

ADVANCING RFMO IUU VESSEL LIST UTILITY

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Contents

Background..... 2

Project 3

 Survey of RFMO websites..... 3

 RFMO Interviews 5

Hub - Requirements 10

 Must..... 10

 Should..... 11

 Can..... 11

Hosting..... 13

Conclusion 13

Appendix A – Data Fields..... 17

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Background

The International MCS (IMCS) Network, through its work to support and facilitate the Tuna Compliance Network (TCN) and Pan Pacific Fisheries Compliance Network (PPFCN), identified that there is potential to coordinate and increase the overall utility of RFMO IUU Vessel Lists by improving the ability of RFMOs to receive near real-time information regarding updates, additions and/or removals of IUU vessels from other the IUU Vessel Lists of other RFMOs. The overall purpose of this work is envisaged to be twofold:

1. To reduce, or possibly even eliminate, time delays associated with updates, additions, or removals of vessels from RFMO IUU Vessel Lists (required due to updates in other relevant RFMOs' IUU Lists where these vessels are cross listed).
2. Reduce the amount of manual intervention or "workload" on RFMO Secretariat staff to regularly, and comprehensively, review all other relevant RFMO IUU Vessel Lists for updates, additions and/or removals of vessels.

The outcome of this initiative may also be beneficial to other organizations, entities, or institutions that utilize, publicize, and/or reference RFMO IUU Vessel Lists in the course of their work.

The tasks specified in the Terms of Reference for this work are as follows:

1. *Document the technical format of each participating RFMO's website IUU Vessel List (for a total of 14 RFMOs involved in the project¹).*
2. *Communicate with the IT/Data Manager (or equivalent) of each RFMO Secretariat to determine and document what capacity the RFMO's website or other IMS/online systems have to support a machine-readable API feed of their IUU Vessel List.*
3. *Develop and document, with input from each RFMO Secretariat and considering the output from (1) above, a set of minimum required data fields necessary to be shared as part of cross-listing arrangements for an RFMO's IUU Vessel List.*
4. *Document any "would also be preferable data fields" and notes about the RFMOs to which these "nice to have" data fields (or additional essential data fields) would be applicable; and*
5. *Develop a proposal, including ballpark estimate of potential cost (resourcing and expertise) for each participating RFMO Secretariat to create an API capability for each participating RFMO. In addition, consider if there are other possibilities than APIs that could fulfill the original purpose of the project.*

In addition, when considering proposals of how to change the way RFMOs work together, it is important that the solutions suggested are primarily technical in nature and workable within a realistic timeframe. Therefore, this project aims to involve little to no changes to RFMO measures and decision-making at the RFMO member level. However, it is recognized that it is necessary for RFMOs to inform their Commissions as to Secretariat involvement in this initiative as a matter of transparency as well engage with their members as if there are any potential RFMO funding implications associated with this project which will require concurrence of RFMO members as appropriate.

¹ Listed on page 3

Project

Survey of RFMO websites

Description

The IMCS Network provided a list of RFMOs expressing a desire to taking part in this initiative. These included:

- CCAMLR: Commission for the Conservation of Antarctic Marine Living Resources
- CCSBT: Commission for the Conservation of Southern Bluefin Tuna
- GFCM: General Fisheries Commission for the Mediterranean
- IATTC: Inter-American Tropical Tuna Commission
- ICCAT: International Commission for the Conservation of Atlantic Tunas
- IOTC: Indian Ocean Tuna Commission
- NAFO: Northwest Atlantic Fisheries Organization
- NEAFC: North-East Atlantic Fisheries Commission
- NPAFC: North Pacific Anadromous Fish Commission (*although currently operating without an IUU Vessel List measure in place*)
- NPFC: North Pacific Fisheries Commission
- SEAFO: South-East Atlantic Fisheries Organization
- SIOFA: Southern Indian Ocean Fisheries Agreement
- SPRFMO: South Pacific Regional Fisheries Management Organization
- WCPFC: Western and Central Pacific Fisheries Commission

The consultant performed an initial survey of the RFMO websites, as the formats of the IUU Vessel Lists and the code behind a website often provides hints to the data sources behind the data. Also, the survey provided background information as to the number of current listings of RFMO-listed IUU Vessels, both globally and at the individual RFMO level.

Findings

Figure 1 provides a snapshot of the number of IUU Vessels each RFMO was the original lister of. These vessels were listed without reference to other RFMOs and listed according to the originating RFMO's own processes (e.g., cross listed vessels are not counted which accounts for NAFO and CCSBT both not included in the pie chart as all vessels on their IUU Vessel lists are cross listed from other RFMOs).

The 161 vessels can still not be assumed to be unique, as the RFMOs may have listed the same vessels due to separate incidents or overlapping concerns. This is rare, however, so the total number of unique vessels listed by the concerned RFMOs is close to 161, but not necessarily definitive. A full and complete reconciliation of the vessels that have been listed as IUU Vessels by all the RFMOs has not taken place as part of this project. Many RFMOs have more vessels listed, but these vessels are cross listings from other RFMO IUU Vessel Lists.

