

**WCPO Transshipment Business Ecosystem Study**

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**MRAC**  
asia pacific

### About MRAG Asia Pacific

MRAG Asia Pacific is an independent fisheries and aquatic resource consulting company dedicated to the sustainable use of natural resources through sound, integrated management practices and policies. We are part of the global MRAG group with sister companies in Europe, North America and the Asia Pacific.

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## Executive Summary

### BACKGROUND AND OBJECTIVES

The Western and Central Pacific Fisheries Convention defines transshipment as “*the unloading of all or any of the fish on board a fishing vessel to another fishing vessel either at sea or in port.*” In recent years, around 80% of purse seine product and 22% of longline product harvested in the Western and Central Pacific Fisheries Convention Area (WCPF-CA) has been transhipped on or near the fishing grounds (SPC data; WCPFC, 2018a).

While the practice of transshipment is a longstanding part of the WCPO fisheries landscape, relatively little is known about the ‘business’ of transshipment outside of the main players involved. This includes the key companies involved at all stages, the main factors influencing profitability, the extent of vertical integration and the economic impacts of transshipment regulation. Against that background, the Pew Charitable Trusts commissioned MRAG Asia Pacific to undertake a study of the ‘business ecosystem’ of transshipment in the WCPO. The main aims of the study were to provide an overview of the key businesses and processes involved in transshipment and the extent to which existing monitoring and regulatory arrangements are effective in achieving shared fisheries objectives.

Information to support the study was drawn from four main sources – (i) interviews with key stakeholders in the transshipment business (e.g. fishing companies, tuna trading companies, carrier operators, Pacific island businesses, regional secretariats), (ii) corporate database searches, (iii) the Global Fishing Watch website, which uses Automatic Identification System (AIS) data to track the movement of fishing vessels and (iv) other publicly available information (e.g. WCPFC Record of Fishing Vessels’; WCPFC member Annual Part 1 reports, etc).

### HISTORY OF TRANSHIPMENT

The history of transshipment in WCPO tuna fisheries has not been well-documented to date but is believed to have commenced with catch consolidation amongst longliners on a rotational basis. At the industrial scale, most interviewees recalled that transshipment in the WCPO commenced in the mid-1980s. The rapid adoption of transshipment was influenced by the very high value of tuna in the 1980s, at the peak of the Japanese economy. For fishing companies, transshipment was a way of allowing fishing vessels to remain on fishing grounds to maximise profits in a bull market, while for trading companies transshipment was an efficient way of securing supply, and ideally beating the competition to fish at the source.

At the global level, the conventional reefer carrier fleet is both aging and contracting. Since 1980, around 774 conventional reefer ships have been built, of which 527 remain in service (Dynamar, 2018). Most vessels currently in service were built between 1988 and 1994, with very few new conventional reefers built since 2000. Of the vessels built between 1980 and 1990, close to half have been scrapped. The average age of scrapped vessels in recent years has been between 30-42.

In recent years, a key impact on the conventional reefer vessel market has been the rise in the use of reefer containers. Advances in technology and reduced freight costs compared to conventional reefers has seen the container sector increase its market share in the total seaborne trade of refrigerated foods from 50% in 2000 to 82% in 2017 (Dynamar, 2018).

### CURRENT TRANSHIPMENT DYNAMICS

As of March 2019, there were 418 ‘fish carrier’ vessels authorised under the WCPFC Record of Fishing Vessels (‘the RFV’). Panama has the largest fleet of flagged carriers with 123 vessels, followed by the Philippines with 111 and Japan with 85.

**Carrier fleets** Other key flag states include Korea (31 vessels), Liberia (21), Taiwan (16) and China (12). Seven other flag States have 19 registered vessels between them.

The average age of all registered carriers is 25 years. Over half the current fleet (52%) were built between 1980 and 1995, with only 17% of carriers built since 2010. Amongst the main flag States, China's fleet is the newest with an average age of 2004 while Taiwan and Thailand have the oldest fleets, with an average year of build at 1978 and 1980 respectively. Of the main flag State carrier fleets, China, Liberia, Panama and Taiwan have the highest rates of high seas transshipment authorisation.

Of the 232 carriers on the RFV >1,000 GT in March 2019, we estimated 137 were active in transshipping fish from the WCPO in 2017-18. Of these, over half (75, 55%) were flagged to Panama. Of the remaining fleets, Korea had the next highest number of active vessels with 27 (20%) (owned by only 7 companies), followed by the Philippines (14 vessels, 10%) and China (9 vessels, 7%).

The average age of active carriers is 27-28 years. Around 65% of active vessels were built in 1991 or before, meaning the many are approaching the age when owners would consider scrapping them (Dynamar, 2018). Only around 12% of active vessels were built in 2000 or later.

Ownership and operational control arrangements for carriers involved in tuna transshipment in the WCPO are dynamic and varied, but can broadly be categorised into three main types:

- Charterer model – Under this model a chartering company leases a carrier vessel, owned and crewed by an independent owner. Two basic modes of charter are available – a time charter, under which the charterer leases the carrier for a defined period of time (e.g. one year) and a voyage/space (or 'spot') charter, under which the charterer 'buys' space on a carrier for a voyage at a time. The chartering model is the one favoured by each of the three main purse seine tuna traders in the WCPO (FCF, Tri Marine, Itochu) and is perhaps the most common operational model;
- Integrated fishing-carrier companies - a number of fishing companies own and operate their own carriers as part of an integrated supply chain. These companies tend to be larger, with a sufficient critical mass of catching vessels to justify their own carrier. Many also have interests in post-harvest processing facilities and use carriers as component of an integrated supply chain. Many of the newer carriers commissioned in the past decade have been commissioned by integrated fishing-carrier companies; and
- Logistics service provider - these companies tend to have no interest in fishing vessels – they've come into the tuna transshipment business from the 'shipping end', not the 'fishing end'. Their main interest is in providing a commercial service to transport fish from the fishing grounds to processing facilities or to market.

The ownership and registration arrangements for carrier vessels are often deliberately opaque. Over time, there has been an increasing movement towards registering reefer carriers with flag States operating open registries, or so called 'flag of convenience' (FOC) states. Of the 232 carriers >1000GT on the RFV, 147 (63%) are registered to FOC States. Interviewees noted that the key factors driving the trend towards FOC states were favourable tax arrangements, discretion around company ownership and low compliance costs. In recent years, the presence of an approved EU Competent Authority (CA) has also emerged as an important consideration in the choice of flag State.

The factors affecting the profitability of a carrier trip were broadly the same across both longline and purse seine sectors, as well as between operators. The overwhelmingly dominant driver of profitability across both sectors was the time taken to fill up and unload. Time can be lost at the fishing end - e.g. if another trader beats you to the fish, or the fishing slows down – or the unloading end – e.g. if offloading is slow and the trader has to bear the cost of demurrage. To that end, carrier operators/charterers (e.g. tuna traders, logistics service providers) work in very close cooperation with prospective fishing vessels in the planning of trips and must make careful judgements about whether sending a carrier is economically justified.

#### Purse seine transshipment

In 2017, around 1,306 transhipments were reported in the WCPO purse seine sector, accounting for 952,151t of product (~ 79% of total purse seine catch). Although a total of 33 ports hosted transhipments in the period 2015-2017, activity was highly concentrated around a number of key ports, mainly in the central Pacific. Majuro was the key transshipment port, accounting for around 37% of all reported transhipments, while Pohnpei and Funafuti accounted for 16%, and 12% respectively. Our estimates indicate that somewhere in the order of 110-120 carriers (>1,000GT) were involved in purse seine transhipments in 2017/18.

The main considerations involved in coordinating carrier fleets servicing the purse seine sector are described, together with a 'typical transshipment'. The key companies involved in purse seine transshipment in the WCPO in recent years are summarised including the main tuna traders, integrated harvester/carrier companies and standalone carrier operators.

#### Longline transshipment

In the longline sector, the key fleets involved in transshipment in the WCPO are the distant water bigeye/yellowfin and albacore fleets operating on the high seas. As at March, 2019, there were 2581 longline vessels on the RFV. Of these, 2,050 (79%) were authorised by their flag State to tranship on the high seas under CMM 09-06. Of the 18 States which flag longline vessels in the WCPO, only six authorise their vessels to tranship on the high seas: China, Japan, Korea, Taiwan, USA and Vanuatu. Collectively, the Taiwanese, Chinese and Japanese fleets account for 83% of all high seas authorised longliners.

In 2017, the Taiwanese longline fleet accounted for around half of all high seas transhipments. China accounted for the next highest number (25%), with the Japanese fleet accounting for less than 2% of all reported events. The nature and operation of the main longline fleets involved in high seas transshipment in the WCPO are described.

The number of reported high seas longline transshipment events has increased by around 60% between 2011 and 2017 (at least some of which may be the result of better reporting). Much of the increase has come from the Taiwanese fleet (an almost four-fold increase in reported transshipment events between 2013 and 2017), with increases also evident in the Chinese, Vanuatu and Korean fleets.

In 2017, around 22% of the total estimated WCPFC-CA longline catch of the three key target species (BET/YFT/ALB) were transhipped on the high seas according to transshipment declarations received by the WCPFC. Bigeye recorded the highest proportion, at 42.2% of total catch, with albacore and yellowfin 18.9%, with at 11.6% respectively. The majority of reported high seas transhipments occur in tropical areas (20°N – 20°S) between 170°W and 120°W.

The number of carrier vessels receiving longline transshipments remained relatively stable between 18 and 27 during the 2011 – 2017 period, although the composition of flag States changed considerably.

Longline companies indicated there are substantial efficiencies associated with transshipment at sea, in particular reduced fuel costs and avoiding loss of fishing time associated with steaming to port. This was particularly the case for small vessels who have limited fish and fuel holding capacity and would spend proportionally more time steaming. Other benefits included cheaper bunkering and provisions, no licensing and port fees and less administrative paperwork and agent's fees. Several large vessel owners advised that transshipment at sea was central to the operation being viable. Many longline companies told us they actively avoided transshipping in Pacific Island ports because of the higher level of compliance scrutiny involved.

The key companies involved in high seas longline transshipments in the WCPO are described, together with the dynamics of carrier fleet organisation.

**POLITICAL AND  
ECONOMIC  
LANDSCAPE**

Broadly, the membership of the WCPFC can be split into three groups based on the extent to which they participate in, and ultimately support, high seas transshipment:

- 'supporters' of high seas transshipment - these countries, most notably DWFNs Taiwan, China and Korea, have fleets who rely heavily on high seas transshipment as part of their operational and economic model. Broadly these countries are strongly supportive of maintaining 'properly regulated' high seas transshipment;
- 'opponents' of high seas transshipment - these countries, most notably the FFA/PNA member countries, have no involvement in high seas transshipment (other than Vanuatu flagged vessels) and strongly support transshipment reform. Broadly, the basis for their position is three-fold: (i) they are concerned that weakly regulated and monitored high seas transshipment represents a significant weakness in the MCS arrangements for shared stocks in the region, (ii) they see transshipment at sea rather than in adjacent PIC ports as a lost opportunity to deliver economic benefits to PIC communities; and (iii) related to (i), they see high seas transshipment as a missed opportunity to undertake comprehensive (and cost effective) compliance checks on vessels in port; and
- The 'others' – these countries have a range of nuanced positions which don't fit neatly into either group above.

Our discussions indicated that the response to any ban on high seas transshipments in the WCPO would be complex and difficult to predict with any certainty.

Taiwanese and Korean fishing companies indicated their vessels would return to east Asian ports (either their home port, or Japanese/Korean market ports) rather than unload in PIC ports on the basis that (i) east Asian ports offer a range of services (e.g. cheap provisions/bunkering, technicians, etc) unable to be provided by PIC ports, (ii) freight costs would be saved by delivering fish direct and (iii) vessels would avoid the higher costs and stronger compliance regimes operating in PIC ports. Companies were of the view that while 'many' operators would go out of business, smaller boats would be hardest hit given limited economies of scale and a higher proportion of steaming to fishing time. One operational response may be a contraction in fishing effort away from the more distant fishing grounds in the central and eastern Pacific towards more westerly grounds, closer to east Asian ports.

Some fishing base operators in PICs thought that a ban on high seas transshipment may mean many current high seas vessels would begin to make partnerships with

companies like them who knew the 'local scene'. One consequence then may be increased requests to reflag vessels to PICs, or alternatively register charters.

For vessels able to survive the shorter-term economic impacts, many longline companies thought there would be a longer-term market and operational correction – fewer fish being caught means higher catch rates over the longer term, as well as higher prices for fish, so those able to stay in the game may receive some longer term benefits. To that end, the impacts of a ban would be dependent on each individual operation's capacity to adapt to the new environment. Longline companies also indicated that if PICs had better container services they would consider unloading in port, but to make in port landing attractive they would also need better support services – food, bait, fuel, etc.

At the carrier company end, all operators thought that a high seas transshipment ban would increase costs. In addition to a requirement to pay PIC license fees, carrier operators made the point that in the longline sector carrier companies are dealing with much smaller volumes than purse seine, making it operationally harder to coordinate a full load (even harder if the number of longline vessels reduces).

If a high seas transshipment ban saw a proportion of the longline fleet go out of business with many of those remaining choosing to offload direct to east Asian ports, there would likely be a contraction in the carrier market. The impacts are likely to be hardest felt by those operators who own, rather than lease, carriers given the capital involved. A contraction in demand may precipitate the scrapping of some carriers nearing the end of their productive life.

**CURRENT  
MANAGEMENT  
AND  
MONITORING**

The main instrument regulating transshipment (at least on the high seas) in the WCPFC-CA is the *Conservation and Management Measure on the Regulation of Transshipment* (CMM 09-06). Despite isolated successes, any clear-eyed assessment is likely to conclude the CMM has not achieved its objectives. Contrary to the intention to allow at sea transshipment only in limited circumstances, the number of vessels authorised to tranship on the high seas is almost double those that aren't (2,355 Vs 1,229 as at April, 2019), the number of reported high seas transshipments in 2017 was more than twice that in 2012 (with the number of offloading vessels increasing by 90% over the same period, albeit at least some of this may be an artefact of better reporting), and the quality of information available to the Commission to independently verify reported catches remains very limited.

There is no doubt a range of reasons why implementation has not matched expectations, but three arguably stand out:

- Weak implementation of the observer program - although intended by CMM 09-06 to be a primary tool to verify compliance, the high seas observer program appears to be largely ineffective at the moment. There is limited use of standardised forms or manuals and only a fraction of data collected by observers has made its way to the WCPFC to date. Crucially, the absence of observer information on catch volumes and species composition limits capacity to independently verify information submitted in transshipment declarations.
- No agreement around guidelines for 'impracticability' - A key component of the CMM is a prohibition on vessels from transshipping on the high seas unless "*it is impracticable for certain vessels ... to operate without being able to tranship on the high seas...*" Despite a number of attempts, no guidelines have yet been agreed around 'impracticability'. In the absence of such guidelines, the CMM requires CCMs to apply interim guidelines, namely that

a ban on at sea transshipment would cause significant economic hardship and the vessel would have to make ‘significant and substantial changes to its historical mode of operation...’. The fact that CCMs have paid limited attention to these interim guidelines is evidenced by the fact that more than 470 vessels on the RFV currently authorised to tranship on the high seas were built in 2010 or later – and therefore could not have had to make changes to their ‘historical mode of operation’. Moreover, the fact that five of the six CCMs who authorise their longliners to tranship on the high seas authorise >98% of vessels indicates that authorisation is being applied as the ‘default’ position, rather than after some ‘meaningful’ analysis of impracticability.

- No serious attempt to encourage vessels to tranship in port - In the spirit of encouraging vessels to tranship in port, paragraph 35 (v) of the CMM requires CCMs of both offloading and receiving vessels involved in high seas transshipment to “*submit to the Commission a plan detailing what steps it is taking to encourage transshipment to occur in port in the future*”. To the best of our knowledge, no CCM has submitted a plan.

#### ANALYSIS AND RECOMMEN- DATIONS

There is little doubt that high seas transshipment faces challenges. Weakly monitored high seas transshipments have long been linked to laundering of illegal catches and broader IUU activities (e.g. Gianni and Simpson, 2004), while in more recent years serious concerns have been expressed around the capacity of at-sea transshipment to facilitate human trafficking, forced labour and other human rights abuses (e.g. ILO, 2013). These problems have led to increasing calls both globally (e.g. Ewell et al, 2017) and regionally (e.g. by the PNA) for ban on high seas transshipment.

For Pacific Island countries, their interest in high sea transshipment reform is strong and legitimate. Despite agreeing the WCPFC Convention in 2004, which requires CCMs to encourage transshipment in port, and despite CMM 09-06 reinforcing the intent of the Convention, PICs have seen little practical progress from DWFNs to encourage transshipment in port. At the other end of the spectrum, DWFN fishing companies see high seas transshipment as a legitimate and globally widespread practice which generates efficiencies and forms an essential component of their operation. Subject to an effective management and monitoring regime, there should be nothing wrong, they argue, with businesses seeking the most efficient means to carry out their legitimate operations.

It is these polarised positions which set the scene for the upcoming review of the transshipment CMM. While on the surface there appears little common ground to be found, it is not inconceivable that both positions can be satisfied, at least to some extent. Getting to this future will require a range of reforms and investments, including:

- **CCMs should comply with the spirit of the WCPFC Convention to encourage transshipment in port.**

Two main measures are required to demonstrate compliance with the intent of the Convention:

1. Those members who’s fleets currently tranship on the high seas should be required to submit tangible plans detailing the steps they will take to encourage their vessels to tranship in port.

2. WCPFC members should agree the circumstances under which it is impractical for a vessel to tranship in port.
- **Any vessel for which it is deemed impractical to tranship in port must be subject to a compliance regime that gives confidence that all transshipment activity is tightly controlled.**

Key measures of an enhanced monitoring regime for high seas transshipments include:

3. Monitoring on all offloading vessels (e.g. longliners) (electronic monitoring or observers)
  4. Examining the utility of EM on receiving vessels (e.g. carriers)
- **Measures to independently verify transshipment activity should be strengthened**
- A range of measures to strengthen capacity to independently verify transshipment reporting would be beneficial:
5. All CCMs which authorise vessels to tranship on the high seas should submit evidence of the processes and mechanisms they use to verify transshipment information submitted by their vessels.
  6. Arrangements for the implementation of the transshipment observer program should be strengthened.
  7. The Secretariat should consider additional measures to independently validate transshipment activity (e.g. inclusion of AIS data in transshipment analysis)

In addition to these core recommendations, observations are made around ensuring equivalent monitoring of fish transported via refrigerated containers and enhancing the attractiveness of PIC ports for longline unloading/transshipment. Observations are also made to improve the utility of carrier vessel information on the RFV.

## 1 Introduction

The Western and Central Pacific Fisheries Convention defines transshipment as “*the unloading of all or any of the fish on board a fishing vessel to another fishing vessel either at sea or in port.*” In the Western and Central Pacific Ocean (WCPO), the practice of transshipment likely started with the consolidation of catches amongst multiple longline vessels with a fleet, with a single (often larger) vessel transferring catches to port and returning with provisions. Catch consolidation meant that fishing vessels could stay on the fishing grounds longer, with less time spent steaming and fewer fuel costs. With the advent of the conventional reefer carrier in the 1960s and the growth in the reefer fleet, the economic advantages associated with transshipment led to the practice becoming the dominant logistics model for the purse seine fishery and high seas longline fleet in the WCPO since around the mid-1980s. In recent years, around 80% of purse seine product and 22% of longline product harvested in the Western and Central Pacific Fisheries Convention Area (WCPFC-CA) has been transhipped on or near the fishing grounds (SPC data; WCPFC, 2018a).

While the practice of transshipment is a longstanding part of the WCPO fisheries landscape, relatively little is known about the ‘business’ of transshipment outside of the main players involved. This includes the key companies involved at all stages, the main factors influencing profitability, the extent of vertical integration and the economic impacts of transshipment regulation. Against that background, the Pew Charitable Trusts commissioned MRAG Asia Pacific to undertake a study of the ‘business ecosystem’ of transshipment in the WCPO. The main aims of the study were to provide an overview of the key businesses and processes involved in transshipment and the extent to which existing monitoring and regulatory arrangements are effective in achieving shared fisheries objectives. The TORs for the study are at Annex 1.

Following this introduction, this report is structured in six parts. Part 2 provides an overview of the main information sources used for the study and the key stakeholders consulted. Part 3 documents the history of transshipment, including the pressures and incentives which led to the growth of the practice in the WCPO. Part 4 provides an overview of current transshipment dynamics. The section is broadly divided around purse seine and longline transshipment dynamics, setting out the key companies involved, their interests and level of integration, key factors affecting profitability and the dynamics of ‘typical’ transshipments. Part 5 documents the political and economic landscape around transshipment, including the main countries benefiting from in port and at sea transshipment and those in favour of transshipment reform. Part 6 examines the effectiveness of the current management and monitoring framework in the context of agreed objectives for shared fish stocks in the WCPO, while Part 7 highlights the key messages arising from the study as well as setting out recommendations for stronger management of the practice of transshipment in future.

## 2 Information sources

Information to support this report was drawn from four main sources:

- **Interviews with key stakeholders** – much of the information on the history of transshipment, key companies involved in the business of transshipment, carrier vessel operations and fleet dynamics, and the political and economic landscape of transshipment in the WCPO was drawn from interviews with key stakeholders with an active interest in transshipment. Interviews were held with:
  - fishing companies involved in both purse seine and longline transshipments;
  - tuna trading companies involved in coordination of carrier fleet activities;
  - carrier companies involved in high seas longline transshipment, some of whom were specialised carrier/logistics businesses while others were involved in multiple

components of the supply chain (e.g. integrated carrier/trader/marketer businesses);

- National fishing industry associations;
- Pacific Island-based businesses involved in onshore unloading of tuna products (i.e. an alternative to transshipment);
- Pacific Island national level government agencies involved in transshipment (e.g. fisheries agencies, ports authorities); and
- Sub-regional and regional Secretariats with an interest in transshipment (e.g. Pacific Islands Forum Fisheries Agency – FFA; the Parties to the Nauru Agreement Office – PNAO; Western and Central Pacific Fisheries Commission - WCPFC);
- Transshipment observer service providers in both the WCPO and other ocean basins (Indian Ocean Tuna Commission - IOTC; Inter-American Tropical Tuna Commission – IATTC; International Commission for the Conservation of Atlantic Tunas - ICCAT).

Several of the companies interviewed were involved in multiple components of the transshipment supply chain (e.g. fishing, transshipment, trading, processing, marketing).

Interviews were conducted between September 2018 and March 2019. A full list of people and organisations consulted is included at Annex 2.

It should be noted that many of the industry representatives participated in interviews on the basis that, although the information they provided could be used, statements they made would not be specifically attributed to either them or their companies. To that end, information generated from interviews has been anonymised where required.

- **Corporate database searches** – information on the corporate structure, ownership and control of companies involved in transshipment activities was obtained from the commercially available corporate database, Orbis, maintained by Bureau van Dijk (BvD)<sup>1</sup>, a Moody’s Analytics company.
- **Global Fishing Watch** – information on carrier vessel activities was obtained from the Global Fishing Watch (GFW) website<sup>2</sup>. GFW uses Automatic Identification System (AIS) (and available Vessel Monitoring System – VMS) data to track the movements and activities of fishing vessels.
- **Other publicly available information** – information was drawn from a range of other publicly available sources, including:
  - **WCPFC Record of Fishing Vessels (RFV)** – information on the registered carrier and fishing fleets;
  - **WCPFC Annual Part 1 Reports** – information on the fleets and activities of individual WCPFC members;
  - **Independent research**
  - **Public websites** – for example, information on the corporate structure and carrier/fishing fleets of individual companies was drawn from publicly available websites where possible.

Additional data were provided by the Secretariat of the Pacific Community (SPC).

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<sup>1</sup> <https://www.bvdinfo.com/en-gb>

<sup>2</sup> <https://globalfishingwatch.org/>

### 3 History of transshipment

#### 3.1 The development of the conventional reefer fleet

The dynamics of the global carrier fleet is tracked annually by shipping industry analysts Dynamar. The following summary of the history of the development of the conventional carrier fleet and its current state is largely drawn from their most recent analysis (Dynamar, 2018):

Up until the mid-1800s, the only way to preserve food was naturally occurring ice or salt. In higher latitudes, ice was harvested in winter and kept under insulated conditions. Limitations in transport and insulation capacity meant that most fresh food was eaten locally. In the 1870s, chilled beef was first shipped from the US to London using an insulated cargo space cooled by ice loaded on departure, while in the 1880s the first shipment of frozen meat using an ‘ammonia compression machine’ was made from South America to Europe.

The relative success of these early ventures led to an expansion of the refrigerated vessel fleet, such that by 1902 the fleet numbered around 460 ships. While most were exclusively focused on the transport of meat products until that point, from the early 1900s, vessels began to experiment with carrying other products such as bananas.

In the 1960s, the ‘conventional’ reefer ship became the standard. The design of conventional reefer carriers allows for different types of products to be transported simultaneously. Fruit requires a variety of temperature settings, chilled meats and seafood need to be stored at around 0°C, while deep frozen products require temperatures <-25°C. The capacity to transport different products at different temperatures substantially improved the flexibility and profitability of conventional reefers.

Since 1980, around 774 conventional reefer ships have been built, of which 527 are still in service (Figure 1). Most vessels currently in service were built between 1988 and 1994, with another peak in 1998. Very few conventional reefers have been built since 2000.

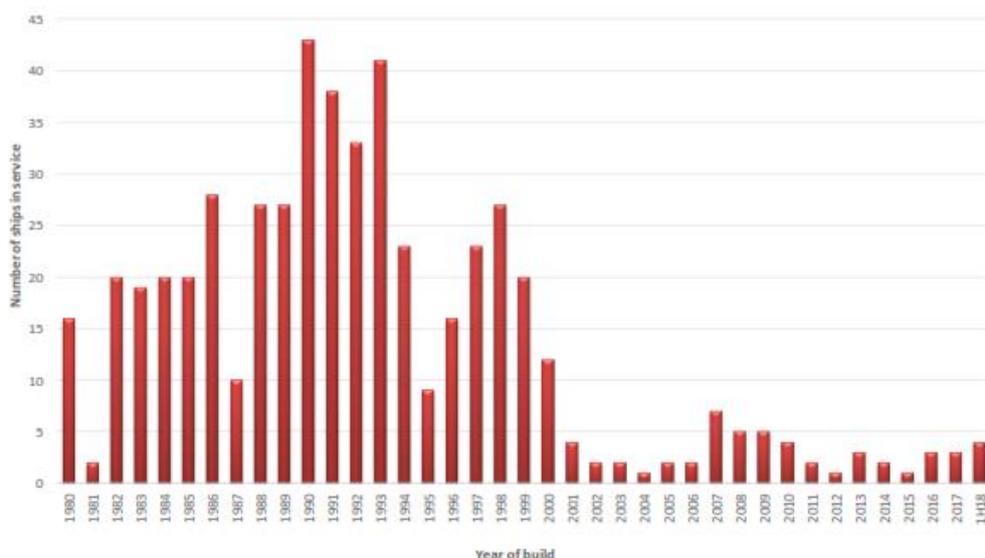


Figure 1: Number of reefers in service globally, by year of build. (Source: Dynamar, 2018)

While the building of new vessels has slowed considerably since 2000, the number of demolitions of existing vessels has increased, such that the overall size of the conventional reefer fleet is declining (Figure 2). Of the vessels built between 1980 and 1990, close to half have been scrapped. The average age of scrapped vessels in recent years has been between 30-42, meaning that many of the remaining vessels built between 1980 and 1995 are also likely to be considered for scrapping shortly.

For context, the median age of ‘fish carriers’ listed on the WCPFC Record of Fishing Vessels (RFV) is 27-28 years, suggesting that at least half the current fleet is coming to the end of their working life.

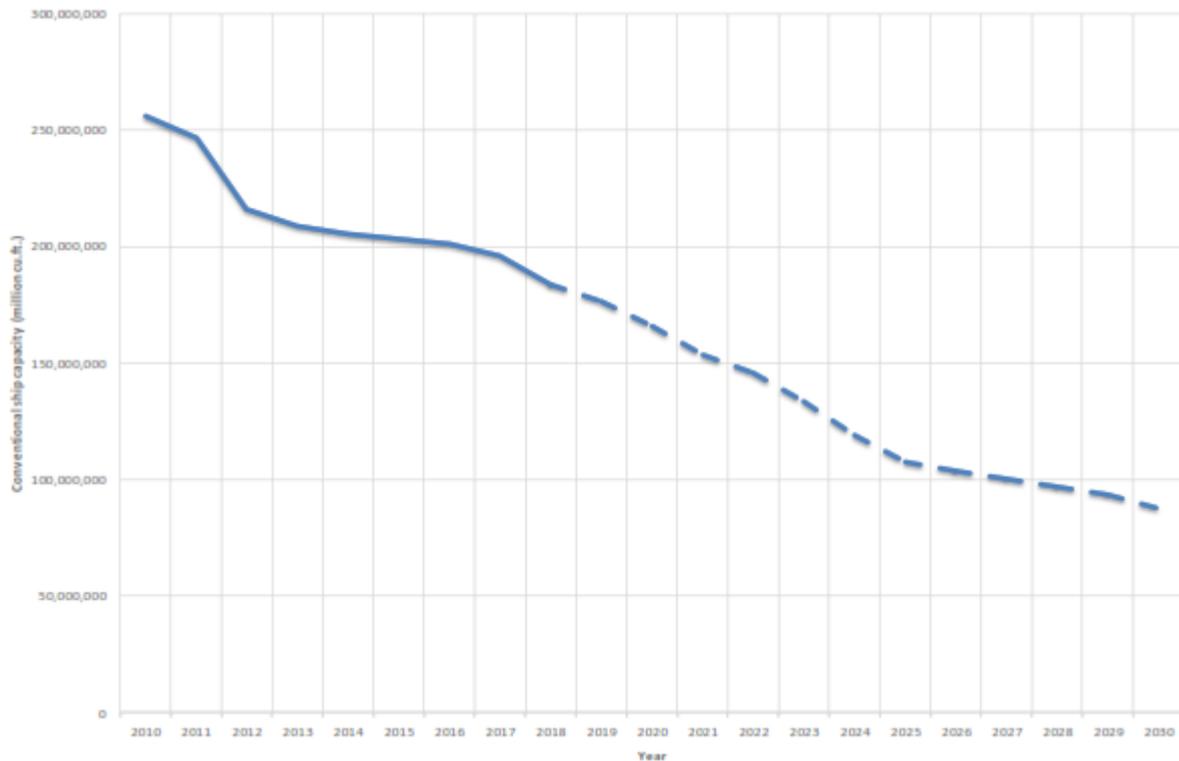


Figure 2: Total volume of the conventional reefer fleet, including projections to 2030. (Source: Dynamar, 2018)

As of mid-2018, 574 conventional reefer ships larger than 100,000 cubic feet (cu.ft.)<sup>3</sup> remain in service globally, with a combined capacity of 183.9 million cu.ft. Around 340 of these were smaller ships (under 300,000 cu.ft.) of the type typically used for carrying fish or meat. Vessels of over 300,000 cu.ft. are primarily deployed for fruit and vegetables. At current rates of building and scrapping, the total volume of the conventional reefer fleet is projected to reduce by more than half by 2030 (to 87.5 million cu.ft.) (Figure 2).

In recent years, a key impact on the conventional reefer vessel market has been the rise in the use of reefer container technology. Originally developed in the late 1960s, reefer containers are equipped with their own cooling unit and can be plugged into the dockside or on-board power supply system. Advances in technology and reduced freight costs compared to conventional reefers has seen the container sector increase its market share considerably since the turn of the century – initially picking up additional growth in volume, but since 2008 eating into the volumes of the conventional reefer sector (Figure 3). In 2017, conventional reefer carriers were estimated to have transported only around 18% of the total seaborne trade of refrigerated foods, down from 50% in 2000.

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<sup>3</sup> Dynamar (2018) use cubic feet as their measure of ship volume. 100 cu.ft. = 1 gross registered ton (GRT). GRT has been superseded by gross tonnage (GT).

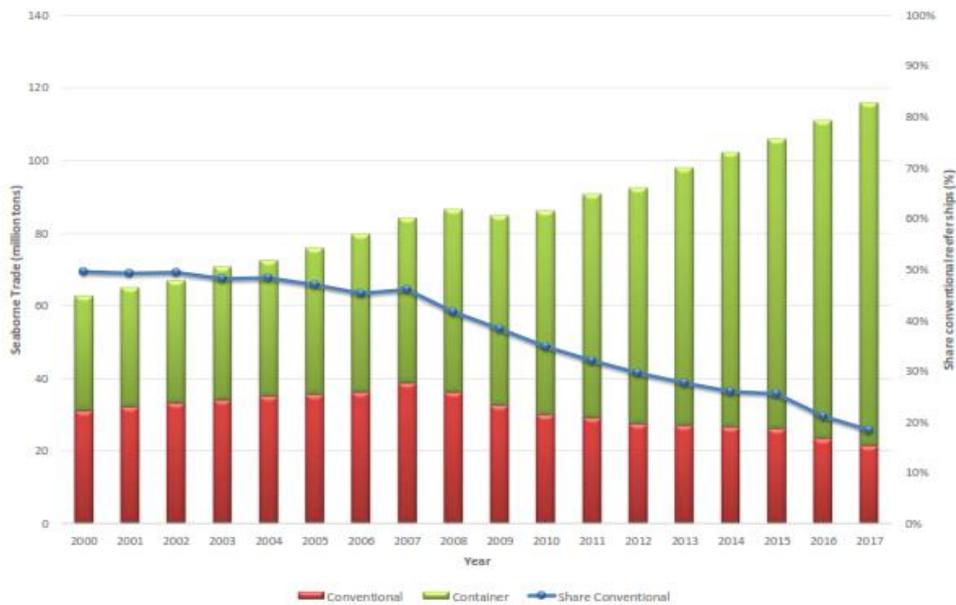


Figure 3: Volumes and market share of conventional vs container reefer transport, 2000 – 2017. (Source: Dynamar, 2018)

### 3.2 History of transshipment in the tuna sector

The history of transshipment in WCPO tuna fisheries does not appear to be well documented to date. McCoy (2012) reports that ‘transshipment’ initially commenced with catch consolidation amongst longliners on a rotational basis. One vessel at a time would receive product from others within a fleet at sea, deliver the product to market and return with bait and other provisions for all. This allowed the bulk of the fleet to continue fishing, maximising fishing days and minimising fuel costs. He notes that the practice evolved into the employment of a vessel as a dedicated carrier, servicing ‘7 or 8 longliners or more during one collection trip’. One operator involved in these early operations noted that transshipment between longline vessels was undertaken twice weekly to coordinate with scheduled air freight services (M. Brownjohn, pers. comm.). All transshipment was done close to the coast, typically after gear was set for the day.

The common recollection amongst most fishing and carrier companies interviewed for this project indicated that transshipment at the industrial scale in the WCPO commenced in the mid-1980s. Several interviewees made the point that the rapid adoption of transshipment was influenced by the very high value of tuna in the 1980s, at the peak of the Japanese economy. The market ‘wanted fish from anywhere’ - for fishing companies, transshipment was a way of allowing fishing vessels to remain on fishing grounds to maximise profits in a bull market, while for trading companies transshipment was an efficient way of securing supply, and ideally beating the competition to fish at the source.

Companies involved in the purse seine fishery noted that US purse seiners were the first to fish in the WCPO, followed by the Japanese fleet. Because the US fleet tended to unload fish in Pago Pago and the Japanese fleet tended to return home to unload, there was limited call for transshipment in the early years. However, with the subsequent entry of the Taiwanese (in the early-mid 1980s) and later Korean fleets (late 1980s) (WCPFC, 2018b), who had limited domestic markets for purse seine tuna and no strong incentive to return home, demand for transshipment increased rapidly. These fleets, together with the Chinese fleet, have been consistent users of transshipment, while the Japanese and US fleets have increasingly used transshipment in recent years.

A number of companies who reported being in the transshipment business ‘from the start’ (e.g. Toei Reefer Line, Itochu, FCF) indicated that, apart from regulatory changes (e.g. banning of at sea transshipment in the purse seine fishery in the early 1990s), the basic practice of transshipment hasn’t

changed substantially over time. Many of the carrier vessels built in the early years of transshipment continue to be active, with the average year of build amongst vessels active in the WCPO in 2017-18 being 1991. Although newer fishing vessels have been designed to maximise efficiencies associated with transshipment (e.g. multiple hatches, booms fore and aft), the basic process of conventional carrier transshipping has not been subject to major evolution.

## 4 Current transshipment dynamics

### 4.1 Overview of the carrier fleet

#### 4.1.1 Authorised carriers

As of March 2019, there were 418 ‘fish carrier’ vessels authorised under the WCPFC RFV<sup>4,5</sup>. Panama has the largest fleet of flagged carriers with 123 vessels, followed by the Philippines with 111 and Japan with 85 (Figure 4). Other key flag states include Korea (31 vessels), Liberia (21), Taiwan (16) and China (12). Seven other flag States have 19 registered vessels between them.

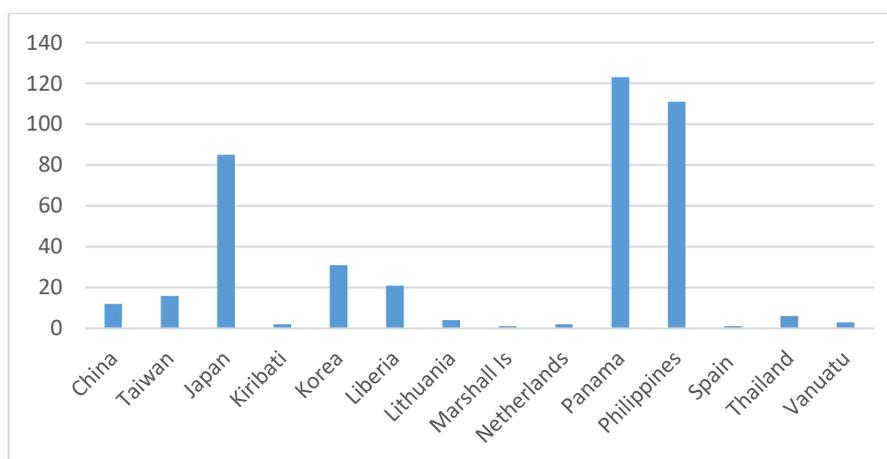


Figure 4: Number of authorised fish carrier vessels on the WCPFC RFV as at March 2019, by flag state.

The average age of all registered carriers is 25 years, with the median age of the fleet being 1991-92<sup>6</sup>. The oldest authorised carrier (a Philippines flagged vessel) was built in 1946, while the newest was the 6,000+ tonne carrier Yachiyo, commissioned by the Mitsubishi Corporation and completed in 2019. Over half the current fleet (52%) were built between 1980 and 1995, with only 17% of carriers built since 2010 (Figure 5). Amongst the main flag States, China’s fleet is the newest with an average age of 2004 (Figure 6). Seven of its 12 flagged vessels have been built since 2014. Taiwan and Thailand have the oldest fleets, with an average year of build at 1978 and 1980 respectively.

<sup>4</sup> <https://www.wcpfc.int/record-fishing-vessel-database>

<sup>5</sup> Note, this figure can’t be compared with the Dyanmar (2018) figure of 574 reefer carriers currently active globally, because Dyanmar only considered carriers >100,000 cubic ft in capacity.

<sup>6</sup> <https://www.wcpfc.int/record-fishing-vessel-database>

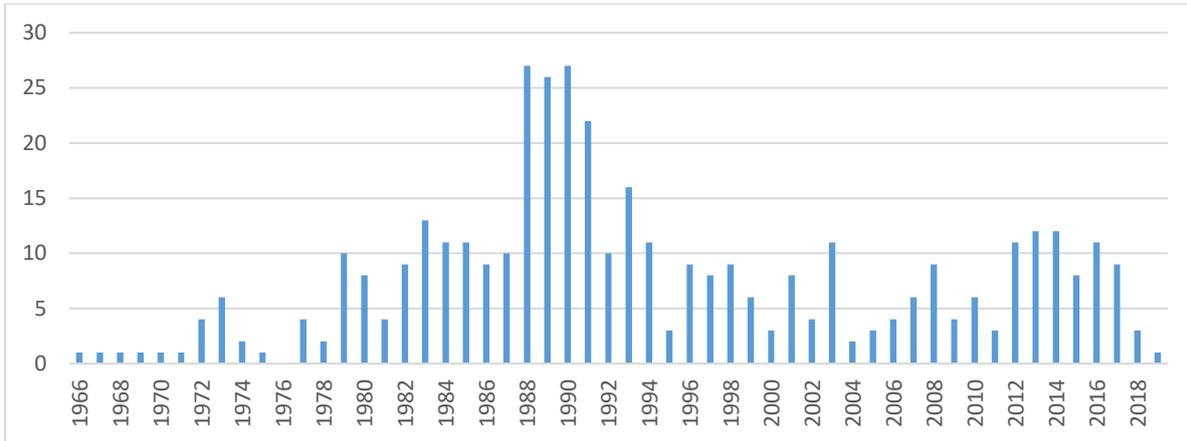


Figure 5: Number of fish carriers on the WCPFC RFV by year of build. Note two carriers are listed as being built before 1966 – one in 1946 and one in 1962, both Philippines flagged.

