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**TRACKING PURSE SEINE TRANSSHIPMENT IN THE WCPO: PRELIMINARY  
FINDINGS**

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## Tracking Purse Seine Transshipment in the WCPO: Preliminary Findings

Katherine Seto, Nathan Miller, Quentin Hanich

### **Abstract**

Transshipment occurs extensively in the Western and Central Pacific Ocean (WCPO) tuna fisheries. However, transshipment at sea is oftentimes conducted far from shore, with limited monitoring and oversight. While transshipment at sea has frequently been associated with illegal or illicit activities, actors that rely heavily on transshipment at sea maintain that it can operate as a legitimate part of the fish commodity chain, under effective regulation. Here we conduct a preliminary study to assess whether at-sea transshipment in the most regulated and visible fisheries subsector of the WCPO is traceable, verifiable, and legal. Using AIS data from Global Fishing Watch, as well as qualitative information from both regional and sub-regional sources, we find that 78 percent of observed potential transshipments at sea remain unsubstantiated even after triangulating with diverse data sources. In tracing these encounters at sea, this preliminary study further identifies three primary areas for improving the traceability and transparency of transshipment at sea in the WCPO. Overall, this study suggests that current data inconsistencies, poor information sharing, and overall lack of transparency inhibit true transshipment legitimacy, even where transshipment is regulated.



## **Introduction**

Transshipment occurs extensively in the Western and Central Pacific Ocean (WCPO) tuna fisheries, especially in the tropical region for skipjack, bigeye, and yellowfin. The Western and Central Pacific Fisheries Commission (WCPFC) 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” [1](Article 1h). While in-port transshipment is conducted in territorial waters, and is thus subject to the rules and regulations of the country in which it occurs, at-sea transshipment is oftentimes conducted on the high seas or far from shore, with limited monitoring and oversight. As such, transshipment at sea has frequently been associated with illegal or illicit activities, such as fish and money laundering, trade of illicit commodities (e.g. drug or wildlife trafficking), labor violations, and illegal, unregulated, and unreported (IUU) fishing [2-4]. Where illegal activity is not associated, transshipment at sea still oftentimes obscures the origins and destinations of fish commodities, inhibiting efforts to improve sustainability, traceability, and transparency in fishing practices. While transshipment at sea is often problematic, governments and fishing enterprises that rely heavily on transshipment at sea maintain that where transshipment is regulated, it can operate as a legitimate part of the fish commodity chain.

With this study, we seek to assess whether regulated at-sea transshipment in the WCPO is traceable, verifiable, and legal. To answer this question, we considered the most highly regulated and visible subsector of Pacific tuna operations: the purse seine fishery in the primary tropical tuna waters of the WCPO. We considered this fishery to be the most highly regulated because of its requirements for 100% coverage by the WCPFC vessel monitoring system (VMS) [5], 100% observer coverage on all purse seine fishing vessels [6], 100% at-sea observer coverage for carrier vessels, prohibition on at-sea transshipment [7], and high levels of automatic identification system (AIS) coverage relative to other fleets. The purpose of this study is first to assess the current state of traceability and transparency of regulated at-sea transshipment in the WCPO. Second, we hope to identify potential gaps in the current monitoring and regulation of purse seine transshipment at sea. Finally, this study seeks to provide recommendations and potential policy solutions to address those gaps.

## **Methodology**

This study was conducted using AIS data from Global Fishing Watch (GFW). This initial exploration of transshipment focuses strictly on encounters at sea between purse seine vessels and refrigerated cargo vessels (reefers); encounters between all other vessel types are omitted. An encounter, or potential transshipment, is defined as any occurrence in which a reefer and a purse seine vessel are fewer than 500 meters from each other for more than 2 hours, greater than 10 kilometers from any port. The study area was defined as the WCPFC convention area between 30°N-30°S latitude, with a temporal range of 2014-2017 calendar years.

