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Eric Kekoa Kingma
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**The Principle of Compatibility:
Its application within the world's largest tuna fishery**

Eric Kekoa Kingma

**Supervisory Professors:
Martin Tsamenyi and Quentin Hanich**

**A thesis submitted in fulfillment of the
requirements for the award of the degree**

Doctor of Philosophy

**University of Wollongong
Australian National Centre for Ocean Resources and Security**

June 2018

Abstract

This thesis analyzes the Principle of Compatibility (hereafter, *Principle*) within the world's largest tuna fishery, which occurs in the Western and Central Pacific Ocean. The Principle is foundational within the international governance framework for highly migratory species such as tuna and billfish. However, the application of the Principle within a functioning RFMO is not well documented, and thus, this thesis fills a void in the academic literature.

This thesis investigates how the Principle was established within international fisheries law, serving to bridge the gap between management of HMS in waters under national jurisdiction and on the high seas. The analysis elucidates the rights and obligations afforded to coastal States with respect to national waters (including in the exclusive economic zone), the freedom enjoyed by all States to fish on the high seas, and the collective duty shared by all States to cooperate on the management of transboundary fish stocks.

The central focus of the analysis is the application of the Principle by the Western and Central Pacific Fisheries Commission. The study employs an analytical tool that includes standards and criteria associated with the application of the Principle. Each of the WCPFC's conservation and management measures associated with the catch of target species is assessed and scored for consistency with the standards.

The analysis demonstrates that the WCPFC is, at least for the most part, applying the Principle, with the highest rating concerning the management of tropical tuna stocks (skipjack, yellowfin and bigeye tuna). Overall, however, the analysis also reveals that the WCPFC has inconsistently applied the Principle and its associated provisions. This thesis identifies the WCPFC's harvest strategies approach as both an opportunity and a mechanism to promote a more consistent application of the Principle, which is important for the long-term conservation and management of the world's largest tuna fishery.

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Mahalo e ke Akua no kēia lā

Thanks be to God for this day

Certification

I, Eric Kekoa Kingma, declare that this thesis submitted in fulfilment of the requirements for the conferral of the degree of Doctor of Philosophy, from the University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Eric Kekoa Kingma

June 16, 2018

List of Abbreviations and Acronyms

ANCORS	Australian National Centre for Ocean Resources and Security
B_{MSY}	Biomass at Maximum Sustainable Yield
CCM	Commission Member, Cooperating Non-Member, and Participating Territory
CMM	Conservation and Management Measure
CPC	Member and Cooperating Non-Member
CPUE	Catch Per Unit Effort
DWF	Distant Water Fleet
DWFN	Distant Water Fishing Nation
EEZ	Exclusive Economic Zone
ENSO	El Nino Southern Oscillation
EPO	Eastern Pacific Ocean
EU	European Union
FAD	Fish Aggregation Device
FAO	Food and Agriculture Organization
FFA	Forum Fisheries Agency
FFC	Forum Fisheries Committee
F_{MSY}	Fishing Mortality at Maximum Sustainable Yield
FSM	Federated States of Micronesia
GDP	Gross Domestic Product
HMS	Highly Migratory Species
HSP1	High Sea Pocket 1
HSP2	High Seas Pocket 2
HSP1SMA	High Seas Pocket 1 Special Management Area
IATTC	Inter-American Tropical Tuna Commission
ILC	International Law Commission
ISC	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
IUU	Illegal, Unregulated, Unreported
MCS	Monitoring, Control and Surveillance
MEY	Maximum Economic Yield
MHLC	Multilateral High Level Conference
MSY	Maximum Sustainable Yield
MT	Metric Tons
MSE	Management Strategy Evaluation
MOW	Management Options Workshop
NAFO	Northwest Atlantic Fisheries Organization
PAE	Party Allowable Effort
PIC	Pacific Island Country
PNA	Parties to the Nauru Agreement
PNG	Papua New Guinea
PT	Participating Territories

RFMO	Regional Fishery Management Organization
SC	Scientific Committee
SCTB	Standing Committee on Tuna Billfish
SIDS	Small Island Developing States
SPC	Secretariat of the Pacific Community
SST	Sea Surface Temperature
STCZ	Subtropical Convergence Zone
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TCC	Technical and Compliance Committee
TRP	Target Reference Point
ULT	Ultra-Low Temperature
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
US	United States
VDS	Vessel Day Scheme
VMS	Vessel Monitoring System
WCP-CA	Western and Central Pacific Convention Area
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WPRFMC	Western Pacific Regional Fishery Management Council

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Chapter 1: Introduction

1.1 Introduction

Fish and fisheries are important. Fish accounts for approximately 17% of the world population's consumption of animal protein.¹ Globally, fish provides about 3.1 billion people with almost 20% of their animal protein consumption, and 4.3 billion people with 15% of such protein.² Not only are fish nutritionally important, but seafood products are economically significant as global commodities, having served as the basis for economic growth in many national economies.³ For example, between 1976 and 2014, world trade in fish and fishery products increased from US\$8 billion to US\$148 billion per year.⁴ Tuna, in particular, are among the main globally-traded fish commodities, with canned tuna being one of the most widespread and recognizable fish products. Collectively, tuna products are among the most economically valuable seafood commodity, with an estimated annual dockside value at over \$10 billion and retail value of around \$40 billion per year.⁵ Indeed, for several small island countries in the Pacific, their dependence on tuna as a primary natural resource and foundational economic base is likely unmatched elsewhere in the world.⁶

Due to its global popularity, tunas are heavily targeted and harvested in significant numbers. There are 23 stocks (comprising seven species) of major commercial tuna fisheries worldwide. Among the commercially harvested stocks, 33% are estimated to be overexploited, 37.5% are considered fully

¹ FAO. (2016). *The State of World Fisheries and Aquaculture 2016. Contributing to food security and nutrition for all*. Rome, FAO.

² Ibid at 4.

³ Smith, M.D., Roheim, C.A., Crowder, L.B., Halpern, B.S., Turnipseed, M., Anderson, J.L., Asche, F., Bourillón, L., Guttormsen, A.G., Khan, A., & Liguori, L.A. (2010). Sustainability and global seafood. *Science*, 327(5967), 784-786.

⁴ FAO (2016) at 52.

⁵ Galland, G., Anthony, R., & Nickson, A. (2016). *Netting Billions: a global valuation of tuna*. Pew Charitable Trusts. Washington, D.C.1.

⁶ Read, R. (2006). Sustainable natural resource use and economic development in small states: the tuna fisheries in Fiji and Samoa, *Sustainable Development*, 14, 93-103.

exploited, and 29% are believed to be non-fully exploited.⁷ The total world-wide catch of tuna was approximately 7.4 million tons in 2013.⁸ The major seven tuna species, which include albacore, bigeye, bluefin (three species), skipjack and yellowfin, yielded 5.1 million tons in 2013, with 70% of those catches coming from the Pacific Ocean.⁹

Tuna are considered a highly migratory species, meaning they have a wide geographic distribution, occurring both inside and outside the 200-mile exclusive economic zones (EEZs) of coastal States. Furthermore, several tuna species undertake migrations of variable distances for both feeding and reproduction.¹⁰ The distribution of tuna extends over approximately 177 million square kilometers of the world's oceans, equating to 35% of the Earth's surface.¹¹ Due to the occurrence of tuna stocks across large oceanic expanses, including waters under national jurisdiction and on the high seas, effective tuna management requires international cooperation.¹²

1.2 Bridging the Gap

The ocean can be separated by two basic delineations: 1) the high seas or international waters; and 2) waters under national jurisdiction. Similarly, the world of nations is comprised of coastal States, which have geographic boundaries adjacent to the ocean, and non-coastal States, which have no boundaries adjacent to the ocean. Since the early 1980s, the international legal framework has provided that coastal States possess sovereign rights and management responsibility over fishery resources within their 200 nautical mile (nm) EEZs. On the other hand, the high seas are subject to international management. Under

⁷ FAO (2016) at 39.

⁸ Ibid.

⁹ Ibid.

¹⁰ Lehodey, P., Senina, I., & Murtugudde, R. (2008). A spatial ecosystem and populations dynamics model (SEAPODYM)—Modeling of tuna and tuna-like populations. *Progress in Oceanography*, 78(4), 304-318. Annex 1 to the United Nations Convention on the Law of the Sea provides a list of HMS including tuna, billfish, pomfrets, species of sauries, dolphinfish, oceanic sharks and cetaceans.

¹¹ FAO. (2012). *Sustainable management of the tuna fisheries and biodiversity conservation in the areas beyond national jurisdiction*. FAO/Global Environmental Facility Project Document. Rome. 1.

¹² Munro, G. R. (2000). The United Nations Fish Stocks Agreement of 1995: history and problems of implementation. *Marine Resource Economics*, 15(4), 265-280.

international law all countries, including non-coastal States, have the right to fish on the high seas. Since the 1990s, however, high seas fisheries have been subject to more regulation by the international community. Generally, fisheries that occur in the high seas are subject to international management regimes developed by Regional Fisheries Management Organizations (RFMOs). For fish that are highly mobile – that is, fish which do not restrict themselves to political boundaries, international cooperation is essential to manage these particular fish stocks across their range. For highly migratory species such as tuna and billfish, there is a need to bridge the management gap between the (Exclusive Economic Zone) EEZ and high seas regimes to ensure the sustainability of such stocks, and to ensure consistency with the rights and obligation under international law provided to coastal States and States fishing on the high seas. To bridge the gap, the international community has come to rely on the Principle of Compatibility (hereafter, the *Principle*), which is the focus of this thesis.¹³

The Principle was first introduced to international fisheries governance in the 1995 United Nations (UN) Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, commonly known as the UN Fish Stocks Agreement (UNFSA).¹⁴ The Principle has been referred to one of three pillars of UNFSA.¹⁵ Generally, the Principle serves as a management objective to be achieved through multilateral cooperation – that is, through the actions of individual nations (i.e., EEZ management) and collectively within RFMOs (i.e., high seas and/or EEZ management). As such, UNFSA established the Principle in international fisheries

¹³ A principle can be defined as: a basic belief, theory or rule that has a major influence on the way in which something is done. Retrieved from: <http://www.macmillandictionary.com/us/dictionary/american/principle>.

¹⁴ Although the Principle was first identified in the UNFSA, earlier international treaties and conventions have employed similar concepts. One example is the “consistency requirement” in the Northeast Atlantic Fisheries Organization (NAFO).

¹⁵ Nandan. S. N. (2005). *Moving words into action*. Conference on the Governance of High Seas Fisheries and the United Nations Fish Stocks Agreement. Keynote speaker. Convened by Fisheries and Oceans, Canada. 1-5 March 2005. St. John’s Newfoundland and Labrador. 3. Ambassador Nandan served as chair for the UNFSA. The other two pillars have been identified as: 2) mechanisms to ensure compliance with conservation and management measures including the authorization of high seas boarding and inspection of vessels by other parties to the agreement; and 3) the provision for the peaceful settlement of disputes, whereby every dispute can ultimately be submitted to a court or tribunal for a binding decision.

law. In support of this, the United Nations Food and Agriculture Organization (FAO) also identified the Principle as fundamental to managing fisheries within an ecosystem approach in 2003.¹⁶

Given the global importance of fisheries, there is surprisingly little published information concerning the description and application of the Principle within RFMOs. One reason for this may be that several RFMOs predate the UNFSA and are still renewing and renegotiating their management measures/agreements with member States to incorporate UNFSA provisions. Another reason may be that the UNFSA compatibility provisions are too broad and open to varying interpretations, and further, that UNFSA does not provide practical guidance on how to implement the Principle.¹⁷ Moreover, there are no examples of RFMO-established processes to develop compatible measures.

In the academic literature, there are several articles and papers that mention the importance of the Principle, but few actually provide a detailed analysis of the Principle. Elferink (2001) provides the most complete review of the Principle and the associated provisions established under UNFSA.¹⁸ While Elferink's analysis of Article 7 of the UNFSA is useful, it offers little description of how the Principle is being applied in practice within RFMOs.

Another study related to the Principle is Finus and Schneider (2015), which combines bioeconomic modeling and game theory.¹⁹ Their model predicts that the establishment of compatible measures for highly migratory species within an RFMO is beneficial for all parties, and further, that the current

¹⁶ Garcia, S.M., Zerbi, A., Aliaume, C., Do Chi, T., & Lasserre, G. (2003). The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook. *FAO Fisheries Technical Paper No. 443*. Rome, FAO.

¹⁷ Ntovas, A. (2011). *Compulsory settlement of compatibility fishery disputes: the theory of embedded clauses in article 7 of the agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks* (Unpublished doctoral thesis), University of Southampton, England.

¹⁸ Elferink, A. G. O. (2001). The determination of compatible conservation and management measures for straddling and highly migratory fish stocks. *Max Planck Yearbook of United Nations Law*, 5, 551-607.

¹⁹ Finus, M. & R. Schenider. (2012). Scope and compatibility of measures in international fisheries agreements. *Oxford Economic Papers*, 67(4), 865-888.

structure of many RFMOs (whereby coastal States retain their sovereign rights over their EEZs), can improve RFMO participation and reduce problems associated with ‘free riders.’²⁰ A drawback of the study by Finus and Schneider (2015) is that it relies heavily on game theory without representative empirical data, and further, the bioeconomic model employed by the authors has been questioned in related literature with regard to assumptions about tuna movement and distribution.²¹ Moreover, the complexity and the technical aspects of the analysis renders it accessible to a limited, largely academic audience.

While the existing studies mentioned above are either too broad or too theoretical, this thesis seeks to overcome these shortcomings by evaluating how the Principle is being applied, if at all, in the international management of HMS stocks in the Western and Central Pacific Ocean (WCPO) – the world’s largest tuna fishery. In this regard, this thesis strives to be practically oriented rather than overly theoretical, lending itself to a broader audience.

1.3 Compatibility in the World’s Largest Tuna Fishery

This thesis focuses on HMS fisheries in the WCPO, and in particular, assesses the application of the Principle within the Western and Central Pacific Fisheries Commission (WCPFC). Tuna has been an important source of protein for Pacific Islanders for several millennia, and with the advent of industrial-scale tuna fishing, only recently has the sustainability of tuna become a food-security issue for the

²⁰ A ‘free rider’ is defined by Munro (2009) as a State which enjoys some of the benefits from the cooperative management of the fishery resource, or resources, while refusing to become a party to the cooperative management arrangement. Munro, G. R. (2009). Game theory and the development of resource management policy: the case of international fisheries. *Environment and Development Economics*, 14(1), 7-27.

²¹ Although the study was recognized for breaking ground in the field of economics and international fisheries governance, Squires et al. (2015) refuted the analysis by indicating that biological evidence does not support the assumptions made in the article with respect to most fish species. See Squires, D., Balance, L.T., Deriso, R., Ianelli, J., Maunder, M., & Schaefer, K.. (2015). Comment on ‘Scope and compatibility of measures in international fisheries agreements’ by Finus and Schneider. *Oxford Economic Papers*, 67(4), 889-894.

region's inhabitants.²² Industrial-scale tuna fishing in the WCPO began with pole and line vessels in the first half of the 20th century, and re-emerged after World War II in the 1950s through the development of pole and line and longline fishing gears.²³ In the early 1980s, industrial purse seine fishing was introduced to the WCPO, and since that time, there has been a rapid increase in the number of purse seine vessels operating in the WCPO, coupled with a rapid increase in associated tuna catches.

Since 2012, the WCPO tuna catch has consistently been over 2.5 million metric tons (mt), with the 2014 catch of 2.85 million mt being the highest on record.²⁴ The total WCPO tuna catch represents about 80% of the total Pacific Ocean tuna catch, and 56% of the global tuna catch.²⁵ The main tuna species targeted in the WCPO are skipjack, yellowfin, bigeye and South Pacific albacore tuna. The total estimated delivered value of the WCPO tuna catch varies more than the catch, ranging from US\$4.8 billion to US\$7.5 billion in recent years.²⁶ The purse seine fishery represents 50-60% of the total value, while the longline fishery accounts for 25-30%, followed by pole and line and other fishing gears. In terms of catch and value, skipjack accounts for approximately 70% (catch) and 50% (value), yellowfin at 25 % (catch) and 30% (value), bigeye at 5% (catch) and 15% (value), and albacore at 4% (catch) and 7% (value).²⁷

The establishment of the EEZ in the 1982 United Nations Convention on the Law of the Sea (UNCLOS) granted Pacific Islands Countries (PICs) exclusive property rights over exploitable natural resources such as tuna and other pelagic species. This was immensely significant, with PICs collectively claiming a

²² Bell, J., Allain, V., Allison, E., Andrhouet, S., Andrew, N., Batty, M., Blanc, M., Dambacher, J., Hampton, J., & Hanich, Q. (2015). Diversifying the use of tuna to improve food security and public health in Pacific Island countries and territories. *Marine Policy*, 51, 584-591.

²³ Barclay, K. (2010). History of Industrial Tuna Fishing in the Pacific Islands: *A HMAP Asia Project Paper. Working Paper No. 169*. Murdoch University, Perth, Australia. -- For further reading on the development of industrial tuna fishing in the Pacific Islands, see: Wilson, P. (2011). *Aku! The History of Tuna Fishing in Hawaii and the Western Pacific*. Honolulu, HI. Xlibris Corporation.

²⁴ Williams, P., & Terawasi, P. (2016). *Overview of Tuna Fisheries in the Western and Central Pacific Ocean, Including Economic Conditions-2015*. Twelfth Regular Session of the WCPFC Scientific Committee. 3-11 August 2016. Bali, Indonesia. WCPFC-SC12-2016/GN-WP-1 rev.3.

²⁵ Ibid at iii.

²⁶ Ibid.

²⁷ Ibid.

maritime area of approximately 30 million square kilometers under their national jurisdiction.²⁸ For example, the delineation of EEZs provided several PICs with ownership over the ocean that exceeds their respective landmass (in square kilometers) by an average factor of approximately 5,000 to one.²⁹ The importance of the property rights over fisheries resources found in the EEZ to PICs cannot be overstated. Figuratively, they were transformed overnight from small island nations to large ocean coastal States, with tuna fisheries playing a major role in their national economies. For example, approximately 50% of global skipjack production is derived from waters of members of the Parties to the Nauru Agreement (PNA).³⁰

Even prior to UNCLOS there were calls to consider a regional organization to help manage HMS stocks in the WCPO; however, this was not realized until several decades later.³¹ Meanwhile, catches continued to increase at a rapid pace, creating concern among PICs that they were not receiving the greatest potential economic benefits from tuna resources. Indeed, before UNCLOS was established, 90% of catches were being made by Distant Water Fishing Nations (DWFNs), with mounting concerns that the long-term conservation of WCPO HMS stocks could be in jeopardy without international cooperation.³²

²⁸ Veitayaki, J. (2005). Staking their claims: the management of marine resources in the Exclusive Economic Zones of the Pacific Islands. In S.A. Ebbin, A.H. Hoel, & A. K. Syndes (Eds.), *A Sea Change: the Exclusive Economic Zone and Governance Institutions for Living Marine Resources* (pp.150-168). Dordrecht, The Netherlands. 151.

²⁹ Lal, P.N. (2008). Rethinking Oceans and Marine Resource Management. In J. Strachan and C. Vigilance. (Eds) *Small Island Developing States: issues and challenges* (pp.22-43). London, United Kingdom. Commonwealth Secretariat. 23.

³⁰ Retrieved from:<http://www.pnatuna.com/About-Us>. Members that comprise the Parties to the Nauru Agreement include: the Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Palau, Papua New Guinea, the Solomon Islands and Tuvalu.

³¹ Kearny, R. E. (1976). *A regional approach to fisheries management in the South Pacific Commission Area*. Paper presented to the South Pacific Forum Meeting on the Law of the Sea. Suva, Fiji. 13-14 October 1976. South Pacific Commission. Noumea, New Caledonia. -- For example, the South Pacific Forum Fisheries Agency (FFA) was established in 1979, but it was not considered an RFMO and did not include DWFN membership. Attempts by the FFA to regulate high seas catches were rebuffed by DWFNs, with such nations citing the customary international law principle granting all States the freedom to fish on the high seas.

³² Chand, S., Grafton, R.Q., & Peterson, E. (2003). Multilateral governance of fisheries: management and cooperation in the Western and Central Pacific tuna fisheries. *Marine Resource Economics*, 18, 329-344.

Recognizing the need for an international legal framework involving PICs and DWFNs, the negotiation process to establish a new RFMO covering the WCPO was initiated in 1994. On 4 September 2000 in Honolulu, and following five years of negotiations at seven Multilateral High Level Conferences (MHLC), 24 members consisting of individual countries, territories³³ and fishing entities³⁴ adopted the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Honolulu Convention or WCPF-Convention).³⁵ The Honolulu Convention established the Western and Central Pacific Fisheries Commission (WCPFC or Commission), which is comprised of members and cooperating non-members with interests in the conservation and management of HMS stocks in the WCPO.

There are several similarities between the UNFSA and the Honolulu Convention. Indeed, both instruments dedicate an entire Article to the Principle and list comparable provisions related to the establishment of compatible measures. Regarding the issue of compatible measures, Article 8(2) of the Honolulu Convention is particularly relevant.³⁶ Unfortunately, however, neither instrument provides detailed guidance on how to establish compatible measures or metrics to determine if compatibility has been achieved or not.

The 2011 WCPFC Performance Review found that from a legal perspective, the “compatibility of measures” was probably the most challenging issue facing the Commission, with conflicts over the interpretation of “compatible management” requiring resolution in order for the WCPFC to effectively

³³ American Samoa, French Polynesia, Guam, New Caledonia, Northern Mariana Islands, Tokelau, Wallis and Fortuna.

³⁴ Chinese Taipei.

³⁵ The result of the vote was 19 in favor, two opposed (Japan and Republic of Korea), and three abstentions (China, France and Tonga). Final Act of the Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. (2001). Report of the Seventh and Final Session of the Multilateral High Level. Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific, Honolulu, Hawaii, USA, 30 August - 5 September 2000.

³⁶ Article 7 of UNFSA is entirely dedicated to the Principle. Several provisions are listed to help guide States in their consideration of compatible management measures.

manage and conserve the stocks across their range.³⁷ Furthermore, the Performance Review recommended that members cooperate with one another to resolve different legal interpretations of the Convention in relation to the Convention Area, while emphasizing the duty incumbent upon members to establish compatible and effective conservation and management measures across the range of the stocks.³⁸

The Principle is fundamental to both the UNFSA and the subsequent Honolulu Convention because it bridges the gap between the rights and duties of coastal States over their EEZs and the rights and obligations shared by all nations with regard to international waters. This thesis will demonstrate that the Principle is not being applied in a clear and consistent manner by the WCPFC. This thesis will also argue that in order for the Principle to be applied more consistently (so as to support effective management of WCPO HMS stocks), compatibility should be included as a management objective within the Commission's Harvest Strategy Approach. This would better facilitate: 1) a clearer understanding of the Principle and its underlying legal framework; and 2) the identification of indicators to assess whether compatibility is being achieved or not.

While other frameworks have been suggested to address current WCPFC management needs, including the development of rights-based³⁹ and adaptive management strategies⁴⁰, market-based approaches⁴¹,

³⁷ WCPFC. (2011). *Review of the Performance of the WCPFC*. Eighth Regular Session of the WCPFC. 26-30 March 2012. WCPFC8-2011/12.

³⁸ Ibid at 17.

³⁹ Ram-Bidesi, V. & Tsamenyi, M. (2004). Implications of the tuna management regime for domestic industry development in the Pacific Island States. *Marine Policy*, 28, 383–392; -- Parris, H., & Lee, A. (2009). Allocation Models in the Western and Central Pacific Fisheries Commission and Implications for Pacific Island States. In Q. Hanich & M. Tsamenyi (Eds.), *Navigating Pacific Fisheries: Legal and Policy Trends in the Implementation of International Fisheries Instruments in the Western and Central Pacific Region* (pp.250-284). Australia National Centre for Ocean Resources and Security. Wollongong, Australia.

⁴⁰ Ibid.

⁴¹ Bailey, M., Ishimura, G., Paisley, R., & Sumaila, U. R. (2013). Moving beyond catch in allocation approaches for internationally shared fish stocks. *Marine Policy*, 40, 124-136.

common pool and risk sharing arrangements⁴², as well as methods to distribute the conservation burden and benefits among members⁴³, the development of effective management measures may be hindered if the Principle continues to be applied inconsistently within the WCPFC. If compatible management is not achieved within the WCPFC, conflicts could arise and erode international cooperation, jeopardizing the long-term sustainability of the world's largest tuna fishery. For PICs which rely on tuna as their primary natural resource, the stakes are extremely high, with ineffective management and overexploitation of tuna stocks threatening their political independence and long-term socio-economic stability.

1.4 Analytical Objectives and Methodology

The analytical objective of this thesis is to answer the following questions:

- 1) What is the rationale for the Principle and why was it established?
- 2) Where do compatibility requirements apply?
- 3) How is the Principle being applied in the WCPFC?
- 4) What can the WCPFC do to improve the application of the Principle?
- 5) What challenges may arise in the application of the Principle?
- 6) How might the application of the Principle change over time?

This study relies on a qualitative analysis of publicly available literature, historic records, legal documents, convention texts, conservation and management measures, as well as meeting reports to: a) describe the rationale for the Principle and why it was established; and b) evaluate where compatibility requirements apply with regard to marine jurisdiction. To analyze how the Principle is being applied within the WCPFC, an assessment matrix was developed utilizing six standards and associated evaluation

⁴² Parris, H. & Grafton, R.Q. (2006). Can tuna promote sustainable development in the Pacific? *The Journal of Environment and Development*, 15(3), 269–296.

⁴³ Hanich, Q. & Ota, Y. (2013). Moving beyond rights-based management: a transparent approach to distributing the conservation burden and benefit in tuna fisheries. *International Journal of Marine and Coastal Law*, 28, 135-170.

criteria found in the Honolulu Convention. Each conservation and management measure applicable to the harvest of WCPFC-managed stocks was assessed against the standards and evaluative criteria.⁴⁴

A scoring system has been used to rate the application of the Principle by measuring consistency with each standard and associated criteria. The scores have then been added together and divided by the total possible score to provide a compatibility rating for each assessed CMM.⁴⁵ A numerical scoring range between 0 and 1 has been employed as follows: 0 = not consistent; 0.25 = partially consistent; 0.5 = moderately consistent; 0.75 = nearly consistent; 1 = fully consistent (Figure 1).

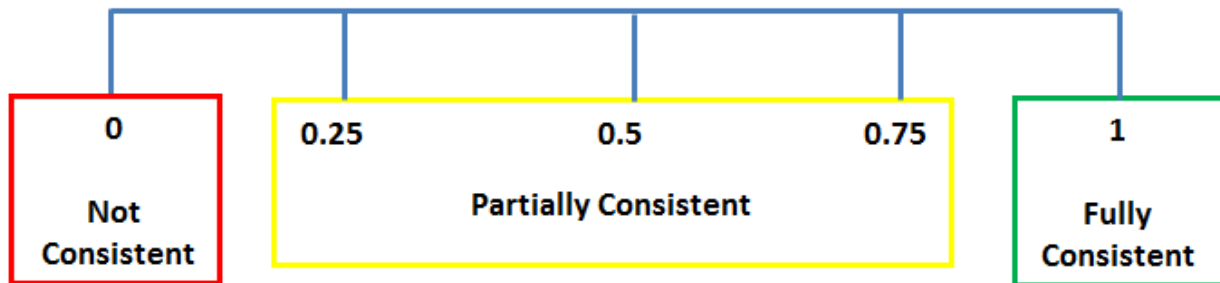


Figure 1: Scoring range used to assess the application of the Principle by the WCPFC

Source: Figure made by author

Information used in the assessment was gained from in-depth reviews of WCPFC meeting records, including meeting reports of the Commission and its subsidiary bodies (e.g., the Scientific Committee). The formulation of each conservation and management measure being evaluated is also considered,

⁴⁴ A similar approach is found in: De Bruyn, P., Murua, H., & Aranda, M. (2013). The Precautionary approach to fisheries management: How this is taken into account by Tuna regional fisheries management organisations (RFMOs). *Marine Policy*, 38, 397-406.

⁴⁵ The rating system utilizes evaluative approaches similar to: Alder, J., Lugten, G., Kay, R., & Ferriss, B. (2001). Compliance with international fisheries instruments. Fisheries impacts on North Atlantic ecosystems: evaluations and policy exploration. *Fisheries Centre Research Reports*, 9(5), 55-80. -- Gilman, E., Passfield, K., & Nakamura, K. (2014). Performance of regional fisheries management organizations: ecosystem-based governance of bycatch and discards. *Fish and Fisheries*, 15(2), 327-351. -- Clark, N. A., Ardron, J. A., & Pendleton, L. H. (2015). Evaluating the basic elements of transparency of regional fisheries management organizations. *Marine Policy*, 57, 158-166. -- Gilman, E., & Kingma, E. (2013). Standard for assessing transparency in information on compliance with obligations of regional fisheries management organizations: Validation through assessment of the Western and Central Pacific Fisheries Commission. *Ocean & Coastal Management*, 84, 31-39.

including the preambular text, the objectives of the particular conservation and management measure, as well as the controlling provisions. To provide an overall rating on the application of the Principle by the WCPFC, a central tendency was identified by summing the total score for each evaluated CMM and taking the average of the ratings across conservation measures.

To address how the WCPFC might improve the application of the Principle, a qualitative analysis was performed with regard to the harvest strategy approach already adopted by the WCPFC. Lastly, to evaluate what challenges may arise in the future application of the Principle, a qualitative analysis has been conducted focusing on climate change and its potential impacts on tuna distribution, as well as the increasing trend in fishing vessel capacity flagged to Pacific Island States. As the proceeding analysis will demonstrate, these two issues have the potential to change the way the Principle is applied in the future as compared to its current manifestation.

1.5 Scope and Limitations

The scope of this thesis is focused on the application of the Principle within the WCPFC. The analysis is largely based on publicly available records of the Commission's meetings and its published conservation and management measures. The main limitation of this thesis is the author's limited access to the potentially voluminous array of country-specific laws and regulations that apply to fishing vessels in the WCPF-Convention Area (and which contribute to the existing raft of compatible measures). For example, there may be domestic restrictions that influence where and how fishing vessels conduct fishing operations in the WCPF-Convention Area, including laws covering: 1) caps on the number of fishing vessels (e.g., limited entry programs); 2) catch or effort limits; 3) fishing gear requirements (e.g., marine mammal mitigation); 4) local landing laws; 5) spatial closures; and 6) fishing subsidies. The Commission is made up of members, cooperating non-members, and participating territories (collectively referred to as

CCMs) comprising 26 members, 7 participating territories and 7 cooperating non-members.⁴⁶ Indeed, it would be a large undertaking requiring time spent in-country to survey all the relevant instruments for each Commission member to appreciate the full suite of domestic measures that may be contributing to compatibility.

The scope of the analysis with respect to the evaluation and assessment of application of the Principle within WCPFC CMMs is through 2016. Negotiations related to the Commission's adoption of a new tropical tuna conservation and management in occurred in December 2017, but it was not possible to include these developments within the scope of thesis and submit on schedule. Based on the author's participation at the December 2017 Commission meeting and understanding of the adopted tropical tuna measure, recent developments do not affect the findings of this thesis.

1.6 Thesis Approach and Structure

Chapter 2 provides an in-depth review of the evolution of international fisheries law with respect to maritime jurisdiction and fisheries governance, including an overview of UNCLOS, UNFSA and the Honolulu Convention. Chapter 3 analyzes and compares the provisions of UNFSA and the Honolulu Convention as they relate to the Principle. To provide a clear picture of the resources and fisheries managed within the WCPFC, Chapter 4 focuses on the HMS fisheries of the WCPO, including a review of the biology of these species, their stock status, as well as the fisheries that target them.

Chapter 5 provides a critical overview of the existing management framework applicable to HMS stocks in the WCPO, including a description of coastal States and DWFNs, sub-regional agreements, as well as

⁴⁶ Members: Australia, China, Canada, Cook Islands, European Union, Federated States of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, Republic of Korea, Republic of Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Chinese Taipei, Tonga, Tuvalu, United States of America, Vanuatu. – Participating Territories: American Samoa, Commonwealth of the Northern Mariana Islands, French Polynesia, Guam, New Caledonia, Tokelau, Wallis and Futuna. – Cooperating Non-Members: Ecuador, El Salvador, Mexico, Panama, Liberia, Thailand, Vietnam.

WCPFC conservation and management measures. It provides a detailed summary of the MHLC process and the development of relevant provisions adopted within the Honolulu Convention.

Chapter 6 evaluates the application of the Principle within the WCPFC. The chapter reviews the Conservation and Management Measures (CMM) which place restrictions on catch and effort for managed species, with the analysis employing particular focus on how the Principle is or is not used in the development of the measures. An evaluation matrix is used to assess consistency with identified standards linked to Article 8 provisions of the Honolulu Convention and a numerical system used to score the application of the Principle. A compatibility rating is provided for each CMM evaluated, such that, when combined and averaged, an overall compatibility rating is provided for the Commission's application of the Principle.

Chapter 7 reviews the WCPFC Harvest Strategy approach and provides justification for the need to apply the Principle in a more formal, transparent manner. The chapter argues that the Commission should identify compatibility as a management objective within the Harvest Strategy framework. By doing so, the Commission would support the identification of performance indicators related to the Principle, in addition to facilitating the incorporation of these indicators within associated management strategy evaluation.

Chapter 8 summarizes the results of the earlier analyses and draws overall conclusions from the study.

1.7 Contribution of Thesis

This thesis achieves the following: a) it fills a void in the academic literature by providing an in-depth review of the history, description and application of the Principle in international fisheries management; b) it provides a practical analysis of the application of the Principle within the world's largest tuna fishery, which is managed internationally by the WCPFC; c) it offers a novel approach for evaluating the application of the Principle within the WCPFC by developing a review standard and assigning a

compatibility rating for key WCPFC conservation and management measures; and d) it identifies the Commission's harvest strategy approach as a mechanism to enhance the application of the Principle.

Chapter 2- Historical Overview of International Marine Fisheries Law and Emergence of the Principle

2.1 Introduction

The rights, duties and interests of coastal and other States fishing on the high seas with respect to internationally shared stocks are critical to understanding the Principle specifically and within international fisheries management as a whole. This chapter will examine the evolution of international fisheries law and identify historical milestones which have resulted in the need to establish the Principle.

2.2 Evolving Marine Jurisdictions

As early as the second century Roman scholars critiqued the legal status of marine jurisdiction;⁴⁷ however, the contemporary law of the sea is a product of Western European economic interests in trade routes to and from the New World.⁴⁸ International maritime law developed during this period to support the colonial exploits of England and Holland, both emerging maritime powers at the start of the 17th century. During the ‘Age of Discovery’ (14th -18th century), and as offshore fleets expanded due to technological advances in navigation, European countries began paying more attention to the extent of a nation’s offshore jurisdiction, delineating exclusive areas adjacent to their coasts.⁴⁹ After the discovery of the ‘New World’, the focus turned to the high seas and the control of trade routes.

⁴⁷ Wilder, R.J. (1992). The three mile territorial sea: Its origins and implications for contemporary offshore federalism. *Virginia Journal of International Law*, 32, 681-746. For example, Marcianus argued that the extent of sovereign jurisdiction was no more than the water’s edge, and that offshore waters were common property. During the period of the Roman Empire, there was little to no international competition for offshore resources; however, as the Roman hegemony waned and competition increased, the thought of extending sovereign jurisdiction into the ocean gained traction.

⁴⁸ Anand (1982) points out that it cannot be denied that international maritime law emerged in response to the need of European countries to trade with Asian States, and as such, it cannot be exclusively thought of as a Western construct. Anand, R. P. (1982). *Origin and Development of the Law of the Sea: history of international law revisited*. The Hague, the Netherlands: Martinus Nijhoff.

⁴⁹ Wilder (1992) at 691.

It is well known that voyages funded by the Spanish crown to the New World resulted in the ascendance of Spain, leading to rivalry with Portugal for maritime dominance during the 15th and 16th centuries.⁵⁰ In the mid-15th century, Portuguese mariners began exploring the west coast of Africa, which was subsequently granted to Portugal by Pope Nicholas V.⁵¹ To Portugal's dismay, Pope Alexander VI decreed the largely unknown areas in the West to Spain in 1493, which effectively *was* the entire New World.⁵² Portugal's appeal to Spain resulted in the Treaty of Tordesillas in 1494, which gave Spain exclusive rights to the Western Atlantic, Pacific and Gulf of Mexico, and Portugal exclusive rights to the South Atlantic and Indian Ocean.⁵³ Based on this treaty, Spain and Portugal instituted the regime of *Mare Clausum* (closed sea), limiting navigation (and fisheries) on the high seas to their own vessels only.⁵⁴

2.2.1 Historical milestone 1 (17th century): the freedom of the seas becomes the prevailing doctrine

As new colonial players such as England and Denmark established themselves in the New World, the century-old Spain-Portugal agreement was under heavy strain.⁵⁵ To support his country's economic interests in the New World, Dutch lawyer Hugo Grotius wrote a seminal legal piece in 1609 called "*Mare Liberum*," which articulated the Freedom of the Seas doctrine.⁵⁶ Grotius' legal analysis, which is well documented in the academic literature, argues that high seas freedoms are founded on two premises: 1)

⁵⁰ Pardo, Arvid. (1984). The law of the sea: its past and its future. *Oregon Law Review*, 7, 13.

⁵¹ Ibid.