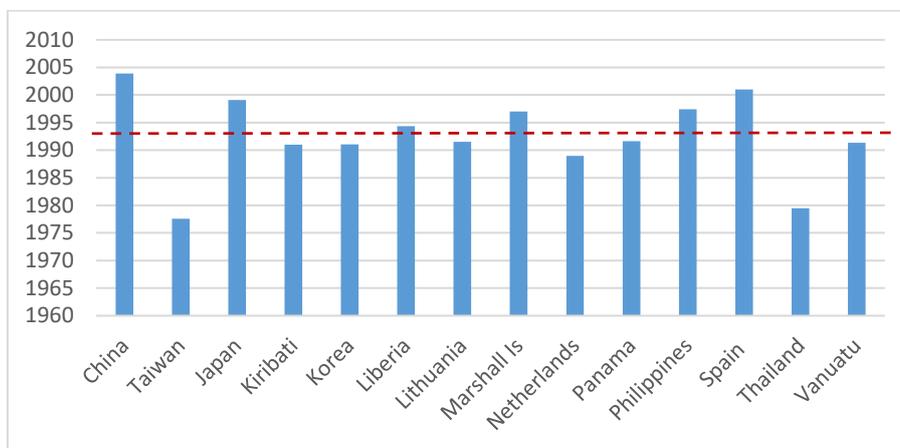


Figure 6: Average year of build for fish carriers on the WCPFC RFV, by flag state. The dotted red line shows average year of build across the full fleet.

Notwithstanding a minor upswing of newer vessel construction since 2010, the overall aging of the carrier fleet servicing the WCPO tuna sector was well-recognised by all interviewees. Representatives from a number of major fishing and carrier companies referred to tuna transshipment as the ‘end of the line’ for reefer carriers, with the pipeline of available carrier vessels getting old. Many noted that ‘new’ vessels coming into the sector tended to be ex-Russian vessels no longer considered economic or suitable for other commodities.

Both carrier owners and charterers observed that the conventional reefer business was being ‘squeezed’ by the growing reefer container trade, with most of the new port-to-port global reefer business being captured by containers. The decline in conventional reefer freight demand and increased competition from containers meant that the economics weren’t sufficiently attractive to justify building new conventional reefers for most general shipping companies.

It is possible that this trend towards a relatively smaller, older reefer fleet has yet to have a substantial influence on the economics and day-to-day business of transshipment in the WCPO (while many interviewees pointed towards the overall trends, none volunteered that it had substantially increased vessel charter prices etc), although the extent to which that will continue is not clear. With over half the fleet either at, or approaching, the age where they will be considered for scrapping, and limited new constructions, the availability of conventional reefer volumes appears far less certain over the coming decade than the previous one.

Amongst the main flag State carrier fleets, average size varies markedly, largely reflecting the function of vessels within the fishing operation/supply chain (Figure 7). Japan and the Philippines

have the smallest sized fish carriers. In Japan’s case, these vessels tend to operate within Japan’s EEZ, servicing the coastal Japanese fishing vessels (Toei Reefer Line representative, pers. comm.). Very few have authorisation to tranship on the high seas. In the Philippines’ case, many of these smaller vessels operate as part of group seine operations, receiving catch and returning it to market.

At the other end of the spectrum, Liberia and Panama have the largest average sized vessels, with Liberian vessels more than double the average tonnage across the full fleet. These vessels, along with Korean, Chinese and Taiwanese vessels, tend to be conventional reefer carriers of the type involved in in-port purse seine and at sea longline transshipments in the WCPO. There is no functional distinction in the RFV identifying which carriers are actively involved in transshipping ULT sashimi tuna versus those involved in cannery grade tuna.

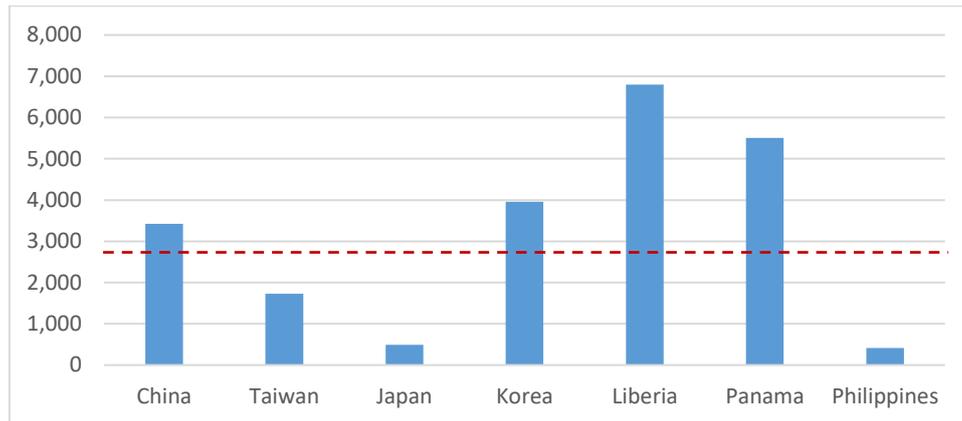


Figure 7: Average size (in GT) of carrier vessels on the WCPFC RFV, for the main flag States<sup>7</sup>. The dotted red line shows average size across the full fleet.

Of the main flag State carrier fleets, China, Liberia, Panama and Taiwan have the highest rates of high seas transshipment authorisation (Figure 8). China authorises all of their vessels to tranship on the high seas, while Liberia, Panama and Taiwan authorise between 85% and 95% of carrier vessels. Korea authorises slightly more than half of its fleet, while Japan and the Philippines authorise very few vessels. Notwithstanding that, the individual license conditions for many Philippines-flagged carriers authorise transshipment in High Seas Pocket 1 (HSP1)<sup>8</sup>.

<sup>7</sup> Note that comparing the sizes of vessels on the RFV is complicated by the use of both gross tonnage (GT) and gross registered tonnage (GRT). Because of the way they are measured, GT is always smaller than GRT for the same vessel. GRT was replaced as a measure by GT in 1982 under the International Convention on Tonnage Measurement of Ships, 1969 (London-Rules).

<sup>8</sup> <https://www.wcpfc.int/record-fishing-vessel-database>

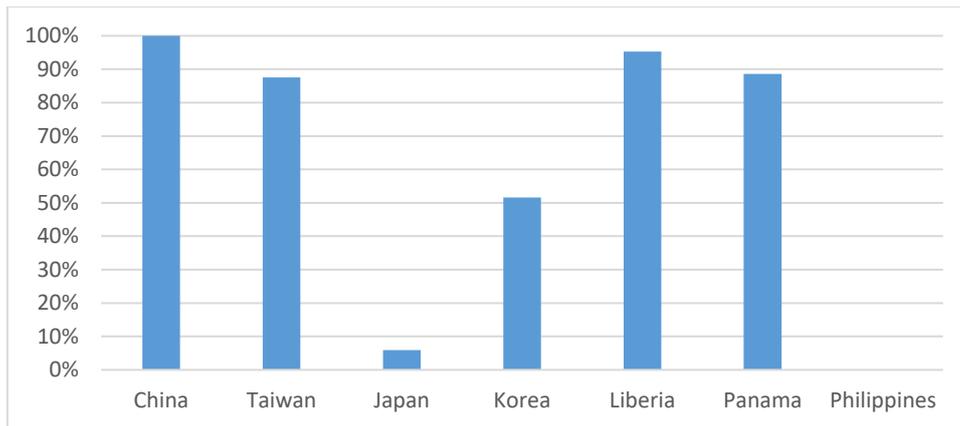


Figure 8: Proportion of fleet authorised to undertake high seas transshipments, by main flag State.

#### 4.1.2 Active carriers

Within the list of registered carriers, not all carriers are active in the WCPO in any one year. Those carriers that do receive product are well known to regulatory agencies (e.g. through FFA/SPC purse seine logbooks which require details of the transhipment receiving vessel, and WCPFC high seas longline transhipment declarations), however a list of active carriers is not routinely made public. In recent years, WCPFC members have been asked to provide an indication of whether each of their flag vessels ‘fished/did not fish’ in that year, with the most recent information available at the time of writing covering the period until 2017 (released in March, 2019)<sup>9</sup>.

To get an indication of vessels active in the most recent calendar year (2018), and to examine the likely robustness of flag State ‘fished/did not fish’ reporting, we compiled an independent list of carriers known, or likely to be, active in the WCPO in 2017 and 2018. Because the overwhelming majority of smaller fish carriers on the RFV are Japanese and Philippines flagged and operate within EEZs, we focused only on vessels larger than 1,000 GT/GRT. Broadly, we used three main approaches to compile the list:

- Officials from key port states in the WCPO were asked to provide lists of fish carrier vessels that had transhipped within their ports in 2017-18. Comprehensive lists were received for Majuro, Pohnpei, Tarawa and Funafuti ports. Collectively, these ports were responsible for ~75% of purse seine transshipments in the period 2015-2017 (Figure 14) (and may cover a larger proportion of the active vessels – carriers visiting these ports are also likely to visit other key transhipment ports – e.g. Rabaul, Pago Pago). This was used as the base list;
- For all vessels (>1,000t) which were not recorded as visiting one of the four major ports above, we examined their tracks for the 2017-18 period using AIS data compiled by Global Fishing Watch<sup>10</sup> (GFW). Vessels which called at key transhipment ports, or displayed activity on the high seas in the WCPO consistent with transhipping, were added to the active list. Vessels which were clearly operational in other ocean basins only, or otherwise inactive, were considered inactive in the WCPO;
- For a range of vessels, AIS data was not available through GFW. For these vessels, we examined vessel movements for the 12 month period March ’18 to March ’19 using AIS

<sup>9</sup> <https://www.wcpfc.int/doc/historical-record-fishing-vessels-rfv-data>

<sup>10</sup> [www.globalfishingwatch.org](http://www.globalfishingwatch.org)

data available through the Marine Traffic website<sup>11</sup>. Vessels were categorised as active or inactive using the same process as for GFW.

These data were supplemented with information received through alternative sources (e.g. consultations with fishing/carrier companies) to compile a final list (Annex 3).

In general, there was very good overlap between our list of active carriers and the 'fished' list provided by CCMs for 2017. Of the 232 carriers on the RFV >1,000 GT in March 2019, we estimated 137 were active in transshipping fish from the WCPO in 2017-18. The WCPFC 'fished/did not fish' list reported that 143 carriers 'fished' in 2017. The main discrepancy was around Panamanian flagged vessels, for which the number of active carriers appeared to overstated. An example of one Panamanian vessel, Ibuki (a sashimi grade ULT carrier, operated by Mitsubishi subsidiary MRS), is shown in Figure 9 below. The vessel is listed as 'fishing' in 2017 on the WCPFC Active Vessel list, but appears to have operated only in the Indian and Atlantic Oceans. Nevertheless, notwithstanding a few isolated examples, the accuracy of the 'fished/did not fish' advice by CCMs appears to be high.

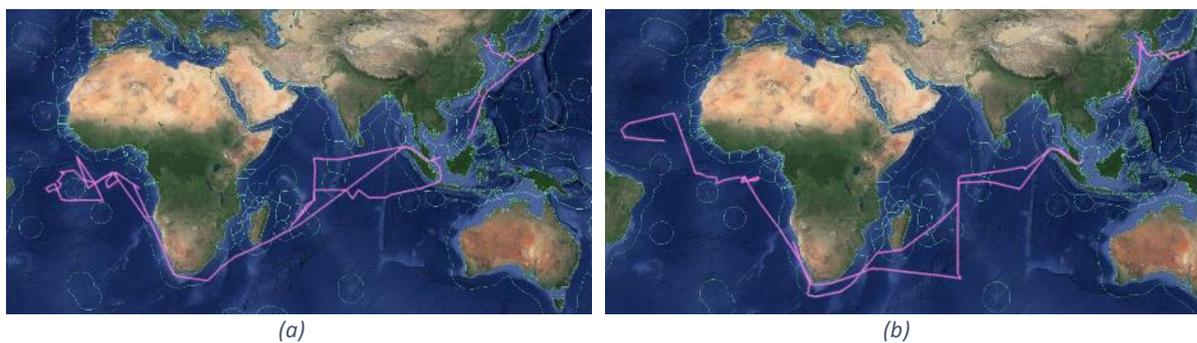


Figure 9: Vessel tracks for the Panamanian flagged carrier, Ibuki, from (a) January to June, 2017 and (b) July to December 2017. (Source: Global Fishing Watch)

For the purposes of the analysis below, we have used our 2017-18 active vessel list (largely because it covers a more recent period), but the figures would be similar if the WCPFC Active Vessel list was used.

Of the 137 carriers >1,000GT we estimated to be active in 2017-18, over half (75, 55%) were flagged to Panama (Figure 10). The 75 active carriers were listed as being owned by 57 different companies, albeit many of these were managed through larger carrier 'pools' (see 'key companies' below) and it is likely many of the individual companies have common beneficial ownership. Of the active Panamanian-flagged vessels, the largest fleet owned by a single listed company was the Habitat International Corp. (connected via common ownership to the Shandong Zhonglu group) fleet with four vessels.

Of the remaining fleets, Korea had the next highest number of active vessels with 27 (20%) (owned by only 7 companies), followed by the Philippines (14 vessels, 10%) and China (9 vessels, 7%). Only three of Liberia's 21 registered carriers were active in 2017-18 – each of which is involved in high seas longline transshipments for sashimi grade fish. All of these vessels are controlled by Japanese companies – two by Hayama Shipping and one by Toei Reefer Line. None of the vessels flagged to Thailand, Lithuania or Spain were active.

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<sup>11</sup> [www.marinetraffic.com](http://www.marinetraffic.com)

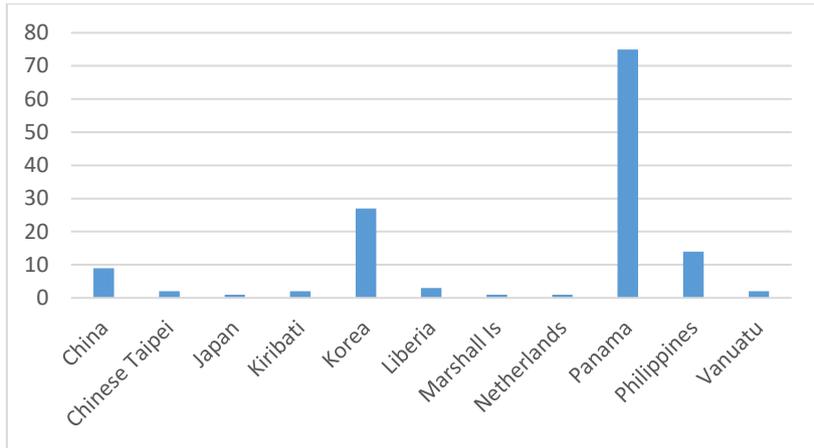


Figure 10: Numbers of active carriers by flag, 2017-18

Of the active carriers >1,000GT, the average size was 4,008GT. The largest vessels were the Panamanian flagged Atmoda, owned by Naval Magnum S.A. and Hai Feng 678, owned Mexon Shipping Ltd, both at 12,413GRT. The Philippines fleet had the smallest average size at 1,886GT. Of the other main fleets, the Korean fleet average was slightly below the fleet average at 3,935GT, the Chinese fleet was around the fleet average (4,034GT), while the Panamanian fleet was slightly larger than the fleet average at 4,500GT.

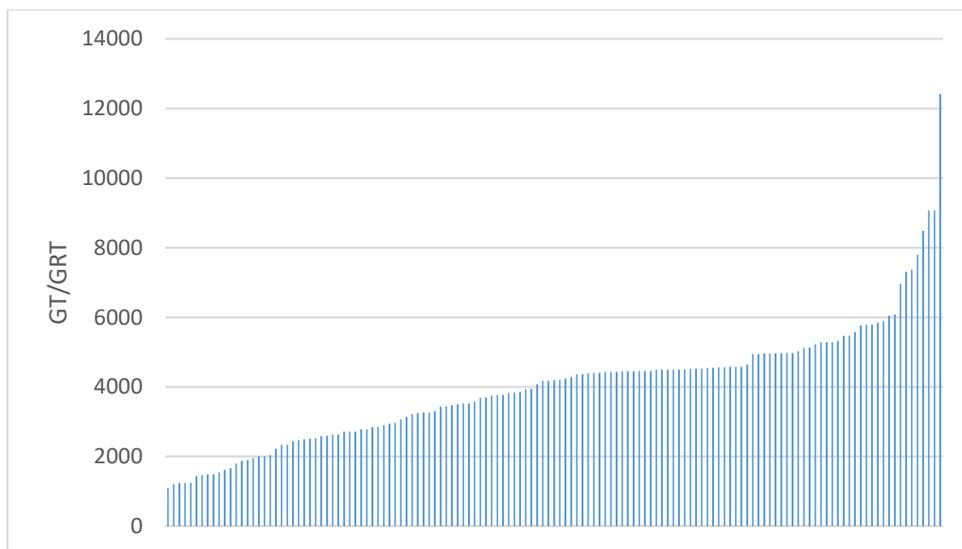


Figure 11: Size profile (in GT/GRT) of carriers >1,000GT that were active in the WCPO in 2017-18.

The average age of active carriers >1,000GT was 27-28 years, with average year of build being 1990 (Figure 12). Around 65% of active vessels were built in 1991 or before, meaning the many are approaching the age when owners would consider scrapping them (Dynamar, 2018). Only around 12% of active vessels were built in 2000 or later. The Chinese fleet was the newest on average, with an average build year of 2009. Seven of their nine active vessels were built in 2014 or later. The Philippines fleet was the oldest on average with an average build year of 1979. Both Panamanian and Korean fleets had average build years of 1990.

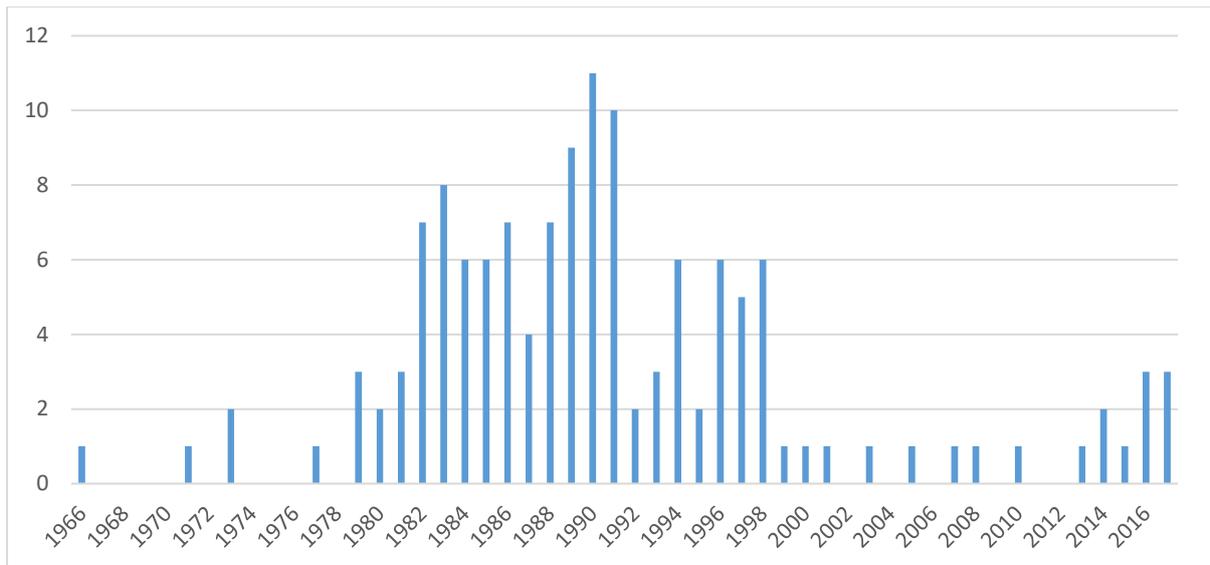


Figure 12: Year of build for carriers active in the WCPO in 2017-18.

Of the 137 active carriers >1,000GT, 98 were authorised by their flag State to tranship on the high seas. All of the vessels flagged by China, Taiwan, Japan, Liberia and Vanuatu were authorised. None of the vessels flagged to the Philippines were authorised generally, although they may be authorised to tranship in HSP1. All but three of the 75 Panamanian flagged vessels were authorised, with a further three of unclear status. Only 12 of the 27 Korean flagged active carriers vessels were authorised.

#### 4.1.3 Ownership and operational models in the carrier sector

Ownership and operational control arrangements for carriers involved in tuna transshipment in the WCPO are dynamic and varied, but can broadly be categorised into three main types. The key features of each are discussed below.

##### 4.1.3.1 Charterer model

The charterer model is perhaps the most common operational model in the WCPO carrier sector, likely to account for around two-thirds of carrier activity in recent years. Under this model a chartering company leases a carrier vessel, owned and crewed by an independent owner. Two basic modes of charter are available – a time charter, under which the charterer leases the full carrier for a defined period of time (e.g. one year) and a voyage/space (or ‘spot’) charter, under which the charterer ‘buys’ space on a carrier for a voyage at a time (Box 1). Both types of charter are typically arranged through a shipping broker, usually independent of both the charterer and ship owner.

Under the charterer model, the chartering company exercises control over the day-to-day operation of the vessel (e.g. much in the same way as a person hiring a car chooses where it travels), while the owning company typically provides a basic crew to undertake normal operation. Payment terms vary by chartering model – for example, under a time charter the chartering party typically pays vessel hire costs, port costs, fuel and special duty fees to crew (the carrier company pays normal crew wages, but the charterer will pay crew for extra duties relating to fish – e.g. stevedoring of fisheries products), while the shipping company will pay for basic crew costs, licenses and maintenance.

Crew with specialised training in fish handling can be arranged with the shipping company, while the charterer also usually has one or more of their own staff on board. In general, the charterer is responsible for any fisheries compliance requirements (e.g. submission of transshipment reports, Mate’s receipts), while the ship owner remains responsible for compliance with shipping regulations.

Interviews with carrier charterers in the WCPO indicated they had little if any contact with either the ship owner or flag State authorities. Contact required with the owner was typically undertaken through the broker, with the ship owner undertaking most liaison with flag State authorities.

The chartering model is the one favoured by each of the three main purse seine tuna traders in the WCPO (FCF, Tri Marine, Itochu), as well as some of the ULT longline carrier operators where additional short term capacity is necessary. The main benefit of chartering (versus owning) is the flexibility involved – there is no upfront capital investment and ongoing capital risk, and the number of vessels chartered can be increased or decreased flexibly to match market demand. The main purse seine trading companies each made the point that their primary expertise was in tuna trading, not shipping, which requires its own set of skills and infrastructure. Chartering allows the hiring in of those skills on a flexible basis. The downside is that the charterer is at the mercy of availability and price fluctuations on the global reefer market. Many charterers have reduced this risk to some extent by having long term relationships over some carriers.

The price paid for carriers is negotiated between the charterer and the owner, through the broker. Advice on the key factors influencing price and availability of carrier charters was mixed. One large charterer indicated that, in addition to the general trends around the contraction and aging of the conventional reefer carrier fleet, competition for reefer space with other agricultural commodities (e.g. fruit, vegetables, meat) was a key factor influencing price and availability. In particular, they noted that in the southern hemisphere summer, when there was strong demand to transport fruits and vegetables from southern hemisphere growing locations to northern hemisphere markets, competition for reefer space reduces availability for tuna transshipments and increases price in the spot market. Other charterers indicated that the carriers typically used for tuna and seafood transport were not suitable for other agricultural products, hence they observed little competition with the broader agricultural market.

In addition to the three main participants in the charterer model (i.e. charterer, broker, ship owner), some vessels may also be under the control of an independent ship operator, hired by the owner to operate the vessel (e.g. arrange crew, deal with day-to-day shipping regulatory compliance, etc).

In recent years, charterers (particularly those trading purse seine fish) have reported a preference for chartering vessels from flag States with Competent Authorities (CA) for the purposes of the EU IUU Regulation, and with EU phyto-sanitary approval. A number of interviewees indicated that the preference for flag States with EU CAs has led to shift away from chartering from some flag States (e.g. Liberia) which don't have CAs to those that do (e.g. Panama).

#### **Box 1: Some basic chartering terms**

Two basic types of chartering arrangement are available to prospective hirers of carrier vessels: (i) a time charter or (ii) a voyage or 'spot' charter (also known as a 'space' charter).

A **time charter** is the hiring of a vessel for a specific period of time; the owner still manages the vessel, but the charterer selects the ports and directs the vessel where to go. The charterer pays for voyage expenses including fuel costs, port charges, commissions, and a set daily rate to the owner of the vessel. Owners are responsible for paying vessel operating expenses (e.g. crewing). In tuna transshipment, time charters are typically used by charterers (e.g. tuna traders) to service a consistent 'base' level of demand.

A **voyage charter** is the hiring of a vessel and crew for a voyage between a load port and a discharge port. The charterer typically pays the vessel owner on a per-ton or lump-sum basis. The owner pays the port costs (excluding stevedoring), fuel costs and crew costs. The payment for the use of the vessel is known as freight. In tuna transshipment, voyage charters are used to adjust capacity to meet changes in demand – e.g. a carrier may be voyage chartered to meet a temporary surge in demand.

Voyage charters typically specify a period, known as **laytime**, for loading and unloading the cargo. If laytime is exceeded, the charterer must pay **demurrage**. Demurrage is a form of liquidated damages for breaching the laytime – i.e. a payment required where a vessel is prevented from loading or discharging cargo such that the laytime is exceeded. The opposite of demurrage is **despatch**, where laytime is saved. If time is saved in loading/unloading, the charter contract may require the shipowner to pay despatch to the charterer.

The economics of demurrage and despatch are particularly important for spot charters which take place for shorter periods (and are therefore more exposed to delays at either end).

#### 4.1.3.2 *Integrated fishing-carrier companies*

In addition to companies chartering independently owned carriers, a number of fishing companies own and operate their own carriers as part of an integrated supply chain. These companies tend to be larger, with a sufficient critical mass of catching vessels to justify their own carrier. Many also have interests in post-harvest processing facilities and use carriers as component of an integrated supply chain. Examples of integrated fishing-carrier companies include Dongwon, Shanghai Kaichuang Marine International Co. Ltd. (“Shanghai Kaichuang”), Ping Tai Rong, Ningbo Yongfa Ocean Fisheries Co Ltd, Shandong Zhonglu Oceanic Fisheries Company Limited, Fair Well Fishing, Koo’s, the RD Group and the Frabelle Group (see section 4.2.3).

Under this model, most interviewees noted that carriers would source from their own company’s fishing boats preferentially, but not exclusively. Both carriers and fishing vessels would ultimately act to optimise profits based on the circumstances at the time – e.g. fishing vessels will preferentially unload to their own company’s carriers vessels, but will also sell to tuna traders if it makes greater commercial sense (e.g. their own company’s carrier is not in a convenient location); carriers will preferentially source from their own company’s fishing vessels, but would also source from other company’s vessels (if, for example, their own vessels were not ready to unload).

Although several older carriers are owned by companies operating under this model, our observation is that many of the newer carriers commissioned in the past decade have been commissioned by integrated fishing-carrier companies (i.e. traditional reefer carrier businesses have not been able to justify investments in new vessels given competition from container vessels and uncertainty over future demand, but integrated fishing-carrier businesses can ‘guarantee’ demand which makes investing in new vessels easier). For example, both of Ping Tai Rong’s two carriers (Ping Tai Rong Leng I and II) were built in 2017 while Shanghai Kaichuang’s two carriers (Kaichuang 101 and 102) were built in 2016.

#### 4.1.3.3 *Logistics service providers*

Under the logistics service provider model, carriers are owned and operated by companies whose primary expertise is in shipping and logistics and their main interest is in providing a commercial service to transport fish from the fishing grounds to processing facilities or to market. These companies tend to have no interest in fishing vessels – they’ve come into the tuna transshipment business from the ‘shipping end’, not the ‘fishing end’. This model is arguably more common in the longline sector with specialised carriers operating ultra-low temperature (ULT) freezing equipment. Examples of companies operating under this model are Toei Reefer Line Ltd and Hayama Shipping Ltd in Japan and SEoL Agency Co. Ltd and Green World Co. Ltd in Korea.

The commercial arrangements under this model are relatively straightforward, with a fee for service charged for the transportation of fish. The fee is paid by the owner of the fish, usually the fishing company who has arranged for the carrier to deliver their fish to market. The fee is determined by a combination of the volume of fish and the distance to the destination – the greater the volume of

fish and further the destination, the higher the price. This model is typically used by Korean, Taiwanese and Chinese high seas longline fleets to transport fish to market.

Logistics service providers may assist in delivering provisions to fishing vessels at sea (e.g. bait, salt, gear, food), but are rarely involved in the trading of the fish themselves. Some of the companies also offer bunkering services (e.g. Toei Reefer Line).

#### 4.1.3.4 *Other models*

In addition to the main models above, a number of other carriers are operated under company-specific arrangements. For example, Mitsubishi (the world's largest trader of sashimi grade tuna; Campling et al, 2017) operates a fleet of seven ULT-capable carriers under what might be called a 'trader-processor-carrier' model. Under this model, Mitsubishi (through its subsidiary MRS Corporation) operates carriers as a means of securing supply and transporting fish for its main tuna trading and processing company Toyo Reizo Co. Ltd. ('Torei')<sup>12</sup>. Although Torei and MRS are operated independently (e.g. Torei buys fish from other carriers/fishing companies; MRS also carries other companies' fish), they do coordinate and MRS carriers are an important part of an integrated supply chain. Six of Mitsubishi's seven vessels are listed on the RFV. In another case, carrier vessels may be chartered by processing operations to supply raw material – for example, Kiribati Fish Limited (KFL), a processing facility operating in Tarawa – reportedly charters carriers to supply the factory (MFMRD, 2018).

#### 4.1.3.5 *Why are carrier vessels owned or chartered?*

As discussed above, for those companies chartering carriers the key factor driving the choice to charter rather than own was flexibility. Chartering involves no upfront and ongoing capital investment and the number of carriers chartered can be increased or decreased relatively flexibly with changes in demand. A number of charterers also noted that they 'weren't shipping companies' – they're primary expertise was in tuna trading or fishing and they wanted to stick to their core business. Owning carriers brings with it a requirement to have a range of in-house support functions (engineering, crewing, maintenance, detailed knowledge of shipping regulations and compliance, etc) which they preferred were handled by specialist shipping companies.

Charterers also made the point that fish often have to be delivered to ports distant from the fishing grounds. It's not efficient to bring the vessel back empty, so the capacity to charter carriers on a voyage basis means there's no requirement to spend time arranging for back-loading opportunities.

Companies owning carriers tend to fit into one of the operational models described above – either they're a specialist shipping company who has chartered their carrier on the open market, they operate the carrier themselves as a logistics provider, or they're an integrated fishing-carrier business who see commercial logic in having access to a dedicated carrier. Many of the latter group are larger businesses with interest in post-harvest processing facilities (e.g. Dongwon, Shanghai Kaichuang, the RD Group), so owning a is a way of controlling supply of raw material.

Our observation is that integrated fishing-carrier businesses tend to be more common in businesses owning purse seine vessels rather than specialist longline businesses. The reasons for that were not specifically discussed with companies, but presumably relate to the volumes involved, the specialist nature of sashimi grade ULT carriers and the relative profitability and risk associated with both sectors (sectors with higher profitability and less risk will make justifying purchasing or building a dedicated carrier easier).

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<sup>12</sup> Interviews with Mitsubishi Corporation representatives

#### 4.1.3.6 *Why are carrier vessels flagged to the States they are?*

The ownership and registration arrangements for carrier vessels are often deliberately opaque, particularly for companies who charter their carriers on the open market. True beneficial ownership is often hidden behind several layers of shell companies, registered in States that ‘value discretion’.

Over time, there has been an increasing movement towards registering reefer carriers (and other ships) with flag States operating open registries, or so called ‘flag of convenience’ (FOC) states. Of the 418 fish carriers registered on the RFV in March 2019, 148 (35%) were registered to FOC states (mainly Panama and Liberia). This number increases markedly when only the larger carriers are considered – of the 232 carriers >1000GT, 147 (63%) are registered to FOC States<sup>13</sup>.

Interviewees noted that the key factors driving the trend towards FOC states were favourable tax arrangements, discretion around company ownership and low compliance costs. Many interviewees made the point that many reefers are getting older and less efficient – as a result, there is economic pressure to re-flag to lower cost countries to be able to maintain viability and maximise profits.

The WCPFC RFV Active Vessel record<sup>14</sup> provides an interesting historical record of such movements. For example, in 2011, Taiho Maru, a 3,858GT carrier owned by Panamanian registered company Princess Line S.A., but operated by Hayama Shipping (a Japanese company involved in high seas longline transshipments<sup>15</sup>), was flagged to Japan. In 2012, the carrier was reflagged to Vanuatu and remained there until 2015 before it was reflagged again to Liberia in 2016, to which it remains flagged.

In recent years, the presence of an approved EU Competent Authority (CA) has also emerged as an important consideration in the choice of flag State, at least in the canning grade transshipment sector. A number of carrier owners and charterers made the point that given the importance of the EU market for canned tuna, leaving open the option for marketing the tuna in the EU was an important economic consideration. This in turn required EU approval for the carrier and makes States with EU CAs (e.g. Panama) more attractive than those that don’t (e.g. Liberia) (i.e. all other things being equal, tuna traders for example would prefer to charter a carrier flagged to a State with an EU CA). It’s possible the lack of a EU CA has influenced the reflagging of a number of vessels away from Pacific Island countries (PICs) in recent years (e.g. Lake Success reflagged from RMI to Korea in 2014; No. 1 Pohah, No. 2 Pohah and Khana reflagged from RMI to Panama in 2014; Saltlake reflagged from RMI to Korea in 2013; Syota Maru reflagged from Kiribati to Panama in 2015). In Kiribati’s case, this may be neutralised now that Kiribati has a CA<sup>16</sup>.

Importantly, the incentives for flagging carriers to States with EU CAs are likely to be weaker in the ULT sashimi grade carrier sector where the main market is Japan (or elsewhere in east Asia/US).

For carrier owners whose vessels are involved in the transshipment of seafood products, particularly those operating on the high seas, ensuring the flag State is a member of relevant RFMOs is another key driver of flagging options. Flagging to FOCs that are not members of the key RFMOs would substantially limit the ‘charterability’ of a vessel on the global market.

In addition, flag State crewing and broader maritime regulations may influence some flagging decisions. For example, one large Japanese company involved in transshipments of sashimi grade fish advised that all officers on Japanese flagged vessels must have relevant Japanese accreditations.

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<sup>13</sup> Of the 186 carriers <1000t, 178 (96%) were registered to either Japan or the Philippines.

<sup>14</sup> <https://www.wcpfc.int/doc/historical-record-fishing-vessels-rfv-data>

<sup>15</sup> <http://www.hayamaship.co.jp/businessE.html>

<sup>16</sup> <https://www.ffa.int/node/1957>

Because they can't source enough officers with the relevant accreditations, it is easier to flag vessels to FOC countries. Similarly, another Japanese company advised that Japanese flagged carrier vessels require at least six Japanese crew on board – this was often hard to achieve, so vessel owners preferred to flag to FOC countries.

Finally, for some companies, legacy issues may drive flagging preference. For example, one Korean carrier company interviewed was previously involved in the 'Alaska run' from Korea to Alaska. Their perception was that US authorities were very welcoming of Korean flagged vessels, but gave Panamanian and other 'open registry' vessels a much higher degree of scrutiny. To that end, the Korean flag was of value and the company simply hasn't seen the value in changing.

#### *4.1.3.7 What are the key factors influencing profitability of carrier trips?*

The factors affecting the profitability of a carrier trip were broadly the same across both longline and purse seine sectors, as well as between operators. The overwhelmingly dominant driver of profitability across both sectors was the time taken to fill up and unload – trips in which the vessel steamed directly the point of loading, filled up quickly and returned to market to unload had the best chance of making money (because operational costs associated with the trip – fuel, port fees etc are minimised); trips in which the vessel was required to steam to multiple destinations to fill up and/or remain in port for lengthy periods, had a higher chance of losing money (because operational costs are higher). In the purse seine sector, the ideal trip is one in which the carrier steams to a port with a sufficient number of vessels waiting to unload, fills up completely with no downtime, returns directly to the market port and offloads quickly. For high seas longline transshipments, it means steaming directly to a location with a concentration of vessels waiting to be unloaded, having the vessels steam to you (rather than operating a 'taxi service' amongst dispersed vessels as one carrier company put it), filling up quickly and returning to port.

One large carrier charterer in the purse seine sector estimated that each day lost sitting in port was worth roughly \$2.50/t on whole cargo (i.e. for a 4,000t trip, \$10k/day), so the 'economics of the whole operation depends on loading and unloading times'. Time can be lost at the fishing end - e.g. if another trader beats you to the fish, or the fishing slows down – or the unloading end – e.g. if offloading is slow and the trader has to bear the cost of demurrage. To that end, given competition amongst traders is high and margins can be low, carrier operators/charterers (e.g. tuna traders, logistics service providers) work in very close cooperation with prospective fishing vessels in the planning of trips (see 'fleet organisation' below) and must make careful judgements about whether sending a carrier is economically justified.

In addition to the basic need to minimise loading and unloading times as well as fuel usage, a number of other factors were cited as potentially influencing the economics of carrier trips:

- fluctuations in fuel price – short term fluctuations may not be able to be fully accommodated in freight charges;
- competition from other traders – other traders may beat you to the fish;
- transshipment location – all other things being equal, for companies delivering fish to east Asian ports, transshipments in the western WCPO will require fewer operational costs; transshipments in the far east or EPO require higher operational costs. Where these are not able to be passed on to customers, location can influence margins;
- charter price – some charterers reported strong seasonal fluctuation in the spot market price, but others reported limited fluctuation. Overall, most charterers noted that the aging of the carrier fleet combined with competition from cheaper container freight rates had kept a lid on reefer charter rates over the past decade;
- changes in vessel numbers – a number of longline carrier companies reported that fewer longline vessels over the last 15 years meant fewer trips, and also influenced the

economics of individual trips – e.g. fewer vessels meant it was harder to get a critical mass to fill up quickly; and

- competition from containers – a number of carrier operators indicated that increased competition from cheaper container freight rates had squeezed margins.

### **Box 2: Carriers Vs containers**

A key question for the overall shape of the transshipment ‘business ecosystem’ in the WCPO in coming years is the extent to which improving container technology and services will eat into the market share of conventional carriers.

The majority of fishing companies, traders and carrier operators interviewed for this study reported that containers had relatively little influence on the market to date, apart from squeezing margins from the ‘old’ carrier business. Most thought that carriers would continue to be the dominant method of transporting fish to market for the ‘foreseeable future’.

The most common reasons given for this view were that:

- loading of containers was too ‘fiddly’ and time consuming – in the purse seine sector, unloading to conventional carrier typically took 3-4 days, while unloading to container typically took 6-7 days. Given limited wharf space in many Pacific Islands, some interviewees also noted that fishing vessels unloading to containers would often be ‘kicked off’ wharves to allow higher priority container ships to unload. Ultimately companies saw this as a loss of fishing days and ‘time is money’;
- container facilities and logistical support are very limited in most Pacific Islands at present;
- the slower nature of loading containers also presented risks to the cold chain and some companies reported having problems with reliability of containers, leading to rejection of fish at market;
- scheduling is a problem in Pacific islands – because volumes are very small, there is uncertainty about when fish can be delivered to market (by contrast, dedicated conventional carriers are a direct ‘door to door’ service). The lack of ‘backfilling’ opportunities would also undermine the economics of container carriers.

Two of the companies involved in providing high seas longline carrier services said containers had had very little impact on the high seas transshipment business to date, noting that containers were ‘only competition if vessels came to port’.

