

# Following the Proceeds of Illegal Fishing in the Asia-Pacific

Kate Barclay (PhD)  
Senior Lecturer  
Faculty of Arts and Social Sciences  
University of Technology Sydney

## Introduction

It is vitally important that illegal fishing practices not be allowed to undermine the effective management of tuna resources in the region, for the sake of marine ecosystems, world seafood supplies and the economic development of Pacific Island countries. Tunas are predatory fish, so declines in stocks have a destabilizing effect on oceanic food chains. As yet the Western and Central Pacific Ocean (WCPO) tuna stocks are relatively less damaged by human activities, including fishing, than tuna stocks in other parts of the world, but scientists have been highlighting stock declines in some species and calling for restrictions on fishing mortality for several years (Sibert et al 2006). The WCPO tuna fishery is the largest in the world, supplying around half the world's tuna, and valued at AU\$3.9 billion (Williams and Terawasi 2010). Some of the richest fishing grounds in the region are in the Exclusive Economic Zones (EEZs) of Pacific Island countries, many of which are in a precarious economic situation. A recent report estimates that between 21 and 46 per cent of catches for this region are illegal (Agnew et al 2008).

The tuna fisheries of the region may be divided by species, fishing method, and end market. The main species fished commercially in the tropical zone are skipjack, yellowfin, bigeye and albacore. In cooler waters further north and south bluefin are also caught. The main types of fishing are purse seine, longline and pole-and-line.<sup>1</sup> End markets are those for fresh and frozen fish (including sashimi as well as tuna steaks) canned tuna, and smoked *katsuobushi* (used as a flavouring in Japanese cuisine). Issues of illegality most often come up to do with tunas sold in sashimi markets, which may fetch tens of thousands of dollars per fish at auction. The most valuable sashimi tunas caught in the region are the southern bluefin tuna and bigeye. Bluefin is mostly caught in temperate waters, while bigeye is mostly caught in tropical waters and is therefore significant in Pacific Island and Southeast Asian fisheries. This chapter focuses on longline fishing of bigeye for sashimi markets, with some discussion of southern bluefin tuna and cannery tuna where relevant. Routes to market are mapped as supply chains, with major players highlighted. Then key points for intervention to address illegal fishing practices are canvassed.

## Illegal Unreported and Unregulated (IUU) Fishing

Illegal fishing is usually discussed under the umbrella term 'IUU', which means fishing not compliant with national and/or international rules for fisheries

conservation and management. Tuna species are highly migratory, crossing through the waters of many countries and the high seas in the course of their lives, so as a resource they must be managed internationally. This is done through Regional Fisheries Management Organizations (RFMOs), such as the Western and Central Pacific Fisheries Commission (WCPFC). Member governments agree on measures, and are obligated to implement these in their national jurisdictions. Bluefin tuna stocks declined drastically due to overfishing from the 1960s to the 1980s and quotas have been implemented in relevant RFMOs to try to limit fishing to sustainable levels. Bigeye populations around the world are considered to be in the 'overfishing' phase (not yet overfished but on the way there), so the RFMOs have highlighted bigeye as a species in need of protection, but not all RFMOs have agreed on measures to limit bigeye catches.

Transnational crime is often described as existing in 'parallel' with legitimate international business networks (van Schendel & Abraham 2005; Nordstrom 2008). This is very much the case with IUU tuna fisheries in the Asia Pacific region. There is not a clearly demarcated group of hidden-from-view illegal fishing vessels with distinct routes to 'black' markets run by criminals. Sometimes IUU fish is caught by vessels that are not appropriately licensed and registered for fishing in the WCPO, but often IUU fish is caught by vessels that are largely compliant. Non-compliant catch is then laundered into the legitimate catch at various points along the supply chain and sold in the main sashimi markets, potentially passing through any of the businesses involved.