## **Preliminary Results**

Applying the above methodology, 77 potential transshipments were identified between 28 unique reefers, and 39 unique purse seine vessels. The distribution of these encounters increased from year to year, likely due in large part to data improvements within the GFW platform (e.g. 10 encounters in 2014, 14 in 2015, 25 in 2016, 28 in 2017) [8]. These 77 encounters occurred in eight different Exclusive Economic Zones (EEZs) as well as on the high seas (figure 1). The most frequent flag states to encounter each other included Panama-flagged

reefers with Papua New Guinea-flagged purse seiners (n=13), Korea-flagged reefers with Korea-flagged purse seiners (n=11), and Korea-flagged reefers with Kiribati-flagged purse seiners (n=10). The primary reefer flag states involved in these encounters included Panama (n=33), Korea (n=23), and Vanuatu (n=16). Despite the limited number of encounters, distinct spatial trends emerge in the encounter behavior of flag-based fleets (Figure 1). For example, encounters with Korean-flagged fishing vessels occur throughout the range of the WCPO tropical tuna waters, whereas US and Taiwanese-flagged fishing vessel encounters are more concentrated in the Western WCPO, and the high seas encounters are almost strictly attributed to fishing vessels flagged to Kiribati.

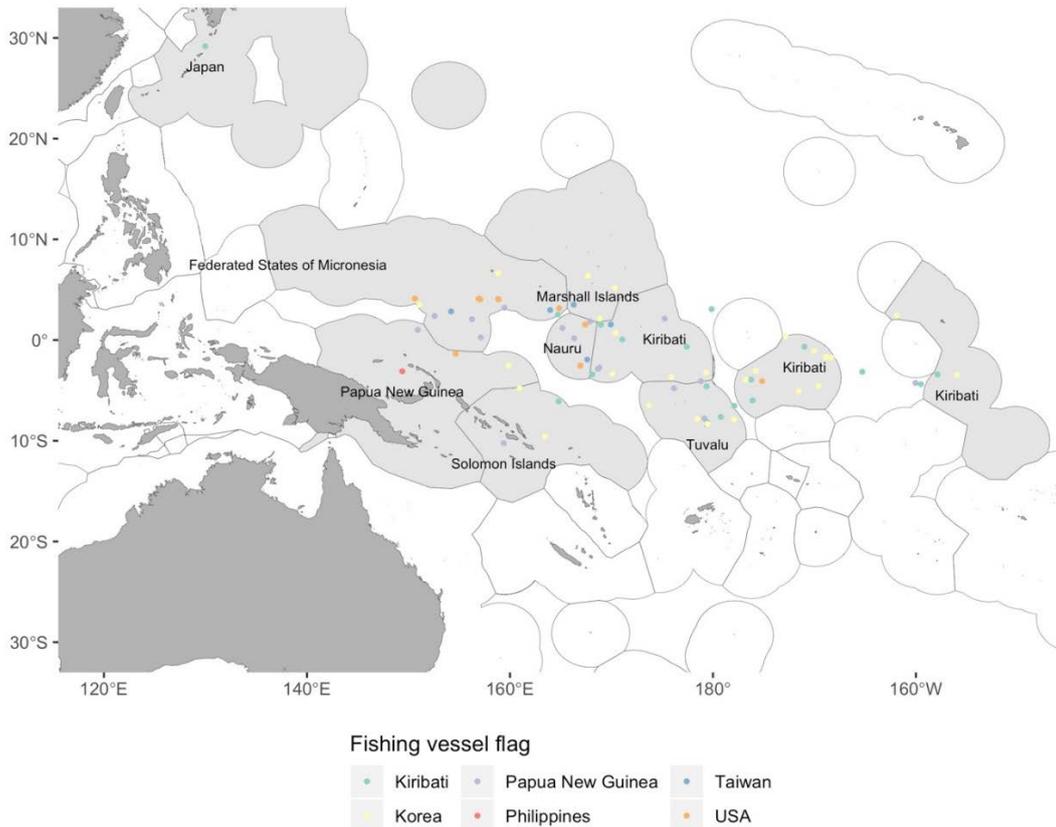


Figure 1: Map of observed encounters between refrigerated cargo vessels and purse seiners

