



**TECHNICAL AND COMPLIANCE COMMITTEE**  
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Majuro, Republic of the Marshall Islands

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**ANNUAL REPORT FOR THE WCPFC RECORD OF FISHING VESSELS**

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**WCPFC-TCC14-2018-RP05**  
**29 August 2018**

**Paper prepared by the Secretariat**

**Purpose**

1. This paper presents for the consideration and information of TCC14, the annual summary of information contained in the WCPFC Record of Fishing (**RFV**) and the status of its operation.

**Background**

2. The RFV was established pursuant to Article 24 (paragraphs 4 – 7) of the WCPF Convention. Conservation and Management Measures on *WCPFC Record of fishing vessels and authorization to fish* (CMM 2017-05) and *Standards, specifications and procedures for the Western and Central Pacific Fisheries Commission Record of Fishing Vessels (RFV SSPs)* (CMM 2014-03) regulates how the RFV operates. The RFV is a publicly accessible list through the WCPFC website, providing a combined list of CCMs vessels that are entitled to fly its flag and are authorized to be used for fishing in the Convention Area beyond areas of national jurisdiction. The WCPFC Secretariat maintains the RFV on behalf of the members of the Commission.

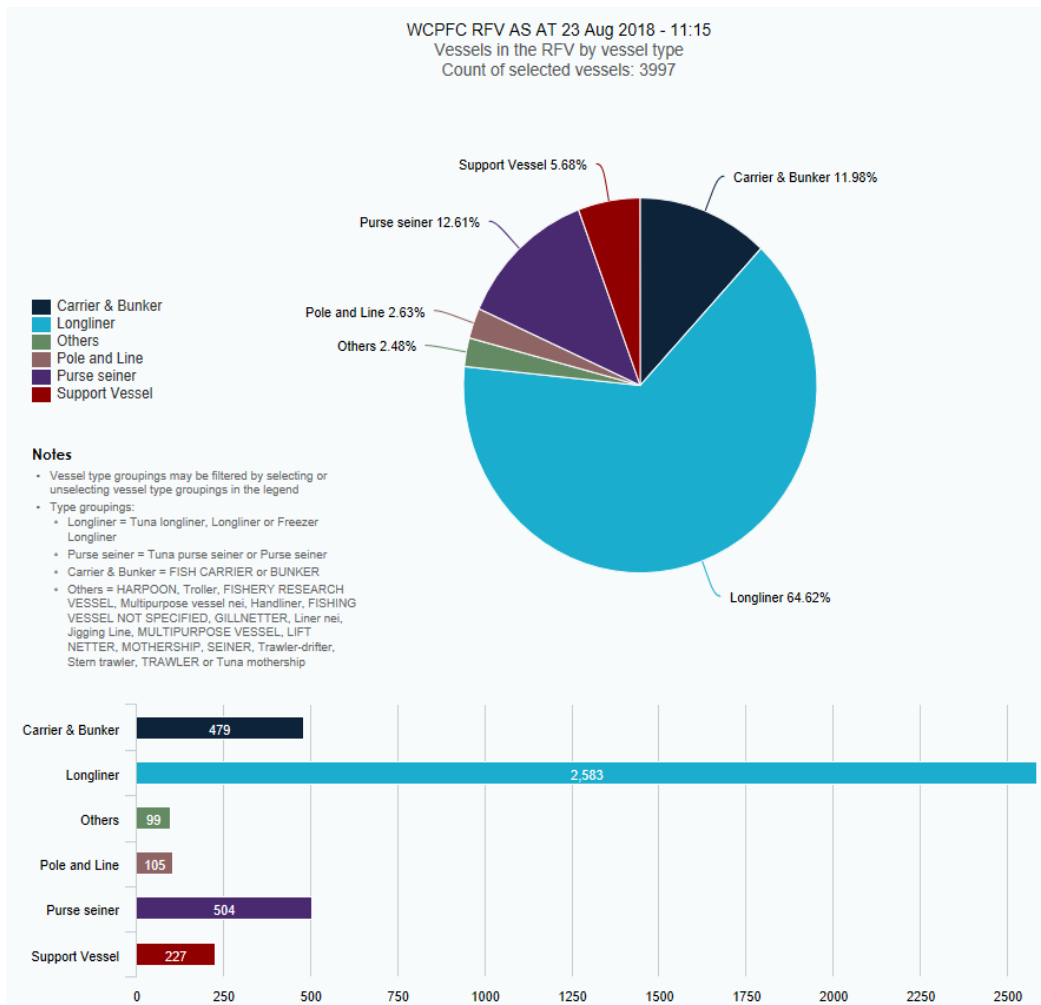
3. This paper, as in previous years, is an annual summary of information contained within the RFV and on the operation of the RFV. It is provided in accordance with paragraph 15 of CMM 2017-05 and paragraph 14 of CMM 2014-03. The paper covers:

- A summary of the information contained in the WCPFC RFV
- Completeness of the fields in the RFV
- RFV and fished/did not fished report
- Review of RFV implementation under the Compliance Monitoring Scheme
- Update on tasking from WCPFC14
- Observations and administrative notes

## Summary of the information contained in the WCPFC RFV as at 23 August 2018

4. This section provides an annual summary of the information contained in the RFV as required under CMM 2017-05 paragraph 15. The RFV is continuously publicly available via the WCPFC web site at <http://www.wcpfc.int/record-fishing-vessel-database> as required by paragraph 9 of CMM 2014-03. The summary statistics, presented as graphs and tables below, are automatically updated, as the RFV changes and is reflective of what is in the RFV at that point in time. There are a number of filters that users can apply to the charts. CCMs are referred to <http://www.wcpfc.int/vessels/charts/types> for the latest RFV summary statistics and these can be printed from the website as pdf files.