Issues with underreporting southern bluefin tuna catches demonstrate how IUU practices can occur within legitimate operations. Member governments of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) RFMO have since the early 1990s agreed to limit their catches of southern bluefin tuna to specified national quotas. In 2005 a survey of the amount of southern bluefin tuna caught by the Japanese fleet available in the market and in cold storage, however, revealed that the fleet had been catching as much as double the agreed quota, possibly for more than a decade. Australia was the second biggest producer of southern bluefin tuna. There have also been accusations that the systems used for calculating the catch and monitoring mortality in the Port Lincoln-based tuna ranching enterprises allow the Australian fleet to underreport their catch.<sup>2</sup> In both cases the whole industry and government systems for monitoring catches are implicated.

### **Bigeye Sashimi Supply Chains**

Sashimi is a style of raw fish cuisine originating in Japan. Japan is still the main market for sashimi fish (80 per cent or more of the sashimi market is in Japan), although there are markets in other countries that have developed a taste for sushi and sashimi, including the USA, Taiwan and Korea. In the WCPO there are two main types of vessels catching bigeye for sashimi markets. Large, high tech longline vessels with ultra-low temperature (ULT) freezing capacity can store their catch for long periods. Tuna flesh turns brown and unappetizing for sashimi unless it is treated very carefully. Normal freezing temperatures are not suitable, but if tunas are frozen at -60<sup>0</sup> Celsius they can be stored for months or

years at sashimi-grade quality. These large vessels are called 'distant water' and roam the globe without needing to offload or return to their home port for a year or more. They may have catch from the Atlantic and Indian Oceans as well as the Pacific Ocean in their hold. Then there are smaller, low tech longline vessels with no ULT freezing capacity that operate from shore bases and return sashimi catches to shore quickly in order to airfreight it to market 'chilled' on ice (see Figure 1).

The Japanese longline fleet was the first to target bigeye for sashimi in the Pacific Ocean in the 1970s. They had been focussing on albacore for cannery markets but due to changing costs of production, availability of ULT freezing technology, and changing market conditions moved to the higher value sashimi sector, with large high tech vessels. Taiwanese and Korean longline fleets soon followed them, both with and without ULT capacity. From the late 1980s and into the 1990s fleets of small longliners (without ULT) based in Pacific Island countries emerged, some owned by local citizens, others by Taiwanese and Chinese investors (Barclay in press; Williams and Terawasi 2010).

Both the WCPFC and the Pacific Islands Forum Fisheries Agency (FFA) maintain databases of vessels licensed to operate in the region, including information on registered owner companies.<sup>3</sup> These databases show a vast number of fishing companies operating in the region, with no major consolidation visible in terms of registered vessel ownership. However, it should be noted that there are a variety of more or less legitimate reasons that the 'beneficial' ownership (who gets the benefit of the activities of the vessel) of a vessel may be obscure. One reason is that vessels usually operate under a chartering arrangement rather than simply being owned by the people managing the fishing. There are many different kinds of chartering arrangements, from 'bare boat' to something more like a fishing contract (where everything from crewing to fishing is managed by the entity supplying the charter). Another is that vessels may be based in a country other than that of their owner, for various reasons. Tariff exemption arrangements for processed fish often have 'rules of origin' that include the nationality of the fleet (Campling et al 2007). Several Pacific Island countries have 'domestication' policies that encourage foreign fishing companies to base their vessels locally, as does a regional multilateral fisheries access arrangement called the Federated States of Micronesia Arrangement, which came into effect in 1995 (Barclay and Cartwright 2007). Finally, companies may choose to register ownership of their vessels in a country in which the owner does not reside in order to reduce costs and/or avoid regulations, a practice called Flag of Convenience (FOC). Panama, Belize, and Vanuatu are associated with FOC tuna fishing in the region.