Nevertheless, a smaller number of fisher/trader interviewees were more optimistic about the potential growth of the container trade (particularly in the context of the gradual global decline in the conventional carrier fleet). In particular, these interviewees noted that:

- container transport was cheaper than conventional carriers – one trader advised that a container could be sent to Asia from the Pacific Islands for around US\$60-70/t cheaper than conventional reefer freight;
- containers gave the option of grading fish and optimising returns – e.g. from a mixed purse seine catch, larger yellowfin could be graded out and sent to Korea/US, larger skipjack could be sent to Bangkok, while smaller skipjack could be sent to Vietnam and rejects discarded; and

- container technology and loading facilities were improving continuously ('pre-cooled' containers; 'star' loaders), meaning faster loading and better mitigating cold chain risks<sup>17</sup>.

One large trader noted the growth of container transport in the WCPO 'wouldn't be a tsunami, but it will certainly grow'.

One Taiwanese fishing company involved in high seas longline activity noted they would be happy to consider using containers in Pacific Islands if facilities existed, but they would also need to have better support services (e.g. fuel, bait, food, etc); offloading wasn't just about getting fish to market – it is important to have a comprehensive set of services.

Amongst the Pacific Islands, a number of national agencies saw the future as containers. For example, the RMI Ports Authority noted the conventional carrier fleet was getting old, with some vessels unable to meet port standards. They are keen to encourage more transshipment in Majuro and are positioning the port to handle increased container traffic from purse seine vessels as part of a redevelopment. Likewise, Nauru is currently exploring options to encourage unloading to containers as part of a major port development<sup>18</sup>.

A key influence on the balance of conventional carriers vs containers in coming years may be the upcoming introduction of new regulations limiting sulphur content in marine fuels. In 2016, the IMO adopted a new global standard of 0.5% sulphur content (down from the current 3.5%), to be implemented from 1 January 2020<sup>19</sup>. While there are multiple ways to comply with the new regulation (e.g. installing 'scrubbers' which remove sulphur from emissions; converting to LNG), most are likely to be far too expensive or impractical for older conventional reefer ships (Dynamar, 2018). On that basis, the only way to comply is to use lower sulphur fuels (e.g. Marine Diesel Oil – MDO Vs Heavy Fuel Oil – HFO), which are in the order of US\$200-250/t more expensive (at a fuel price of US\$400-500/t, means a cost increase of 50%). While both conventional carriers and container vessels are required to comply with the new regulation, container ships are typically more fuel efficient than carriers, with fuel making up a smaller proportion of overall running costs (Dyanmar, 2018). Given the already fragile economics of aging conventional carriers, increased costs associated with low sulphur fuel may result in many being sold for scrap. Those that remain may need to recover increased fuel costs through higher freight and other charges, making containers even more price competitive.

## 4.2 Purse seine

### 4.2.1 Overview

Given the imbalance between catch volume and local processing capacity within the WCPO, transshipment is an essential component of the purse seine supply chain. In recent years, around 80% of total purse seine catch has been transhipped (Figure 13), with the remaining 20% unloaded directly at ports with processing facilities (e.g. Pago Pago, Madang, Noro). In the purse seine sector,

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<sup>17</sup> See Yang and Lin (2017) for an interesting analysis of the benefits of containers vs carriers for Taiwanese longline vessels in the Indian Ocean

<sup>18</sup> <https://www.adb.org/projects/48480-003/main#project-overview>

<sup>19</sup> <http://www.imo.org/en/MediaCentre/HotTopics/Pages/Sulphur-2020.aspx>

transhipment at sea is broadly prohibited under Article 29 of the WCPF Convention, while transhipment at sea in PNA member zones has been prohibited since 1993 (McCoy, 2012)<sup>20</sup>.

In 2017, around 1,306 transhipments were reported in the WCPO purse seine sector, accounting for 952,151t of product (representing approximately 78% of all purse seine vessel unloads by number, and 79% of total purse seine catch) (SPC data). The number of transhipments in 2017 was broadly consistent with those recorded in 2016 (1,308 transhipments totalling 985,938t of fish) and 2015 (1,322 transhipments totalling 997,368t of fish).

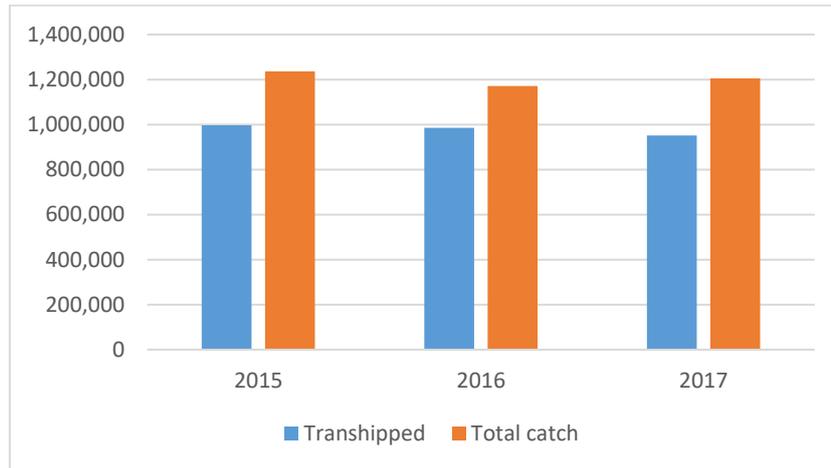


Figure 13: Amount of WCPO purse seine catch transhipped vs total catch (Data source: SPC).

Although a total of 33 ports hosted transhipments in the period 2015-2017, activity was highly concentrated around a number of key ports, mainly in the central Pacific (Figure 14). Majuro was the key transhipment port, accounting for around 37% of all reported transhipments. Pohnpei was the next busiest port with 16%, followed by Funafuti with 12%. Rabaul and Tarawa accounted for 10% of transhipments each. The remaining 26 ports accounted for around 3% of all transhipments.

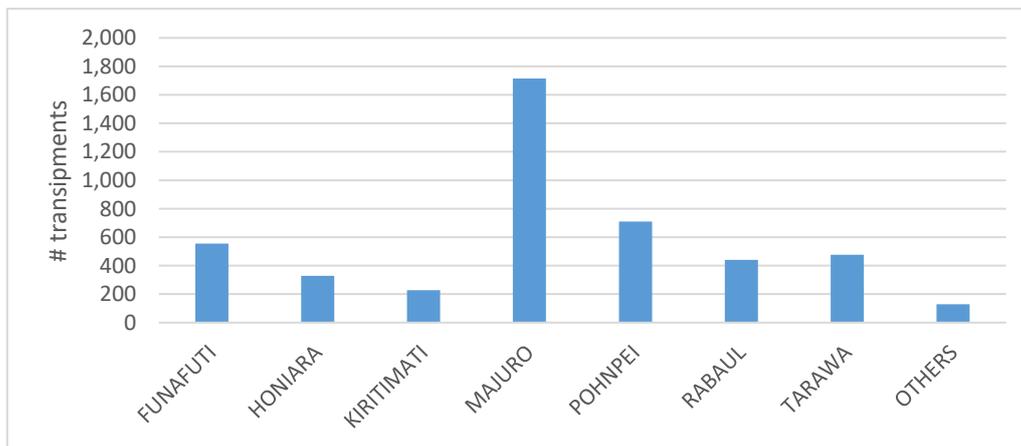


Figure 14: Total number of reported purse seine transhipments by port, 2015-2017 (Data source: SPC).

Both carrier and fishing companies interviewed for the project advised that transhipment location in the purse seine sector was primarily determined by proximity and convenience – fishing vessels will tend to unload to the carrier in the closest transhipment port to minimise steaming time and operational costs (e.g. fuel). Although differences exist between ports in fees, support services

<sup>20</sup> Notwithstanding some limited exemptions (e.g. group seining operations in PNG archipelagic waters).

available and local compliance presence, for many vessels these tend to be secondary considerations to proximity in choosing a transshipment port (i.e. all other things being roughly equal, companies will choose to tranship in the most adjacent transshipment port). At the carrier company end, locations of transshipment are selected to minimise the time required to fill up. To that end, transshipment ports are carefully coordinated with fishing companies, taking into account location of fishing activity, how full each vessel is and how close it is to unloading. Nevertheless, this does not apply to all vessels, with some vessels either preferring or avoiding particular ports for regulatory or historic reasons.

Our estimates indicate that somewhere in the order of 110-120 carriers (>1,000GT) were involved in purse seine transshipments in 2017/18<sup>21</sup>. This seems plausible given 139 carriers were listed on the FFA Regional Register as at February 2019 and, given the costs of licensing, only those with a real interest in transshipping in zone (essentially all purse seine) would seek registration.

## 4.2.2 Fleet dynamics

### 4.2.2.1 Fleet organisation

The organisation of carrier fleets is a complex logistical exercise with multiple ‘moving parts’. At the carrier company end, the primary motivation is to minimise operational costs for each tonne of fish sourced. In practice, this means maximising the volume of fish sourced in the minimum possible time. Quick trips mean fewer operational costs (e.g. fuel, port charges) need to be deducted from the revenue from the sales of the trip and also have the advantage of maintaining cash flow for traders. By contrast, trips in which the carrier is required to steam greater distances, visit multiple transshipment ports (i.e. higher fuel and operational costs) and stay in port longer (i.e. higher port fees) have a substantially higher chance of losing money. As discussed above, the circumstances around what makes a ‘good’ trip versus a ‘bad’ trip were universal across all carrier owners/charterers interviewed for the project.

With that in mind, each of the carrier companies coordinates very closely (on a daily basis) with prospective fishing vessels in planning carrier voyages. Carrier company operational staff will arrange for a carrier to be in a port after talking with their trading staff as well as skippers on purse seiners, and after a careful evaluation of the risks and rewards. Key considerations in planning voyages include the location and dynamics of current fishing activity, how many fishing vessels are in the area, how full they are, when they’re likely to come to port/unload, whether competing traders have vessels in the area and whether they’re likely to beat them to the fish and broader supply and demand issues (e.g. are there short term price windows that should be taken advantage of?). Most traders have a relatively regular stable of companies/vessels they source from, with other transactions undertaken opportunistically (or as one trader put it “some are wives; others just girlfriend”).

As discussed above, the location of transshipment port is primarily chosen based on proximity to fishing grounds, with fishing companies keen to minimise operational costs and downtime in the transshipment process. For purse seine fish traders, choosing the ‘wrong’ location for transshipment risks other traders beating them to the fish, as well as lengthening the trip and increasing operational costs.

As a general rule, there is little fidelity in carriers delivering product to ports in States to which they are flagged. The majority of carriers active in the purse seine sector are registered to countries operating open registries (e.g. Panama, Liberia, Vanuatu) which have no processing facilities.

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<sup>21</sup> We estimated ~137 carriers were active in total. WCPFC (2018a) report that 27 and 21 carriers received high seas transshipments in 2017 and 2018 respectively (as at 31 July 2018). There will be some overlap with carriers taking both purse seine and longline albacore cannery grade fish, albeit the extent is unknown.

Moreover, most of the purse seine catch continues to be delivered to regional processing hubs (e.g. Thailand, Vietnam, Ecuador) which have no active carriers on the RFV in recent years. To that end, the bulk of the purse seine catch is likely to be delivered to processing locations by carriers of a different flag State. Nevertheless, there are company and flag specific exceptions. For example, a considerable proportion of the Japanese coastal carrier and Philippines flagged carrier volume is likely to be landed in their flag State and some of the Chinese owned and flagged carriers may land fish domestically.

#### 4.2.2.2 *A typical transshipment*

A typical transshipment in the purse seine sector commences with a negotiation/agreement between the carrier operator (e.g. a tuna trader) and the fishing company<sup>22</sup> around the purchase of the fish and an agreement on likely transshipment location. At the carrier company end, this is a dynamic process, with coordination happening across multiple companies/vessels at any one time. Traders will send a carrier to a port once a critical mass of prospective vessels is ready to unload.

Depending on the flag State, some carrier operators are required to submit a proposed voyage plan to flag State authorities for approval prior to departure. For example, under Taiwan's Act for Distant Water Fisheries which became effective in January 2017, each transshipment operation whether in port or at sea requires government authorization. To support this process, Taiwanese authorities require their companies to submit a proposed voyage plan (including key dates, locations etc) for approval prior to departure.

Once the decision has been made to send a carrier to a port, the carrier company will inform the local agent who handles local administrative and logistical arrangements. This includes requesting approval from port State authorities to tranship >72hrs prior to loading (e.g. consistent with the FFA Harmonised Minimum Terms and Conditions - HMTCs), as well handling all local immigration, customs, quarantine and other requirements. Where necessary, the agent will also source provisions and other supplies for the vessel.

Upon arriving in port, the carrier vessel will typically be inspected by a boarding party comprising local officials undertaking administrative compliance checks.

Once both carrier and fishing vessel are ready to tranship, the fishing vessel comes alongside and secures itself to the carrier (Figure 15). Fish are then loaded into 'slings' and transferred by crane into the hold of the carrier vessel. The process of transshipping usually takes place for around 12-14 hours/day and takes 3-4 days per purse seiner, depending on the size of the vessel and the loading capacity of staff. One trader advised that, for their own internal calculations, they work off a conservative figure of 150t/day being transhipped, although in practice it is more likely to achieve 250-300t/day.

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<sup>22</sup> in some cases these are the same people



Figure 15: Purse seine transshipment taking place in Majuro lagoon.

Depending on the port, the process of transshipment may be monitored by an independent observer (Figure 15, bottom left panel), although the level and nature of monitoring varies between ports.

Where fish from multiple vessels is loaded within the same hold on the carrier, netting is used to separate the catch from different vessels. Netting may also be used to separate fish from individual sets (e.g. where histamine is a concern in a large set) or for other traceability/segregation purposes (e.g. double netting is used to separate MSC-eligible fish under the PNA's MSC Group Chain of Custody scheme). The location of fish from each purse seine vessel is recorded on a well plan maintained by the carrier.

The carrier is usually in port for around three to six weeks – shorter if the fishing is good; longer if the fishing is poor<sup>23</sup>. Fishing vessels are typically in port for around five days – 3-4 days of transshipping, plus an additional day of logistics/R&R. Vessels would offload/tranship 7-10 times per year on average.

The amount transferred from the fishing vessel to the carrier vessel is reported in purse seine logsheets, together with the name of the receiving vessel and destination. This information, together with a Mate's Receipt submitted by the carrier vessel, are the main sources of information on the transshipment provided to coastal States.

Following completion of all transshipments, the local agent advises local authorities of the expected departure date. Assuming no irregularities have been detected, port fees have been paid and the Mate's Receipt has been submitted, the vessel is free to leave.

A number of tuna traders indicated that requiring transshipment in port had made the process of transshipping in the purse seine sector simpler. Because transshipment was concentrated around a handful of major ports, coordinating a critical mass of vessels to fill up was easier than in the high seas longline sector where carriers often steamed to multiple locations loading smaller amounts.

At the fishing company end, a number of companies estimated they lost between 20-30% of potential fishing days streaming to and from port. Having said that, given effort is limited under the Vessel Days Scheme (VDS) in the purse seine sector, the extent of any actual 'loss' would be a

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<sup>23</sup> The RMI Ports Authority advised the average stay in Majuro was between 3-6 weeks, depending on fishing

complex interaction between the number of days held by the fishing company, weather and other factors. For many, the only substantive cost associated with in port transshipment may be the additional fuel cost associated with steaming as well as port fees. For some, particularly those with large fleets, it may be possible to more efficiently fish their available days with fewer platforms (i.e. each vessel fishes for more days) if at sea transshipment was allowed.

In the purse seine sector, most transhipped fish from the WCPO are sold through one of the three main tuna traders (FCF, Tri Marine and Itochu; Hamilton et al, 2011). Each of these companies uses a trading model for purchases and sales – in short, traders purchase the fish from fishing companies at the point of loading and then aim to sell them to customers (e.g. processing companies, canned tuna brands) at a price that covers the purchase price, plus operational costs (e.g. carrier/staff costs) and a margin. Profit margins are influenced by competition with other traders, operational costs (e.g. fuel price, carrier costs) as well as broader supply and demand issues (availability of fish, volumes in cold storage).

In the purse seine sector, fish from the supplying vessel are usually provided on either a ‘free on board’ (FOB) or ‘cost and freight’ (CFR) basis. Under FOB arrangements, the receiving company is responsible for arranging and paying for the actual shipping cost from the port of origin to the destination port. The supplying vessels is free of responsibility for shipping costs once the fish are loaded onto the receiving vessel. Under CFR arrangements, the supplying company is responsible for arranging and paying for transportation all the way to the destination port specified by the receiving vessel.

Most traders and fishing companies indicated that freight costs ranged between US\$250 to US\$370/ton depending on location of transshipment and how many ports were visited.

Traders advised they occasionally supplied provisions to vessels, but it wasn’t a ‘big thing’. A number of fishing companies have their own carriers – in these cases, the carrier will carry salt and other provisions for the fishing vessels, but in most cases reprovisioning is reportedly done through agents in port.

Bunkering of carrier vessels is typically done at the unloading port immediately following unloading. Most carrier operators made the point that fuel prices in Bangkok were considerably cheaper than in the Pacific. Other provisions and support services for the carrier could also be obtained at reasonable rates. Carrier trips average around 2-2.5 months, assuming a capacity of around 4,000t.

### 4.2.3 Key companies

#### 4.2.3.1 Tuna trading companies

In the purse seine sector, tuna trading companies account for the majority of transshipment activity. Under the trading model, the fish is purchased from harvesters and sold for a higher fee to buyers (usually canning companies) in the key processing destinations (e.g. Thailand, Vietnam, Ecuador, PNG) taking into account costs of production (fish price, plus carrier costs etc). The bulk (90%+) of the purchase price is paid upon physical transfer of the fish, with the balance paid upon receipt of the cannery out-turn report which details the precise volumes, species composition and size grades of the load (e.g. Hamilton et al, 2011).

Three main companies (FCF, Tri Marine and Itochu) dominate the tuna trading business, collectively purchasing around 900,000t from the WCPO annually (Hamilton et al, 2011).

#### **FCF**

Founded in 1972, Kaohsiung-based FCF Co., Ltd. (FCF) is the world’s largest trader of cannery grade tuna, reportedly equivalent in volume to the other two main traders combined (FCF pers. comm.). Trading in purse seine caught fish represents majority of its trading/carrier business, although the company is also active in logistics solutions for longline vessels.

FCF operate a fleet of around 16 carriers, nine on a time-chartered basis (usually annual) with the remaining carriers space and voyage chartered (FCF pers. comm.). The number of space-chartered carriers is adapted based on demand. Carriers average around 4,000 GT with average trip length around 2-2.5 months.

In the purse seine sector, FCF has a stable of around 50-60 boats which tranship to its carriers. Around 40 of these will always supply to FCF, while the remaining 20 will sell to FCF on a spot-basis from time to time. FCF are in constant communication with prospective vessels to coordinate trades and the details of carrier trips (location and timing of transhipment).

Most of FCF's carriers are Panama flagged, with some Korean and Chinese flagged carriers occasionally space chartered. FCF advised that they have limited contact with the flag State authorities, with any dealings usually being handled by the carrier owner – FCF are simply a charterer. Nevertheless, under Taiwanese law, FCF must submit to, and have approved by, the Taiwan Fisheries Agency (TFA) a voyage plan for each of its trips, together with the details of each carrier including VMS information irrespective of vessel flag. The TFA then monitors each carrier and transhipment remotely, 24/7.

The majority of FCF's carriers are sourced through brokers on the global market, although in some cases FCF will manage carrier vessels on behalf of carrier companies (including arranging fishing vessels to tranship, assigning unloading ports, etc). In the latter case, carriers are managed as a normal part of the FCF carrier pool to optimise overall profitability and logistics efficiency.

The bulk of FCF's purse seine-sourced fish is unloaded in Thailand, with smaller amounts also unloaded in Vietnam, China and other markets. Carriers will typically bunker and reprovision in the unloading port before heading back for the next trip (fuel and provisions are cheaper in Asian ports than PIC ports).

In addition to this trading/carrier activity, FCF has interests in a number of processing facilities internationally (e.g. South Seas Tuna Corporation [SSTC] and Nambawan in PNG; Cosmos in Ghana<sup>24</sup>), although the extent to which these rely on transhipped fish is not known. FCF also has interests in purse seine vessel operations and management through SSTC in PNG and South Pacific Tuna Corporation (SPTC) in the US.

FCF arranges for bunkering services for fishing vessels (it reports more than 20 tankers available in the Pacific, Atlantic and Indian Oceans), as well as reprovisioning (bait, helicopter fuel, rope, oil, salt, nets and other gear) where necessary through a network of offices and agents across the Asia Pacific region<sup>25</sup>.

### **Tri Marine**

The US-based Tri Marine Group is the second largest trader of cannery grade tuna, purchasing around 250,000mt of purse seine caught tuna from the WCPO annually (Hamilton et al, 2011).

Tri Marine typically operates a fleet of around 6-8 carriers, all of which are chartered. Tri Marine don't see carrier ownership as their core business, noting that a range of specialist skills and support services (e.g. engineering, crewing, shipping regulatory compliance) are required as the ship owner, which they'd rather leave to the specialists. Charters vary between time and space charters, with capacity adjusted based on demand and fishing conditions. Tri Marine's carriers are mostly chartered through shipping brokers.

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<sup>24</sup> <http://www.fcf.com.tw/strategic-partnerships/>

<sup>25</sup> <http://www.fcf.com.tw/services/bunkering/>; <http://www.fcf.com.tw/services/provisions/>;  
<http://www.fcf.com.tw/our-subsiaries-and-other-locations/asia-pacific/>

Tri Marine's carriers typically average between 3,000 and 4,500 tonnes capacity, with most flagged to Panama. Panama is preferred over some other possible flags (e.g. Liberia, Marshall Islands) because it has an EU Competent Authority, leaving open the option of certifying the vessels in order to be able to sell the fish into the EU market.

Like FCF, Tri Marine's traders and operational people are in constant communication with prospective fishing vessels to arrange transshipments, of which they estimate they do around 180-200 per year. The company has a regular stable of boats from which they source, but also sources from others who 'float' between the different buyers. Carriers will be in port for roughly three weeks; longer if the fishing is poor, shorter if the fishing is good.

Much of Tri Marine's fish is delivered to Thailand, China and Vietnam, with some also sent to canneries in South America (mainly Ecuador, but also Mexico and Colombia) according to market demand. Four to five carriers per year are sent to South America, accounting for up to 20,000t of fish.

Unlike FCF, Tri Marine focuses mainly on cannery grade fish but does have a ULT sashimi business from PIC ports (e.g. RMI, FSM), using reefer containers.

In addition to its trading/carrier operations, the Tri Marine group has a range of diverse interests throughout the canned tuna supply chain - harvesting (e.g. through its purse seine vessels operated by National Fisheries Developments in the Solomon Islands); processing (e.g. SolTuna and other facilities in South America), logistics and marketing<sup>26</sup>. The company historically provided bunkering services, but no longer.

Recently, National Fisheries Developments (NFD), a Tri Marine Group company, has begun offering a Star Loader service for refrigerated containers in a joint venture with Solomon Islands Ports Authority (SIPA) and Maersk Line<sup>27</sup>. The investment is intended to attract interest from purse seine vessels by speeding up container loading and allowing them to take advantage of cheaper freight rates and diversified destinations associated with containers.

## **Itochu**

Itochu is one of Japan's largest *sogo shosa*, or general trading companies, whose business incorporates 900+ subsidiary companies<sup>28</sup>. Itochu is the world's third largest tuna trader, purchasing around 200,000mt of purse seine caught tuna from the WCPO annually (Hamilton et al, 2011), although in relative terms tuna represents only a very small proportion of the company's overall business.

Itochu advised that they operate a fleet of between 8-12 carriers, most of which are time chartered. Like the other two main traders, the company does not own its carriers. Vessels are chartered through shipping brokers with many of Itochu's current fleet flagged to Korea.

Itochu's trading (and carrier) activities are largely focused on the WCPO, with less exposure to other ocean basins. Hamilton et al (2011) reported that around 75% of Itochu's purchases (around 150,000 mt) are from Taiwanese vessels, with the remaining 25% from other fleets (Japan, Korea, Philippines). They noted the majority of vessels supplying Itochu have long term relationships with the company (some dating back 30-35 years). Nevertheless, in our interviews company representatives noted the market was both dynamic and competitive and Itochu made spot purchases from all available vessels.

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<sup>26</sup> <http://www.trimarinegroup.com/about-us-2/>

<sup>27</sup> <http://www.trimarinegroup.com/2019/03/08/nfd-new-si-star-loader-services/>

<sup>28</sup> <https://www.itochu.co.jp/en/index.html>

Much of its trading is focused on skipjack and yellowfin tuna, although the company also trades some albacore, particularly from Japanese vessels. Itochu trades considerably more canning grade fish than sashimi, but does do some sashimi grade fish (including farmed tuna). Notwithstanding, Itochu are not involved in high seas transshipments.

Much of Itochu's fish is delivered to customers in Thailand and the Philippines with some also sent by container to Indonesia, where it has an interest in a joint-venture tuna processing facility (P.T. Aneka Tuna Indonesia) in Surabaya.

Itochu entered the trading/carrier business in the 1980s, but unlike the other two main tuna traders, Itochu does not operate its own fishing vessels. The company also does not provide bunkering services to fishing vessels, although it does occasionally arrange to deliver food, salt and other provisions organised by the fishing company. Its carriers usually bunker at the port of unload to take advantage of cheaper fuel than in PIC ports. Trading and carrier activity is coordinated by the Marine Products Department, part of the Fresh Food Division of the Food Company.

#### 4.2.3.2 *Integrated harvester/carrier companies*

In addition to the larger fish traders, a number of larger companies and corporate groupings own and operate both harvesting and carrier vessels, with operations integrated to varying degrees. Some of the main companies with integrated harvester/carrier operations in the purse seine sector are set out below.

#### *Korean companies*

##### **Dongwon**

Founded in 1969 as a fishing company, the Dongwon group has grown into a large, vertically integrated conglomerate with interests across fishing, logistics, seafood processing and distribution, food service, construction, and packaging<sup>29</sup>. The group includes around 40 affiliated companies underneath the umbrella of holding company Dongwon Enterprise Co Ltd. Amongst its other businesses, the company also owns the Starkist brand and group of companies while its food and beverage manufacturing arm, Dongwon F&B, reportedly owns around 75% of the canned tuna market share in Korea (Havice and Campling, 2018).

In the WCPO, the Dongwon group operates 12 Korean-flagged purse seiners through Dongwon Industries as well as an additional two Kiribati-flagged purse seiners through its joint venture Kiribati and KT Fisheries Co. Ltd<sup>30</sup>. The group also operates a fleet of 16 large scale longline vessels targeting bigeye and yellowfin in the tropical WCPO and Indian oceans.

In addition to its fishing fleet, the Dongwon group also operates a fleet of five cannery grade carriers in the WCPO. Dongwon Industries Co. Ltd is the direct owner of Korean-flagged carriers Badaro and Oceanus and majority owner of Panama-registered Sealand Trading Services Corporation which owns Panama-flagged carriers Sanwa Fontaine and Hanaro (Figure 16). Dongwon Industries also charters the Panamanian-flagged carrier Bao Win, owned by Chinese registered company Bao Power Shipping Co., Ltd.

Interviews with Dongwon representatives indicated that Dongwon's carriers only serviced purse seine vessels, with no longline transshipment. Dongwon's vessels will preferentially tranship to their own carriers – which return fish to Korea, as well as servicing the Starkist facility in Pago Pago – but also sell to traders where convenient.

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<sup>29</sup> <http://www.dwhf.co.kr/eng/about/aboutMain?menuId=0701060000>

<sup>30</sup> <http://www.dwml.co.kr/eng/contents/fisheries/purseseine>

The vessel track of the Dongwon carrier Sanwa Fontaine shown in Figure 16c also potentially highlights another area of integration between purse seine and carrier vessels. In the track, after steaming from Korea the vessel spends around eight days in the eastern area of the Kiribati Phoenix Islands EEZ before steaming through the US Jarvis Island EEZ into the Line Islands, where it runs along the border of the two EEZs in the Line Islands zone for a further two days. While the evidence is not definitive, these zones are known fishing aggregation device (FAD) deployment ‘hotspots’ (e.g. Escalle et al, 2018) (to take advantage of a generally westward drift along the South Equatorial Current) and it is possible the carrier is providing some form of support to FAD deployment.

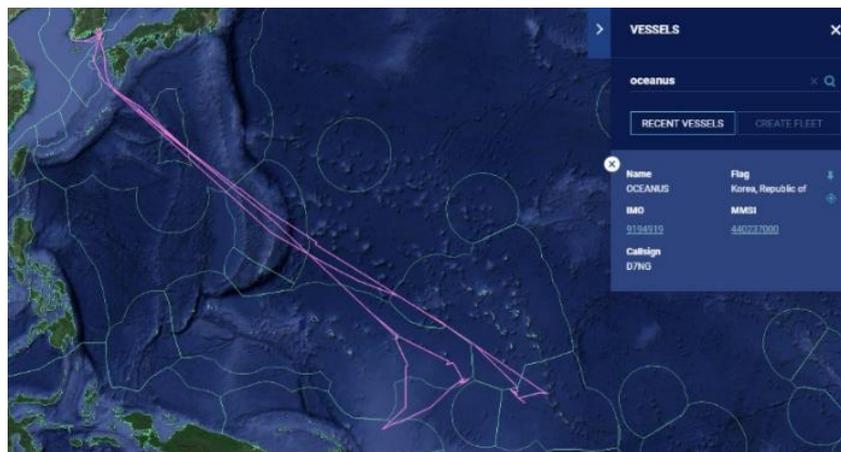


(a)

(b)



(c)



(d)

Figure 16: Dongwon controlled carriers (a) Sanwa Fontaine (Panama flagged) and (b) Oceanus (Korea flagged),<sup>31</sup> Panel (c) shows part of a vessel track of a three month trip made by the Sanwa Fontaine between November 2018 and February 2019. Panel (d) shows the vessel track of two trips made over a five month period made by the Oceanus between July and December 2018. (Source: Global Fishing Watch).

<sup>31</sup> <http://www.dwml.co.kr/contents/fisheries/carriers>

## Chinese companies

### The Shanghai group (Shanghai Kaichuang Marine International Co., Ltd, Pan Pacific Fishing, etc)

The 'Shanghai group' is a group of 2,800+ state-owned companies underneath the umbrella of the Shanghai State Owned Assets Supervision and Administration Commission. Although some of the ownership arrangements are unclear, the group includes the Shanghai Fisheries General Corp Group, which appears to incorporate a number of companies including Shanghai Deepsea Fisheries Co., Ltd Ltd and Shanghai Kaichuang Marine International Co., Ltd., which is separately listed as the owner of a number of companies including the Marshall Islands registered Fantai Fish (Marshall Islands) Co Ltd, the Chinese registered Shanghai Kaichuang Deep Sea Fisheries Co. Ltd. and the Singapore-registered Asia Pacific Tuna Pte Ltd which it owns jointly with Tri Marine. The Shanghai group is one of China's leading distant water fishing entities, with anecdotal reports suggesting the group accounts for more than half of the skipjack tuna output by Chinese fishing fleets<sup>32</sup>.

The group operates three carriers - Kai Yuan, Kaichuang 101, Kaichuang 102 (each listed as being owned by Shanghai Deep Sea Fisheries Co., Ltd) – as well as seven purse seine vessels (Jin Hui 8, Jin Hui 9, Jin Hui No.1, Jin Hui No.6, Jin Hui No.7 owned by Shanghai Kaichuang Deep Sea Fisheries Co., Ltd and Jin Hui 18, Jin Hui 58 owned Shanghai Deepsea Fisheries Co., Ltd<sup>33</sup>). The group also owns Pan Pacific Fishing (RMI) Inc, which operates six RMI-flagged purse seiners, and Pan Pacific Foods (RMI) Inc. (PPF) which operates a loining plant in Majuro.

Amongst other components of its business, Shanghai Kaichuang Marine International Co. sells tuna and horse mackerel in China under its Longmen brand and carriers may form an important part of the logistics supply chain.

Interviews with PPF indicated the relationship between the companies around supply and logistics was flexible, and ultimately driven by maximising profits for each entity. Shanghai Kaichuang (SK) vessels will preferentially unload to their own carriers, but will also unload to other company's carriers (e.g. traders) where there was a commercial logic for doing so (e.g. if price is dropping and they need to sell fish quickly). Similarly, SK vessels will sometimes offload to PPF, particularly when supplies are low, but will also offload to carriers if better returns can be made.

Although PPF is owned by the Shanghai group, the company operates independently and is able to make its own commercial decisions to maximise profitability (e.g. once the fish is transferred to PPF, they choose their own markets to maximise returns, etc). In addition to the loining plant, PPF operates a container packing service. Containers are mainly used by SK boats, but occasionally by others. The primary motivation is to save freight costs, but containers also allow purse seine vessels to grade their catch and sell to different markets. PPF reported that they would like to do more container business from purse seine fleet, although they were limited by the lack of an EU Competent Authority in RMI.

The Shanghai group also operates a fleet of 20+ longline vessels (owned by Shanghai Deepsea Fisheries Co., Ltd and Shanghai Jinyou Deep Sea Fisheries Co. Ltd), although the extent of integration in the longline/carrier operations is unclear.

One of its subsidiaries, Fan Tai Fishing (Marshall Islands) Co. has recently spent USD 20.5 million (EUR 17.5 million) on each of three new purse seine vessels to "increase scale and profitability" at the firm<sup>34</sup>.

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<sup>32</sup> [http://usa.chinadaily.com.cn/china/2016-08/20/content\\_26540681.htm](http://usa.chinadaily.com.cn/china/2016-08/20/content_26540681.htm)

<sup>33</sup> 'Shanghai Deep Sea Fisheries Co., Ltd' and 'Shanghai Deepsea Fisheries Co., Ltd' are spelled differently in different places on the RFV but are likely to be the same company

<sup>34</sup> <https://www.seafoodsource.com/news/business-finance/loss-making-kaichuang-seeks-profit-with-international-m-a-new-vessels>

## Shandong Zhonglu

The Shandong Zhonglu group is a group of state-owned enterprises mainly based in Qingdao, China. The companies are ultimately part of the People's Republic of China state-owned enterprise system, although the internal ownership arrangements and the working relationship between companies is not clear. The group includes a number of companies with assets on the RFV. Shandong Zhonglu Oceanic Fisheries Co. Ltd was incorporated in 1999 and is reported to have operations in mainland China and Taiwan, Japan, South Korea, Singapore, Ghana, and internationally. The company owns two purse seiners (Tai Long 1, Tai Long 2) and several longline vessels on the RFV. A sister company, Shandong Zhonglu Fishery Shipping Co. Ltd., is listed as the owner of three carrier vessels - Tai Ning, Sea Glory II and Tai Xing (Figure 17) - all Panamanian flagged. Our company searches also suggested that Shandong Zhonglu Oceanic Fisheries Co. Ltd was owned by the same holding company as the Panama registered Habitat International Corp., which is listed as the owner of an additional four carriers - Sea Mark, Sea Trader I, Sea Star V, Sea Pearl I (all Panama flagged).

The extent to which carriers and purse seiners coordinate operations is not known, although we understand that at least several carriers are made available for charter to third parties on the global market.



Figure 17: (a) Shandong Zhonglu Fishery Shipping Co. Ltd 3,218 GRT carrier Tai Xing and (b) six-month vessel track for the Tai Xing between October, 2018 and May, 2019 showing port calls (in order) at Rabaul, Wewak (PNG), Singapore, Pohnpei (FSM), Majuro (RMI), Shandong province (China), Busan (Korea), Pohnpei, Majuro and Wewak.

## China National Fisheries Corp.

China National Fisheries Corp. (CNFC) is a state-owned asset operating underneath the umbrella of the China National Agricultural Development Group Co., Ltd. Company searches indicated CNFC controls around 17 subsidiary companies with interests in fisheries and related industries. In the WCPO, CNFC owns a fleet of 61 longline vessels through CNFC Overseas Fishery Co., three purse seiners (Zhong Tai No.1, Zhong Tai No.2, Zhong Tai No.3) and eight longline vessels through subsidiary Zhongyu Global Seafood Corp. (ZGS). The group also operates four Panama-flagged carrier vessels (Hai Feng 658, Hai Feng 668, Hai Feng 628 And Hai Feng 678) through ZGS subsidiary, Mexon Shipping Ltd, registered in Hong Kong. Each of the carriers are larger than average, and include the equal largest carrier in the fleet, the 12,413 GT Hai Feng 678. Two carriers - Hai Feng 658 and Hai Feng 668 – appear to have been active in the WCPFC-CA in 2017/18.

The extent to which Mexon Shipping Ltd carriers coordinate activities with the ZGS purse seiners is not known. We understand Mexon makes their carriers available for time and space charter to tuna traders.

## Ningbo Yongfa Ocean Fisheries

Ningbo Yongfa Ocean Fisheries Co., Ltd (NYOF) is a private limited company that was incorporated in China in 2012. The company owns two Chinese flagged carriers - Yong Fa Yun 10 and Yong Fa Yun 12 – as well as the purse seiner, Feng Xiang 818. Both carriers are relatively new, being constructed in 2016 and 2015 respectively. NYOF was also listed as being the owner of purse seiners Shun Fa 8 and

Xiang Fa 8 in some of our corporate searches, although these were listed as being owned by the Zhejiang Ocean Family Co., Ltd. on the RFV. The company also operates a fleet of six squid, saury and trawl vessels.

The extent to which its purse seine and carrier operations are integrated is unknown, although we understand that both carriers have been made available for charter to 3<sup>rd</sup> parties in recent years.

### *Taiwanese companies*

#### **Fair Well Fishery Group**

The Fair Well Fishery Group is a large Kaohsiung-based group of integrated companies with interests across a range of fisheries (tuna, saury, squid), aquaculture and logistics areas<sup>35</sup>. In the WCPO, the Group operates a fleet of seven PNG-flagged purse seine vessels, as well as a number flagged to Taiwan (e.g. Fair Well No.707, New Fair Discovery No.707). The company also reportedly operates three carrier vessels (only two of which, Hua Fu 107 and Tiara 108, have been identified in our searches) which provide logistics services to its own vessels<sup>36</sup>. Fair Well's carriers also support saury fleets in the northern Pacific from September to November.

The two known Fair Well carriers are each owned by a different subsidiary company, in keeping with common practice in the Taiwanese fishing fleet (Hua Fa 107 – Well Success Marine S.A.; Tiara 108 – Tiara Marine S.A.).

Through its subsidiaries Chen-Fa Refrigeration Co. Ltd and Grand Huang Enterprise Ltd, Fair Well operates a network of cold stores in strategic locations in Taiwan and China.

The company launched two new Taiwanese-flagged purse seine vessels (Win Rich No.707 [1,668GT] and Win Forever No.707 [1,818 GT]) in 2018.

#### **Fong Kuo Fishery Group**

Established in 1964, the Fong Kuo Fishery Group is a Kaohsiung-based group of integrated companies specialising in tuna fisheries<sup>37</sup>. The group owns two 5,000+ GT carriers - Fong Kuo No 818 and Fong Kuo No 819 – through its subsidiary F.K. Overseas Corp (Figure 18), and also reports managing an additional two 2,800 GT carriers. The group also operates a fleet of six Taiwanese flagged purse seiners (Fong Kuo 188, 189, 828, 866, 869, 889) under its main company Fong Kuo Fishery Co., Ltd, as well as three purse seiners (Atun Kalap, Atun Planti, Atun Star) through separate companies (Top Wealth Global Limited, Worthy Ocean Limited, Ocean Lucky Limited, respectively). Fong Kuo Fishery also reportedly manages a fleet of six US flagged vessels on behalf of their owners, and has previously entered into joint ventures with South Pacific Tuna Corporation in the building of purse seine vessels.