⁵² For an in-depth review of the papal bulls issued by Pope Alexander VI with respect to marine jurisdiction, see Linden, H. Vander. (1916). Alexander VI and the Demarcation of the Maritime Colonial Domains of Spain and Portugal, 1493-1494. *American Historical Review*, 22, 20.

⁵³ Theutenberg, B. J. (1984). Mare Clausum et Mare liberum. *Arctic*, 37(4), 481-492.

⁵⁴ Ibid at 490.

⁵⁵ Other countries increasing their maritime prowess during this period included Britain, France and Scandinavia. Interestingly, once Britain gained prominence in maritime affairs, they too tried to establish a *mare clausum* rule for fishing around the British Isles. This proclamation was based on writings by renowned scholar John Selden; however, his arguments eventually lost currency, with Britain favoring a policy of closure around her possessions while seeking freedom of the seas abroad. Anand (1982) at 695.

⁵⁶ Grotius, H. (1916). *The Freedom of Seas: or the right which belongs to the Dutch to take part in the East Indian trade*, translated from Latin by Ralph van Deman Magoffin and edited by James Brown Scott. New York, NY: Oxford University Press. As explained by Juda (1996), Italian scholar Gentili, in a piece published in 1588, articulated that "the sea is by nature open to all and its use common to all". Grotius, however, is historically credited with the modern doctrine of the freedom of the seas. Juda, L. (1996). *International Law and Ocean Use Management: the evolution of ocean governance*. New York, NY: Routledge. 345.

the impossibility that the high seas could be occupied; and 2) the inexhaustible nature of marine resources.⁵⁷ Basing his arguments on these positions, Grotius posited that there should be no limits on the freedom of navigation and fishing on the high seas.⁵⁸

Grotius, however, was not without his detractors. Preeminent British scholar John Selden responded to Grotius in his 1635 book *Mare Clausum, sive de Domino Maris Libri Duo*, with the objective of establishing British sovereignty over the British Seas.⁵⁹ Selden sought to prove that the freedom of the seas was not an all-encompassing doctrine, and that the ocean could be, and had been, allocated in some circumstances.⁶⁰ Selden also argued against the notion that the sea was inexhaustible, not so much in a biological or physical sense, but with regard to the allocation of marine resources. According to this conception, fewer profits would accrue to the State that owned the resources if other States were free to exploit such resources.⁶¹ In this sense, the works of Selden and Grotius have been described as products of personal and national interests as opposed to writings of pure and unbiased juristic science.⁶²

It was not until the British Empire and its unmatched naval forces gained global dominance after the Napoleonic War, coupled with its control over India which benefited European trade during the Industrial Revolution, that *Mare Liberum* gained traction once again.⁶³ Exploitation and trade with the New World now seemed limitless, and it could be done much cheaper with a free and open sea. Arguably, the change

⁵⁷ Vicuna, F. O. (2001). *Changing International Law of High Seas Fisheries* (Vol 9). Cambridge, United Kingdom: Cambridge University Press.

⁵⁸ Juda, L. (1996), at 10. While Grotius was primarily focused on the freedom of navigation to serve Dutch trade interests against the Portuguese, the doctrine of freedom of the seas, which was supported by the belief that marine fisheries were limitless, also propped up Dutch fishing interests for herring off the coast of England (Ibid at 11). According to Vicuna (2001), Grotius did make a distinction between freedom of navigation and freedom of fishing by stating, "...and it is possible to prohibit any of those things, say for example, fishing, for in a way it can be maintained that fish are exhaustible, still it would not be possible to prohibit navigation, for the sea is not exhausted in that use" (Grotius (1916) at 43).

⁵⁹ Selden, J. (1636). *Ioannis Seldeni Mare Clausum, Seu, de Dominio Maris Libri Duo : Primo, Mare, Ex Iure Naturae, Seu Gentium, Omnium Hominum Non Esse Commune, sed Domini Privati, Seu Proprietatis Capax, Pariter AC Tellurem, Esse Demonstratur*. Lugduni Batavorum: apud Ioannem & Theodorum Maire. Reproduction of the original in the Harvard University Library.

⁶⁰ Juda (1996) at 12.

⁶¹ Ibid.

⁶² Anand (1992) at 107.

⁶³ Ibid at 129.

was not made for a moral reason, but rather, the doctrine met the needs of the time – freely accessible trade routes supporting rapidly growing European economies.⁶⁴

Grotius' Freedom of the Seas doctrine, which was based on the principles of freedom of navigation and freedom of fishing on the high seas, became the cornerstone for the modern law of the sea.⁶⁵ The Freedom of the Seas doctrine resulted in the oceans being considered humanity's common heritage, or *res communis*, and therefore available for use by everyone.⁶⁶ While the concept of the freedom of seas became widely accepted in the 19th century, there was still considerable debate over the extent to which a sovereign State had jurisdiction over waters adjacent to its shore.

2.2.2 Historical milestone 2 (19th century): the three mile territorial sea is established as customary international law

Even before Grotius's *Mare Liberum*, Italian scholars had postulated for several hundred years that coastal States possessed exclusive jurisdiction of areas up to 100 miles from their coasts.⁶⁷ However, such delineations failed to gain traction, mainly because naval forces at the time lacked the capacity to enforce maritime boundaries.⁶⁸ In 1598, however, the Dano-Norwegians claimed an exclusive fisheries zone of

⁶⁴ Ibid at 130.

⁶⁵ Vicuna (2001) at 5.

⁶⁶ Joyner, C. C. (1986). Legal implications of the concept of the common heritage of mankind. *International and Comparative Law Quarterly*, 35, 190-199. The use of common heritage property without effective controls can lead to the "tragedy of the commons," whereby multiple individuals, acting independently and tied to their own self-interest, ultimately deplete a shared limited resource, even when such action is not in anyone's long-term interest. See Hardin, G. (1968). The Tragedy of the Commons. *Science*, 162, 1243-1248; See also: Ciriacy-Wantrup, S.V. & R. Bishop. (1975). Common property as a concept in natural resources policy. *Journal of Natural Resources*, 15, 713-728.

⁶⁷ For example, in the 14th century, famed jurist Bartolus de Sassoferrato published a legal manuscript proposing that the sovereign jurisdiction of a coastal State should extend 100 miles seaward. This proposal was the first to offer a specific, measurable distance to delimit offshore jurisdiction. A pupil of de Sassoferrato's, Baldus de Ulbadus also wrote on offshore jurisdiction, but proposed a 60 mile seaward area as being under a coastal State's sovereign jurisdiction. Wilder (1992) at 691.

⁶⁸ Ibid at 697.

approximately eight nm in breadth.⁶⁹ The Dano-Norwegian claim of eight miles was significant, not only because it was actually enforced, but because it was specifically intended to exclude foreign fishing.⁷⁰

In the 17th century, the blending of three principles for determining coastal State sovereignty gave rise to the internationally accepted three nm territorial sea.⁷¹ The first was the use of the Scandinavian league, which was approximately four nm.⁷² The second was the line-of-sight doctrine, which provided that a coastal State's jurisdiction extended as far out to sea as one could see while standing onshore at sea level (coincidentally, the distance one can see towards the horizon standing at the coastline is generally three nm).⁷³ The third was the cannon-shot rule, whereby the distance of a coastal State's jurisdiction was the farthest extent of a cannon projectile, which at the time was around three nm.⁷⁴ Although fisheries exclusion was an important consequence of this increased jurisdiction, the main reason for extending coastal State jurisdiction in the 17th century was not fisheries conservation, but rather protecting coastal States from enemy attacks and intrusions.⁷⁵

While there was international support for a three nm territorial sea, no country formally declared such jurisdiction until 1794, when the United States, by Congressional action, delimited a three nm neutrality

⁶⁹ Ibid at 698.

⁷⁰ In 1745, and by Royal Decree, the Dano-Norwegian claim of eight nm was reduced to four nm. Wilder (1992) at 700.

⁷¹ Wilder (1992) at 698.

⁷² Ibid.

⁷³ Ibid. Prior to standardizing this approach for the observer to stand at sea level, there were inconsistencies in applying this method, as the distance of sight varies upon the elevation of the observer and viewing conditions (i.e., sun, rain, fog etc).

⁷⁴ As Wilder (1992) identifies, the cannon-shot rule is believed to have been overstated by many scholars as the preeminent principle in establishing the three mile territorial sea limit as customary international law. However, during the 17th and 18th centuries, cannons were not capable of firing out to three nm, but could extend out to two nm, thereby suggesting that the three mile territorial sea limit was a blend of several doctrines, primarily the cannon-shot rule (two nm) and the Scandinavian league (four nm).

⁷⁵ Anand (1992) at 136.

belt under its domestic law.⁷⁶ The establishment of a neutrality belt was not intended for fisheries management purposes. However, not long after, fisheries rights entered the discussion. The formal recognition of a three mile boundary for excluding foreign fishermen occurred with the 1818 treaty between the United States and Great Britain.⁷⁷ Along the same lines, Great Britain and France signed a convention in 1839 that provided each country with exclusive fishery rights to three miles adjacent to their shores.⁷⁸

During this period, distinctions emerged between the inexhaustibility of fisheries on the high seas versus those closer to shore, such that nearshore waters were considered worthy of greater protection with regard to coastal State interests.⁷⁹ As a result, the early to mid-19th century saw a proliferation of treaties between coastal States for the purpose of fisheries exclusion within the three mile territorial sea. However, the freedom of all States to fish on the high seas was maintained in these treaties, with the freedom not even being cited in some agreements because its inclusion was considered superfluous.⁸⁰

2.2.3 Historical milestone 3 (19th century): The ocean is no longer inexhaustible: a new fisheries paradigm

By the end of the 19th century, there was recognition that coastal fisheries were exhaustible, including within the accepted three nm territorial sea for some fisheries.⁸¹ During the late 19th century, for example,

⁷⁶ Wilder (1992) at 710. While the Dano-Norwegian four mile claim related to fisheries exclusion, the more common expression denoting offshore jurisdiction was a zone of “neutrality,” whereby if not declared, warring nations (e.g., Britain and France) could take ‘prizes’ off US coasts. Thus, a delimited neutral zone, if adhered to, would prevent warring nations from engaging in hostile acts within the zone. Thus, the main purpose of the zone was far removed from fisheries conservation and management, although an argument could be made that neutrality zone offered some protection for food security.

⁷⁷ Convention respecting fisheries, boundary and the restoration of slaves between the United States of America and the United Kingdom of Great Britain and Ireland. Open for signature on 20 October 1818. Effective 30 January 1819. United Nations Treaty Series 112. For a review of 19th century fisheries treaties between the United States and Great Britain, see Maddocks, L. (1888). *Fisheries treaties between the United States and Great Britain: Discussed from a fishermen’s perspective*. Harvard, United States: Harvard College Library.

⁷⁸ Juda (1996) at 15. See also Daggat, A.P. 1934. The regulation of maritime fisheries by treaty. *The American Journal of International Law*, 28(4), 693-717.

⁷⁹ Juda (1996) at 15.

⁸⁰ Daggat (1934) at 704.

⁸¹ Juda (1996) at 16.

the herring fishery of the North Sea was a focal point for European fishing interests from Scotland, France, Belgium, the Netherlands, Britain and Germany. Such intensive fishing in a defined area led to the signing of the International Convention for Regulating the Police of the North Sea Fisheries Outside Territorial Waters in 1882 (North Sea Fisheries Convention) - the first multinational agreement to reserve territorial waters (0-3nm) for the exclusive use by fishermen of particular coastal States.⁸² Indeed, previous treaties dealing with the same subject matter had been limited to bilateral participation.⁸³ The North Sea Fisheries Convention, however, had less to do with stock conservation than it did with regulating the vessels of convention parties on the high seas.⁸⁴ Although an international precedent had now been set reserving the territorial waters of party States for the exclusive use by fishermen from particular adjacent coastal States, little time elapsed before three miles was deemed inadequate to coastal State interests. The result was States claiming wider jurisdictions for the exclusive right of fisheries, as well as expressing interest in fisheries resources beyond their territorial waters.⁸⁵

A particularly good illustration of changing marine jurisdictional claims and the exploitation of marine resources was the multinational Northern Fur Seal Conflict (1886–1910) between the United States,

⁸² *International Convention for Regulating the Police of the North Sea Fisheries Outside Territorial Waters*. Signed on 6 May 1882. Entered into force on 15 May 1884. Known informally as the North Sea Fisheries Convention, its signatories were Belgium, Denmark, France, Germany, Great Britain and the Netherlands. Its main function was to police the fleet in order to reduce gear conflict and vessel competition. The convention required signatories to ensure vessels flying their flag were marked and registered. The depletion and conservation of stock was not at issue, despite such depletion being increasingly apparent at the time. This is not to say that the stock condition of herring was not a major problem at the time, as the introduction of the trawl and advancements in fish capture technology increased yields to alarming levels. In the 1860's for example, the introduction of trawling in Britain was a significant issue and led to a national debate on the effect of the gear on herring stock. See Roberts. C. (2007). *The Unnatural History of the Sea*. Washington, D.C.: Island Press. Roberts describes the contentious period in late 19th century England after the trawl was introduced, causing rapid increases in herring and cod harvests and gear conflicts among trawl fishermen and hook and line fishermen.

⁸³ Juda (1996) at 20.

⁸⁴ Ibid.

⁸⁵ Anand (1992) at 146. For example, Norway and Sweden provided claims that their territorial seas should be delineated out to four miles using wide, straight line boundaries.

Canada, Great Britain (acting on behalf of Canada), Japan and Russia.⁸⁶ Indeed, the Northern Fur Seal Conflict and Bearing Sea Fur Seal Arbitration between the United States and Great Britain is a landmark historical case on the interests of coastal States and fishing States in transboundary stocks harvested within waters of national jurisdiction and on the high seas. Germaine to this thesis, the conflict was fundamentally about the need for compatible management measures for the harvest of seals within national waters and on the high seas. The Northern Fur Seal Conflict tested the existing international law at the time, specifically questioning the issue of national jurisdiction and property rights over marine resources that also occur on the high seas.

The Northern Fur Seal Convention of 1911 is also noteworthy because: 1) it was the first international environmental agreement for the specific objective of marine resource conservation;⁸⁷ 2) it represented the first instance in international fisheries law when the access to the wealth obtained from a resource was distinct from the access to harvesting the resource;⁸⁸ 3) it appeared to satisfy all parties involved;⁸⁹ 4) it led to the recovery of the northern fur seal populations;⁹⁰ and 5) the original agreement was maintained for several decades.⁹¹ Moreover, the Bearing Sea Fur Seal Arbitration is important in the history of the law of the sea because it represents the first decision by an ‘impartial’ adjudicator on the rights, property interests and responsibilities of nations fishing on a common stock within areas of national jurisdiction and on the high seas. Although the Principle of Compatibility is neither mentioned in the commentary on the Bering Sea Fur Arbitration nor the Northern Fur Seal Convention of 1911, the deliberative outcomes

⁸⁶ For further reading on the Northern Fur Seal Conflict see: Paterson, D.G. (1977). The North Pacific seal hunt, 1886-1910: rights and regulations. *Explorations in Economic History*, 14, 97-119. -- Castree, N. (1997). Nature, economy, and the cultural politics of theory: the ‘war against the seals’ in the Bering Sea, 1970-1911. *Geoforum*, 28(1), 1-20. -- Mirovitskaya, N. S., Clark, M., & Ronald, G. P. (1993). North Pacific Fur Seals: Regime Formation as a Means of Resolving Conflict. In Oran R. Young and Gail Osherenko (Eds.), *Polar Politics: Creating International Environmental Regimes* (pp. 22-55). Ithaca, NY: Cornell University Press. -- Williams, W. (1943). Reminiscences of the Bering Sea Arbitration. *The American Journal of International Law*, 37(4), 562-584.

⁸⁷ Castree (1997) at 6.

⁸⁸ Mirovitskaya et al. (1993) at 35.

⁸⁹ Castree (1997) at 6.

⁹⁰ Ibid at 6.

⁹¹ Ibid at 6.

of the decision and the agreement can be viewed as achieving compatible measures between the high seas and areas of national jurisdiction.

2.2.4. Historical milestone 4 (mid-20th century): Rapid rise in industrial fishing leads to claims for broader areas of national jurisdiction

While the freedom of the seas doctrine was predicated on the inexhaustibility of fisheries, ripe with its economic potential, the doctrine became dysfunctional due to the emergence of new fishing technologies during the Industrial Period. In addition, changing patterns of human use of the oceans, and different human perspectives of ocean resources, brought increased attention to the law of the sea.⁹² While the three nm territorial sea was generally accepted as customary international law in the early 20th century, claims for extended fisheries jurisdiction beyond the three nm territorial sea gained popularity and led to international deliberation.⁹³

In 1894, an unofficial body of experts within the Institute of International Law found that the three nm limit was insufficient for the protection of coastwise fishing, and instead proposed a six nm territorial sea.⁹⁴ Their finding had no legal effect, and it was not until 36 years later that the international community assembled at the Hague Codification Conference in 1930 to formally establish the breadth of territorial waters.⁹⁵ The conference, however, failed to reach agreement on this issue.⁹⁶ While the three mile territorial sea was generally accepted as customary international law with regard to neutrality and coastal State protection, it was the breadth of the contiguous zone and access to fisheries that contributed to the failure to adopt formal demarcations.⁹⁷

⁹² Juda (1996) at 2.

⁹³ Anand (1982) at 149.

⁹⁴ Juda (1996) at 50.

⁹⁵ Daggett, A.P. (1934) at 693.

⁹⁶ Ibid.

⁹⁷ Anand (1982) at 149. Demarcations for a contiguous zone represented an attempt to balance the needs of coastal States by providing an extension of authority (but with limited police powers) to protect local interests while also recognizing legitimate activities of nations outside of the territorial sea (See Juda (1996) at 50).

Rapidly advancing fishing power and capacity soon discredited the notion of inexhaustible marine fisheries, leading to a recognition that the three-mile limit for exclusive fisheries rights was inadequate to conserve fish stocks, and that wider demarcations were needed. However, global maritime powers including the United Kingdom, the United States, Japan and others, were determined to maintain the three mile general limit in order to bolster their interest in exploiting fisheries of several other nations just beyond the three mile mark.⁹⁸

Between 1930 and 1945, several States claimed broader marine jurisdictions for the protection of their fisheries. While this was met with opposition from maritime powers including the United Kingdom and the United States, it signified that fisheries were generating greater international interest.⁹⁹ By the late 1930's, improved catch and effort information led to growing concerns over fisheries depletion in the larger expanses of the ocean. Although depletion had been observed in some local areas much earlier (e.g., Great Britain's herring fishery), the greater issue of stock depletion was largely eclipsed during this period by the discovery of new fishing grounds, coupled with advances in fishing technology.¹⁰⁰ Nonetheless, there was growing recognition that the freedom of the seas doctrine was license for powerful countries to exploit resources near the coasts of other countries.¹⁰¹ As Anand (1982) has opined, "freedom of the seas has always meant unequal freedom or only freedom for the few (global maritime powers)."¹⁰²

After the Second World War, the long-held concept of the freedom of the seas was found to be insufficient insofar as it applied to marine resource exploitation – that is, fisheries, and was subsequently challenged by coastal States. The regime change was spurred by unilateral action taken by the United

⁹⁸ Juda (1996) at 62.

⁹⁹ In addition to fisheries, the principle of innocent passage also garnered significant attention in law of the sea matters in the early 20th century. As the freedom of the seas doctrine became closely aligned with the freedom of commerce under customary international law, the right of innocent passage through a State's territorial sea (up to three nm) later accommodated the commercial activities of merchant ships. Warships, however, were distinguished from merchant ships and were not granted innocent passage. See Anand (1992) at 150.

¹⁰⁰ Juda (1996) at 107.

¹⁰¹ Anand (1982) at 153.

¹⁰² Ibid at 153.

States. In 1945, US President Harry S. Truman issued two proclamations that would fundamentally change the law of the sea.¹⁰³

The Truman Proclamations unilaterally extended US jurisdiction beyond the three mile territorial sea and onto the contiguous continental shelf for natural resources including oil, natural gas, minerals and fisheries. The “Continental Shelf Proclamation” asserted US jurisdiction over the continental shelf contiguous with the US out to 100 fathoms, while calling for an equitable process for establishing boundaries with adjacent States.¹⁰⁴ The “Fisheries Proclamation” declared US rights to establish conservation zones for the protection of fisheries in areas of the high seas contiguous to the coasts of the United States, and further, for areas which traditionally had been fished by US nationals only (and thus subject to US regulation and control).¹⁰⁵ The fisheries proclamation also established that some fishing grounds could, when conditions warranted, be restricted to fishing by US nationals alone.¹⁰⁶ In areas that had been fished by nationals of other States, the proclamation instructed cooperative management between the United States and these other States, while reserving the right to exclude new entrants to those fisheries if necessary.¹⁰⁷

The Truman Proclamations set off claim and counterclaim responses by other nations.¹⁰⁸ The chain reactions that ensued resulted in some countries staking claims to areas beyond the territorial sea which

¹⁰³ Ibid at 164. See also Hollick, A. (1976). US oceans policy: the Truman Proclamations. *Virginia Journal of International Law*, 17, 23-55. Although the proclamations were named for President Harry S. Truman, the underlying policies were developed under President Franklin D. Roosevelt.

¹⁰⁴ Proclamation 2667. (1945). *Policy of the United States with respect to the Natural Resources of the Subsoil and Sea Bed of the Continental Shelf*. September 28, 1945.

¹⁰⁵ Proclamation 2668. (1945). *Policy of the United States with respect to coastal fisheries in certain areas of the high seas*. September 28, 1945.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid. The primary driver for the “fisheries proclamation” was the exploitation of salmon fisheries off the coast of Alaska by Japanese fishermen and competition with US fishermen. For a detailed review of the development of the Truman Proclamations, see: Hollick, A. L. (1976). US oceans policy: the Truman proclamations. *Virginia Journal of International Law*, 17, 23.

¹⁰⁸ Juda (1996) at 113

were broader than those asserted by the United States.¹⁰⁹ Interestingly, it was not the claims of extended jurisdiction over the continental shelf that caused international concern (indeed, these were viewed as a positive development in international law), but rather the extended jurisdiction over fisheries.¹¹⁰ In the 1952, Chile, Peru and Ecuador, all of which had narrow continental shelves but rich fisheries beyond these shelves, signed the Santiago Declaration proclaiming a 200 nm maritime frontier of sole sovereignty and jurisdiction.¹¹¹ Based on the Truman Proclamations, the United States and Great Britain favored fisheries management on high seas through agreements with coastal States and States with historical fishing interests in the area. However, neither the United States nor Great Britain accepted the 200 nm extension of sole jurisdiction and protested vigorously.¹¹² Latin American countries responded with continued reiterations of their claims.¹¹³ Unilateral and inconsistent claims of marine jurisdiction were now fraught with conflict, setting the stage for international negotiations.

2.3 Historical milestones 5 and 6 (mid-20th century): the United Nations Law of the Sea Conventions, the EEZ, and International Cooperation over Shared Stocks

In 1949, the newly created United Nations International Law Commission (ILC) identified the delineation of the high seas and the territorial sea as a major agenda item. Indeed, such action signified the importance of law of the sea issues in a post-World War II world. In this context, the ILC also considered the conservation of living marine resources, coastal State claims over the continental shelf, straight line

McDougal, M. (1955). The Hydrogen Bomb Tests and the International Law of the Sea. *American Journal of International Law*, 49(3), 356-361, cited in Juda (1996) at 113. The claim/counter claim phenomena as a means of developing international law can be distinguished from international law developed through the multilateral treaty process.

¹⁰⁹ Juda (1996) at 113.

¹¹⁰ Johnson, D.H.N. (1959). Geneva Conference on the Law of the Sea. *Yearbook of the World Affairs*, 13, 68.

¹¹¹ Juda (1996) at 114. Using an ecological argument, these countries claimed that 200 nm represented the outer boundaries of Humbolt Current, which supports a diverse array of marine species. Around the same time, several other Latin American States (El Salvador, Argentina and Honduras) also proclaimed similar extensions of their jurisdiction out to 200 nm. See also: Anand (1992) at 165.

¹¹² Ibid.

¹¹³ Ibid at 115.

baselines for territorial waters, mid-ocean archipelagos and their claims, high seas testing areas for modern weapons, as well as air defense zones.¹¹⁴

Fisheries were also identified as a primary issue to be discussed, and in 1951 the ILC agreed that, absent regulations, the freedom to fish in waters beyond the territorial sea would endanger world food supply.¹¹⁵

In 1955, the International Technical Conference on the Conservation of Living Resources of the Sea was held in Rome.¹¹⁶ The fisheries-specific outcome of the conference was that the freedom of all States to fish on the high seas was maintained, but that such fishing would be subject to formal conventions.¹¹⁷

These treaties would be formed by fishing nations, coastal States with jurisdiction contiguous to the high seas, as well as any other State with “an interest in the conservation of the living resources in the area.”¹¹⁸

The ILC recommended that the UN General Assembly convene an international conference to examine the law of the sea and to implement the results of the conference, including the adoption of international conventions and other such instruments deemed appropriate.¹¹⁹

2.3.1 The First United Nations Conference on the Law of the Sea and the 1958 Geneva Conventions

The First United Nations Conference on the Law of the Sea was held in Geneva in 1958 and attended by 86 States.¹²⁰ The work of the conference was divided among five committees considering the following issues: 1) the territorial sea and the contiguous zone; 2) the general regime of the high seas; 3) fishing and

¹¹⁴ Juda (1996) at 117.

¹¹⁵ Ibid.

¹¹⁶ The conference was held 18 April to 10 May 1955. Retrieved from: <http://repository.un.org/handle/11176/206832>

¹¹⁷ Report of the International Technical Conference on the Conservation of the Living Resources of the Sea. 18 April – 10 May 1955. Rome.

¹¹⁸ Ibid at 9.

¹¹⁹ Anand (1992) at 177.

¹²⁰ Treves, T. (2008). 1958 Geneva Conventions on the Law of the Sea. *United Nations Audiovisual Library of International Law*, 5.

the conservation of living resources on the high seas; 4) the continental shelf; and 5) access to the seas of land-locked countries.¹²¹

As described above, there was growing concern from newly independent coastal States that the conventional three mile territorial sea was too narrow, and that it did not offer enough protection for their important fisheries. Conversely, Western maritime powers, including the United States and Great Britain, did not support the expansion of the territorial sea or the contiguous zone.¹²² This divergence of opinion is illustrated by committee 1 (above) passing, by simple majority, a resolution to establish a 12 mile contiguous zone, which would have enabled coastal States to exclude foreign fishermen. However, when that provision was considered in the plenary session, it failed to win the three-fourths majority required for its inclusion in the convention.¹²³

Although the conference committee failed to define the extent of the territorial sea in geographic terms, the participants did agree on the 1958 Geneva Convention on the Territorial Sea and Contiguous Zone.¹²⁴ Importantly, that convention designated the territorial sea to be under the sovereign jurisdiction of the coastal State, subject to other provisions of the convention and international law generally. One such provision is the right of innocent passage for all vessels transiting through the territorial sea, subject to coastal States being able to restrict vessel transit in circumstances where a vessel is not abiding by the rules of the particular coastal State.¹²⁵

The 1958 Geneva Convention on the Territorial Sea and Contiguous Zone also established the concept of a contiguous zone, an area bounded no more than 12 miles from shore and adjacent to the territorial sea.

¹²¹ Ibid.

¹²² Juda (1996) at 155.

¹²³ Ibid.

¹²⁴ Geneva Convention on the Territorial Sea and Contiguous Zone. Opened for signature on 29 April 1958. Entered into force on 10 September 1964. United Nations, Treaty Series, 516(205). Articles 1-6 provide the limits of the territorial sea, but without explicitly identifying the distance from the shore. The articles establish uniform methods for drawing boundaries to establish territorial seas (e.g., straight line boundaries).

¹²⁵ Ibid. Section III Articles 14-23.

In the contiguous zone, the convention provides that a coastal State can exercise control related to customs, pollution, immigration, as well as the enforcement of infractions that occur in the territorial sea.¹²⁶ However, the convention did not provide that a coastal State could prohibit foreign fishing within the contiguous zone.¹²⁷

The committee on high seas fishing was another contentious forum at the conference. The tension was between newly developing coastal States and existing maritime powers. The former sought the authority to manage fisheries that occur on the high seas; the latter wanted to preserve the traditional high seas fishing freedom, preferring an international approach to managing high seas fisheries.¹²⁸ The outcome was a compromise, with the relevant provisions described below continuing to hold currency today.

The 1958 Geneva Convention on Fishing and Conservation of the Living Marine Resources of the High Seas established, for the first time, special recognition for the interests of coastal States in the conservation and management of high seas fisheries that occur adjacent to their coasts.¹²⁹ Article 1 maintains the freedom of high seas fishing; however, such freedom is subject to: a) treaty obligations; b) the interests and rights of coastal States; and c) other obligations related to the conservation and management of high seas fisheries.¹³⁰ Article 1 also provides that States have the duty to adopt, or cooperate with other States in adopting, such measures as may be necessary for the conservation of high seas resources.

Article 6(1) recognizes the importance of fisheries to coastal States, affirming that such States have a special interest in maintaining the productivity of fisheries in any area adjacent to their territorial sea.

¹²⁶ Article 24 of Geneva Convention on the Territorial Sea and Contiguous Zone (1958). Entered into force on 10 September 1964. United Nations, Treaty Series, 516(205)

¹²⁷ Ibid.

¹²⁸ Juda (1996) at 144. It is instructive to recall that during this period, the high seas were believed to start beyond the three mile territorial sea limit.

¹²⁹ Geneva Convention on Fishing and Conservation of the Living Marine Resources of the High Seas (1958). Open for signature on 29 April 1958. Entered into force on 20 March 1966. United Nations, Treaty Series, 559.

¹³⁰ Article 1 of the Convention on Fishing and Conservation of Living Marine Resources of the High Seas. Signed on 29 April 1958. Entered into force 20 March 1966. United Nations, Treaty Series, 559(285).

Article 6(2) further recognizes the interests of coastal States, granting them equal rights to participate in any research and regulation for the conservation of high seas fisheries. Indeed, this right persists even though the nationals of the coastal State may not engage in high seas fishing. Article 6(4) prohibits States from enforcing conservation measures which are contrary to those measures adopted by the adjacent coastal State. However, the article does permit such States to enter into negotiations with a view to prescribing necessary conservation and management measures for living resources in the particular high seas area.

Importantly, if the States concerned are unable to reach agreement within a year of initiating negotiations, they may refer the matter to the dispute resolution process.¹³¹ In this regard, it is noteworthy that pursuant to Article 7(1), if negotiations have failed to produce an agreement within 6 months, any coastal State can adopt unilateral conservation measures with a view to maintaining the productivity of the resource in question.¹³² This is indeed a significant provision, allowing coastal States to theoretically impose binding measures on States fishing on the high seas. The provision thus represents a substantial departure from the historical *carte blanche* freedom of the seas concept.

While major issues such as the breadth of the territorial sea and the contiguous zone for fisheries exclusion were not settled, the outcome of the conference resulted in four adopted conventions. When read together, these conventions reaffirm the principle of the freedom of the seas, but with certain caveats with respect to coastal State interests.¹³³ As such, it has been asserted that the major theme to arise from the conventions was the rule of ‘reasonableness’, whereby potential abuses resulting from one State

¹³¹ Article 6(5) of the Convention on Fishing and Conservation of the Living Marine Resources of the High Seas. Signed on 29 April 1958. Entered into force 20 March 1966. United Nations, Treaty Series, 559(285).

¹³² A coastal State could impose such unilateral measures only if: a) there was an urgent need for the application of such measures; b) the measures are based on appropriate scientific findings; and c) the measures do not discriminate against foreign fishermen. See Article 7 of the Convention on Fishing and Conservation of Living Marine Resources of the High Seas. Signed on 29 April 1958. Entered into force 20 March 1966. United Nations, Treaty Series, 559(285).

¹³³ Anand (1992) at 184.

exercising high seas fishing freedoms must be tempered by an obligation on that State to not adversely affect the activities of another nation.¹³⁴

2.3.2 The Second United Nations Law of the Sea Conference

In 1960, the Second United Nations Law of the Sea Conference met in Geneva, with representatives from 88 States participating.¹³⁵ The conference again focused on defining the extent of the territorial sea, as well as the issue of exclusive fisheries jurisdiction within the contiguous zone.¹³⁶ At the time, several countries had made unilateral claims for the exclusive use of areas between 12 miles and 200 miles.¹³⁷ The conference, however, failed to reach agreement on the extent of the territorial sea and exclusive fisheries zones. As a result, unilateral claims for exclusive areas of jurisdiction proliferated, and conflicts arose between DWFNs and coastal States over rights to fishery resources beyond three nm. With the passage of time, the need to resolve these issues became increasingly pressing.

2.3.3 The Third United Nations Conference on the Law of the Sea and the 1982 United Nations Convention on the Law of the Sea

In the mid-1960s, a global shift occurred in relation to the extent of coastal State jurisdiction, and more specifically, how coastal States viewed fishery resources, including highly migratory species that occur adjacent to their coastlines. It was also a time of post-colonial nation-building, with developing States keen to exert greater control over their natural resources.¹³⁸ For example, by 1969, 59 coastal States

¹³⁴ Juda (1996) at 157. One might be able to assert that the rule of reasonableness is a precursor to the Principle of Compatibility, which appears nearly 40 years later in international fisheries law.

¹³⁵ Retrieved from: http://legal.un.org/diplomaticconferences/1960_lof/docs/english/vol_1/a_conf19_115.pdf

¹³⁶ Ibid.

¹³⁷ Recall the Santiago Declaration of 1952 whereby Chile, Peru and Ecuador claimed 200 nm exclusive use areas. Also, in 1958, just two months after UNCLOS I, Iceland claimed a 12 nm exclusive fisheries zone, which led to conflict with Great Britain. Juda (1996) at 154.

¹³⁸ Bishop, William. W. (1956). International Commission draft articles on fisheries. *The American Journal of International Law*, 50(3), 627-636. From 1960-1970, 46 new States gained independence and were recognized by the international community (Juda (1996) at 170).

unilaterally extended their territorial seas from three miles to 12 miles.¹³⁹ As the extension of coastal State jurisdiction became commonplace, DWFNs grew increasingly resistant to the idea of relinquishing their free access to HMS stocks within the territorial sea of other countries.¹⁴⁰ One reason for this was that between 1960 and 1970 the global marine catch doubled, from 33 million mt to 61 million mt, with the catch dominated by DWFNs.¹⁴¹ Relations between the two sets of States remained strained until the early 1970s, when the international community, including two world superpowers - the United States and the Soviet Union - agreed on the need to reconcile issues related to fishing interests in the territorial sea and on the high seas. The freedom of navigation was also a pressing issue at the time, with 'Cold War' tensions at their height.¹⁴²

Around the same period, dozens of countries unilaterally established 200 nm exclusive use zones and declared sovereignty over the underlying seabed and fisheries in the water column.¹⁴³ This added to the existing tension between coastal States and DWFNs. Another issue gaining traction at the time was the rapidly developing interest by many coastal and non-Coastal States in seabed mining (e.g., manganese nodules).¹⁴⁴ The third United Nations Law of the Sea Conference was initiated in 1973 to address these pressing global issues.

The outcome of the conference, which took 10 years to complete (1973-1982) was the 1982 United Nations Convention on the Law of Sea (UNCLOS).¹⁴⁵ It took another decade for the convention to enter

¹³⁹ Lajeunesse, A. (2016). *Lock, Stock, and Icebergs: A History of Canada's Arctic Maritime Sovereignty*. Vancouver, British Columbia. UBC Press, 336, at 162.

¹⁴⁰ Caron, D. D., & Scheiber, H. N. (Eds.). (2004). *Bringing New Law to Ocean Waters*. Law of the Sea Institute, University of California. Boston: Brill. 57

¹⁴¹ Juda (1996) at 171.

¹⁴² Ibid.

¹⁴³ Smith, R. (1986). *Exclusive Economic Zone Claims: an analysis and primary documents*. Boston, MA: Martinus Nijhoff. See also: Loftas, T. (1981). FAO's EEZ programme: Assisting a new era in fisheries. *Marine Policy*, 5(3), 229-239.

¹⁴⁴ Murphy, J. M. (1978). Politics of Manganese Nodules: International Considerations and Domestic Legislation, *San Diego Law Review*, 16, 531.

¹⁴⁵ United Nations Convention on the Law of the Sea. (1982). Montego Bay, Jamaica. Opened for signature 10 December 1982. Entered into force 16 November 1994. United Nations Treaty Series No. 31363.

into force (1994), and it is currently binding on 154 States. UNCLOS has been described as the global constitution for the oceans, providing nations with their rights and responsibilities in relation to the oceans and the management of resources contained therein.¹⁴⁶ UNCLOS has also been identified as quite possibly “the greatest treaty-making accomplishment in the entire history of international law.”¹⁴⁷

Several provisions of UNCLOS heralded changes or introduced new concepts to the law of the sea, including topics covering navigation and rights to the seabed. However, for the purposes of this thesis, these issues will not be examined in detail. Central to the current analysis is that UNCLOS managed to achieve what previous Law of the Sea conferences had failed to accomplish – delineate the breadth of the territorial sea and the EEZ. UNCLOS also distinguished the differing rights of coastal States within these zones. Within the 12 nm territorial sea, for example, coastal State sovereignty is absolute; whereas within the 200 nm EEZ, coastal States only possess sovereign rights and jurisdiction over resource-related activities.¹⁴⁸

The distinction between sovereignty and sovereign rights is important. Coastal State sovereignty within the territorial sea is a recognition of the all-encompassing authority provided to coastal States, subject to the caveats specified under UNCLOS (for example, that coastal States grant innocent passage and transit passage within the territorial sea).¹⁴⁹ On the other hand, UNCLOS provides coastal States with sovereign rights within the EEZ, indicating a more limited authority than the full sovereignty enjoyed within the

¹⁴⁶ Koh, T. B. (10 December 1982). *Closing remarks by Tommy B. Koh of Singapore, President of the Third United Nations Conference on the Law of Sea*. Retrieved from http://www.un.org/Depts/los/convention_agreements/texts/koh_english.pdf

¹⁴⁷ Faulk, R. and H. Elver. (1999). Comparing Global Perspectives: 1982 UNCLOS and 1992 UNCED. In Vidas, D., and Østreng, W. (Eds.), *Order for the Oceans at the Turn of the Century*. The Hague, The Netherlands: Kluwer Law International, at 153.