There is no indication that the lack of transparency about vessel ownership, however, hides an underlying consolidation of vessel ownership among a few major players. Vessel ownership does seem to be widely dispersed among many companies in many countries. Furthermore, fishing companies are 'price takers' within supply chains consolidated in the fishing nodes. A node is a part of the fishing enterprise that is distinct in terms of the processes involved – imagine a horizontal axis – representing a process such as harvesting, packing trading, etc.

Prices, and other production factors such as quality standards, are generally set well down the supply chain – imagine a vertical axis – by traders and retail buyers. While illegal fishing is conducted in the production node of the supply chain, downstream nodes of the chain may be implicated because they create conditions that encourage illegal fishing by putting downward pressure on prices, demanding large volumes, and by failing to ensure that their products have been sourced legally.

The trading node of sashimi supply chains is highly concentrated. This node involves getting the fish from the fishing vessel to the auction, or to a retail buyer in strands of supply chains that bypass Japan's wholesale auctions (see Figure 1). The seafood company Mitsubishi is estimated to control around 70 per cent of the global trade in sashimi grade tuna. Other large seafood trading companies involved in this node include Maruha and Nippon Suisan. There are also very small companies involved in trading sashimi tunas, but many of these are in effect subsidiaries of the large trading houses, set up by former employees who deal exclusively with the one trading house.

Some fishing vessels supply both sashimi and cannery markets. A detailed discussion of cannery supply chains is beyond the scope of this chapter, but one point worth noting in cannery supply chains is that the 'trading' node of the supply chain – moving fish from fishing vessels to carrier vessels and/or to landing fish in ports – is also highly consolidated. Companies keep their trading relationships confidential so there is no public data about exactly how much fish is traded through which company, but industry people estimate that in excess of 75 per cent of the world's tuna catch bound for canneries is funnelled through three companies: FCF Fishery Company, Itochu Corporation and Tri Marine. Tri Marine does not trade in sashimi tuna, but FCF and Itochu both trade in sashimi as well as fish for canneries. For example, FCF has an exclusive contract to supply the Pafco processing plant managed by Bumble Bee in Fiji. FCF has arrangements with many tuna fishing companies as part of this deal, including Taiwanese and Fiji-based companies that supply both cannery and sashimi markets, so when dealing with vessels that offload to the Pafco factory FCF is also likely to be buying sashimi from some of the same vessels (see Figure 1).

[insert **Figure 1. Sashimi Supply Chains** near here]

It is not easy to trace where particular batches of fish go as they move from fishing vessel through the importation (or landing for the Japanese fleet) and wholesale processes. Governments require traceability in seafood supply chains where food safety is of concern. Since sashimi is eaten raw, it might be assumed traceability would be required, however, there is no official traceability system for ensuring food safety for sashimi in the Japanese market. Food safety, along with quality more generally, is guaranteed by relationships of trust between the people buying and selling the fish. Some unofficial traceability exists in strands of supply chains ending up in the big auctions, such as the famous Tsukiji in Tokyo, because the buyers in these auctions want to know (for quality reasons) which fishing master caught the fish and where it was caught. This capacity to trace where the fish came from in the auction strand of the supply chain, however,

lasts only until the 'outer ring' of Tsukiji (where wholesalers buy at auction). Restaurateurs trust their wholesalers to supply quality fish and generally do not require information about where the fish came from (Bestor 2004; Issenberg 2007).

Sashimi sold in high-end department stores and supermarkets is labelled with its origin as the region it was caught as well as whether it was 'wild caught' or farmed. An increasingly significant portion of the Japanese food retail market, including sashimi, also has traceability for its products as part of a move to provide consumers with information about how their food is produced, to enhance perceptions of food quality, safety and sustainability, but this practice is yet to be substantially implemented for sashimi tunas. The direct route to market for tuna that bypasses the 'middle-men' layers of the auction system facilitates traceability as it is less complex than the auction route in the supply chain. However, direct sales of sashimi are mostly to large chains of supermarkets, department stores and restaurants and these buyers want predictable volume and quality, so tend to favour farmed product. Wild caught bigeye from the Pacific is most likely to end up in the auction strand.