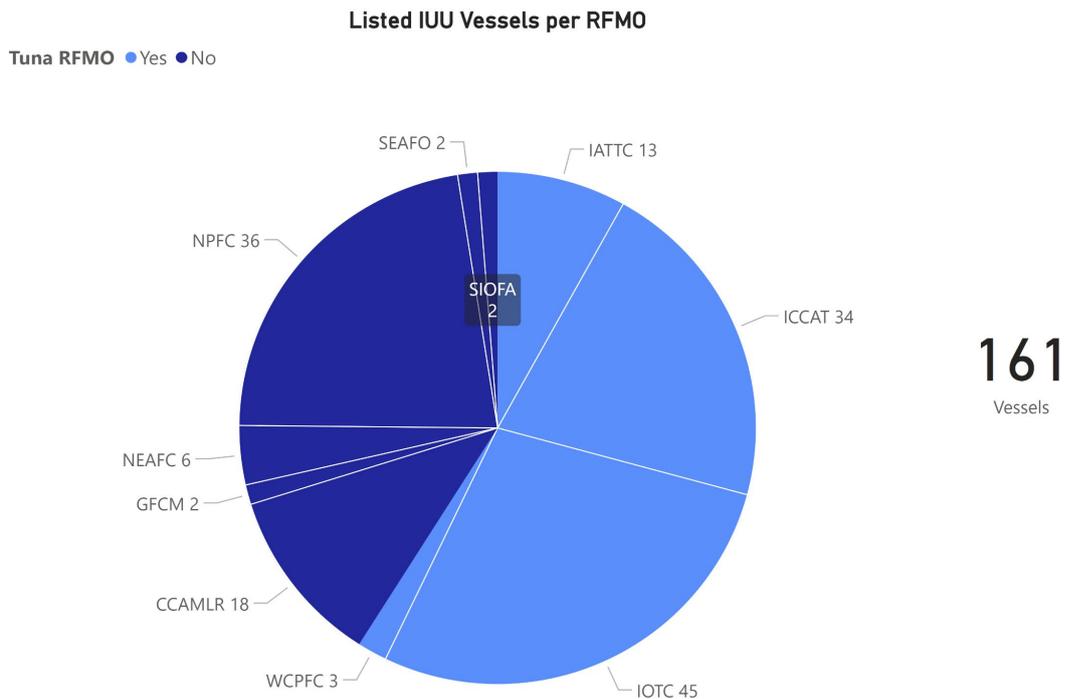


Figure 1: Listed IUU Vessels per RFMO

Note:

NAFO currently have no own listings, but they have adopted all vessels originally listed by NEAFC into their IUU Vessel List. The process is not referred to as cross listing in their conservation measures but works in much the same way through a close cooperation with NEAFC. NAFO is therefore not shown in the chart.

Currently, all vessels on the CCSBT IUU Vessel List have been cross listed from other organisations. CCSBT is therefore not shown either, although they maintain a long list of vessels.

Depending on the structure of the public RFMO IUU Vessel Lists, it was sometimes difficult or even impossible to separate an RFMO's own IUU listed vessels from cross listed IUU vessels. Figure 1, therefore, represents a best effort, current snapshot based on the displayed IUU Vessels Lists as of July 2022, making corrections after RFMO interviews were conducted.

Many current IUU vessel listings have no new observations of the vessels listed that may have occurred and been documented over the last five years, with some vessels having had no new information stretching back more than ten years.

Many RFMO IUU Vessel Lists are maintained by the respective Secretariats primarily using Excel spreadsheets or MS Word documents. Some are maintained directly on the RFMO webpage itself, with only a few IUU lists being stored in a database structure behind the webpage (outlined in Figure 2, p8).

The data fields displayed were largely consistent between the RFMOs, but not all IUU Vessel Lists corresponded directly to the RFMO's respective authorized vessel Measures or Resolutions when it came to displaying vessel information in all required data fields. The IUU Vessel Lists themselves often contained "Unknown" as data field content. This is natural considering the challenging nature of typical operational situations involving observation and documentation of illicit activity occurring at sea by the specific vessels listed. At times, it was sometimes clarified through footnotes in the IUU Vessel List itself that at the time of the observation, a particular vessel had been conducting fishing activities

under false credentials, either as duplicates of legal fishing vessels or displaying a false vessel name, flag, or other information. A high degree of uncertainty is therefore inherent to the observations of vessels involved in an observed illicit activity due to inability of a relevant enforcement authority to interdict the vessel and conduct a follow-on physical compliance boarding and inspection.

As a result, it became clear that Task (3) from the Terms of Reference, the “*minimum required fields*” for an IUU Vessel List, would be difficult to establish. One would believe that “*minimum required*” in many cases would mean that these vessel data fields would also be the same data fields required for a vessel to be registered and authorized to fly a specific flag or be included as an authorized vessel in an RFMO. However, considering the sparse information about each IUU vessel listed that is available, this requirement would exclude many of the vessels currently listed.

A different approach is therefore needed. From a data perspective the data fields for IUU listed vessels would therefore need to be considered “optional” rather than “required”, on a best-effort basis. A suggested baseline for these data fields has been included for consideration in *Appendix A – Data Fields*, but this baseline should be considered extendable, to always convey the most robust information possible to enable positive vessel identification.