## **Discussion**

AIS data provides an opportunity to analyze encounter behavior of vessels at sea in an open-source, transparent way, unmediated by any specific governing body (e.g. state or RFMO-based data). However, AIS is also currently constrained by technical and regulatory limitations which could lead to false assumptions, and require further data or analysis to corroborate (Table 1). First, AIS is currently only internationally required by the International Maritime Organization (IMO) on vessels over 300 gross tonnes undertaking international voyages [9]. Many vessels licensed within the WCPO are under this size requirement, and since international voyages are defined as those in which a vessel embarks from one port and lands in the port of another country, transshipment at sea is by nature a means of avoiding this designation, if primarily for the economic reasons of reducing costs. Additionally, fishing vessels are specifically exempt from these regulations within the IMO Safety of Life at Sea (SOLAS) Convention [10]. For these regulatory reasons, it is highly likely that a large number of encounters are not detected because one or both vessels do not broadcast AIS (Table 1, AIS

limitation 1 and 2). Second, the practice of transshipping between fishing vessels—which are usually smaller in size than refrigerated cargo vessels, and thus under the IMO size requirement—is widely acknowledged in the WCPO [11], increasing the potential for undetected transshipment between vessels not requiring AIS (Table 1, AIS limitation 1). A third limitation potentially resulting in the underestimation of transshipment at sea is the fact that AIS is not tamper-proof, and individual vessels may alter or turn off their AIS transponders (Table 1, AIS limitation 3). This represents a violation of existing AIS regulations, and may prevent detection specifically of illegal behaviors.

The three limitations above represent possible false negatives, leading to an *underestimation* of transshipment at sea. The solutions to most of these limitations are regulatory in nature, and relate to overall AIS adoption and oversight (Table 1). However, as a remotely sensed data source, AIS also has the potential to create false positive errors, over-identifying diverse encounters at sea as transshipment of fish. These potential false positives may lead to the *overestimation* of transshipment at sea, and need to be triangulated with other qualitative and non-remotely sensed data to understand specific on-vessel activities.

Analytical error	AIS limitation	Analytical outcome	Potential solution
Possible false negative	1) Encounters where both vessels do not have AIS (and are not currently required to)	<i>Underestimation</i> of transshipment at sea	Expand AIS adoption requirements; use additional data sources
	2) Encounters where one vessel does not have AIS (and is not currently required to)	<i>Underestimation</i> of transshipment at sea	Expand AIS adoption requirements; use additional data sources; possible to analyze encounter-like behavior of single vessels
	3) Encounters where 1 or both vessels have tampered or off AIS	<i>Underestimation</i> of transshipment at sea	Increase oversight and enforcement of current AIS requirements
Possible false positive	4) Cannot separate transshipment of fish from other encounters	<i>Overestimation</i> of transshipment at sea	Triangulate with observer data and other narrative or anecdotal sources

### **Triangulating AIS transshipment evidence**

In order to reduce the potential for overestimation in this preliminary analysis, we sought to triangulate results with regional and national observer data. On the regional level, potential additional data sources included WCPFC VMS data, annual reports, and observer reports. According to the 2007 WCPFC Data Rules, WCPFC VMS data is not available to third parties, and would require approval from all CCMs in order to obtain the data [12]. Considering the high resolution required to triangulate preliminary findings (e.g. vessel flag states, dates, times, etc.) and prolonged process for approval, WCPFC VMS data was considered infeasible for the purpose of this study and for overall third-party assessment of traceability, verifiability, and legality. WCPFC Annual reports were also explored to verify these encounters, however the Annual Report on Transshipping published by the Secretariat only covers high seas transshipments as reported by longliners and carriers, with a resolution of flag state rather than vessel. Furthermore, CCM Annual Report Part 1 demonstrated inconsistent to non-existent data on carrier vessels, with only occasional reports for transshipment in port. Without at-sea transshipment information including purse seine vessels, annual report information was also deemed ineffective for triangulating AIS results. The last regional source of data with the

potential to elucidate the nature of these encounters at sea was WCPFC observer data. However, while the CMM on Regulation of Transshipment requires that observers be on all carriers, there is no requirement for carrier vessel observer reports to be submitted to the Secretariat (e.g. 1 observer report submitted for 956 transshipments in 2016 and none for the 1,089 transshipments reported in 2017). Considering the above limitations in the availability or resolution of qualitative WCPFC transshipment information, no regional data was appropriate to clarify the nature of the observed encounters at sea between purse seine vessels and reefers.