### **IUU in Bigeye Sashimi Supply Chains**

In 2004 Japan accused Taiwan of laundering IUU bigeye tuna from the Atlantic Ocean, disguising it as catch from the Indian Ocean, and to a lesser extent the Pacific Ocean. Tuna fishing in the Atlantic is managed under the auspices of the International Commission for the Conservation of Atlantic Tunas (ICCAT) RFMO. Heavy fishing over many years had diminished bigeye stocks in the Atlantic so ICCAT had stipulated catch limits for this species. Some Taiwanese vessels fishing in the Atlantic, however, worked around the catch limit by recording some of their Atlantic bigeye as having been caught in other oceans (RFMOs for the Indian and Pacific Oceans have yet to set catch limits for this species). Japan's evidence included analyses of changes in Taiwanese bigeye production, noting improbable shifts in the regions in which fish were recorded as having been caught and the types of vessels recorded as having caught them. Also the Japan Coastguard arrested two freezer cargo vessels (vessels that take ULT frozen fish from fishing vessels to market in Japan) and found evidence of tuna laundering. The cargo vessels had duplicate log books falsifying information about where fish was caught, what vessels had caught fish, and when/where the fish was transhipped to carrier vessels. The crews of these vessels told prosecutors these fish laundering practices were widespread throughout the Pacific, Indian and Atlantic Oceans. Taiwan countered some of the Japanese claims about shifts in production – arguing that some of the changes in production records were due to legitimate changes in business model, misunderstandings of vessel capacities and mistakes in data – while also acknowledging that there was a significant level of criminal activity needing to be addressed.<sup>4</sup>

Japan's accusations of Taiwanese bigeye laundering in 2004 took place after Japan and other members of ICCAT had for several years been putting increasing pressure on Taiwan to more strongly enforce flag state controls on its tuna fleet.

Despite some efforts by the Taiwanese government to reduce fishing capacity through vessel buy-back schemes in the 1990s, the Taiwanese fleet had a reputation for flouting efforts to restrict their catch by laundering practices such as those outlined above, and also for simply evading Taiwanese regulation by using Flags of Convenience. The Taiwanese Fisheries Agency was prevented from extending greater control over the fleet because of the electoral importance of the tuna fishing industry around the port city of Kaohsiung (Chen 2009a). ICCAT was unimpressed by Taiwan's efforts to reign in its fleet and in 2005 took the unprecedented step of implementing strong sanctions against Taiwan. Taiwan's quota of bigeye for 2006 for the Atlantic was cut from 16,500 to 4,600 tons, a cut worth about US\$100 million to the industry, and cut the numbers of Taiwanese vessels permitted to fish in the Atlantic from around 100 in 2005 to just 15 for 2006 (Fisheries and Oceans Canada 2005). These cuts sent the Taiwanese longline industry into financial chaos, and caused a turnabout in attitudes to government regulation of their activities. Industry now needed the Fisheries Agency to regulate them effectively enough that they would regain good standing as a fishing fleet. Fisheries Agency measures to reduce the capacity of the fleet (such as requiring companies to scrap an old vessel for every new vessel they build) and reduce the use of flags of convenience have been much more convincing since 2005 (Chen 2009a).<sup>5</sup>