¹⁴⁸ See UNCLOS Articles 2 and 3 with respect to coastal State sovereignty within the territorial sea, and Article 3 for the breadth of territorial sea. For a description of coastal State sovereign rights with respect to the EEZ, see Article 56, and for the breadth of the EEZ, see Article 57. For the full text of UNCLOS, see <http://treaties.un.org/doc/Publication/UNTS/Volume%201833/volume-1833-A-31363-English.pdf>

¹⁴⁹ For the distinctions between ‘innocent passage’ and ‘transit passage’ with respect to coastal State rights and duties, see UNCLOS Articles 17-30.

territorial sea.¹⁵⁰ As Juda (1996) has termed it, the EEZ is a zone *sui generis*, being neither part of the territorial sea nor the high seas.¹⁵¹

Initially, there was debate over whether UNCLOS provided coastal States with property rights over non-HMS fisheries within the EEZ. However, the issue was settled a few years later, with the predominant view being that non-HMS fishery resources occurring in the EEZ are the property of the coastal State.¹⁵²

There was considerably more debate on whether HMS stocks found within an EEZ constitute the property of a coastal State, with this issue lingering for several years after UNCLOS. Major DWFNs such as the United States opposed the concept of coastal State property rights over HMS such as tuna in the EEZ. The issue was conceded in the 1990s, and it is now accepted that HMS are the property of coastal States while they occur in this zone.¹⁵³ The establishment of the EEZ, and the granting of sovereign rights to coastal States over the exploitation of living resources in the EEZ, is widely regarded as the most significant reallocation of fisheries property rights in the 20th century. From once being considered common heritage property, fisheries resources now have the legal status of being the sovereign property of coastal States.¹⁵⁴

2.3.3.1 Coastal State Duties for the Conservation and Management of Living Marine Resources within the EEZ and Cooperation Over Shared Stocks

The establishment of the EEZ was a game-changer for coastal States with respect to the reallocation of fishery resources. However, granting sovereign rights to resources found within the EEZ to coastal States did not come without responsibility. UNCLOS articulates the rights, jurisdiction and duties of coastal

¹⁵⁰ Schrijver, N. (2008). *Sovereignty over natural resources: balancing rights and duties* (Vol. 4). Cambridge, United Kingdom: Cambridge University Press. 199.

¹⁵¹ Juda (1996) at 228.

¹⁵² McRae, D., & Munro, G. (1989). Coastal State 'rights' within the 200-mile exclusive economic zone. In P. Nieher, R. Arnanson, and N. Mollet (Eds). *Rights Based Fishing* (pp. 99-112, at 106). Dordrecht, The Netherlands: Kluwer.

¹⁵³ Kaitala, V., & Munro, G.R.. (1993). The Management of High Seas Fisheries. *Marine Resource Economics*, 8(4), 313-329, at 315

¹⁵⁴ Hanich, Q., Schofield, C., & Cozens, P. (2009). Oceans of Opportunity? The Limits of Maritime Claims in the Western and Central Pacific Region. In Q. Hanich & M. Tsamenyi (Eds.). *Navigating Pacific Fisheries: Legal and Policy Trends in the Implementation of International Fisheries Instruments in the Western and Central Pacific Ocean* (pp. 21-50). University of Wollongong. Wollongong, Australia.

States in the EEZ. Article 56, for example, provides coastal States with exclusive rights to explore and exploit living and non-living resources found within the EEZ.

Article 61 provides coastal States with the ability to determine the total allowable catch (TAC) of living marine resources within the EEZ, but in doing so, coastal States are to ensure through conservation and management measures that such resources are not endangered by over-exploitation. Further, management measures established by coastal States are to be designed so that populations of harvested species are maintained at levels which can produce the maximum sustainable yield (MSY).¹⁵⁵ Coastal States are also required to take into consideration associated and dependent species, and to maintain these species above levels at which their reproduction may become seriously threatened.¹⁵⁶ Lastly, coastal States are to regularly exchange catch and effort information through competent international organizations.

Under Article 62, coastal States are required to promote the objective of optimum utilization of the living resources in the EEZ, without prejudice to Article 61. Furthermore, where a coastal State does not have the capacity to harvest the entire allowable catch, Article 62 requires the particular coastal State to grant other States access to the surplus allowable catch through appropriate mechanisms and regulations.¹⁵⁷

It has been argued that the terms “maximum sustainable yield” (Article 61) and “optimum utilization” (Article 62) are open to broad interpretation and require further definition to provide guidance on how the

¹⁵⁵ The duty to maintain EEZ fish stocks to levels associated with MSY is tempered by Article 61(3), with the duty taking into account relevant environmental and economic factors, as well as the special requirements of developing States.

¹⁵⁶ Associated and dependent species can be taken to represent bycatch species (e.g., sharks), as well as caught species that are the primary prey for other species (e.g., herring). One could argue that Article 61(4) provides the basis for ecosystem-based management of living marine resources, as it requires consideration of associated and dependent species.

¹⁵⁷ Article 62(4) lists several examples of regulations that coastal States could impose on other States fishing in its EEZ, including but not limited to: permit fees, seasonal closures, gear restrictions, vessel capacity limits, harvest size limits, catch and effort reporting, observer coverage, landing requirements, as well as enforcement procedures.

sustainable management of living marine resources is to be achieved.¹⁵⁸ Moreover, pursuant to Article 61, the maintenance of stocks at levels capable of producing Maximum Sustainable Yield (MSY) can be further qualified *by relevant environmental and economic factors*, meaning that the biomass of living marine resources within the EEZ can be exploited to levels below that which produce MSY. In doing so, coastal States can achieve what UNCLOS defines as “optimum utilization.” In other words, the over-exploitation of a resource (e.g., fishing at a rate *above that* which produces MSY within a nation’s EEZ is acceptable under the UNCLOS, provided such action is qualified by relevant factors.¹⁵⁹ Arguably, this may only apply to fish stocks found within the EEZ, or to the unilateral action of a coastal State exercising its rights under UNCLOS.

Notably, Article 56 requires coastal States carrying out their rights and duties in the EEZ to have “due regard to the rights and duties of other states,” and to “act in a manner compatible with the other provisions of the Convention.” The interpretation of this provision is key to balancing the rights and obligations of coastal and other States under UNCLOS with respect to transboundary stocks.

Articles 63 and 64 of UNCLOS cover shared fish stocks (i.e., species that range between a State’s EEZ and international waters) and HMS respectively. Both stocks are to be managed cooperatively through bilateral or multilateral international agreements involving coastal nations that fish such stocks in their EEZ, as well as countries fishing the stocks on the high seas. In the absence of appropriate international organizations, Article 64 directs coastal States and other States whose nationals harvest HMS species in a particular region to cooperate to establish such organizations and to participate in their work. Annex I to UNCLOS provides a list of species considered to be HMS (see Appendix 1).

¹⁵⁸ Buck, E. H. (2004). *UN Convention on the Law of the Sea: Living Resources Provisions*. Congressional Research Service, The Library of Congress, 14, at 3. Retrieved at: https://digital.library.unt.edu/ark:/67531/metacrs10072/m1/1/high_res_d/RL32185_2004Jan07.pdf

¹⁵⁹ In contrast, under US law, the optimal yield cannot be greater than that which results in overfishing - i.e., when the ratio of current fishing mortality (F) and fishing mortality corresponding to MSY (F_{MSY}) is greater than 1.

UNLCOS maintains the freedom to fish on the high seas in Articles 87 and 116. However, Article 116(b) also instructs States that fish on the high seas to do so with respect to the rights, duties and interests of coastal States as provided for, *inter alia*, in Article 63(2) and Articles 64-67.¹⁶⁰ Article 116(b) can be viewed as a critical provision within UNCLOS due to its potentially far-reaching effects. For example, one can infer from the term “inter alia,” as used in Article 116(b), that fishing on the high seas should *also* be conducted with due regard to the duties of coastal States (as articulated in Articles 61 and 62). If that much is accepted, in order for a coastal State to fulfill its duty of ensuring that EEZ fish stocks are managed through proper conservation measures, the high seas fishing activities of DWFNs cannot be allowed to undermine coastal State conservation and management measures.¹⁶¹ According to this conception, there are linkages between particular UNCLOS provisions and those of the 1958 Geneva Convention on high seas fishing. In other words, fishing on the high seas for shared stocks should be conducted with due regard for the rights and obligations of coastal States to maintain healthy stocks while they occur within waters under their national jurisdiction.

Article 117 contains the central tenet of international fisheries management: that States are to cooperate with one another, either regionally or sub-regionally, in the conservation and management of stocks exploited on the high seas. Such cooperative engagement is further elucidated in Article 119, which instructs States to manage fisheries so that they achieve MSY (as qualified by environmental and economic factors, including the special requirements of developing States), and by taking into consideration the effects on dependent species.

¹⁶⁰ Article 87(1) lists the high seas freedoms, with the freedom to fish mentioned in subparagraph (e). The freedom is qualified in Article 87(2), such that high seas fishing shall be exercised with due regard for the interests of other States.

¹⁶¹ Kwiatkowska, B. (1991). Creeping jurisdiction beyond 200 miles in the light of the 1982 Law of the Sea Convention and State practice. *Ocean Development and International Law*, 22, 153-187. See also Kwiatkowska, B. (1993). The high seas fisheries regime: at a point of no return? *The International Journal of Marine and Coastal Law*, 8, 327-358. An alternative view has been proposed by Oda (1989). According to this view, Article 116 only requires coastal States and high seas fishing nations to cooperate on the conservation and management of transboundary stocks. See: Oda, S. (1989). *International Control of Sea Resources* (reprint, with a new introduction). Dordrecht, The Netherlands: Martinus Nijhoff.

UNCLOS was incredibly important in cementing the spatial delineations of the territorial sea and the EEZ – once highly contentious concepts within the law of the sea. The previous discussion focused on the sovereign rights provided to coastal States over their EEZs, as well as the duty of all States to cooperate on the management of HMS stocks. Notably, coastal States under UNCLOS are provided full sovereignty over their territorial sea (0-12 nm) and archipelagic waters, such that they do not have an obligation to accept international management measures for HMS resources within those jurisdictions.¹⁶² Indeed, some of these waters can be quite extensive, resulting in large catches of HMS. The complexity of this issue has manifested within the WCPO tuna fishery, and is explored in greater detail in subsequent sections of the thesis.

Overall, UNCLOS provisions were seen as ambiguous in terms of defining what level of cooperation is required between States on the management of stocks that occur both within the EEZ and on high seas. As Munro (2001) has proposed, UNCLOS Articles 116-120, which relate to fishing on the high seas, are “models of vagueness and imprecision.”¹⁶³ One explanation for this ambiguity is that the risk of over-exploitation on the high seas was low at the time of negotiating the convention, and thus detailed provisions on cooperative processes and strategies were likely viewed as unnecessary. For example, it was believed that the establishment of the EEZ would mean that 90% of global marine fishery harvests would be made from within the 200 nm EEZ, and thus fall under the management jurisdiction of coastal

¹⁶² UNCLOS Article 2. For further reading on this issue, see: Tsamenyi, M., & Hanich, Q. (2012). Fisheries jurisdiction under the Law of the Sea Convention: rights and obligations in maritime zones under the sovereignty of Coastal States. *The International Journal of Marine and Coastal Law*, 27(4), 783-793. -- Garcia, S. M., & Hayashi, M. (2000). Division of the oceans and ecosystem management: A contrastive spatial evolution of marine fisheries governance. *Ocean & Coastal Management*, 43(6), 445-474.

¹⁶³ Munro, G.R. (2001). The United Nations Fish Stocks Agreement of 1995: History and Problems of Implementation. *Marine Resource Economics*, 15, 265-280, at 267.

States.¹⁶⁴ However, this soon proved to be a false assumption, as evidenced by the overfishing crisis which ensued on the high seas.¹⁶⁵

2.4 Historical Milestone 7: United Nations Fish Stocks Agreement Establishes the Principle of Compatibility

The Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks was held between 1993 and 1995. The objective of the conference was to solve what was perceived to be a high seas overfishing crisis and remedy the vagaries of Articles 63 and 64 of UNCLOS. The outcome was the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, commonly known as the UN Fish Stocks Agreement (UNFSA).¹⁶⁶

Convened by the UN General Assembly in 1992, the Conference had the dual purpose of establishing measures for: 1) the conservation and management of transboundary stocks; and 2) the restoration of transboundary stocks to levels that can produce MSY.¹⁶⁷ At time of the Conference, it was believed that many straddling and HMS stocks were either overexploited or depleted.¹⁶⁸ In addition, there was a call for

¹⁶⁴ Loftas, T. (1981). FAO's EEZ programme: Assisting a new era in fisheries. *Marine Policy*, 5(3), 229-239. See also Kaitala, V. and G. Munro. (1993). The management of high seas fisheries. *Marine Resource Economics*, 8, 313-329.

¹⁶⁵ For example, significant harvests of straddling high seas stocks occurred in the North Pacific Donut Hole (pollock fishery) and the Grand Banks (Atlantic cod fishery). Furthermore, during this time there was a climate of apprehension, with DWFNs anticipating that coastal States would try to unilaterally extend their rights over straddling stocks into the high seas (Munro (2001) at 268).

¹⁶⁶ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. New York, USA. Opened for signature on 4 August 1995. Entered in force 11 December 2001. United Nations, *Treaty Series*, 2167(3).

¹⁶⁷ Earth Negotiations Bulletin. (1993). Summary of the First Substantive Session. UNFSA. July 12-30, 1993. Retrieved from <http://www.iisd.ca/fish.html>. At the time, it was believed that many straddling and HMS stocks were subject to intense, unregulated fishing pressure, and were either being over-exploited or depleted.

¹⁶⁸ Ibid.

broader consideration of ecosystem impacts and the use of the precautionary approach to the management of high seas fisheries.¹⁶⁹

The chief task of the Conference was to harmonize the management of transboundary stocks within the EEZ and on the high seas while staying within the UNCLOS framework.¹⁷⁰ During the negotiations, the differing views of coastal States and fishing States with regard to the issue of management control were stark. Indeed, this issue had been highly contested between the two sets of States since the late 19th century. From the outset of the Conference, coastal States pushed for an agreement that would apply to the high seas only, citing their sovereign rights over EEZ fishery resources as provided for in Article 61 of UNCLOS.¹⁷¹ Furthermore, in the period leading up to the Conference, coastal State interest had shifted from adequate fishery conservation and management (as envisioned in UNCLOS) to a recognition of the ‘special interests’ of coastal States with regard to the control and allocation of fisheries resources on the high seas. This shift only served to stir opposition from fishing States, with negotiations stalling as a result.¹⁷²

As the negotiations inexorably continued, it was apparent that both sides would need to make a concession. The compromise offered by DWFNs was that the Conference would produce a binding agreement – a result this group initially opposed. On the coastal State side, the agreement would apply to cover the entire range of the shared stock, both within the EEZ (a proposition coastal States had originally rejected), and on the high seas.¹⁷³ However, striking the balance between the interests of coastal States in shared stocks, and the rights of fishing States on the high seas, was the subject of significant debate. This

¹⁶⁹ Vicuna, F. O. (1999). *Changing international law of high seas fisheries*. Cambridge, UK: Cambridge University Press, at 124.

¹⁷⁰ Earth Negotiations Bulletin. (1993). Summary of the First Substantive Session. UNFSA.12-30 July 1993. Retrieved from: <http://www.iisd.ca/fish.html>.

¹⁷¹ Balton, D. A. (1996). Strengthening the law of the sea: the new agreement on straddling fish stocks and highly migratory fish stocks. *Ocean Development & International Law*, 27(1-2), 125-151. The United States found itself in both “camps,” being both a coastal State with a large EEZ, but also having interests as a fishing State (e.g., US tuna purse seine fleet); Balton (1996) at 133.

¹⁷² Vicuna (2001) at 277. See also: Juda (1996) at 279.

¹⁷³ Balton (1996) at 136.

was largely due to the inherent tension between UNCLOS provisions that preserve the freedom to fish on the high seas (subject to the duties, rights and interests of coastal States as contained in Article 116), and the requirement that coastal States show due regard to the rights and duties of other States in exercising their sovereign rights in the EEZ (Article 56 (b)(2)).

Over the course of three years and five conferences, UN delegates negotiated a new legally binding international instrument. The final convention text was said to be based on three pillars: 1) compatibility between EEZ and high seas management regimes; 2) high-seas enforcement by all parties to the agreement; and 3) provision for the peaceful settlement of disputes.¹⁷⁴ It is important to note that UNFSA was negotiated to *implement* UNCLOS, not to supersede it. As Balton (1996) has affirmed, “UNFSA never strays from UNCLOS,” but rather serves to build upon the UNCLOS framework.¹⁷⁵ This observation is made strikingly clear in Article 4 of UNFSA:

Nothing in this Agreement shall prejudice the rights, jurisdiction and duties of States under the Convention. This Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention.¹⁷⁶

As identified in Article 3 of UNFSA, the convention applies to the conservation and management of straddling fish stocks and highly migratory species beyond areas of national jurisdiction. However, the principles and provisions contained in Article 6 (Precautionary Approach) and Article 7 (Compatible Measures) also apply to EEZ waters. UNFSA also instructs coastal States to apply the general principles enumerated in Article 5 (General Principles), *mutatis mutandis*, meaning coastal States need only apply those measures that require alteration with respect to their EEZ management. The main outcome of UNFSA was establishing a framework for the international cooperation on the management of shared fish stocks as they occur in the EEZ and on the high seas.

¹⁷⁴ Juda (1996) at 285.

¹⁷⁵ Balton (1996) at 137.

¹⁷⁶ Article 4 UNFSA.

An important consideration with respect to Article 7 is that coastal States are not obligated to establish compatible measures for their territorial sea and archipelagic waters. As previously discussed, under UNCLOS coastal States possess full sovereignty over their territorial sea (0-12 nm) and archipelagic waters, such that they do not have an obligation to accept international management measures for HMS resources that occur within these jurisdictions. Support for this distinction is found in the opening paragraph of Article 7, which is prefaced with the phrase “without prejudice to the sovereign rights of coastal States,” and continues with “for the conservation and management of living marine resources found in waters under their national jurisdiction.” The use of the term “without prejudice” in conjunction with “sovereign rights” has been interpreted to mean that the duty to implement the relevant measures only applies to the EEZ and not the territorial sea or archipelagic waters, which are under the sovereign control of coastal States as provided for under UNCLOS.¹⁷⁷

2.4.1 Core Provisions of UNFSA

The mechanism for cooperation between coastal States and DWFNs is identified in Article 8(1) which states:

[c]oastal States and States fishing on the high seas shall pursue cooperation in relation to straddling fish stocks and highly migratory fish stocks either directly or through appropriate subregional or regional fisheries management organizations (RFMOs) or arrangements, taking into account the specific characteristics of the subregion or region, to ensure effective conservation and management of such stocks.

Article 8(2) encourages States to enter into cooperative consultations without delay, and to act in good faith with due regard to the rights, interests and duties of other States until agreement on sub-regional or RFMO arrangements have been made.

Article 8(3) provides that if sub-regional or RFMO arrangements exist, States shall give effect to their duty to cooperate by becoming members of such arrangements or by agreeing to apply the conservation

¹⁷⁷ Tsamenyi, M., & Hanich, Q. (2012). Fisheries jurisdiction under the Law of the Sea Convention: rights and obligations in maritime zones under the sovereignty of Coastal States. *The International Journal of Marine and Coastal Law*, 27(4), 783-793, at 786..

and management measures which have been established by such arrangements to their fisheries. Article 8(3) also provides that the terms of participation in any arrangement shall not discriminate against any State or group of States which have a real interest in the fisheries concerned. Article 8(4) states that only those States which are members of sub-regional arrangements or RFMOs, or which agree to apply the conservation and management measures established by such arrangements or organizations, shall have access to the fishery resources to which those measures apply. It is this last provision that is perhaps the most influential in terms of stimulating cooperation. That is, in order to gain access to a particular fishery, a fishing nation must actively cooperate through the relevant sub-regional arrangement or RFMO.

Article 5 sets out the General Provisions of agreement with respect to international cooperation. While some paragraphs echo the language found in UNCLOS, others introduce novel concepts, such as the precautionary approach. This is exemplified in Article 5(a), which requires the adoption of measures to ensure the long-term sustainability of transboundary stocks and to promote the objective of their optimum utilization. Although lacking a definition of ‘long-term sustainability’, Article 5(b) requires that measures be based on the best scientific evidence available, and that stocks be kept at levels capable of producing MSY. Even so, such measures may be qualified by relevant environmental and economic factors, including the special requirements of developing States, and by taking into account fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether sub-regional, regional or global.¹⁷⁸ The general provisions also require the application of the precautionary approach (5(c)), an assessment of the impacts of fishing and other human impacts, as well as the effects of environmental factors on the status of targeted and non-targeted stocks (5(d)). Article 5(e) requires consideration of ecosystem-based measures, while Article 5(f) requires that pollution, waste, discards and derelict fishing gear be minimized.

¹⁷⁸ Article 5 UNFSA.

Article 5(g) requires the protection of marine biodiversity. Article 5(f) requires the prevention of overfishing and the elimination of excess fishing capacity. Lastly, Article 5(i) requires States to take into account the interests of artisanal and subsistence fishers when discharging their cooperative duty in accordance with the convention.

Article 6 details the application of the precautionary approach under the UNFSA, directing States to: a) collect comprehensive data and use the best scientific information available; b) exercise caution when information is uncertain, unreliable or inadequate; c) take into account the status of target, non-target and dependent stocks; and d) develop target and limit reference points. Annex II of UNFSA provides guidelines for the application of precautionary reference points, stating that the fishing mortality rate that generates MSY should be used as a minimum standard for limit reference points.¹⁷⁹

Article 7 is dedicated to the Principle, providing that measures established by coastal States for HMS resources found in their EEZ waters should be compatible with high seas measures, and *vice versa*.¹⁸⁰

Article 7(2) requires that conservation and management measures established for the high seas and within the EEZ be compatible to ensure conservation of these fish stocks in their entirety. Article 7(2)(a) lists several considerations to be taken into account when negotiating measures in terms of compatibility, including but not limited to: 1) the existing measures adopted by coastal States for waters under their national jurisdiction in accordance with Article 61 of UNCLOS; 2) the biological unity and distribution of the stocks and the extent to which such stocks are fished in waters under national jurisdiction; and 3) the respective dependence on HMS fish stocks by coastal States and States fishing on the high seas. The following chapter will discuss these issues in greater detail.

¹⁷⁹ Annex II paragraph 7 UNFSA.

¹⁸⁰ Elferink, A.O. (2001). Determination of compatible measures for straddling and highly migratory species. *Max Planck Yearbook of United Nations Law*, 5, 551.

Article 8 directs States to cooperate internationally through appropriate sub-regional or regional fisheries management organizations (RFMOs) or arrangements, and to do so without delay (Article 8(2)). Article 9 sets out the framework for developing sub-regional arrangements or RFMOs, while Article 10 delineates the functions of such organizations. Other articles of UNFSA which are relevant to this analysis cover data collection (Article 14), enforcement and compliance (Articles 19-22), as well as the special requirements of developing States (Article 24).

2.4.2 Post-UNFSA

Since the 1995 UNFSA, the following RFMOs have been established:

- 1) Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (2000);
- 2) South East Atlantic Fisheries Organization (2001);
- 3) South West Indian Ocean Fisheries Commission (2004);
- 4) South Pacific Regional Fisheries Management Organization (2009); and
- 5) North Pacific Fisheries Commission (2012);

Furthermore, RFMOs which pre-date UNFSA (such as the Inter-American Tropical Tuna Commission) have revised their respective charters to incorporate UNFSA provisions – a course of action which is encouraged in Article 13.¹⁸¹ UNFSA came into force in 2001 and currently 59 States are signatories and 88 are parties to the agreement. In 2006, a Review Conference of UNFSA was undertaken. Based on the findings of that Review Conference, Balton and Koehler (2006) have identified UNFSA as being the preeminent instrument in the field of international fisheries management, with virtually all governments represented at the Review Conference (including those who are not yet party to agreement), indicating their acceptance of the treaty as an expression of the basic standards for the management of ocean

¹⁸¹ Balton, D. A., & Koehler, H. R. (2006). Reviewing the United Nations Fish Stocks Treaty. *Sustainable Development Law & Policy*, 7(1), 5-9, at 8.

fisheries.¹⁸² However, several major fishing nations such as China, Korea and Indonesia, as well as many Latin American countries, are yet to become parties to the treaty.¹⁸³ Stated reasons for resisting UNFSA include the belief that the provisions of the treaty related to high seas boarding and inspection infringe upon flag nation rights, as well as the view that Article 7 of UNFSA prejudices the rights of coastal States (as provided for by UNCLOS), by requiring cooperation on straddling/HMS stocks that occur in their EEZ.¹⁸⁴

Meetings of the UNFSA Review Conference were held in 2010 and 2016.¹⁸⁵ The 2010 Review Conference reaffirmed that UNCLOS and UNFSA provide the legal framework for conservation and management of straddling fish stocks and highly migratory fish stocks, but noted that several of such species were severely over-exploited, thus calling into the question the effectiveness of international RFMO management.¹⁸⁶ The 2016 Review Conference noted, among other things, increased participation in the Agreement; the formation of new regional fisheries management organizations and arrangements; the enhanced collaboration between those organizations and arrangements; and the imminent entry into force of the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing of FAO.¹⁸⁷ It was identified at the conference that RFMOs are crucial in the implementation of UNFSA; however, several delegations highlighted the need for increased collaboration through RFMOs to adopt science-based and compatible measures.¹⁸⁸

¹⁸² Ibid at 7.

¹⁸³ Ibid.

¹⁸⁴ Ibid.

¹⁸⁵ For more information on the UNFSA Review Conferences see:

http://www.un.org/depts/los/convention_agreements/review_conf_fish_stocks.htm

¹⁸⁶ United Nations General Assembly. (2010). Report of the resumed Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. 24-28 May 2010. New York, USA. 45, at 19.

¹⁸⁷ United Nations General Assembly (2016). *Report of the resumed Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*. 23-27 May 2016. New York, USA.7.

¹⁸⁸ Ibid at 8.

2.5 Chapter Conclusion

It is clear from the preceding discussion that the law of the sea has evolved as a result of several factors, including unilateral and multilateral changes to marine jurisdictional limits, resource depletion coupled with advancements in fishing technology, as well as the persistent tension over the competing interests of coastal States and high seas fishing States.

Through an historical analysis starting with the 17th century, this chapter has identified the following milestones as having influenced the current state of international law with respect managing marine fisheries:

Historical milestone 1: *mare liberum*, or the freedom of the seas, becomes the prevailing doctrine within the law of the sea.

Historical milestone 2: The three mile territorial sea limit is established as customary international law, with subsequent treaties allowing for the exclusion of foreign fishermen in this zone.

Historical milestone 3: Marine resources are determined to be exhaustible, with activities within territorial waters and on the high seas affecting the long-term sustainability of such resources.

Historical milestone 4: Coastal States make claims for broader areas of national jurisdiction beyond their coastlines to counter the negative effects of unfettered fishing on the high seas by DWFNs.

Historical milestone 5: UNCLOS defines the territorial sea and EEZ, establishes standards for the management of marine resources found within the EEZ and on high seas, recognizes the rights, duties and interests of coastal States and States fishing on the high seas.

Historical milestone 6: UNCLOS requires international cooperation for the conservation and management of transboundary fish stocks.

Historical milestone 7: UNFSA establishes the Principle of Compatibility to bridge the gap between the conservation and management of transboundary stocks found within the EEZ and on the high seas.

The Freedom of the Seas doctrine (*mare liberum*), which was first articulated in the early 17th century but gained favor in the 19th century, remains the cornerstone of contemporary international maritime law

through UNCLOS. However, the freedoms granted to States by UNCLOS come with a corresponding set of obligations, not the least of which is to consider the rights and duties of other States. UNCLOS also served to define areas of national jurisdiction out to 200 nm, thus establishing the concept of the EEZ. In doing so, UNCLOS reallocated fishery resources to coastal States by providing such States with sovereign rights over resources found within their EEZ. In exercising their sovereign rights, however, UNCLOS requires coastal States to fulfil certain duties, such as ensuring that stocks within their EEZ are properly managed. In this way, UNCLOS endows coastal States with a special interest in the management of high seas fisheries.

For transboundary stocks, the advancement of technology has allowed for greater fishing power and the ability to fish farther from shore, leading to the unfettered exploitation of shared stocks beyond the EEZ. Although UNCLOS directed States to cooperate internationally on the conservation of transboundary stocks found within EEZs and on the high seas, it lacked specific direction on the fundamental terms for international cooperation. The result was rapidly expanding fisheries and a concomitant global concern over the status of transboundary stocks. Thus, the expanded EEZ jurisdiction of coastal States, coupled with the threat of overexploitation of transboundary stocks, firmed international resolve for a solution to what many identified as a global fishing crisis only a few years after the signing of UNCLOS.

The international community responded with UNFSA, which continued where UNCLOS left off – international cooperation. The Principle of Compatibility emerged as a means to reconcile the different approaches to fisheries management for stocks that occur within the EEZ and on the high seas. The Principle itself is not exacting, but rather intuitive, and although not identified formally prior to UNFSA, some of the basic elements have been applied in the past (e.g., the Bering Fur Seal Conflict).

Despite the importance of the Principle of Compatibility in terms of bridging the gap between EEZ and high seas management for shared stocks, questions remain over its interpretation and application within

RFMOs. Moreover, tensions persist over how best to balance the interests of coastal States and high seas fishing States. The following chapter takes a closer look at the Principle and how it has been employed in UNFSA. The chapter also investigates how the Principle addresses the management of shared stocks in the relevant maritime jurisdictional zones, and further, how it could be used to resolve the problems discussed above, if at all.

Chapter 3: Bridging the Gap: the Principle in detail

3.1 Introduction

Central to UNFSA are the compatibility provisions, which serve to bridge the gap between EEZ and high seas management of transboundary fish stocks.¹⁸⁹ This chapter provides a detailed analysis of the Principle,¹⁹⁰ as well as a review of its origins within the negotiations of UNFSA. Indeed, these negotiations took place during a period where the high seas were believed to be the subject of increasing, unmitigated fishing exploitation. Against this backdrop, coastal States and high seas fishing States saw the UNFSA conference as potentially eroding the rights which had accrued to them under UNCLOS. Negotiating the Principle was indeed a challenge, but ultimately an entire article dedicated to the Principle was incorporated into the agreed text of UNFSA. This chapter analyzes Article 7 of UNFSA with a view to understanding the meaning of the text and how to interpret the article in practice.

3.2 The Need for the Principle?

The world was facing a global fishing crisis in the lead up to the UNFSA conference, with fisheries, catches and gear types on the high seas being largely unregulated.¹⁹¹ Although UNCLOS directs coastal States and high seas fishing States to cooperate, it does not provide guidance on *how* such cooperation should occur. Nor does it contain definitive provisions on how to balance the rights, obligations and

¹⁸⁹ Nandan, S. (2005). *Moving words into action*. Conference on the Governance of High Seas Fisheries and the United Nations Fish Stocks Agreement. Keynote speaker. Convened by Fisheries and Oceans, Canada. 1-5 March 2005. St. John's Newfoundland and Labrador. 3.

¹⁹⁰ A principle can be defined as: a basic belief, theory, or rule that has a major influence on the way in which something is done. Retrieved from: <http://www.macmillandictionary.com/us/dictionary/american/principle>

¹⁹¹ Munro (2001) at 123. See also Kwiatkowska (1993), who describes high seas driftnet fishes as being a significant issue in the period leading up to the UNFSA.

interests of coastal States and fishing States with respect to the management of straddling or highly migratory fish stocks.¹⁹² The UNSFA conference was held to resolve this problem.

A major outcome of UNFSA was agreement on the Principle, which in simple terms requires the establishment of compatible measures within the EEZ and on the high seas. Compatibility can be defined as: “a state in which two things are able to exist or occur together without problems or conflict.”¹⁹³ As described in the preceding chapter, the Principle serves to balance the rights and obligations of coastal States and States fishing on the high seas with respect to the management of shared stocks.

The Principle is considered to have stemmed from the 'consistency principle' found in the 1978 convention establishing the Northwest Atlantic Fisheries Organization (NAFO).¹⁹⁴ In NAFO, for example, members are to ensure consistency in the conservation and management of straddling stocks within EEZs and on the high seas.¹⁹⁵ The consistency principle within NAFO is said to lean towards the interests of coastal States, such that high seas measures are to be consistent with those adopted in the EEZ

¹⁹²Burke, W. T. (2000). Compatibility and precaution in the 1995 Straddling Stock Agreement. In Scheiber, H. (Ed). *Publication on Ocean Development* (pp.105-126). London, UK: Nijoff. -- Straddling fish stocks are not defined under UNCLOS, with the convention instead referring to “the same stock or stocks of associated species which occur both within the exclusive economic zone and in an area beyond and adjacent to the zone”. See: Maguire, J. J. (2006). *The state of world highly migratory, straddling and other high seas fishery resources and associated species* (No. 495). Rome, FAO.

¹⁹³ Retrieved from: <https://en.oxforddictionaries.com/definition/compatibility>

¹⁹⁴ Hayashi, M. (1995). The 1995 Agreement on the conservation and management of straddling and highly migratory fish stocks: significance for the Law of the Sea Convention. *Ocean & Coastal Management*, 29(1-3) 51-69.

¹⁹⁵ Convention on Future Management Cooperation in the Northwest Atlantic Fisheries. Open for signature on 24 October 1978. Entered in force on 1 January 1979. United Nations, Treaty Series, 1135. See Article 11(3) for the ‘consistency principle.’

of a coastal State.¹⁹⁶ It has also been argued that the ‘consistency principle’ is implicit in the relationship between UNCLOS Articles 61-64 and Article 116. Indeed, these articles suggest that, in order to fulfil their obligations under UNCLOS, coastal States are required to maintain management interests in fisheries beyond the EEZ and into the high seas.¹⁹⁷

By instituting the consistency principle, NAFO may have succeeded in addressing the management of transboundary cod stocks in their region. However, going into the UNFSA conference, there was clearly no international consensus on how to balance the rights of coastal States and high seas fishing nations with regard to straddling stocks or highly migratory species. For example, high seas fishing nations sought to maintain their right to fish on the high seas (as stipulated in Article 116 of UNCLOS), whereas coastal States were keen to curb high seas fishing – an activity that conflicted with their obligation to prevent the overexploitation of fish stocks when they occur within their national waters.

¹⁹⁶ Kwiatkowska, B. (1993). The high seas fisheries regime: at a point of no return? *International Journal of Marine and Coastal Law*, 8(3), 327-358. In the mid-1980s and within NAFO, however, the consistency principle was extensively challenged by high seas fishing States of the European Commission (e.g., Spain) in relation to quotas set by Canada for straddling stocks within its EEZ. See: Applebaum, B. (1993). Straddling stocks - international law and the Northwest Atlantic problem. In L.S. Parsons and W.H. Lear (Eds.), *Perspectives on Canadian marine fisheries management*. Ottawa, Canada. National Research Council of Canada. The NAFO experience, along with other EEZ/high seas conflicts of the mid 1980s, bolstered support for a new agreement relating to straddling and HMS stocks, which culminated in the UNFSA. Following the establishment of NAFO, several other agreements incorporated the consistency principle, including but not limited to: the 1980 Northeast Atlantic Fisheries Commission (NEAFC) Convention, the 1984 Vina del Mar Declaration of the Permanent Commission for the South Pacific (PCSP), and the 1989 Lima Agreement Creating the Eastern Pacific Tuna Fishing Organization (EPTFO). See Kwiatkowska (1993) at 333.

¹⁹⁷ Article 61 requires coastal States to prevent overexploitation of stocks found in their EEZs. See Miles, E.L., & Burke, W.T. (1988). Pressures on the United Nations Convention on the Law of the Sea of 1982 arising from new fisheries conflicts: the problem of straddling stocks. *Ocean Development and International Law*, 20, 343-357. See also Applebaum (1993) and Kwiatkowska (1993). Recall that under Article 61, coastal States have a primary duty to ensure that living marine resources found in their EEZ are not endangered by over-exploitation. Article 62 requires coastal States to promote the objective of optimal utilization within their EEZ. Article 63 requires coastal States and DWFNs to “seek to agree” on conservation measures for straddling stocks outside the EEZ. Article 64 requires coastal States and DWFNs to cooperate with a view to ensuring the optimal utilization of HMS stocks both within and outside the EEZ. Article 116 provides that a State’s right to fish on the high seas is subject to the rights, duties, and interests of coastal States. It is also noteworthy that during UNCLOS negotiations, some countries attempted to make the consistency principle explicit in Article 63. However, the proposal ultimately failed, with the result being the lack of specificity found in Articles 63 and 64. At the 11th session Australia, Canada, Cape Verde, Ireland, the Philippines, Sao Tome and Principe, Senegal and Sierra Leone proposed an amendment to the existing text of Article 62(3) that would have provided, *inter alia*, that high seas measures take into account measures applied by coastal States to the same stocks within their EEZ. See http://legal.un.org/diplomaticconferences/lawofthesea-1982/docs/vol_XVI/a_conf-62_1-114.pdf.