In addition to regional data sources, we further identified two sources of sub-regional information that might assist in elucidating the identified encounters. Of the 77 observed encounters, 34 occurred within waters of states that are Parties to the Nauru Agreement (PNA). As PNA states have 100% observer coverage, it was possible to apply that qualitative information to the 34 eligible encounters [13]. Review by the PNA verified 25 encounters as observed non-transshipment, primarily consisting of provisioning, salt, spare parts, and exchange of crew members. Of the remaining nine encounters, seven lacked access to hard copy reports, and two were “unable to find transshipment.” Both of these unverified encounters occurred between the same fishing and reefer vessels in 2017 in the waters of Japan and Tuvalu. Eight additional encounters fell within the purview of states within the Forum Fisheries Agency (FFA), for whom the Secretariat for the Pacific Community (SPC) collects data via the regional observer program. As this data is housed within SPC, it was not readily accessible for FFA, and these eight encounters remain pending.

### **Conclusions, Next Steps, & Recommendations**

Applying all qualitative information from both regional (i.e., WCPFC) and subregional (i.e., PNA and FFA/SPC) sources, 32 percent of the observed encounters between purse seiners and reefers are verifiable as non-transshipments of fish. As such, this study determined that for the most highly regulated fishery in the WCPO, it is not currently possible to assess transshipment traceability—and thus verification or legality—with publicly available data. Several limitations currently constrain the ability to assess transshipment at sea, even in a regulated scenario. First, regional WCPFC data is considered to be non-public domain data, severely limiting access by third parties. Second, the Secretariat likewise makes no regular assessment of this non-public domain data for the verification of transshipment activities. With no regular oversight and no formal data sharing arrangements with third parties or other RFMOs on transshipment-specific information (e.g. IATTC, NPFC), this data is largely ineffective at ensuring traceability and legality. Third, while some transshipment regulations are in place, their current structure does not require sufficient reporting (e.g. observer reports) or resolution (e.g. annual reports) to enable adequate verification. Sub-regional regulations and policies are able to bridge some of that gap, but these institutions also lack regular oversight, and the majority of encounters (78%) remain unsubstantiated even after triangulating with diverse data sources.

In tracing encounters at sea, this preliminary study identifies three primary areas for improving the traceability and transparency of transshipment at sea in the WCPO:

**Reporting** - The current WCPFC transshipment measure (CMM 2009-06) should be strengthened to include consistent transshipment reporting requirements to all areas within the Convention Area, including all transshipments that occur in port and within EEZs. This will allow the Secretariat to receive a complete picture of transshipment activity that occurs within the WCPFC Convention area.

**Monitoring** –The template provided by the Secretariat in Annex 3 of RP03 should be expanded to include data fields for number of offloading and receiving vessels involved in transshipping, and locations where transshipping events occurred (e.g. high seas, EEZs, in port). This will allow cross-verification of vessel transshipment reporting. In addition, the ROP Standards and Guidelines document should be revised to mandate the submission of observer reports to the Secretariat for all high seas transshipments occurring within the WCPFC Convention Area to facilitate the Secretariat’s ability to review, cross-verify and validate transshipment information.

**Data sharing** – The Commission should establish formal transshipping data-sharing procedures with NPFC and expand the current data-sharing agreement with IATTC. This expansion should include the ability for the IATTC carrier observer service provider (MRAG Americas) to share information directly with WCPFC for any transshipment taking place on the high seas in the WCPFC Convention Area involving a carrier vessel with an embarked IATTC observer.

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