**Figure 1:**



**Figure 2:**

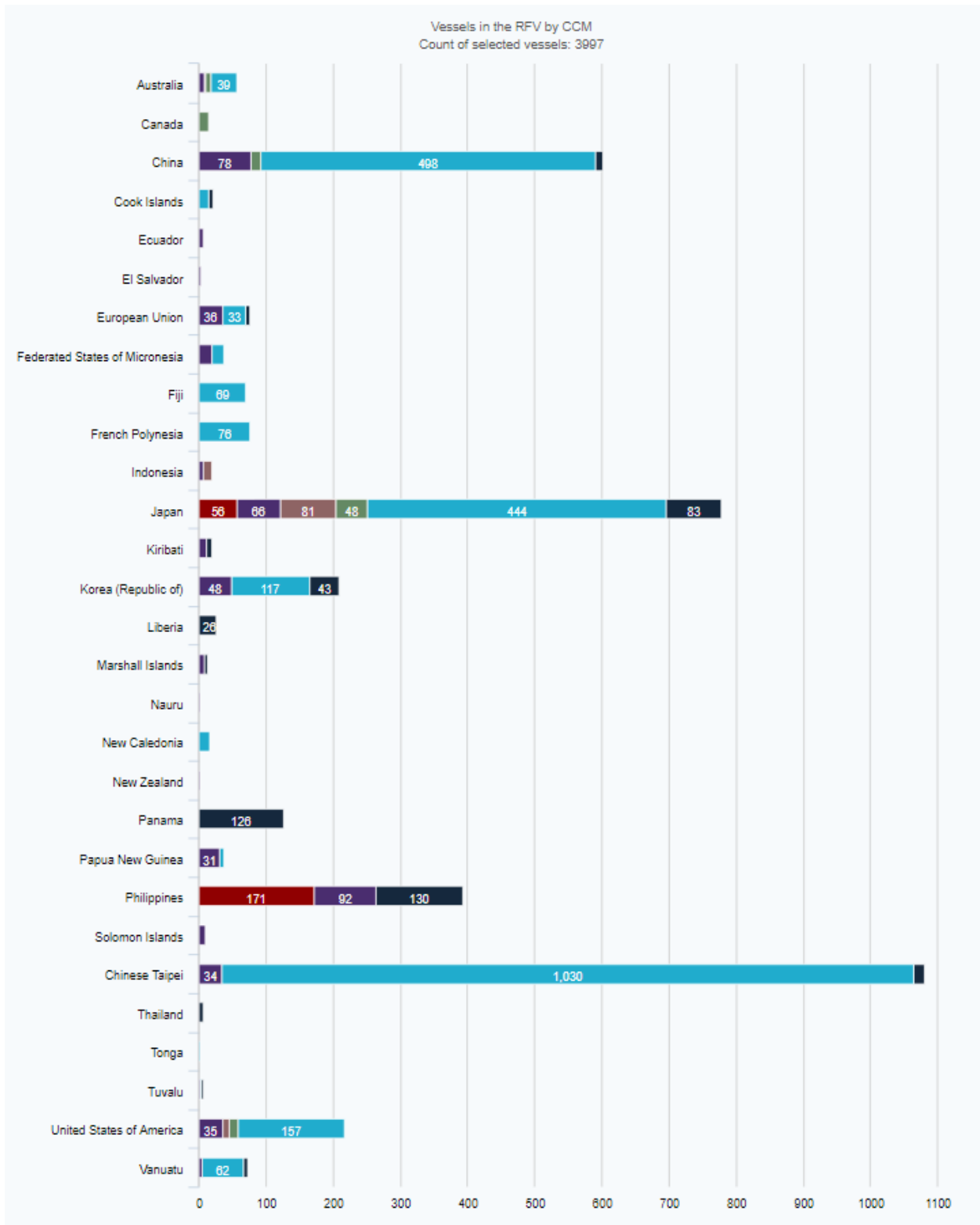