3.3 Negotiating the Principle in UNFSA

The First Session of the UNFSA conference was held in April 1993 and served to organize the work to be accomplished in the sessions to follow. At this meeting, Ambassador Satya Nandan (Fiji) was chosen to chair the conference, and he identified the “high seas problem” as being the result of a lack of cooperation and management.¹⁹⁸ Nandan further emphasized that:

the mandate of the Conference [was] not about the extension of national jurisdiction or the abridgement of the right of States to fish in the high seas...but rather to resolve the festering problems of high seas fishing in order to give full and faithful effect to the very delicately balanced provisions of the Convention (UNCLOS)...¹⁹⁹

The Second Session of the conference took place in July 1993, with Nandan asserting that “the biological nature and distribution of these stocks necessitate compatible and coherent management measures over their entire range.”²⁰⁰ This was followed by several days of opening statements by participating States, with coastal States expressing strong support for high seas measures to be consistent with EEZ-based measures. Meanwhile, high seas fishing States propounded that the adopted measures should not unduly infringe upon the freedom to fish on the high seas.²⁰¹ Despite such divergent statements, there was consensus on the need for the negotiated agreement to ensure consistency between EEZ and high seas

¹⁹⁸ Nandan, S. (1993, April 19). Statement made by the chair of the Conference at the opening of the First Session. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/Conf.164/7. Nandan was a seasoned diplomat and expert on the Law of the Sea, having served from 1983-1992 as UN Under-Secretary-General for Ocean Affairs and the Law of the Sea, and as Representative of the Secretary-General for the Law of the Sea.

¹⁹⁹ Ibid. Chair Nandan’s opening remarks at the First Conference Session. It is also important to note that a formal agreement was not included in the mandate adopted by the UN General Assembly for the conference. The UN General Assembly mandate for the conference was to: a) identify and assess existing problems with respect to straddling and HMS stocks; b) consider means for improving cooperation among States; and c) formulate appropriate recommendations. See UN General Assembly Resolution 47/192 of 22 December 1992.

²⁰⁰ Nandan, S. (1993, July 12). Statement made by the chair of the Conference at the opening of the Second Session. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/Conf.164/12.

²⁰¹ See Earth Negotiations Bulletin (ENB 07:02). Retrieved from: <http://iisd.ca/vol107/0702001e.html>.

management measures.²⁰² Nandan acknowledged the support for consistent measures and stated that the need to harmonize EEZ and high seas measures was at the heart of the Conference's negotiations.²⁰³

Recognizing there was strong support for this concept within the early debates of the Conference, the first draft of the agreement, called the "Negotiating Text," included Article IX - "Compatibility and Coherence Between National and International Conservation Measures for the Same Stock."²⁰⁴ For brevity, a review of the provisions included in Article IX will not be provided herein; however, it is worth mentioning that several of the initial provisions were not maintained in the final agreement.²⁰⁵ Discussion on this draft article was varied, and as expected, coastal States made strong statements in support of measures that would not undermine their sovereign rights. On the other hand, DWFNs made several statements regarding the importance of recognizing the biological unity of stocks in developing compatible measures.²⁰⁶

The Third Session of the conference was held in March 1994, with the negotiations again centering on the issue of compatibility. Discussions advanced to a point where there was general support for the need to establish compatible measures for waters under national jurisdiction and on the high seas, and to ensure that common minimum standards were applied to the management of stocks in both maritime zones.²⁰⁷ However, the area that presented difficulty was the application of minimum standards in the EEZ and in the adjacent high seas. This was due to the sovereign rights of coastal States to manage their resources, as

²⁰² Nandan, S. (1993, July 15). Statement made by the Chairman at the conclusion of the general debate. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/CONF.164/19. Retrieved from <http://daccess-dds-ny.un.org/doc/UNDOC/LTD/N93/409/02/PDF/N9340902.pdf?OpenElement>

²⁰³ Nandan, S. (1993, July 30). Statement made by the Chairman at the closing of the second Conference. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/CONF164/15. Retrieved from <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N93/443/82/PDF/N9344382.pdf?OpenElement>

²⁰⁴ United Nations. (1993). Negotiating text prepared by the chairman of the conference. United Nations Conference on Straddling Fish Stocks and Highly Migratory Species. 12-30 July 1993. New York, USA. A/CONF.163/13. 23.

²⁰⁵ One example is the concept of ecosystem-based management, which was introduced by a delegate to be included in the compatibility section. See Earth Negotiations Bulletin (EBN 07:30). Retrieved from: <http://www.iisd.ca/vol07/0730017e.html>.

²⁰⁶ Ibid.

²⁰⁷ Earth Negotiations Bulletin. *Notes on the negotiation of Section III - General Principles of the Negotiating Text*. Retrieved from <http://www.iisd.ca/vol07/0739010e.html>.

well as the interrelationship of the stocks found in the adjacent high seas.²⁰⁸ In other words, ‘the devil was in the detail.’ As the contents of the next iteration of the Negotiating Text were divulged, several countries conveyed concerns that the new text shifted the balance towards high seas fishing States rather than coastal States. Moreover, concerns were raised that the new text did not adequately recognize the interest of coastal States in the management of high seas fisheries.²⁰⁹

Nandan opened the Fourth Session by stating that the voluntary system of regulation of global fisheries had failed.²¹⁰ He identified that the rampant use of subsidies were overcapitalizing fishing fleets and that the rate of increase for fishing fleets has more than doubled the rate of increase in catch. Nandan stated that the right to fish, whether in the EEZ or on the high seas, is a conditional right that is accompanied by the duty to conserve and manage fishery resources for future generations, and further, that any abuse of this right is an act against humanity. He reminded delegates that the world was watching and expecting the conference to solve the global fishing crisis.²¹¹

Nandan further explained that in order for the agreement to be effective, the adopted conservation and management measures for the EEZ and adjacent high seas areas must be compatible and coherent, taking into account the biological unity of the stocks and the supporting ecosystem.²¹² To counter negotiations that were faltering due to jurisdictional issues, Nandan reminded delegates that because straddling and HMS stocks do not recognize jurisdictional boundaries, it is critical that consistent management is applied

²⁰⁸ Ibid.

²⁰⁹ Ibid. See statements made by India (supported by Argentina and other Latin American countries), and Australia (on behalf of South Pacific countries). The Third Session also revealed that the Conference would establish a binding agreement - something which exceeded the mandate of the Conference as set out by the UN General Assembly. Although the idea of a binding agreement was discussed at the Third Session, there was no consensus on the form of the agreement at that meeting. See also, Discussion on the Final Outcome of the Conference. Retrieved from <http://www.iisd.ca/vol07/0739022e.html>.

²¹⁰ Nandan, S. (1994, August 15). Statement made by the Chairman of the Conference at the opening of the Fourth Session. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/CONF.164/21. Retrieved from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N94/331/19/PDF/N9433119.pdf?OpenElement>

²¹¹ Ibid.

²¹² Ibid.

throughout a stock's range.²¹³ A complicating factor in the negotiations, however, was that although UNCLOS requires States that are members of regional or sub-regional organizations to share data on fisheries, at the time of the Conference many high seas fishing States were not sharing their data on high seas catches. Thus, the amount of catches of straddling and HMS stocks was largely unknown at the time.²¹⁴

At the Fourth Session of the Conference, negotiations over the proposed compatibility provisions were suggestive of the chair's draft representing a somewhat more balanced approach to the interests of coastal States and high seas fishing States. Although a few States tried to influence the text to support their specific circumstances, the text went forward largely unchanged from the chair's draft.²¹⁵ It was agreed that two more sessions of the Conference were needed to finalize the agreement, with the Fifth Session to finalize negotiations and the Sixth Session to harmonize the agreed text in several languages.

Nandan opened the Fifth Session by reviewing some of the intersessional discussions that had taken place.²¹⁶ He mentioned that the compatibility provisions of the draft agreement had been the focus of many of the intersessional meetings, further demonstrating the importance of this issue to the agreement.²¹⁷ The Fifth Session added two additional paragraphs to the draft Article 7, covering the notification of management measures adopted within the EEZ and on the high seas. At the close of the session, Nandan related that the draft agreement was based on three pillars: 1) effective management

²¹³ Ibid.

²¹⁴ FAO. (1993). *Some high seas fisheries aspects relating to straddling and highly migratory fish stocks*. United Nations Conference on Straddling and Highly Migratory Fish Stocks. A/CONF.164/Inf/4. Retrieved from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N93/349/45/PDF/N9334945.pdf?OpenElement>.

²¹⁵ Earth Negotiations Bulletin. ENB:-07:43. Part II Conservation and Management of Straddling and Highly Migratory Fish Stocks. Retrieved from <http://www.iisd.ca/vol07/0743015e.html>. Iceland, for example, attempted to modify the text of Article 7(2)(e) by including the statement: “[to] take into account the interest of coastal States whose economies are overwhelmingly dependent on the exploitation of living marine resources.” Although supported by other countries, this proposal was not ultimately accepted.

²¹⁶ Nandan. S. (1995 27 March). Statement by the chairman at the closing of the Fifth Session. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/CONF./164/28. Retrieved from <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N95/129/83/PDF/N9512983.pdf?OpenElement>

²¹⁷ Ibid.

through the establishment of compatible measures; 2) facilitating compliance through high seas enforcement by State parties on vessels of other State parties; and 3) the peaceful settlement of disputes.²¹⁸

At the Sixth and final session, interventions on the compatibility provisions were still varied, with some delegates arguing that a balance had not been struck between the interests of coastal States and those of high seas fishing States. Meanwhile, other delegates indicated that the compatibility provisions did not mesh well with other draft articles of the agreement.²¹⁹ Nonetheless, common ground on the text was found and the agreement was signed on December 4, 1995. In his closing remarks, Nandan emphasized that the compatibility provisions represent one of the cornerstones of the agreement.²²⁰

In summary, the Principle was a critical issue in the negotiation of UNFSA, and reaching consensus on the provisions related to the Principle (e.g., Article 7) was fraught with difficulty.²²¹ During the negotiations, the Principle invoked trepidation among coastal States, with such States fearing that its implementation would infringe upon coastal State sovereign rights in the EEZ as provided for by Article 61 of UNCLOS. On the other side, high seas fishing nations were anxious over the potential for coastal States to gain extended control over shared stocks occurring on the high seas, and that the freedom of the high seas guaranteed by Article 116 of UNCLOS would be threatened. The formula, as articulated by Nandan, was that consensus on the Principle and on the agreement in general was forged by adhering to the rights and duties of States under the UNCLOS.²²²

²¹⁸ Ibid.

²¹⁹ Earth Negotiations Bulletin, 7(47). Retrieved from <http://www.iisd.ca/vol07/0747000e.html>

²²⁰ Nandan, S. (1995, July 24). Statement by the Chairman at the closing of the Sixth Session. United Nations Conference on Straddling Stocks and Highly Migratory Species. A/CONF.164/30. Retrieved from <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N95/284/53/PDF/N9528453.pdf?OpenElement>

²²¹ Nandan, S. (1995). Conservation and management of straddling and highly migratory fish stocks under the Convention on the Law of the Sea. *American Society of International Law*, 89, 454-456.

²²² Ibid. Article 4 states that “nothing in this Agreement shall prejudice the rights, jurisdiction, and duties of States under UNCLOS. This Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention.”

3.4 UNFSA Article 7: the compatibility provisions

As described in the previous section, the primary driver in reaching consensus on UNFSA was that the agreement was purposefully crafted to adhere to UNCLOS. The subordinate relationship of UNFSA to UNCLOS was also noted in Article 7 paragraph 1, such that the exclusivity of the EEZ (as far as coastal States were concerned) was not affected, and that the right to fish on the high seas was also maintained. Even so, both these rights were made subject to cooperation within RFMOs.²²³

Article 7(1):

Without prejudice to the sovereign rights of coastal States for the purpose of exploring and exploiting, conserving and managing the living marine resources within areas under national jurisdiction as provided for in the Convention, and the right of all States for their nationals to engage in fishing on the high seas in accordance with the Convention...

In this regard, the sovereign rights of coastal States over living marine resources in their EEZs (UNCLOS Article 56 and 61-64) are maintained, and the right of all States to engage in fishing on the high seas (UNCLOS Articles 116), is protected. By remaining consistent with the drafting of Articles 63 and 64 of UNCLOS, Article 7(1) maintains the textual distinction with respect to straddling stocks and HMS. For example, Article 7(1)(a) requires States to seek to agree upon measures necessary for the conservation of straddling stocks, whereas Article 7(1)(b) requires States to cooperate “with a view” to ensuring conservation and optimum utilization with respect to HMS stocks.

Article 7(1)(a):

with respect to straddling fish stocks, the relevant coastal States and the States whose nationals fish for such stocks in the adjacent high seas area shall seek, either directly or through the appropriate mechanisms for cooperation provided for in Part III, to agree upon the measures necessary for the conservation of these stocks in the adjacent high seas area;

Article 7(1)(b):

with respect to highly migratory fish stocks, the relevant coastal States and other States whose nationals fish for such stocks in the region shall cooperate, either directly or through the appropriate mechanisms for cooperation provided for in Part III, with a view to ensuring conservation and promoting the objective of optimum utilization of such stocks throughout the region, both within and beyond the areas under national jurisdiction.

²²³ Ibid at 454.

The textual differences between paragraph (a) and paragraph (b) above suggest that paragraph (a), as it relates to the conservation of straddling stocks, is more rigid than paragraph (b), which relates to HMS stocks. Paragraph (b) also incorporates the concept of optimal utilization, which suggests socio-economic factors may be involved. The language found in Article 7 paragraphs 1(a) and 1(b) is almost verbatim to that used in Articles 63 and 64 of UNCLOS respectively. However, as Burke (2000) has asserted, not only are these UNCLOS provisions not well understood, their lack of specificity contributed to the need for UNFSA to address the regulation of fisheries on the high seas.²²⁴

If Article 7(1) provides the Principle's foundational adherence to UNCLOS, then Article 7(2) provides the working parts. Pursuant to Article 7(2), States have a duty to cooperate for the purpose of achieving compatible measures, with those measures "established" for the high seas, and those "adopted" for areas under national jurisdiction, needing to be compatible to ensure conservation of transboundary stocks in their entirety.²²⁵

Article 7(2):

Conservation and management measures established for the high seas and those adopted for areas under national jurisdiction shall be compatible in order to ensure conservation and management of the straddling fish stocks and highly migratory fish stocks in their entirety. To this end, coastal States and States fishing on the high seas have a duty to cooperate for the purpose of achieving compatible measures in respect of such stocks.

Indeed, this instruction is fundamental to the Principle's application within UNFSA. It mandates cooperation to ensure that compatible measures are developed and applied wherever these shared stocks may swim – whether in the high seas or in areas of national jurisdiction (or both).

²²⁴ Burke, W. T. (2000). Compatibility and precaution in the 1995 Straddling Stock Agreement. *In Law of the Sea: the common heritage and emerging challenges*. In Scheiber, H. (Ed). *Publication on Ocean Development* (pp.105-126). London, UK: Nijoff. However, it could be argued that if UNCLOS were clear, there may not have been a need for UNFSA. According to this conception, the allegiance of UNFSA to UNCLOS likely leads to more questions than answers in terms of legal interpretation. See Juda, L. (1997). The 1995 United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks: a critique. *Ocean Development and International Law*, 28, 147-166.

²²⁵ The different formulation between measures "established" for the high seas and those "adopted" for waters of national jurisdiction is indicative of the jurisdictional differences between those areas. High seas measures are envisioned to be established through multinational cooperation, whereas only a coastal State has the authority to adopt measures for its waters under national jurisdiction.

UNFSA, however, goes further than simply directing States to cooperate on compatible measures. Article 7(2) lists six subparagraphs that guide States in their development of compatible measures. These six subparagraphs, however, are not particularly detailed in terms of practical application and involve some degree of interpretative complexity.²²⁶ The manner in which the six subparagraphs are formulated is likely indicative of the challenging UNFSA negotiations with regard to the compatibility provisions. As described earlier, coastal States and high seas fishing States were at pains to avoid shifting the balance in either one's direction, resulting in compromise language that is not overly prescriptive. For example, it remains an open question whether Article 7 paragraph 2(a-f) provides a balance between the rights of coastal States and States fishing on the high seas, or whether they favor one group of States over the other.

In discharging their duty to cooperate on the establishment of compatible measures for the high seas, Article 7(2)(a) requires coastal States and fishing States to take into account measures already applied in areas under national jurisdiction in accordance with the rights provided to coastal States under Article 61 of UNCLOS. Furthermore, Article 7(2)(a) requires that high seas measures not undermine EEZ measures established by coastal States.

Article 7 paragraph. 2(a):

(a) take into account the conservation and management measures adopted and applied in accordance with article 61 of the Convention in respect of the same stocks by coastal States within areas under national jurisdiction and ensure that measures established in respect of such stocks for the high seas do not undermine the effectiveness of such measures;

Article 7(2)(b) provides a parallel requirement, such that previously agreed high seas measures should be taken into account when developing compatible measures for waters under national jurisdiction.

However, it does not go as far as paragraph 2(a), which requires that high seas measures do not undermine measures taken by a coastal State. The differences in these textual formulations have been the subject of debate, with questions being raised over whether or not the final text shifts the balance towards

²²⁶ Elferink (2001) at 553.

coastal States. Burke (2000) concludes that the standard for compatibility between high seas and coastal State measures is whether or not the effectiveness of coastal States measures is undermined by high seas measures.²²⁷ In other words, because there is a lack of parity in the formulation of these paragraphs, whereby high seas measures cannot undermine EEZ measures, but not vice versa, the balance has clearly been shifted in favor of coastal States.²²⁸ This, however, is not a universally held interpretation.

Other commentators have suggested that UNFSA makes the distinction found in paragraphs 2(a) and 2(b) because only coastal States have competency over their respective EEZs, whereas competency over the high seas is not unilaterally provided, but shared among nations.²²⁹ Thus, the textual difference could indicate that UNFSA negotiators were hamstrung in their ability to provide parallel formulations for paragraphs (a) and (b), with only coastal States being able decide what is appropriate for their waters, and UNFSA being perfectly placed to instruct more specifically with respect to the high seas.

Elferink (2001) warns against placing too much weight on the textual differences between paragraphs (a) and (b), relating that the goal of UNFSA was to achieve a balance consistent with the rights and obligations provided to coastal States and high seas fishing nations under UNCLOS.²³⁰ However, it should be noted that there are interpretations of UNCLOS suggesting that, because coastal States have a duty to ensure that stocks found within their national waters are sustainable, the interests of such States can naturally be said to extend to the high seas. This view, if accepted, would certainly shift the balance of power towards the coastal States with respect to the management of shared stocks.²³¹ Of course, if one considers the divergence of opinion within the academic literature as to the balance struck by Article 7 and UNCLOS, it is rather unsurprising that coastal States and distant water fishing States are yet to reach agreement on this issue.

²²⁷ Burke (2000) at 114.

²²⁸ Ibid.

²²⁹ Elferink (2001) at 564; Vicuna (2001) at 194.

²³⁰ Elferink (2001) at 564.

²³¹ Kwiatkowska (1991) at 166.

Article 7(2), however, does not stop at paragraphs 2(a) and (b), but includes other factors to consider when developing compatible measures. Article 7 paragraph 2(c) provides that existing measures established by regional or sub-regional organizations must also be taken into account when developing compatible measures.²³²

Article 7 paragraph 2(d) requires consideration of the biological unity and other biological characteristics of affected stocks, as well as the relationship between the distribution of the stocks, the fisheries and the geographical particularities of the region concerned, including the extent to which the stocks occur and are fished in areas under national jurisdiction. Although the term ‘biological unity’ is undefined in UNFSA, one can reasonably infer that consideration should be placed on the impact of conservation and management measures on a stock’s entire geographical range, rather than being limited to a specified area or jurisdiction.²³³

Article 7 paragraph 2(e) mandates that States take into account the respective dependence of coastal States and distant water fishing States on the stocks concerned. Unfortunately, UNFSA does not further define the term “respective dependence.” However, one could reasonably infer that developing coastal States, and in particular Small Island Developing States (SIDS), could use paragraph 2(e) to make strong arguments that their national economies and food security are highly dependent on the shared stocks under consideration (as compared to, for example, developed nations with vessels fishing on the high seas).²³⁴

²³² See Appendix 1.

²³³ Elfernink (2001) at 566.

²³⁴ For further reading on the importance of tuna fisheries to the economies of the Pacific Island economies, see: Gillett, R. (2009). *Fisheries in the economies of the Pacific island countries and territories*. Mandaluyong City, Philippines. Asian Development Bank.

Elferink (2001) suggests that other articles of UNFSA offer contextual guidance with regard to “respective dependence.” For example, UNFSA Article 11 paragraphs (d) and (e), which relate to participatory rights to fish within RFMO managed areas, state that such rights need to take into account the needs of coastal fishing communities which are *dependent* mainly on fishing for the stocks, as well as the needs of coastal States whose economies are overwhelmingly *dependent* on the exploitation of living marine resources (emphasis added). In addition, UNFSA Article 24 paragraphs 2(a) and (b), which focus on the special requirements of developing States, instruct States engaged in cooperative conservation measures to consider the vulnerability of developing States which are *dependent* on the exploitation of living marine resources, including for meeting the nutritional requirements of their populations, as well as the need to avoid adverse impacts on, and access to fisheries, by subsistence, small-scale and artisanal fishers.²³⁵

The use of the term “respective” suggests that each State is to evaluate dependence separately and not collectively or in absolute terms.²³⁶ For developing coastal States, it seems Article 7 paragraph 2(e) would tilt the balance of rights in their favor (all other considerations being equal), as such States are likely to be much more dependent on fisheries in terms of their national economies, coastal communities and nutritional requirements as compared to developed States. Thus, the term “respective dependence” in Article 7 paragraph 2(e) suggests that, when developing compatible measures, consideration must be given to the importance of the stocks in relation to a nation’s economy, the needs of coastal communities, and when used in the context of developing States, the nutritional requirements of its population.²³⁷

²³⁵ Elferink (2001) at 568.

²³⁶ The definition of “respective” means: *relating to two or more persons or things regarded individually*. See *The American Heritage Dictionary of the English Language*, Fourth Edition. 2000. Retrieved from <http://www.thefreedictionary.com/respective>.

²³⁷ Elferink (2001) at 568.

Lastly, Article 7 paragraph 2(f) requires that the measures established by States do not result in harmful impact on ‘the *living marine resources as a whole*’ (emphasis added).²³⁸ It is not entirely clear whether this formulation only applies to targeted straddling and highly migratory fish stocks, or whether it refers to the broader ecosystem. However, as UNFSA has incorporated the precautionary approach in Article 6, it is likely that the term “the living marine resources” encompasses more than just target stocks, with non-target, dependent and associated stocks, as well as the marine environment as a whole, falling within the ambit of the term.²³⁹

The considerations in Article 7(2)(a-f) suggest that compatible measures can be negotiated on a case-by-case basis. Elferink (2001) has posited that in developing compatible measures and taking into account the considerations listed in Article 7(2)(a-f), equity should play an important role.²⁴⁰ Although equity is a key concept in international law, countries often negotiate international agreements with a high degree of self-interest, seeking to preserve existing benefits or obtain a greater allotment of shared resources.²⁴¹ As history has shown, developing States have often been on the losing end of international agreements as they lack the institutional capacity to implement them.²⁴² To level the playing field, international law has evolved in recent decades to support the concept of differential treatment and capacity building for developing States within international agreements.²⁴³ In this regard, UNFSA has incorporated a specific article to recognize the special requirements of developing States and the need to ensure that measures ultimately established do not result in transferring, directly or indirectly, a disproportionate burden of

²³⁸ See Appendix 1 for the complete paragraph as drafted in UNFSA.

²³⁹ UNFSA Article 6(5) states: “Where the status of target stocks or non-target or associated or dependent species is of concern, States shall subject such stocks and species to enhanced monitoring in order to review their status and the efficacy of conservation and management measures. They shall revise those measures regularly in the light of new information”.

²⁴⁰ Elferink (2001) at 574 notes that case law regarding international fisheries disputes has identified the need for an “equitable solution.”

²⁴¹ For further reading on equity in international law, see: Franck, T. M. (1998). *Fairness in international law and institutions*. Oxford, UK: Oxford University Press.

²⁴² Drumbl, M. A. (1999). Does sharing know its limits? Thoughts on implementing international environmental agreements: a review of national environmental policies, a comparative study of capacity-building. *Virginia Environmental Law Journal*, 18(3), 281-304, at 281.

²⁴³ Cullet, P. (2017). *Differential treatment in international environmental law*. London, United Kingdom: Routledge.

conservation action onto such States.²⁴⁴ UNFSA, however, does not provide any guidance on what form a ‘disproportionate burden’ may take, or how to avoid the imposition of such a burden in the first place.²⁴⁵

The UNFSA conference also anticipated that a lack of compatible measures would lead to disputes between States. Article 7(3) instructs States that in giving effect to their duty to cooperate, they are to make every effort to agree on compatible conservation and management measures within a reasonable period of time. Article 7(4), however, provides that if no agreement on compatible measures can be reached within a reasonable period of time, the States concerned may invoke dispute settlement procedures provided for in Part VIII.²⁴⁶

3.4.1 Establishing Compatible Measures and Balancing UNFSA Article 7 Considerations

As identified in the preceding section, UNFSA provides several factors to take into consideration when developing compatible measures. Unfortunately, however, UNFSA provides no guidance on the weighting of these factors or how to balance them. It is worth reiterating that the main objective of establishing compatible measures is to ensure the conservation and management of shared stocks in their entirety.²⁴⁷ Moreover, if the status of a specific highly mobile stock is unhealthy, a lack of compatibility between EEZ and high seas measures may be a significant factor contributing to poor stock status.

Elferink (2001) suggests that the logical starting point in establishing compatible measures is to determine the extent to which conservation and management measures already exist for: 1) waters under national jurisdiction (paragraph 2(a)); 2) the high seas (paragraph 2(b)); and 3) RFMO-managed areas (paragraph

²⁴⁴ UNFSA Article 24(1) and 2(2-c).

²⁴⁵ Davis, R., & Hanich, Q. (2015). Developing an equitable and ecosystem-based approach to fisheries management. In H.N. Scheiber, J. Kraska, & M.S. Kwon (Eds.), *Science, Technology, and New Challenges to Ocean Law*. Boston, United States: Brill Nijhoff.

²⁴⁶ See Appendix 1 for the complete text as found in UNFSA.

²⁴⁷ UNFSA Article 7 paragraph 2.

2(c)).²⁴⁸ It is axiomatic that if existing measures are identified, but found not to be meeting the conservation and management objective, then they should be revised. If it is found that the existing measures applicable to waters under national jurisdiction are unsustainable, either individually or cumulatively, then any new entrant to the high seas fisheries targeting the same stock would result in non-compatibility. However, if one considers that HMS stocks can range thousands of miles and are part of large ocean basin-scale populations, a critical issue emerges with regard to the issue of non-compatibility. This issue can be stated as follows: the wide-ranging nature of HMS stocks means that it is difficult to demonstrate a significant impact on such stocks from fishing solely conducted in the waters of one coastal State. Conversely, fishing mortality would need to take place through a stock's entire range in order for a significant impact on these widely dispersed stocks to be shown.

Elferink (2001) also argues that if coastal State measures have not been established for national waters, but measures exist for the high seas, it is necessary to determine if the relevant coastal State participated in the development of the high seas measures. For example, if the coastal State refused to cooperate in the development of the high seas measures, then it would be difficult for that particular coastal State to maintain that such measures are not compatible with measures that apply in their national waters. However, if certain high seas measures were adopted without the knowledge of a particular coastal State, then the high seas measures would potentially be ripe for evaluation with respect to compatibility, and perhaps even conflict resolution.²⁴⁹

After determining what measures exist within national waters or within the high seas, a logical next step is to evaluate whether or not existing measures appropriately take into account the biological unity of the stocks (paragraph 2(d)). HMS stocks are wide ranging, broadly dispersed and found in various densities

²⁴⁸ Elferink (2001) at 578.

²⁴⁹ Elferink (2001) at 580.

related to spawning and foraging habitats, which sometimes do not overlap.²⁵⁰ Therefore, to properly manage the resource, it is important to understand the movement of fish in relation to their preferred habitat, the extent of their range as dictated by oceanographic conditions, as well as the genetic connectivity within a species.

Without a good understanding of the characteristics listed above, the biological unity of a stock cannot be deciphered. Tagging activities constitute the primary method of gaining information on the movement of fish stocks and are critical to applying paragraph 2(d).²⁵¹ Understanding habitat preferences for spawning and foraging is also important in predicting the occurrence of fish stocks in a particular area of the ocean. Genetic testing is a yet another powerful tool in understanding biological unity, with analyses from this testing gaining better resolution as time goes on.²⁵²

Fisheries targeting HMS stocks typically occur throughout the range of stock and include catches of juveniles and adults.²⁵³ Therefore, an important reason to take into account the biological unity of a stock is for the purpose of regulating catches with respect to temporal and spatial characteristics of the fisheries, including spawning areas, migration routes, as well as foraging areas. Critical to applying this provision is data on the location of fish catches and the size of the fish at capture. To properly obtain this data, a fisheries dependent monitoring system which includes catch reporting (e.g., logbooks) is necessary and supplemented with independent observer coverage. Preferably, operational level data should be provided for independent review by scientific experts, with such data being of the quality used in stock assessments. Port sampling is also an important aspect of a comprehensive monitoring program, as it

²⁵⁰ Joseph, J. (1977). The management of highly migratory species: Some important concepts. *Marine Policy*, 1(4), 275-288.

²⁵¹ Another technique used to understand fish movement involves fish otolith microchemistry. See: Secor, D. H., Henderson-Arzapalo, A., & Piccoli, P. M. (1995). Can otolith microchemistry chart patterns of migration and habitat utilization in anadromous fishes? *Journal of Experimental Marine Biology and Ecology*, 192(1),15-33.

²⁵² Hellberg, M. E., Burton, R. S., Neigel, J. E., & Palumbi, S. R. (2002). Genetic assessment of connectivity among marine populations. *Bulletin of Marine Science*, 70(1), 273-290.

²⁵³ Yellowfin tuna is one example of a HMS stock that is subject to fishing pressure at nearly all stages of its lifespan, with juveniles being caught in purse seine vessels using FADs, and adults targeted by longline vessels.

allows for verification of logbook submissions and landings, and as a means of collecting life history information and well as monitoring and enforcement.

As an example, fishing on a spawning aggregation could greatly impact a stock if the fish were caught prior to having had the ability to spawn and fertilize eggs. Secondly, the overharvesting of adults can lead to recruitment overfishing. This occurs when too many adults are removed from the population, resulting in low numbers of juveniles entering the population. This, in turn, affects the population's ability to produce MSY. Third, an overharvest of juveniles can lead to growth overfishing, whereby substantial losses in yield occur, resulting in significant economic losses.²⁵⁴ Therefore, in order to properly take into account the biological unity of a stock, additional factors such as the location of catches and the life history stage of the catch are essential to understand. Like most issues related to fisheries conservation and management, this is predicated on the quality of data available to scientists and managers.

Following on from the investigation into the 'biological unity of the stocks,' the next issue to consider is the respective dependence of coastal States and fishing States on the stocks concerned (paragraph 2(e)). To properly account for a State's dependence on a fishery, transparent information should be available under the following categories: a) the number and type of fishing vessels (commercial, artisanal and subsistence) participating in a fishery; b) where the vessels operate (e.g., in domestic waters, the EEZ of another coastal State, or on the high seas); c) the amount of catch harvested by the vessels; d) where the catch is landed; e) whether the catch is consumed in domestic markets or exported to foreign markets; f) the number of direct and indirect jobs associated with the fishery; and g) the contribution of the fishery (expressed as a percentage) to the State's Gross National Product.²⁵⁵

²⁵⁴ Hilborn, R. (2011). *Overfishing: What Everyone Needs to Know*. Oxford, UK: Oxford University Press.

²⁵⁵ Similar considerations have been identified for understanding benefits and costs related to conservation and management measures and the need to avoid a disproportionate conservation burden on developing States. See: Hanich, Q. and Ota, Y. (2013). Moving beyond rights-based management: a transparent approach to distributing the conservation burden and benefit in tuna fisheries. *International Journal of Marine and Coastal Law*, 28(1), 135-17

Arguably, the primary reason to consider the respective dependence of a coastal State or high seas fishing State on a particular stock or fishery is to determine catch allocations or effort limits between States. Catch or effort allocations represent the business end of international fisheries negotiations, with decisions being made on how much catch or fishing effort is allowed for each member. Indeed, allocation decisions are among the most difficult to reach agreement on within international fisheries management fora.²⁵⁶ What complicated UNFSA negotiations on the issue of compatibility was the fear held by participating nations of being on the losing side of catch or effort allocations. The outcome was Article 7 and its associated six subparagraphs, which when read collectively, allow for compatibility being evaluated on a case-by-case basis.

With the right political will, existing measures, whether applicable in-zone or on the high seas, could be modified to take into account the considerations listed in Article 7. This is important in the context of adaptive fisheries management as it recognizes that management measures should be adaptive rather than static, and thus capable of responding to changes in stock status, fishing conditions or governance structures.²⁵⁷

3.4.2 Dispute Resolution - the last resort

UNFSA negotiators were mindful that agreement on compatibility may not always occur (or endure), and therefore incorporated provisions for the settlement of disputes within Article 7. On this issue, however, UNFSA refers back to Article 297 paragraph 3(a) of UNCLOS, which does not oblige coastal States to

²⁵⁶ Maria Cecilia Engler Palma. (2010). *Allocation of Fishing Opportunities in Regional Fisheries Management Organizations: a legal analysis in the light of equity*. Nova Scotia, Canada: Dalhousie University Halifax.

²⁵⁷ Walters, C. J. (1986). *Adaptive management of renewable resources*. New York: Macmillan Publishers. Since publishing the referenced work on adaptive management, Walters has been critical of the success (or lack thereof) regarding adaptive management frameworks in fisheries. See Walters, C. J. (2007). Is adaptive management helping to solve fisheries problems? *AMBIO: A Journal of the Human Environment*, 36(4), 304-307. Walters notes that it is not the concept of adaptive management that is the problem, but rather the following issues: i) the lack of management resources for the expanded monitoring needed to carry out large-scale experiments; ii) the unwillingness of decision makers to admit and embrace uncertainty when making policy decisions; and iii) a lack of leadership by individuals who are responsible for planning and implementing new and complex management programs.

accept measures derived from the dispute settlement process relating to their sovereign rights with respect to living marine resources in their EEZs. Thus, the potential for the compulsory settlement of disputes regarding compatible measures with respect to coastal State EEZ management is limited.²⁵⁸ As coastal States would not be obligated to accept a court's ruling on compatible measures as they apply to waters under national jurisdiction, other avenues would be need to be pursued, such as public information campaigns that look to sway public opinion. In this respect, it is important to note that all parties to UNFSA have a duty to cooperate, and failure to do so could be viewed as an abdication of responsibility.

3.5 Pathways towards achieving compatibility

In prescribing the Principle of Compatibility, as well as the basic elements to consider when developing compatible measures, UNSFA anticipates two States working together directly (or regionally within a RFMO).²⁵⁹ Orebach et al. (1998) suggest that a RFMO could take two basic approaches to developing compatible measures – bottom up or top down.²⁶⁰ A bottom up approach is where a RFMO accepts the autonomy of a coastal State to establish management measures for its EEZ, which the RFMO is then obliged to consider when developing compatible measures.²⁶¹ With a top down approach, the RFMO has the responsibility to develop compatible measures and authority to set quotas and other management measures throughout the entirety of the stock, both within national waters and on the high seas.²⁶²

Orebach et al. (1998) argue that with the bottom-up approach, only States fishing on the high seas would have an obligation to establish compatible measures, resulting in potential conservation and management

²⁵⁸ Rayfuse, R. (2005). The future of compulsory dispute settlement under the Law of the Sea Convention. *Victoria University of Wellington Law Review*, 36, 683.

²⁵⁹ See UNFSA Article 8.

²⁶⁰ Orebach, P., Sigurjonsson, K., & McDorman, T. (1998). The 1995 United Nations Straddling and Highly Migratory Fish Stocks Agreement: management, enforcement, and dispute settlement. *International Journal of Marine and Coastal Law*, 13(2), 119-141, at 128.

²⁶¹ Ibid.

²⁶² Ibid.

inequity (and thus a process that is destined to fail from the outset).²⁶³ However, the authors note that coastal States would still have other conservation burdens associated with their rights and obligations for waters under their national jurisdiction, such as ensuring that stocks are not overexploited, as well as the responsibility of implementing the precautionary approach. Conversely, Orebach et al. (1998) argue that with a top down approach, a RFMO could emphasize ecological integrity, integrative and holistic management, as well as supranational authority.²⁶⁴ High seas fishing nations would likely lend support for a top-down approach, as they would have enhanced bargaining power within the decision-making area that includes EEZs.²⁶⁵ It is further argued that negotiations are better facilitated where there are packages and trade-offs, as this allows for more options to be considered. Indeed, under a top-down approach all States could bring potential trade-offs to the negotiating table.²⁶⁶ In reality, however, the main drawback to a top down approach is the need for States participating in RFMOs to acquiesce to the process and forfeit their sovereign EEZ rights to the RFMO, something which is unlikely to ever occur.