RFMO Interviews

Description

Representatives of all the participating RFMO Secretariats were interviewed, except for NPAFC, as they do not currently have an IUU Vessel List. However, the NPAFC Executive Director expressed a desire to follow this process, as NPAFC made a recent decision to implement their own IUU Vessel List.

The focus for the RFMO interviews was on developing an understanding of the processes that each RFMO Secretariat followed for maintaining their own IUU Vessel List. This included trying to identify the challenges associated with potential time delays associated with changes or modifications to vessels included on the various IUU Vessel Lists, as well as the specific workloads on Secretariat staff associated with maintaining their own IUU Vessel List.

For the most part, the respective RFMO Measure or Resolution concerning IUU Vessel Lists, any cross-listing procedures, and the workflows associated with listing vessels on an IUU Vessel List, were publicly and readily available on the websites of each RFMO.

To increase the understanding of potential technical changes or updates that could be implemented relevant to the maintenance of these RFMO IUU Vessel Lists so that they collectively and consistently displayed near real-time and up-to-date information, which would be meaningful in nature and positively impact RFMO Secretariat processes, different scenarios and ideas were suggested by the consultant and discussed with the RFMO representatives as part of the interviews. In addition, as a component of the interviews, the technical capabilities and IT resources of each RFMO Secretariat were also noted.

Findings

IUU Vessel Listings

The RFMOs had very similar Measures or Resolutions outlining the procedures for adding vessels to their IUU Vessel List when considering illicit vessel activity observed and documented in waters under

the competence of the RFMO. Ending up on an IUU Vessel List has major consequences for vessels and their owners. As such, IUU Vessel listing must therefore be a very thorough process.

For the RFMOs generally, each year a draft IUU Vessel List is created, distributed, and discussed by Commission members as a component of the agenda of the respective RFMO Compliance Committee. The Compliance Committee typically agrees by consensus on a provisional IUU Vessel List which then goes before the Commission at the Annual Commission Meeting of each RFMO where a final IUU Vessel List may then be agreed and adopted. Any adopted list then becomes the official IUU Vessel List for the RFMO and is made publicly available on the RFMO website.

Some slight variations were observed around whether an IUU Vessel List would contain vessels flagged to Members, Cooperating Non-Members as well as non-Members of the specific RFMO. For instance, sometimes, where IUU fishing activity was conducted by vessels flagged to an RFMO Member, these vessels would be sanctioned by the flag State Members themselves and the vessels would then not be subject to IUU Vessel listing. In some cases, unique processes were established. For instance, NEAFC established a procedure involving “A and B listing”, which is consistent with the provisional (A) and final public (B) IUU Vessel listing processes of other RFMOs. Both A and B IUU Vessel Lists are public and sanctioning actions can occur against vessels still at the A listing (or provisional) stage.

Procedures for de-listing a vessel from an IUU Vessel List depends on the RFMO and could take place either in the intersessional period between Annual Commission Meetings, or only at the next scheduled Compliance Committee and Annual Commission meeting. De-listing occurs when the criteria for IUU vessel listing no longer applies (e.g., due to a change of ownership of an IUU-listed vessel, the IUU vessel has been sunk, scrapped, or permanently reassigned for purposes other than fishing activities, or an IUU vessel having been sanctioned appropriately and the incident(s) in question fully adjudicated).

All RFMOs (except NPAFC) had Measures or Resolutions that outlined requirements for the Secretariat to distribute updated IUU Vessel Lists to all other interested parties, including other RFMOs, when vessels are listed or delisted or other information regarding the listed vessels change.

Cross listing of IUU listed vessels involves a separate set of procedures, and these processes varied amongst those RFMOs that had implemented these procedures.

Cross Listing

Four out of the 13 RFMOs do not cross list IUU Vessels because the relevant Measure or Resolution does not include such procedures. These RFMO Secretariats acknowledged that their IUU Vessel Lists are routinely shared and recognised their IUU vessel list may be cross listed by other RFMOs.

For one specific cross-listing example, according to NAFO rules, IUU Vessels listed on the NEAFC IUU Vessel List, and only from the NEAFC IUU list, are cross listed on the NAFO IUU Vessel List. Recently NEAFC updated their listing processes to cross list IUU vessels from other RFMO IUU Vessel lists. However, some NAFO Contracting Parties objected to automatically listing all the NEAFC IUU Vessel List onto NAFO’s IUU Vessel List, because of the potential lack of due process. This is also partly because NAFO also maintains a ‘provisional’ IUU list, so that NAFO Contracting Parties can consider whether the vessel in question should be listed in the ‘definitive’ list.

The maintenance of IUU Vessel Lists can also be particularly cumbersome due to the manual work involved. In general, this was a problem for all RFMOs that cross listed vessels. Different processes often guided IUU vessel cross-listing processes. In these cases, the addition of a vessel to an RFMO IUU Vessel List was either:

- Automatically accepted as a cross listed IUU vessel (SPRFMO).
- Placement on an “A” IUU Vessel List upon notification by the originating RFMO (NEAFC).
- Subject to acceptance following a 30 day “fast-track” objection² process by Commission members (most other RFMOs); or
- Subject to agreement by the respective RFMO Compliance Committee (which typically only meets in yearly or bi-yearly meetings).

