and regional systems that are administered by Members, the Secretariat and partners such SPC and PNAO.

19. With the advent of new and emerging technologies, it is obvious that open source data and information are often now providing the same level of information. A case in point is FFA VMS data and Automatic Information System (AIS) data, where both data sources present the same information and the only difference between these data sources is the regularity of the received positions and the reliability and integrity of the systems that collect these data and information.

20. Technology has also enhanced the timely and open acquisition of fisheries data and information in coastal State EEZs without the need to seek authorisation to do so. For instance, commercial Satellite Aperture Radar (SAR) service providers may take imagery of vessel activities in any EEZs without that country’s consent. Similarly, aerial surveillance aircraft passing through the region may collect data and information on vessel activities in any EEZ without that country’s consent. In these examples the “data owner” concept may not apply as countries have no control over collection or use of raw data and information by third parties in their EEZs.

21. The ISMS concepts of “data owner” and “data user” need to be reconsidered in light of the fact that open source data and information can provide relevant information similar to that of closed fisheries data and information sources. Members should also note that the advances in technologies have implications on the current approaches to sharing fisheries data and information and to discuss how FFA members can make best use of reliable data and information to maximise benefits in terms of MCS and fisheries management.

Seafood and Fisheries Emerging Technology (SAFET) workshop

22. The FFA Director General delivered the keynote address to the SAFET workshop held virtually in early April 2021. A number of interesting technologies that could complement the FFA Integrated MCS Framework were presented. The Secretariat will be evaluating these technologies in line with priority areas requiring technological support.