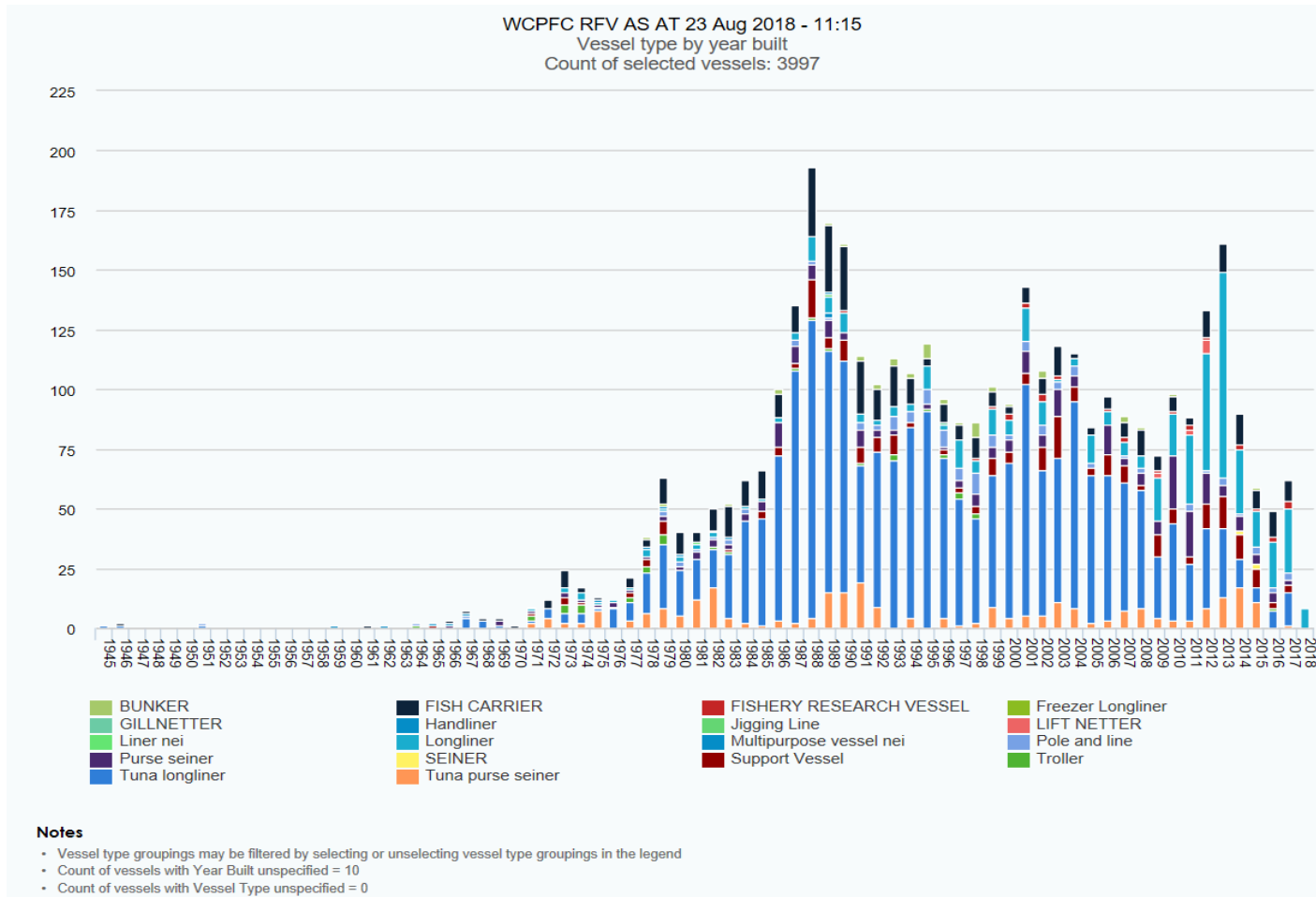
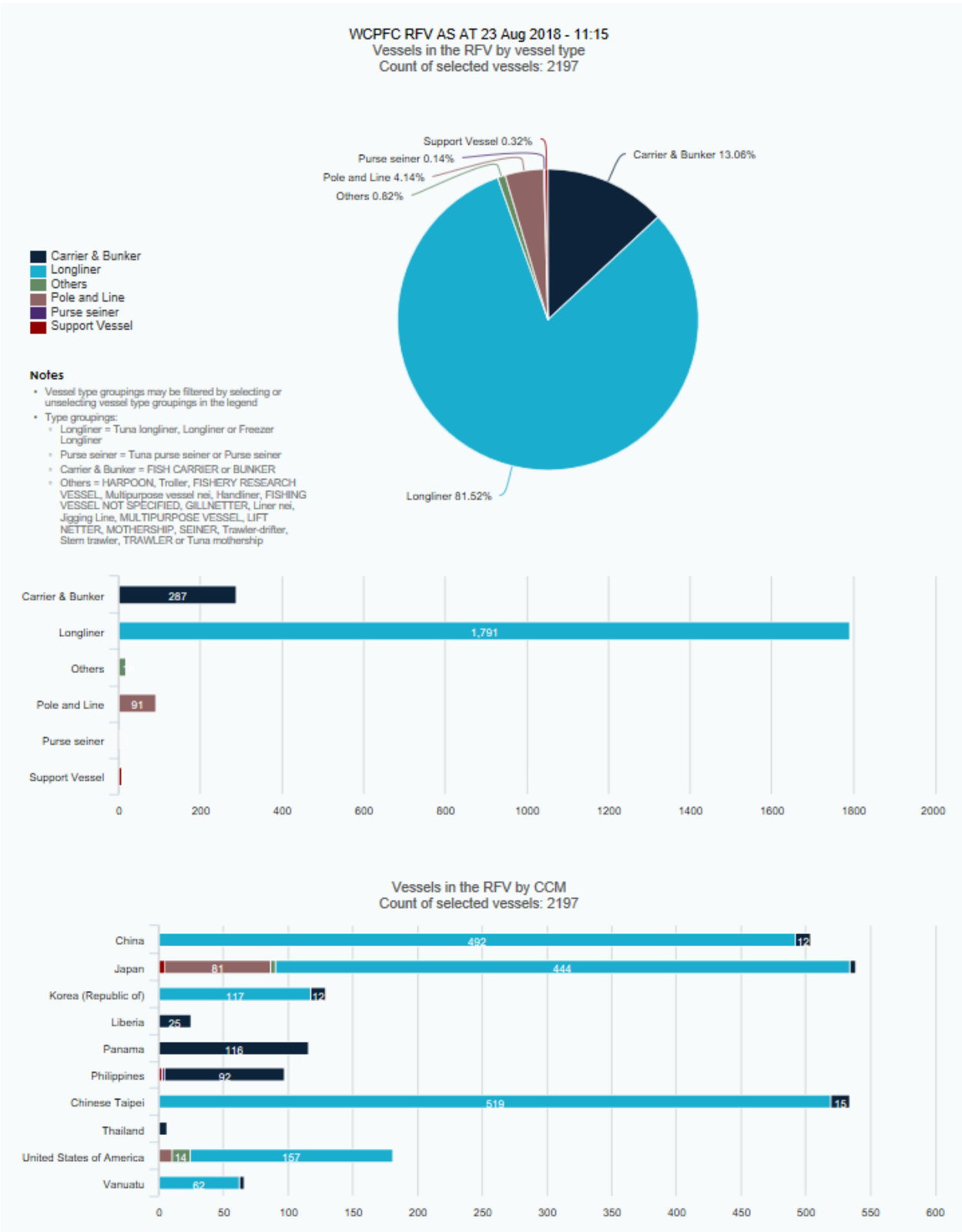