De-listing of a cross listed IUU vessel from an IUU Vessel List was either:

- Immediate on notice from original RFMO IUU vessel lister.
- Subject to acceptance by Commission members within 30 days; or
- Subject to agreement by the respective RFMO Compliance Committee (which typically only meets in yearly or bi-yearly meetings).

When information about the vessels themselves was updated, the IUU Vessel List Measures or Resolutions did not always describe the due processes involved which would leave some Secretariats to determine for themselves when and how to update the information. Mostly, the Secretariats would update their own displayed information about cross listed vessels as soon as possible. Again, since this involved manual processes, it would lead to some delays in complete and updated information in the IUU Vessel Lists of the RFMOs that cross listed the vessel(s) involved.

The following tasks and issues associated with RFMO IUU Vessel Lists were expressed to be time consuming or problematic:

- Following up with all RFMO IUU Vessel Lists published on the web. For those RFMOs that cross list vessels from other RFMO IUU Vessel Lists, there are potentially 12 different websites that must be checked periodically.
 - For example, in current SPRFMO processes, to avoid authorizing a vessel that may be found on an IUU Vessel List of another RFMO, the SPRFMO Secretariat, in conducting their own due diligence, manually checks all individual RFMO IUU Vessel Lists before any new vessel is added to the SPRFMO authorized Record of Vessels.
- When changes to IUU Vessel Lists occur, Secretariats send out updates by e-mail to all interested parties, including other RFMOs. The main information source however is the published public IUU Vessel List, so all information must be cross-checked against this.
- Information usually needs to be sent out to all Commission members for them to accept any new vessel up for IUU Vessel listing via the cross listing process.
- Delisting a vessel from an IUU Vessel List may involve circulating the originating RFMO’s delisting notice to all Commission members for acceptance to occur.
- Keeping track of the originating RFMO of a cross listed IUU vessel, so that appropriate and timely delisting can occur when the originating RFMO delists the vessel.
- Updating IUU vessel data based on new information.
- Complicated cases have occurred when vessel information was updated during the IUU Vessel cross listing process. A recent example involved the cross listing RFMO (non-originating RFMO) displaying different (and in this case more up to date information on the flag State of the

² Vessels are automatically cross listed if no objection is received within 30 days

vessel) than the original RFMO lister, because of objections raised at an annual meeting by one of the cross listing RFMO members to the information to be displayed during the listing process. The source RFMO of the IUU vessel listing thus became increasingly unclear.

- ‘Chained’ cross listing occurs where an RFMO ends up listing vessels that are originally listed by RFMOs beyond the group of RFMOs their measures specify as eligible for cross listing.
 - For example, IOTC cross-lists vessels on SIOFA’s IUU List; SIOFA cross lists vessels on NPFC’s IUU List; thus, IOTC ends up cross listing vessels on NPFC’s list although NPFC is not officially followed by IOTC.
- Identifying whether a vessel observed or documented as being engaged in suspicious or illicit activity has already been listed as an IUU vessel by other RFMOs.

APIs and storage formats

The original Terms of Reference for this initiative outlined a deliverable³ to “create an API capability for each participating RFMO”. Five out of 14 RFMOs stored, or had current developments in progress, to store the IUU Vessel List in a database, as shown in Figure 2.

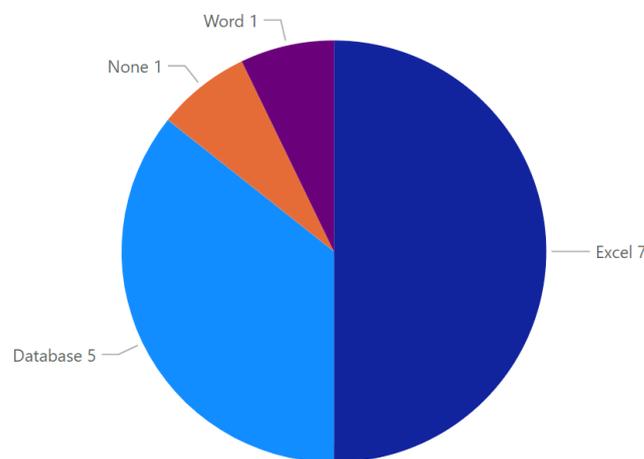


Figure 2: Storage Means of RFMO IUU Vessel Lists

If an RFMO is to provide an API, an underlying queryable data source (e.g., a database) is required. There is no point in providing an API which only returns a manually edited semi-structured spreadsheet. As such, this deliverable could not be accomplished by considering existing processes of some of the RFMOs.

Importantly, it was easy to understand why manually edited spreadsheets and documents (MS Excel and Word) were being used to maintain some of the RFMO IUU Vessel Lists. For instance:

- There are relatively few vessels listed per RFMO.
- The vessels listed and their associated data fields change very infrequently, with very few changes per year even for the largest RFMOs; and
- Relational databases are costly to maintain, have strict schemas, and are difficult to change or be modified once created. As such, this gives little freedom for comments and annotations.