It is important to note that while the Taiwanese fleet was at the centre of this IUU fishing scandal, culpability was certainly not limited to people of any one nationality. Indeed, it was somewhat ironic for Japan to be pointing the finger at Taiwan in the bigeye laundering scandal, as Japan was the main market for the IUU fish. While Taiwanese domestic politics had prevented better fisheries management, no doubt the desire for cheap sources of bigeye on the part of some interest groups influenced Japanese policies. We tend to speak of national fleets as distinct entities, but the commercial reality of these supply chains is transnational. For example, *Suruga 1* was one of the ULT freezer carrier vessels arrested by Japan in 2004. *Suruga 1* was flagged in Panama but described as being operated by a Japanese company at the time of inspection. Of the 13 Taiwanese longliners that had supplied fish found on the *Suruga 1*, six were found to have laundered fish. One of the laundering practices was to record fish that was caught by a vessel that should not have been catching that fish as having been caught by another vessel that was licensed to catch those fish. Some of the vessel names used were from vessels registered in the Peoples Republic of China. (Currently *Suruga 1* is on the list of vessels licensed in Solomon Islands, it is still flagged in Panama but is 'held' by the (South) Korean company Mako.<sup>6</sup> Mako is not a fishing company *per se*, but is an agent for Korean vessels that tranship their catch in Solomon Islands.)

Networks between Japan, Taiwan, Korea and China in regional tuna fishing were established during the twentieth century and underpin regional tuna industries. Fisheries were a key part of Japan's empire building from the late 1800s. Japanese fishing companies were moving into Korean waters as early as the 1880s, were one of the main commercial pillars of colonialism in Taiwan from 1895, later spreading into Southeast Asia and parts of the Chinese mainland occupied by Japan (Koh & Barclay 2007; Chen 2009b). Korean and Taiwanese

fishing industries developed in the context of the Japanese Empire, with strong links to Japanese fisheries and markets. These business ties continued even after decolonization, especially from the 1970s as Japan's economy took off and domestic fisheries production costs increased so many Japanese fishing and seafood trading companies looked overseas for cheaper sources of production. Japanese companies utilized pre-War connections in Taiwan, Korea and later, as China's market reforms took hold, on the Shandong and Liaoning Peninsulas. Then as Taiwan and Korea's own economies strengthened, their seafood companies also utilized transnational connections to reduce their production costs, particularly in mainland China, utilizing ethnic connections between communities on either side of their shared borders.<sup>7</sup>

### Intervention Points

There are various points along the bigeye sashimi supply chain at which interventions to deter IUU activities may be targeted: 1) the harvesting/fishing node; 2) the transshipping/trading node; and 3) the point of importation or landing in the country in which the fish is retailed. Most types of interventions are in the form of government regulation. Government regulations are developed in the RFMOs, and then implemented by members; coastal states, fishing (flag) states, port states and end-market states. Private measures to ensure seafood is sourced from legal fishing operations are also becoming influential, due to the increasing importance of Corporate Social Responsibility in the public relations of food retailers (Roheim 2008). Non-governmental organizations (NGO, both industry and environmental) are important players because of the pressure they bring to bear on governments and companies to strengthen fisheries conservation measures. Some of the key NGO players in tuna fisheries in the region include: Greenpeace; the Marine Stewardship Council (MSC); WWF; International Seafood Sustainability Foundation (ISSF); Organization for the Promotion of Responsible Tuna Industries (OPRT); and the Japan Fisheries Association.

Fisheries regulation has conventionally targeted fishing activities, and there are well-established systems for intervening at this node of the supply chain. Some of the systems of Monitoring, Control and Surveillance (MCS) for fisheries include: 1) coastguard operations; 2) placement of government observers on fishing vessels to give independent information to cross check with company logbooks; 3) use of satellite tracking Vessel Monitoring System (VMS) equipment on vessels for tracking their movements; and 4) linking licensing of vessels to their standing on public lists of vessels complying (or not) with regulations ('black' lists). Unfortunately these measures have not been sufficiently effective. One reason is the sheer difficulty of mounting effective MCS in the extremely large national waters of many countries in the region, with limited government resources. Government will is another problem. In some cases the will to effectively enforce fisheries regulations is weakened by corruption, or by competing demands on government – the short-term economic health of the fishing industry may trump enforcement, or scarce government resources may be diverted to other priorities, understandable in the developing country context. The fact that there are thousands of companies involved in fishing for

sashimi tunas, and that the fishing node of the chain is not very powerful relative to other nodes also means that targeting fishing companies for interventions may not be as effective as targeting companies further downstream in the supply chain.