Figure 3:

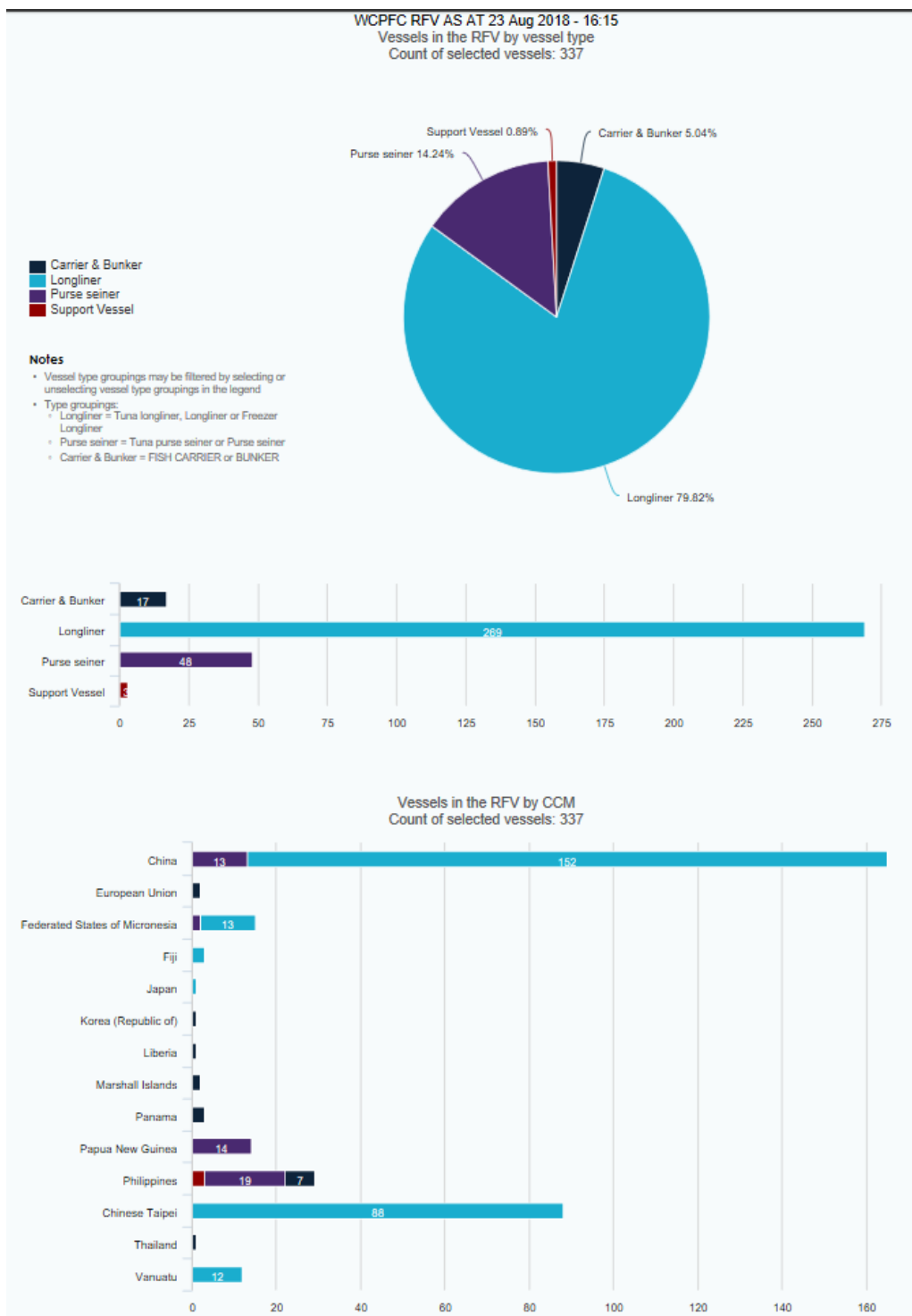


**Figure 4: WCPFC RFV AS AT 23 August 2018**

**Number of Vessels authorized to transship (ie. field Authorisation to transship on the high seas = YES)**



**Figure 5: WCPFC RFV AS AT 23 August 2018**  
**Number of Vessels that answered 'Yes: CCM-flagged' in the field 'Under Charter'**



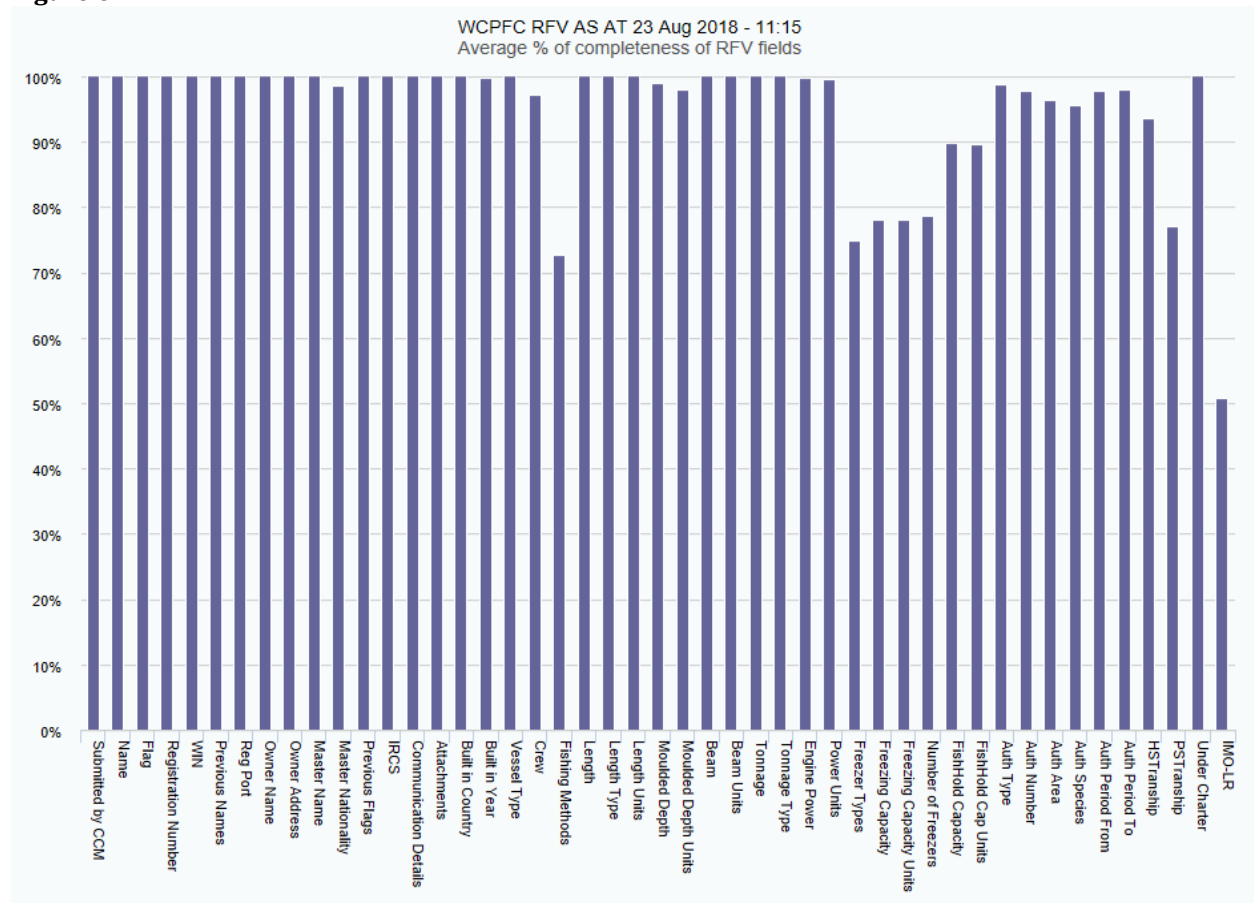
5. As reported to TCC11, WCPFC11 agreed that the information reported by flag CCMs as part of the RFV updates, related to charter notifications and high seas transshipment authorizations should be treated as public domain data (WCPFC 11 summary report para 500). Accordingly, these information were made publicly available on the RFV website in 2015. CCMs are reminded that in accordance with Attachment 1 of CMM 2014-03, the charter information relates to vessels in which it is notified as chartered under CMM 2016-05 or is considered to be chartered under CMM 2017-05 paragraph 42. The Secretariat has observed in some instances, that CCMs are entering charter information on the RFV for vessels which are **not** formally notified as chartered by a chartering CCM under CMM 2016-05 or its predecessor. In addition, some formally notified charters in accordance with CMM 2016-05 are yet to be updated on the RFV. As at 23 August 2018, there were 337 vessels in the RFV which has ‘YES-CMM flagged’ in the field ‘Under Charter’ (see Figure 5), 232 of which had current charter authorization period. However, according to the Secretariat’s record, there were only 208 vessels with current authorization charter period, notified to be chartered under CMM 2016-05 (or its predecessor). The Secretariat urges CCMs to check that they are using the charter fields correctly. Only the submitting CCM, which is usually the flag State, can update its own vessels on the RFV. Only after the flag CCM has duly received advice from the chartering CCM of charter notifications (CMM 2016-05), would there be an expectation by the Secretariat that flag CCMs would update the relevant fields on the RFV for their submitted vessels.