³ Objective 5 on p2

Instead of helping RFMOs connect their systems associated with IUU Vessel Lists, the first challenge therefore seemed to be to ensure that appropriate systems exist. Most RFMOs would each need their own system for registering and maintaining their IUU Vessel Lists; as such, the concept of developing an IUU Vessel Hub (described later in this document) arose.

Fields

In addition to the fields described in Appendix A, two important dimensions were identified.

First, as IUU vessel information is updated, the history with respect to changes is of interest. This was usually solved by putting historic values in parenthesis or inserting a comma to separate data fields. This process however does not provide transparency on when these changes were observed. It would be useful to know the time intervals the data field values were observed, so that a recent change (for instance a name change) could be displayed with “from – to” dates. These would obviously need to be approximate, especially when it comes to changes not immediately reported to, or documented by, authorities.

Second is the veracity of the data field values. Some RFMOs (especially as noted by NPFC) observe high numbers of vessels clearly conducting fishing activity under false credentials, sometimes impersonating (or duplicating) other vessels. It is therefore essential to convey information about the veracity of the vessel data field values, to avoid confusion and mistaken identities of IUU vessels from other vessels. Typically, this type of information was made public through comments and footnotes within an IUU Vessel List which was provided beyond the scope of the specific data fields agreed to by members and found in an IUU Vessel List.

However, vessel history and the veracity of information add to the complexity of storing data in a sensible fashion. Although far from a trivial accomplishment, relational databases can handle this if modelled correctly. However, it has not been verified to what extent RFMOs utilizing database storage of IUU Vessel Lists have catered for such a requirement. Some questions RFMOs may wish to consider regarding data captured in a potential Hub include whether there is a need to transmit historical information on IUU vessels to the central Hub? Or would it be more efficient to only transmit the latest known information captured in IUU Vessel Lists and have the rest available on request? Is historical information (e.g., more than ten years old) especially useful to RFMOs? Or only the latest information?

The Concept of an IUU Vessel Hub

Discussion of the IUU Vessel Hub concept refers to the following two objectives initially identified on page 2:

- 1. Reduce, or possibly even eliminate, time delays associated with updates, additions, or removals of vessels from RFMO IUU Vessel Lists (required due to updates in other relevant RFMOs’ IUU Lists); and*
- 2. Reduce the amount of manual intervention or “workload” on RFMO Secretariat staff to regularly, and comprehensively, review all other relevant RFMO IUU Vessel Lists for updates.*

For automated information sharing between RFMOs, with all the benefits and flexibility that information sharing provides, MS Excel or Word are clearly inadequate mechanisms or means for facilitating effective sharing of this information.

In addition, to have each of the participating RFMOs initiate their own respective database modelling, which may involve having to hire expensive consultants that may -or may not - succeed during the time allocated to such a project, would likely require lengthy processes and timeframes before a general level could be achieved where the RFMOs would be able to “communicate” with one another regarding IUU vessel listings with a certain degree of automation. The risk of overall failure with this approach is high.

A concept that arose from the initial interview process of this initiative, and further discussed during subsequent interviews, was the idea of establishing an IUU Vessel Hub which contained the public IUU Vessel Lists from each RFMO. This Hub could provide the means for RFMOs to create and maintain their own IUU Vessel Lists, storing these lists in a well modelled unified database, and thereby create the possibility of automated information exchange. Each participating RFMO would be responsible only for maintaining their own IUU Vessel List within the Hub. However, automatic notifications would be distributed via the Hub to all other RFMOs whenever an IUU vessel was listed, modified or delisted.

This means that a central Hub could be the mechanism that maintains the current state of all the RFMO IUU Vessel Lists, the information of which would be automatically shared amongst all the RFMOs. The intention would be to improve upon current Secretariat processes with only minimum effort by staff strictly limited to the manual maintenance of their own respective IUU Vessel List. The Hub itself would be the mechanism by which any updated information would automatically be distributed to all other RFMOs without any further manual effort. A list of IUU cross listed vessels could also be downloaded or otherwise included through an API to provide the basis for the display of all cross listed IUU vessels.

A concept that may be worth considering by the RFMOs is also whether the Hub should incorporate an advanced search page for compliance assistance purposes to allow Secretariat staff to conduct their own additional due diligence via the Hub in checking and investigating specific background information on a vessel that may be either already IUU listed by another RFMO, or a vessel being considered by their own respective RFMO for IUU Vessel listing. However, this concept may expand the Hub concept beyond the original intent of primarily advancing the overall utility of RFMO IUU Vessel Lists and may be out of scope or interest for some/all RFMOs.

Please see below for an initial outline of more detailed requirements for the Hub concept, based on the information gained during the interviews. A key point is not making this process overly complicated or technically cumbersome.

Hub - Requirements

The following requirements have been separated into “*Must*”, “*Should*” and “*Can*”, to try to differentiate the essential features for a baseline Hub with an Initial Operating Capacity, to the “nice-to-have” features a Hub could incorporate to achieve Full Operating Capacity.