The next node in the supply chain is when fish are moved from the fishing vessel; landed at a fish market, landed for airfreight to market, or transhipped to a carrier vessel to take it to market. When catches are landed or transhipped in port there are government monitoring systems in place – by Fisheries officers and officers from other departments, such as Customs. By contrast, transshipping at sea facilitates the laundering of IUU catches (Greenpeace 2009). Longliners do most of their fishing in the region in high seas areas. They are not required to report via VMS while on the high seas, and furthermore may tranship on the high seas, where as yet there is no effective monitoring. A vessel fishing on the high seas with its VMS turned off may stray into a nearby EEZ for which it is not licensed and fish those national waters then go back to the high seas and tranship the catch. The portion of the catch from the EEZ would be IUU because of the licensing issue, but also IUU because it will be misreported as coming from somewhere other than where it was actually caught (distorting the statistics on which resource management decisions are based). Purse seiners in the WCPO have for many years been required to tranship in port to reduce the opportunities for IUU, and the WCPFC has been negotiating measures to bring more longline transshipments into ports and increase the monitoring of high seas transshipments.

When considering the scope for more intervention in the transshipping node of sashimi supply chains it is useful to bear in mind that this stage of the journey from ocean to plate is largely managed by a relatively small number of companies. The tuna traders' business is facilitating the supply of fish from longline vessels to sashimi wholesale markets or canning processors, so presumably the companies Mitsubishi, FCF and Itochu can influence practices in the transshipping node of supply chains.

In recent years 'trade-related measures' have been added to conventional fisheries regulation in an attempt to strengthen conservation measures overall. One kind of trade-related measure is that the importing state can refuse to accept fish not accompanied by appropriate documentation certifying that it was caught in compliance with relevant regulations. This type of intervention occurs at the point in the supply chain of landing the catch in the end market country. In-so-far as they are related to 'trade', these measures only apply to imports, and it is important to also encompass domestic catches with interventions at this point in the chain. For example, with Japan's overcatching of southern bluefin tuna mentioned earlier, the catch from Japan's domestic fleet had been exempt from a level of monitoring imposed on imported fish in a 'trade documentation scheme' implemented by Japanese customs authorities. When the overcatching was revealed in 2005 Japan agreed that its domestic fleet should also be subject to this intervention and the documentation scheme was extended to cover all catches to be sold in Japanese markets.



Measures to monitor catches at the point of landing in the end-market country relies on the accuracy of the documentation certifying that the catch was caught according to relevant regulations. That is, the documentation must enable officials to accurately trace the path the fish has taken back to the fishing vessel and pinpoint when and where it was caught. The scheme used for the South Georgia toothfish fishery under the RFMO the Commission for the Conservation of Antarctic Marine Living Resources is one model. It is certified by the Marine Stewardship Council and uses a system with barcodes on boxes of fish (Roheim 2008). As mentioned earlier, there is no thorough scheme in place for traceability in sashimi tunas. There is, however, traceability for canned tuna, and this system might be adapted for sashimi tunas.

For canned tuna both importing governments and retail buyers require the importing agent to be able to quickly and accurately work out exactly where in the supply chain any food safety problem occurred, and identify all other fish in that batch, for the purposes of a recall. It is in the commercial interests of everyone in the supply chain for these traceability systems to be very accurate so that all the fish needing to be recalled can be, while the recall is limited to only the affected fish. All the information needed to trace canned tuna is contained in the code printed on the flat side of the can. This traceability system as it currently exists is for food safety rather than conservation purposes, and most of the information used for the traceability is commercially sensitive so sits with the companies managing supply, rather than with governments, so it may be that this system is not amenable to cooption for conservation purposes. Nevertheless traceability for accurate catch documentation schemes is necessary for effective intervention at the importation/landing node of sashimi tuna supply chains, and lessons may be learned from existing traceability in cannery tuna supply chains.