#### **Completeness of the fields in RFV**

6. CMM 2017-05 paragraph 6 requires a list of information to be submitted by CCM with respect to each vessel entered in its record. The RFV SSPs also require CCMs to submit complete vessel record data to the WCPFC Secretariat that meet the structure and format specifications of Attachment 1 (of CMM 2014-03). Attachment 1 identified “minimum data requirements” which must be present for the vessel to be included on the RFV. Footnote 3 (of CMM 2014-03) clarified that although vessels with only the minimum required data will be added to and maintained on the RFV, this does not relieve the responsible CCM of its obligations to provide all the data required under the WCPFC’s applicable conservation and management measures (CMM 2017-05 paragraph 6).

7. This information as well as a current evaluation of completeness of the RFV fields by CCM is viewable by CCMs on the secure CCM-pages of the website.

Figure 6:



8. CCMs are referred to the WCPFC website for the latest RFV summary statistics for Figure 1 – Figure 6 that are available at <http://www.wcpfc.int/vessels/charts/types> and can be printed from the website as pdf files.

### RFV and Fished/Did not fished Report

9. CMM 2017-05 paragraph 9 states that before 1 July of each year, each Member shall submit to the Executive Director a list of all vessels that appeared in its record of fishing vessels at any time during the preceding calendar year, together with each vessel’s WCPFC identification number (WIN) and an indication of whether each vessel fished for highly migratory fish stocks in the Convention Area beyond its area of national jurisdiction. The indication shall be expressed as (a) fished, or (b) did not fish. CCMs are reminded that in accordance with CMM 2013-10 paragraph 9, an indication of ‘fished’ means the vessel fished for highly migratory fish stocks in the Convention Area beyond the flag CCM’s area of national jurisdiction. This is an important piece of information that assists the Secretariat in reviewing the applicability of certain CMMs and is used in its task of preparing the draft CMR in response to the tasking set out in paragraph 22 of CMM 2017-07 entitled *Conservation and Management Measure for Compliance Monitoring Scheme*.

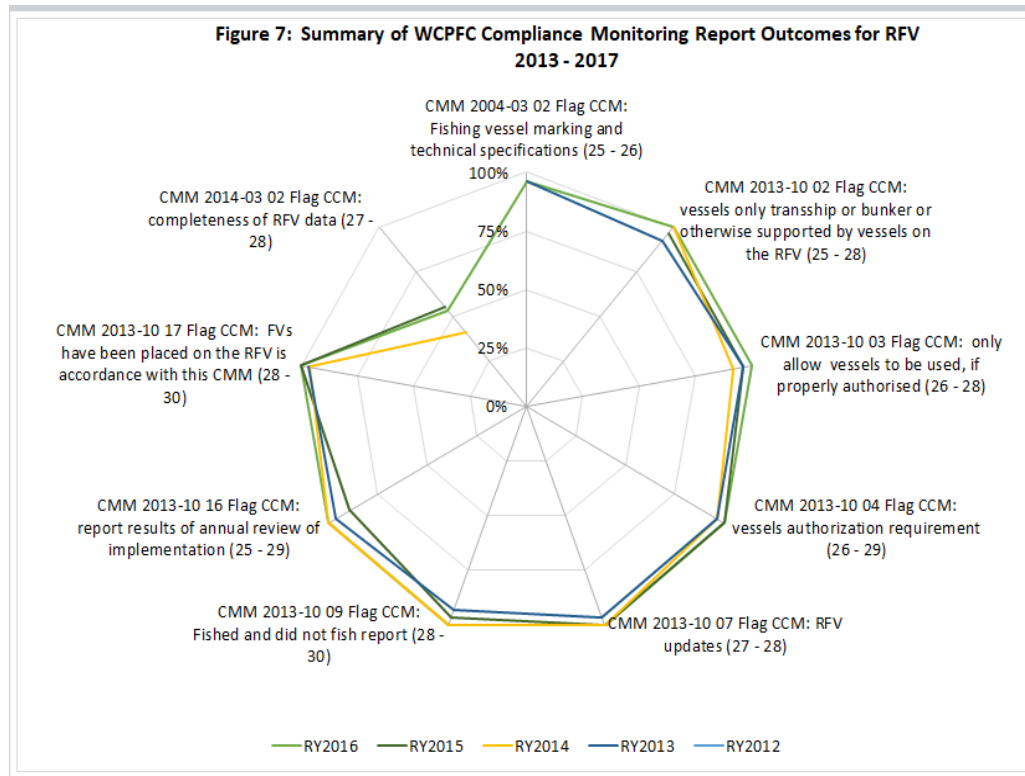


10. In 2018 the Secretariat maintained its usual practice of providing relevant CCMs with an Excel spreadsheet template based on Secretariat records of the list of vessels that were included on the RFV (authorized to fish in the Convention Area beyond the flag CCMs jurisdiction) for at least one day during the preceding calendar year. The templates are prepared with a view to assisting CCMs in providing their reports, through the template providing CCMs with a list of their flagged vessels on the RFV and the option of choosing “fished” or “did not fish” from a drop-down menu. The use by CCMs of the template also has the advantage in that it provides the WCPFC Secretariat with a report that can be automatically loaded into the WCPFC RFV databases (no manual data entry into WCPFC records is needed).

11. By 1 July 2018, all 28 flag CCMs (including 5 CNMs) have submitted their fish/did not fish report for 2017 calendar year. Timeliness of submission of this report continued to improve this year with all reports received by the deadline. Annex 1 to this paper provides a summary of reporting by CCMs in their fished/did not fish report for the past three years. As required by paragraph 13 of CMM 2014-03, this information is integrated with the RFV and available for use in compliance reviews and MCS analyses by the Secretariat for completing the draft CMR.