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<sup>35</sup> <http://www.fairwell.com.tw/index.php?lang=en>

<sup>36</sup> <http://www.fairwell.com.tw/edcontent.php?lang=en&tb=5&id=57>

<sup>37</sup> [http://www.fongkuo.com.tw/ENGLISH/index\\_introduction.html](http://www.fongkuo.com.tw/ENGLISH/index_introduction.html)

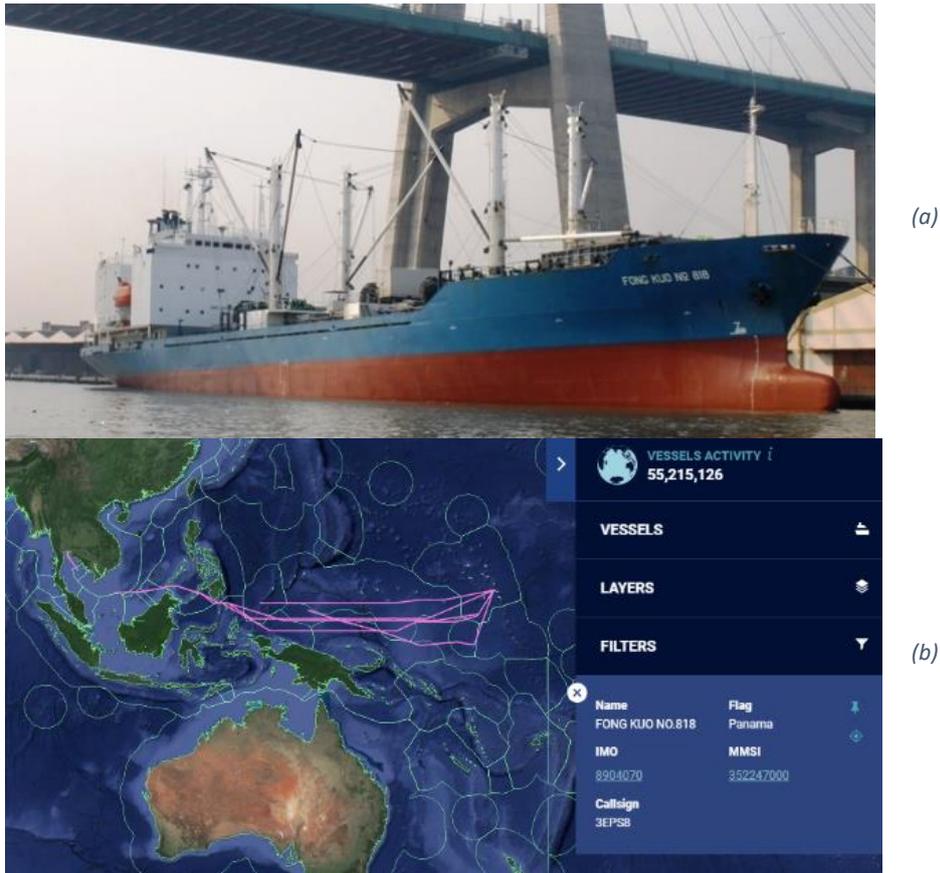


Figure 18: (a) Fong Kuo carrier Fong Kuo 818 (5,286 GRT) and (b) vessels tracks for the Fong Kuo 818 in the six months to May, 2019 showing multiple trips between Bangkok and Majuro. (Source: Global Fishing Watch)

### The Koo's Group

The Koo's group operates three Panamanian-flagged carriers - Syota Maru, Eita Maru and Kenta Maru<sup>38</sup> – through its Taiwanese registered company Koo's Shipping Company S.A. The group also operates a fleet of five RMI-flagged purse seiners (Koo's 101, 102, 107 and 108, Marshall's 201) from its base in Majuro through Koo's Fishing Co. Ltd and Marshall Islands Fishing Co., as well an additional four FSM-flagged purse seiners (Micronesia 101, 102, 103 and 106) through subsidiaries Kasar Fishing Corporation and Pohnpei Shipping Company Inc in FSM.

Koo's advised that the operation of the carriers and seiners are tightly coordinated – the three carriers will exclusively pick up fish from the company's seiners. Fish picked up the company's own carriers may be sold to processors in Bangkok or at auction in Makurazaki, Japan. However, the three carriers aren't sufficient to service all nine seiners, so they will also offload to other carriers where necessary.

### Philippines companies

#### Frabelle Group

Originally established in 1966, the Frabelle group of companies is a Philippines based business with diverse interests across fishing, aquaculture, canning, food manufacturing and processing, food

<sup>38</sup> Note, there are two vessels named 'Kenta Maru' registered on the WCPFC RFV – Koo's Shipping Company S.A.'s Kenta Maru has IMO number 8615784; the second Kenta Maru, registered to Toei Reefer Line has IMO number 9788772

importation and trading, cold storage, shipyard operations, wharf development, real estate development, and power generation<sup>39</sup>. The group includes a number of subsidiaries including Frabelle Fishing Corp (FFC), which claims to maintain a fleet of over a hundred vessels fishing in the Pacific, Atlantic and Indian Oceans, Frabelle Cold Storage Corp, which operates cold storage facilities in the Philippines, Eoana Canning and Food Processing Corporation, focused on seafood processing in the Philippines, Frabelle Market Corporation, which markets Frabelle’s in-house branded seafood products domestically and the Frabelle Shipyard Corporation, which offers shipbuilding, drydocking and maintenance services. The company also operates a tuna cannery in Lae, PNG, through Frabelle PNG Ltd, as well as having an interest in Majestic Seafoods, a joint venture with Thai Union of Thailand and Century Canning of Philippines.

On the RFV, Frabelle operate a fleet of:

- 11 PNG-flagged purse seiners through Frabelle PNG Ltd;
- five Philippines-flagged purse seiners and six carriers through FFC; and
- two Philippines-flagged tuna purse seiners, one small, older carrier (Zinnia 2 – 491 GT, constructed in 1968) and one support vessels through FFC Subic Seafood Corp.

An additional carrier, the Philippines-flagged 3,065 GT Majestic Milkyway, is chartered by Majestic Seafoods.

FFC’s carriers are some of the oldest in the fleet, constructed between 1966 and 1984, and smaller than average (ranging from 498 GT to 2,967 GT). Carriers are thought to coordinate closely with Frabelle purse seiners in the supply of canning facilities in both PNG and the Philippines. Available information on vessel tracks were limited, though appear to highest activity around PNG ports, with likely voyages to the Philippines (Figure 19).

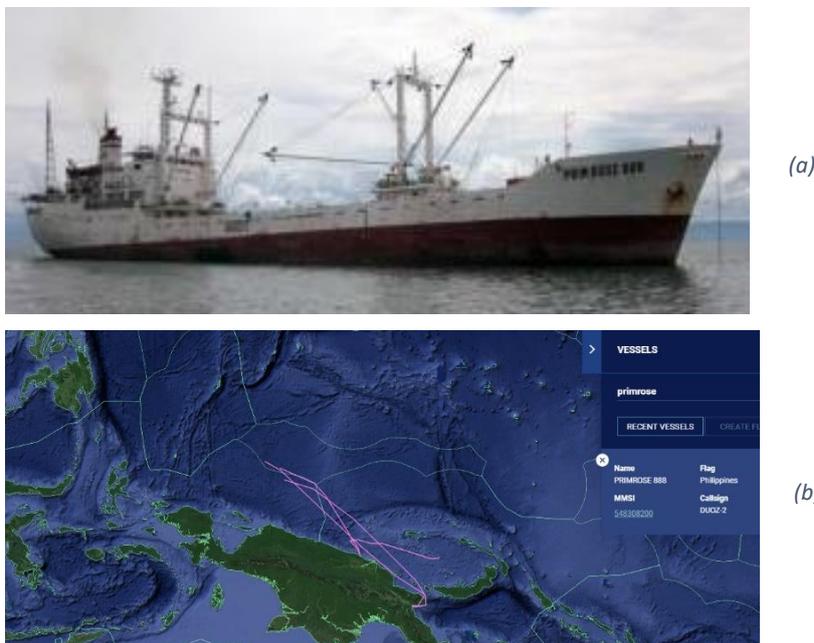


Figure 19: (a) Philippines-flagged Frabelle carrier Primrose 888 (2,967 GT) and (b) available vessel tracks for the six-month period from July to December 2018. (Source: Global Fishing Watch)

<sup>39</sup> <http://frabelle.com/group-of-companies/>

### Trans-Pacific Journey Fishing Corp.

Trans-Pacific Journey Fishing Corp. (TPJ) was established in 1987 and currently operates a fleet of 10 purse seiners (ranging from 844 to 1,534 GT), five carriers (ranging from 1,239 to 1,542 GT) and 19 smaller support vessels (30 to 57 GT) on the RFV. All vessels are Philippines-flagged.

TPJ also has an interest in Nambawan Seafoods PNG Ltd, a joint venture with FCF and TSP Mariner Industries, which operates a tuna cannery in Lae, PNG<sup>40</sup>. Each of its five carriers are recorded on the RFV as being chartered by Nambawan.

Vessel tracks from TPJ carriers show most activity within the PNG EEZ and between PNG (Lae, Rabaul, Wewak) and Philippines ports (particularly General Santos) (e.g. Figure 20). The activity appears consistent with TPJ carrier vessels transshipping catch from PNG-licensed purse seine vessels to deliver raw material to canneries in both PNG and the Philippines.

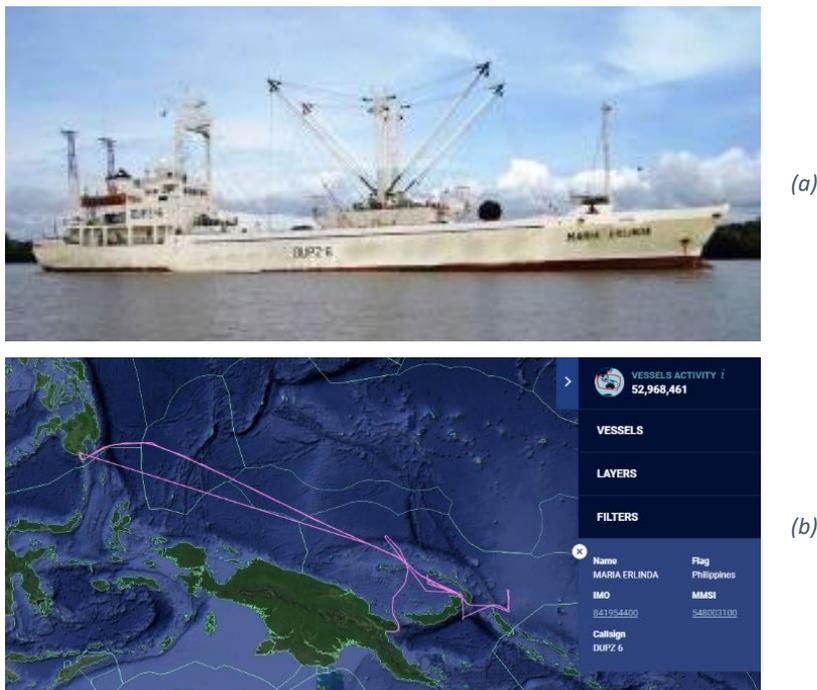


Figure 20: (a) Philippines-flagged TPJ carrier Maria Erlinda (1,482 GT) and (b) vessel tracks for Maria Erlinda between January to July 2018 showing movements between PNG and Philippines ports.

Nevertheless, the tracks of some TPJ carriers suggest more intensive coordination and support of vessels in PNG's EEZ. For example, Figure 21 shows a six-month vessel track for TPJ carrier Daniella-T between May and November, 2017. The vessel makes several excursions into EEZ waters before returning to various PNG ports.

<sup>40</sup> [http://www.fisheries.gov.pg/Portals/0/NFA%20Fishing%20Line%20Nius1%20Jan-Apr2017\\_1.pdf](http://www.fisheries.gov.pg/Portals/0/NFA%20Fishing%20Line%20Nius1%20Jan-Apr2017_1.pdf); <https://business.inquirer.net/185317/filipino-taiwanese-firm-to-open-tuna-plant-in-png>



Figure 21: Vessel track for Philippines-flagged TPJ carrier Daniella-T for the six-month period May to November 2017, showing activity exclusively within the PNG EEZ. (Source: Global Fishing Watch)

### RD Corporation

Founded in 1999, the RD Corporation acts as a holding company for a conglomerate reportedly encompassing 43 subsidiaries and 12 affiliates with interests across fishing, processing and canning, shipbuilding, finance, realty development, retail and hotels and resorts<sup>41</sup>.

It's fishing group reportedly comprises 13 companies, collectively known as the RD Fishing Group: RD Fishing Industry, Inc. (RDFII), Bismarck Pacific Sunrise Fishing Corp. (BPSFC), Global Fishing Tuna Venture, Inc. (GFTVI), Golden Anchor Marine Ventures Corp. (GAMVC), Ocean Bounty Fishing Ventures Corp. (OBFVC), Pacific Seas Tuna Ventures, Inc. (PSTVI), Phil Sino Pacific Ventures Corp. (SPAFC), RD Tuna Ventures, Inc. (RDTVI), South Pacific Allied Fisheries Corp. (SPAFC), South Pacific Deep Sea Ventures, Corp. (SPDSVC), South Sea Fishing Ventures Philippines, Inc. (SSFVPI), RD Fishing PNG Ltd., and Tropical Fishing Tuna Ventures, Inc. (TFTVI).<sup>42</sup> Collectively, the group operates 16 single seiners, five reefer carriers and two 'ranger' boats. At least four of the carriers (Dolly 767, Dolly 798, Dolly 888, Dolly 889) are on the RFV (Figure 22).

<sup>41</sup> <http://rdgroup.rdphilippines.com/>

<sup>42</sup> <http://rdgroup.rdphilippines.com/fishing/>



Figure 22: RD Fishing Group carriers Dolly 888 (top left) and Dolly 889 (top right). Six-month vessel track for Dolly 888 between January and June 2019 showing two return trips between Madang, PNG and General Santos City, Philippines (bottom). (Source: Global Fishing Watch)

#### 4.2.3.2 Ship brokers

For those companies that operate but don't own carriers (e.g. FCF, Tri Marine, Itochu), ship brokers are an important component of the commercial supply chain. These companies provide a link between the charterer and the ship owner, who may have limited or no other involvement in fisheries. Brokers can either work on behalf of the charterer (a 'Charterer's Broker') or the vessel owner (an 'Owner's Broker'). Companies interviewed for this project advised that brokers tend to be paid on a commission basis, although the nature of the commission may vary depending on the relationship between the broker and owner.

#### 4.2.3.3 Standalone carrier owners, owner/operators

At the 'supply end' of the carrier supply chain are standalone carrier owners, whose business is in providing shipping platforms to the world market. These companies tend to have entered the transshipment business from the 'shipping end' rather than the 'fishing end'. As a general rule, these companies have no interests in fishing vessels. Carrier ownership is often through subsidiary companies, registered in countries such as Panama, with actual beneficial ownership sometimes difficult to determine without detailed forensic work.

Carriers owned by these companies are typically contracted to a charterer through a broker, although some may be managed through an 'in house' or group fleet management company (e.g. GreenSea Chartering [GSC] provide ship management services to a fleet of around 48 reefer carriers owned by the Green Reefers group and the Seatrade group). The shipping company provides the vessel and basic crew for an agreed fee, with the chartering company free to control the operation of the vessel based on their own commercial interests.

Although compliance with general shipping (e.g. IMO) regulations remains the responsibility of the owning company, compliance with fisheries regulations (e.g. WCPFC CMMs) is the responsibility of the chartering company. In isolated cases, the charter is formally listed on the RFV, but in most cases there is no recognition of short term charters. To that end, there is no linkage on the RFV to the company actually controlling the movements and operation of the vessel. This is different to both the IOTC and ICCAT vessel registries which list both owner and ‘operators’ of carriers and give a better sense of who’s responsible.

In some cases, vessels will be more or less exclusively used in the tuna sector, while in other cases vessels will be used across a range of seafood commodities (squid, saury, etc) depending on demand and season. Several of the larger companies (e.g. Seatrade) are also heavily involved in non-seafood commodities (e.g. fruits and vegetables).

Some of the key standalone carrier owners with vessels listed on the RFV include:

### Seatrade Group

With a history dating back to 1951, Dyanmar (2018) report that Seatrade is “the undisputed leader of the conventional reefer segment”. In total, Seatrade is involved with 49 conventional reefer ships (including those employed by the GreenSea Pool or chartered out long term)<sup>43</sup>, with approximately 40-45% Seatrade-controlled vessels, and the rest contributed by third-party ship owners (Dynamar, 2018). With an average age of twenty-three years, the fleet is relatively young. Of the 52 vessels, 17 are listed on the WCPFC RFV – five controlled by Seatrade (Table 1) and 12 controlled by the GreenSea Chartering (see below) in which it has a 50% stake. Of the five vessels controlled by Seatrade (all Liberian-flagged), none appeared to be active in the WCPFC-CA in 2017/18.

Table 1: Seatrade group fleet listed on the RFV, with nominated owners.

Vessel Name	Flag	RFV Owner
ACONCAGUA BAY	Liberia	ACONCAGUA BAY SHIPPING COMPANY B.V. (Foreign Maritime Entity)
EVEREST BAY	Liberia	EVEREST BAY SHIPPING COMPANY B.V.
FUJI BAY	Liberia	Fuji Bay Shipping Company N.V. (Foreign Maritime Entity)
HUMBOLDT BAY	Liberia	Humboldt Bay Shipping Company B.V. Foreign Maritime Entity
WHITNEY BAY	Liberia	Whitney Bay Shipping Company B.V. (Foreign Maritime Entity)

Seatrade Reefer Chartering N.V. (operating from Belgium) effectively handles the day-to-day operations of the reefer pool.

Dynamar (2018) reports that in 2014, the company embarked upon a container ship building program, with the ultimate aim to bring their container ship fleet to around 20 vessels.

### GreenSea Chartering

Based in Belgium, GreenSea Chartering (GSC) is a ‘shipping pool’ with two members – the Green Reefers group and the Seatrade group<sup>44</sup> – exclusively contributing vessels to the pool (Hans Mol, pers. comm.). The pool commenced operations in 2012 as a vehicle to operate the two members’ small conventional reefer ships.

GSC is responsible for the commercial operation of the vessels, including cargo contracting and chartering where necessary. GSC currently controls a pool of around 48 reefer carriers<sup>45</sup>, with 12

<sup>43</sup> <http://www.seatrade.com/fleet/>

<sup>44</sup> a subsidiary of Seatrade Holding B.V.

<sup>45</sup> <http://www.greensea.be/fleet>

listed on the RFV. Notwithstanding that, GSC advise that their main areas of operation for tuna fisheries are Indian and Atlantic Oceans and only two vessels within its pool – New Takatsuki<sup>46</sup> (chartered to one of the tuna traders) and Cool Expreso – appear to have been active in the WCPFC-CA in 2017/18.

GSC advised that around 10% of their overall business would be tuna-related, with tuna comprising around 30% of their seafood logistics business. Dynamar (2018) reports that the Seatrade group has four 300,000 cu.ft. conventional reefer ships under construction, to be operated by GSC when completed.

Although all vessels in the GSC pool are nominally contributed by its two members, vessel ownership records on the RFV highlight the diversity in registered ownership (Table 2). Of the 12 vessels on the RFV, 10 separate owners are listed.

Table 2: Ownership and flagging arrangements for the GreenSea Chartering fleet, as listed on the WCPFC RFV.

Vessel Name	Flag	RFV Owner
COOL EXPRESO	Netherlands	Celtic Klipper Shipping Company N.V.
SIERRA QUEEN	Liberia	B.V. BEHEERMAATSCHAPPIJ PACIFIC (Foreign Maritime Entity)
GREEN GLACIER	Liberia	Green Shipping AS
GREEN TOLEDO	Liberia	Green Shipping AS
BAY PHOENIX	Liberia	GREY SHIPPING COMPANY N.V.
SIERRA KING	Netherlands	Holland Klipper Shipping Company B.V.
WATER PHOENIX	Liberia	Magenta Shipping Co. N.V.
NEW TAKATSUKI	Panama	NEW POWER SHIP,S.A
YUN DER	Panama	RYOMA INTERNATIONAL TRANSPORT CORP.
HSIANG HAO	Panama	RYOMA MARINE TRANSPORT CORP.
PRINCE OF SEAS	Liberia	VIOLET SHIPPING COMPANY LTD.
LAGOON PHOENIX	Liberia	Yellow Shipping Co. /Seatrade Groningen B.V.

GreenSea reportedly uses CCTV cameras on their vessels to register loading and discharge.

### Boyang Ltd

Boyang Ltd is a Korean company established in 1990. Boyang operates a fleet of 10 carriers in total on the RFV - four Korean-flagged vessels owned directly through Boyang Ltd and six Panamanian-flagged vessels through its majority owned Panamanian registered subsidiary Nok Co. S.A. Of the 10 vessels, four appear to have been active in the WCPFC-CA in 2017/18 (Mononok, No. 1 Baron, Khana, Suah). Boyang Ltd is also the majority owner of Khana Marine Ltd, which is listed on the RFV as charterer of the carrier Jochoh.

There is also evidence that Boyang acts as the chartering entity for the Panamanian-flagged carriers Mabah and No. 2 Pohah<sup>47</sup>, listed as being owned by Gjende Reefer AS and Eastern Reefer II AS respectively (but ultimately owned by Norwegian shipping company Lorentzen Skibs)<sup>48</sup>. In addition, it is probable that Boyang Ltd has a link to the newly-constructed (2018) Panamanian-flagged carrier

<sup>46</sup> Note that while New Takatsuki is listed on the GreenSea Chartering website as being as being managed under the GreenSea pool, the address for its owner (New Power Ship S.A.) is C/- Kyohei Kaiun Kaisha, Ltd. The relationship around management of the vessel between the two companies is not known.

<sup>47</sup> <https://www.tradewindsnews.com/weekly/363327/lorentzen-pounces-on-boyang-reefer-in-sale-leaseback-deal>

<sup>48</sup> <http://lorskibs.no/vessels>

Boyang Bering, listed as being owned by Boyang Alaska S.A, although the ownership link was not clear in our searches.

### Sein Shipping

Sein Shipping Co. Ltd is a Korean-based company, listed as the owner of seven Korean-flagged carriers on the RFV. All of the vessels appear to have been active in 2017/18. Apart from one smaller carrier (Sein Star, at 2,004 GT), the remaining six carriers are larger than the fleet average, ranging between 4,428 GT and 6,965 GT. Its vessels were constructed between 1984 and 1994.

Dynamar (2018) note that Sein Shipping are active as a ship owner, manager and operator, but ‘as with many of these small carriers in South Korea, it keeps a low profile and little public information is available’.

It seems probable that Sein Shipping has some interest in the Panamanian-flagged carriers Sein Grace and Sein Princess (listed as being owned by Panamanian registered companies Sky Reefer SA and Princess Reefer SA, respectively), although an ownership linkage was not immediately obvious in our searches.

### Ji Sung Shipping

Ji Sung Shipping Co. Ltd is a Korean-based company, listed as the owner of eight Korean-flagged vessels on the RFV. All of the vessels appear to have been active in 2017/18. Its vessels range from 1,894 GT to 5,225 GT and were constructed between 1985 and 1995.

### Kyoei Kaiun Kaisha, Ltd.

Kyoei Kaiun Kaisha, Ltd (KKK) is a Japanese shipping company established in 1991. KKK operates a total of six carriers on the RFV – four through its Panama-registered subsidiary New Power Shipping S.A. (Amagi, Hikari, Kaimon, New Takatsuki<sup>49</sup>) and two through Liberian-registered subsidiary, Sea Road Line Inc (Shin Izu, Shin Fuji). The KKK fleet includes the only remaining carrier flagged to the Marshall Is, as well as one of the three remaining carriers flagged to Vanuatu. All six vessels appear to have been active in the WCPFC-CA in 2017/18.

Table 3: Kyoei Kaiun Kaisha fleet of carriers on the WCPFC RFV.

Vessel Name	Flag	RFV Owner
AMAGI	Marshall Islands	New Power Ship S.A.
HIKARI 1	Panama	NEW POWER SHIP, S.A
KAIMON	Vanuatu	NEW POWER SHIP, S.A
NEW TAKATSUKI	Panama	NEW POWER SHIP,S.A
SHIN IZU	Panama	SEA ROAD LINE INC.
SHIN FUJI	Panama	SEA ROAD LINE INC.

### Frigoship Chartering

Dynamar (2018) report that “Hamburg-based Frigoship Chartering is controlled by Lavinia Corporation, the leading entity in the Greek Laskaridis group, established in 1984. Frigoship is used for exclusive chartering purposes and to employ the tonnage of the Alpha Reefer Transport (ART) pool. The pool is administered by Alpha Reefer Transport GmbH, Hamburg, majority controlled by

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<sup>49</sup> See footnote 48

Lavinia Corporation. In addition to its commercial management of the ART Pool, Frigoship is also responsible for the chartering of the fleet managed by Laskaridis Shipping.

The ART Pool members, six in total, are Laskaridis Shipping Company Ltd. of Athens, with holding company Lavinia as a cargo provider, Limarko Shipping Co, Klaipeda, JSC Yugreftransflot, Sebastopol, Norfoss Shipping, Tallinn, Agder Ocean Shipping AS, Oslo, and Fairport Shipping Ltd, Piraeus, as well as JSC Ships Service Agency, Klaipeda.”

The Frigoship website notes that “a considerable number of the Laskaridis ships are employed independently under various long term contracts with the firm's customers in the fishing industry, a clientele which forms the backbone of the company since several years”<sup>50</sup>. It also notes that “numerous vessels are employed in high sea transshipments, and this has indeed become a speciality of the shipowners of the Pool. Not only ship design, availability of large ocean fenders, stevedoring by experienced crews, as well as fuel supplies and provisions and spares for trawlers at sea, has become part of the services rendered with reefer carriers and tankers where ever it is required.”

As at April, 2019, 26 carrier vessels managed under the Frigoship Chartering group were listed on the WCPFC RFV (albeit there appears to be two vessels on the RFV named Taganrogskiy Zaliv)<sup>51</sup>. Of these, we estimate eight vessels have been active in the WCPFC-CA in 2017/18. An additional three vessels had similar names (i.e. ‘Frio ...’) with similar owner addresses as other vessels within the group, but were not listed on the Frigoship website.

An examination of the ownership details listed on the RFV provides an insight into ownership structures within the group (Table 4). Of the 29 vessels on the RFV (including the additional Frio vessels), each (apart from the three Lithuanian-registered vessels) were listed as being owned by separate companies registered in Panama, Vanuatu, Liberia, Lithuania and Greece. Despite that, the 27 separate companies were registered to only 13 different addresses, with as many as five companies registered to the same address.

We understand the Frigoship group charters its vessels on both a time and voyage basis to tuna traders in the WCPO.

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<sup>50</sup> <http://www.frigoship.de/fsc.html>

<sup>51</sup> <http://www.frigoship.de/fleet1.html>

Table 4: Carrier vessels on the WCPFC RFV within the Frigoship Chartering group of vessels. Rows shaded the same colour indicate the same or similar address.

Vessel Name	Flag	Owner	Address
ANGARA	PN	ANGARA SHIPPING LTD	1st Floor, International Building, LINI Highway, Port Vila, Republic of Vanuatu
FRIO DOLPHIN	PN	ATHENIAN MARINE LTD	1st FLOOR, INTERNATIONAL BUILDING LINI HIGHWAY POR VILS, VANUATU
TAGANROGSKIY ZALIV	PN	DELIA NAVIGATION CORP.	80, BROAD STREET MONROVIA, LIBERIA
FRIO POSEIDON	PN	DREAM FAITH, S.A	53RD STREET URBANIZACION OBARRIO SWISS TOWER, 16th FLOOR, PANAMA CITY
FRIO HELLENIC	PN	EXPLORER MARINE S.A.	53RD Street, Urbanizacion Obarrio Torre Swiss Bank Panama, Republic of Panama
AVUNDA REEFER	PN	LILIUM SHIPPING CO. S.A.	SAMUEL LEWIS AVENUE, COMOSA BUILDING, 1ST FLOOR, PANAMA CITY, REPUBLIC OF PANAMA
LIBRA	Lith.	Limarko Shipping Company AB	Nemuno Street. 22, LT-93277 Klaipeda, Lithuania
CAPELLA	Lith.	Limarko Shipping Company AB	Naujoji Uosto str. 8, Klaipeda LT-92125 Lithuania
CASSIOPEA	Lith.	Limarko Shipping Company AB	Naujoji Uosto str. 8, Klaipeda LT-92125 Lithuania
FRIO OLYMPIC	PN	MARESOL NAVIGATION S.A	80 BROAD STREET MOROVIA-LIBERIA
TAGANROGSKIY ZALIV	PN	MERLIN MARINE CORP.	80, BOARD STREET, MONROVIA, LIBERIA
FRIO ANTWERP	PN	NAUTILUS SHIPPINGS AND TRADING S.A	C/O LASKARIDIS SHIPPING CO., LTD 5 XENIAS STREET, 14625, ATENAS, GRECIA
NESTOS REEFER	PN	NAVIGATION SHIELD S.A.	SAMUEL LEWIS AVENUE, COMOSA BUILDING, 1ST FLOOR, PANAMA CITY, REPUBLIC OF PANAMA
FARO	PN	NAVISUD S.A.	P.H Proconsa II Building, 8th floor, Beatriz M. de Cabal Street, Panama
ZEFYROS REEFER	PN	OLYMPUS MARINE LTD.	"C/O Atlas Corporation Limited 1st Floor, International Bldg Lini Highway Port Vila, Vanuatu"
FRIO AEGEAN	PN	ROSSE OCEANWAY S.A.	80 BROAD STREET MONROVIA, LIBERIA
SALGIR	PN	SALGIR SHIPPING LIMITED	1st Floor, International Building, LINI Highway, Port Vila, Republic of Vanuatu
FRIO OCEANIC	PN	SEABORN EAGLE S.A.	PASEO DEL MAR Y PACIFIC AVENUES, COSTA DEL ESTE, MMGT TOWER, PISO 23, PANAMA
FRIO LAS PALMAS	PN	SEABORN HONOR S.A.	PASEO DEL MAR Y AVENIDA PACIFICO, COSTA DEL ESTE, MMG TOWER, PISO 23, CIUDAD DE PANAMA
DON REEFER	PN	SEACAPE MARINE S. A.	SAMUEL LEWIS AVENUE, COMOSA BUILDING, 1ST FLOOR, PANAMA CITY, REPUBLIC OF PANAMA
OSTROV BERINGA	PN	SEAJET OVERSEAS S.A.	CALLE 53 E. URB MARBELLA MMG TOWER PISO 16
FRIO CHIKUMA	PN	SKY GLOBAL MARITIME S.A.	OMEGA BUILDING MEZZANINE, SAMUEL LEWIS AVENUE & 53 RD STREET, PANAMA, REP. OF PANAMA
FRIO SHINANO	PN	SPRING GLOBAL MARINE LTD., S.A.	SAMUEL LEWIS AVENUE, COMOSA BUILDING, 1ST FLOOR, PANAMA CITY, REPUBLIC OF PANAMA
FRIO MOGAMI	PN	STAR GLOBAL SHIPPING S.A.	C/O LASKARIDIS SHIPPING CO., LTD 5 XENIAS STREET, 14562, ATENAS, GRECIA
FRIO NAGATO	PN	STARFINE MARINE S.A.	Via Espana 122, Delta Tower, Floor 14, City of Panama, Republic of Panama
FRIO MARATHON	PN	SUNNY SKIES CORPORATION	80, BROAD STREET MONROVI, LIBERIA

**Additional 'Frio' vessels (not listed on Frigoship Chartering website, but with the same address as owners above)**

FRIO CANARIAS	PN	DAYLIGHT SHIPPING,S.A	SAMUEL LEWIS AVENUE, COMOSA BUILDING 1st fl, PANAMA, REPUBLICA OF PANAMA
FRIO PACIFIC	PN	NAVAL COMMANDER S.A	53rd STREET URB.OBARRIO SWISS BANK TOWER 16th FLOOR PANAMA
FRIO ATHENS	PN	ZEUS MARINE LTD	C/O ATLAS CORPORATION LTD, 1 st FLOOR, INTERNACIONAL BUILDING, LINI HIGHWAY, POR VILA, VANUATU

## 4.3 Longline

### 4.3.1 Overview

The number of vessels involved in the WCPO longline fishery has fluctuated between 3,000 to 6,000 vessels over the past 30 years, with numbers in recent years close to 3,000 (Williams and Reid, 2018). Broadly, longline operations in the WCPO can be categorised into one of two operational types:

- i. **distant water freezer vessels** (typically >250GRT) which undertake long voyages over large areas. These vessels are typically flagged to Japan, Korea, Taiwan, China and Vanuatu and may target bigeye and yellowfin tuna in tropical areas or albacore in sub-tropical areas. Vessels targeting bigeye and yellowfin typically have refrigeration equipment capable of freezing to -50°C to -60°C and target tuna for the Japanese frozen sashimi market. Activity in this sector tends to be focused in the central and eastern parts of the WCPO and into the Eastern Pacific Ocean (EPO). Vessels targeting albacore typically operate in more temperate eastern and southern waters of the WCPO and supply much of the catch to canning markets; and
- ii. **smaller 'offshore' vessels** (typically <100GRT) which are generally domestically-based. Williams and Reid (2018) note that these vessels usually undertake trips of less than one month, with ice or chill capacity, and serve fresh or air-freight sashimi markets, or albacore canneries.

Although a small number of the domestic offshore vessels are able to tranship within EEZs for efficiency (e.g. domestic vessels within authorised areas of Fiji's EEZ when transferring fresh fish), the key fleets in the context of transhipment in the WCPO are the distant water bigeye/yellowfin and albacore fleets operating on the high seas.

#### 4.3.1.1 *Main fleets involved in transhipment*

As at March, 2019, there were 2581 longline vessels<sup>52</sup> on the RFV. Of these, 2,050 (79%) were authorised by their flag State to tranship on the high seas under WCPFC CMM 09-06. A total of 490 vessels were not authorised to tranship on the high seas, while 41 vessels (most flagged to the European Union) did not have a high seas authorisation status recorded.

Of the 18 States which flag longline vessels in the WCPO, only six authorise their vessels to tranship on the high seas: China, Japan, Korea, Taiwan, USA and Vanuatu (Figure 23a). In most cases high seas authorisation is effectively 'all or nothing' – 12 States authorise none of their vessels to tranship on the high seas, while five of the six states that do authorise high seas transhipment have >98% of their vessels authorised (China, Japan, Korea, USA, Vanuatu). Only Taiwan, which authorises 76% of its vessels to tranship on the high seas, appears to actively discriminate amongst its fleet in respect of high seas transhipment authorisations.

Notwithstanding that, Taiwan continues to have the largest number of high seas authorised vessels, accounting for 37% of all high seas authorised longliners (759 vessels) (Figure 23b). Collectively, the Taiwanese, Chinese and Japanese fleets account for 83% of all high seas authorised longliners.

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<sup>52</sup> Listed as either 'longliner' or 'tuna longliner'

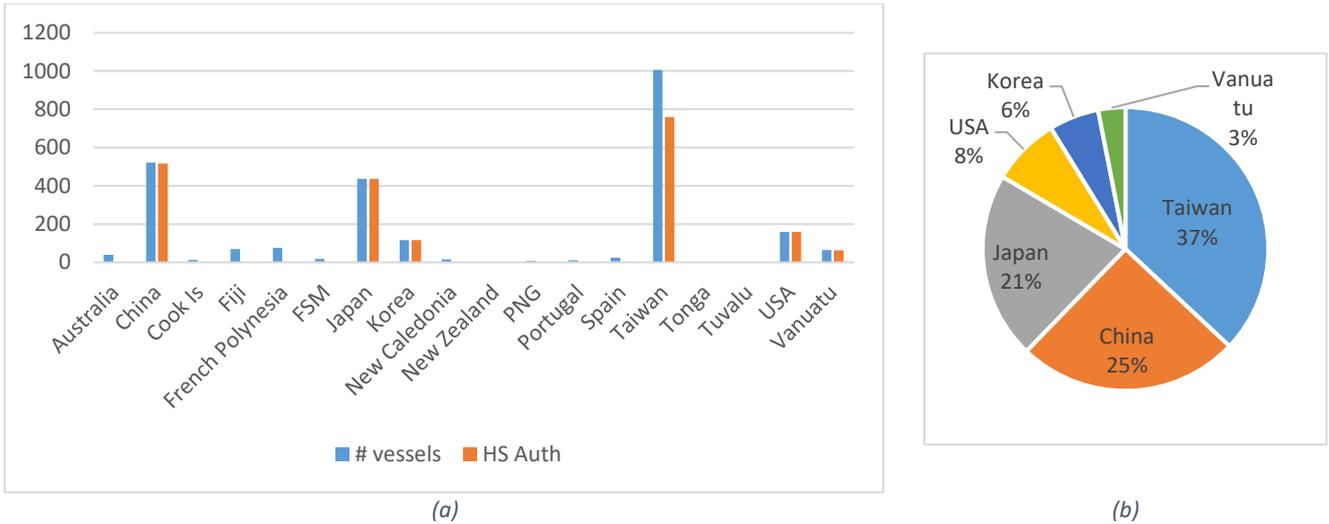


Figure 23: (a) WCPFC longline fleet profile showing total number of registered vessels by flag, and those authorised to tranship on the high seas, as at March 2019 and (b) proportion of WCPFC longline fleet authorised to tranship on high seas by flag State, as at March 2019. (total number of high seas authorised vessels = 2,050).

In 2017, the Taiwanese longline fleet accounted for around half of all high seas transhipments (Figure 24; Table 5) (WCPFC, 2018a). Amongst the three main target tuna species, bigeye tuna accounted for 45% of the volume transhipped, with albacore and yellowfin 33% and 23% respectively. Of the 539 high seas transhipments reported by the Taiwanese fleet, 474 (88%) occurred within the WCPFC-CA, while 65 occurred at sea outside of the WCPFC-CA (presumably in the adjacent Eastern Pacific Ocean - EPO). China accounted for the next highest number of high seas transhipment events, with around 25% of total activity. The volume of each main tuna species transhipped is not known. The Japanese fleet reported only 21 high seas transhipments, accounting for less than 2% of all reported events. Despite each of its 159 vessels being authorised to tranship on the high seas, the US longline fleet reported no high seas transhipments in 2017.

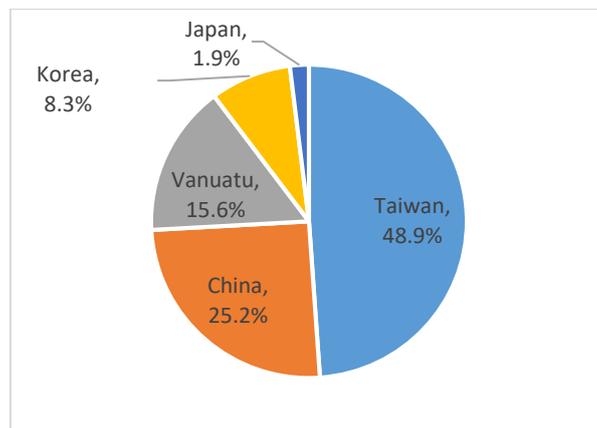


Figure 24: Proportion of high seas transhipments reported by offloading vessel flag in 2017 (WCPFC, 2018a) (Total number of offloading events = 1084)

Table 5: Number of reported transshipment events by offloading vessel flag State between January 2013 and 31 July 2018 (WCPFC, 2018a).

count of events by offloading vessel						
Reporting CCM	2013	2014	2015	2016	2017	2018
Belize	3					
China	186	182	240	313	274	187
Indonesia	11	3				
Japan	58	31	29	28	21	25
Kiribati	5					
Korea (Republic of)	43	60	88	77	90	64
Philippines	4	2				
Solomon Islands						
Chinese Taipei	137	173	189	290	529	493
United States of America	1					
Vanuatu	145	101	209	248	170	68
	<b>593</b>	<b>552</b>	<b>755</b>	<b>956</b>	<b>1,089</b>	<b>837</b>

The nature and operation of the main longline fleets involved in high seas transshipment in the WCPO has been well summarised by Campling et al (2017), as well as in Annual Reports by CCMs provided to the WCPFC.

### Taiwan

The Taiwanese fleet is categorised by the Taiwan Fisheries Agency according to vessel size (GT). CT3 and CT4 categories represent vessels from 20-50 GT, and CT4 is 50-99 GT respectively. Those over 100 GT and are designated CT-5, CT-6 and CT-7 depending on GT. CT3 and CT4 vessels may be broadly referred to as small scale tuna longline (STLL) vessels, while CT5 and above are large scale tuna longline vessels (LTLL). Of the 2019 high seas authorised Taiwanese fleet, around 672 could be classed as STLL vessels, while 116 are LTLL vessels.

The Taiwan Fisheries Agency (TFA, 2018) reports that between 73 and 82 LTLL vessels have been active in the WCPFC-CA between 2013 to 2017, with 82 vessels active in 2017. The LTLL fleet can be divided into two groups based on target species: (i) one that targets bigeye tuna in tropical areas (15°N - 15°S) conducting year round trips and relying on transshipment for offloading catches and refuelling/reprovisioning and (ii) another that targets albacore in sub-tropical/temperate waters and enters PIC ports around twice per year to land catches and refuel/reprovision. Campling et al (2017) reported that around 50 LTLL vessels target sashimi grade tuna, while the remaining 20-30 target albacore for canning, however these proportions may have changed more recently. Preliminary estimates for 2017 indicate that albacore accounted for 36% of the catch, followed by bigeye (29%) and yellowfin (16%) (TFA, 2018). The majority of the LTLL fleet has blast freezers, which allows them to market ULT sashimi product. Campling et al (2017) reported that 74% of the LTLL fleet's WCPFC-CA catch between 2011 and 2015 was taken on the high seas.