Must

Separate logins for each RFMO

To manually maintain their own IUU Vessel List, subscriptions to other RFMOs changes, and other RFMO specific settings, each RFMO would be provided with the means to log in to the Hub. Personal logins would be recommended for tracing and verification of changes. An administrator role would be required to maintain and assign logins to each RFMO.

IUU Vessel List maintenance pages

The maintenance pages need to be as user friendly as possible, so that no time is wasted during maintenance processes. To avoid typos and unintended changes or edits, draft changes should be supported, enabling timely internal verification, before being made public.

Automatic notification generation

Whenever information on an IUU Vessel List is changed, automatic notifications need to be generated to all interested RFMOs. In the first version these near real-time notifications would be automatically generated e-mails with automated content, displaying the changes in detail.

Subscription page

It should be possible to set up subscriptions for notifications for specific subsets of RFMOs as well as all other RFMOs.

Cross list page

To support the IUU vessel cross listing function, there should be a page displaying all the potential cross listed IUU vessels, based on the subscribed RFMOs. A setting “listed / not-listed” based on the decisions of each RFMO to cross list or not should be added, to maintain the status. Based on this status, a readily downloadable up-to-date list of currently cross listed IUU vessels in a human or application (Excel) readable format should be available.

Should

Search page

There should be a search page where all IUU listed vessels with all data fields could be searchable. The search page should also support “fuzzy” searches, searches with more than exact matches, and possibly also non-western character sets.

Cross-list data source

A readily available data source for automated updating of the displayed cross listed vessels on each RFMO IUU Vessel List should be available. This would be provided in a standardized machine-readable format. This would enable the direct use of the IUU Vessel List on an RFMOs own website.

Can

Advanced cross list page

To support all cross listing processes, a complete history of the updates to each IUU vessel listing must be provided. It is then up to each subscribing RFMO to adopt each update, ensuring that they are following their own procedures, and noting the updates as they happen. Updates to be processed should be provided as a to-do list.

Integrate hub with structured IUU Lists (some RFMOs only)

If IUU vessel data is already stored within an RFMO in a structured and compatible way, a specific data transfer mechanism from the source RFMO can be considered. However, updates are often small and infrequent so this type of automated exchange mechanism may not be cost-effective.

Additional formats to simplify distribution of information

While much of the emphasis has been on cross listing, each RFMO's own IUU Vessel listings could also be downloaded or accessed through an API for publishing.

Additional data sources

There exist other IUU Vessel data sources beyond RFMOs, such as the TM-Tracking Combined IUU Vessel List, that may provide additional updated information regarding vessels that have been IUU Vessel listed. It could be possible to notify RFMOs about vessels they have listed as IUU, whenever new information is available from these external data sources, for RFMOs to consider and make appropriate decisions on updating an IUU vessel listing.

Design Considerations

Double Maintenance

Considering that a list of IUU cross listed vessels could be downloaded or otherwise included through an API to provide the basis for the display of all cross listed IUU vessels (outlined under "Must" requirements), this assumption presumes that once the Hub is finished and operative, the IUU Vessel List of each RFMO would be stored and maintained through the Hub, and each RFMO webpage will have a link/connection to the Hub in order to show its own IUU Vessel List. If the RFMOs use an Excel Spreadsheet or MS Word document, they could link directly to the Hub for making an automatic extraction from it (assuming this functionality is developed) or just use a document exported from it (a more feasible functionality). However, in the case of RFMOs which store their IUU Vessel data already in an existing database structure, RFMOs should consider the possibility that their RFMO Members may want, at least at the early stages of this project, to keep their own RFMO data managed/stored in house. In this case the Hub would be just a tool to achieve a final IUU Vessel List that would be transposed to the RFMO database and displayed on its webpage. For this assumption, the design process may imply the need for incorporating two steps:

- Managing the Hub to make cross listings, validations, etc. and achieve a final IUU Vessel List in compliance with its own appropriate recommendations.
- In some manner, transposing the data in the Hub to the RFMO's own database.

Data Integration Functionality

Regarding the potential for the Hub to save RFMOs time and effort in maintaining their IUU Vessel Lists, but not as much as initially thought with diminished impact, data integration functionality could be also implemented into the system in one of two ways:

- Simple approach: The system can be developed to export/import from/to the Hub database via a form of fixed-format document/spreadsheet that allows an easy exchange of data between the Hub and the RFMO database. This way an update in either environment could be easily replicated in the other. This functionality could be useful for a first load of the IUU Vessel data of every RFMO into the Hub.
- More costly but optimal approach: The system can be developed to facilitate automated information sharing between the Hub and those RFMOs that use databases. Once a definitive IUU Vessel List is set in the Hub by an RFMO, the data is automatically synchronized with the RFMO database.

Hosting

For any Hub solution to be sustainably maintained, it needs clear ownership. The following two potential “owners” outlined below provide a starting point for follow-on discussions, not excluding partnering with others to achieve desired outcomes of this initiative.