### **Review of RFV implementation by applicable CCMs under the Compliance Monitoring Scheme (CMS) 2013 - 2017**

12. Figure 7 provides an overview of the result of evaluation of RFV related CMMs (CMM 2004-03, CMM 2013-10 and CMM 2014-03) under the CMS over the years. CMM 2004-03 was evaluated in the Reporting Year (RY) 2013 and RY2016; CMM 2013-10 was evaluated annually (RY 2012 to 2016) and CMM 2014-03 was evaluated annually since 2015 (RY2014). Figure 7 shows a general trend of consistently high levels of implementation by applicable flag CCMs with CMM 2004-03 (96% for both RY2013 and RY2016) as well as CMM 2013-10 where percentage of implementation by applicable CCMs ranges from 96% to 100%. On the other hand Figure 7 shows some improvement, but there are continuing implementation challenges being faced by applicable CCMs in ensuring that it completes all required data fields for each vessel CCM has entered into the RFV: in RY2014 41% of the flag CCMs who were expected to have submitted complete data for each vessel record in the RFV whereas for RY2016 this improved marginally to just over 50% of applicable flag CCMs fully implementing this reporting requirement of CMM 2014-03 paragraph 2. It is clear that many flag CCMs continue to face difficulties in fully implementing the requirement for complete data for each vessel that is entered in the RFV.



### Tasking from WCPFC14 and response to CCM requests

13. WCPFC14 confirmed that the historical RFV information should be considered “public domain information” in accordance with the WCPFC data access rules and procedures. In addition, WCPFC14 tasked the Secretariat to periodically update and make available for download from the WCPFC website, the RFV in full (WCPFC14 Summary Report paragraph 428). The Secretariat posted the first full version of the RFV including all historical information associated with the RFV to the website at <https://www.wcpfc.int/vessels> in February 2018. The most recent updated file was posted to the website in August 2018.

14. Further, at TCC13, some CCM highlighted that it was particularly important for small administrations to be reminded when vessels were approaching their authorization period expiry date (TCC13 Summary Report paragraph 241). To this end and in response to their request, monthly during 2018, the Secretariat has been sending to Kiribati an Excel export of the RFV highlighting vessels with expired/about to expire authorization period and vessels with incomplete RFV data.

### Consolidated List of Authorised Vessels (CLAV)

15. In addition, WCPFC14 noted that the funding for the technical support to the global consolidated list of authorized vessels would end in 2019. TCC and FAC in 2018 are tasked to review the utility of the CLAV and provide advice to WCPFC15 (WCPFC 14 Summary Report para 411). At the ABNJ steering committee meeting this year in July, it was noted that there may be possibility of funding available through the ABNJ phase 2 to continue supporting the CLAV otherwise the alternative may be for tuna RFMOs to financially support the continuation

of the CLAV. A background note prepared for the ABNJ Steering Committee is provided in Annex 2.

### **IMO number scheme extended to fishing vessels and other vessels**

16. By way of update, the Secretariat notes that IMO Assembly, in its meeting last year, agreed to extend the IMO Ship Identification Number Scheme to more vessels on a voluntary basis to support ship safety and pollution prevention by being able to more easily identify vessels. The number scheme applies to ships over 100 gross tonnage and is mandatory for passenger ships of 100 gross tonnage and upwards and all cargo ships of 300 gross tonnage and upwards. In 2013, the Assembly agreed to voluntary extension to fishing vessels over 100 gross tonnage. Further voluntary application is now extended to fishing vessels of steel and non-steel hull construction; passenger ships of less than 100 gross tonnage, high-speed passenger craft and mobile drilling units, engaged on international voyages; and to all motorized inboard fishing vessels of less than 100 gross tonnage down to a size limit of 12 metres in length overall (LOA) authorized to operate outside waters under national jurisdiction of flag State.<sup>1</sup>

17. As at 23 August 2018, 49% (1965) of the vessels in the RFV have blank in the IMO number field, 8% (324) of which are at least 100 GT or 100 GRT.

### **Secretariat observations and administrative notes**

18. In the operation of the WCPFC RFV in the past year, the Secretariat makes the following observations:

- The implementation of the RFV SSPs, since its coming into force in June 2014, together with the reviews of RFV data completeness through the Compliance Monitoring Scheme have greatly streamlined and improved the operation of the RFV including the completeness of the information within the RFV.
- VID (WCPFC vessel identification number) number, which is a system identifier for a vessel in the RFV is now generally understood to be an important feature that is necessary to maintain the quality of the RFV database and historical RFV data linkages to other WCPFC datasets. CCMs can view history for an individual vessel record on the intranet, using three dots shortcut see section 2.4 of the ‘Managing RFV On-line Guide’ for guidance on how to do this.
- The RFV is a central data source in the WCPFC’s Integrated MCS databases. An important part of the day to day administration by the Secretariat of the WCPFC RFV involves the management of the vessel history in the RFV. The Secretariat makes best efforts to check for and avoid the creation of duplicate records in the RFV and will regularly liaise with CCMs to this end. CCMs should note that when a vessel is ‘deleted’ from the RFV, in practice the record is no longer viewable on the public views of the RFV. The vessel record is archived, and the vessel status is changed from “active” to “deleted”. CCMs can re-instate/re-list a deleted vessel and section 3.3 and section 4 of the ‘Managing RFV On-line Guide’ provide the procedures on how to do this. CCMs are reminded to use these procedures in order to avoid creating duplicate records in the RFV.

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<sup>1</sup> <https://maritime-executive.com/article/imo-assembly-adopts-new-strategic-directions#gs.JLuZxzo>

The effect of duplicates in the RFV means the history of a vessel is not consolidated in one place and this create extra and complicated tasks for the Secretariat Compliance and IT team in terms of consolidating these duplicate records.

- As reported to previous TCCs, the Secretariat continued to receive queries relating to expired or blank authorization period for a vessel on the RFV, mostly from high seas boarding and inspection (HSBI) party and markets. The Secretariat continues to maintain the advice provided previously that if a vessel flagged to a Commission member or Cooperating Non-member is listed on the RFV, this implies, through reference to CMM 2017-05, that the flag State considers that the vessel is “entitled to fly its flag and is authorized to fish in the Convention Area” and that that the expiry of authorization date is an administrative matter between the flag State and the vessel (TCC9 Summary Report, para 324).
- CCMs are reminded to send all general RFV inquiries, requests for assistance and submissions of electronic files to update the RFV to the email address: [contact.rfv@wcpfc.int](mailto:contact.rfv@wcpfc.int)

## **Recommendation**

19. TCC14 is invited to:
  - i. consider and note this paper;
  - ii. review the utility of the CLAV and provide advice to WCPFC15; and
  - iii. discuss the implications of the recent IMO decision providing the opportunity to issue IMO numbers to vessels smaller than 100GRT.
  - iv. .