3.6 Parallels to International Water Management

Like tuna, water can be considered a common resource for public good and/or a private good.²⁶⁷ Moreover, neither tuna nor water follow political boundaries, but are rather influenced by natural forces. As such, there are similarities in the international management of water and tuna, including in the areas of conflict and cooperation.²⁶⁸ Within international water management law, the following principles have been identified: 1) equitable utilization; 2) preventing significant harm to other States; 3) data sharing;

²⁶³ Ibid at 129.

²⁶⁴ Ibid.

²⁶⁵ Ibid.

²⁶⁶ Ibid.

²⁶⁷ White, C. (2015). Understanding water markets: public vs private goods. *Global Water Forum*. Retrieved from <http://www.globalwaterforum.org/2015/04/27/understanding-water-markets-public-vs-private-goods/>

²⁶⁸ Wolf, A. (2007). Shared waters: conflict and cooperation. *Annual Review of Environmental Resources*, 32, 241-269. More often than not, disputes over shared watercourses lead to international cooperation rather than armed conflict and war, see Wolf (2007) at 245.

and 4) cooperative management.²⁶⁹ These principles are very similar to the common principles of international fisheries management and representative of international standards that exist for the cooperative management of shared resources.²⁷⁰

3.7 Chapter Conclusion

UNCLOS has provided certain rights and obligations to coastal States for the management and utilization of fishery resources when they occur within national waters. UNCLOS has also provided all States with the right to fish on the high seas, subject to the rights, duties and interests of coastal States. Although UNCLOS mandates that coastal and high seas fishing States are to cooperate on the management of straddling stocks and highly migratory species, it lacks precision on how best to accomplish this important task. The ambiguity found in UNCLOS resulted in what was described as a global fishing crisis in the late 1980s/early 1990s, with fisheries operating on the high seas being largely unregulated. The UNFSA conference met to resolve the crisis, and what emerged was the Principle. The Principle, and to a greater extent UNFSA, was negotiated so as not to prejudice States' existing rights and obligations under UNCLOS.

The Principle was elucidated within Article 7 and includes several considerations to take into account when developing compatible measures. In establishing compatible measures for the high seas, for example, States are to take into account measures that apply to the same stocks within the national waters of coastal States. Furthermore, high seas measures are not to undermine the effectiveness of the measures in place within national waters. When developing compatible measures for waters under national jurisdiction, coastal States are to take into account measures in place for the high seas that have been agreed to by relevant coastal States and States fishing on the high seas. However, UNFSA does not

²⁶⁹ Gleick, P. H. (1993). Water and conflict: Fresh water resources and international security. *International security*, 18(1), 79-112.

²⁷⁰ Sands, P., & Peel, J. (2012). *Principles of international environmental law*. Cambridge, United Kingdom: Cambridge University Press.

provide a reciprocal obligation – that is, there is no provision prohibiting coastal State measures from undermining the effectiveness of high seas measures. This difference has led some commentators to argue that UNFSA provides a slight tilt in favor coastal States. Even so, other academics have described the difference as immaterial, asserting that UNFSA achieves an overall balance between the rights and obligations of the States involved.

Article 7 of UNFSA lists additional considerations to take into account when developing compatible measures. They include: 1) the biological unity of the stocks concerned, as well as the relationships between the distribution of the stocks, fisheries and the geographic considerations of the particular region; 2) the respective dependence of the coastal States and the States fishing on the high seas on the stocks concerned; and 3) the need to ensure that compatible measures do not harmfully impact the marine resources as a whole. Unfortunately, UNFSA does not provide further details or definitions on the considerations listed above, a situation which allows for differing interpretations and variability in the application of the provisions.

Understanding that disputes are likely arise over the development of compatible measures, or in circumstances where no such measures have been developed, UNFSA lays out a dispute resolution procedure consistent with UNCLOS. Importantly, however, any result from a dispute settlement procedure has no application to living marine resources found within the national waters of coastal States. Notwithstanding this situation, States have a duty to cooperate and to “make every effort” to agree on compatible measures within a reasonable period of time. While UNFSA sets up the basic framework to apply the Principle, the detailed work of developing compatible measures lies with the relevant RFMO.

Chapter 4: Description of the World's Largest Tuna Fishery: oceanography, major tuna stocks, catch, and fishing capacity

Tuna has been an important source of protein for Pacific Islanders for several millennia, and with the advent of industrial-scale tuna fishing, only recently has the status of tuna become a food-security issue for the inhabitants of this region.²⁷¹ Industrial-scale tuna fishing in the WCPO began with pole and line vessels in the first half of the 20th century, and re-emerged after World War II in the 1950s through the development of pole and line and longline fishing gears.²⁷² In the early 1980s, purse seine fishing was introduced to the WCPO, and since that time, there has been a rapid increase in the number of purse seine vessels operating in the WCPO, coupled with a rapid increase in associated tuna catches. The WCPO catch of skipjack, yellowfin, albacore and bigeye tuna represent nearly 60% of the global tuna catch, and 80% of the tuna being harvested in the Pacific Ocean.²⁷³ This chapter will describe the main target tuna stocks in the WCPO and the fisheries that target them, which collectively represent the world's largest tuna fishery. The discussion will also examine Pacific bluefin tuna, which due to its extremely depleted population is of significant concern.

4.1 The Western and Central Pacific Ocean

4.1.1 Boundaries

The Pacific Ocean is made up of geopolitical and oceanographic boundaries. With regard to HMS fisheries management, the Pacific Ocean is divided into two large areas: the Western and Central Pacific

²⁷¹ Bell, J., Allain, V., Allison, E., Andrfouet, S., Andrew, N., Batty, M., Blanc, M., Dambacher, J., Hampton, J., & Q, Hanich. (2015). Diversifying the use of tuna to improve food security and public health in Pacific Island countries and territories. *Marine Policy*, 51, 584-591. -- Charlton, K. E., Russell, J., Gorman, E., Hanich, Q., Delisle, A., Campbell, B., & Bell, J. (2016). Fish, food security and health in Pacific Island countries and territories: a systematic literature review. *BMC Public Health*, 16(1), 285.

²⁷² Barclay, K. (2010). *History of Industrial Tuna Fishing in the Pacific Islands: A HMAP Asia Project Paper*. Working Paper No. 169. Perth, Australia: Murdoch University.

²⁷³ Williams, P., Terawasi, P., & Reid, C. (2017). *Overview of tuna fisheries in the Western and Central Pacific Ocean*. Thirteenth Regular Session of the WCPC Scientific Committee. 9-17 August 2017. Rarotonga, Cook Islands, 71. WCPFC-SC13-2017/GN-WP-01. 2.

Ocean, and the Eastern Pacific Ocean. The longitudinal line separating the WCPO from the EPO is typically delineated at 150° W. Between the WCPFC and IATTC, however, there is an area of overlap, such that the WCP-CA encompasses waters east of 150° W to include French Polynesia (see Figure 2).²⁷⁴

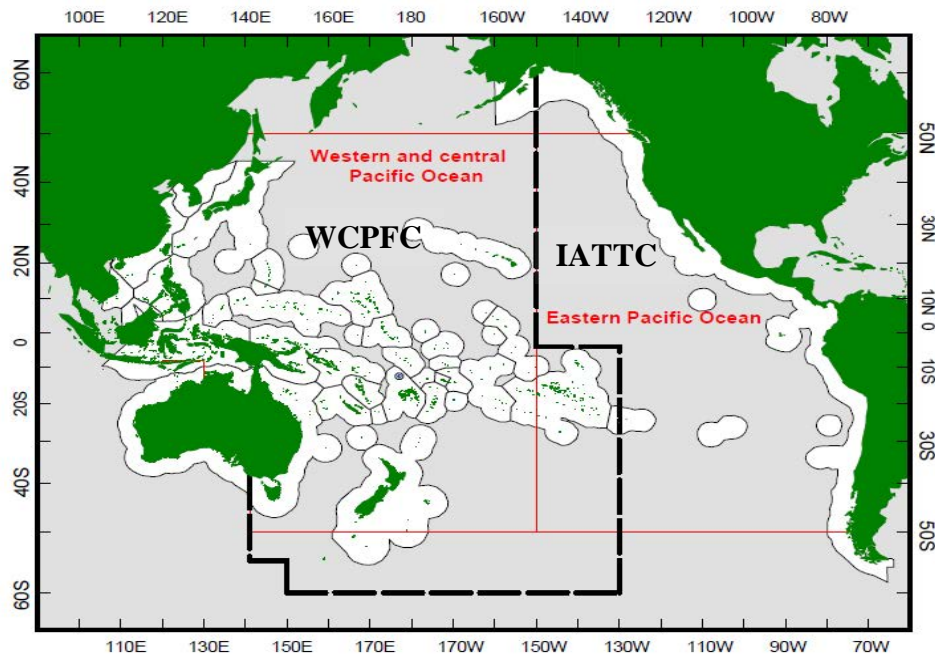


Figure 2: Map showing the areas of responsibility for the WCPFC and IATTC and shared jurisdiction

Source: Brouwer et al. 2015

Note: red lines delineate WCPO and EPO.

4.1.2 Oceanography

Although the separation between the WCPO and EPO is largely political, there are oceanographic differences. For example, the thermocline is much shallower (~50 m) in the EPO, whereas in the WCPO, it progressively deepens towards the west (~150 m).²⁷⁵ During El Niño, which involves the eastward movement of warmer surface water, the thermocline deepens in the central and eastern Pacific, while

²⁷⁴ As indicated in Figure 2, there is an overlap area shared between the WCPFC and IATTC. When providing catch statistics, ‘WCPO’ and ‘WCP-CA’ are often used interchangeably, with the data taking into account the overlap area.

²⁷⁵ The thermocline is a band in the water column where water temperatures significantly differ from the surface layer, forming a temperature gradient which inhibits mixing with the surface layer.

rising in the western Pacific. Conversely, during La Niña, the warm pool stays in the westernmost portion of the WCPO, resulting in a deeper thermocline in the EPO. El Niño and La Niña oceanographic conditions cause fluctuations in the distribution of Pacific tuna fisheries and associated catches.²⁷⁶

Major ocean currents move water and transport plankton, fish, heat, momentum, salts, oxygen and carbon dioxide over large geographic scales. Tuna and other HMS are known to follow areas of current convergence, where prey items tend to aggregate.²⁷⁷ Figure 3 shows the major surface currents of the Pacific Ocean.

²⁷⁶ Briand, K. (2005). *General oceanography of the WCPO*. Secretariat of the Pacific Community. Noumea, New Caledonia. Retrieved from <http://www.spc.int/oceanfish/en/other/doc.../703-general-oceanography-of-the-wcpo>

²⁷⁷ Lehodey, P., Andre, J. M., Bertignac, M., Hampton, J., Stoens, A., Menkès, C, Mémerly, L. and Grima, N. (1998). Predicting skipjack tuna forage distributions in the equatorial Pacific using a coupled dynamical biogeochemical model. *Fisheries Oceanography*, 7(3-4), 317-325.

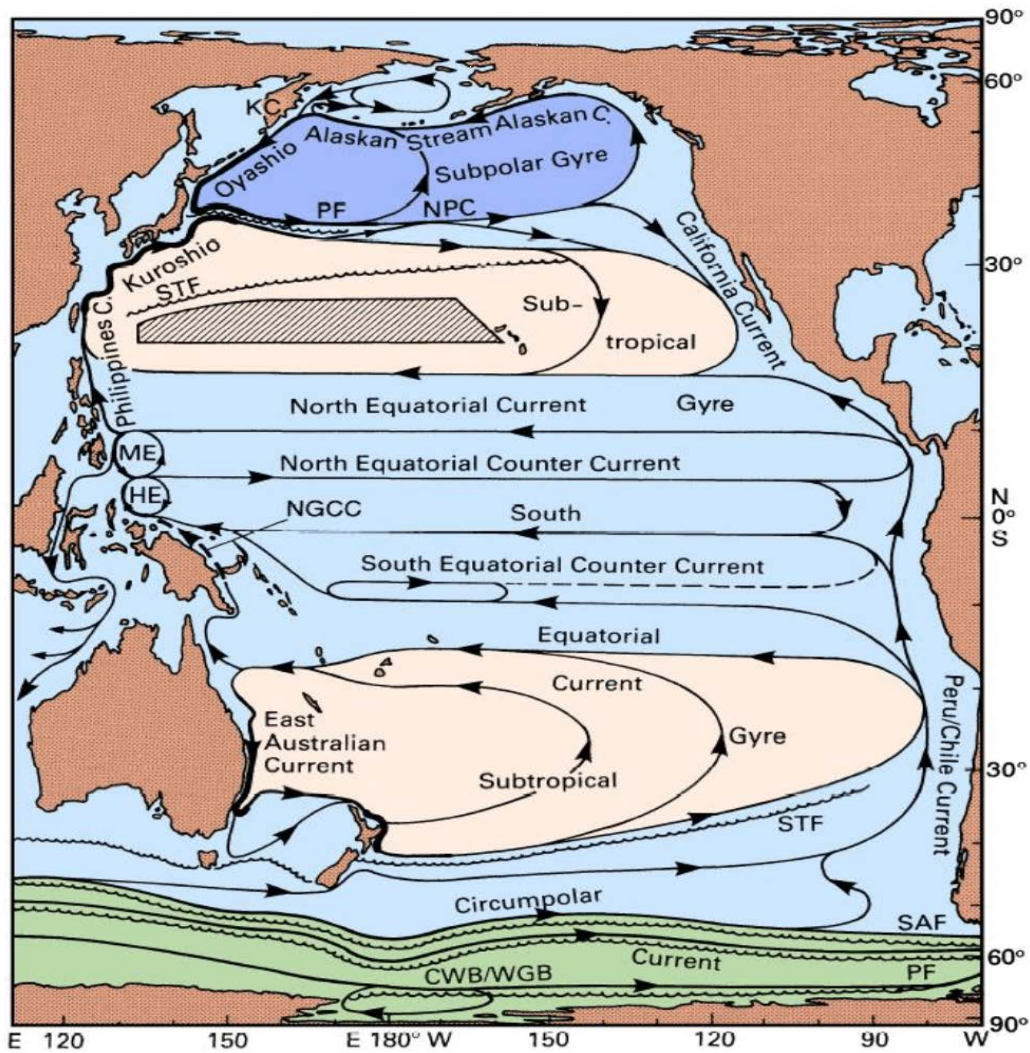


Figure 3: Major Oceanographic Currents of the Pacific Ocean

Source: Tomzack and Godfrey 2003

In the eastern and central Pacific Ocean, a westward-flowing upwelling current exists along the equator from the coast of South America. This water mass, which is commonly referred to as the ‘cold tongue,’ contains cold, nutrient-rich waters that support high primary production extending to the surface in the EPO (Figure 4). On the other side, the western equatorial Pacific supports the ‘warm pool’ which is observed to have low primary production and high sea surface temperatures (SST) – among the warmest sea temperatures on Earth.

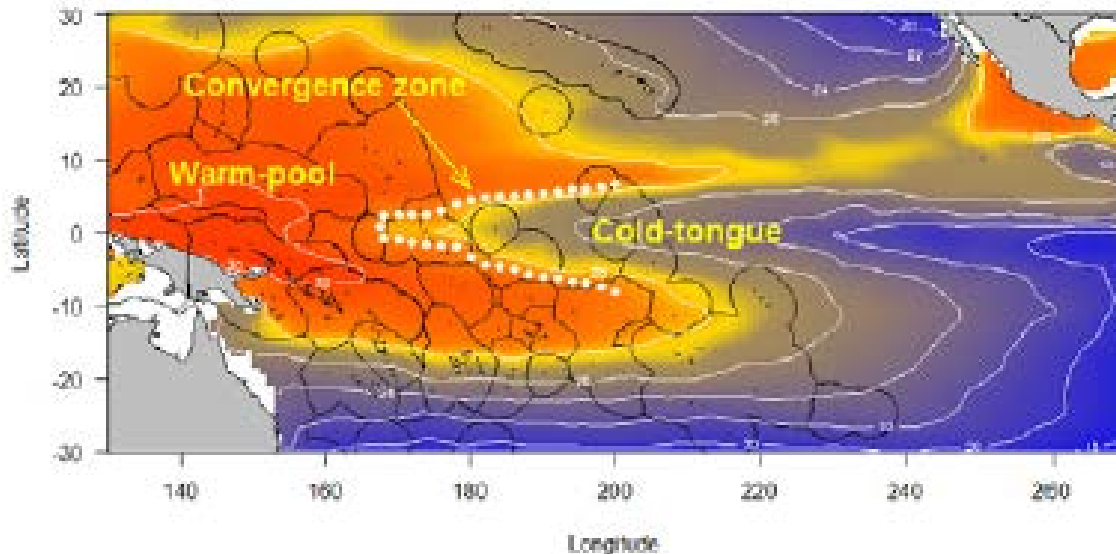


Figure 4: Map showing WCPO Warm pool - Cold tongue conversion and temperatures²⁷⁸
 Source: Nicol et al. 2014

Skipjack tuna, for example, are believed to follow the convergence zone between the warm pool and cold tongue, allowing them to remain in waters with relatively high concentrations of prey species.²⁷⁹ The largest proportion (approximately 80%) of the tuna catch (mainly skipjack) in the Pacific Ocean is taken within the warm pool area, primarily by purse seine vessels. In contrast, the catch of longline vessels is more widely distributed over the tropical and sub-equatorial areas of the Pacific Ocean.²⁸⁰

El Nino Southern Oscillation (ENSO) has been found to have profound effects on tuna distribution.²⁸¹ For example, during ENSO events, the equatorial warm pool in the WCPO moves east, shifting the boundaries of the equatorial warm pool/cold tongue convergence zone as far as 4,000 km east.²⁸² Skipjack tuna follow the eastward shift of the warm pool during El Nino. Catch rates for skipjack in the central

²⁷⁸ Nicol, S., Menkes, C., Jurado-Molina, J., Lehodey, P., Usu, T., Kumasi, B., Muller, B., Bell, J., Tremblay-Boyer, L., & Briand, K. (2014). Oceanographic characterisation of the Pacific Ocean and the potential impact of climate variability on tuna stocks and tuna fisheries. *SPC Fisheries Newsletter*, 145, 37-48.

²⁷⁹ Ibid.

²⁸⁰ Ibid.

²⁸¹ Lehodey, P. M. Bertignac, J. Hampton, A. Lewis, & J. Picaut. (1997). El Nino Southern Oscillation and tuna in the Western Pacific. *Nature*, 389, 715-718.

²⁸² Ibid at 715.

equatorial Pacific have shown a strong correlation to the eastern movement of the warm pool during El Nino.²⁸³

4.1.3 Tuna Stocks

Tuna are found in the Pacific, Atlantic and Indian Oceans and are harvested commercially on a large scale for various types of seafood markets. Tuna, along with mackerel and bonito, comprise the Scombridae family.²⁸⁴ Fish species are often categorized into separate stocks of larger populations. Stocks are groupings of fish that are assumed to be homogenous for management purposes, and where intrinsic factors such as growth, recruitment, natural mortality and fishing mortality can affect population dynamics.²⁸⁵ Understanding stock structure, stock abundance, as well as the uncertainty associated with these factors, is critical for effective fisheries management.²⁸⁶

4.1.3.1 Skipjack Tuna

Skipjack tuna (*Katsuwonis pelamis*) is found in the Pacific, Atlantic and Indian Oceans. With a combined catch of over 2.5 million tons per annum, skipjack tuna represents nearly 60% of global tuna landings.²⁸⁷ Skipjack is a highly productive tuna species with levels of biomass exceeding those of all other tuna stocks combined in the WCPO.²⁸⁸ Within the Pacific, skipjack subpopulation structure is believed to exist; however, distinctions between areas are not well defined. For this reason, skipjack are believed to make up a single population in the Pacific, but the chances of two fish breeding are inversely proportional

²⁸³ Ibid at 716.

²⁸⁴ Collette, B. B., Reeb, C., & Block, B. A. (2001). Systematics of the tunas and mackerels (Scombridae). *Fish Physiology*, 19, 1-33.

²⁸⁵ Begg, G.A., & Waldman, J.R. (1999). A holistic approach to fish stock identification. *Fisheries Research*, 43, 35-44. Defining stocks is a complex endeavor and involves a wide range of factors and disciplines including catch information, tag and recapture studies, life history characteristics, otolith microchemistry, parasite studies, morphology and genetics.

²⁸⁶ Hilborn, R., & Walters, C. J. (1992). *Quantitative fisheries stock assessment: choice, dynamics and uncertainty*. New York, NY: Chapman and Hall.

²⁸⁷ See <http://www.fao.org/fishery/statistics/tuna-catches/en>;

²⁸⁸ <http://www.spc.int/oceanfish/en/tuna-fisheries/tuna-species/296-skipjack>

to the distance separating them.²⁸⁹ For stock assessment and management purposes, skipjack is assessed separately in the WCPO and EPO, with a stock delineation defined generally at 150°W longitude.²⁹⁰

Skipjack prefer warm waters of the mixed surface layer, and can be found in ocean waters with temperatures above 15° C and distributed between 45°N and 45°S in the Western Pacific and between 30° N and 30° S in the Eastern Pacific.²⁹¹ However, other oceanographic features and biological characteristics also affect skipjack distribution.²⁹² Skipjack move between the surface layer and the thermocline during the day, while generally remaining within 75 m of the surface at night.²⁹³ Skipjack lack a swim bladder and must thus maintain constant forward motion to achieve hydrodynamic lift and respiration. This likely explains why they have the highest proportion of deep red muscle tissue in comparison to other tunas.²⁹⁴

Skipjack maturation and first spawning is estimated to occur at approximately 40 cm or one year of age, based on growth estimates.²⁹⁵ Skipjack spawn year-round in tropical waters and seasonally in sub-tropical

²⁸⁹ Wild, A. & Hampton, J. (1994). A review of the biology and fisheries for skipjack tuna, *Katsuwonus pelamis*, in the Pacific Ocean. In R.S. Shomura, J. Majowski, & S. Langi (Eds.) *Interactions of Pacific tuna fisheries. Proceedings of the first FAO Expert Consultation on Interactions of Pacific Tuna Fisheries (pp.1-51)*. 3–11 December 1991. Noumea, New Caledonia. Volume 2: Papers on biology and fisheries. FAO Fisheries Technical Paper, 336(2). Rome, FAO. This is referred to as the isolation by distance model, whereby skipjack exist in a series of semi-isolated genetic neighborhoods.

²⁹⁰ McKecknie, S., Hampton, J., Pilling, G., & Davies, N. (2016). *Stock assessment of skipjack tuna in the Western and Central Pacific Ocean..* Twelfth Regular Session of the Scientific Committee of the WCPFC. 3-11 August 2016. Bali, Indonesia. WCPFC-SC12-2016/SA-WP-04.

²⁹¹ Wild and Hampton (1994), at 11.

²⁹² Ibid. Factors that influence distribution include thermocline structure, bottom topography, water transparency, current systems, water masses and biological productivity. In the tropics, these factors may be more important in determining distribution than temperature. In sub-tropical regions temperature changes also affect seasonal abundance, as do large-scale climatic features such as El Niño/La Niña.

²⁹³ Schaefer, K.M., Fuller, D.W., & Block, B.A. (2009). Vertical Movements and Habitat Utilization of Skipjack (*Katsuwonus pelamis*), Yellowfin (*Thunnus albacares*), and Bigeye (*Thunnus obesus*) Tunas in the Equatorial Eastern Pacific Ocean, Ascertained Through Archival Tag Data. In J.L. Nielsen, H. Arrizabalaga, N. Fragoso, A. Hobday, M. Lutcavage, & J. Sibert (Eds.), *Tagging and Tracking of Marine Animals with Electronic Devices. Reviews: Methods and Technologies (pp. 121-144)*. New York: Springer.

²⁹⁴ Rayner, M., & Keenan, M.J. (1967). Role of red and white muscles in the swimming of skipjack tuna. *Nature*, 214(5086), 392-393. – Sharp, G.D. (1978). Behavioral and physiological properties of tunas and their effects on vulnerability to fishing gear. In G.D. Sharp, A.E. Dizon (Eds.), *The physiological ecology of tunas*. New York, NY: Academic Press.

²⁹⁵ McKecknie et al. (2016) at 8.

areas when temperatures are optimal, typically in spring and fall months.²⁹⁶ In the Pacific, the highest concentration of skipjack larvae is found between 5° N and 5° S and from 160° E to 140° W. Even so, skipjack larvae can be found as far north as 35° N off Japan and as far south as 37° S of Australia.²⁹⁷ Skipjack larvae have also been found in relatively high concentrations near coral reefs in French Polynesian islands, suggesting that productive waters around oceanic islands and reefs provide habitat for larval development.²⁹⁸

Relatively little is known about the juvenile phase of skipjack. This is due to a lack of samples appearing in plankton tows, and because juveniles are too small to be captured in the major fisheries.²⁹⁹ Most of the small juvenile skipjack which have been collected derive from stomach content analysis of larger tunas and billfish, indicating that skipjack are forage prey for predators at higher trophic levels.³⁰⁰ Juvenile abundance in the Pacific has been found to be greatest during October-March between the equator and 25°S in two broad geographical areas - eastern Polynesia (130°-150°W), and in the area adjacent to Papua New Guinea, the Solomon Islands and Vanuatu (140°-170°E).³⁰¹

Overall, skipjack abundance is highest in the equatorial regions, with horizontal movements corresponding to preferred habitat and prey availability. Tag and recapture studies in the Pacific have indicated that skipjack are not as highly migratory of other marine species (e.g., billfish) that fall in the

²⁹⁶ Retrieved from <http://www.spc.int/oceanfish/en/tuna-fisheries/tuna-species/296-skipjack>

²⁹⁷ Wild and Hampton (1994) at 2.

²⁹⁸ Leis, J. M., Trnski, T., Harmelin-Vivien, M., Renon, J. P., Dufour, V., El Moudni, M. K., & Galzin, R. (1991). High concentrations of tuna larvae (Pisces: Scombridae) in near-reef waters of French Polynesia (Society and Tuamotu Islands). *Bulletin of Marine Science*, 48(1), 150-158.

²⁹⁹ Wild and Hampton (1991) at 3.

³⁰⁰ Ibid.

³⁰¹ Argue, A. W., & R.E. Kearney. (1983). *Spatial and temporal distributions of juvenile tunas from stomachs of tunas caught by pole and line gear in the central and western Pacific Ocean*. Technical Report Tuna and Billfish Assessment Program. South Pacific Commission. 9, 47.

same category.³⁰² Although an individual fish may move large distances (i.e., over 1,000 nm), such occurrence is the exception rather than the rule, and most skipjack do not migrate more than 500 nm, with approximately 50% migrating less than 500 nm in their lifetime.³⁰³ This has implications for the domestic, sub-regional and international management of skipjack, with domestic (EEZ-based) and sub-regional (adjacent EEZs) conservation and management measures being vitally important for skipjack fishery sustainability.³⁰⁴

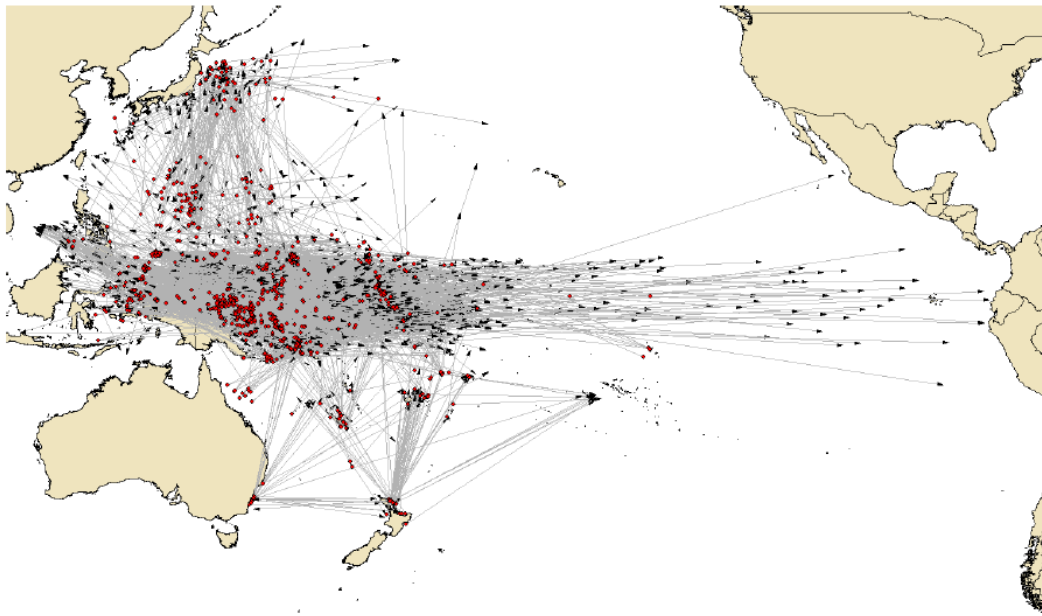


Figure 5: Movements of tagged and recaptured skipjack tuna

Source: McKechnie et al. 2016

El Nino affects skipjack distribution, both in the WCPO and EPO. During El Nino events, skipjack are believed to follow the eastward movement of the warm pool towards the central and eastern Pacific Ocean.³⁰⁵ The eastward movement of skipjack during El Nino can range up to 4,000 km, impacting

³⁰² Hilborn, R. and Sibert J. (1998). Is international management of tuna necessary? *Marine Policy*, 12(1), 31–39. A list of Highly Migratory Species is found in Appendix 1 of UNCLOS. Hilborn and Sibert (1988) go as far as to argue that the scant horizontal movement of tuna, when combined with high their natural mortality rates and the large EEZ of States, weakens the need for international cooperation in fishery management.

³⁰³ Sibert J. and J. Hampton. (2003). Mobility of tropical tunas and the implications for fisheries management. *Marine Policy*, 27, 87-95.

³⁰⁴ Ibid at 92.

³⁰⁵ Lehodey et al. (1997) at 716.

fisheries across substantial distances in terms of catch rates within short periods of time.³⁰⁶ While it is recognized that domestic and sub-regional measures are important for skipjack management, the substantial movement of skipjack during El Nino events also exemplifies the need for compatible management measures across large swaths of the Pacific Ocean.

Human-induced climate change will likely lead to future changes in the marine environment, which in turn is expected to affect the geographical distribution of skipjack tuna, as well as their migration, physiological rates (growth, reproduction), and ultimately skipjack abundance and catchability in various fisheries.³⁰⁷ For example, climate modeling indicates that increased temperature stratification from a rise in sea surface temperature will degrade preferred skipjack habitat in equatorial surface waters, resulting in a considerable decrease of population abundance toward the end of the century.³⁰⁸ This potential occurrence also suggests that future spatial changes in skipjack abundance as a result of climate change are an important consideration in the compatibility of management measures.

4.1.3.1.1 Fisheries

Skipjack catches dominate tuna landings in the WCPO in terms of individual numbers, tonnage and value. With respect to the weight of the catch, skipjack landings are nearly double the combined amount of yellowfin, albacore and bigeye tuna landings (Figures 6 and 7).

³⁰⁶ Ibid.

³⁰⁷ Dueri, S., Bopp, L., & Maury, O. (2014). Projecting the impacts of climate change on skipjack tuna abundance and spatial distribution. *Global Change Biology*, 20, 742–753.

³⁰⁸ Ibid at 753.

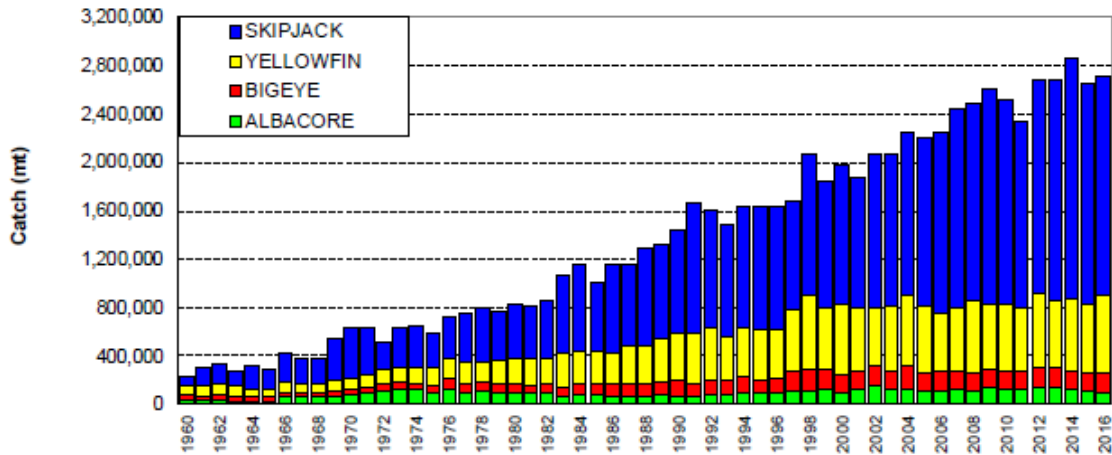


Figure 6: Catch of skipjack, yellowfin, albacore and bigeye tuna in the WCPO
 Source: Williams et al. 2017

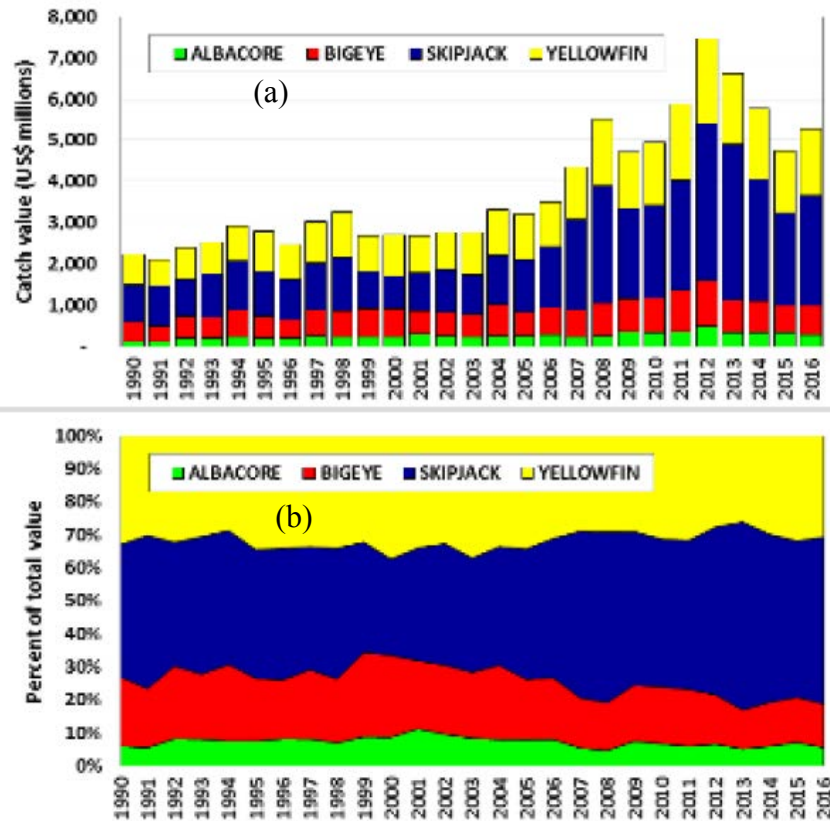


Figure 7: Catch value (a) and percentage of total value (b) of WCPO skipjack, yellowfin, albacore and bigeye tuna landings
 Source: Williams et al. 2017

Historically, bait boats (pole-and-line) were the main gear used to catch skipjack tuna. However, since the 1950s, purse seiners have dominated the fishery in the EPO, with a similar trend occurring in the WCPO since the early 1980s.³⁰⁹ Some skipjack tuna are also caught incidentally by longliners on much lower levels, as well as by handline and trolling methods (Figure 8).³¹⁰

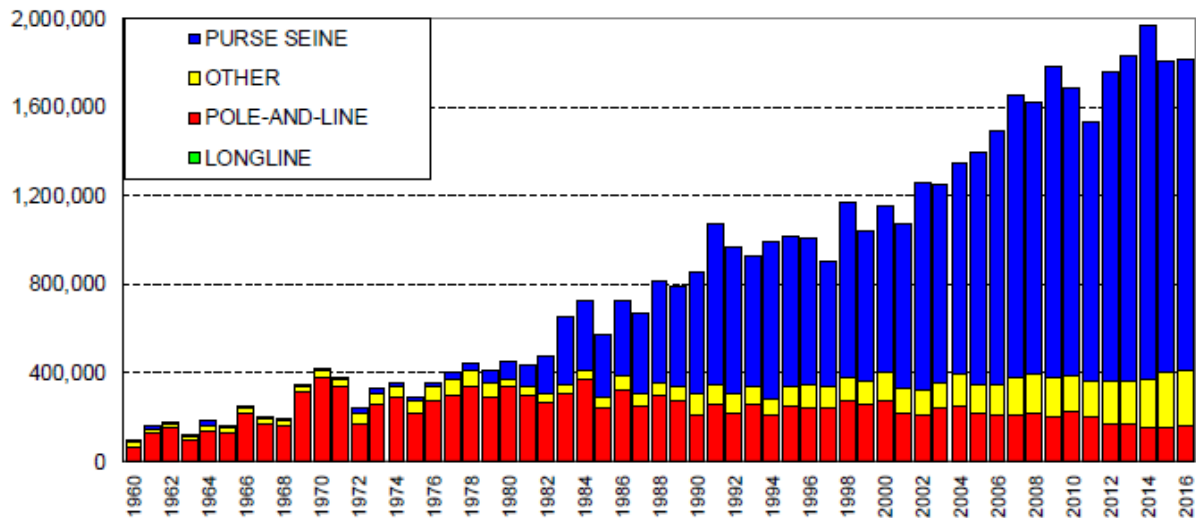


Figure 8: WCPO catch of skipjack tuna by gear
Source: Williams et al. 2017

Most of the catch of skipjack occurs within tropical waters between 10° N and 10° S of the equator (Figure 9).