## Conclusion

Various kinds of organizations have a role to play in addressing the laundering of IUU catches in transnational tuna supply chains. RFMOs are the main international bodies for discussing and agreeing on measures, that then must be implemented by members, including coastal states, fishing states, port states and market states. Private measures related to concerns with Corporate Social Responsibility are also influencing practices, with retailers increasingly requiring suppliers to ensure the product has been legally sourced. Industry organizations and environmental organizations have an impact through lobbying of RFMOs, governments and companies to improve fisheries conservation.

Interventions to deter IUU fishing may be implemented at several points along the supply chain. Interventions in the fisheries node of the supply chain have been tried and tested over many years. More recently measures have been developed for implementation further downstream, in the transshipping, landing and importation nodes of the chain. The effectiveness of fisheries regulations implemented downstream from the fishing node depends on traceability - the ability to accurately trace the fish back to the point which it was caught.

Some of the challenges facing attempts to stem IUU sashimi tuna practices include the capacities (and political will) of governments, and the complexity of intervening at several points in supply chains that operate across multiple jurisdictions and the high seas. Factors in favour of more effective enforcement include the increasing importance of Corporate Social Responsibility potentially making IUU fish harder to sell, and the high level of consolidation at both the trading node and the end-market country node of the supply chain .

## References

- Agnew, D., Pearce, J., Peatman, T., Pitcher, T., & Ganapathiraju, P. 2008, *The Global Extent of Illegal Fishing*, Marine Resources Assessment Group and Fisheries Ecosystems Restoration Research, Fisheries Centre, University of British Columbia, viewed 24 November 2010, <<http://www.mrag.co.uk/Documents/ExtentGlobalIllegalFishing.pdf>>.
- Barclay, K. in press, 'History of Industrial Tuna Fishing in the Pacific Islands', in M. Tull and J. Christensen (eds), *History of Marine Animal Populations: Asian Region*, University of Amsterdam, Mare Publication Series, Holland.
- Barclay, K. & Cartwright, I. 2007, *Capturing Wealth from Tuna: Case Studies from the Pacific*, Asia Pacific Press, Canberra.
- Bestor, T. 2004, *Tsukiji: The Fish Market at the Center of the World*, University of California Press, Berkeley.
- Campling, L., Havice, E., Ram-Bidesi, V. & Grynberg, R. 2007, *Pacific Islands Countries, The Global Tuna Industry and the International Trade Regime – A Guidebook*, DEVFISH Project, Pacific Islands Forum Fisheries Agency, Honiara.
- Chen, H.T. 2009a, 'Japan-Taiwan Relations in the 21st Century: From the Perspective of Tuna Disputes in the Atlantic Ocean', unpublished paper, China Research Centre, University of Technology Sydney.
- Chen, H.T. 2009b, *Taiwanese Distant-Water Fisheries in Southeast Asia 1936-1977*, International Maritime Economic History Association, Research in Maritime History No. 39, St John's, Newfoundland.
- Fisheries and Oceans Canada, 2005, 'Unprecedented Sanctions Invoked by ICCAT for Overfishing Bigeye Tuna', news release, viewed 12 November 2010, <<http://www.dfo-mpo.gc.ca/media/npress-communique/2005/hq-ac94-eng.htm>>.
- Greenpeace, 2009, 'End the High Seas Heist', Briefing to the Fifth Regular Session of the Western and Central Pacific Fisheries Commission Scientific Committee, viewed 2 December 2010, <<http://www.wcpfc.int/meetings/2009/5th-regular-session-scientific-committee>>.
- Issenberg, S. 2007, *The Sushi Economy: Globalization and the Making of a Modern Delicacy*, Gotham Book, New York.
- Koh, S. & Barclay, K. 2007, 'Traveling through Autonomy and Subjugation: Jeju Island Under Japan and Korea', *Asia Pacific Journal: Japan Focus*, viewed 2 December 2010, <<http://www.japanfocus.org/-Kate-Barclay/2433>>.
- McCoy, M.A. & Gillett, R.D., 2005, *Tuna Longlining by China in the Pacific Islands: A Description and Considerations for Increasing Benefits to FFA Member Countries*, Pacific Islands Forum Fisheries Agency, Honiara.