STLL vessels fish both within and outside the Taiwanese EEZ. Those with freezing capacity operate in a similar manner to LTLL vessels. In 2017, 1,079 STLL vessels were active in the WCPFC-CA – a considerable drop from the 1,303 vessels active in 2016 (TFA, 2018). Amongst the STLL sector, the smaller CT3 vessels are typically fresh fish vessels which use ice and refrigerated seawater (RSW), while CT4 vessels have a mix of refrigeration methods. Campling et al (2017) report that beginning in the 2000s an unknown, but believed to be significant proportion (perhaps half), of CT4 vessels upgraded their freezing and fish hold capacity to enable higher quality bigeye and yellowfin to be held at -55°C rather than -35°C or -40°C. The net result was an increase in autonomy at sea and a greater reliance on transshipment for vessels operating on the high seas.

As described above, in 2017 the Taiwanese fleet reported the highest number of high seas transshipments (474), but also the highest number in port (804). A large number of at sea transshipments were also reported outside the WCPFC-CA (65).

One Taiwanese longline company (Shun He Fishery) interviewed - whose vessels are 600-700 GRT (fish hold capacity of 200-300t) and target BET/YFT in the equatorial central Pacific - advised their vessels ordinarily spend two years at sea between dry-docking, with roughly 2-3 months between transshipments depending on catches. These vessels fished east to around 120°W, but no further due to the difficulties in arranging carrier vessels and reprovisioning. They made the point that transshipment is more than just offloading fish – reprovisioning (including water, bait and food) is critical to the operation. They also noted the large size of their vessels meant they could store fish for longer and afforded more flexibility. Smaller vessels with less storage are less flexible. These vessels need to tranship more regularly, which would make them more vulnerable to a prohibition on high seas transshipment.

On their way back to home port (Kaohsiung), the vessels will sometimes deliver fish direct to Japan to save freight costs. Where the vessels call into other ports, catch will be offloaded into containers and shipped to Japan.

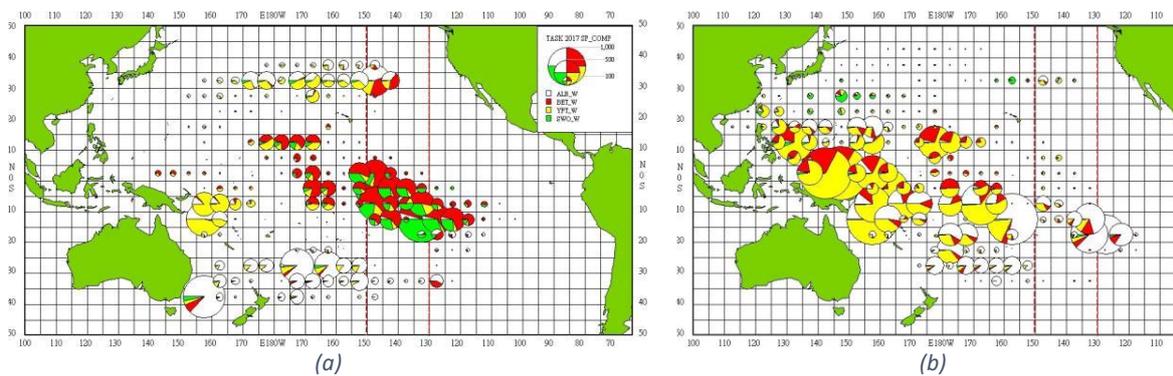


Figure 25: Distribution of fishing effort and catch for Taiwan's (a) LTL and (b) STLL fleets.

### Japan

Japanese longline vessels are classified into three categories – coastal, offshore and distant water – according to their areas of operation and vessel size (JFA, 2018). Coastal longliners (1-20GRT) fish only in Japan's EEZ. Offshore longliners are divided into two categories: small offshore longliners (10-20GRT) and offshore longliners (10-120 GRT). Both groups may go beyond Japan's EEZ to fish in the WCPFC-CA high seas and across into the EPO. Distant water longliners are larger than 120 GRT.

A total of 368 vessels were estimated to be active in 2017 (Uosaki, 2018). This was dominated by smaller offshore vessels (10-50 GRT – 229 vessels) and large distant water vessels (200 GRT+ - 108 vessels).

Total catch is dominated by distant water and offshore vessels, which accounted for around 73% of the total Japanese longline catch in 2017. For these vessels, fishing effort is relatively widely distributed throughout the western part of the WCPFC-CA, with target species varying by location (Figure 26). Swordfish are targeted around Japan, while albacore are targeted at sub-tropical and temperate latitudes both north and south of the equator between 15°S and 40°S. Bigeye is targeted in tropical waters between 5°N and 15°N and yellowfin is targeted around Papua New Guinea (where the Japanese fleet has had bilateral access in recent years).

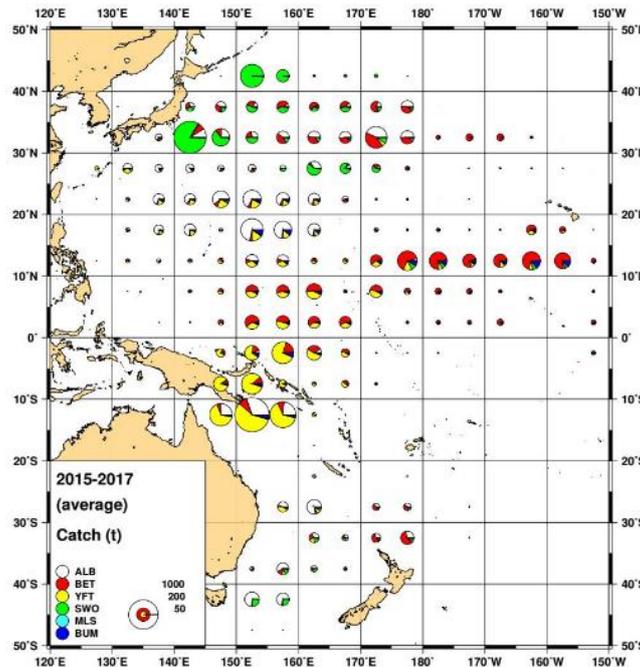


Figure 26: Distribution of Japanese offshore and distant water longline catch by species, average 2015-2017 (Uosaki, 2018).

Average annual catch of all species for distant water vessels targeting bigeye and yellowfin is 250-300mt (Campling et al, 2017), with all vessels fitted with ULT freezing capacity.

Although they are authorised to undertake high seas transshipment, Japanese distant water vessels typically return to port at the end of a trip and only occasionally tranship on the high seas. Campling et al (2017) indicate this is consistent with a longstanding understanding between fleet owners and the Government that catch would be landed domestically, as well as to maintain quality in the cold chain.

Uosaki et al (2018) report that only 13 transshipments were reported by Japanese longliners inside the WCPFC-CA in 2017, with a further eight outside the WCPFC-CA. The total volume transhipped (685t - 540t transhipped inside the WCPFC-CA, 145t outside) represented only 2% of the total catch taken inside the WCPFC-CA by Japanese distant water and offshore longliners. Campling et al (2017) note that this is quite different from other distant water longline fleet strategies and means that any at sea transshipment ban would impact less on the Japanese fleet than other fleets.

For smaller offshore vessels, catch and effort tend to be concentrated closer to the Japanese EEZ in waters north of the equator and west of 160°E (Uosaki, 2018). Catch is stored using RSW and usually landed fresh in Japan (Campling et al, 2017).

Japan's total tuna longline catch and effort amongst distant water and offshore vessels have declined considerably in recent decades, in line with a steady reduction in vessel numbers (particularly of medium scale offshore longliners whose numbers have fallen from 757 in 1980 to 28 in 2017). Catch has fallen from a high of close to 140,000mt in 1980 to around 16,000 in 2017, while fishing effort in the WCPFC-CA by Japanese vessels has declined from 200 million hooks annually in the 1971-1990 period to less than 50 million hooks in 2015 (Uosaki et al, 2018).

### Korea

Unlike other DWFN fleets, the Korean longline fleet is entirely comprised of large distant water vessels with ULT capacity. Kim et al (2018) reported that 96 vessels were active in the WCPFC-CA in 2017, down from 125 in 2013 and 220 in 1991. Of these, 95 vessels were between 200-500GRT, with the remaining vessel between 51-200GRT. Campling et al (2017) report that the vessels have slurry, blast and freezing capacity to -60°C and are able to handle 8-10mt of fish per day.

Although all vessels are based in Korea, the fleet mainly targets bigeye and yellowfin in equatorial waters between 10°N and 15°S, and from 160°E to as far east as 120°W in the EPO (Figure 27). Efforts shifts between the eastern WCPO and the EPO, with effort higher in the WCPO in 2014 and 2016 and in the EPO in 2015 and 2017 (Kim et al, 2018). Bigeye and yellowfin collectively accounted for close to 80% of the catch in 2017, with albacore making up <6%.

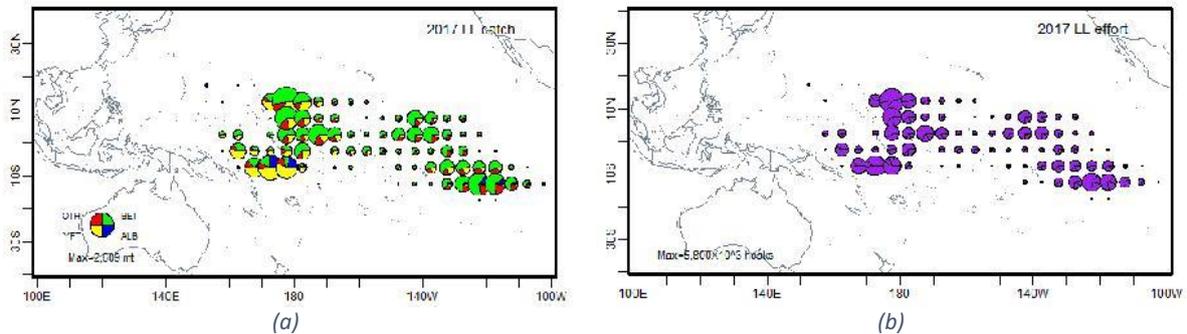


Figure 27: Distribution of (a) catch and (b) effort by the Korean longline fleet in the WCPO/EPO in 2017. (Kim et al, 2018)

The large scale nature of the vessels and ULT freezing capacity allows vessels to undertake long trips, with vessels remaining at sea between 12-18 months before return to home port (all vessels are based in Busan). Transshipment, bunkering and reprovisioning at sea are essential components of the operation, with over 70% of the catch transhipped on the high seas (Korean Overseas Fisheries Association, pers. comm.). KOFA advised that transshipment at sea has become even more important to the operation since 2017, when Korean vessels elected not to fish in PNA EEZs because of increased costs associated with the longline vessel days scheme (LLVDS).

Given their large size, Korean vessels tend to tranship less frequently than smaller fleets, with two transhipments per year typical (KOFA, pers. comm.). In 2017, the Korean fleet reported 91 transhipments in total, with 65 of these on the high seas within the WCPFC-CA, 25 at sea outside of the WCPFC-CA (likely in the EPO) and one transhipment in port (Kim et al, 2018).



Figure 28: Six-month vessel track (January – June, 2018) of one Korean flagged high seas longline vessel. (Source: Global Fishing Watch)

Campling et al (2017) report that considerable processing of high quality ULT product occurs in home ports (mainly Busan) prior to export, with some product sold domestically.

Amongst the main WCPO fleets involved in high seas transshipment, the Korean fleet is the oldest with an average year of build in 1988 (31 years). Only five vessels were built after 1991, with no new vessels built after 1999. Nevertheless, Campling et al (2017) reported that with diligent maintenance and quality timely repairs where necessary, at least some companies considered there was considerable working life left in the fleet.

## China

The Chinese fleet is the most recent of the main DWFN longline fleets to enter the WCPO, beginning exploration in the Pacific in the late 1980s (Dai et al, 2018). The fleet has the youngest average age of the main DWFN fleets, with an average year of build of 2007 (Figure 29). Catch and effort in the Chinese longline fleet has increased substantially since the turn of the century, with the number of active vessels growing from 106 in 2000 to a peak of 429 in 2015 (WCPFC, 2018b)<sup>53</sup>. Although the number dropped to 362 in 2017, the total catch in 2017 was the highest on record (49,534t) driven largely by record catches of albacore (29,252t – 59% of total).

Dai et al (2018) report that there are two main types of Chinese longline operation - ice fresh tuna longliners (IFLL) and deep frozen tuna longline vessels (DFLL). In 2017, there were 277 IFLL vessels and 85 DFLL vessels. Most DFLL target bigeye tuna on the high seas and in the EEZs of PICs, while IFLL vessels operate mainly in the EEZs of PICs (particularly Solomon Islands, Marshall Islands) targeting both bigeye/yellowfin and albacore depending on location.

Campling et al (2017) note that amongst the IFLL vessels there are two main types: the first consists of PIC-based vessels (e.g. those chartered by Luen Thai Fishing Venture and based in RMI) that utilise ice only and target bigeye and yellowfin tuna. These vessels make relatively short trips (~10 days) and land fish at their PIC bases. The second, much larger category primarily target albacore for cannery use. Some of these vessels reportedly have both freezer and ice capability, with the bigeye, yellowfin and albacore from the final few sets of a trip retained on ice for non-cannery markets. A sub-set of this component also has deep freezing capability. Fishing for the latter category mainly occurs on the high seas, with a smaller proportion in the EEZs of PICs. Dai et al (2018) reported that of the 277 IFLL vessels active in 2017, 25 targeted bigeye while the remainder targeted albacore.

Much of the catch from DFLL vessels is transhipped, as well as a proportion from freezer equipped IFLL vessels (Campling et al, 2017). Chinese vessels reported a total of 274 transhipments in 2017, 273 of which occurred at sea, with one in port transhipment in Suva (Dai et al, 2018). Of the at sea transhipments, 273 occurred in areas beyond national jurisdiction (246 in the WCPFC-CA, 27 outside). A total of 20,832t was transhipped by the Chinese fleet in 2017, mainly whole (8,873 – likely mainly albacore) and gilled and gutted (9011t – likely mainly BET and YFT).

Campling et al (2017) report that many of the newer Chinese longline vessels are built with advanced refrigeration, navigation and communications systems. They noted that advanced refrigeration systems allowed diversification of traditional markets (e.g. vessels with ULT freezing capability can take advantage of an emerging Japanese market for sashimi grade albacore). Importantly, over half of Chinese (56% - 288 of 513) vessels currently authorised for high seas transhipping were built after CMM 09-06, which requires that high seas authorised vessels “*would have to make significant and substantial changes to its historical mode of operation as a result of the prohibition of transhipment in the high seas*”.

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<sup>53</sup> There was a larger ‘peak’ of active vessels in 1994 (456 vessels), although this was associated with little catch.

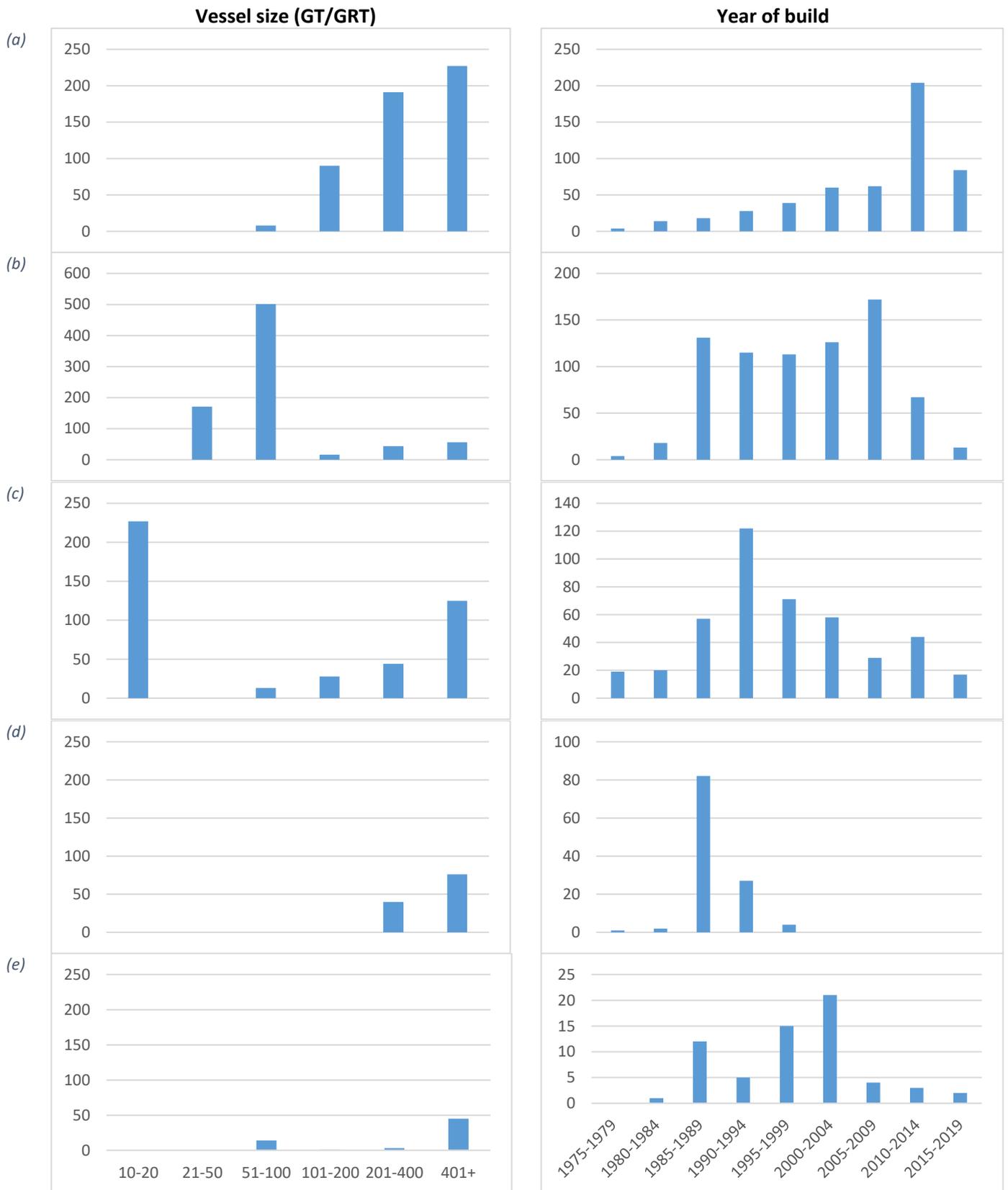


Figure 29: Size (left panel) and year of build (right panel) for high seas transshipment authorised longline vessels within the five main fleets involved in high seas transshipment activity: (a) China, (b) Taiwan, (c) Japan, (d) Korea and (e) Vanuatu. (Data source: WCPFC RFV)

#### 4.3.1.2 Number and volume of transhipments

The number of reported high seas transhipment events in the WCPO increased by around 60% between 2011 and 2017 (Table 6). Much of the increase has come from the Taiwanese fleet (an almost four-fold increase in reported transhipment events between 2013 and 2017), with increases also evident in the Chinese, Vanuatu and Korean fleets (Table 5). Notwithstanding that, the WCPFC Secretariat advises it has been more active in following up CCMs around transhipment reporting in recent years, so at least some of the increase may reflect better reporting only (WCPFC Secretariat, pers. comm.). By contrast, the Japanese fleet reported fewer than half the number of high seas transhipments in 2017 than they did in 2013. The number of vessels involved in offloading also substantially increased, from 281 in 2011 to 448 in 2017.

Table 6: Summary of high seas transhipments reported to the WCPFC from June 2010 to 31 July 2018 (WCPFC, 2018a)

	Number of reported transhipment events	Number of receiving vessels	Number of offloading vessels
Jun – 31 Dec 2010	231	17	158
2011	680	22	281
2012	525	19	236
2013	593	18	296
2014	552	24	299
2015	755	24	304
2016	956	24	351
2017	1089	27	448
2018	837	21	409
	<b>6,218</b>		

In 2017, around 22% of the total estimated WCPFC-CA longline catch of the three key target species (BET/YFT/ALB) were transhipped on the high seas according to transhipment declarations received by the WCPFC (WCPFC, 2018a). Bigeye recorded the highest proportion, with 42.2% of the total longline catch transhipped. Albacore accounted for the next highest proportion at 18.9%, with yellowfin at 11.6% transhipped. These percentages are broadly a reflection of the area in which each species is targeted, with the highest bigeye catches coming from the central and eastern areas of WCPO fished by DWFN freezer vessels for whom at sea transhipment is a central part of their fishing strategy.

#### 4.3.1.3 Distribution of high seas transhipments

Although a small number of reported high seas transhipments occur in western high seas pockets and south of 20°S, the vast majority occur in tropical areas (20°N – 20°S) between 170°W and 120°W (Figure 30a). A number of the DWFN longline companies interviewed indicated that they did not tend to fish east of 120°W because few carriers ventured that far east and it was hard to make an operation in that area viable (i.e. the logistics of unloading fish and provisioning were very difficult). Bigeye and yellowfin tuna dominated transhipment volumes in tropical areas, while albacore dominated at higher latitudes (Figure 30b).

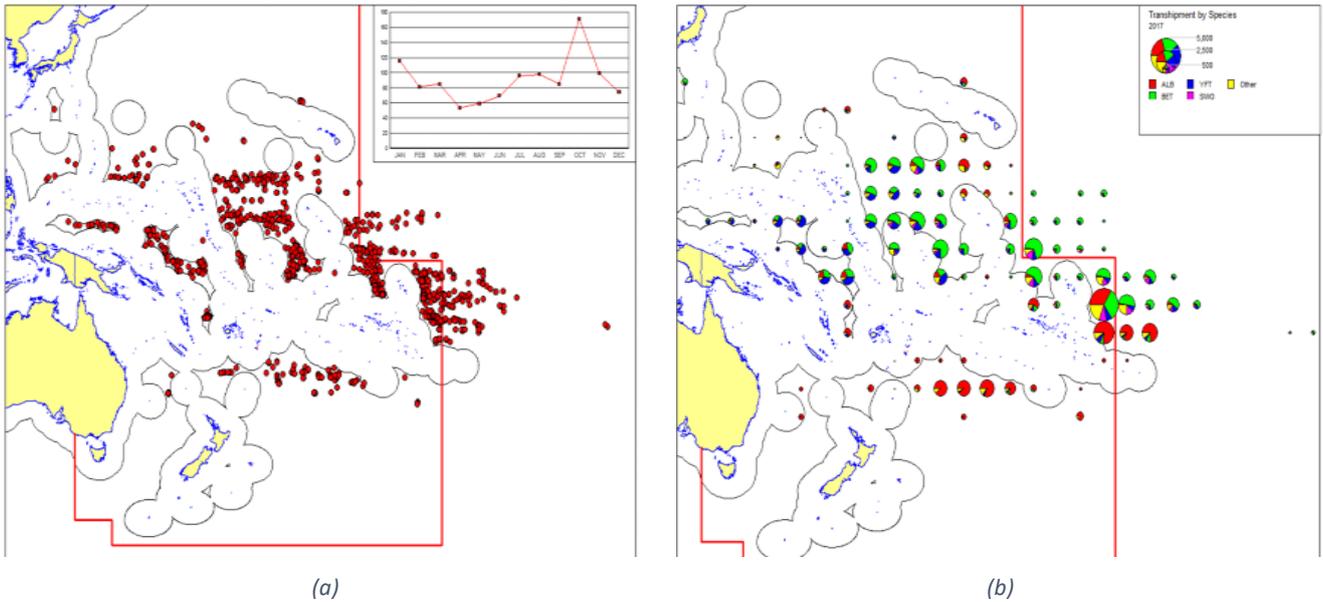


Figure 30: Reported high seas transshipments in the WCPFC-CA in 2017 by (a) location and (b) volume and species composition transhipped. (Source: WCPFC, 2018a)

#### 4.3.1.4 Number of active carriers

Although the number of carrier vessels receiving longline transshipments remained relatively stable between 18 and 27 during the 2011 – 2017 period (Table 6), the composition of receiving events by flag State changed considerably (Table 7). In 2013, Vanuatu flagged carriers dominated reported high seas transshipments, accounting for 74% of all reported events. Panamanian flagged carriers accounted for the next highest proportion at 9%, while Liberian and Taiwanese flagged carriers reported no activity. By 2017, reported transshipments by Panamanian flagged carriers had grown more than five-fold, accounting for around 26% of all transshipments, while reported activity by Korean flagged carriers grew close to 10-fold over the same period, accounting for 18% of receiving events in 2017. Similarly, transshipment activity amongst Liberian and Taiwanese flagged carriers grew from no reported activity in 2013-14 to 249 and 204 transshipments respectively (23% and 19%) in 2017. By contrast, the number of transshipments to Vanuatu flagged carriers declined substantially, representing less than 12% of total transshipments in 2017. Similarly, Belize and Kiribati flagged carriers reported no transshipment activity after 2014 and 2015 respectively. In practice, these substantial changes in the composition of longline carrier fleet activity probably reflect a mix of both the dynamic nature of flagging arrangements amongst carrier owners and changes in reporting behaviour amongst WCPFC CCMs.

Table 7: Number of reported transshipment events by receiving vessel flag State between January 2013 and 31 July 2018 (WCPFC, 2018a).

count of events by receiving vessel						
Reporting CCM	2013	2014	2015	2016	2017	2018
Belize	41	16				
China		23			29	61
Kiribati	40	133	68			
Korea (Republic of)	21	27	86	94	200	127
Liberia				193	249	57
Panama	52	34	53	275	280	412
Chinese Taipei			56	113	204	253
United States of America	1					
Vanuatu	438	335	492	281	127	68
	<b>593</b>	<b>552</b>	<b>755</b>	<b>956</b>	<b>1089</b>	<b>978</b>

## 4.3.2 Fleet dynamics

### 4.3.2.1 Fleet organisation

A number of companies involved in both purse seine and longline transshipments made the point that coordinating transshipments in the longline sector is less stable and predictable than the purse seine sector. Whereas in the purse seine sector carriers can be chartered on an annual basis, with a reasonable expectation that carrier volume can be 'sold', in the longline sector, demand is more variable. Some also noted that planning and logistical coordination of longline trips is more challenging than purse seine because the volumes are much smaller, hence there is a need to coordinate with more vessels to fill up.

Carrier companies must first decide whether it's worth making the trip – trips can be a big risk and many made the point it's easy to lose money if the judgement isn't right or circumstances change for the worse. Nevertheless, some interviewees noted that sometimes carriers are sent even if there's not demand for the full volume, in order to beat the competition.

As in purse seine, the motivation for the carrier is to fill up and return to the offloading port in the fastest possible time, at the least possible cost. For the fishing vessel, the motivation is to steam the shortest distance and lose the least possible fishing time. To that end, longline carrier companies work closely with fishing companies to plan voyages and determine transshipment locations. Carrier companies typically start with a voyage plan, although arrangements are flexible.

The actual location of transshipment is largely determined by the pattern of fishing activity – if a large number of vessels are concentrated in one area, the carrier will go to them; if the boats are more dispersed, the vessels will come to the carrier. If the fishing vessel is in transit between fishing ground, sometimes the carrier will meet them mid-transit if convenient. Carrier companies have a clear commercial motivation to avoid steaming large distances around the ocean picking up small volumes at a time – as one longline carrier company representative put it 'operating a taxi service costs money'. Fishing companies interviewed indicated that in most cases, the distance from the point of fishing to the transshipment location is less than a day's steaming.

The frequency of transshipments by longline vessels is dependent on the size of the vessel. Smaller vessels will typically tranship every 2-3 months, while bigger boats can be every 5-6 months. Notwithstanding that, frequency is also influenced by company cash flow – 5-6 months can be a long time to wait between payments, so vessels may choose to tranship earlier where cash flow is needed. A few carrier companies noted the Chinese high seas fleet tended to be smaller and therefore transhipped more often.

Perhaps more so than in the purse seine fishery, transshipments in the longline sector are pre-arranged between the fishing and carrier companies. Because carriers also provide an important provisioning service to long-range longline vessels - with provisions (e.g. food, bait, gear, etc) loaded on the carrier by the fishing company before it leaves port – it is not necessarily the case that vessels can simply offload to the nearest carrier. The carrier to which a vessel will offload is often pre-determined – the only thing to be negotiated is the meeting point (albeit the carrier will often meet up with the fishing vessels to supply provisions without transshipping).

Similar to the purse seine fishery, there is limited fidelity in longline vessels offloading fish only to carriers flagged to the same State. This certainly happens – for example, the Korean fleet largely uses Korean flagged carriers run by SOeIL Agency and Green World – but is not widespread. As in the purse seine fishery, many of the active carriers are flagged to FOCs without their own fleets (e.g. Panama) which means the majority of transshipments occur between vessels and carriers of different States (even where the offloading vessel and the charterer of the carrier are from the same country – e.g. a Taiwanese vessel offloading to a FCF chartered carrier).

Nevertheless, some participants reported that China offered commercial incentives for fish to be offloaded in China, which may influence the choice of carrier. They reported that China subsidised some of the transshipment freight costs as well as refunding VAT (13%) on fish unloaded domestically, although this was not independently verified.

#### 4.3.2.2 *A typical transshipment*

Because of the logistical (vessel reprovisioning) components, planning for a transshipment in the longline sector often starts earlier than in purse seine, and well before the carrier has left the wharf. Where reprovisioning is required, the fishing company will coordinate with the carrier company to arrange space for the provisions (e.g. bait, food, gear, etc). If necessary, the carrier will stop briefly at the home ports of the fishing company to pick up provisions (it is not unusual for example, for a Korean carrier to stop briefly in Japan and Taiwan before heading to the fishing grounds).

Similar to purse seine, some countries (e.g. Taiwan) will require their companies to send a carrier voyage plan for approval prior to departure. Other countries will require their vessels to seek approval before transshipping – for example, Korean vessels (both carrier and fishing vessel) are required to submit a pre-transshipment notification at least 24 hours before all transshipments, both at sea and in port (KOFA, pers. comm.).

During the carrier's steam from the departure point to the fishing grounds, the carrier company is in constant communication with prospective fishing vessels. Once the broad details of the transshipment have been agreed (primarily time, location and volume to be transhipped), both the carrier and fishing companies will notify their relevant flag State authorities that a transshipment will take place. This should be done in sufficient time to allow WCPFC CCMs to comply with the requirement in CMM 09-06 to notify the Executive Director at least 36 hours in advance.

At the agreed time of transshipment, the longline vessel will secure itself to the carrier, with large fenders preventing impact between vessel hulls. Fish from the longline vessel are transferred to the carrier on 'strings' using a crane from the carrier vessel (Figure 31). Crane scales are often used by the carrier to verify accurate weights, although in some cases the fishing vessel's estimated weights are used. Transfer of each string is done as quickly as possible to minimise cold chain risks. Transfer of a string from hold to hold can be completed in less than 30 seconds.



Figure 31: (a) 'Strings' used to transfer fish from the longline vessel to the carrier and (b) crane scales used to verify weights.

Transshipment times in the longline sector are considerably shorter than the purse seine sector. Information on the time taken by each vessel tranship is not available for the WCPFC, but for the ICCAT area (where the vessel profile and transshipping operation is largely the same) transshipment times range from as little as 30 minutes to a maximum of around 7 hours (for calibration on a recent trip, a 30 minute transshipment offloaded 12 tonnes of product; a 6h35m transshipment offloaded 141t of product, both primarily bigeye tuna)<sup>54</sup>. The majority of transshipments are relatively rapid affairs, with most lasting 3 hours or less (see example in Figure 32).

One WCPO carrier company we spoke to used a rule of thumb that a 50t transshipment would take half a day, with most carriers transshipping between 1-3 vessels per day.

<sup>54</sup> [https://www.iccat.int/Documents/Comply/transshipmentreports\\_current.pdf](https://www.iccat.int/Documents/Comply/transshipmentreports_current.pdf)

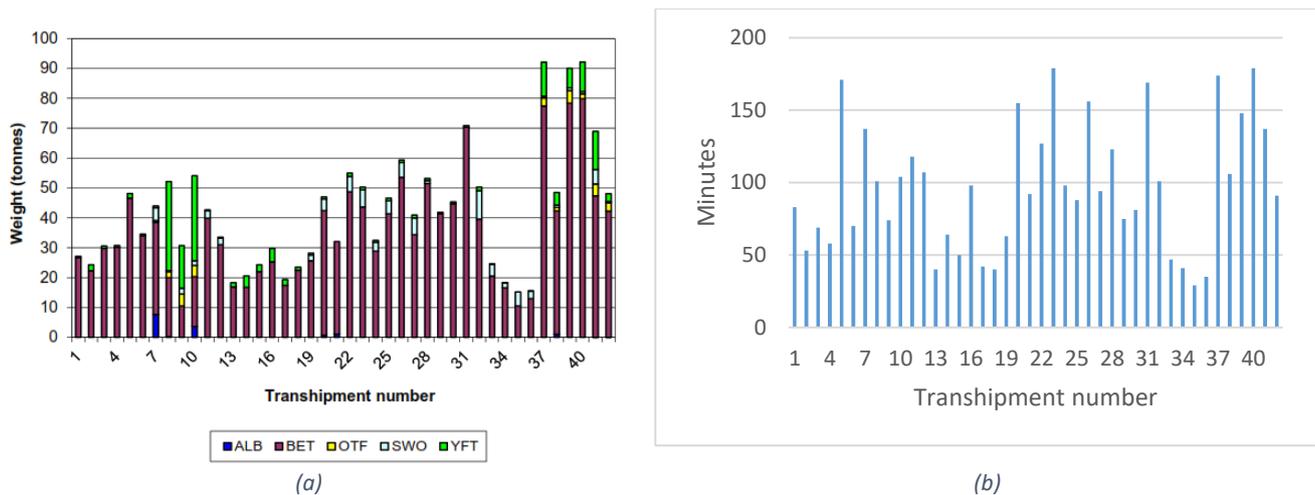


Figure 32: Example of (a) variation in transshipment volumes and (b) time taken (in minutes) for each corresponding transshipment, from a longline carrier trip undertaken in the ICCAT area in 2018<sup>55</sup>.

Any provisions arranged by the fishing company will also be loaded onto the longliner as part of the transshipment, although this may also be done separate to a transshipment event. Anecdotal information from transshipment programs in other ocean basins indicates that the number of non-fish/supply transfers at sea between carriers and longliners can equal or exceed the number of transshipments (MRAG Ltd, pers. comm.). A number of carrier companies advised that the number of people who can go on board carriers is limited. To that end, crew exchanges occur during transshipment only when really needed.

Once transshipment is completed, transshipment declaration forms are submitted by both the fishing vessel and carrier setting out the details of the transshipment (volumes, species composition, location, etc – see Annex I of CMM 09-06).

In the longline sector, there are two payment models depending on the market destination. For fish destined for the canning market (primarily albacore), fish are typically purchased by traders in a manner similar to that described for purse seine fish previously. Fish price is negotiated between the fishing company and the trader, with the majority of the sale price (90%+) paid at the time of transfer. The balance is paid upon receiving the cannery out-turn receipts. For fish destined for the sashimi market, in the majority of cases carriers simply provide a logistics service. A fee is charged for the service of transferring fish to market, with the size of the fee a function of the volume and distance to market<sup>56</sup>. The price for the fish themselves is ultimately negotiated between the fishing company and the buyer in the market State (e.g. a Japanese sashimi trader), based on quality etc.

Payment terms for companies providing a logistics service only vary between companies and customer. One Japanese carrier company advised they typically got paid within 14 days of the fish being landed, but for some customers with a poor track record of payment, they will ask for some of the fee upfront (with the balance adjusted as necessary after the completion of the trip). Several other carrier companies noted they got paid after the fish was landed at port and weighed.

A number of interviewees noted there is a difference in fee structure between Korean and Japanese controlled carriers – Korean carriers tend to charge slightly higher fees for volumes, but no fees for demurrage; Japanese controlled carriers tended to charge lower fees for volume, but did charge for demurrage. One Korean carrier company noted that fees for carrier space was heavily influenced by

<sup>55</sup> [https://www.iccat.int/Documents/Comply/transshipmentreports\\_current.pdf](https://www.iccat.int/Documents/Comply/transshipmentreports_current.pdf)

<sup>56</sup> Interestingly, this meant that transshipment in locations such as the Indian Ocean and far eastern Pacific was relatively more expensive than the western and central areas of the WCPO.

the negotiating power of fishing businesses – carriers tend to be price takers, not price makers, which is unusual in the shipping game.

Korean carrier company, SEoIL Agency, advised that they would typically tranship from between 10-20 vessels per trip, with an average trip length of around three months. Much of the cargo was likely to come from large scale Korean longliners, so its possible other carriers transhipping from smaller vessels would load from more vessels per trip.

Once the final transhipment has been completed, the carrier will steam to the market destination – typically Japan or Korea for sashimi grade fish and one of the canning hubs (Fiji, American Samoa, Thailand) for canning grade albacore. For sashimi grade fish delivered to Japan, fish are usually sold through one of the main sashimi traders (e.g. Torei, Try Sangyou; Campling et al, 2017). Sashimi grade fish delivered to Korea are often further processed (e.g. by Dongwon, Sajo) before re-export to Japan or sale domestically (Korean industry reps, pers. comm.).

Carriers will typically reprovision themselves from the last offloading port.

#### 4.3.2.3 *Why tranship at sea?*

All longline companies involved in transhipment indicated there are substantial efficiencies associated with transhipment at sea – although they are not the only reasons companies tranship.

The key benefit all companies cited was the operational efficiency in reduced fuel costs and avoiding the loss of fishing time associated with steaming to port. This was particularly the case for small vessels who have limited fish and fuel holding capacity and would spend proportionally more time steaming to and from port. The Korean fleet, which consists entirely of large scale vessels, estimated they saved between 20-30% of fishing time by not having to return to port to tranship (assuming vessels would return to Busan port) (KOFA, pers. comm.). Taking into account fuel costs and port fees, they estimated around \$70,000 per transhipment is saved by transhipping on the high seas.

Taiwanese large vessel owners made the point that the economics of longline fishing had been precarious for a long time, with transhipment at sea essential to the operation being viable<sup>57</sup>. Any prohibition on high seas transhipment would send many of them insolvent, beginning with smaller vessels who are more sensitive to any requirement to steam to port.

In addition to the fuel/fishing time savings, DWFN longline fishing companies also highlighted a number of other financial and administrative benefits from transhipment at sea:

- **Cheaper provisions** – all companies/associations noted that the key provisions involved in longline fishing (bait, gear, food, salt) could be acquired cheaper in their home port (or the, usually east Asian, port of carrier unloading) than in PIC ports;
- **Cheaper bunkering** – although not strictly a benefit associated with transhipment, companies noted that fuel prices from (mainly Asian) companies arranging high seas bunkering were typically cheaper than fuel available in PIC ports;
- **No port fees** – transhipment at sea avoids vessels paying fees associated with port calls. Fees are dependent on the size of the vessel, services used and the length of stay. One carrier company estimated port fees averaged around US\$10,000 per stay, with costs up to \$30,000 per stay in some ports. They noted that PIC ports were typically considerably more expensive than US or Asian ports;
- **No license fees** – many PIC countries require vessels to purchase a license before allowing a vessel to tranship in port. Transhipment at sea saves vessels – both longliners and carriers – from paying annual license fees, which may be required across several

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<sup>57</sup> Interviews with TTA, Shun He

countries if multiple ports are used. One carrier company indicated an annual license for their carrier in PNG was US\$24,000 and Kiribati \$41,000, although there were discounts for using Kiribati crew.

- **Less administrative paperwork/agent's fees** – transshipment at sea avoids the need to go through customs, immigration and other administrative checks undertaken by foreign ports. Many of these checks are handled by local agents, for which a fee is paid.

In addition to the direct financial benefits associated with at sea transshipment, many longline companies told us they actively avoided transshipping in Pacific Island ports because of the higher level of compliance scrutiny involved<sup>58</sup>. Many noted they were unfamiliar with local laws - which differed from EEZ to EEZ and port to port - and they were wary of either having the vessels impounded or delayed, or otherwise being required to pay large fines for (in their view) small offences. There was a clearly a cultural difference for some in what constituted a serious offence (many could not understand why Pacific countries took some offences – e.g. shark offences – so seriously) and a general view that PIC compliance approaches were 'overly picky'. One local representative of a DWFN company thought that PIC compliance officers should check only if the vessel was licensed, not whether they were complying with the license terms.