**Annex 1: Number of vessels in the RFV vs number of vessels that ‘fished’ as indicated by the Fished/Did not fished report for the year 2015-2017**

Row Labels	2015				2016				2017			
	VesselCount	AFA_Receive	Fished_Cnt	DidNotFish_	VesselCount	AFA_Receive	Fished_Cnt	DidNotFish_	VesselCount	AFA_Receive	Fished_Cnt	DidNotFish_
AU	74	74	9	65	71	71	12	59	64	64	9	55
CA	26	26	0	26	12	12	0	12	15	15	5	10
CK	15	15	2	13	15	15	6	9	18	18	1	17
CN	677	663	455	208	697	697	443	254	634	634	392	242
EC	11	0	0	0	11	11	3	8	7	7	4	3
EU	106	105	13	92	80	80	11	69	78	78	6	72
FJ	79	78	44	34	75	75	39	36	75	75	36	39
FM	33	33	31	2	38	38	37	1	41	41	38	3
ID	398	394	18	376	400	400	0	400	15	15	0	15
JP	1243	1239	504	735	862	861	575	286	885	885	459	426
KI	70	50	39	11	36	36	30	6	35	35	26	9
KR	309	307	159	148	306	306	157	149	213	213	158	55
LR	18	18	0	18	34	34	3	31	34	34	4	30
MH	20	19	16	3	19	19	13	6	14	14	14	0
NC	17	17	0	17	18	18	2	16	17	17	3	14
NZ	9	8	3	5	7	7	5	2	4	4	2	2
PA	96	95	28	67	109	109	81	28	125	124	87	37
PF	96	96	0	96	83	83	0	83	76	76	0	76
PG	62	62	23	39	72	72	24	48	51	51	18	33
PH	845	844	340	504	870	870	301	569	409	409	322	87
SB	9	9	0	9	9	9	3	6	11	11	5	6
SV	4	4	2	2	4	4	2	2	4	4	2	2
TH	8	8	0	8	8	8	0	8	8	8	0	8
TO	2	2	0	2	1	1	0	1	1	1	0	1
TV	6	6	4	2	6	6	5	1	6	6	4	2
TW	1718	1717	650	1067	1679	1679	651	1028	1670	1670	644	1026
US	219	193	193	0	224	224	183	41	224	224	194	30
VU	140	131	120	11	125	125	96	29	108	108	85	23
<b>Grand Total</b>	<b>6267</b>	<b>6213</b>	<b>2653</b>	<b>3560</b>	<b>5846</b>	<b>5870</b>	<b>2682</b>	<b>3188</b>	<b>4827</b>	<b>4841</b>	<b>2518</b>	<b>2323</b>

## **Annex 2: Background note on the Consolidated List of Authorized Vessels: current situation and future**

### **Background: the origin of the CLAV as part of the Kobe process**

Since the late 1990s, the five tuna regional fisheries management organizations (T-RFMOs) have adopted measures that call for their members to authorize large-scale fishing vessels, carrier vessels and other types of vessels, as appropriate, to operate in their areas of competence or catch species under their purview. In each RFMO, the lists of vessels authorized by the various participating flag States are to be submitted to, and maintained by the corresponding Secretariat, who would make available a compiled Record of Authorized Vessels for the RFMO in a timely manner.

During the first joint T-RFMO meeting in 2007 (Kobe I), the participants “underlined the need for a stronger cooperation and coordination among tuna RFMOs particularly, unification of lists of authorized as well as IUU vessels. T-RFMOs agreed to work towards the creation of a harmonized list of tuna-fishing vessels that is as comprehensive as possible (positive list) including use of a permanent unique identifier for each vessel such as an International Maritime Organisation “IMO number”. Such a list would consolidate the information contained in the Records of Authorized Vessels of each T-RFMO, identifying duplicates to the extent possible and assigning unique vessel identifiers (UVIs) for vessels that have not yet been assigned IMO identification numbers.

The IATTC and the IOTC Secretariats built the first versions of the consolidated list in 2007 and 2009, respectively. The T-RFMOs noted that these lists, albeit useful at the time they were created, represented only snapshots in time of the T-RFMO Lists of Authorized Vessels, agreeing on the need for the T-RFMOs to establish a mechanism to allow for a more frequent consolidation of their lists of authorized vessels. This was achieved through the organization of the “Workshop on exchange of information and maintenance of the consolidated list of authorized vessels of Tuna Regional Fisheries Management Organizations”, held in February 2011 with the support of FAO and the International Seafood Sustainability Foundation (ISSF). The Workshop, which was attended by database and compliance managers from the T-RFMO Secretariats and participants from FAO, agreed on the procedures and time frames to be used in the consolidation of vessel records.

The IOTC Secretariat, in collaboration with the other Secretariats, undertook a new update of the list (by then called Consolidated List of Authorized Vessels, or CLAV) in February 2011, updating this information several times since then. Authorized fishing vessels are identified through a T-RFMO Unique Vessel Identifier (TUVI) that is assigned to multiple vessels recorded by different T-RFMOs when these are identified as duplicates of the same, single vessel.

The T-RFMOs, through the IOTC, cooperated with FAO to streamline the procedures for the updating and maintenance of the CLAV, including modification of the duplicate-finding algorithm used by the FAO Vessel Record Management Framework, and increase the frequency of updates to reach close to real-time updates in the future.

It was clear at the time that the usefulness of the CLAV was limited by the time needed for the Secretariats to make the lists available in a standard format, to be submitted to and eventually manually collated by the IOTC Secretariat. A better solution was required and was formulated as part of the activities programmed by the Common Oceans/ABNJ Tuna Project: an automated data exchange process, to be installed in each t-RFMO server hosting the respective Record of Authorized Vessels, that would submit daily changes in each Record to a centralized server hosting the CLAV.