- Nordstrom, C. 2008, 'Global Fractures', *Social Analysis*, 52(2): 71-86.
- Roheim, C. 2008, *Seafood Supply Chain Management: Methods to Prevent Illegally-Caught Product Entry into the Marketplace*, paper prepared for the IUCN-US PROFISH Law Enforcement Corruption and Fisheries Work Project, viewed 2 December 2010, <[cmsdata.iucn.org/downloads/supply\\_chain\\_management\\_roheim.pdf](http://cmsdata.iucn.org/downloads/supply_chain_management_roheim.pdf)>.
- Sibert, J., Hampton, J., Kleiber, P., & Maunder, M. 2006. 'Biomass, Size, and Trophic Status of Top Predators in the Pacific Ocean', *Science*, 314 (15 December): 1773-1776.
- van Schendel, W. & Abraham, I. 2005, *Illicit Flows and Criminal Things : States, Borders, and the Other Side of Globalization*, Indiana University Press, Bloomington.
- Williams, P. & Terawasi P. 2010, *Overview of Tuna Fisheries in the Western and Central Pacific Ocean, Including Economic Conditions – 2009*, Western and Central Pacific Fisheries Commission, Pohnpei, Federated States of Micronesia, viewed 12 October 2010, <<http://www.wcpfc.int/meetings/2010/6th-regular-session-scientific-committee>>.

## Endnotes

---

- <sup>1</sup> For explanation about these types of fishing see the FAO fish capture technology website: <<http://www.fao.org/fishery/topic/3384/en>>.
- <sup>2</sup> For official accounts of southern bluefin tuna underreporting issues see the CCSBT meeting reports for 2005 and 2005 at: <[http://www.ccsbt.org/docs/meeting\\_r.html](http://www.ccsbt.org/docs/meeting_r.html)>.
- <sup>3</sup> The WCPFC fishing vessel database is available at: <<http://www.wcpfc.int/record-fishing-vessel-database>>. The FFA vessel list is available at: <[http://www.ffa.int/licence\\_lists](http://www.ffa.int/licence_lists)>.
- <sup>4</sup> Japan submitted versions of an 'Information Paper' on this topic to ICCAT and the Preparatory Conference for the WCPFC, and Taiwan submitted versions of an 'Explanatory Note' in response. See the Papers Submitted by Delegates for the Preparatory Conference on the WCPFC website: <<http://www.wcpfc.int/preparatory-conference/conference-documents/papers-submitted-delegations>>. One of the issues Japan raised was that old Taiwanese vessels built prior to 1980 were recorded as having caught sashimi, whereas Japan asserted that vessels this old would not have the ULT capacity to supply sashimi-grade fish (they would only be able to supply cannery-grade fish). Taiwan countered that its fleet had ULT capacity since the 1970s and in any case it was possible to retro-fit ULT freezing equipment in older vessels.
- <sup>5</sup> Weichen Wang, third generation owner/manager of Taiwanese tuna longlining company (Wu Pioneers Seafoods), personal communication, 18 November 2009.
- <sup>6</sup> The list of vessels licensed to operate in Pacific Island countries is available on the website of the Pacific Islands Forum Fisheries Agency: <<http://www.ffa.int/>>.
- <sup>7</sup> The political standoff between China and Taiwan means Taiwanese companies are not supposed to work with Chinese companies, but mingled Taiwanese and

---

Chinese investment are not uncommon in regional tuna industries (McCoy & Gillett 2005).