Collectively, these cost and administrative differences between PIC and Asian ports meant that virtually all companies we spoke with advised that – in the event high seas transshipment was ever banned - they would return to their home ports (as inconvenient as that would be) rather than tranship in PIC ports.

#### 4.3.3 Key companies

##### Japanese companies

###### Mitsubishi

The Mitsubishi Corporation is Japan's largest *sogo shosa*, or general trading company, whose business incorporates something in the order of 900+ subsidiary companies. Mitsubishi, through its subsidiary Toyo Reizo Co. Ltd. (or TOREI) is the leading sashimi trader in Japan, and thus the world. With sales of around US\$1.5b in 2016, Campling et al (2017) estimated TOREI's turnover more than doubled its next largest trading competitor (Try Sangyou).

Mitsubishi entered the transshipment business around 30 years ago and currently manages a fleet of seven carrier vessels, coordinated through its subsidiary MRS Corporation. These vessels form part of an integrated logistics/cold chain from fishing grounds/farms to the customer, which includes an extensive network of cold stores and processing facilities in Japan<sup>59</sup>. Both TOREI and MRS operate within Mitsubishi's Marine Product's Department, which is in turn part of the wider Fresh Food Products Division.

Three of the carrier vessels – Lady Tuna, Tuna Queen and Tuna Princess – are primarily 'processing' vessels, which source product from tuna farms in the Mediterranean, Australia and Mexico and have specialised crew on board to undertake processing (although they may source from longline vessels – see Figure 33b). Each of these vessels is relatively large, at around 4,500 GRT, with product sourced supplying TOREI's 'Tuna Queen' brand<sup>60</sup>.

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<sup>58</sup> Interviews with DWFN industry representatives as well as locally-based industry

<sup>59</sup> <http://www.toyoreizo.com/index.php>

<sup>60</sup> <http://www.tunaqueen.com/index.html>

The remaining four carriers - Chikuma, Ibuki, Chitose and Yachiyo – are focused on sourcing longline caught fish. These vessels are some of the largest active carriers in the fleet at 6,500+ GRT.

Six of Mitsubishi’s seven carriers are listed on the WCPFC RFV (all except Chitose). Mitsubishi is one of the few companies who have invested in new carriers in recent years, with the latest addition, the 6,607 GRT Yachiyo, launched in 2019 (Figure 33a).



Figure 33: (a) The most recent addition to Mitsubishi’s carrier fleet, the 6,607 GRT Yachiyo, launched in 2019 and (b) an example WCPFC/IATTC high seas transshipment vessel track for one of Mitsubishi’s carriers, Lady Tuna, between January and April, 2019 (source: Global Fishing Watch).

Overall, Mitsubishi advised that they sourced more wild caught fish than farmed fish, although the exact proportions were not available. Of the wild caught fish, they estimated roughly equal amounts were sourced from each of the Pacific, Indian and Atlantic Oceans. Bigeye tuna is the most important species by volume, followed by yellowfin and albacore. Bigeye and yellowfin are mainly landed in Japan, but sometimes Korea and China. Mitsubishi haven’t historically supplied fish into the EU market, but they advised the tax regime is becoming more favourable so it may be an option in future.

Mitsubishi reported that MRS operated independently of TOREI (MRS carried fish for other companies, TOREI purchased fish from other carriers, etc), but the two did coordinate. TOREI buy fish at the Japanese end after the fish are landed; MRS operate like a normal shipping company, charging a fee to the fishing company for the service of transporting the fish. MRS carriers specialise only in fisheries products.

The ownership/chartering arrangements for Mitsubishi’s carriers were not entirely clear from our research. Mitsubishi reported that MRS typically charters vessels on a time charter basis, which provides flexibility to end the lease if necessary and means issues such as crew management are outsourced. Of Mitsubishi’s seven vessels, four (Ibuki, Yachiyo, Tuna Queen, Tuna Princess) are listed as being owned by Star Navigation S.A. (alternatively listed as being based in Panama City and c/o Shinko Kaiun Co., Ltd in Tokyo) and flagged to Panama. Two - Lady Tuna and Chitose - are listed as being owned by Wang Tat Corporation, based in Singapore. Lady Tuna is flagged to Panama,

while Chitose is flagged to Singapore (and therefore not on the WCPFC RFV). The remaining vessel – Chikuma – is flagged to Panama and is listed as being owned by Oceanwide Shipping, S.A., based in Panama.

Nevertheless, it is possible that Mitsubishi has a closer than normal charterer/owner relationship with at least some of the companies. For example, it appeared widely known amongst interviewees that ‘Mitsubishi’ had built the Yachiyo, listed as being owned by Star Navigation S.A. on the RFV. Star Navigation S.A. is listed as the owner of four vessels controlled by Mitsubishi, and is not listed as the owner of any vessel other than those controlled by Mitsubishi. Moreover, while the WCPFC RFV lists only the ‘owner’ of the vessels and not the ‘operator’, this is not the case for the IOTC and ICCAT vessel registries. For Ibuki, for example (also listed in the WCPFC RFV), Star Navigation is listed as the operator on the ICCAT registry, while MRS Corporation is listed as the operator on the IOTC registry.

### **Toei Reefer Line**

Toei Reefer Line Ltd (TRL) is a specialist marine transport and shipping services company, headquartered in Tokyo, Japan<sup>61</sup>. Founded in 1959, the company offers a broad range of shipping logistics services and is a leading operator in the ULT frozen tuna logistics industry. The company operates a fleet of eight ULT carrier vessels - two directly owned Japanese flagged reefer carriers (Gouta Maru and Kenta Maru<sup>62</sup>) as well as a further six carriers through its Panamanian registered subsidiary Panama TRL SA:

- Astraea 102<sup>63</sup> (Panama),
- Genta Maru (Liberia),
- Houta Maru (Panama),
- Kurikoma (Panama),
- Meita Maru (Liberia); and
- Shota Maru (Liberia).

Of these, all but Astraea 102 are currently listed on the RFV and authorised to tranship on the high seas. We understand that a number of TRL managed vessels, including Shota Maru, Kurikoma and Victoria II have been actively involved in transhipments from LSTFVs on the high seas in the Pacific in 2017 and 2018.



(a)



(b)

Figure 34: Toei Reefer Line ULT carriers Gouta Maru and Kenta Maru<sup>64</sup>

TRL was a pioneer of the seafood transhipment business, starting with shrimp but quickly moving into tuna around 35 years ago. The company now specialises in tuna transhipment, with few other types of products transported. The company also runs fish trading, bunkering and ship agency services, although tuna logistics is the key component of the business.

<sup>61</sup> [http://www.toeireefer.co.jp/index\\_e.html](http://www.toeireefer.co.jp/index_e.html)

<sup>62</sup> See footnote 34.

<sup>63</sup> May have recently been renamed Souta Maru

<sup>64</sup> <http://www.toeireefer.co.jp/tanker/index.html>

Like Mitsubishi, TRL operate two types of carrier vessels: transshipment carriers, focused on receiving sashimi grade fish from longline vessels at sea, and processors, focused on processing and transporting harvests directly from tuna farms in the Mediterranean, Australia and Mexico. At present they have four of each type of vessel. The two types of vessel are largely the same – the main difference being processing vessels carry a specialist crew to process farmed tuna. At this stage, TRL’s business is 70% farmed tuna, 30% wild caught tuna.

TRL’s main transshipment areas are the Atlantic and Indian Oceans. TRL estimate on average two of its vessels will be involved in high seas transshipments in the WCPFC-CA annually, although its main customers are in the ICCAT and IOTC areas. TRL tends to source from the main distant water fleets – those from Japan, Taiwan, Korea and China. Very occasionally they will pick up purse seine caught fish, although the majority is bigeye and yellowfin carried at <-50oC.

Sashimi grade fish is mainly delivered to Japan.

Of the non-Japanese options for flagging its carriers, TRL advised that Panama is the preference because they have an EU CA. Originally, several of its carriers were flagged to Vanuatu, but had subsequently been changed to Liberia. More recently, they’ve flagged to Panama because of the CA.

An example 6-month vessel track for one of TRL’s carriers, Kurikoma (Figure 35) shows the multi-fishery nature of TRL’s operation. The trip commences in Mexico in March sourcing fish from tuna farms, before returning to Japan (conspicuously steaming around the Hawaii EEZ). The vessel remains in Japan for around one month, visiting a number of ports. The vessel then steams to Singapore (potentially to pick up an IOTC observer), before transshipping fish in the southern Indian Ocean for 2-3 weeks. The vessel then steams to Port Lincoln, Australia, to source Australian farmed southern bluefin tuna, where it remains for around six weeks. The vessel then returns to Japan, via Busan, Korea, in early September.

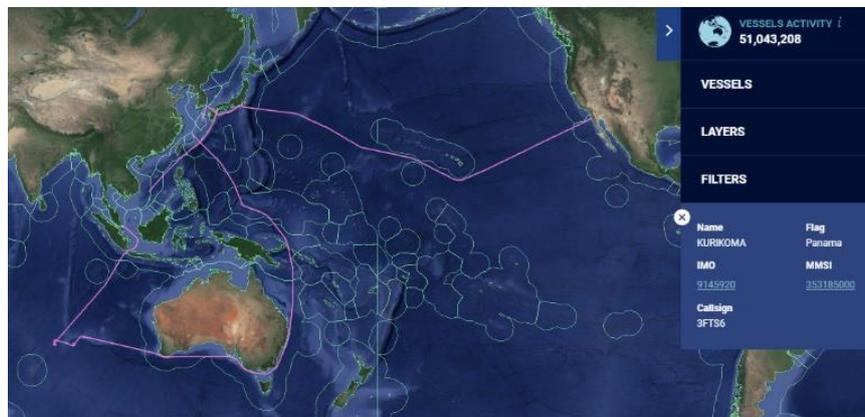


Figure 35: Kurikoma vessel track, March to September 2018. (Source: Global Fishing Watch)

## Hayama Shipping

Hayama Shipping is a general freight, shipowner and marine logistics company based in Tokyo. The company was established in 1981 and operates the Liberian flagged reefers Tenho Maru and Taiho Maru<sup>65</sup>, both of which are understood to have been involved in high seas longline transshipments in the Pacific Ocean in 2017 and 2018. Both of these carriers are listed on the RFV as being owned by Princess Line S.A., based in Panama. The relationship between Hayama and Princess Line S.A. is not clear although the companies appear to share some of the same representatives<sup>66</sup>.

<sup>65</sup> <http://www.hayamaship.co.jp/businessE.html>

<sup>66</sup> Based on company representatives listed in the Orbis database and on [www.opencorporates.com](http://www.opencorporates.com)

We also understand that Hayama may have a management role for the Panama-flagged carrier Ryoma, which is also thought to have been involved in high seas transshipments in the Pacific in 2017 and 2018. Ryoma's owner is listed as Jong Shyn Shipbuilding Co., Ltd.

Hayama also operates four other bulk carriers and a general cargo vessel.

Hayama lists a 'business connection' with Toei Reefer Line Ltd on its website, but the nature of the connection is not clear.



(a)



(b)

Figure 36: Hayama Shipping's (a) Tenho Maru and (b) Taiho Maru<sup>67</sup>

### Korean companies

#### SEoIL Agency

SEoIL Agency is a Korean based shipping business which provides a range of services including fishing reefer services, dry bulk and reefer cargo, vessel and crew management and shipping agency services<sup>68</sup>. The company was founded in 1991 and commenced its reefer business in 2006 through the purchase of the carrier SL Archi (Figure 37). The company established a south Pacific reefer carrier service in 2007 with the purchase of a second carrier, SL Bogo, which it continues to own and operate. SL Bogo is the bigger of the two vessels at 3,302GT, is capable of freezing fish to -55°C and focuses on high seas longline transshipments. SL Archi is smaller (1,488GT) and carries only canning grade fish (mainly from purse seiners). Both vessels are flagged to Korea.



Figure 37: SEoIL Agency's reefer carriers.

<sup>67</sup> <http://www.hayamaship.co.jp/shipE.html#tenho>

<sup>68</sup> <http://sseoil.com/profile/>

SOeIL Agency has offices in Korea and the US, and previously had offices in China although these are now closed. SOeIL's carriers work only in the Pacific (WCPO and EPO) and load fish mainly from Korean vessels. Much of the canning grade fish is unloaded to Thailand and Korea (SOeIL do a lot of transshipments for Dongwon), while sashimi grade fish is unloaded to Japan and Korea.

Examples of SOeIL Agency's recent carrier vessel tracks are shown in Figure 38.

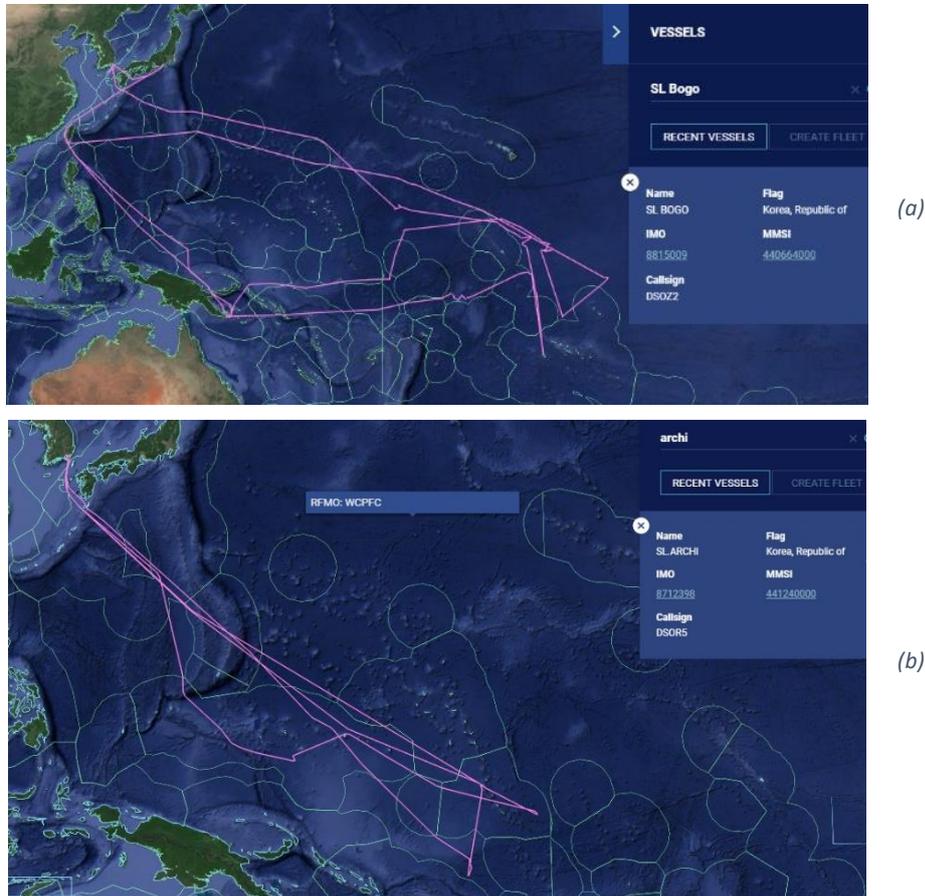


Figure 38: Vessel tracks for (a) SL Bogo for the six months to March 2019 and (b) SL Archi's for the four months from March 2018. (Source: Global Fishing Watch)

### Green World

Established in 1995, Green World Company Limited is a privately owned Korean company that works internationally to catch, transport and trade frozen fish and seafood from the Pacific and Indian Oceans<sup>69</sup>. The company owns six carriers listed on the RFV (Seiho, Seiwa, Green Cape, Sei Shin, Seibu and Seiyu), all of which are Korean flagged. The company's website also claims to charter the carriers Ming Fa and Kyung Il Reefer, although these are not listed on the RFV.

The company's website lists Seiyu, Sei Shin and Green Cape as 'super freezing' carriers, although the freezing capacity of the remaining vessels is not known. The carriers span a large size range from the smallest (Sei Shin) at 978 GRT to the largest (Green Cape) at 4,970 GRT. Each of the vessels is authorised to tranship on the high sea in the WCPFC-CA, except for Green Cape.

Interviews with Korean longline companies indicated that Green World was one of the main carrier companies used by the Korean WCPO longline fleet (KOFA, pers comm.). Vessel tracks from four of the six Green World carrier appear to indicate involvement in high seas transshipments in the

<sup>69</sup> <http://ipnlf.org/who-we-are/members/green-world-company>

WCPFC-CA in the past 18 months (Seiwa, Seiho, Sei Shin and Seiyu). Green Cape’s vessel patterns are more consistent with transporting purse seine catch (in the WCPO), while Seibu appears to have been focused in the Indian Ocean in recent times.

The company’s main office is in the 8th Dongwon Building, Busan, Korea, although reportedly has offices in both China and the Maldives.

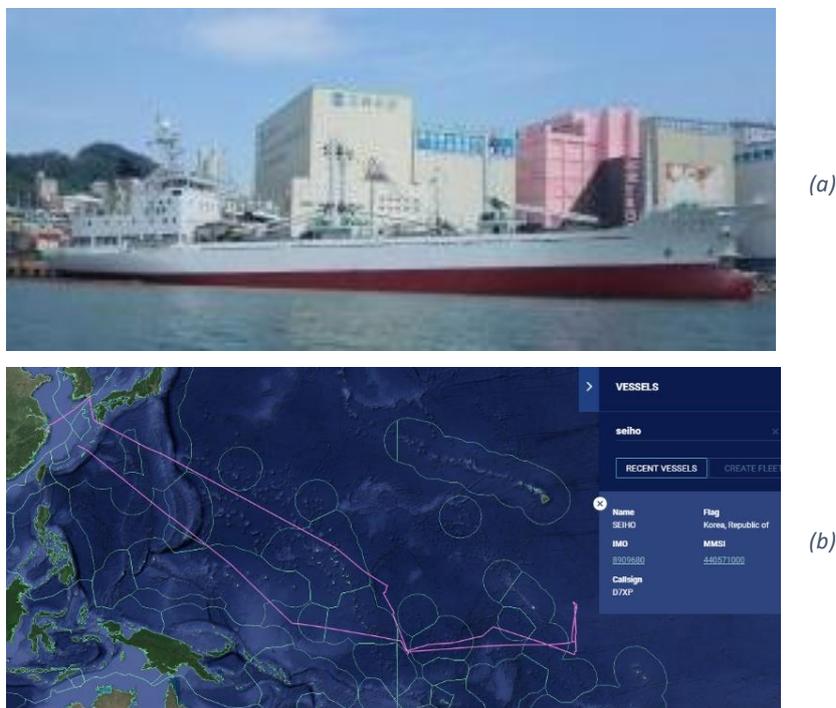


Figure 39: (a) Green World carrier Seiho (1,238 GT), and (b) Seiho vessel track for a 7-week trip between mid-September and late November 2018.

Green World appears to have undergone a period of expansion in recent years, acquiring four carriers (Sei Shin, Green Cape, Seibu and Seiho) since 2015<sup>70</sup>. The company is also reportedly involved in importing/exporting a range of other seafood products (squid, sardine, hairtail), as well as having interests in a katsuobushi factory and joint venture canned tuna plant in the Maldives. The company also reportedly provides bunkering and stevedoring services in Korea.

### Dongwon

Although Dongwon doesn’t operate its own carriers for sashimi grade fish, it is a leading processor of ULT tuna, undertaken at its processing facilities in Busan<sup>71</sup>. Fish are sourced from its own longline vessels (Dongwon has 26 longline vessels on the RFV), as well as others across all major oceans. Tuna are processed into various forms (raw, loin, block, steaks) before being exported to Japan, the US and Europe, or sold domestically through its own brands.

Dongwon also operate a comprehensive international and domestic cold chain logistics network through its distribution brand Loex<sup>72</sup>.

<sup>70</sup> <http://www.greenworldcompany.com/eng/01/03.php>

<sup>71</sup> <http://www.dwml.co.kr/eng/contents/distribution/processing>

<sup>72</sup> <http://www.dwml.co.kr/eng/contents/logistics/tpoverview>



Figure 40: Dongwon cold storage in Busan, Korea<sup>73</sup>.

## Sajo

Founded in 1971 as a small tuna fishing business, the Sajo group has grown to become a diverse, integrated group comprising over 25 companies with interests across fishing, seafood processing and distribution, farming, food products, golf and IT logistics<sup>74</sup>. Through its companies, Sajo Industries Co., Ltd, Sajo Sea Food Co., Ltd and Sajo Daerim Corporation, the group operates a fleet of 40 large scale longline vessels in the WCPFC-CA (as well as having interest in the purse seine fishery, pollock trawl, and squid fishing). A further seven vessels are operated by the Oyang Corporation which is linked to the Sajo group through common ownership<sup>75</sup>. Campling et al (2017) note that the collective Sajo fleet, which also operates in the Indian and Atlantic Oceans, is reportedly the ‘world’s largest (sashimi) tuna longline fleet’.

The Sajo group is a key processor of longline tuna products in Korea, with processing and cold storage facilities in Busan<sup>76</sup>.

The Sajo group does not operate its own transshipment vessels, with much of the product in the Pacific reportedly transported using SOeIL Agency and Green World carriers.

### *Taiwanese companies*

#### FCF

In addition to its purse seine canning grade tuna trading activities (see section 4.2.3), FCF also operates longline tuna logistics services for sashimi grade fish (mainly bigeye and yellowfin) and canning grade fish (mainly albacore).

Where canning grade albacore is sourced, FCF purchases the fish under a standard trader type model. For sashimi grade fish, the company operates a logistics service similar to other longline carrier companies.

Much of FCF’s canning grade albacore is delivered to Thailand, while sashimi grade fish is largely delivered to Japan. ‘Miscellaneous’ fish (mainly bycatch from longline vessels) goes to a range of markets including China, Korea, Vietnam and Taiwan.

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<sup>73</sup> <http://www.dwml.co.kr/eng/contents/distribution/processing>

<sup>74</sup> <http://www.sajo.co.kr/en/group/introduce.asp>

<sup>75</sup> Corporate searches through Orbis database

<sup>76</sup> <http://sf.sajo.co.kr/eng/business/foodBusiness.asp>; <http://sf.sajo.co.kr/eng/business/freezeStorage.asp>

## Lung Soon Group

The Lung Soon (LS) Group is a large, vertically integrated fishing, processing and retail group based originally in Taiwan<sup>77</sup>. The company operates the carrier Lung Yuin, flagged to Vanuatu, through one of its subsidiaries, Chang Soon Shipping Co Ltd. The Lung Yuin was thought to be active in 2017/18 in high seas longline transshipments in the Pacific (Figure 41). Chang Soon Shipping Co Ltd is also reportedly involved in tanker charters, although is not listed as an owner of bunker vessels on the RFV.

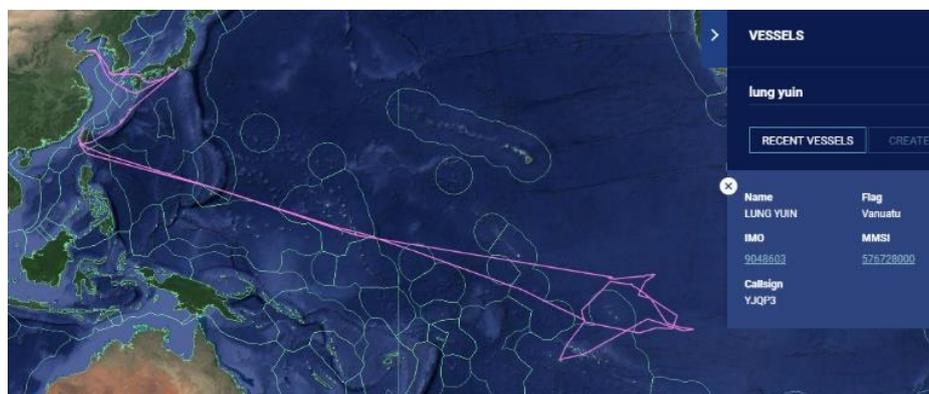


Figure 41: Five month vessel track of the Lung Yuin between September 2018 to January 2019 (Source: Global Fishing Watch)

The company was originally established in 1985, operating break bulk carriers to service Asian ports and expanding up to 20 carriers at its peak in the freight business. In 1994, the group diversified into fishing, with the purchase of its first longline vessel. Since then, the group has continued to expand its fishing fleet through its main fishing company Lung Soon Fishery Co Ltd. At present, the LS Group is reportedly responsible for a fleet of 21 self-owned and 25 contracted longline vessels, two self-owned and three contracted purse seiners and 3 self-owned and 2 contracted squid jig vessels<sup>78</sup>.

The LS Group also operates at least nine subsidiary companies across its at sea support, trading, superfrozen processing, food service and US divisions. Through its subsidiary Soon Yi Superfrozen Co. Ltd it undertakes processing of ULT tuna products. The Kaohsiung-based Soon Yi facility has 2,000mt of -55°C cold storage, with distribution logistics managed through Lung Soon Frozen Logistics Co Ltd in Taiwan, China and Hong Kong.

Lung Soon also operates a chain of sushi retail stores (Soon Yi Sushi) through its subsidiary Lung Soon Safe Food Co. Ltd, with 23 stores across Taiwan and China.

In the US, the group owns Da Yang Seafood Inc, Great Ocean Seafood Inc and LS Global Transport Inc. Da Yang Seafoods operates a seafood processing centre in Astoria, Oregon, with products sold through its 'Lewis and Clark' and 'Astoria's Best' brands. Da Yang also operates an unloading facility in Kosrae, FSM<sup>79</sup>, which allows purse seine vessels to unload catch into reefer containers.

The LS Group also operates a tuna (and other seafood) trading business through its subsidiary Da Yang Seafood Ltd.

<sup>77</sup> <http://www.lungsoon.com/our-companies.html>

<sup>78</sup> <http://www.lungsoon.com/>

<sup>79</sup> <http://www.lungsoon.com/media.html>

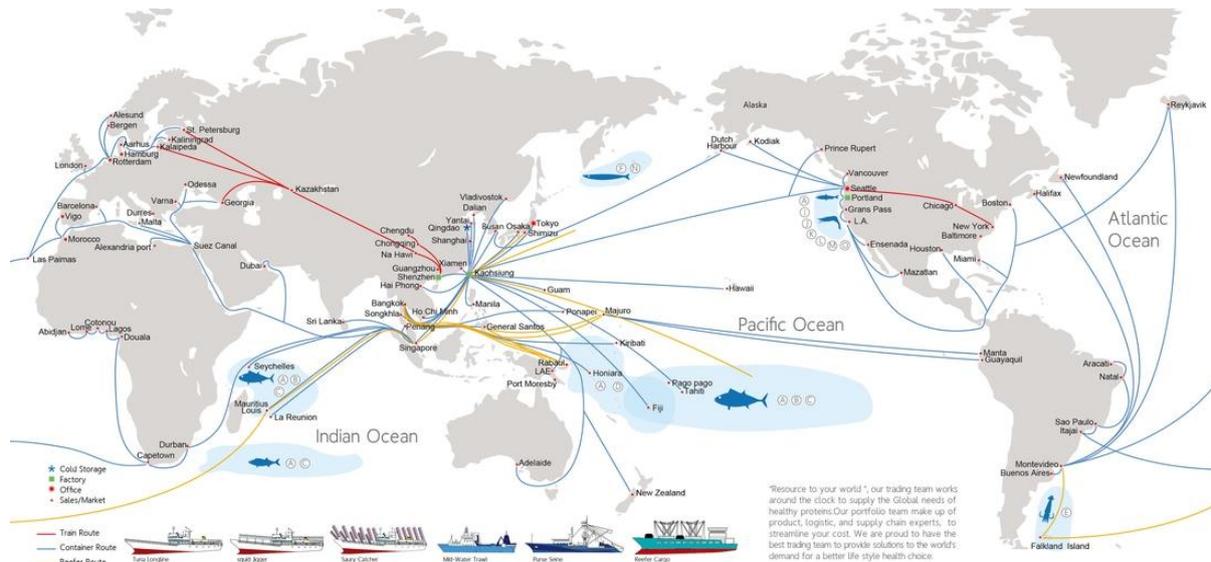


Figure 42: Lung Soon Holdings Group sourcing and distribution network.<sup>80</sup>

### Tunago Shipping Co. Ltd.

Tunago Shipping is a Kaohsiung-based company which operates the WCPFC registered carriers Shin Ho Chun No. 101 and Shin Ho Chun No. 102, both of which are Panama flagged. The extent to which both vessels have been involved in high seas transshipments in recent times is unclear, although the vessel tracks of both appear consistent with at least some activity. Similarly, the extent to which Tunago Shipping controls the movements of the vessels, or simply makes them available for time or space charters is equally unclear.

Little information is publicly available on the internal structure and workings of the company. The relationship between Tunago Shipping Co Ltd and the similarly named Vanuatu-registered Tunago Fishery Co., which operates six longline vessels, and the Belize-registered Tunago Shipping Co. Ltd is not known.

### Hon Shun Fishery Co. Ltd

Hon Shun Fishery Co. Ltd is a Kaohsiung-based company which owns the carrier Shun Tian Fa No.168. The carrier is understood to have been involved in high seas transshipments in the Pacific in 2017 and 2018 (Figure 43).

We understand the company may also have a management role for carrier Lian Jyi Hsing, which has also been active in high seas longline transshipments. Lian Jyi Hsing is listed as being owned by Lian Jyi Hsing Marine Products Co. Ltd on the RFV. This seems to be in keeping with a common Taiwanese practice of establishing companies for the management of individual vessels. The relationship, if any, between Hon Shun Fishery Co and Jyi Hsing Marine Products Co. Ltd is not known.

Limited additional information is available about the company, other than that it is not listed as owner of other vessels on the RFV.

<sup>80</sup> <http://www.lungsoon.com/join-us.html>



Figure 43: Four month vessel track for Shun Tian Fa No. 168 between March and July 2018. (Source: Global Fishing Watch)

### Chinese companies

#### Ping Tai Rong Ocean Fishery Group Co., Ltd

Based in Zhoushan, Ping Tai Rong Ocean Fishery Group Co. Ltd. (PTR) was established in 2007 and has grown quickly to over 700 employees<sup>81</sup>. The company operates across a range of integrated fields including fishing, marine aquaculture, processing, storage, transportation, sales, import and export, as well as marine biotechnology.

PTR claims to operate 28 tuna longline vessels, 25 of which appear to be on the WCPFC RFV and all of which are authorised to fish on the high seas. The company also operates two new (2017 construction) large (4,571 GT) carrier vessels – Ping Tai Rong Leng 1 and Ping Tai Rong Leng 2. Although Dai et al (2018) report that the Ping Tai Rong Leng 1 was the only Chinese flagged carrier to undertake high seas transshipments in 2017, it is likely that both vessels have been active in high seas transshipments in 2017-2019 (Figure 44). PTR claims both vessels are capable of freezing to -60°C.

PTR note their longline vessels mainly target albacore, with a total annual catch of all species of over 12,000t. We understand the two carriers form an important link in PTR's integrated logistics chain between its fishing vessels and its processing facilities in mainland China.

<sup>81</sup> <http://www.zjptr.com/en/index.php/Index/lists/catid/23.html>



Figure 44: PTR group carriers Ping Tai Rong Leng 1 (upper left) and Ping Tai Rong Leng 2 (upper right) and Ping Tai Rong Leng 1 vessel track, six months from August 2018. (Source: Global Fishing Watch)

The PTR group has four subsidiaries: Zhejiang Rongzhou Marine Industry Co. Ltd., Zhoushan Rongsheng Marine Technology Co. Ltd., Zhoushan Zhongku Farming Co. Ltd., Zhoushan Pingtairong Catering Service Co. Ltd.

Established in July 2012, Zhejiang Rongzhou Marine Industry Co. Ltd is the group's main processing base for tuna and other seafood products with nearly 200 employees. The company's site covers an area of 20 acres and incorporates modern processing facilities. The tuna processing workshop has been operational since October 2015 and, with a processing capacity of 25-30 tons/day, PTR is aiming for an annual production capacity of 10,000 tons of tuna products. The site is also equipped with a 4,000-ton -55°C ULT cold storage capacity and 3,000 tons of low temperature storage capacity, which PTR claims is the largest in East China. Processed loins from the facility are currently sold to China, Japan, Thailand and Fiji.

Zhoushan Rongsheng Marine Technology Co. Ltd. was established in 2013 as a vehicle to engage in research, development and innovation in tuna processing technology and the full use of trimming materials. Zhoushan Zhongku Farming Co. Ltd. is focused on aquaculture, while Zhoushan Pingtairong Restaurant Management Co. Ltd. is focused on providing catering services (including diversifying the use of PTR's tuna products).

#### **Fujian Province Changfu Fishery Co. Ltd**

Fujian Province Changfu Fishery Co. is listed as owning two smaller Chinese-flagged carriers - Fu Yuan Yu F86 (1,588 GT) and Fu Yuan Yu F76 (1,593 GT) – as well as five longliners on the RFV, albeit the carriers do not appear to have been active in the WCPFC-CA in 2017/18. A number of other companies with similar names are listed as owning longliners on the RFV although the relationship between them, if any, is unclear.

## 5 Political and economic landscape

### 5.1 The politics of transshipment

This component of the TORs calls for an analysis of the ‘political and economic landscape’ of transshipping and, in particular, identification of key countries that benefit from transshipment as well as those supportive of transshipment reform. The analysis has been separated into in port and at sea transshipment.

#### 5.1.1 In port transshipment

The vast majority of in port transshipment in the WCPO region occurs in the purse seine fishery, in which at sea transshipment is banned except in a few very limited circumstances. In recent years, roughly 900,000 mt to 1,000,000 mt of purse seine caught tuna has been transhipped in PIC ports annually, across 1,200+ transshipment events (SPC data). In the longline fishery, transshipment in port occurs only rarely (most product is landed) and usually in one of the regional hubs (e.g. Suva). In 2017, Fiji reported only two transshipments in port, totalling 410 mt of albacore (Fiji MoF, 2018).

The main beneficiaries of in port transshipment are the key port states in which transshipment occurs. As reported in section 4.2.1, transshipment is highly concentrated amongst a number of key port States, predominantly in the central Pacific (Figure 14). In recent years, Majuro has accounted for around 37% of all purse seine transshipment in the WCPO, with Pohnpei, Funafuti, Rabaul and Tarawa collectively accounting for a further 48%.

The benefits to PIC port States from in port transshipment are more than simply economic ones (see for example review by McCoy, 2012), though economics remains a key driver for wanting to see all transshipment happen in port. Some of the key benefits include:

- **Port/transshipment fees and other Government charges** – carrier companies interviewed for this project indicated average port fees and other Government charges (e.g. fees per transshipment/tonne transhipped, customs, quarantine, etc) averaged roughly \$10,000 per transshipment (albeit some stays could be up to \$30,000). This is broadly consistent with McCoy (2012) who estimated an average of \$6,800 in port fees, plus transshipment costs. In total, McCoy (2012) estimated five major PIC port States received up to \$4.7m between them in 2010.
- **License fees** – each PIC (except RMI) requires vessels transshipping in their ports to be licensed. License fees for carrier vessels vary by country, but can reportedly be up to \$40,000 annually.
- **Support for local businesses** – although some vessels reprovision through their own carriers, many buy provisions (e.g. food, FAD materials) and receive services (e.g. minor vessel maintenance, water taxis, crew R&R) from local companies. McCoy (2012) estimated expenditure of between \$1,000 and \$8,000 per stay for purse seiners;
- **Jobs** – transshipment activity provides jobs in support businesses, as well as for Government officers such as pilots, customs, immigration and port monitors;
- **Stronger freight/transport connections** – in transshipment hubs, higher levels of transshipment activity will support stronger transport connections, which in turn improves access for PIC citizens to overseas destinations and potentially moderates transport costs;
- **Stronger compliance monitoring** – a key benefit of transshipment in port is the capacity to undertake more cost effective and comprehensive compliance checks, as well as facilitate better monitoring (e.g. embarking and disembarking observers); and
- **Access to bycatch** – although there are problems with competition with local fishers, access to purse seine bycatch can be a valuable source of cheap protein for PICs (e.g. Tolvanen et al, 2019).

For non-port State PICs, although direct economic benefits are limited, broader benefits arguably exist through the capacity for better compliance monitoring and verification of catches in port versus on the adjacent high seas.

Having said that, transshipment activity has not been all positive for PICs. Many PIC interviewees reported complaints around pollution associated with fishing vessels and carriers (oil spills washing onto local beaches, trash being thrown overboard), social problems associated with prostitution and tensions between locals and ‘outsiders’ and competition between fishing vessels and locals for provisions (e.g. fruit and veges – although one interviewee saw this as a positive because it encouraged locals to plant more gardens)<sup>82</sup>. These problems have required the application of new local laws, as well as increased costs – for example, RMI has dealt with some of the social problems by having a 10pm curfew for fishing vessel crew, while the Pohnpei Port Authority (PPA) pays for additional Port Control Officers to monitor fishing vessel compliance with port regulations (e.g. pollution).

For DWFNs, in an environment where at sea transshipment is prohibited by the WCPFC Convention and has long been prohibited in zone by FFA members, the key benefit of in port transshipment is the capacity to offload catch and reprovision close to the fishing grounds. Were PIC ports not open to DWFN vessel transshipment, fishing companies would face substantially higher operational costs in returning to their home port (or market port) to discharge. Korean fishing companies interviewed estimated they lost between 20-30% of fishing days by not having access to high seas transshipment, and the impact of a requirement to steam outside the FFA member area would likely be more significant (KOFA, pers comm.). Nevertheless, reduced profitability associated with higher operational costs is also likely to impact VDS revenues, so ultimately not allowing in port transshipment in PICs would almost certainly be detrimental to all parties.

Given the longstanding ban on at sea transshipment in the purse seine sector, we detected no substantial appetite for any change to arrangements, either in written records (e.g. WCPFC meeting records) or in our discussions with interviewees. Where management ‘reforms’ were mentioned they were largely in the context of improved compliance with local environment regulations, and improved monitoring of the in port transshipment process.

Perhaps the major economic ‘reform’ raised in our discussions was a desire amongst several PIC port States to strengthen onshore port facilities to encourage greater unloading to containers by purse seiners. Proponents of this view noted that greater onshore landings would provide local jobs, allow purse seiners to grade fish and therefore optimise the value of catch, while at the same time increasing volumes of shipping traffic which should reduce freight price and improve access to goods.

### 5.1.2 At sea transshipment

McCoy (2012) reports that there are four PICs who currently authorise longline transshipment at sea within their EEZs under limited circumstances: Fiji, PNG, Palau and Kiribati. In Fiji’s case, transshipment at sea is allowed for Fijian flagged vessels transshipping fresh fish in designated areas<sup>83</sup>. In Kiribati’s case, MFMRD (2018) report that it is to minimize operational costs for vessels supplying KFL, in which the Government has an interest. In 2017, the four countries collectively reported very little at sea longline transshipment. PNG and Kiribati reported no at sea transshipment, Fiji reported two at sea transshipments totalling 5.5t, while Palau reported 50 ‘at sea’ transshipments totalling 59.9t, but all occurred within Malakal Harbour (NFA, 2018; MFMRD, 2018; Fiji MoF, 2018; BMR, 2018). In contrast, WCPFC (2018a) reported a total of 58,454t of the main longline species were

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<sup>82</sup> e.g. interviews with government agency staff in RMI and FSM

<sup>83</sup> [https://www.ffa.int/system/files/Offshore\\_Fisheries\\_Management\\_Regulations\\_2014.pdf](https://www.ffa.int/system/files/Offshore_Fisheries_Management_Regulations_2014.pdf)

transhipped on the high seas in 2017. To that end, given the overwhelming majority of ‘at sea’ transshipment in the WCPO occurs in the high seas longline sector, we have focused our attention here on the high seas sector.

Broadly, the membership of the WCPFC can be split into three groups based on the extent to which they participate in, and ultimately support, high seas transshipment:

### **1. ‘supporters’ of high seas transshipment**

These countries, most notably DWFNs Taiwan, China and Korea, have fleets who rely heavily on high seas transshipment as part of their operational and economic model. These countries benefit from at sea transshipment to the extent that it delivers operational efficiencies to its fleets.