The IMCS Network

As the initiative has been brought forward by the IMCS Network to the participating Officers responsible for Compliance in the RFMO Secretariats, it may be natural to assume that the IMCS Network could be responsible for hosting and maintaining an IUU Vessel Hub. However, the IMCS Network would need to partner with others to ensure they have the technical capabilities to develop, host, and maintain such a solution. The construct of the IMCS Network as a voluntary and primarily technical MCS organization (not an advocacy organization) not bound by treaty or legal constraints allows for the IMCS Network Secretariat to often be nimbler in approach with its activities, thereby facilitating the ability to conduct agile projects, enabling speed and rapid decisions. Often, smaller prototype driven projects, with continuous testing and feedback from the users involved (in this case, the RFMO Secretariats), can at times be easier to implement via smaller organizations such as the IMCS Network.

FAO

FAO and the GFCM have commenced some of their own initiatives in this direction which is laudable. However, up till now these efforts have been focused on more advanced IT solutions and APIs with a view to establish a solid interoperability layer that might be leveraged by other RFMOs’ systems or consumed by widespread clients like Microsoft Excel. However, these advanced efforts may not quite align with the current IT system situations of all RFMOs, especially the smaller RFMOs with more limited IT capacity. For this reason, GFCM has informed about the modular stack of tools envisaged to also address simpler usage scenarios, such as dynamic public data consultation dashboards (for the general audience) and password-protected portals to provide features aimed at updating the IUU vessel list records.

FAO could be a potential choice for hosting an IUU Vessel Hub and is highly capable of developing, hosting, and maintaining such a solution for advancing the utility of RFMO IUU Vessel Lists. However, consideration may wish to be given that that this specific initiative involves a global list of less than 200 vessels. With such a small global “footprint” of vessels, a pilot hosting solution in this case may be better suited and geared towards a smaller hosting organization, especially where in this case a technical solution need not be overly robust and where the information involved is strictly public domain data for a relatively small number of vessels not considering, among others, the benefit of historical records. A stepwise, modular approach could be envisaged to progressively implement required features and revisions based on the common needs and desires identified by the participating RFMOs. It may also be worth further investigation whether FAO may be interested in possibly incorporating the Hub concept as an amendment to the technical specifications of the Port State Measures Global Information Exchange System (GIES) currently being implemented by FAO.

Conclusion

This report suggests there are benefits to consider development of an IUU Vessel List Hub concept that contains the aggregated RFMO IUU Vessel Lists based on voluntary participation by the RFMOs. However, for a solution like this to work, there are some aspects that are essential:

- To be truly effective, all RFMOs should participate in the project.

- There must be enough benefits to the RFMOs participating in a Hub for all to agree with voluntarily sharing public information on their IUU-listed vessels via this mechanism.
- Clear ownership of IUU vessel listings must be present, so that one RFMO – the originating RFMO - controls the IUU listing of each specific vessel (with the proviso that sometimes more than one RFMO independently IUU lists the same vessel so occasionally there may be more than one “owner” of a specific vessel listing).
- The development of a Hub must be done in a manner that accounts for agreed Measure or Resolution processes of each RFMO to accommodate changes in IUU vessel listings based upon the specific procedures of each originating RFMO; and
- To avoid lengthy or convoluted processes concerning data privacy and security, only publicly available information already published in RFMO IUU Vessel Lists currently available should be included in the Hub and shared. With the approval of the RFMO participants, this could be changed or modified in the future.

It would also be beneficial to clarify and harmonize IUU Vessel List cross listing processes, but it is recognized this would involve further Commission member involvement, consideration, and consensus. This initiative as it stands is envisaged to be purely a technical solution that advances and improves Secretariat processes and procedures for implementing a “tool” already agreed upon by Commission members. As such, no new changes or modifications to current RFMO decisions involving Measures or Resolutions on IUU Vessel Lists are required, although there may be budgetary implications that will require member consideration.

Further work

Sometimes a vessel is IUU listed by two different RFMOs, without cross listing processes having taken place. This could be the result of historical listings before cross listing procedures were agreed to and implemented, or listings based on different incidents, leading up to the eventual individual IUU listings. This should of course be possible, but there is a need to avoid double cross listing of the same vessel. Should the development of an IUU Vessel Hub be viewed favourably, the requirements outlined in this document should be further extended and discussed amongst relevant RFMO staff including both officers responsible for compliance as well as respective IT/Data managers, preferably with sketches of a potential user interface and to outline the overall functionality of the IUU Vessel Hub. Based on potential positive responses and interest from the RFMOs, this work could be conducted in a future phase of this initiative.

Most importantly, a potential IUU Vessel Hub needs to find an appropriate “owner” and be developed with a sustainable funding mechanism. Preferably, the solution could be financed outside of the regular budgets of the RFMOs, as providing funding through individual decisions for each RFMO may be time-consuming and potentially lead to instances where consensus is not achieved for funding support. There could also be an issue in finding the correct formula for sharing operational and maintenance costs between larger and smaller RFMOs. Potential funding options would need to be further discussed and investigated as a component of a future phase of this initiative.

One possible option could involve the IMCS Network potentially funding development of the Hub with an advance commitment for a pre-specified funding amount from each RFMO involved in the Project on a long-term basis. However, this is not a firm commitment by the IMCS Network at this point in time as further exploration of the required budget to develop the technical specifications and implement the baseline Hub to Initial Operating Capacity is needed.