³⁰⁹ Felando, A., & Medina, H. (2012). The origins of California’s high-seas tuna fleet. *Journal of San Diego History*, 28(1-2), 1-40.

³¹⁰ Retrieved from: https://www.wcpfc.int/system/files/YB_2015.pdf.

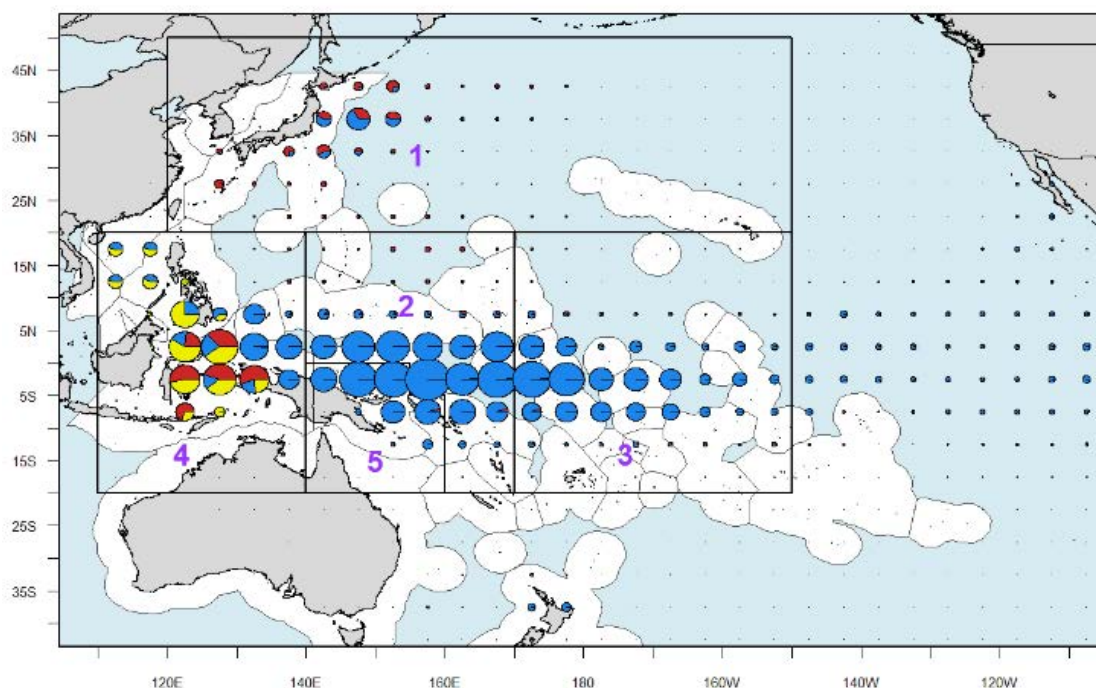


Figure 9: Distribution of skipjack catch in the Pacific Ocean by gear, 2006-2015

Source: McKechnie et al. 2016

Note: purse seine (blue), pole and line (red), longline (green), other (yellow). Boxed areas represent the WCPO stock assessment sub-regions.

4.1.3.1.2 WCPO Stock Status

While catches of skipjack have increased nearly every year since 1980, WCPO stock assessments have found that skipjack is neither overfished nor experiencing overfishing with regard to fishing mortality and biomass levels (Figure 10).³¹¹

³¹¹ McKechnie, S., Hampton, J., Pilling, G. M., & Davies, N. (2016). *Stock assessment of skipjack tuna in the western and central Pacific Ocean*. Twelfth Regular Session of the WCPFC Scientific Committee. Bali, Indonesia. 3–11 August 2016. WCPFC-SC12-2016/SA-WP-04.

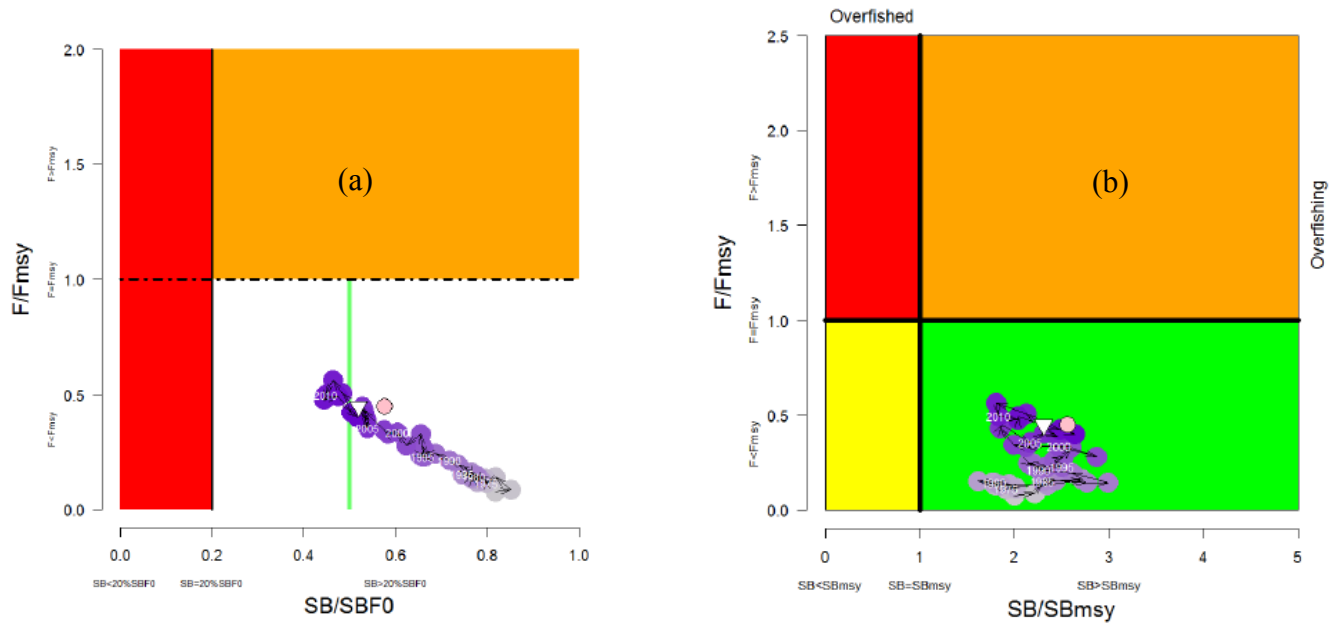


Figure 10: Majuro Plot (a) and Kobe Plot (b) for skipjack tuna in the WCPO
 Source: McKechnie et al. 2016

4.1.3.2 Yellowfin Tuna

Yellowfin tuna (*Thunnus albacares*) is found in tropical waters of the Pacific, Atlantic and Indian Oceans. Yellowfin is considered a ‘tropical’ tuna, as distinguished from ‘cold-water’ tuna such as bluefin, albacore, and to some extent bigeye tuna.³¹² Within the Pacific, yellowfin tuna are found widely from around 35° N – 33° S in the EPO, and from 40° N - 35° S in the WCPO, and within the temperature band of 18°C and 31°C (Figure 11). Sea surface temperatures play a primary role in the horizontal and vertical distribution of yellowfin, particularly at higher latitudes.³¹³ Yellowfin in the WCPO and EPO yellowfin stocks are assessed separately and managed by the WCPFC and IATTC respectively.

³¹² Yellowfin and bigeye tuna share several morphological characters, with bigeye tuna appearing to cluster weakly with the tropical tunas based on some genetic evidence. Chow, S., & Kishino, H. (1995). Phylogenetic relationships between tuna species of the genus *Thunnus* (Scombridae: Teleostei): inconsistent implications from morphology, nuclear and mitochondrial genomes. *Journal of Molecular Evolution*, 41(6), 741-748.

³¹³ Itano, D. G. (2000). *The reproductive biology of yellowfin tuna (Thunnus albacares) in Hawaiian waters and the western tropical Pacific Ocean: project summary*. Honolulu, Hawaii: University of Hawaii, Joint Institute for Marine and Atmospheric Research.

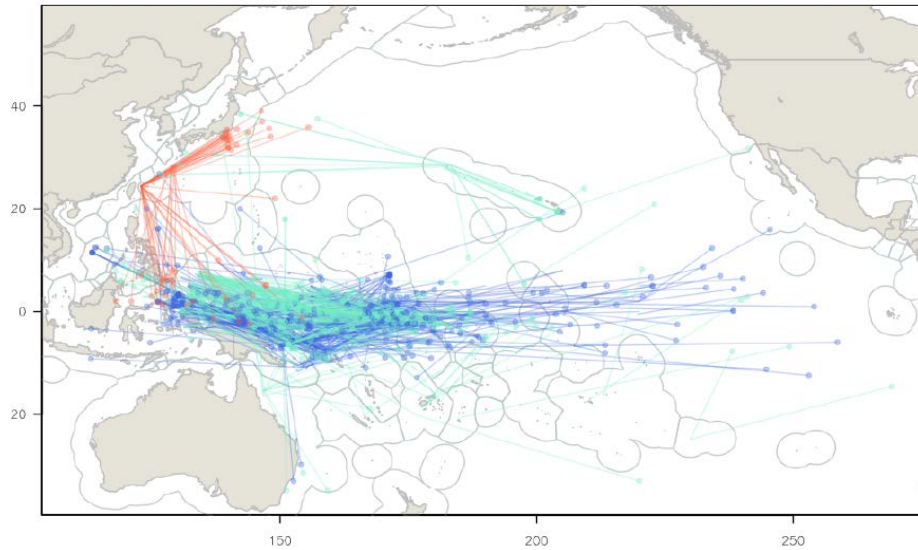


Figure 11: Yellowfin tuna movement over 1,000 nm based on tagging studies

Source: Tremblay-Boyer et al. 2017

Feeding is opportunistic at all life stages, with prey items consisting of crustaceans, cephalopods and fish.³¹⁴ Growth is considered very rapid, with individuals reaching approximately 55 cm in fork length (FL) at the age of one, and over 90 cm at the age of two.³¹⁵ Yellowfin tuna are not considered long-lived in comparison to bluefin tunas or albacore, with a maximum age believed to be around 6 - 7 years.

Yellowfin are considered to mature very quickly at around two years of age, with some regional variability.³¹⁶ The size of yellowfin at 50% maturity is estimated to be approximately 110-120 cm.³¹⁷

Yellowfin prefer water temperatures above 24°C to spawn, which are not uncommon in the equatorial and sub-tropical zones of the Pacific.

³¹⁴ Suzuki, Z. (1994). A review of the biology and fisheries for yellowfin tuna (*Thunnus albacares*) in the Western and Central Pacific Ocean. In R.S. Shomura, J. Majowski, & S. Langi (Eds.) *Interactions of Pacific tuna fisheries. Proceedings of the first FAO Expert Consultation on Interactions of Pacific Tuna Fisheries* (pp.108-136). 3–11 December 1991. Noumea, New Caledonia. Volume 2: Papers on biology and fisheries. FAO Fisheries Technical Paper, 336(2). Rome, FAO.

³¹⁵ Ibid.

³¹⁶ Lehodey, P., & Leroy, B. (1999). Age and growth of yellowfin tuna (*Thunnus albacares*) from the western and central Pacific Ocean as indicated by daily growth increments and tagging data. Twelfth Meeting of the Science Committee on Tuna and Billfish. 16-23 June 1999. Papeete, French Polynesia. WP YFT-2-SCTB-12.

³¹⁷ Itano (2000) at 27.

4.1.3.2.1 Fisheries

Yellowfin is second to skipjack in terms of catch within the WCPO, with the highest catch recorded at over 600,000 mt in 2016. Purse seine, longline, pole and line, troll, and handline methods are used to catch yellowfin (Figure 12). Catches are dispersed in both the equatorial and sub-tropical regions, but like skipjack, most of the catch occurs in the equatorial region of the WCPO. Significant amounts of yellowfin are caught in the national waters of Indonesia and Philippines by mostly artisanal fishing gears (Figure 13).

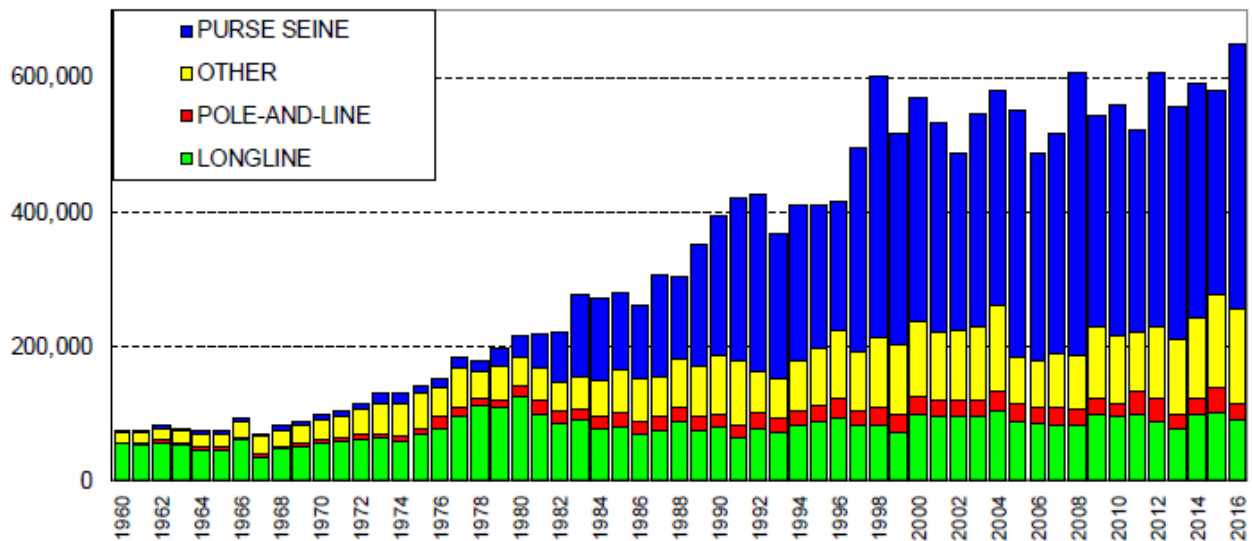


Figure 12: Catch of yellowfin tuna in the WCPO by fishing gear

Source: Williams et al. 2017

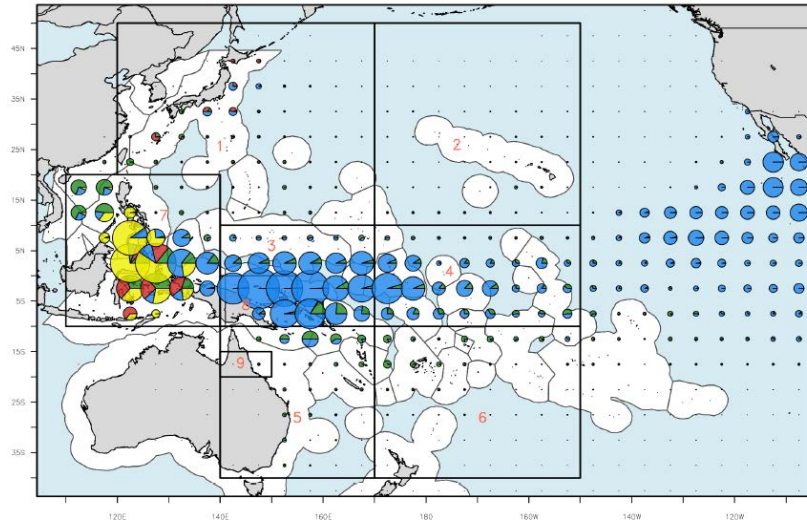


Figure 13: Location of yellowfin catch in the Pacific, 2006-2015

Source: Tremblay-Boyer et al. 2017

Note: Fishing gears: longline (green), pole-and-line (red), purse seine (blue) and miscellaneous (yellow).

4.1.3.2.2 WCPO Stock Status

Yellowfin in the WCPO is not overfished or experiencing overfishing; however, it is understood that the biomass of yellowfin has been continuously declining since the 1960s (Figure 14).³¹⁸ Based on current estimates, WCPO yellowfin spawning biomass is around 33% of unfished biomass levels.³¹⁹

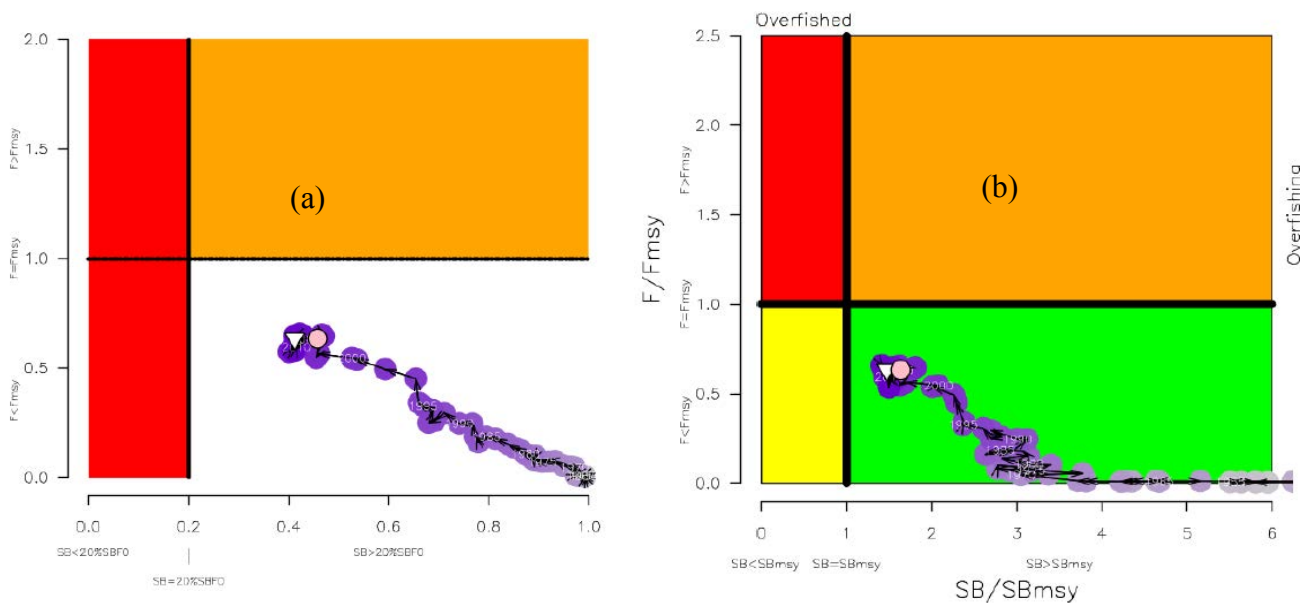


Figure 14: Majuro plot (a) and Kobe plot (b) of WCPO yellowfin tuna stock status

Source: Tremblay-Boyer et al. 2017

³¹⁸ WCPFC. (2017). *Summary Report of the Thirteenth Regular Session of the Scientific Committee*. 7-14 August 2017. Rarotonga, Cook Islands. xxii.

³¹⁹ Ibid.

4.1.3.3 Albacore

Albacore tuna (*Thunnus alalunga*) is a sub-tropical tuna species found in the Pacific, Atlantic and Indian Oceans, with six genetically different stocks globally.³²⁰ In the Pacific, there are separate northern and southern stocks, each with differing growth rates, spawning areas and migration patterns.³²¹ In the North Pacific, there is believed to be only two sub-stocks,³²² while in the eastern equatorial Pacific, albacore is considered to be absent.³²³

North Pacific Albacore are mainly centered around 35° N, but range between 10° N and 50° N.³²⁴ South Pacific Albacore are distributed in the central South Pacific between 10° S and 30°S and 150° E to 120° W, but can also be found as far as 50°S. Although albacore can be found at the surface and at deeper depths, the most important factor in determining albacore distribution is temperature.³²⁵ Sea surface temperatures between 10° C and 20°C provide the general boundaries for albacore; however, deep-swimming albacore can be found in waters up to 25°C.³²⁶

Oceanic features such as thermal fronts are believed to be important habitat areas for albacore, including the Kuroshio Front east of Japan and North Pacific Transition Zone.³²⁷ Albacore undertake complex migration patterns, and depending on age may make different migrations. For example, in any given year, one year class of North Pacific Albacore is believed to migrate east to west and then east again in a band

³²⁰ Nikolic, N., Morandau, G., Hoarau, G.L., West, W., Arrizabalaga, H., Hoyle, S., Arrizabalaga, H., Hoyle, S., Nicol, S. J., Bourjea, J., Puech, A., Farley, J.H., Williams, A.J., & Fonteneau, A. (2016). Review of albacore tuna, *Thunnus alalunga*, biology, fisheries and management. *Reviews in Fish Biology and Fisheries*, 1-36.

³²¹ Murray T. (1994). A review of the biology and fisheries for albacore, *Thunnus alalunga*, in the South Pacific Ocean. In R.S. Shomura, J.Majkowski, and S.Langi (Ed.), *Interactions of Pacific tuna fisheries* (pp.188-206). FAO Fisheries Technical Paper. Rome, FAO.

³²² Laurs, M. & Lynn, R.J. (1991). North Pacific albacore ecology and oceanography. In Wetherall, J.A. (Ed.), *Biology, Oceanography and Fisheries and the North Pacific Transition Zone and Subarctic Frontal Zone* (pp.69-87). NOAA Technical Report.

³²³ Collette B. & Nauen, C. (1983). *Scrombrids of the world: an annotated and illustrated catalogue of tunas, mackerels, bonitos, and related species known to date*. FAO Fisheries Synopsis No. 125. Rome. FAO. 137.

³²⁴ Laurs and Lynn (1991) at 69.

³²⁵ Saito, S. (1973). Studies on fishing of albacore, *Thunnus alalunga* by experimental deep-sea tuna long-line. *Memoirs of the Faculty of Fisheries Hokkaido University*, 21(2), 107-184.

³²⁶ Ibid. Albacore can be found to a depth of at least 380 m.

³²⁷ Ibid.

between 30°N and 45°N. This class of albacore leave the northeast Pacific in September-October, reaching waters off Japan the following summer, before returning to the east in the summer of the following year. After a period of four-to six years (the time it takes to reach maturity), North Pacific adults enter sub-tropical waters south of 30° N to spawn.³²⁸

Concentrations of albacore larvae have been found off coral reefs in French Polynesia and Hawaii, which suggests that spawning may occur close to islands.³²⁹ Small juvenile albacore (12mm to 300 mm in length) have been found in Western Pacific coastal waters including the Mariana Islands, Japan, Fiji, the coast of east Australia, Hawaii and Tuvalu.³³⁰ As juvenile fish mature up to the age of five, they prefer cooler waters, and then enter the tropics as adults.³³¹

In the North Pacific, female albacore tuna reach maturity by about 90 cm, while males are believed to reach maturity later at approximately 97 cm.³³² In the South Pacific, mature females are generally found to be greater than 80 cm.³³³ South Pacific albacore exhibit sexual size dimorphism, with males being larger than females after about 85 cm in length.³³⁴ The maximum life span for albacore is up to 15 years.³³⁵

³²⁸ Childers, J., Snyder, S., & Kohin, S. (2011). Migration and behavior of juvenile North Pacific albacore (*Thunnus alalunga*). *Fisheries Oceanography*, 20(3), 157-173.

³²⁹ Leis, J. M., Trnski, T., Harmelin-Vivien, M., Renon, J. P., Dufour, V., El Moudni, M. K., & Galzin, R. (1991). High concentrations of tuna larvae (Pisces: Scombridae) in near-reef waters of French Polynesia (Society and Tuamotu Islands). *Bulletin of Marine Science*, 48(1), 150-158. The authors also warn that the anthropogenic impact on near-reef waters will have consequences for tuna fishery management.

³³⁰ NMFS. (2001). Environmental Impact Statement. Pelagic Fisheries of the Western Pacific Region. National Marine Fisheries Service, Department of Commerce. Honolulu, Hawaii. 40.

³³¹ Ibid.

³³² Bartoo, N. & Foreman, T. (1991). A review of the biology and fisheries for North Pacific albacore (*Thunnus alalunga*). In *Interactions of Pacific tuna fisheries*. FAO Fisheries Technical Paper. 336/2. Vol. 2.

³³³ Williams, A., Farely, J., Hoyle, S., Davies, C., & Nicol, S. (2012). Spatial and sex-specific variation in growth of albacore tuna (*Thunnus alalunga*) across the South Pacific Ocean. *PLoS One*, 7(6), 1-10.

³³⁴ Ibid.

³³⁵ Wells, R. D., Kohin, S., Teo, S. L., Snodgrass, O. E., & Uosaki, K. (2013). Age and growth of North Pacific albacore (*Thunnus alalunga*): implications for stock assessment. *Fisheries Research*, 147, 55-62.

South Pacific albacore spawn in the tropical and sub-tropical waters in the South Pacific between 10°S and 25°S.³³⁶ Juveniles appear about one year later at a size of 45–50 cm in the vicinity of the sub-tropical convergence zone (STCZ, at about 40°S) in the central Pacific.³³⁷ Catch rates of South Pacific albacore in subequatorial waters peak during December–January and May–July, indicating that albacore migrate south during early summer, and north during winter. As a result of different movement patterns commensurate with life stage, there is a latitudinal gradient in size distribution, with predominately small fish (<80 cm) at latitudes south of 35°S, and large fish (>80 cm) at latitudes north 30°S.³³⁸

4.1.3.3.1 Fisheries

The availability of juvenile populations closer to the surface, and adults at deeper depths, results in different types of fishing gear being used to target albacore at particular life stages. Currently, most North Pacific albacore is caught using troll gear, whereas longline fishing gear catches the most albacore in the South Pacific (Figures 15 and 16). In the 1980's, there were substantial drift gillnet fisheries in the South Pacific conducted by Taiwanese and Japanese vessels.³³⁹ However, drift gillnet fisheries were banned on the high seas after the 1989 UN General Assembly Resolution called for a moratorium on this type of fishing gear.³⁴⁰

³³⁶ Farley, J. H., Hoyle, S. D., Eveson, J. P., Williams, A. J., Davies, C. R., & Nicol, S. J. (2014). Maturity ogives for South Pacific albacore tuna (*Thunnus alalunga*) that account for spatial and seasonal variation in the distributions of mature and immature fish. *PLoS one*, 9(1), 1-15, at 1.

³³⁷ Ibid.

³³⁸ Ibid at 2.

³³⁹ Wright, A. and D. Doulman. (1991). Driftnet fishing in the South Pacific: from controversy to management. *Marine Policy*, 15(5), 303-329. Large-scale driftnet fishing, which involves the setting of gillnets 20-55 km long at depths of 10-15 m, is considered indiscriminate fishing gear. Indeed, in addition to catching target species, the gear also catches seabirds, marine mammals, sea turtles, as well as other types of fish that swim into the translucent netting. In addition to high bycatch levels, large-scale driftnets also pose navigational hazards, as the nets are often unmarked and too long to be actively tended.

³⁴⁰ UN Resolution 44/225 placed a moratorium on high seas driftnet fishing in the South Pacific from July 1991, and globally after June 1992. Prior to the UN high seas driftnet moratorium, several South Pacific countries began a series of regional level meetings to curb the practice. In 1989, several South Pacific countries signed the Wellington Convention, which prohibited large-scale drift-netting by signatories in the EEZ and on the high seas of the South Pacific Ocean.

Albacore are widely dispersed throughout the Pacific and caught at both relatively low and high latitudes. For example, surface troll and jig vessels target juvenile in temperate waters, whereas longline gear is used to target adults in tropical and subtropical waters (Figure 17).³⁴¹ The major fish surface fisheries occur off the West Coast of North America (troll), south of Japan (poll and line), New Zealand (troll and poll and line), and in the northwest and south Pacific, with longline gear being used to capture deep-swimming fish (Figure 17).

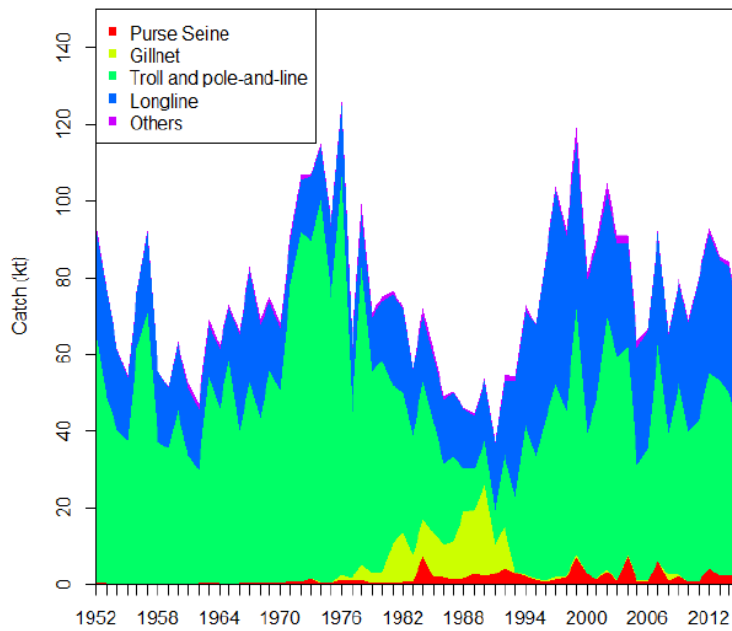


Figure 15: Catch of North Pacific albacore by gear, 1952-2016
Source: ISC 2017

³⁴¹ ISC (2017). Stock Assessment of Albacore Tuna in the North Pacific Ocean in 2017. *Report of the Albacore Working Group*. 12-17 July 2017. Vancouver, Canada. 103.

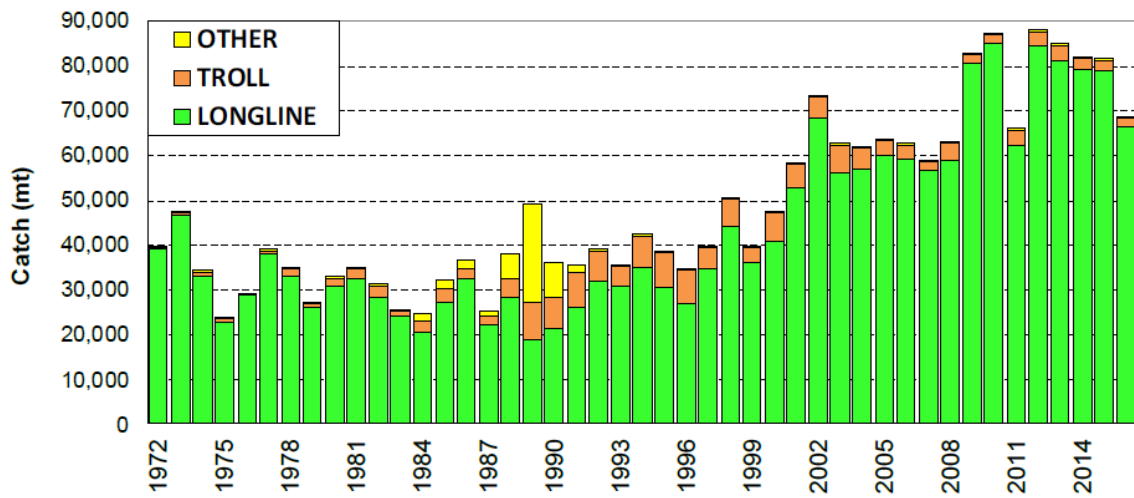


Figure 16: Catch of South Pacific albacore in the WCPO by gear, 1972-2016
 Source: Williams et al. 2017

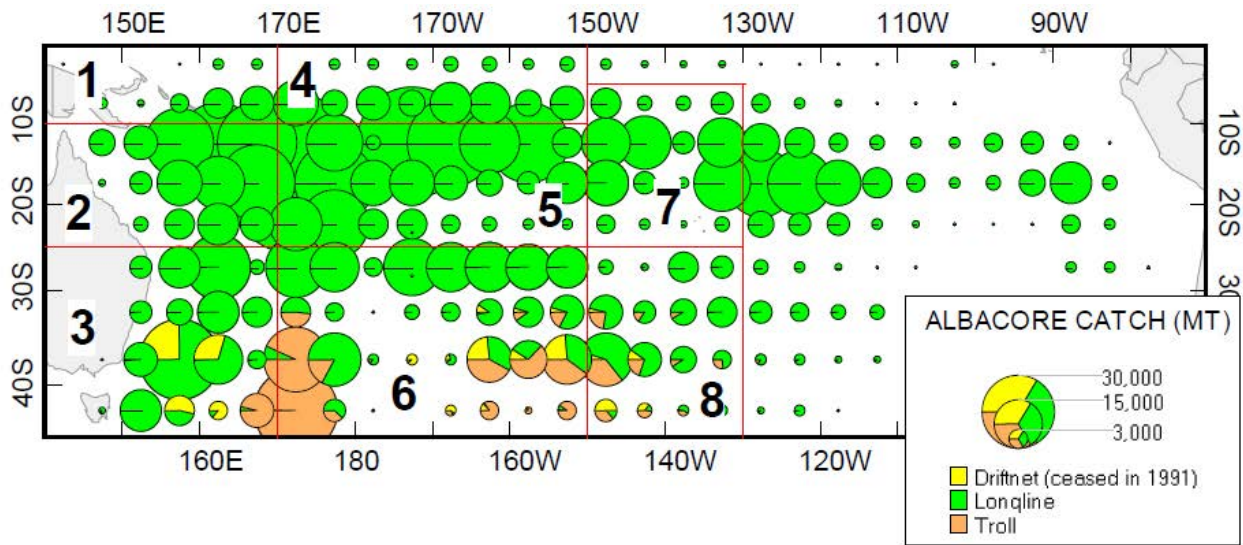


Figure 17: Catch distribution of South Pacific albacore, 1988-2016
 Source: Williams et al. 2017

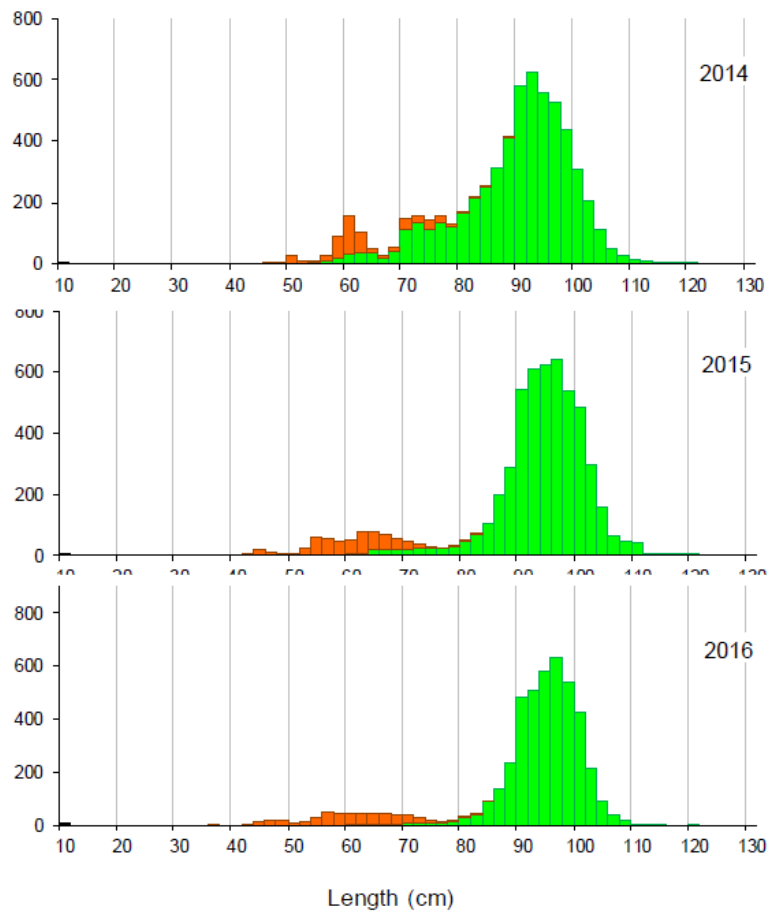


Figure 18: Size distribution of South Pacific albacore catch, 2014-2016

Source: Williams et al. 2017

Note: Green (longline) and orange (troll).

4.1.3.3.2 Stock status

As of the date of this thesis, the most recent stock assessment for North Pacific Albacore was conducted in 2017. After reviewing the stock assessment, the WCPFC Scientific Committee concluded that the stock was not in an overfished condition.³⁴² The Scientific Committee also noted that although no fishing mortality reference points have been established for this stock, recent levels of fishing mortality were

³⁴² WCPFC SC13 (2017) at 75.

below six of the seven reference points evaluated.³⁴³ Overall, North Pacific Albacore is believed to be in a reasonably healthy condition (Figure 19).