Although there are nuances in the positions taken by each of the ‘supporters’ bloc, broadly these countries are strongly supportive of maintaining ‘properly regulated’ high seas transshipment. In China’s case, they have argued that high seas transshipment is very important for China’s fishing fleet and, while “unregulated high seas transshipment presented a huge opportunity for IUU activities”, they do not agree with a prohibition on properly regulated high seas transshipment (WCPFC, 2018c). China supported the upcoming review of WCPFC transshipment CMM (09-06) “*not to ban high seas transshipment, but to simplifying procedures for the purpose of reducing the work load of the WCPFC Secretariat staff and flag CCMs in reference to other tuna RFMOs (e.g., IOTC and ICCAT)...*” (WCPFC, 2018d). Notwithstanding that, they also noted that China’s policy was to “*encourage Chinese fishing companies to invest in and use ports in SIDS, and that Chinese authorities could provide financial assistance to Chinese companies for infrastructure improvement, noting they had several examples where this occurred*” (WCPFC, 2018d).

In Korea’s case, their view is that high seas transshipment is an ‘integral part’ of longline operations and, while very heavy penalties should be imposed on any IUU activity, they did not agree with a ban on at sea transshipment (WCPFC, 2018d). Taiwan’s position is similar to China’s. At the 2017 WCPFC Technical and Compliance Committee (TCC), Taiwan argued that high seas transshipment is a “*globally common practice, and supported its regulation, but not a ban, while noting that any illegal activities should be addressed*” (WCPFC, 2017). They also noted that “*some coastal States’ ports may be unfit or may not allow vessels to conduct transshipment activities in ports due to their laws and policies. Chinese Taipei stated that it works with some coastal states to seek or enhance cooperation in facilitating in-port transshipment activities.*”

Despite the obligation under Article 29 of the WCPF Convention that members “*shall encourage their fishing vessels, to the extent practicable, to conduct transshipment in port*”, and despite DWFN investments in PIC ports, the growth in high seas transshipments in recent years suggests there is little practical progress amongst the ‘supporter’ bloc to transition fleets to in port transshipment. We understand, for example, that neither Taiwan, China or Korea has submitted a plan to the WCPFC Secretariat detailing measures they are taking to encourage their fleets towards in port transshipment, as required by Paragraph 35 (v) of CMM 09-06. In China’s case, they have said they believe this provision is not mandatory because of the use of the term ‘as appropriate’ in paragraph 35a.

### **2. ‘opponents’ of high seas transshipment**

These countries, most notably the FFA/PNA member countries, have no involvement in high seas transshipment (other than Vanuatu flagged vessels) and strongly support transshipment reform. Broadly, the basis for their position is three-fold: (i) they are concerned that weakly regulated and monitored high seas transshipment represents a significant weakness in the MCS arrangements for shared stocks in the region, potentially allowing IUU catch to enter the marketplace and undermining effective conservation and management measures; (ii) they see transshipment at sea rather than in adjacent PIC ports as a lost opportunity to deliver economic benefits to PIC communities; and (iii) related to (i), they see high seas transshipment as a missed opportunity to

undertake comprehensive (and cost effective) compliance checks on vessels in port that otherwise receive very little compliance monitoring at sea (recognising that undertaking compliance on the high seas is relatively more expensive than in port).

The FFA bloc position on high seas transshipment is concisely summarised in a letter from the Forum Fisheries Committee (FFC) Chair to the Executive Director of the WCPFC calling for a review of CMM 09-06 (Herrmann, 2018). The letter notes that *“FFA Members' long-term objective regarding transshipment regulation is to facilitate all transshipments in the Convention Area occurring in port. This is consistent with Article 29(1) of the WCPF Convention which provides that 'the members of the Commission shall encourage their vessels, to the extent practicable, to conduct transshipment in port'. However, the current levels and regulation of high seas transshipment activity are inconsistent both with Article 29(1) and the objective of the WCPF Convention. CCMs transshipping on the high seas have not provided evidence regarding their efforts to encourage their vessels to tranship in port.*

*The review of 2009-06 is long overdue. The measure was negotiated a decade ago and, more importantly, there have been notable deficiencies in its implementation and ability to sufficiently regulate transshipment activity in accordance with the WCPF Convention. This fact was recognised by TCC14 which recommended to WCPFC15 that 'review of the existing transshipment measure (CMM 2009-06) should be a priority item in 2019’” (FFA, 2018).*

FFA members have also expressed concern that the absence of sufficient independent catch monitoring and verification in the high seas, particularly for the longline fleet, leads to uncertainty regarding the nature and extent of illegal and/or unreported high seas transshipment and also that there are potential links to broader transnational crimes.

FFA’s position has been echoed by the PNA, who said of the review of CMM 09-06 *“We need an outcome ... that properly addresses the reporting risks and results in the receipt of timely, complete and well-documented data from transshipment activity”* and *“Our position is to move as quickly as possible to a complete ban of all high seas transshipment. PNA already requires all purse seiners to transship their catch in port. We think all transshipments should take place in ports in our region. In-port transshipment generates economic benefits for our members as well as eliminating IUU and other risks inherent in unmonitored high seas transshipments.”*<sup>84</sup>

Of the FFA members, some interviewees noted that Vanuatu was perhaps the most marginal in its support for transshipment reform given the involvement of its vessels in high seas transshipment. Nevertheless, they have supported the review and advised that they are *“taking steps to reduce transshipment and meet the requirements of relevant CMMs on the issue”* (WCPFC, 2018c).

Notwithstanding the broader FFA/PNA position, it is worth noting a number of PIC interviewees for this project recognised that some PIC ports were not well set up infrastructure-wise to encourage transshipment and they didn’t expect to see substantial direct economic returns in those ports from a ban on high seas transshipment. Their main interest was in seeing a stronger compliance regime.

It is also worth noting that poorly regulated high seas longline fishing has serious implications for PICs given the shared nature of stocks. In the purse seine fishery, for example, one of the key risks to VDS revenue (which can represent 50%+ of some PNA Parties’ total government revenue) is declines in the bigeye and yellowfin stock. Declines in these more vulnerable species means more restrictive measures across the broader fishery to encourage stock recovery. These measures (e.g. FAD closures, TAE reductions, etc) restrict the fleet’s capacity to access the main target species, skipjack, which is ultimately likely to reduce VDS revenue. To that end, some of the main economic benefits associated with high seas transshipment reform for FFA (and particularly PNA) members will be in the reduction of risk to key revenue streams (e.g. the VDS) and greater capacity to optimise

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<sup>84</sup> <https://www.pnatuna.com/content/high-seas-tuna-transshipments-targeted-action>

management of key target stocks for maximum return. Accordingly, opponents of high seas transshipment see reform as a logical economic investment.

### 3. The 'others'

It would be easy to characterise the remaining members of the WCPFC as being somewhere 'in the middle' of the two polarised positions above, but in truth the positions of remaining members are more nuanced than that.

For example, the EU's view is that at sea transshipment is not illegal, but that it was an open door for illegal activities (WCPFC, 2018c). To that end, their preference is to have no transshipment at sea (hence they could easily be placed in the 'opponents' camp above), but they think revising CMM 09-06 will be difficult. At a minimum they've argued that the level of observer coverage of transshipment should be increased. Moreover, they've also argued the risk of illegal activities is similar for any transshipment out of port - whether it happens on the high seas or in EEZs – hence any reforms to high seas transshipments should apply equally to transshipments in EEZs.

The US position has featured less prominently in records of WCPFC discussions on transshipment but is reportedly broadly supportive of the EU position that any stronger measures on high seas transshipment should apply equally to at sea transshipments in zone. A number of interviewees expressed concern that the EU/US view that any transshipment regulation be applied in both EEZs and the high seas has slowed down progress on reform because there is less clarity and enthusiasm about the WCPFC getting involved in management of transshipment in zone.

In Japan's case, while they broadly oppose a ban on high seas transshipments (e.g. WCPFC, 2018c) some interviewees indicated Japan served as a mediator to some extent between the supporters and opponents. They don't want to be seen to be opposing FFA/PNA too much, but equally don't want high seas transshipment banned completely. Because their vessels tend to return home to port to unload, they are less reliant on high seas transshipment. In that context, they have reportedly been broadly comfortable to make the management and monitoring of high seas transshipments more rigorous.

## 5.2 Government involvement in the transshipment business 'ecosystem'

At the PIC level, government involvement and returns from transshipment have been reviewed by McCoy (2012) and generally discussed above. The main direct returns come from port fees (e.g. anchorage fees, environmental levies), transshipment fees, license fees and other government charges (e.g. customs, immigration fees). He estimated five major PIC port States received up to \$4.7m in direct returns between them in 2010, not including license fees. While the value of transshipment-related license fees received by PICs is not well known, there is some likelihood it exceeds the revenue generated in port fees and other government charges. Taking revenue from carrier fees alone, there are currently 139 carriers registered on the FFA RR. Assuming each of these vessels is required to take out a license across four key PIC port States at a conservative \$10,000 each<sup>85</sup>, a total of \$5.5m would be generated.

The other key government involvement at the PIC level is in the provision of public port infrastructure and services. While most interviewees shared a view that PIC ports were generally not well set up to attract transshipment or onshore landings (mainly related to geography and a lack of infrastructure and services), many are in the process of exploring opportunities to upgrade facilities with a view to securing greater local involvement in the supply chain. For example, Nauru has recently embarked on a \$79.59 million project, co-financed by the Asian Development Bank, the

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<sup>85</sup> Some carrier companies indicated license fees were considerably higher than this in some countries – up to \$40,000.

Governments of Australia and Nauru, and the Green Climate Fund, to upgrade its port facilities at Aiwo, one of the aims of which is to attract purse seine transshipment<sup>86</sup>. Similarly, RMI has recently secured a \$33m loan from the World Bank to upgrade its port infrastructure, including container loading facilities in Majuro<sup>87</sup>. RMI Port Authority (RMIPA) officials interviewed noted that the conventional reefer carrier fleet was aging and RMIPA was positioning the new port to handle increased container traffic from purse seiners (and longliners).

In addition to its direct ‘involvement’ in the transshipment business ecosystem, the regulatory environment and institutional framework delivered by PIC governments can have a very substantial influence over transshipment business in their waters. For example, although Majuro is currently a major transshipment port, a number of local interviewees expressed concern that its potential was being constrained by the absence of an EU Competent Authority. PPF, for example, who operate a loining facility in Majuro advised that, in order to supply key potential markets/customers certain certifications were required (e.g. British Retail Consortium, brand requirements of key potential customers, etc). Meeting and maintaining the certification requirements would require investment of several hundred thousand dollars annually. However, without the safety net of being able to supply into the EU, the business could not justify the risk.

However, perhaps most importantly, it is the nature of the fisheries compliance regime operated by PICs which can have one of the biggest influences over the size of the transshipment business ‘ecosystem’ in its ports. Interviews with a range of DWFN longline fishing companies revealed that avoiding compliance inspections in port – and in particular the threat of being fined or having the vessel held at port – was a key driver of high seas transshipment. One DWFN fishing company representative with experience in a number of PIC ports indicated that although DWFN boats use the ‘economic argument’ to continue high seas transshipment, the ‘real reason’ they don’t come into port is to avoid increased compliance scrutiny. A number of interviewees also indicated that the differing strength of compliance regimes within PIC ports influenced the extent of purse seine transshipment – i.e. some ports were seen by industry as ‘more welcoming’ of fishing vessels than others.

At the DWFN end, most fishing/carrier companies reported the Government as having little involvement in the ‘business’ of transshipment, other than supporting their interests at RFMOs and monitoring their activities. Taiwanese and Korean companies reported receiving no direct support (subsidies) from their governments, although a number of interviewees indicated that China provides incentives both for the operation of carriers (and fishing vessels) as well as to encourage vessels to bring catch back to China for processing. The details weren’t clear although some thought China subsidised part of the transshipment freight costs as well as returning VAT (13%).

The other major investment in the business ‘ecosystem’ by DWFN governments is in providing support for PIC port infrastructure upgrades. For example, China’s policy was to encourage Chinese fishing companies to invest in and use ports in SIDS (WCPFC, 2018d).

### 5.3 What would happen if at sea transshipment was banned?

In recent years, a total prohibition on high seas transshipment has been increasingly advocated for amongst FFA and PNA member countries, as well as in scientific literature (e.g. Ewell et al, 2017). In the Pacific Island States, this is in response to a perceived failure by DWFNs to live up to the ‘spirit’ of the WCPFC Convention which encourages transshipment in port, as well as loopholes in the

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<sup>86</sup> <https://www.adb.org/news/videos/port-upgrade-throws-lifeline-people-nauru>

<sup>87</sup> <http://documents.worldbank.org/curated/en/817051556639882607/pdf/Marshall-Islands-Maritime-Investment-Project.pdf>

existing management arrangements (e.g. WCPFC, 2018d). In the scientific literature, a range of benefits of a high seas transshipment (and more broadly at sea transshipment) ban have been argued including strengthening the ability of enforcement agencies to detect and prevent IUU fishing and reducing scope for human trafficking and forced labour (e.g. Ewell et al, 2017). In many cases, because high seas transshipment happens relatively close to PIC ports at present (Figure 30), there is an implicit expectation that a ban on high seas transshipment would result in those vessels simply steaming into port to tranship. But after speaking with a broad cross section of stakeholders in the supply chain, our sense is the response would be considerably more complex and unpredictable than that.

At the fishing company end, many DWFN companies made the point that longlining is a 'sunset' business – profits are hard to make and participation is going downhill. Costs continue to increase (for example, Taiwan has recently introduced a new labour regulation requiring a minimum wage for crew amongst other measures<sup>88</sup>) and the operational efficiencies associated with high seas transshipment are central to keeping many companies operating.

In the event high seas transshipment was banned, Taiwanese and Korean fishing companies we spoke to had little hesitation in saying their vessels would return to east Asian ports (either their home port, or Japanese/Korean market ports) rather than unload in PIC ports. This was largely for three reasons: (i) east Asian ports offer a range of services (e.g. cheap provisions, technicians, dry-docking, cheap bunkering, etc) unable to be provided by PIC ports, (ii) freight costs would be saved by delivering fish direct and (iii) vessels would avoid the higher costs and stronger compliance regimes operating in PIC ports, which risked the vessel being fined or delayed.

Given the marginal nature of longlining, the question then is how many businesses could survive the increased costs (particularly fuel). Overall, companies were of the view that while 'many' operators would go out of business, smaller boats would be hardest hit given limited economies of scale and a higher proportion of steaming to fishing time. These vessels would go broke first, with bigger boats offering more flexibility and better capacity to hang on longer. The exception to this may be any smaller vessels receiving fuel subsidies, who could still achieve positive returns.

One operational response from the fleet may be a contraction in fishing effort away from the more distant fishing grounds in the central and eastern Pacific towards more westerly grounds, closer to east Asian ports (particularly amongst smaller vessels).

For those vessels who would consider transshipping in PIC ports, a common view was that most vessels would choose to tranship/offload in southern hubs (e.g. Suva), rather than PNA ports, because there was a higher likelihood of having a critical mass of services available. Having said that, one Taiwanese company noted it was 8-9 days steaming from Kaohsiung to their main fishing grounds in the tropical central Pacific (11 days to 160°W) and steaming from there to Kaohsiung wasn't much further than steaming from there to Suva, so there was little advantage to be gained in not returning home.

A number of the fishing base operators in PICs (e.g. Luen Thai Fishing Venture), thought that a ban on high seas transshipment may mean many previously high seas vessels would begin to make partnerships with companies like them – companies who knew the 'local scene', who could help vessels avoid compliance pitfalls and generally facilitate operations (as well as taking advantage of their provisioning/distribution networks). This may work for a number of the smaller vessels who would otherwise struggle to adjust to a high seas transshipment ban. One consequence then may be increased requests to reflag vessels to PICs, or alternatively register charters (similar to the LTFV fleets in RMI/FSM). Both LTFV RMI and FSM base managers noted they had capacity to unload

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<sup>88</sup> <https://www.fa.gov.tw/en/Announcement/content.aspx?id=54&chk=8ecbb658-4294-4ce5-acb0-1db9f1060ab4&param>

frozen high seas longline vessels, but that provisions (bait, salt, etc) would be more expensive than reprovisioning on the high seas (albeit prices would come down with economies of scale).

For vessels able to survive the shorter term economic impacts, many longline companies thought there would be a longer term market and operational correction – fewer vessels fishing means fewer fish being caught. Fewer fish being caught means higher catch rates over the longer term, as well as higher prices for fish, so those able to stay in the game may receive some longer term benefits (at least to the extent that some of the reduction in operational efficiency may be offset by improved returns). To that end, companies thought the impacts of a ban would not be straightforward and would be dependent on each individual operation’s capacity to adapt to the new environment.

As noted above, some longline companies also indicated that if PICs had better container services they would consider unloading in port, but to make in port landing attractive they would also need better support services – food, bait, fuel, etc. Companies noted that transshipment was not just about offloading catch – it delivered an integrated set of services that would need to be replaced in port. In the absence of these services, the better option in the short term at least was to offload directly at Asian ports.

At the carrier company end, all operators thought that a high seas transshipment ban would increase costs. In addition to the PIC license fees required to tranship in port, many made the point that in the longline sector carrier companies are dealing with much smaller volumes than purse seine. Therefore, it is operationally much harder to coordinate a full load (even harder if the number of longline vessels reduces) and takes longer to fill up. Longer stays in port would result in substantially higher costs than existing high seas operations.

Should increased costs be passed on to customers in the form of higher freight costs, the existing disparity between conventional reefer freight and container freight rates would only increase. In response, there would likely be increased incentive for longline vessels to use containers (or deliver fish direct to market), but the extent of uptake in practice would depend on the capacity of PIC ports to deliver effective ULT container logistics and a full suite of provisioning services. Most interviewees considered this capacity did not currently exist.

If the fishing company predictions are correct that many operators would go out of business and many more chose to offload direct to east Asian ports, there would likely be a contraction in the carrier market. The impacts are likely to be hardest felt by those operators who own, rather than lease, carriers given the capital involved. The extent to which these vessels could be deployed in other sectors would be dependent on the characteristics of the vessel and the capacity of other markets to absorb more boats. Standard conventional reefers used in cannery grade albacore high seas transshipments may be absorbed into the purse seine trade or other seafood sectors (e.g. north Pacific saury/squid, Atlantic/Pacific squid, etc), although a number of interviewees made the point that many carriers used in the WCPO tuna transshipment trade are ‘old and cheap’ and won’t meet regulatory standards in many ports. Accordingly, a contraction in demand may precipitate the scrapping of carriers nearing the end of their productive life. Specialised ULT carriers may be more difficult to shift into other sectors, so there may be pressure on carrier owner/operators to find ways to make in port transshipment work.

## 6 Current management and monitoring

### 6.1 Management measures

#### 6.1.1 Current WCPFC CMM

In addition to the general provisions of the WCPF Convention prohibiting at sea transshipment in the purse seine sector and encouraging all transshipment in port, the main instrument regulating

transshipment (at least on the high seas) in the WCPFC-CA is the *Conservation and Management Measure on the Regulation of Transshipment* (CMM 09-06). The CMM came into force on 1 July, 2010 and aims, amongst other things, to:

- Encourage accurate reporting of landings and reduce IUU fishing;
- Encourage transshipment in port (to the extent practicable);
- Develop procedures to obtain and verify data on the quantity and species transhipped both in port and at sea; and
- Provide access to information to support at sea MCS activities.

These aims are to be achieved by a range of measures including prohibiting high seas transshipment unless authorised by the flag State (with guidelines to be developed around the circumstances under which vessels can be authorised), requiring information on transshipment activity to be provided to the Executive Director, requiring CCMs to establish mechanisms to verify transshipment reporting, requiring ROP observer coverage on the receiving vessel for at sea transshipments and requiring CCMs to submit plans detailing the measures they're taking to encourage transshipment to occur in port in future.

Consistent with other measures, flag States are primarily responsible for ensuring vessels flying their flag comply with the CMM.

Although there have been isolated successes (e.g. transshipment reporting has improved in recent years; a 'Transshipment Analysis Tool' shows signs of promise; WCPFC, 2018a), any clear-eyed assessment is likely to conclude the CMM has not been well-implemented, not has it achieved its objectives. Contrary to the intention to allow at sea transshipment only in limited circumstances, the number of vessels authorised to tranship on the high seas is almost double those that aren't (2,355 Vs 1,229 as at April, 2019<sup>89</sup>), the number of reported high seas transshipments in 2017 was more than twice that in 2012 (with the number of offloading vessels increasing by 90% over the same period, albeit at least some of this may be an artefact of better reporting; WCPFC, 2018a), and the quality of information available to the Commission to independently verify reported catches remains very limited.

There are no doubt a range of reasons why implementation has not matched expectations, but three arguably stand out:

- **Weak implementation of the observer program**

Although intended by CMM 09-06 to be a primary tool to verify compliance, the high seas observer program appears to be largely ineffective at the moment. Nine years after the adoption of the CMM, the transshipment observer program has limited use of standardised forms or manuals, no standardised training programme and only a fraction of data collected by observers has made its way to the WCPFC to date. WCPFC (2018c) indicates that despite over 2,000 reported transshipment events in 2016/17, only one observer report was received in 2016 and it is possible none were received for 2017. Anecdotal information from IATTC observers deployed on vessels with ROP transshipment observers on board indicates the level of observation being undertaken is often minimal.

Crucially, the absence of observer information on catch volumes and species composition limits capacity to independently verify information submitted in transshipment declarations. So, while compliance with requirements to submit transshipment declarations may be improving, there is no capacity to verify the quality of that data against observer reports.

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<sup>89</sup> <https://www.wcpfc.int/record-fishing-vessel-database>

The absence of observer information also makes compliance with others measures uncertain – for example, the extent to which receiving vessels comply with the requirement (in paragraph 16) to unload from one vessel at a time for each observer (i.e. one observer, one unloading vessel) is not known. Moreover, although CMM 09-06 provides for access by the observer to both the offloading and receiving vessels, it is not known how many inspections of offloading vessels have been undertaken. While the CMM also commits the Commission to developing guidelines for the safety of observers in moving between vessels, these are yet to be developed.

- **No agreement around guidelines for ‘impracticability’**

A key component of the CMM is a prohibition on vessels from transhipping on the high seas unless *“it is impracticable for certain vessels ... to operate without being able to tranship on the high seas...”*<sup>90</sup>. This is the primary mechanism through which vessels are encouraged to tranship in port, consistent with Article 29 (1) of the Convention. In order to ensure standardisation around the circumstances under which it would be considered ‘impracticable’ for a vessel to operate without transhipping on the high seas, paragraph 37 of the CMM provides that the Executive Director will prepare draft guidelines *“for the determination of circumstances where it is impracticable for certain vessels to tranship in port or in waters under national jurisdiction.”* These guidelines were to be adopted by the Commission in 2012.

Despite a number of attempts (e.g. WCPFC, 2013; WCPFC, 2016), no guidelines have yet been agreed.

In the absence of such guidelines, the CMM requires CCMs to apply interim guidelines, namely that:

- a ban on at sea transhipment would cause significant economic hardship (assessed against some ‘meaningful’ analysis of costs and/or revenues); and
- the vessel would have to make ‘significant and substantial changes to its historical mode of operation...’

The fact that CCMs have paid limited attention to these interim guidelines is evidenced by the fact that more than 470 vessels on the RFV currently authorised to tranship on the high seas were built in 2010 or later – and therefore could not possibly have had to make changes to their ‘historical mode of operation’. Although the majority of these vessels are Chinese (62%), Taiwan, Japan, Panama, Vanuatu and the US have also authorised vessels built after 2010.

If Commission members’ clear intention is to allow high seas transhipment under only limited circumstances, the absence of agreed guidelines around ‘impracticability’ is a particular problem because it leaves scope for individual CCMs to apply their own – often liberal – definitions. The fact that five of the six CCMs (China, Japan, Korea, USA, Vanuatu) who authorise their longliners to tranship on the high seas authorise greater than 98% of vessels indicates that authorisation is being applied as the ‘default’ position, rather than after some ‘meaningful’ analysis of impracticability. The US longline fleet is perhaps an interesting case in point here: the US authorises all 159 of its registered longliners to tranship on the high seas<sup>91</sup>, yet in 2017 the fleet reported no high seas transhipments (WCPFC, 2018a). Ergo, if the fleet is not transhipping on the high seas, it must be practicable for them to tranship or unload in port.

- **No serious attempt to encourage vessels to tranship in port**

In the spirit of encouraging vessels to tranship in port, paragraph 35 (v) of the CMM requires CCMs of both offloading and receiving vessels involved in high seas transhipment to *“submit to the*

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<sup>90</sup> This provision does not apply to purse seine vessels which are prohibited from transhipping on the high seas under Article 29(5) the WCPFC Convention

<sup>91</sup> As at April, 2019

*Commission a plan detailing what steps it is taking to encourage transshipment to occur in port in the future*<sup>92</sup>. To the best of our knowledge, no CCM has submitted a plan (albeit China has noted that it provides support to Chinese companies for infrastructure improvement in PIC ports; WCPFC, 2018c).

The fact that no concerted attempt to encourage vessels to tranship in port has been made appears evident from the data. Far from decreasing - as one might expect if vessels were being actively encouraged to tranship in port - the number of reported high seas transshipments doubled between 2012 and 2017 (WCPFC, 2018a). Even if part of the increase is an artefact of improved reporting (as is likely), representatives from PIC ports we spoke to reported no particular change in behaviour/activity over the life of the CMM (i.e. no more high seas longline vessels transshipping in port), nor did any of the fishing companies we spoke to. The fact that CCMs responsible for five of the six main high seas longline fleets continue to authorise >98% of their vessels to tranship on the high seas is also good circumstantial evidence that there is limited pressure from above to transition towards transshipping in port.

Assuming members of the Commission continue to want the same outcomes from transshipment regulation as they agreed in 2009, each of these issues should be addressed in the current review of CMM 09-06.

### 6.1.2 Differences between regulation of fish carriers and merchant vessels

A minor component of the TORs for this project was to examine any differences in regulatory arrangements between merchant vessels and those involved in transshipment of fisheries products. Our discussions with carrier companies highlighted few practical differences, other than those related to fisheries regulation (e.g. need to carry observers, submit transshipment declarations etc).

## 6.2 Monitoring

### 6.2.1 High Seas transshipments

A key requirement of CMM 09-06 is 100% observer coverage on receiving vessels involved in high seas transshipments. The main focus of this component of the TOR was to examine how the process of placing human observers on carrier vessels for high seas transshipments is coordinated, how information from observers is received, as well as perceptions around the value of the data.

At this stage, the majority of work around the coordination of observers is undertaken by carrier companies (or agents of either the carrier company or observer program). When the vessel needs an observer, the carrier company will contact one of the national programs accredited under the ROP. In some cases, this is done through an agent. In recent years, most of the observers have been sourced from Vanuatu and Kiribati, although other countries (e.g. PNG, FSM) now reportedly supply a few (WCPFC Secretariat, pers. comm.). Some countries have refused to provide observers because they oppose high seas transshipping.

Once an observer is nominated by an ROP program, the carrier company will arrange for all logistics, including transporting the observer to the embarkation port if necessary, arranging visas, accommodation and meals, cash advances etc. Carrier companies we spoke with indicated that, apart from supplying the observer, ROP programs had little active role in logistics, other than monitoring correspondence.

Occasionally carrier companies will seek assistance from the WCPFC Secretariat in sourcing an observer (in which case they will point them to the list of ROP Coordinators), but not often. In most

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<sup>92</sup> Note that China has expressed their view that this is not mandatory given the use of 'as appropriate' in the introduction

cases, the only way the Secretariat knows an observer is on board is through the observer's name being listed on transshipment pre-notification and declaration forms (WCPFC Secretariat, pers. comm.). Otherwise, the Secretariat has no involvement in the process (no involvement in placements/logistics, etc).

The Secretariat has developed a series of forms to standardise data collection<sup>93</sup>, although the extent to which these are used is uncertain and probably variable. Anecdotal information from the Secretariat indicated that some observers have been using the forms, some have been using FFA/SPC port unloading forms and others won't take forms at all (they simply write a report). Irrespective of the forms used, WCPFC confirmed that very little of the information collected by observers finds its way to the Secretariat. As above, WCPFC (2018c) indicates that only one report was received in 2016, and possibly none in 2017. Current monitoring of catch volumes and species composition then is based on carrier and longline reporting only, with no access to observer data to independently verify vessel reporting.

It is also worth noting there is no current framework of Pacific Islands Regional Fisheries Observer (PIRFO) standards and training to support transshipment observing, although this is in the process of being developed by FFA/SPC.

Given the absence of data available to the WCPFC (who are the only entity centrally holding all transshipment declarations), and the lack of standardisation in training and data collection, the existing suite of observer data is likely to have very little practical utility.

Notwithstanding existing weaknesses in the observer program, high seas transshipments are subject to some other forms of monitoring both at the Commission level and within individual CCMs. For example, all registered vessels are subject to regular VMS polling. A welcome recent addition to the WCPFC's MCS suite of tools is a 'Transshipment Analysis Tool' (TAT), which uses VMS information to 'flag' when two registered vessels are estimated to be within a distance of 250 metres, over a time period of at least 4 hours (WCPFC, 2018a). Although there are practical limitations (e.g. many longline transshipments take considerably less time than 4 hrs; Figure 32) and the system is still under development, the TAT has the potential to help verify information reported in transshipment declarations as well as highlight unreported transshipments. The TAT has also highlighted behaviours that should prompt further investigation with flag States. For example, in the 18 month period from 1 January 2017 to 21 July 2018, 1,791 longliner to longliner meetings at sea were recorded<sup>94</sup> (WCPFC, 2018a). While many or all of these meetings may be innocent (e.g. transfer of bait, provisions etc), if catch consolidation from one vessel to another is occurring (which may make sense from an economic point of view amongst a cooperating group of vessels, particularly if one is returning home or steaming to a transshipment location), then the transshipment would need to be reported, with an observer on the receiving vessel, etc.

At the flag State end, a number of CCMs operate their own processes to monitor high seas transshipments. For example, under Taiwanese law, Taiwanese companies operating carriers must submit a plan for each voyage to the TFA for approval, with a list of prospective vessels (albeit this is flexible). The VMS information must be given to the TFA, even if it is a non-Taiwanese flagged (e.g. Panamanian) vessels. TFA then monitors VMS activity for the nominated vessel '24/7'. (Interviewees indicated this was also the case for Taiwanese fishing vessels wanting to tranship – the VMS information of the carrier must be provided to the TFA, who monitor activity). Prior to transshipment, three days' advance notice is provided to the TFA. After transshipment, a declaration

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<sup>93</sup> <https://www.wcpfc.int/regional-observer-programme>

<sup>94</sup> Compared to only 475 longliners to carrier meetings

with volumes and species and signed by the vessel captain and captain of the carrier must be submitted. This is separate to the WCPFC transshipment declaration.

Korea reportedly operates a similar system. All Korean fishing vessels are required to submit a pre-transshipment request to the Fisheries Monitoring Centre (FMC) at least 24 hours before expected transshipment (for both at sea and in port transshipments) (KOFA, pers. comm.). FMC check the request against the detail of the vessel's daily e-reporting fishing records, as well as the carrier details, and if there is no problem, they authorise the transshipment. After landing, the details of the transshipment declaration are also reviewed against landings records to verify accuracy, with FMC reportedly applying a tolerance limit of 10% between estimates at sea and landed catch weights.

Notwithstanding that, the measures taken by most CCMs to "validate and where possible, correct information received from vessels undertaking transshipment..." consistent with CMM 09-06 did not appear widely known amongst interviewees. This information would be valuable to collate and share as part of the upcoming review of the CMM (e.g. what processes are used by Panama, as the CCM responsible for the majority of carriers involved in high seas transshipments, to validate data received by its vessels?).

### 6.2.2 In port transshipments

The extent to which in port (mainly purse seine) transshipments are actively monitored appears variable across the WCPO region. Although purse seiners have 100% observer coverage, McCoy (2012) notes that observers do not always physically remain on the vessel at the conclusion of a trip and are not tasked with monitoring transshipment, even if scheduled to remain onboard for a subsequent trip on the same vessel.

Many of the Pacific Island CCMs operate port monitoring programs, with varying levels of coverage depending on resources and objectives. The Marshall Islands Marine Resources Authority (MIMRA) aims to achieve 'as close to 100%' purse seine transshipment monitoring as they can, with the program largely staffed by trained observers not currently out on trips (S. Lanwi, pers. comm.). Similarly, Papua New Guinea's National Fisheries Authority operates a transshipment monitoring program as part of its ambit as the EU Competent Authority, which monitors 100% of transshipments and unloadings in port. In other ports, some types of transshipment will be prioritised – for example, trips involving Marine Stewardship Council (MSC) certified catch will be monitored to ensure chain of custody (CoC) requirements are satisfied, whereas other trips may not be monitored. Overall, SPC advise that the unloadings monitoring coverage rate in the purse seine fishery in 2017 was around 14%.

Even where monitoring takes place, there are practical challenges in achieving good quality coverage across a full transshipment, which may run for 12-14 hours/day across 3-4 days (e.g. McCoy, 2012).

There is currently no requirement for purse seine carrier operators to report transshipment details to the WCPFC. The main sources of information about transshipment volumes and species composition available to coastal/port States in the purse seine sector are (i) purse seine logsheets, which require the details of the transshipment to be recorded (dates, times, carrier vessel details and destination, volumes/composition) and (ii) the Mate's Receipt, signed by officers of both the offloading and receiving vessel, agreeing the estimated volume and species composition of fish transferred. The Mate's Receipt is typically provided to the port State.

Some carrier companies also reported the degree of compliance monitoring and inspections varied between ports – one reported very intensive compliance monitoring in Pago Pago, but less frequent inspections elsewhere.

### 6.2.3 Electronic monitoring

Our discussions indicated that electronic monitoring (EM) technology was not widely used on either carriers or fishing vessels involved in transshipments. A number of the longline fleets (e.g. Korean vessels) had CCTV on board, though this was more for the officers of the vessel to have an overview of current operations (KOFA, pers. comm.). Footage was not saved or reviewed externally. Likewise, some carriers operated EM systems, but coverage was typically limited<sup>95</sup>.

The general consensus amongst observer providers and managers was that EM technology had potential to assist in transshipment monitoring, albeit as a complement rather than a replacement for human observers, and there would be a range of practical challenges to work through.

For example, in the longline fishery transfers of individual strings take place very quickly (something like 30 seconds from hold to hold) (J. Clark, pers. comm.). Strings don't always go into the same hold and the transshipments themselves can take several hours. Cameras would need to be very carefully positioned (or have very wide angles), otherwise it may be difficult to capture the full transfer. One observer program manager noted that their program had produced a video for training purposes, capturing a number of strings being transferred (J. Clark, pers. comm.). Trainee observers are required to undertake fish counts in real time. In the video, the camera operator was able to move around and pan the camera to get good angles on all the fish, but even then it is difficult for observers to get an accurate count (even with slowing down and pausing the footage). Their view from a camera at a fixed position would be even harder. They noted EM may be of some use to get counts of individual fish, but there would be challenges in dealing with 'hidden' fish and the different ways they are processed.

Even with careful camera positioning, another observer provider noted that identifying individual fish species in longline transfers would be extremely difficult (B. Belay, pers. comm.). Frost accumulation alone would be hard to overcome, but is made more difficult by the lack of readily identifying characteristics between many tuna species (some of which can only be distinguished through close inspection of the body cavity). Other functions currently performed by observers – e.g. checking tags have been properly fitted to any southern bluefin tuna, etc – could only be undertaken by human observers.

Notwithstanding that, EM offers clear utility in other areas. Having a camera that records the deck and railing (where boats would sit if vessels tied together) would 'definitely' reduce the chances of illegal or unrecorded transshipments, while footage could also be used to verify more readily observable things such as identification of the offloading vessel, time and duration of the transshipment, location and whether the observer was on deck. EM could also be used to verify how many strings have been transferred and give a crude estimate of weight based on average values.

In addition, EM image data (if accessible to the observer) could be used by the observer to improve the accuracy of their own reporting (they could check it later to examine particular strings they're unsure of), while observer providers noted that the presence of the camera may make both vessel and observer less likely to mis-record information.

In addition to 'core' fisheries purposes, EM has a range of other very important benefits. Observer providers made the point that the presence of cameras would likely improve the safety environment for observers (by having an independent record of events), while for good operators EM also provides a mechanism to help demonstrate compliance with good labour practices.

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<sup>95</sup> Although note that at least some carrier companies report using CCTV footage to monitor all loading and discharge – e.g. <http://www.greensea.be/why-greensea>

On purse seine carriers, similar challenges around species identification are likely to exist and there is arguably less need for EM given transshipments can be monitored by human observers in port. Nevertheless, EM could offer utility in other areas. For example, cameras on carriers could be used to provide evidence of segregation in chain of custody programs supporting FAD-free tuna claims, while also providing capacity to monitor environmental and other regulations – e.g. MARPOL requirements; pollution discharge while carriers are in port, etc.

## 7 Analysis and recommendations

### *Where to from here for high seas transshipment?*

There is little doubt that high seas transshipment faces challenges. Weakly monitored high seas transshipments have long been linked to laundering of illegal catches and broader IUU activities (e.g. Gianni and Simpson, 2004), while in more recent years serious concerns have been expressed around the capacity of at sea transshipment to facilitate human trafficking, forced labour and other human rights abuses (e.g. ILO, 2013). These problems have led to increasing calls both globally (e.g. Ewell et al, 2017) and regionally (e.g. by the PNA<sup>96</sup>) for total ban on high seas transshipment.

For Pacific Island countries, their interest in high sea transshipment reform is strong and legitimate. Despite agreeing the WCPF Convention in 2004, which requires CCMs to encourage transshipment in port, and despite the 2009 Transshipment CMM reinforcing the intent of the Convention, PICs have seen little practical progress from DWFNs to encourage transshipment in port. For many fleets, >98% of registered longline vessels continue to be authorised to tranship on the high seas, while the number of reported transshipment events has risen substantially since the commencement of the CMM.

For PICs, this is more than simply a principled stand to ensure Parties who wilfully signed the Convention implement its terms. There are real dollars at stake. DWFN longline fleets operating on the high seas harvest shared stocks upon which the vulnerable economies of Pacific Islands States depend. In Kiribati's case, they generate up to 70% of their annual government revenue from the sale of fishing rights. Weaknesses in the management and compliance regime which lead to stock declines, and which in turn require more restrictive management measures, represent perhaps the key threat to ongoing government revenue upon which many PIC essential services depend. To that end, PICs will continue to advocate for management reform until there is confidence that activities on the high seas are not undermining their legitimate interests. Transshipment reform is a key piece of that puzzle.

At the other end of the spectrum, DWFN fishing companies see high seas transshipment as a legitimate and globally widespread practice which generates efficiencies and forms an essential component of their operation. Subject to an effective management and monitoring regime, there should be nothing wrong, they argue, with businesses seeking the most efficient means to carry out their legitimate operations. Given the marginal economics of high seas longlining, it is likely that the efficiencies associated with transshipment are central to keeping many of them financially afloat. Many (legitimately) fear that the increased costs associated with a requirement to tranship in port would send them broke and - because it is seen as a matter of economic survival - the right to continue to tranship on the high seas is passionately argued by companies and strenuously defended by DWFN states.

It is these polarised positions which set the scene for the upcoming review of the Transshipment CMM.

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<sup>96</sup> <https://www.pnatuna.com/content/high-seas-tuna-transshipments-targeted-action>

While on the surface there appears little common ground to be found, it is not inconceivable that both positions can be satisfied, at least to some extent. An 'ideal' future for transshipment in the WCPO appears to be one in which:

- Vessels which are practically able to tranship in port do so;
- PIC ports receive increased economic benefits from transshipment/landing in port, consistent with investments in infrastructure and services to make in port transshipment more attractive; and
- Those vessels for which it is genuinely impractical to tranship in port are subject to a comprehensive compliance regime which provides all parties with confidence that the practice of transshipment is tightly controlled, with minimal scope to facilitate non-compliance.

Getting to this future will require a range of reforms and investments. These include:

- **CCMs should comply with the spirit of the WCPFC Convention to encourage transshipment in port.**

While the Article 29 (1) of the Convention requires that members "*shall encourage their fishing vessels, to the extent practicable, to conduct transshipment in port*", the available evidence indicates that most DWFNs have made little progress on this obligation. More vessels are authorised to tranship on the high seas than vessels who aren't, and despite an overall decline in catch in since 2010, reported transshipment activity is increasing. Two main measures are required to demonstrate compliance with the intent of the Convention:

1. Those members who's fleets currently tranship on the high seas should be required to submit tangible plans detailing the steps they will take to encourage their vessels to tranship in port.