### **The most recent CLAV: automated daily consolidation t-RFMO records since 2014**

The CLAV data exchange mechanism was implemented by a CLAV technical specialist (Mr. Fabio Fiorellato, hired by the Common Oceans/ABNJ Tuna Project) in the months between July and December 2014. Since then, data updates from all five T-RFMOs have been received on a regular daily basis and successfully incorporated within the CLAV global database used for dissemination purposes. In addition

to the daily updates, the FAO Common Oceans/ABNJ Tuna Project has supported the T-RFMO Secretariats by hiring a consultant who identifies inconsistencies in the CLAV that could be the results of mistakes.

### **The CLAV after the end of the Common Ocean/ABNJ Project**

As the Project is scheduled to be completed by early 2019, and some of the services to the CLAV will be discontinued, there is a need to consider how best to sustain that support. The following sections describe some alternatives

#### **Hardware and software costs**

The CLAV database and dissemination portal have been hosted by the IOTC Secretariat since 2014: this required an initial cost of around 4000 USD for the acquisition of the hardware resources (covered by the Common Oceans/ABNJ Tuna Project, one dedicated server). No software licenses were required, as the system relies on a fully open source software stack. Network connectivity is provided through the IOTC Secretariat infrastructure, and its cost - for what concerns the CLAV specific impact – although it cannot be directly assessed, can be considered negligible.

With the current level of user access, there is no need to upgrade the hardware capabilities of the CLAV server which is capable of withstanding the current load.

#### **Location of the CLAV server**

Another aspect to be discussed is the actual physical location of the CLAV servers, which may have an impact on the points discussed above. As already noted, the CLAV server is hosted by the IOTC Secretariat, and the user interface and data collection endpoint are exposed through a dedicated subdomain (clav.iotc.org) of the IOTC website. The main access point, however, is through the joint tRFMO website [www.tuna-org.org](http://www.tuna-org.org).

Granting access to the CLAV at its current physical location requires using the IOTC Secretariat bandwidth that, as of today, is limited by its physical location (Seychelles) and by the contract in place with the service provider (Cable & Wireless Seychelles). Users from certain geographical areas (namely, those from the CCSBT Secretariat in Canberra) reported extremely slow response times, mostly due to network latency issues, which might suggest the need for a different deployment of the CLAV database and dissemination portal. The IOTC Secretariat is in the process of negotiating upgrades to the level and quality of its network connectivity for its own purposes, and this could result in improved bandwidth.

Conversely, if a decision is taken to host the CLAV elsewhere, then the following aspects should be considered:

- Comparable hardware (be it physical or virtual) should be guaranteed to host the CLAV database and application servers. The current server, originally provided by the Common Oceans/ABNJ Tuna Project could be shipped to another location, at a cost.
- Comparable or better network bandwidth should be available to users remotely accessing the CLAV dissemination interface.
- CLAV data is basically public domain, therefore no confidentiality issue exists and it can be easily hosted in a cloud-based environment.

Transferring the CLAV database and dissemination interface is a task that should require approximately one day of work, so its cost - in terms of support - is negligible.

#### **Assistance to Secretariats on quality control**

Following the installation of the data-exchange mechanism, a consultant (Mr. Fernando Jara) has been hired by FAO under the Common Oceans/ABNJ Tuna Project to perform quality control checks, and

liaise with T-RFMOs Secretariats any time an issue with the data was detected during the CLAV data exchange workflow. In particular, the consultant had to ensure that key quality issues, such as the detection of wrong IMO numbers or possible vessel duplicates, are properly identified, and the results communicated to the Secretariats for further consultation with the flag States involved.

In recent months, and following major updates in the ICCAT authorised vessel registry that fixed many of the issues noted in above, the need for daily data curation interventions has decreased, and the quality and stability of the information within the CLAV system has reached a peak. If T-RFMOs consider the extensive quality-control check and reports valuable, they may want to also consider maintaining the service after the Common Oceans/ABNJ Tuna Project is finished in 2019.

The workload associated with the quality-control checks is currently in the range of 5-10 working days per month from the consultant, given that the data from the five T-RFMOs are quite stable and tools have been developed to facilitate the work. Therefore, it can be reasonably expected that the workload will remain constant over time.

Sixty to 100 working days for each calendar year should be considered at maximum for this category, and with a possible daily fee of 300USD these will account for a **total cost of 18,000 to 30,000USD for each calendar year**.

#### **Extension to programmatic data read-only access to CLAV records**

A number of sources, including independent scientists, have requested that programmatic (i.e. non-interactive) data access to the CLAV information be provided. With respect to this requirement, the current level of support is very basic and if this extension is supported, funds should be secured to extend the CLAV backend to provide proper APIs (Application Programming Interfaces) to extract the information from the CLAV through specific remote services. Extending the CLAV APIs requires a different type of specialist, with solid knowledge of J2EE and REST technologies. Depending on the level of complexity, 10 to 20 working days should be required for this task, at a minimum fee of 250 USD per day (**total cost: 2,500 to 5,000 USD minimum**).

#### **Update of the CLAV interface**

In terms of technologies and software implementation best-practices, the CLAV user interface has started to show its age (almost four years old) and it might be worth considering redesigning the system with more recent and robust front-end technologies that will also provide better ergonomics when accessing the CLAV dissemination interface from portable devices (smartphones and / or tablets). Improving the CLAV frontend requires a different type of specialist, with good knowledge of J2EE, REST and excellent knowledge of HTML / Javascript technologies. Depending on the level of complexity required, 20 to 40 working days should be considered for this task, at a minimum fee of 250 USD per day (**total cost: 5,000 to 10,000 USD minimum**).

#### **CLAV support: unexpected costs:**

Right now, the CLAV technical specialist (Mr. Fabio Fiorellato, now serving as IOTC Data Coordinator) that was initially tasked with the goal of implementing the CLAV data exchange and the dissemination interface, still provides his support when (rare) disruption to the data exchange mechanism occur during normal operation as consequences of changes in the hosting environments at each T-RFMO. A mechanism to formally borrow Mr. Fiorellato time at the IOTC Secretariat to provide unplanned support for the resolution of these issues should be considered, so that the time spent for CLAV-related issues could be properly accounted and paid to IOTC.



**Summary of the costs**

Therefore, assuming that the location of the server stays unchanged, the annual costs will be primarily limited to the quality-control assistance by the consultant at a cost of 18 to 30,000USD per year. To this, a one-time cost of 15,000 USD could be added to address the need for programmatic access and an update of the CLAV interface.

This cost can be allocated to each T-RFMO in a number of different ways that need to be discussed among the T-RFMOs. One possible way would be to divide the cost proportionally to the number of records in the CLAV for each RFMOs.

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