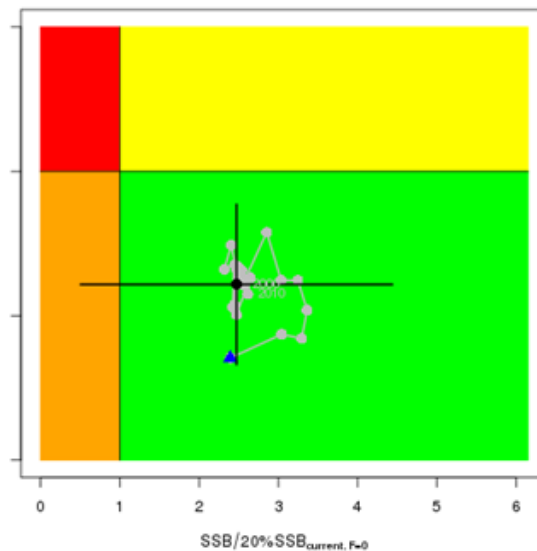


Figure 19 Kobe plot indicating stock status of North Pacific albacore

Source: ISC 2017

Note: Blue triangle represents start time for the series (1993)

South Pacific albacore is not believed to be overfished or experiencing overfishing (Figure 20). However, there has been concern for several years that adult biomass - the age class most vulnerable to longline fishing - has been declining and negatively impacting longline catch rates. The WCPFC SC has recommended that longline fishing mortality be reduced to avoid further declines, and to ensure that economically viable catch rates can be maintained.³⁴⁴

³⁴³ Ibid.

³⁴⁴ WCPFC SC13 (2017) at 71.

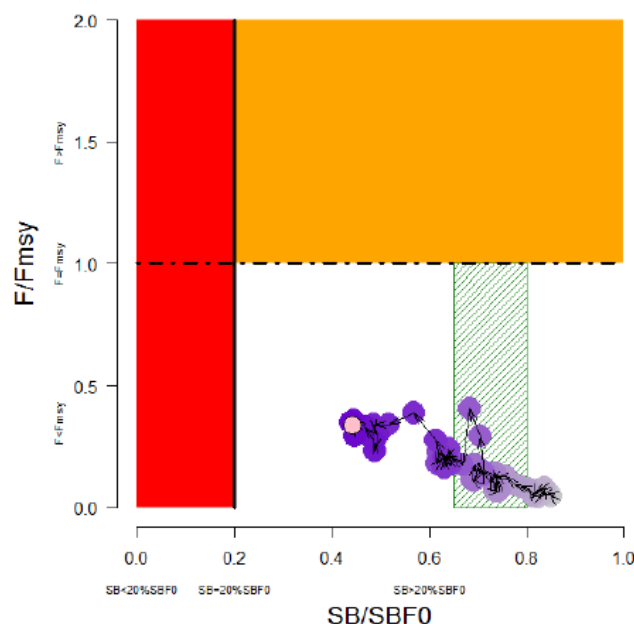


Figure 20: Majuro plot of South Pacific albacore

Source: Harley et al. 2015

4.1.3.4 Bigeye tuna

Bigeye tuna (*Thunnus obesus*) is a large pelagic species that occurs throughout the tropical and subtropical waters of the Pacific, Atlantic and Indian Oceans.³⁴⁵ Bigeye are considered highly adept predators and occupy the higher trophic levels of the pelagic food web.³⁴⁶ Although genetic analysis has failed to reveal population subdivision within the Pacific, there is evidence from tagging studies of bigeye movement in excess of 4,000 nm, which lends support for Pacific bigeye being considered a single stock.³⁴⁷ However, most recaptured tagged bigeye have been caught much closer to their areas of release

³⁴⁵ Collete, B.B., & Nauen, C.C. (1983). FAO Species Catalogue. Vol. 2. Scombrids of the world. An annotated and illustrated catalogue of tunas, mackerals, bonitos, and related species known to date. *FAO Fisheries Synopsis* 125(2), 137.

³⁴⁶ Dambacher, J. M., Young, J. W., Olson, R. J., Allain, V., Galván-Magaña, F., Lansdell, M. J., N. Boocanegra-Castillo, V. Alatorre-Ramirez, S. Cooper, & Duffy, L. M. (2010). Analyzing pelagic food webs leading to top predators in the Pacific Ocean: a graph-theoretic approach. *Progress in Oceanography*, 86(1), 152-165.

³⁴⁷ Grewe, P. & Hampton, J. (1998). An assessment of bigeye (*Thunnus obesus*) population structure in the Pacific Ocean based on mitochondrial DNA and DNA microsatellite analysis. *JIMAR Contribution* 98-330.

– a finding which supports the inclusion of spatial structure into stock assessments.³⁴⁸ Tagging studies have also shown that bigeye exhibit latitudinally-constrained movement between 10°N and 10°S, and a general eastward longitudinal dispersion pattern, particularly from fish tagged around 170°W.³⁴⁹ It is generally believed that there is considerable mixing of bigeye tuna between the central equatorial regions of the WCPFC and IATTC Convention Areas (Figure 21).³⁵⁰ Even so, bigeye are assessed and managed separately by the WCPFC and IATTC.

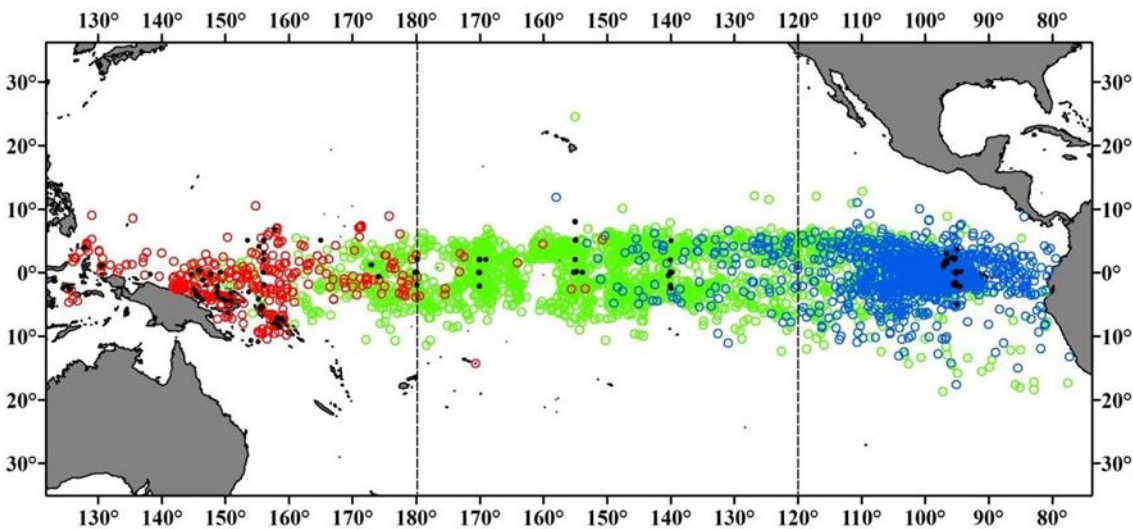


Figure 21: Map of bigeye movement from equatorial tagging studies

Source: Schaefer et al. 2016

Note: black dots represent release locations; red dots are recapture locations of fish released in western region; green dots are recaptures of fish released in central region; blue dots are recaptures of fish released in eastern region.

Bigeye are fast growing and are believed to reach maturity between 80 cm and 120 cm (approximately 3-4 years old).³⁵¹ Many bigeye live in excess of 8 years, reaching a maximum length of around 200 cm.³⁵²

³⁴⁸ Hampton, J. (2002). *Stock assessment of bigeye tuna in the Western and Central Pacific Ocean*. Fifteenth Meeting of the Standing Committee on Tuna and Billfish. 22-27 July 2002. Honolulu, Hawaii. 37.

³⁴⁹ Schaefer, K., Fuller, D., Hampton, J., Caillot, S., Leroy, B., & Itano, D. (2015). Movements, dispersion, and mixing of bigeye tuna (*Thunnus obesus*) tagged and released in the equatorial Central Pacific Ocean, with conventional and archival tags. *Fisheries Research*, 161, 336–355.

³⁵⁰ Ibid.

³⁵¹ Farley, J., Eveson, P., Krusic-Golub, K., Sanchez, C., Roupsard, F., McKechnie, S., Nichol, S., Leroy, B., Smith, N., and Chang, S.-K. (2017). *Age, growth and maturity of bigeye tuna in the western and central Pacific Ocean*. Thirteenth Regular Session of the Scientific Committee of the WCPFC. Rarotonga, Cook Islands, 9–17 August 2017. WCPFC-SC13-2017/SA-WP-01.

Bigeye spawn across the Pacific Ocean from between 15° N and 15° S in areas of the WCPO where sea surface temperatures are above 24°C. However, data collected from the Eastern Pacific Ocean suggests little spawning in waters below 28°C. Generally, bigeye spawn year around, with peak spawning occurring between February and September, and at a frequency of every 1-3 days.³⁵³

4.1.3.4.1 Fisheries

Although bigeye are caught in lesser numbers compared to other tuna stocks, their harvests hold high commercial value, ranking behind skipjack and yellowfin in terms of total landed value in the Pacific. Bigeye are principally targeted by longline vessels fishing between 40° N and 40° S, but can be incidentally caught by purse seine vessels fishing between 10° N and 10° S when using fish aggregation devices (FADs). Bigeye can also be caught by pole and line and handline fisheries.³⁵⁴ The annual Pacific-wide catch of bigeye for the last decade has been around 250,000 mt, with around 60% coming from the WCPO. Around 150,000 mt of bigeye have been harvested annually in the WCPO over the last 10 years (Figure 22).

³⁵² Hampton (2002). The age of the longest tagged and recaptured bigeye was 14 years (McKechnie et al. 2017).

³⁵³ Sun, C. L., Yeh, S. Z., Chang, Y. J., Chang, H. Y. and Chu, S. L. (2013). Reproductive biology of female bigeye tuna *Thunnus obesus* in the western Pacific Ocean. *Journal of Fish Biology*, 83, 250–271.

³⁵⁴ McKechnie, S., Piling, G., & Hampton, J. (2017). *Stock assessment for bigeye tuna in the western and central Pacific Ocean*. Thirteenth Regular Session of the WCPFC Scientific Committee. 9-17 August 2017. Cook Islands. WCPFC-SC13-2017/SA-WP-05. Rev 1. 149. Purse seine vessels can also catch bigeye in free-swimming schools of skipjack and yellowfin, but at much lower levels than with FAD fishing.

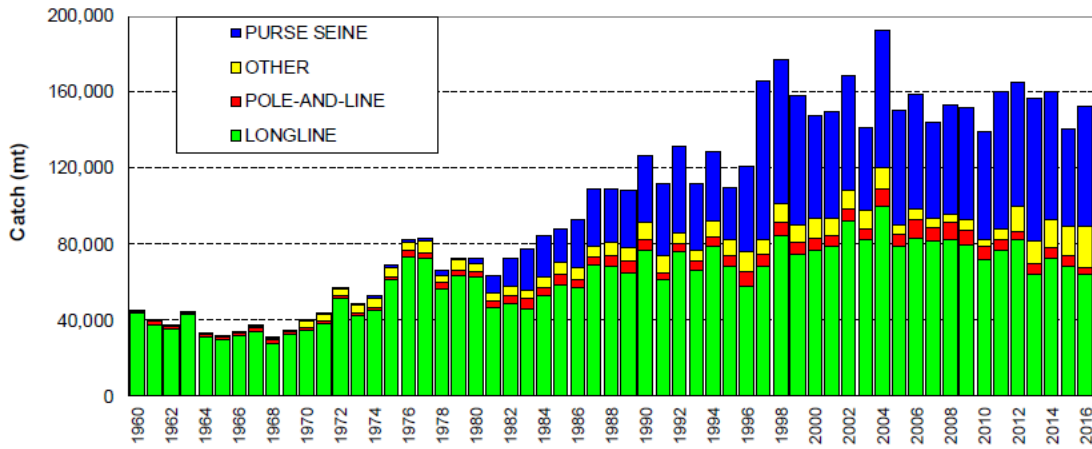


Figure 22: Catch of bigeye in the WCPO, 1960-2016
 Source: Williams et al. 2017

Like skipjack and yellowfin, most of the bigeye catch is taken in the equatorial region, but catches are also dispersed in higher latitude regions of the North Pacific (Figure 23). The composition of the bigeye catch is also similar to that of skipjack and yellowfin, with mostly small, juvenile fish being caught in purses seine and fisheries in Indonesia and Philippines and larger fish caught in longline fisheries (Figure 24).

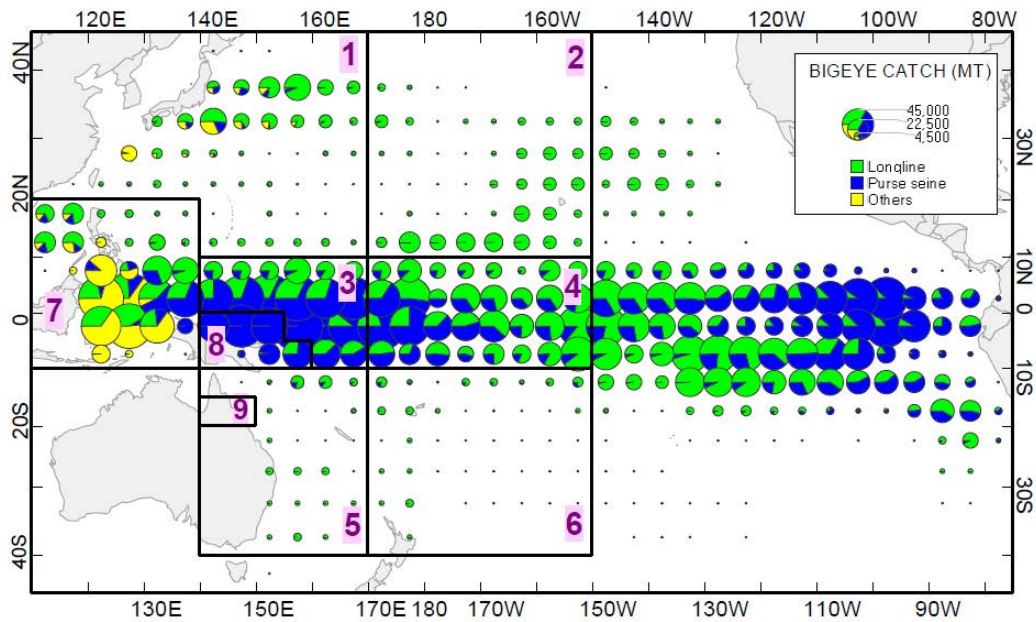


Figure 23: Distribution of bigeye catches in the Pacific Ocean, 1990-2016
 Source: Williams et al. 2017

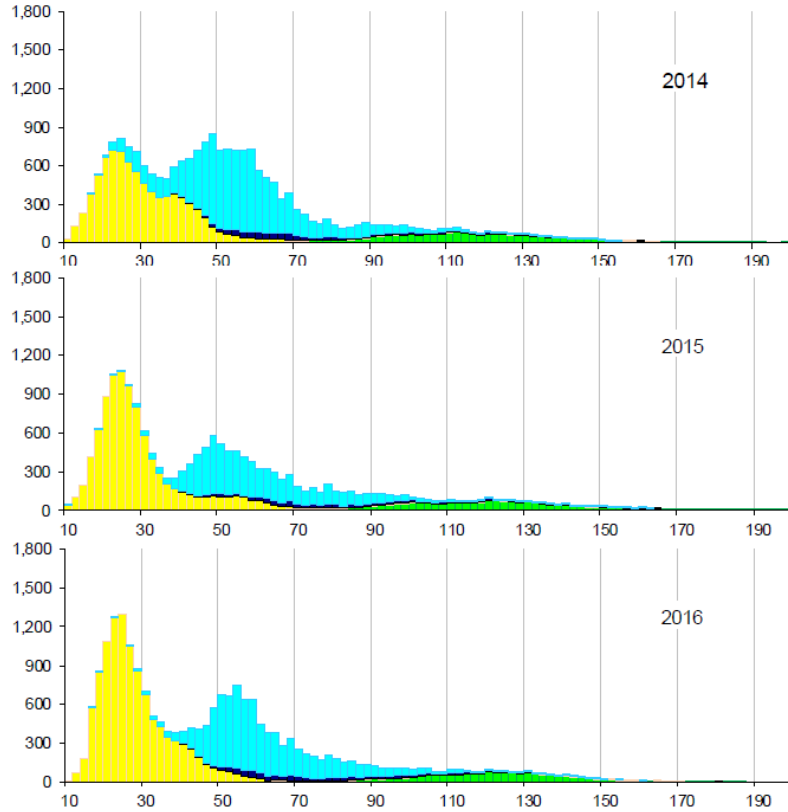


Figure 24: Number of individual bigeye caught by fishing gear, 2014-2016

Source: Williams et al. 2017

Note: Indonesia/Philippines fisheries in archipelagic waters (yellow); purse seine (blue); longline (green).

4.1.3.4.2 Stock Status

Due to the political bifurcation of the Pacific Ocean, with the WCPFC and IATTC being responsible for different management jurisdictions, the stock status of bigeye must be assessed separately. Bigeye in the WCPO was thought to have been experiencing overfishing since the early 2000s, and overfished since

2013 with respect to the WCPFC-established spawning biomass limit reference point.³⁵⁵ As explored in Chapter 6, the poor stock status of bigeye in the WCPO resulted in the implementation of international management measures over several years – measures which sought to address bigeye overfishing and reverse declines in spawning biomass. However, the 2017 WCPO stock assessment yielded different results. Not only did this most recent stock assessment consider overfishing to no longer be occurring, it also revealed that spawning stock biomass is no longer below the WCPFC limit reference point (Figure 25).³⁵⁶ Such positive changes in stock status are believed to be related to a new WCPO bigeye growth curve, changes to the boundaries of the stock assessment sub-regions, as well as improved catch per unit effort (CPUE) trends.³⁵⁷

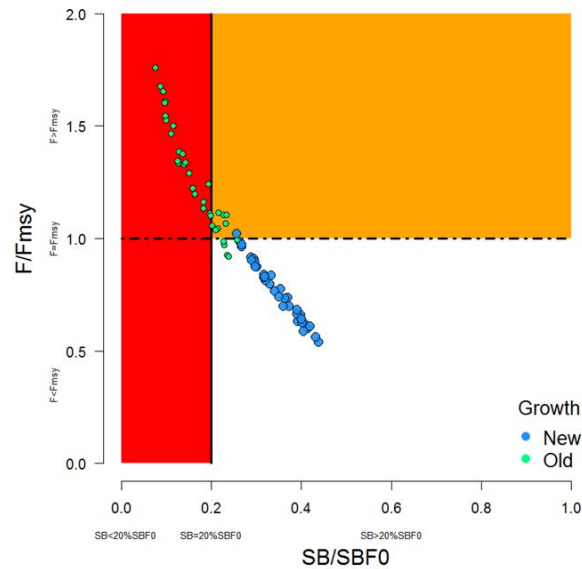


Figure 25: Majuro plot indicating WCPO bigeye stock status

Source: McKechnie et al. 2017

Note: Plot provides stock status using growth estimates used in the 2014 assessment and the new growth estimates derived from Farley et al. 2017.

³⁵⁵ Hampton, J., P. Klieber, Y. Takeuchi, H. Kurota, and M. Maunder. (2003). *Stock assessment of bigeye tuna in the western and central Pacific Ocean*. Sixteenth Meeting of the Standing Committee on Tuna and Billfish. 9-16 July 2003. Mooloolaba, Australia. 81. See also: Harley, S., N. Davies, J. Hampton, S. McKechnie. (2014). *Stock assessment of bigeye tuna in the Western and Central Pacific Ocean*. Western and Central Pacific Commission Science Committee, Majuro, Republic of the Marshall Islands, 6-14 August 2014. WCPFC-SC10-2014/SA-WP-01. 115.

³⁵⁶ WCPFC SC13 (2017) at 40.

³⁵⁷ Ibid.

In the EPO, bigeye is also not overfished or experiencing overfishing (Figure 26).³⁵⁸ It is important to note, however, that the stock assessment methods used in the WCPO and EPO are different.³⁵⁹

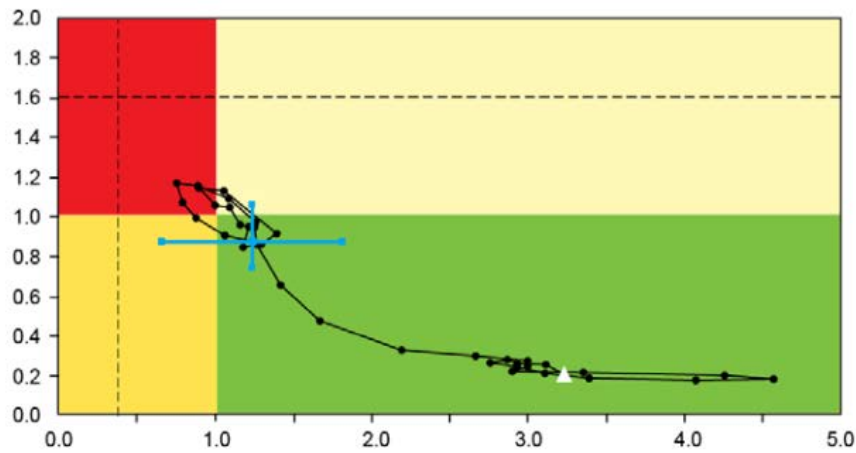


Figure 26: “Kobe” plot indicating bigeye status in the EPO
Source: Aires-da Silva et al. 2017

4.1.3.5 Pacific Bluefin Tuna

Pacific bluefin tuna (*Thunnus orientalis*) is found mostly in the North Pacific Ocean between 20° N and 50° N, but there are accounts of this species occurring in the western South Pacific as well. Pacific bluefin is genetically distinguished from other bluefin species such as Southern bluefin and Atlantic bluefin; however, like other bluefin species, Pacific bluefin are large and long-lived.³⁶⁰ Pacific bluefin generally reach maturity after 5 years and can live past 20 years, reaching lengths greater than 300 cm.³⁶¹

³⁵⁸ Aires da Silva, A., Minte-Vera, C., & Maunder, M. (2017). *Status of bigeye tuna in the eastern Pacific Ocean in 2016 and outlook for the future*. Eighth meeting of the Scientific Advisory Committee of the IATTC. 8-12 May 2017. La Jolla, USA. SAC-08-04a. 12.

³⁵⁹ McKechnie, S., J. Hampton, F. Abascal, N. Davies, and S. Harley. (2015). *Sensitivity of the WCPO bigeye tuna stock assessment to the inclusion of EPO dynamics within a Pacific-wide model*. Eleventh Regular Session of the WCPFC Scientific Committee. 5-13 August 2015. Federated States of Micronesia. WCPFC-SC11-2015/SA-WP-03. 56.

³⁶⁰ Takagi, M., Okamura, T., Chow, S., & Taniguchi, N. (1999). PCR primers for microsatellite loci in tuna species of the genus *Thunnus* and its application for population genetic study. *Fisheries Science*, 65(4), 571-576.

³⁶¹ Chen, K. S., Crone, P., & HSU, C. C. (2006). Reproductive biology of female Pacific bluefin tuna (*Thunnus orientalis*) from south-western North Pacific Ocean. *Fisheries Science*, 72(5), 985-994.

Spawning of Pacific bluefin is known to occur only in the northwestern Pacific Ocean, with a portion of each cohort between the ages of 1-3 conducting trans-Pacific migrations to waters off the west coast of North America (Figure 27).³⁶² The individual fish spend several years in the EPO before returning to the western Pacific to spawn, remaining in these waters until death.³⁶³

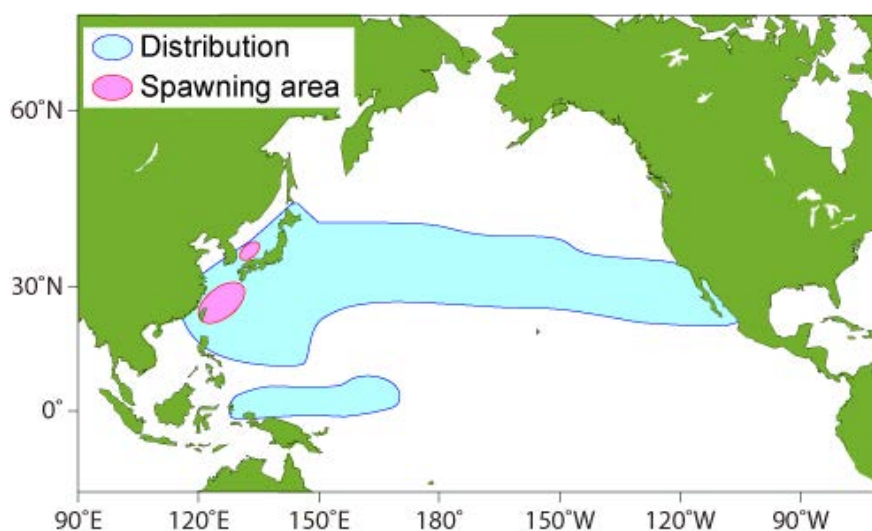


Figure 27: Map showing Pacific bluefin distribution and spawning areas

Source: http://isc.fra.go.jp/working_groups/pacific_bluefin_tuna.html

4.1.3.5.1 Fisheries

Pacific bluefin are caught by a variety of fishing gear including purse seine (the major gear type), longline, troll, handline and fixed traps. The historical annual catch of Pacific bluefin has fluctuated between 10,000 and 40,000 mt, with the most recent five-year average being around 23,000 mt (Figure 28).³⁶⁴ Since the early 1990s, bluefin have been caught in purse seines and transferred to enclosed offshore pens, where they are grown-out and sold. This practice is called “tuna ranching,” and is

³⁶² ISC. (2016). *2016 Pacific Bluefin Stock Assessment. Report of the Pacific Bluefin Working Group*. International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean. 13-18 July 2016. Hokkaido, Japan. 17.

³⁶³ Ibid at 18.

³⁶⁴ ISC (2016) at 19.

conducted in the waters of Japan and Mexico.³⁶⁵ In Japan, offshore aquaculture of Pacific bluefin also involves fish that are farm-hatched and raised from eggs to adults – a practice referred to as “closed-loop cycle” aquaculture.³⁶⁶ Most of the catch is caught by Japan followed by Mexico (Figure 29).

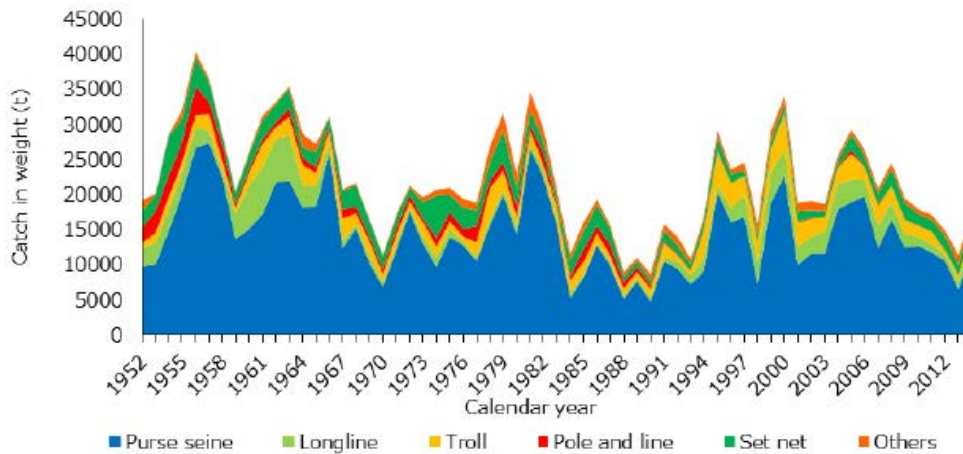


Figure 28: Annual catches of Pacific bluefin by gear, 1952-2014
Source: ISC 2016

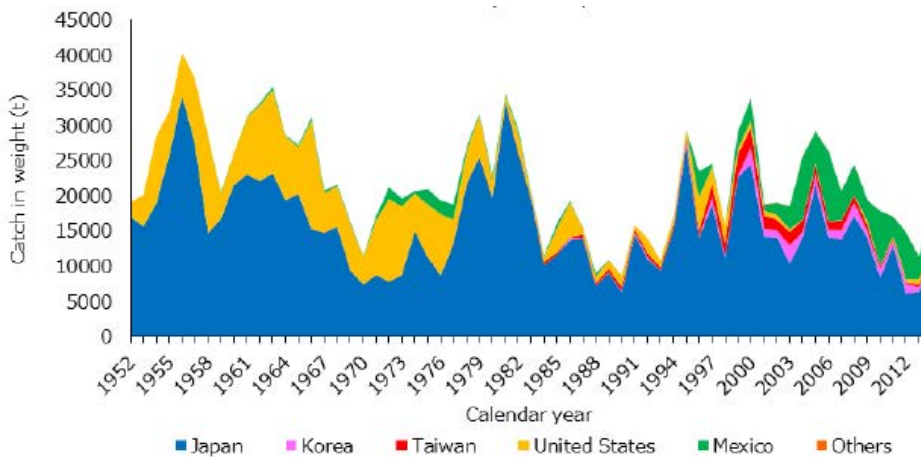


Figure 29: Annual catches of Pacific bluefin by country, 1952-2014
Source: ISC 2016

³⁶⁵ Retrieved from: <http://factsanddetails.com/world/cat53/sub340/item2188.html>

³⁶⁶ Sawada, Y., Okada, T., Miyashita, S., Murata, O., & Kumai, H. (2005). Completion of the Pacific bluefin tuna *Thunnus orientalis* (Temminck et Schlegel) life cycle. *Aquaculture Research*, 36(5), 413-421.

4.1.3.5.2 Stock Status

Compared to other tuna stocks, Pacific bluefin is the most heavily depleted. The proportion of current spawning biomass compared to that of unfished biomass is estimated at 2.6%, with substantial decline in spawning biomass beginning in the 1960s and again in the mid-1990s (Figure 30).

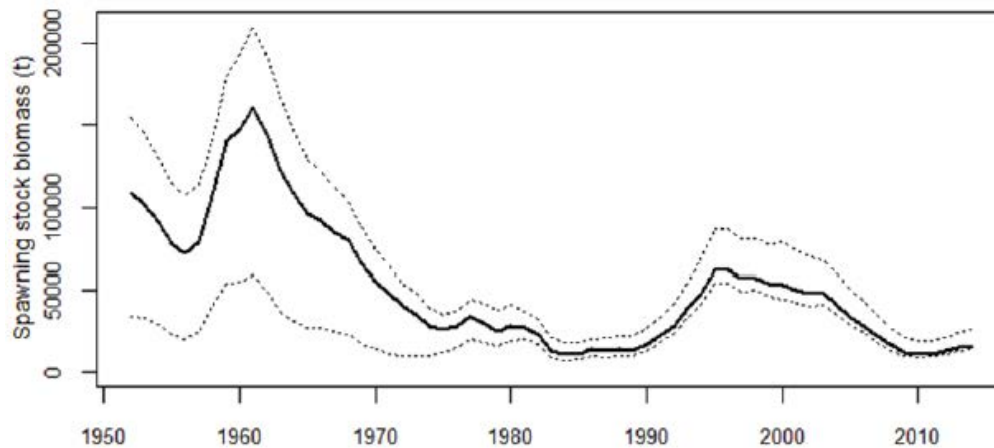


Figure 30: Pacific bluefin spawning biomass, 1959-2014

Source: ISC 2016

A major concern related to stock health is that a large proportion of the Pacific bluefin catch is comprised of juveniles which have not had an opportunity to spawn. In fact, most of the catch is made up of individuals with 0 year age-class (Figure 31). Although no limit reference points have been established for Pacific bluefin, existing fishing mortality and biomass levels exceed most biological reference points, and thus the stock can generally be considered overfished or to be experiencing overfishing (Figure 33).³⁶⁷

³⁶⁷ ISC 2016.

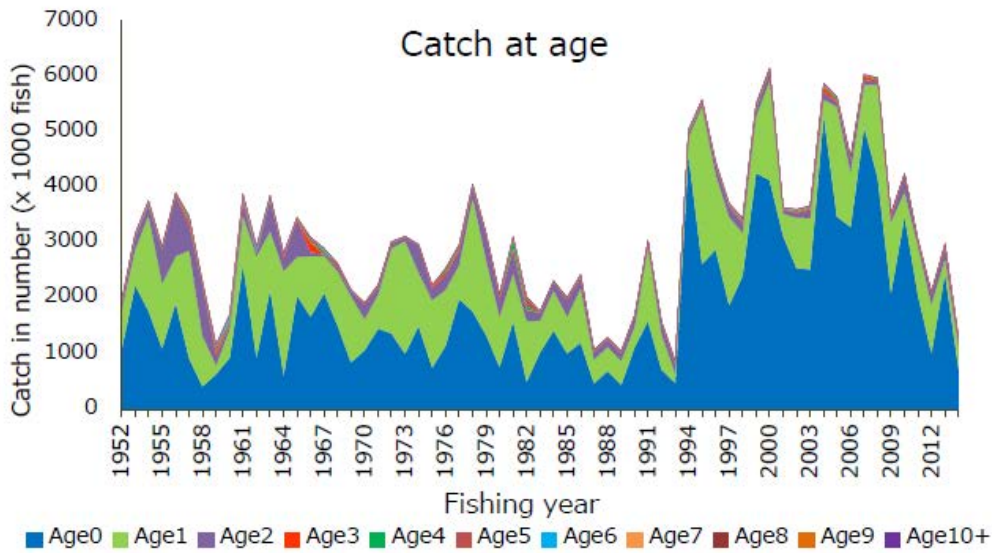


Figure 31: Catch at age for Pacific bluefin

Source: ISC 2016

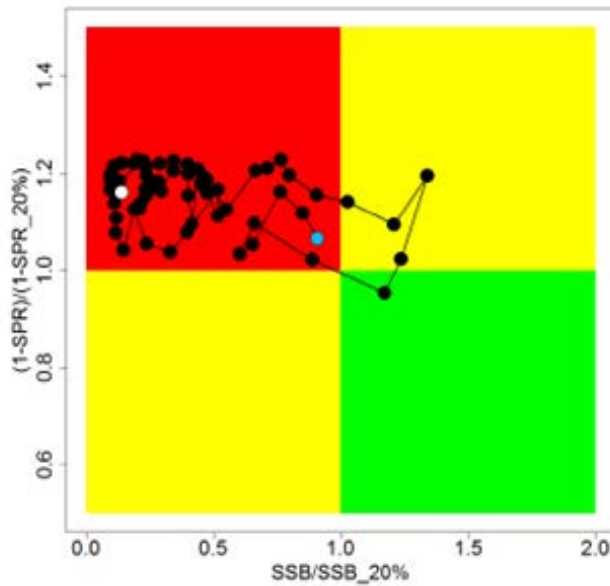


Figure 32: Stock status Pacific bluefin tuna in Kobe Plot

Source: ISC 2016

4.2 Fishing Capacity

Fishing capacity generally refers to the capability of catching fish, and has been defined by the FAO as “the amount of fish (or fishing effort) that can be produced over a period of time (e.g., a year) by a vessel

or a fleet if fully utilized.³⁶⁸ Overcapacity in a fishery should be avoided, otherwise it will result in wasteful fisheries, reduced economic rent, as well as diminished economic viability of the fishing industry as a whole.³⁶⁹ Unfortunately, overcapacity is affecting many of the world's fisheries.³⁷⁰ Greboval and Munro (1999) have estimated that in the 30 years prior to their study, the world's fleet of active fishing vessels increased several times faster than the growth in world catches.³⁷¹ Excess fishing capacity is believed to exist in the major industrial-scale tuna fisheries in the Pacific, Atlantic and Indian Oceans, perpetrated primarily by purse seine and longline vessels.³⁷² Globally, the United Nations FAO has been examining issues associated with overcapacity in the world's tuna fisheries, concluding that options to address this excess capacity are urgently needed.³⁷³ As a result of ecological and economic impacts arising from overcapacity, coastal States which are fisheries-dependent stand to face significant social impacts from depleted resources, including food security issues.³⁷⁴

It is widely accepted that overcapacity is a primary threat to the long-term sustainability of fishery resources.³⁷⁵ Fisheries can become overcapitalized for multiple reasons, including: 1) open access

³⁶⁸ Bayliff, W.H., de Leiva Moreno, J.I., & Majikowski, J. (Eds.). (2004). *Second meeting of the Technical Advisory Committee on the Management of Tuna Fishing Capacity: conservation and socio-economics*. Madrid, Spain. FAO Fisheries Proceedings 2. Rome. FAO. -- Bayliff, W.H. and J. Majikowski. (Eds.). (2007). *Methodological workshop on the management of tuna fishing capacity: stock status, data envelopment analysis, industry surveys, and management options*. FAO Fisheries Proceedings 8. Rome.

³⁶⁹ FAO. (1998). *Report of the FAO Technical Working Group on the Management of Fishing Capacity*. La Jolla, United States, 15-18 April 1998. FAO Fisheries Report. No. 586. Rome, FAO.57.

³⁷⁰ FAO. (2008). Fisheries Management. 3. Managing Fisheries Capacity. *FAO Technical Guideline for Responsible Fisheries. No. 4, Suppl. 3*. Rome, FAO. 104.

³⁷¹ Greboval, D.& Munro, G. (1999). Overcapitalization and Excess Capacity in World Fisheries: Underlying Economics and Methods of Control. In Greboval, D. (Ed.). *Managing Fishing Capacity: Selected Papers on Underlying Concepts and Issues* (pp.21-48). FAO Fisheries Technical Paper 386. Rome, FAO.

³⁷² Allen, R., Joseph, J. A., & Squires, D. (2010). *Conservation and management of transnational tuna fisheries*. Ames, Iowa: John Wiley & Sons.