This measure is currently included in CMM 09-06, but to the best of our knowledge (a decade after the CMM was agreed) no CCM has developed and submitted a plan. Requiring the development of tangible plans would have the benefit of (a) requiring CCMs to think though the practical steps that could be taken to encourage transshipment in port as well as (b) giving other Commission members (mainly PICs) an indication of how serious the high seas DWFNs were.

2. WCPFC members should agree the circumstances under which it is impractical for a vessel to tranship in port.

Again, this provision is in the existing CMM, but not yet delivered. In the absence of agreed guidelines, CCMs have been free to apply their own interpretation of 'impracticable', which clearly vary widely amongst the membership (albeit none have yet said explicitly how they've defined it). The fact that >98% of the main DWFN fleets (with the exception of Taiwan) are authorised to tranship on the high seas indicates a fairly liberal interpretation has been applied.

While reaching agreement around these circumstances is likely to be no easy task (evidenced by the fact they haven't been agreed yet), securing some form of practical framework for defining/assessing 'impracticability' is important to give all members confidence that the intent of the Convention is being logically and consistently applied. Given the diversity of high seas fishing activity, it is likely that a 'principles-based' framework (together with some active process of assessing individual vessels/companies) will be most practical.

In the absence of agreed guidelines, CCMs should implement the interim guidelines agreed in CMM. A literal reading of these guidelines would prohibit transshipment on the high seas by all vessels constructed after 2009.

- **Any vessel for which it is deemed impractical to tranship in port must be subject to a compliance regime that gives confidence that all transshipment activity is tightly controlled**

In practice, this means a substantial strengthening of the existing compliance regime for vessels wishing to continue to tranship on the high seas. Vessels which choose to meet the standard would be able to continue to tranship on the high seas; those vessels that chose not to meet the standards would be required to tranship in port.

Key measures of an enhanced monitoring regime for high seas transhipments include:

8. Monitoring on all offloading vessels (e.g. longliners)

For all vessels wishing to tranship on the high seas it should be mandatory to have some form of independent monitoring. EM is likely to be the most cost effective and practical method, although vessels may choose to use observers.

Where EM is used, footage should be capable of verifying the nature and extent of all potential transhipment activity (as well as any other data required by the flag State – e.g. catch and effort), as well as working in concert with complementary analyses – e.g. analysis from VMS/AIS data showing potential transhipment activity – to retrospectively verify events.

While a human observer is required to be present on all receiving vessels, the installation of cameras on offloading vessels would better address potential for offloading to unlicensed carriers or catch consolidation amongst longline vessels<sup>97</sup>.

Although there is little doubt the longline fishery is sensitive to additional costs, for fleets who argue they can't operate without high seas transhipment, the installation of EM equipment is likely to be a small investment relative to alternatives (e.g. returning to home port).

EM coverage also potentially provides good operators with a form of evidence to demonstrate compliance with good onboard labour practices.

The proportion of footage reviewed should be based on risk.

9. Examining the utility of EM on receiving vessels (e.g. carriers)

Carriers receiving transhipments are already required to have an observer on board and, to that extent, have a legitimate argument that they are already monitored (and bearing the cost that that entails). The key weakness at the moment is that arrangements for the observer program are not standardised and very little of the data collected finds its way to the WCPFC (albeit this is no fault of the carrier company). To that extent, WCPFC (or the flag State) has limited or no capacity to independently verify the details reported by offloading and receiving vessels in transhipment declarations.

Although carrier companies could rightly argue that first priority should be given to strengthening the observer program (see below), installation of EM on carrier vessels could still serve as an important complement to observer coverage. In particular, EM serves as an important back-up to verify transhipment activity where observer data is not provided, it strengthens the safety environment for observers and provides an independent record to keep all parties honest.

Some carrier companies already report using CCTV footage to monitor all loading and discharge<sup>98</sup>.

- **Measures to independently verify transhipment activity should be strengthened**

These measures are essentially complementary to the requirements for EM above. At this stage, capacity for WCPFC and its members to independently verify high seas transhipment reporting is relatively weak across the board. At the Secretariat level, they receive limited data from independent observers, while there is also limited visibility of the processes each CCM takes to

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<sup>97</sup> In 2017, the WCPFC TAT detected 1,700+ longline to longline vessel at sea meetings for >4hrs.

<sup>98</sup> <http://www.greensea.be/why-greensea>

validate and verify the transshipment reporting from its flagged vessels. Verification is limited to comparing information submitted by both the offloading and receiving vessels. At the CCM level, while some members have established strong oversight mechanisms to approve and monitor transshipments remotely (e.g. Korea, Taiwan), the capacity to independently monitor information on transshipment declarations is limited, unless the vessel discharges its catch in domestic ports which are subject to dockside monitoring. Like the Secretariat, flag States do not get observer data. To that end, while some mechanisms to validate transshipment reporting exist, they are not yet 'joined up'.

In that context, a range of measures to strengthen capacity to independently verify transshipment reporting would be beneficial:

10. All CCMs which authorise vessels to tranship on the high seas should submit evidence of the processes and mechanisms they use to verify transshipment information submitted by their vessels.

Like measures 1 and 2 above, this is an outstanding action from the existing Transshipment CMM. While some countries have clearly adopted processes to verify transshipment activity, these measures do not appear widely known amongst the WCPFC membership. For other members, it is not clear that robust processes exist. The Secretariat noted it had little visibility of the processes used to verify transshipment information amongst CCMs, despite the requirements of 35 (a)(i) of the CMM.

Apart from complying with the obligations in the existing CMM, providing information on the processes used by each CCM would help identify 'best practices' and promote wider adoption amongst the membership.

11. Arrangements for the implementation of the transshipment observer program should be strengthened.

While there appears little doubt that carrier companies are complying with the requirement in CMM 09-06 to have observers on board for all high seas transshipments, the usefulness of the information collected to independently verify transshipment reporting appears limited. A range of measures are required to strengthen implementation:

- Observer forms should be standardised to the extent possible through WCPFC to ensure consistent, relevant data collection. Ideally, these should be produced as e-forms to allow for e-reporting, as well as hard copies;
- A clear manual should be developed to guide all relevant transshipment observer activities;
- Training for transshipment observation (at least for FFA members) should be standardised within the framework of the Pacific Islands Regional Fisheries Observer (PIRFO) standards;
- All data collected by ROP programs providing high seas transshipment observers should be submitted to the Secretariat to allow for independent validation of transshipment declarations (existing data collected should be collated and reviewed for usefulness – one program we spoke with noted that data from 2017 onwards was currently with the observer coordinator, but they had problems submitting the data to the WCPFC). Existing ROP minimum standards should be revised to make this a requirement;
- The Secretariat should consider publishing de-sensitised versions of all high seas observer reports received, consistent with existing practice in ICCAT<sup>99</sup>;

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<sup>99</sup> <https://www.iccat.int/en/ROP.html>

- Data sharing arrangements should be concluded with RFMOs operating complementary observer programs;
- WCPFC should consider mechanisms required to allow observer data to be used to independently validate transshipment declarations. At the very least, a well-constructed database which allows for housing of both set of data and automatic flagging of discrepancies would appear useful. Discrepancies could be forwarded to relevant flag States for investigation.

12. The Secretariat should consider additional measures to independently validate transshipment activity

In addition to the observer program, a range of other mechanisms to independently validate transshipment activity exist. The TAT, which uses VMS to examine potential transshipment activity, appears to show considerable promise, albeit its usefulness may be limited somewhat by current polling rates (i.e. the default polling rates are every four hours<sup>100</sup> – the TAT currently flags a potential transshipment when vessels are <250m apart for >4 hours. However, many transshipments are completed well before four hours – see Figure 32. Moreover, if the polling times of the two vessels are out of synch, it may be considerably longer than 4 hours before two consecutive polls from both vessels are received). This may be helped to some extent by the inclusion of AIS data in the analysis. AIS data is transmitted much more frequently (seconds/minutes) and is publicly available, albeit is limited in its application - it's only mandatory on vessels >300 GT undertaking international voyages, and fishing vessels are excluded<sup>101</sup>. Nevertheless, our preliminary investigations through Global Fishing Watch<sup>102</sup> which uses AIS data to track fishing activity, indicates that most carriers (and some fishing vessels) operating in the WCPO transmit AIS data regularly. Information on potential unreported transshipments could then be partnered with EM and observer data to help validate activity.

Additional measures should also be considered – for example, to examine issues around possible catch consolidation between longline vessels, analyses could be undertaken of the frequency with which each vessel transships, and the volumes transhipped. Vessels transshipping disproportionately more frequently than others, or which tranship impractically large volumes for the number of days they've been at sea, could point towards catch consolidation.

Both of these types of analyses are consistent with the obligation under Article 29(3) of the WCPFC Convention to “develop procedures to obtain and verify data on the quantity and species transhipped both in port and at sea in the Convention Area”.

Similar analysis is already undertaken for at least one other RFMO.

***In port transshipments/unloading***

By their very nature, in port transshipments offer greater opportunities for monitoring as well as other practical benefits for a compliance regime (e.g. capacity to undertake vessel inspections, embark/disembark observers, crew, etc). To that end, they are lower risk.

Nevertheless, unloading directly to local processing facilities/cold stores or directly to containers can present risks if not monitored effectively. In particular, a number of conventional carrier operators stressed the need for both carriers and container providers to operate on a ‘level playing field’. Carrier operators note that they are subject to a strict compliance regime, including observers, with

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<sup>100</sup> WCPFC VMS Reporting Requirement Guidelines - <https://www.wcpfc.int/doc/tcc-05/vms-reporting-requirements-draft-guidelines>

<sup>101</sup> <http://www.imo.org/en/OurWork/Safety/Navigation/Pages/AIS.aspx>

<sup>102</sup> <https://globalfishingwatch.org/map/>

its attendant costs. However, in ports with limited monitoring, vessels may load fish directly into containers, allowing potentially IUU fish to reach the market with little chance of detection. Container vessels carrying fish are not considered 'fishing vessels', and are not subject to the same RFMO requirements.

To that end, and particularly in light of the likely growth in the use of containers, all WCPFC members should ensure effective port State monitoring of catches unloaded directly to containers (or other land-based facilities).

#### *Making PIC ports more attractive for transshipment/unloading*

If there is scope for 'win-win' outcomes in the 'transshipment debate' it is if more vessels currently undertaking transshipment on the high seas voluntarily begin using PIC ports for transshipment or unloading. PIC ports are typically closer to the main fishing grounds than east Asian ports, and transshipment/unloading in port can deliver important economic benefits to vulnerable PIC economies. However, the pragmatic reality is transshipping in PIC ports will only happen if there's a clear economic benefit to industry in doing so.

At the fishing vessel end, transshipping in port is not attractive in most cases at the moment because PIC ports lack necessary infrastructure and cost effective services. In addition, there are extra costs involved with licensing and disincentives associated with strong compliance regimes. At the carrier company end, transshipment in port is more difficult to coordinate logistically in the longline fishery because of the smaller volumes involved.

Attracting more transshipment/unloading in PIC ports will require a strategy which deals with all of these issues.

It is not clear whether this is best approached regionally, or by each interested port State, but the critical thing it seems to us is that ports with an interest in attracting more transshipment/unloading talk directly with their potential customers (fishing companies, carrier companies, traders) to identify the current impediments to the use of the port and the circumstances that would make the port more attractive.

For many, this may require (potentially substantial) investments in infrastructure and services and a clear-eyed analysis may show the potential returns are not worth it given their circumstances (e.g. location, potential volume of port visits, etc). (Indeed, it is impractical to expect that all PICs would have a port which is attractive for unloading). However, for others - either because of their strategic location or existing mix of services, or because investments in port infrastructure are already planned and making them attractive to fishing vessels may require only marginal additional investment – the risk/reward equation may be more favourable. In either case, given the 'package' of measures vessels look for in an unloading destination, making PIC ports more attractive will almost certainly require coordination across multiple government departments (and potentially local industry).

#### *Improving transparency of transshipment vessels on the RFV*

In addition to strengthening measures to validate transshipment activity, a number of measures could be taken to improve the utility of carrier vessel information on the RFV. These include:

- publishing both the 'owner' and 'operator' (or charterer) of carrier vessels, consistent with ICCAT and IOTC.

Under the WCPF Convention, flag States are primarily responsible for ensuring compliance of their vessels with CMMs. On the RFV, the owners of carriers are listed, but in many cases these entities have no involvement in the day-to-day operation of the vessel (other than providing crew etc) and have little involvement in fisheries. In practice, it is the entity in operational control of the vessel – often a charterer – who has responsibility for ensuring compliance with fisheries regulations (e.g. submission of transshipment notices and declarations, etc). In many cases, the charterer has little

contact with the owner (dealings are done through a broker) or the flag State. The fact that the flag State has limited contact with the charterer arguably dilutes their capacity to ensure vessel compliance. Although paragraph 8 of CMM 09-06 requires the chartering and flag States to cooperate to ensure compliance by the vessels, it is not clear how often this occurs in practice (despite the very high rates of chartering in the carrier sector, only 13 of 232 carriers >1000 GT are formally recorded as being chartered on the RFV).

Registering both the owner and the 'operator' (i.e. charterer) of a carrier would provide authorities with better information on which entity is in operational control of the vessel, and therefore in practical charge of day-to-day fisheries compliance issues. Both ICCAT and IOTC already list both the owner and 'operator' of carrier vessels on their respective vessel registers.

Given the public interest in carrier operations by some NGOs in the past<sup>103</sup>, listing current operators may be sensitive for some charterers, and moreover, the short term nature of many charters may require frequent 'upkeep' of the RFV. To that end, the practicalities of this requirement should be worked through with carrier operators.

- Providing an indication of minimum holding temperature

Although freezer type and capacity is listed on the RFV, at present there is little means to distinguish those carriers involved in ULT sashimi transfers versus those only involved in cannery grade transshipments. Providing some indication of the minimum holding temperature (i.e. in °C) of carriers would provide some indication of the capacity of the vessel to carry different types of products.

- Standardising units

The units used across a number of categories in the RFV are different, which makes comparison between vessels and fleets difficult. For example, vessel size can be GT or GRT, engine power can be kilowatts or horsepower, freezing capacity is variously given as cubic meters, metric tonnes/day, twenty foot container equivalent units (TEUs), cubic feet or JRT, while fish hold size is given as cubic feet, cubic meters or metric tonnes. In addition to variations in vessel type – a longliner can variously be a 'freezer longliner', a 'tuna longliner' or simply a 'longliner' – and often multiple variations in the spelling of the same address – the existing structure of the RFV makes analysis difficult. 'Cleaning up' and simplifying the structure is likely to have a range of benefits.

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<sup>103</sup> For example: [https://www.journeyman.tv/film\\_documents/5914/transcript/](https://www.journeyman.tv/film_documents/5914/transcript/)

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## **WCPO Transshipment Business Ecosystem Study**

**Goal:** To conduct an in-depth analysis of the global “business ecosystem” of transshipping where this “business ecosystem” is defined as the network of organizations - including suppliers, operators, processors, distributors, traders, customers, competitors, and government agencies - involved in the movement of transshipped fish and other seafood product from catcher vessel to first point of landing. For clarity, transshipment is defined as “...the unloading of all or any of the fish on board a fishing vessel to another fishing vessel either at sea or in port...” and first point of landing is defined as “...the initial point at which fish are brought to shore...” First point of landing does NOT include the transshipping of fish between vessels while in port.

**Scope:**

1. Vessel scope: all vessels involved in transshipping fish and the transferring of fuel, provisions, etc. This would include the tuna industry (and all its associated fishing gears), in the Western and Central Pacific Ocean (WCPO) region.
2. Transshipment scope: at sea (EEZ and high seas) and in port;
3. Product scope: tuna caught by all fishing gears as well as non-tuna by-catch; and
4. Geographic scope: Global preferred but WCPO primarily.

**Items/Questions for Key Analysis:**

**1. History**

- a. When, how, by whom and what pressures led to transshipping growing to become a global practice, particularly in the fisheries sector?

**2. Operational**

- a. What key companies and/or organizations are involved in:
  - i. The fleet profiles of transshipping (by flag and ownership linkages) to include longliners and vessels of other gear types that offload fish; carriers that receive the fish or other seafood product; bunkers that provide fuel and provisions; and the key factors that determine why the carrier and bunker vessels involved in transshipping are either chartered or owned;
  - ii. The initial downstream processing of landed transshipped product to include the extent or level of vertical integration by and between the companies involved as well as that of their subsidiary companies (to include opportunistic transactions and the extent to which they occur) and the percent of total catch or market share that can be attributed to these companies based on specific and differing fisheries);
- b. Carrier vessel fleet dynamics;
  - i. How these fleets are organized and how/when/where transactions are scheduled and otherwise conducted; and
  - ii. The extent to which carrier vessels are selective in only delivering product to processors located within ports of the same State the carrier is flagged to.

- c. The profile of a typical transshipping event for each fishery covered to include key events, the timing and locations of the event and how this event may differ amongst various fisheries;
- d. The number of active carrier and bunker vessels involved in transshipping in a given year on both a global and regional basis; and
- e. How operational and economic efficiencies are gained through transshipment at sea or in port.

### **3. Economic/Financial**

- a. When are transshipment events paid for and how are transactions conducted;
- b. Typical costs of various types of transshipment goods (fuel, provisions, bait, port fees, etc.);
- c. Extent to which transshipping involves the exchange of crew and the process of how these transactions are coordinated and conducted;
- d. If and how costs would change for carriers, bunkers and fishing vessels if at sea transshipment was banned and the extent to which the regional geography is a significant driver; and
- e. The extent to which government agencies (of both the vessel flag State as well as port States that host in-port transshipping) are involved in and benefit (or face costs) from the transshipping business ecosystem (including any subsidies or incentives paid out by governments, specific to the transshipping activity, or costs for monitoring) as well as the extent to which government involvement has been subsumed and privatized within the ecosystem.

### **4. Political**

- a. Identification of key countries that support and/or benefit from the business practice of transshipping outlined within two distinct categories of analysis – in-port and at sea, as well as those countries that are overtly supportive of transshipping reform and the factors that influence the different stances.

### **5. Legal**

- a. Evaluate the WCPFC Transshipping CMM to determine the extent to which they allow or address vessels flagged to both Members as well as Cooperating Non-Member countries or to Non-Members (via charter arrangements) to conduct transshipping, as well as any loopholes that prevent or impede effective control of this activity; and
- b. Key regulatory/legal differences between merchant vessels and vessels involved in transshipment of fisheries products.

### **6. Monitoring**

- a. How is the process of placing human observers on carrier vessel coordinated and conducted to include information and data flows for observer reporting; and the perceptions of fishery managers and scientists of the value of such observer programs and the information collected; and
- b. What are views from both observer service providers and commercial electronic service providers on integrating electronic monitoring as a means to conduct transshipment monitoring.

## Annex 2: List of persons/organisations consulted

### *Trading/Carrier Companies*

#### **FCF Fishery Co.**

- WH Lee, Chief Executive Officer
- Max Chou, President
- Henry Hong, Senior Vice President
- Harry Chen, Senior Specialised Assistant
- Eddie Chiang, Specialised Assistant, Executive Office
- Jubby Shun, Specialised Assistant
- FL Sang, Senior Manager, Office of CEO
- Poyi Li, Account Manager, Office of CEO

#### **Tri Marine**

- Phil Roberts, Managing Director, Tri Marine International

#### **Itochu**

- Hiroshi Nishimura, Section Manager, Marine Products Section No. 1, Marine Products Dept
- Eiji Ogawa, Deputy Section Manager, Marine Products Section No. 1, Marine Products Dept
- Daiki Sugiura, Marine Products Section No. 1, Marine Products Dept.

#### **Mitsubishi Corporation**

- Kenichi Ito, Team Leader, Tuna Team, Marine Products Dept
- Yusuke Kishida, Manager, Tuna Team, Marine Products Dept

### *Carrier Companies*

#### **Toei Reefer Line**

- Tomokazu Namai, General Manager, Shipping and Trading Division
- Hideki Mori, Deputy General Manager, Shipping and Trading Division
- Kazuhiro Tsuruta, Assistant Manager, Shipping and Trading Division
- T. Shibusawa, Assistant Manager, Shipping and Trading Division
- T. Umezawa, Assistant Manager, Shipping and Trading Division
- Momoe Sakuma, Assistant Manager, Shipping and Trading Division

#### **SOeIL Agency**

- M. J. Kim, President

#### **GreenSea Chartering**

- Hans Mol, Managing Director

### *Fishing Companies/Associations*

#### **Silla (Longline, Purse seine)**

- Mike Chae, Marine Fisheries Headquarters, Longliner staff
- Aaron Jeong, Marine Fisheries Headquarters, Purse Seiner Team, Assistant Manager

#### **Dongwon (Longline, Purse seine, Carrier vessels)**

- Kyungpill Kim, Assistant Manager, Marine Fisheries Team 2

### **Shun He Fishery**

- Wen Li Chen, Chairman
- Wen Lien Chen, Manager, Longliner Dept
- Yi Chang Chen, Manager, Purse Seiner Dept

### **Fong Kuo (Purse seine, Carrier vessels)**

- 5 company representatives

### **Korean Overseas Fisheries Association (KOFA)**

- Hyun-Ai Shin, General Manager, International Affairs Dept
- Ho-Jeong Jin, Deputy General Manager, International Affairs Dept
- Bong-Jun Choi, Assistant Manager, International Affairs Dept
- Sang-Jin Baek, International Affairs Dept

### **Taiwan Tuna Association (TTA)**

- Yu-Chih Lin, President

### **Koo's Fishing Co. Ltd.**

- Gene Muller

### *PIC-based Onshore Businesses*

#### **Liancheng Overseas Fishery (FSM) Co. Ltd**

- Benson Deng, Pohnpei Base Manager

#### **Luen Thai Fishing Venture**

- Jin Liang, Majuro Base Manager

#### **Pacific International Inc.**

- Jerry Kramer, Chief Executive Officer

#### **Pan Pacific Foods**

- Wanjun Yang (Young), Manager

### *PIC Government Agencies*

#### **Marshall Islands Marine Resources Authority (MIMRA)**

- Sam Lanwi, Deputy Director

#### **Marshall Islands Ports Authority**

- Anram Kemem, Deputy Director
- Thomas Maddison, Seaport Manager

#### **Pohnpei Ports Authority**

- Pius Roby, General Manager
- Danny Ludwig, Seaport Manager

#### **Solomon Islands Ports Authority**

- Derrick Maepeza

### *Sub-regional/Regional Secretariats*

#### **FFA**

- Matt Hooper, Deputy Director General
- Vivian Fernandes, MCS Policy Advisor

#### **PNA Office**

- Ludwig Kumoru, CEO, PNA Office
- Maurice Brownjohn, OBE, Commercial Manager, PNA Office

#### **WCPFC Secretariat**

- Dr Lara Manarangi-Trott, Compliance Manager
- 'Ana Taholo, Assistant Compliance Manager
- Karl Staisch, ROP Coordinator

### *Transshipment Observer Services Providers*

#### **Vanuatu Fisheries Dept**

- John Mahit, Vanuatu Fisheries Dept

#### **MRAG Americas (Observer provider for IATTC Transshipment program)**

- Bryan Belay, Director, Fisheries Monitoring Division

#### **MRAG Ltd (Observer provider for IOTC/ICCAT Transshipment programs)**

- James Moir-Clark
- Patrick Nugent

### Annex 3: Carrier vessels active in 2017-18

(note: Green shaded vessels are authorised to tranship on the high seas; orange shaded vessels are not authorised to tranship on the high seas; the high seas authorisation status of grey shaded vessels is not listed on the RFV)

Vessel Name	IMO #	Flag	Owner Name	Active 2017-18	RFV Active 2017
FU YUAN YU LENG 36	8791734	China	FUJIAN CHANGFENG FISHERY CO.,LTD	Y	Y
TAI XIANG	9005625	China	LIAOYU GROUP CO., LTD	Y	Y
YONG FA YUN 12	9797527	China	NINGBO YONGFA OCEAN FISHERIES CO.,LTD	Y	Y
YONG FA YUN 10	9787716	China	NINGBO YONGFA OCEAN FISHERIES CO.,LTD	Y	Y
PING TAI RONG LENG 1	9834894	China	PING TAI RONG OCEAN FISHERY GROUP CO., LTD	Y	Y
PING TAI RONG LENG 2	9839363	China	PING TAI RONG OCEAN FISHERY GROUP CO., LTD	Y	Y
KAI YUAN	8317409	China	SHANGHAI DEEP SEA FISHERIES CO., LTD.	Y	Y
KAICHUANG 101	9810604	China	Shanghai Deep Sea Fisheries Ltd., Co.	Y	Y
KAICHUANG 102	9810616	China	Shanghai Deep Sea Fisheries Ltd., Co.	Y	Y
SHUN TIAN FA NO.168	7323401	Chinese Taipei	HON SHUN FISHERY CO., LTD.	Y	Y
SHENG HONG	7920869	Chinese Taipei	SHENG HONG FISHERY CO., LTD.	Y	Y
KENTA MARU	9788772	Japan	TOEI REEFER LINE LTD.	Y	Y
YUN RUN	9003756	Kiribati	FENG RUN SHIPPING CO.,LTD	Y	Y
XIN RUI	9065534	Kiribati	MAX STEP SHIPPING LIMITED	Y	Y
M/V MONONOK	8911607	Korea (Rep.)	BOYANG LTD	Y	Y
OCEANUS	9194919	Korea (Rep.)	DONGWON INDUSTRIES Co., Ltd	Y	Y
BADARO	9163439	Korea (Rep.)	DONGWON INDUSTRIES Co., Ltd	Y	Y
SEIHO	8909680	Korea (Rep.)	GREEN WORLD CO., LTD	Y	Y
SEIWA	9021277	Korea (Rep.)	GREEN WORLD CO., LTD	Y	Y
SEIBU	9684067	Korea (Rep.)	GREEN WORLD CO., LTD.	Y	Y
GREEN CAPE	8800224	Korea (Rep.)	GREEN WORLD CO., LTD.	Y	Y
SEIYU	9172909	Korea (Rep.)	GREEN WORLD CO.,LTD	Y	Y
LAKE SUCCESS	8702630	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
LAKE WIN	9020780	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
SUN FLOWER 7	8513871	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
SALLAKE	8603121	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
LAKE CASTLE	9004657	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
KATAH	9105360	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
PHAROSTAR	9087910	Korea (Rep.)	JI SUNG SHIPPING CO., LTD.	Y	Y
LAKE NOVA	9009669	Korea (Rep.)	JISUNG SHIPPING CO., LTD	Y	Y
SEIN STAR	8319029	Korea (Rep.)	SEIN SHIPPING CO LTD	Y	Y
SEIN VENUS	8906808	Korea (Rep.)	SEIN SHIPPING CO., LTD.	Y	Y
SEIN FRONTIER	9051789	Korea (Rep.)	SEIN SHIPPING CO., LTD.	Y	Y
SEIN GALAXY	9076246	Korea (Rep.)	SEIN SHIPPING CO., LTD.	Y	NA
SEIN SUN	8415859	Korea (Rep.)	SEIN SHIPPING CO.,LTD	Y	Y
SEIN SKY	8813623	Korea (Rep.)	SEIN SHIPPING CO.,LTD	Y	Y
SEIN QUEEN	8807430	Korea (Rep.)	SEIN SHIPPING CO.,LTD	Y	Y
SL ARCHI	8712398	Korea (Rep.)	SEOIL AGENCY CO., LTD	Y	Y
SL BOGO	8815009	Korea (Rep.)	SEOIL AGENCY CO., LTD	Y	Y
CHERRY STAR	9015840	Korea (Rep.)	SHINHAN CAPITAL CO.,LTD.	Y	Y

LAKE GLORY	8204597	Korea (Rep.)	SHINHAN CAPITAL CO.,LTD.	Y	Y
SHOTA MARU	9194892	Liberia	PANAMA TRL S.A. (Foreign Maritime Entity)	Y	Y
TAIHO MARU	9459591	Liberia	Princess Line S.A.	Y	Y
TENHO MARU	9128764	Liberia	Princess Line, SA	Y	Y
AMAGI	9170963	Marshall Is.	New Power Ship S.A.	Y	Y
COOL EXPRESO	9085479	Netherlands	Celtic Klipper Shipping Company N.V.	Y	Y
ANGARA	9136890	Panama	ANGARA SHIPPING LTD	Y	Y
BAO WIN	9109263	Panama	BAO POWER SHIPPING CO., LTD	Y	NA
YUNG DA FA 108	9016076	Panama	BRAVO SKILL SHIPPING, S.A.	Y	Y
CHAN HAN 6	7812074	Panama	CHAN FONG TRANSPORT CO. LTD	Y	Y
ISLEMAN	8814902	Panama	CHANTREY SHIPPING S.A	Y	Y
WIN SHENG	7810571	Panama	Chen-Lien Hsieh	Y	Y
HAI FENG 618	9035084	Panama	CHINA KINGDOM SHIPPING LIMITED	Y	Y
KAI DE	8421286	Panama	DALIAN NONGJIN SHIPPING CO., LTD	Y	Y
FRIO CANARIAS	9061904	Panama	DAYLIGHT SHIPPING,S.A	Y	N
FRIO POSEIDON	8807662	Panama	DREAM FAITH, S.A	Y	Y
YUNG DA FA 101	8508840	Panama	ETERNAL ONE SHIPPING S.A.	Y	Y
EURO STAR	8319055	Panama	EURO STAR SHIPPING, INC	Y	Y
FONG KUO NO 819	8913992	Panama	F.K. OVERSEAS CORP.	Y	Y
FONG KUO NO 818	8904070	Panama	F.K. OVERSEAS CORP.	Y	Y
YUN RUN 3	9161613	Panama	FENGRUN SHIPPING CO., LIMITED	Y	Y
FULL KUO SHIN	8604967	Panama	FULL KUO CORP.	Y	NA
MABAH	9105358	Panama	GJENDE REEFER AS	Y	Y
SEA PEARL I	9008639	Panama	HABITAT INTERNATIONAL CORP.	Y	Y
SEA TRADER I	8919893	Panama	HABITAT INTERNATIONAL CORP.	Y	Y
SEA STAR V	8914221	Panama	HABITAT INTERNATIONAL CORP.	Y	Y
SEA MARK	8317423	Panama	HABITAT INTERNATIONAL CORP.	Y	Y
ANGEL I	8223488	Panama	HONG KONG (LIAOYU GROUP) COMPANY LTD	Y	Y
LIAOYU REEFER 1	8904068	Panama	HONG KONG EVER OCEAN SHIPPING COMPANY LTD	Y	NA
TAI JI	8804244	Panama	HONG KONG(LIAOYU GROUP) CO., LTD	Y	Y
JONATHAN ACE	8221595	Panama	JONATHAN SHIPPING INC	Y	Y
JONATHAN STAR	8223311	Panama	JONATHAN STAR SHIPPING INC.	Y	Y
RYOMA	9133305	Panama	JONG SHYN SHIPBUILDING CO., LTD	Y	Y
SYOTA MARU	9087908	Panama	KOO'S SHIPPING COMPANY S.A.	Y	Y
EITA MARU	9109287	Panama	KOO'S SHIPPING COMPANY S.A.	Y	Y
KENTA MARU	8615784	Panama	KOO'S SHIPPING COMPANY S.A.	Y	Y
NO.2 JOCHOH	9698343	Panama	KSC SHIPPING S.A	Y	Y
PONTOS	8908739	Panama	MAGIC PRESTIGE GROUP S.A.	Y	Y
YUN RUN 1	8815023	Panama	MAX STEP SHIPPING LIMITED	Y	NA
HAI FENG 658	8710209	Panama	MEXON SHIPPING LIMITED	Y	Y
HAI FENG 668	8800236	Panama	MEXON SHIPPING LIMITED	Y	Y
ATMODA	8908076	Panama	NAVAL MAGNUM, S.A.	Y	Y
VICTORIA-A	9140097	Panama	NAVISA MARITIME S.A	Y	NA
FARO		Panama	NAVISUD S.A.	Y	Y
HIKARI 1	9293313	Panama	NEW POWER SHIP, S.A	Y	Y
NEW TAKATSUKI	9015838	Panama	NEW POWER SHIP,S.A	Y	N

NO 1 BARON	8911619	Panama	NOK CO ., LTD. S.A	Y	Y
KHANA	8810645	Panama	NOK CO. LTD., S.A	Y	Y
SUAH	9000376	Panama	NOK CO., LTD. S.A	Y	Y
ZEFYROS REEFER	8916748	Panama	OLYMPUS MARINE LTD.	Y	N
ISLAND REEFER	8312461	Panama	PACIFIC ISLAND REEFER CORP.	Y	Y
HAI FENG 648	8710132	Panama	PACIFIC VENTURE DEVELOPMENT LIMITED	Y	Y
PS REEFER	8221947	Panama	PACSUN SHIPPING, S.A	Y	Y
HOUTA MARU	9003158	Panama	PANAMA TRL S.A	Y	Y
KURIKOMA	9145920	Panama	PANAMA TRL.S.A.	Y	Y
SEIN PRINCESS	8609981	Panama	PRINCESS REEFER S.A.	Y	Y
SALGIR	9142289	Panama	SALGIR SHIPPING LIMITED	Y	Y
SHIN IZU	9186936	Panama	SEA ROAD LINE INC.	Y	Y
SHIN FUJI	9140281	Panama	SEA ROAD LINE INC.	Y	Y
FRIO LAS PALMAS	8908193	Panama	SEABORN HONOR S.A.	Y	N
OSTROV BERINGA	8517815	Panama	SEAJET OVERSEAS S.A.	Y	Y
SANWA FONTAINE	8204121	Panama	SEALAND TRADING SERVICE CORPORATION	Y	Y
HANARO	9133317	Panama	SEALAND TRADING SERVICES CORPORATION	Y	NA
IRIS REEFER	8513039	Panama	SEAVIEW MARITIME S.A	Y	Y
SEA GLORY II	9009695	Panama	SHANDONG ZHONGLU FISHERY SHIPPING CO., LTD	Y	Y
TAI XING	8210273	Panama	Shandong Zhonglu Fishery Shipping Co.,Ltd	Y	Y
TAI NING	8217116	Panama	SHANDONG ZHONGLU FISHERY SHIPPING CO., LTD	Y	Y
HAN XING	9586332	Panama	SHAO JUN HAN	Y	Y
SEIN GRACE	8609979	Panama	SKY REEFER S.A.	Y	Y
FRIO MOGAMI	9184548	Panama	STAR GLOBAL SHIPPING S.A.	Y	Y
TUNA QUEEN	9278612	Panama	STAR NAVIGATION S.A	Y	Y
TUNA PRINCESS		Panama	STAR NAVIGATION S.A.	Y	Y
TAI FU NO. 1	7908976	Panama	SUN BIG REEFER SHIPPING S.A.	Y	Y
TIARA 108	8420763	Panama	TIARA MARINE S.A.	Y	Y
SHIN HO CHUN NO. 101	9220653	Panama	TUNAGO SHIPPING CO. LTD	Y	Y
SHIN HO CHUN NO. 102	9262182	Panama	TUNAGO SHIPPING CO. LTD	Y	Y
HUA JIAN 107	8421298	Panama	UNITED OCEAN SHIP MANAGEMENT LIMITED	Y	Y
VIVA 106	8122385	Panama	VIVA MARINE S.A.	Y	Y
LADY TUNA	9453418	Panama	WANG TAT CORPORATION PTE LTD	Y	NA
HUA FU 107	8518819	Panama	WELL SUCCESS MARINE S.A	Y	Y
HARU	9241932	Panama	WORLD FISH ENTERPRISE CO. LTD	Y	Y
TANGERINE 88	7931674	Philippines	DIAMOND EXPORT CORPORATION	Y	Y
GLAXINIA 888	7627223	Philippines	FRABELLE FISHING CORPORATION	Y	Y
VANDA 888	7322471	Philippines	FRABELLE FISHING CORPORATION	Y	Y
PRIMROSE 888	7046845	Philippines	FRABELLE FISHING CORPORATION	Y	Y
VANILLA	6613469	Philippines	FRABELLE FISHING CORPORATION	Y	Y
MAJESTIC MILKYWAY	8021892	Philippines	JV3 MARINE CORPORATION	Y	Y
DOLLY 798	7916791	Philippines	RD Tuna Venture Inc.	Y	Y
DOLLY 888	8408301	Philippines	SOUTH SEA FISHING VENTURES PHILIPPINES, INC.	Y	N
DOLLY 889	8211007	Philippines	SOUTH SEA FISHING VENTURES PHILIPPINES, INC.	Y	Y
PAUL REYNALD	8210326	Philippines	TRANS-PACIFIC JOURNEY FISHING CORP.	Y	Y
BERNADETTE MARIE	8500446	Philippines	TRANS-PACIFIC JOURNEY FISHING CORP.	Y	Y

DANIELLA -T	8217142	Philippines	TRANS-PACIFIC JOURNEY FISHING CORPORATION	Y	Y
MARIA ERLINDA	8419544	Philippines	TRANS-PACIFIC JOURNEY FISHING CORPORATION	Y	Y
FRANCESCA L.T.		Philippines	TRANS-PACIFIC JOURNEY FISHING CORPORATION	Y	Y
LUNG YUIN	9048603	Vanuatu	CHANG SOON SHIPPING CORP	Y	Y
KAIMON	9172442	Vanuatu	NEW POWER SHIP, S.A	Y	Y
<b>Additional 'Active' vessels on WCPFC Active Vessel list (2017)</b>					
HAI SHUN 158	9011911	Panama	BEI YOU HUA (81%), YAO YOU FANG (19%)	N	Y
ORIENTAL CHILAN	8301723	Panama	KAO SHENG MARINE	N	Y
RUI SHENG	8688755	Panama	RUI CHENG INTERNATIONAL SHIPPING LIMITED	N	Y
JACHA		Panama	NOK CO.LTD., S.A	N	Y
NO.1 POHAH	8714944	Panama	NOK CO.LTD., S.A	N	Y
DINOK	8908234	Panama	NOK CO., LTD. S.A	N	Y
TAI FU NO. 3	7927453	Panama	SUN VICTORY SHIPPING S.A	N	Y
PLATTE REEFER	7812098	Panama	COMERCIO INTERNACIONAL DEL ATUN, S.A	N	Y
HAO XIANG	7812062	Panama	KONGTONG SHIPPING CO. LIMITED	N	Y
NO.2 POHAH	9227601	Panama	Eastern Reefer II AS	N	Y
DON REEFER		Panama	SEACAPE MARINE S. A.	N	Y
HAI FENG 628	8317356	Panama	MEXON SHIPPING LIMITED	N	Y
HAI FENG 678	9016961	Panama	MEXON SHIPPING LIMITED	N	Y
SARONIC BREEZE	9041540	Panama	STAR SEA SHIPPING S.A.	N	Y
IBUKI	9666481	Panama	STAR NAVIGATION S.A	N	Y
FRIO DOLPHIN	8807442	Panama	ATHENIAN MARINE LTD	N	Y
SHIN HANG	8214839	Panama	SHIN HANG SHIPPING CO., LTD	N	Y
TAGANROGSKIY ZALIV	9017276	Panama	MERLIN MARINE CORP.	N	Y
SKYFROST	8521830	Panama	MEDWAY MARINE, S.A	N	Y
<b>Vessels on RFV in March 2019, but not 2017</b>					
M/V JOCHOH	9126261	Korea (Rep.)	BOYANG LTD.	-	
EVEREST BAY	8911073	Liberia	EVEREST BAY SHIPPING COMPANY B.V.	-	
TRITON REEFER	8911102	Liberia	WEI CHENG SHIPPING LIMITED	-	
HARIMA	9819923	Panama	WANG TAT CORPORATION PTE. LTD	-	
BOYANG BERING	9851191	Panama	BOYANG ALASKA S.A	-	
YACHIYO	9851581	Panama	STAR NAVIGATION S.A	-	
FRIO MARATHON	8916229	Panama	SUNNY SKIES CORPORATION	-	
YUN DER	9797917	Panama	RYOMA INTERNATIONAL TRANSPORT CORP.	-	
HSIANG HAO	9797656	Panama	RYOMA MARINE TRANSPORT CORP.	-	
FRIO SHINANO	9073385	Panama	SPRING GLOBAL MARINE LTD., S.A.	-	
SHEN JU	9189885	Panama	YONGXIANG INTERNATIONAL SHIPPING CO., LTD	-	

Note – there are two vessels on the RFV named KENTA MARU and two vessels named TAGANROGSKIY ZALIV. Both KENTA MARU vessels (IMOs: 8615784 and 9788772) were active and are listed above. Only one TAGANROGSKIY ZALIV (IMO: 9017276) was reported to be active by its flag State (Panama). The other TAGANROGSKIY ZALIV (IMO: 9152181), also flagged to Panama, was not reported as being active.