Project methodology

It is strongly recommended that a potential IUU Vessel Hub be developed according to best practices within software development. This means software development should be conducted according to “lean” principles. Instead of developing a large and complicated solution over a long period of time with many “nice-to-have” features that may potentially fail to be technologically adopted, it is recommended an IUU Vessel Hub be implemented as a simple IT solution initially with strictly only the key important features to gain experience and ensure adoption at the earliest possible stage. Referring to the requirements specified, a potential solution could be operationalized after the “*Must*” section in this document has been implemented, although there are clear benefits to making more features available. Further discussions must also occur to establish consensus on which features belong to the different sections (“*Must*”, “*Should*”, “*Can*”) of the requirements, so that a baseline model can be agreed upon.

Outcomes of these baseline discussions would also have consequences on financing, where not all features need to be part of the first development phase. An interesting approach could be to create a “beta” prototype, confirming viability, and following agile processes which are implemented with a restricted number of RFMO users consistent with current RFMO processes.

Based on discussions and RFMO desires, a project managed and hosted by the IMCS Network may very well be an easier alternative in terms of hosting.

Recommendations

- RFMO Secretariats verify the initial assumptions outlined within this report with the IMCS Network via a feedback process.
- RFMO Secretariats consider reviewing ICCAT’s IUU Vessel database structure/knowledge and electronic form as; (1) a potential option if there is a desire by some RFMOs to migrate away from the use of MS Word and Excel spreadsheets to maintain their IUU Vessel Lists, and (2) to help inform their thinking as to technical aspects related to the concept of an IUU Vessel Hub.
- The IMCS Network facilitate development of IUU Vessel Hub “user stories” that can be used to reinforce and confirm RFMO user needs and visualize outputs and usefulness of a Hub. These user stories, a standard process in software development, would capture the "who", "what" and "why" of Hub requirements.
- The IMCS Network facilitate informal discussions with RFMO Secretariats to discuss the report, its recommendations, any unidentified challenges or obstacles, options, development of user stories, and potential interest in further work on the initiative, for example through:
 - Dedicated agenda items during TCN and PPFCN virtual meetings.
 - Virtual meetings for RFMOs that are not part of TCN/PPFCN as required.
 - In-person meetings in the margins of COFI (depending on in-person RFMO participation).
 - In the margins of other international meetings such as the IMCS Network Global Fisheries Enforcement Training Workshop or others; and/or
 - Direct one-on-one discussions as needed.
- Based on these discussions, determine RFMO interest in furthering the development of a potential IUU Vessel Hub solution.

- Ensure RFMO Secretariats are given ample opportunity to engage their respective Commission Members as appropriate to provide transparency on the initiative and gather initial external feedback and input, to help them determine the expression of interest to proceed.
- Pending collective RFMO interest and available budget, the IMCS Network facilitate creation of a simple, independent Hub prototype based on the “Must” requirements outlined within this report to further verify assumptions, provide a working beta model for RFMOs users, and obtain feedback on the prototype’s workability and usefulness.
- Pending continued RFMO interest, identify the most appropriate organization to host and sustainably maintain the Hub solution and determine overall budget availability and commitment.
- Based on available funding, agree upon a set of more robust technical specifications for an initial Version of an IUU Vessel Hub that would involve iterative development through user input and feedback.

Appendix A – Data Fields

The following data fields and media were common for almost all RFMOs relevant to their IUU Vessel Lists.

| Data Field | Required | | Optional |
|---|------------------|--|----------------------------|
| | Key Information* | Date Information First Received and/or Updated | Veracity (where available) |
| Name | * | ✓ | ✓ |
| Call Sign | * | ✓ | ✓ |
| IMO Number / UVI | * | ✓ | ✓ |
| Owner | | ✓ | ✓ |
| Operator | | ✓ | ✓ |
| Vessel Master | | | ✓ |
| Flag | | ✓ | ✓ |
| Photographs | | (Display date taken) | |
| Date first included on an IUU Vessel List | ✓ | | |
| Summary of activities | ✓ | | |

*All Key Information should be provided if available, but at least one of the * Data Fields is required along with Date First Included and Summary of Activities.

NOTES:

- (1) In addition, Data Fields such as vessel length and weight were included by some RFMOs, which is important to simplify identification when vessels were known to be displaying false credentials. These Data Fields can be included if needed.
- (2) The complete view of a vessel is often put together by fragments of information; as such, it is recommended a potential IUU Vessel Hub be developed to allow for IUU Vessel List data fields and listings to accept sparse records. This means that all Data Fields containing Key Information should be considered “optional” with the only “required” Data Fields being at least one of the three * listed Data Fields (Name, Call Sign, IMO Number) as well as the first date the vessel was included on an RFMO IUU Vessel List and the summary of activities that provided the basis by which the vessel was IUU listed. The development of these data fields should allow for them to be extended to include additional fields (such as vessel length and weight) based upon the needs and desires of the RFMO users.
- (3) In terms of the IUU Vessel Hub, the source, or originating RFMO, should also be prominently displayed.
- (4) A link could be included to “more information” displayed on an RFMO’s website if any additional relevant information on an IUU listed vessel is added after its initial listing.