³⁷³ Ibid.

³⁷⁴ FAO. (2002). *Report of the expert consultation on catalyzing the transition away from overcapacity in marine capture fisheries*. Metzger, R., Ward, J.M. (comps). FAO Fisheries Report. No. 691. Rome, FAO. 89.

³⁷⁵ Pauly, D., Christensen, V., Guénette, S., Pitcher, T.J., Sumaila, U.R., Walters, C.J., Watson, R., & D. Zeller. (2002). Towards sustainability in world fisheries. *Nature* 418, 685-696. -- Greboval, D., & G. Munro. (1999). Overcapitalization and Excess Capacity in World Fisheries: Underlying Economics and Methods of Control. In Greboval, D. (Ed.). *Managing Fishing Capacity: Selected Papers on Underlying Concepts and Issues*. FAO Fisheries Technical Paper 386. Rome, FAO. 21-48.

participation;³⁷⁶ 2) common-pool fisheries that are managed non-cooperatively;³⁷⁷ 3) sole-ownership fisheries with high discount rates and/or high price-to-cost ratios;³⁷⁸ 4) the replacement of small-scale fishing vessels with larger ones;³⁷⁹ and 5) the payment of subsidies by governments to fishery participants.³⁸⁰

From a technical fisheries management perspective, there are numerous FAO reports and publications on fishing capacity that are both informative and comprehensive.³⁸¹ However, it is often the case that fisheries scientists, managers and economists have differing views (e.g., inputs vs. outputs) on how to measure and express fishing capacity.³⁸² For example, fisheries scientists tend to conceptualize capacity in terms of fishing effort (input perspective) and its resultant impact on fishing mortality. Fishery managers often think of fishing capacity in terms of the number of vessels (input perspective), whereas economists tend to consider capacity as the potential production (output perspective) of a vessel at various

³⁷⁶ Gordon, H. S. (1954). The economic theory of a common property resource: the fishery. *Journal of Political Economics*, 62, 124-142.

³⁷⁷ Munro, G. (1979). The optimal management of transboundary renewable resources. *Canadian Journal of Economics*, 12, 355-376.

³⁷⁸ Sumaila, U. R. (1979). Cooperative and non-cooperative exploitation of the Arcto-Norwegian cod stock in the Barents Sea. *Environmental and Resource Economics*, 10, 147-165.

³⁷⁹ Sumaila, U. R., & Bawumia, M. (2000). Ecosystem justice and the marketplace. In Coward, H., Ommer, R. & Pitcher, T. J. (Eds.). *Fish Ethics: Justice in the Canadian Fisheries* (pp. 140-153). Institute of Social and Economic Research, Memorial University, St John's, Newfoundland.

³⁸⁰ Hatcher, A., & Robinson, K. (1999). Overcapacity, overcapitalization and subsidies in European Fisheries. In *Proceedings of the first Concerted Action Workshop on Economics and the Common Fisheries Policy*. Portsmouth, United Kingdom: CEMARE Miscellaneous Publication. No. 44.

³⁸¹ There are numerous FAO reports and publications on fishery capacity that are both informative and comprehensive. The FAO also focused on tuna fishing capacity in a project called the "Management of tuna fishing capacity: conservation and socio-economics". For further reading, see: FAO. (1998). *Report of the FAO Technical Working Group on the Management of Fishing Capacity*. FAO Fisheries Report. No. 586. 15-18 April 1998. La Jolla, United States. -- FAO. (2002). *Report of the expert consultation on catalyzing the transition away from overcapacity in marine capture fisheries*. Metzger, R., & Ward, J.M. (comps). FAO Fisheries Report. No. 691. Rome, FAO. 89. -- Pascoe, S., Kirkley, J.E., Greboval D., & Morrison-Paul, C.J. (2003). Measuring and assessing capacity in fisheries. 2. Issues and methods. *FAO Technical Paper*. No.433/2. Rome, FAO. -- FAO. (2004). *Measuring and appraising capacity in fisheries: framework, analytical tools, and data aggregation*. FAO Fisheries Circular No. 994. Rome. -- Bayliff, W.H., de Leiva Moreno, J.I. & J. Majkowski, (Eds.). (2004). *Second meeting of the Technical Advisory Committee on the Management of Tuna Fishing Capacity: conservation and socio-economics*. 15-18 March 2004. Madrid, Spain. -- Bayliff, W. H., & Majkowski, J. (Eds.). (2007). *Methodological Workshop on the Management of Tuna Fishing Capacity: Stock Status, Data Envelopment Analysis, Industry Surveys and Management Options* (Vol. 8). Food & Agriculture Organization. Rome.

³⁸² FAO (2002) at 53.

utilization levels. As different disciplines have formulated different concepts of fishing capacity, addressing the issue can be a complex endeavor.³⁸³

Excess Capacity vs. Overcapacity

Excess capacity can be described as the difference between fishing capacity and actual harvest.³⁸⁴ Indeed, this problem is usually short-run,³⁸⁵ and can vary annually depending upon target stock status and a broader set of environmental, social and economic variables affecting the operation of the fishery.³⁸⁶ For example, a fishery could experience excess capacity in one year due to stock fluctuation or market conditions, but in the next year be fully utilized.

On the other hand, overcapacity refers to excessive levels of fishing capacity and is a longer-term phenomenon. Overcapacity occurs when the potential output that *could* exist under normal operating conditions is greater than the target level of production.³⁸⁷ A fundamental concept when dealing with issues of overcapacity is target capacity, which can be described as either the level of input or output required to meet management objectives.³⁸⁸ For example, if the management objective is to achieve a harvest level (output) associated with MSY, then the number of vessels operating at full utilization to achieve MSY would be the corresponding input target. The same is true if the management objective is to achieve Maximum Economic Yield (MEY). In this situation, there would be a corresponding number of vessels to achieve MEY.

³⁸³ Joseph, J. (2003). *Managing fishing capacity of the world tuna fleet*. FAO Fisheries Circular No. 982. Rome, FAO.

³⁸⁴ Bayliff, W.H. and Majikowski, J. (Eds.). (2007). *Workshop to further develop, test and apply a method for the estimation of tuna fishing capacity from stock assessment-related information*. La Jolla, USA. FAO Fisheries and Aquaculture Proceedings. No. 16. Rome.

³⁸⁵ Short-run refers to a time period in which at least one input is fixed. For example, a vessel is generally fixed in the short-term, while fishing effort can be varied (FAO 2002).

³⁸⁶ FAO (2002) at 5.

³⁸⁷ Ibid at 57.

³⁸⁸ Pascoe et al. (2003) at 54.

It is believed that excess capacity could be eliminated simply by fishermen changing their production levels in response to market conditions. Eliminating overcapacity, on the other hand, would require a change in the management regime of the particular fishery.³⁸⁹ Overcapacity, without effective controls on the total output of a fishery, often results in overfishing, which is the level of fishing effort on target stocks above that which supports MSY. Overfishing leading to severe biomass depletion is certainly an unsustainable use of ocean resources in the long term.³⁹⁰

In addition, overcapacity can result in unsustainable bycatch levels on associated and dependent stocks (e.g., non-target stocks), as well as the overuse of essential fish habitats, which in turn impacts stock conditions.³⁹¹ Overcapacity has also been linked to the promotion of Illegal, Unreported and Unregulated (IUU) fishing. This is because the greater the number of vessels operating in an area, the less available fish, resulting in a tendency to engage in IUU fishing to maximize returns.³⁹²

From an economic perspective, both excess capacity and overcapacity can impact profit margins due to operational inefficiency (e.g., gear competition) and leave fishermen vulnerable to resource and economic shock.³⁹³ When this occurs, the same, if not greater catches, could be taken with less vessels fishing for the same target stock. A reduced number of vessels would also result in less fixed or capital costs being incurred unnecessarily. Moreover, if overfishing were eliminated as a result of a reduced number of vessels, higher catches per unit effort would be realized, allowing for vessel profits to be maximized. However, without management intervention, fishery participants tend to ‘race to the fish’, resulting in

³⁸⁹ FAO (2002) at 53.

³⁹⁰ Jackson, J. B., Kirby, M. X., Berger, W. H., Bjorndal, K. A., Botsford, L. W., Bourque, B. J. Bourque, R.H. Bradbury, R. Cooke, J. Erlandson, J.A. Estes, T.P. Hughes, S. Kidwell, C.B. Lange, H.S. Lenihan, J.M. Pandolfi, C.H. Peterson, R.S. Steneck, M.J. Tegner, & R. R. Warner. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science*, 293(5530), 629-637.

³⁹¹ FAO at 73.

³⁹² Greboval, D. (2000). The International Plan of Action for the Management of Fishing Capacity and Selected Issues Pertaining to Illegal, Unreported, and Unregulated Fishing. In *Report of and Papers Presented at the Expert Consultation on Illegal, Unreported and Unregulated Fishing* (pp.234-243). FAO Fisheries Report, No. 666. Expert Consultation on Illegal, Unreported and Unregulated Fishing. 15-19 May 2000. Sydney, Australia. Fishery Policy and Planning Division. FAO.

³⁹³ Greboval & Munro (1999) at 26.

bigger, faster, more efficient fishing vessels to capitalize individual returns, further exacerbating the overcapacity problem.³⁹⁴

Unfortunately, the ‘less is more’ concept is often lost on the fishing industry (and particularly fishery managers), as there can be high variation in resource availability coupled with short-term economic incentives. Furthermore, when addressing capacity issues for transnational and HMS stocks, the ‘playing field’ is often not ubiquitous for vessels of differing flag nations. For example, some countries have very few domestic regulations in place compared to others. In addition, government subsidies in the fisheries sector is widespread. Indeed, this can be destructive practice which generates ‘profits’ even when resources are overfished.³⁹⁵

4.2.1 Fishing capacity in the WCPO

A 2005 study by Reid et al. determined that excess fishing capacity existed in the WCPO purse fishery with respect to all national fleets operating in the investigation area. In particular, the authors concluded that the level of fishing capacity was between 14 and 35% greater than required to take the available catch of skipjack, and between 11 and 28% greater than required to take the available catch of yellowfin and skipjack.³⁹⁶ For yellowfin and bigeye, the purse seine excess capacity was between 11 and 28% greater than necessary.³⁹⁷ The number of purse seine vessels operating in the WCPO has steadily increased since the early 1970s, with the current number of vessels approaching 300 (Figure 33).³⁹⁸

³⁹⁴ Rieser, A. (1999). Prescriptions for the commons: environmental scholarship and the fishing quotas debate. *Harvard Environmental Law Review*, 23, 393-41.

³⁹⁵ Clark, C.W., G.R. Munro, & U.R. Sumaila. (2005). Subsidies, buy-backs, and sustainable fisheries. *Journal of Environmental Economics and Management*, 50, 47-58.

³⁹⁶ Reid, C., Kirkley, J. E., Squires, D., & Ye, J. (2005). An analysis of the fishing capacity of the global tuna purse-seine fleet. In Second Meeting of the Technical Advisory Committee of the FAO Project Management of Tuna Fishing Capacity: Conservation and Socio-economics. *FAO Fisheries Proceedings*, 2, 117-156.

³⁹⁷ Ibid.

³⁹⁸ Williams et al. (2017) at 4.

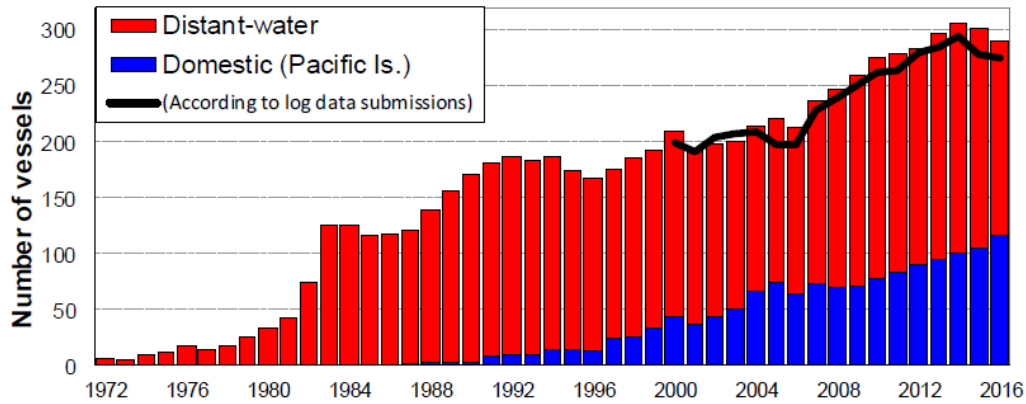


Figure 33: Number of purse seine vessels operating in the WCPO

Source: Williams et al. 2017

Note: Excluding Indonesian/ Philippine and Vietnamese domestic purse seine/ringnet fleets

Capacity levels for the longline fishery in the WCPO are not well understood; however, there are thousands of longline fishing vessels generally believed to be fishing below their full capacity.³⁹⁹ In the WCPO, statistics indicate that the number of longline vessels has decreased from their historically high levels. Even so there is great uncertainty regarding the degree of longline fishing effort prior 2006. This is because many longline vessels flagged to DWFNs were authorized by their countries to fish globally and not just in the WCPO. Over the last 10 years, the active number of longline fishing vessels in the WCPO is believed to have reached 3,000 (Figure 34).⁴⁰⁰

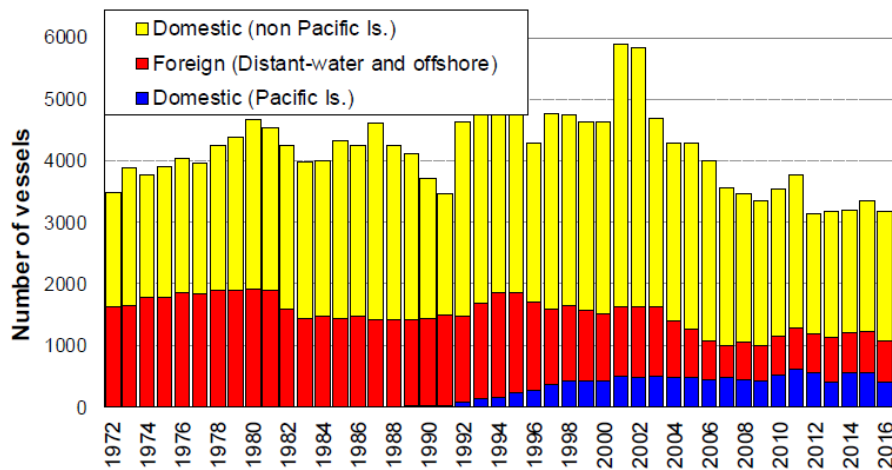


Figure 34: Number of longline vessels operating in the WCPO

Source: Williams et al. 2017

³⁹⁹ Miyake, P. M. (2005). A review of the fishing capacity of the longline fleets of the world. In Second Meeting of the Technical Advisory Committee of the FAO Project Management of Tuna Fishing Capacity: Conservation and Socio-economics. *FAO Fisheries Proceedings 2*, 157-170.

⁴⁰⁰ Williams et al. (2017) at 28.

4.3 Chapter Conclusion

The WCPO supports the world's largest tuna fishery, mainly driven by large catches of skipjack and yellowfin, followed by albacore and bigeye. Tuna in the WCPO are caught by a handful of fishing gears, with purse seine fishing being the most dominant and accounting for nearly 80% of the total tuna catch. While the distribution of tuna stocks is wide ranging, tuna are heavily exploited within the WCPO, with the highest levels of exploitation occurring within equatorial waters. The four main tuna stocks are not currently overfished or experiencing overfishing.⁴⁰¹ Pacific bluefin, on the other hand, is significantly depleted, with concerns of stock collapse and even extinction. Fishing capacity is a concern for the WCPO tuna fishery, with over 300 purse seine vessels and several thousand longline vessels operating in the region. Excess capacity is believed to exist for the purse seine fishery, with the longline fishery in the WCPO likely experiencing a similar situation. Such conditions do not generally result in increased harvests or higher catch rates of target species, but rather poorer economic conditions for vessels and greater impacts on non-target species.

⁴⁰¹ Prior to the most recent stock assessment for WCPO bigeye in 2017, this stock was believed to experiencing overfishing since the early 2000s.

Chapter 5: Managing the World's Largest Tuna Fishery

5.1 Introduction

This chapter describes the current framework for managing the world's largest tuna fishery, which occurs in the WCPO. The roles of PICs and DWFNs within this framework are examined. Furthermore, the responsibilities of regional organizations including the Forum Fisheries Agency, Parties to the Nauru Agreement, the Secretariat of the Pacific Community, will be investigated. Sub-regional agreements such as the Palau Arrangement, the FSM Arrangement, and the Tokelau Arrangement, which have shaped regional fisheries outcomes, are also considered. Environmental non-governmental organizations, academic institutions, and fishing industry groups and their roles are also briefly described.

Following on from these discussions, a review of the Multilateral High Level Conferences (MHLC) is conducted. Negotiations at the MHLC meetings, which occurred between 1994 and 2000, established the framework which eventually became the Honolulu Convention. An overview of the provisions of the Honolulu Convention is provided, and where appropriate, an historical review of MHLC negotiations on selected topics.

Taken as a whole, this chapter provides an overview of the countries and international agreements which manage the world's largest tuna fishery, with an emphasis on the Honolulu Convention, the establishment of the WCPFC, and linkages to the Principle.

5.2 The Players

5.2.1. Pacific Island Countries

Fishery resources, and in particular tuna stocks, constitute the primary renewable resource for PICs in their EEZs. Indeed, the dependence on tuna by many PICs as their primary economic commodity is

unmatched elsewhere in the world.⁴⁰² These PICs, which for present purposes exclude Australia, New Zealand, and territories of the United States and France, are found within the Oceania region of the Pacific. As previously stated, UNCLOS's codification of the 200 nm EEZ has been touted as the most significant reallocation of fisheries property rights in the 20th century.⁴⁰³ For coastal States such as PICs, the establishment a 200 nm EEZ was incredibly significant, collectively providing them with approximately 30 million square kilometers of ocean under national jurisdiction.⁴⁰⁴ In actuality, the establishment of the 200 nm EEZ provided several PICs with ownership over the ocean that exceeded their respective landmass by substantial ratios (e.g., Cook Islands sea to land ratio in square kilometers is 7,627).⁴⁰⁵ Thus, in the wake of UNCLOS and the recognition of the EEZ, PICs went from small island countries to large ocean States with custodianship of vast maritime areas and fishery resources.

UNCLOS has provided PICs with sovereign property rights over the fish that occur in their EEZs, including tuna while they are found there. While tuna forms a significant economic base for many PICs, it is likely that PICs are yet to fully realize the potential economic benefits that derive from the world's largest tuna fishery.⁴⁰⁶

Since the formal recognition of EEZs, PICs have generated revenue from selling access rights to DWFNs to fish in their EEZs. Domestically-based industrial-scale fishing fleets, support industries, as well as

⁴⁰² Read, R. (2006), Sustainable natural resource use and economic development in small states: the tuna fisheries in Fiji and Samoa. *Sustainable Development*, 14, 93–103. -- Gillett, R. (2009). *Fisheries in the economies of the Pacific island countries and territories*. Mandaluyong City, Philippines: Asian Development Bank.

⁴⁰³ Hanich, Q., Schofield, C., & Cozens, P. (2009). Oceans of Opportunity? The Limits of Maritime Claims in the Western and Central Pacific Region. In Q. Hanich & M. Tsamenyi (Eds.), *Navigating Pacific Fisheries: Legal and Policy Trends in the Implementation of International Fisheries Instruments in the Western and Central Pacific Region* (pp. 21-51).. Australia National Centre for Ocean Resources and Security. Wollongong, Australia.

⁴⁰⁴ Veitayaki, J. (2005). Staking their claims: the management of marine resources in the Exclusive Economic Zones of the Pacific Islands. In S.A. Ebbin, A.H. Hoel, & A. K. Syndes (Eds.), *A Sea Change: the Exclusive Economic Zone and Governance Institutions for Living Marine Resources* (pp.150-168). Dordrecht, The Netherlands. 151.

⁴⁰⁵ Lal, P.N. (2008). Rethinking Oceans and Marine Resource Management. In J. Strachan and C. Vigilance. (Eds) *Small Island Developing States: issues and challenges* (pp.22-43). London, United Kingdom. Commonwealth Secretariat.23.

⁴⁰⁶ The 2013 ex-vessel (dockside) value of the total WCPO tuna catch was approximately \$6 billion dollars. Williams, P., & Terawasi, P. (2014). For economic information on Pacific Island countries see: World Bank. (2017). *Pacific Possible: Long term Economic Opportunities and Challenges for Pacific Island Countries*. Washington, DC: World Bank.

local processing facilities, also provide tuna-related economic revenue to PICs. In total, the revenue gained from tuna is a significant percentage of the government revenue and gross domestic product (GDP) of many PICs.⁴⁰⁷ For some PICs, it is their *only* source of non-foreign aid income and the basis for their future economic development.⁴⁰⁸ Therefore, ensuring effective conservation and management of tuna stocks within areas of national jurisdiction and on the high seas is of critical importance to the long-term economic stability and independence of many PICs.

The EEZs of PICs that produce the most tuna include Papua New Guinea, Kiribati, the FSM and Tuvalu (Figure 35). It is noteworthy that these countries, which collectively control over 80% of the purse seine tuna catch and around 60% of the total catch in the WCPO, are all members of the PNA.⁴⁰⁹ The two countries that produce the most tuna out of their national waters are Kiribati and Papua New Guinea, with Kiribati surpassing PNG's tuna production in recent years (Figure 36). There are other PICs that are non-PNA members but nonetheless derive significant economic benefits from tuna fishing in their waters, including from longline fishing.⁴¹⁰ Some of these PICs are situated in the South Pacific and have a strong interest in South Pacific Albacore, with domestic longline fleets being based in their ports.⁴¹¹

⁴⁰⁷ Gillet, R. & Lightfoot, C. (2002). *The Contribution of Fisheries to the Economics of Pacific Island Countries*. Pacific Studies Series. Manila, Philippines: Asian Development Bank. Revenues associated with access fees, domestic tuna fisheries, and support services contribute up to 42% of some PIC's GDP. Over 50% of government revenue for Kiribati, Tokelau and Tuvalu is derived from fisheries.

⁴⁰⁸ Sandra Tarte (1999): Negotiating a Tuna Management Regime for the Western and Central Pacific: The MHLIC Process 1994–1999. *The Journal of Pacific History*, 34(3), 273-280.

⁴⁰⁹ Clark, S. (2017). *Purse seine fishing activity in PNA waters*. Thirteenth Regular Session of the WCPFC Scientific Committee. 9-17 August 2017. Cook Islands. WCPFC-SC13-2017/ST-IP-12.

⁴¹⁰ Hanich, Quentin A., (2011). *Interest and Influence — A Snapshot of the Western and Central Pacific Tropical Tuna Fisheries*. University of Wollongong, Australia: Australian National Centre for Ocean Resources and Security (ANCORS).

⁴¹¹ Langley, A. D. (2006). *The South Pacific albacore fishery: a summary of the status of the stock and fishery management issues of relevance to Pacific Island countries and territories* (No. 37). Secretariat of the Pacific Community. Noumea, New Caledonia. 38. -- Gillett, R. (2009). *Fisheries in the economies of the Pacific island countries and territories*. Manila, Philippines: Asian Development Bank.

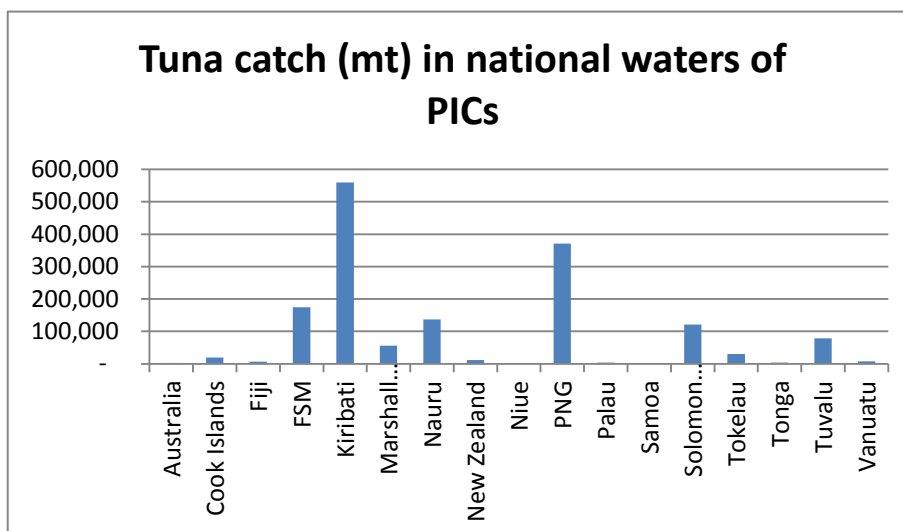


Figure 35: Average total tuna catch in national waters of PICs (2013-2015)
 Source: SPC data tables; Figure made by author

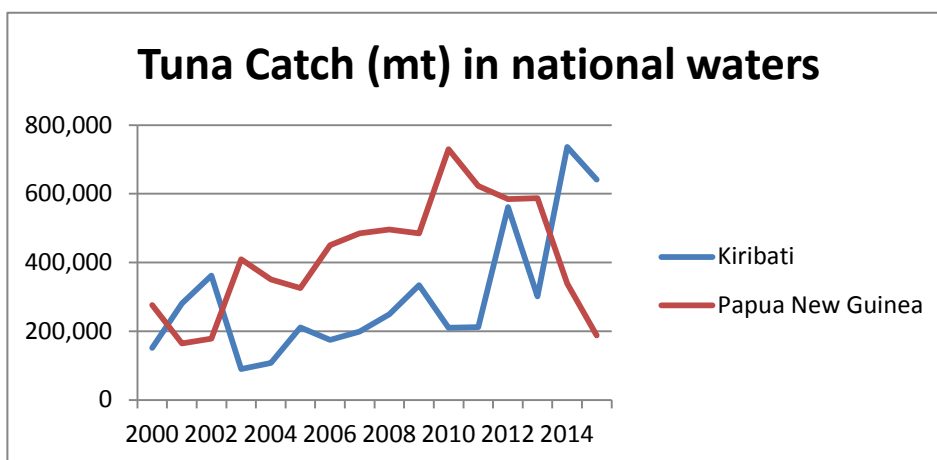


Figure 36: Tuna catch in national waters of Kiribati and Papua New Guinea
 Source: SPC data tables. Figure made by author

5.2.1.1 The Forum Fisheries Agency

In the 1970s, PICs were following global trends regarding the extension of coastal State jurisdiction and the need for international cooperation for the conservation and management of HMS stocks.⁴¹² In 1979, a

⁴¹² Van Dyke, J., & S. Heftel. (1981). Tuna management in the Pacific: an analysis of the South Pacific Forum Fisheries Agency. *University of Hawaii Law Review*, 3(1), 67. -- Sutherland, W. M. (1987). Management, conservation, and cooperation in EEZ fishing: The Law of the Sea Convention and the South Pacific Forum Fisheries Agency. *Ocean Development and International Law*, 18(6), 613-640. According to Sutherland, regional cooperation on fisheries issues first emerged within the South Pacific Forum in 1976.

group of ten self-governing Pacific Island nations, including Australia and New Zealand, agreed to a convention establishing the South Pacific Forum Fisheries Agency (FFA).⁴¹³ The FFA was formed as a means for members to coordinate on regional fisheries management issues, with membership only being offered to nations within the region, excluding the United States, Japan, and other distant water fishing nations.⁴¹⁴

The impetus for this sub-regional organization stemmed from discussions three years prior within the South Pacific Forum.⁴¹⁵ The formation of a regional fisheries management organization was proposed as a way of enhancing regional cooperation and supporting the surveillance of foreign fleets fishing in the waters of Pacific Island nations.⁴¹⁶ Efforts within the South Pacific Forum began to identify the foundations of the potential regional organization, but disagreements soon surfaced regarding the scope of the agreement, membership, as well as its objectives.⁴¹⁷

Two camps quickly emerged within the Forum with regard to the scope of the agreement. On one side was Papua New Guinea, Fiji, the Solomon Islands and Tonga. These nations were against including DWFNs as members, asserting that one of the purposes of establishing the regional body was to provide a unified front in access negotiations with DWFNs.⁴¹⁸ The opposing camp consisted of Australia, New Zealand, the Cook Islands, Western Samoa and Niue. These countries maintained that the chief aim of the

⁴¹³ Sutherland (1987) at 628.

⁴¹⁴ Van Dyke & Heftel (1981) at 5.

⁴¹⁵ Sutherland (1987) at 614. The South Pacific Forum was founded in 1971, and in 2000, its name was changed to the Pacific Islands Forum to reflect the geographic location of its members in the north and south Pacific. The Pacific Islands Forum is a political grouping of 16 independent and self-governing States. Members include Australia, the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, Nauru, New Zealand, Niue, Palau, Papua New Guinea, the Republic of the Marshall Islands, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu. New Caledonia and French Polynesia, previously Forum Observers, were granted Associate Membership in 2006. Forum Observers include Tokelau (2005), Wallis and Futuna (2006), the Commonwealth (2006), the United Nations (2006) the Asian Development Bank (2006), the Western and Central Pacific Fisheries Commission (2007), the World Bank (2010), the ACP Group (2011), American Samoa (2011), Guam (2011) and the Commonwealth of the Northern Marianas (2011), with Timor Leste as Special Observer (2002). See <http://www.forumsec.org/pages.cfm/about-us/> for more information.

⁴¹⁶ Ibid at 615. Sutherland (1987) describes at length the debate occurring within the Forum regarding the objectives of the new agreement, including the differences between “conservation” and “management.”

⁴¹⁷ Ibid at 615.

⁴¹⁸ Ibid.

regional management organization was to facilitate cooperation for conservation objectives as envisioned by Article 64 of UNCLOS.⁴¹⁹

The camp advancing an economic agenda eventually won out and the FFA was created with 16 members comprised of Forum nations only.⁴²⁰ A contributing factor to the win was the position held by the United States and Japan at the time - that coastal States had no exclusive ownership or management authority over HMS stocks within their EEZ.⁴²¹ One can reasonably infer that this position was largely self-serving, with DWFNs seeking to preserve the ability of their vessels to fish unfettered within the newly established EEZ.

Although the South Pacific Fisheries Forum Convention of 1979 was limited to Forum members only, Article III of the agreement does recognize that effective conservation of HMS stocks in the region requires the establishment of “additional international machinery” to provide for cooperation between all states involved in fishing in the region and all states involved in the harvesting of such resources.”⁴²² In this context, “additional machinery” envisages a broader agreement pursuant UNCLOS Article 64 - one which includes coastal States and DWFNs.

The FFA Convention established the Forum Fisheries Committee (FFC), which is composed of representatives from all members of the Pacific Island Forum and a Secretariat. Neither the FFC nor the

⁴¹⁹ Ibid at 627.

⁴²⁰ FFA members include: Australia, the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, the Marshall Islands, Niue, New Zealand, Palau, Papua New Guinea, the Solomon Islands, Samoa, Tonga, Tuvalu and Vanuatu. Dependent territories such as French Polynesia, New Caledonia, Wallis and Fortuna, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands are not eligible for membership. The US territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands have official observer status to the FFA.

⁴²¹ Nandan, S. (1997). Statement by Ambassador Satya Nandan, Chairman of the Conference. *Report of the Conference*. Second Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. June 10-13 1997. Majuro, Marshall Islands. 57.

⁴²² South Pacific Forum Fisheries Agency Convention. (1979). Opened for signature on 10 July 1979. Entered into force 9 August 1979. The depository of the convention is Papua New Guinea. See: ftp://ftp.fao.org/FI/DOCUMENT/RFB/ffa/FFA_Convention.pdf

Secretariat has the power to allocate fishery resources, but rather serve respective administrative and advisory roles.⁴²³

It has been proposed that the FFA exists as a means for members to: a) adopt coordinated actions with respect to their EEZ rights; b) sustainably manage the fisheries within their EEZs; and c) secure a fair share of the benefits from fisheries that occur in the region.⁴²⁴ Since its establishment in 1979, the FFA has increased benefits derived from the harvest of fishery resources within the EEZs of member nations.⁴²⁵ In particular, the FFA was able to increase benefits by leveling the playing field between DWFNs and Pacific Island States with respect to negotiating fishing access agreements.⁴²⁶ Prior to the establishment of the FFA, it was believed that DWFNs were playing PICs against each other, threatening to move their fleets to another country's EEZ if access terms were not to their liking. After the FFA was established, this negotiation strategy ceased to be viable option for DWFNs, with the FFA developing minimum terms and conditions (MTCs) for foreign fishing access.⁴²⁷

⁴²³ Article V of the South Pacific Fisheries Convention provides that the role of the FFC is to: (a) provide policy and administrative guidance to the FFA; (b) provide a forum for consultation on matters of common concern regarding fisheries; (c) carry out tasks necessary to give effect to the convention; and (d) promote intra-regional coordination and cooperation in fisheries management with respect to (i) harmonization of fisheries management policies, (ii) relations with distant water fishing countries, (iii) surveillance and enforcement, (iv) processing and marketing of fish, and (v) accessibility to the EEZs of other Parties. Article VII of the South Pacific Fisheries Convention lists the functions of the FFA to: (a) collect, analyze and distribute information on living marine resources, especially the highly migratory species; (b) collect and disseminate information on management, legislation and agreements adopted by other countries; (c) collect and disseminate information on prices, shipping, processing, and marketing of fish and fish products; (d) provide assistance in the development of fisheries policies, negotiations, the issuing of licenses, the collection of fees, as well as surveillance and enforcement; and (d) establish working arrangements with regional and international organizations, especially the South Pacific Commission.

⁴²⁴ Doulman, D. (1988). In pursuit of fisheries cooperation: The South Pacific Forum Fisheries Agency. *University of Hawaii Law Review*, 10, 137-150. --Hyndman, M. (2005). South Pacific Forum Fisheries Agency: Benefits and Costs. In *Towards a New Pacific Regionalism. An Asian Development Bank--Commonwealth Secretariat Joint Report to the Pacific Islands Forum Secretariat Vol. 3*(pp.327-371). Mandaluyong City, Philippines. Asian Development Bank.

⁴²⁵ Doulman (1998) at 138. Specifically, Doulman (1988) indicates that the FFA has provided members with negotiation support by leveling the field in foreign fishing access agreements, as well as by expanding domestic fishing industries, securing markets for marine products, improving artisanal fishing capabilities, enhancing local fisheries administrations, implementing fisheries surveillance programs, and enhancing professional development for local fisheries officials.

⁴²⁶ Ibid at 145.

⁴²⁷ Ibid at 145.

The FFA has been involved in the establishment of several sub-regional agreements and programs including: a) the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest (1982); b) the Regional Foreign Vessel Register (1984); c) the US Multilateral Treaty on Fisheries (1987); the Niue Treaty on Cooperation on Fisheries Surveillance and Law Enforcement (1992); d) the Palau Arrangement for the Management of the Purse Seine Fishery in the Western and Central Pacific Ocean (Palau Arrangement) (1993, 1997 and 2003); e) the FSM Arrangement for Regional Fisheries Access (1994); f) the FFA Vessel Monitoring System; and g) the Tokelau Arrangement (2014).⁴²⁸ The FFA also played a key role in the MHLC process which led to the formation of the WCPFC. To this day, FFA countries participate within the WCPFC as a formidable bloc that routinely share common positions and perspectives on issues before the Commission. Through its membership framework and institutional capacity, the FFA is integral to the management of tuna fisheries in the WCPO.

5.2.1.2 Parties to the Nauru Agreement

In 1982, a subset of FFA member countries signed the Nauru Agreement.⁴²⁹ This sub-regional agreement between eight member countries (the Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Palau, Papua New Guinea, the Solomon Islands and Tuvalu) was adopted to establish uniform MTCs for fisheries access agreements within their respective EEZs.⁴³⁰ In addition to harmonizing access agreement terms and conditions, the Nauru Agreement also strives to grant preferential access to vessels

⁴²⁸ Hyndman (2005) at 332.

⁴²⁹ For a detailed review of the PNA, see: Tamate, J. M. M.M.(2013). *Balancing the scales: the experience of the Parties to the Nauru Agreement*. Doctor of Philosophy thesis, Australian National Centre for Ocean Research and Security. University of Wollongong. Wollongong, Australia.

⁴³⁰ See Articles I and III of the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest (1982).

of member nations, thereby encouraging domestic participation in the fishing industry and enhancing local economic development.⁴³¹

Collectively, approximately 80% of the WCPO tuna catch, and 40% of the global raw material for canned tuna markets, is caught within the EEZs of PNA members.⁴³² Nearly all of this catch is from purse seine vessels targeting skipjack tuna and to a lesser extent yellowfin tuna, with longline fishing also occurring in the waters of PNA members targeting bigeye, yellowfin and albacore tuna.⁴³³

The PNA has advanced its policies through a series of implementing arrangements. The First Implementing Arrangement of the PNA occurred in 1983, and provided that only vessels listed in good standing on the FFA's Regional Registry would be authorized to fish in the national waters of PNA members.⁴³⁴ Other MTCs which have been set for vessel access include: 1) the non-transferability of vessel licenses; 2) an acceptance that authorized personnel may board vessels; 3) logbook catch and effort reporting requirements; and 4) vessel marking requirements.⁴³⁵

The PNA's Second Implementing Arrangement was adopted in 1990 and included the following additional licensing terms and conditions: a) a prohibition on transshipment at sea by purse seine vessels;

⁴³¹ Dunn, S., Rodwell, L., & Joseph, G. (2006). The Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery - Management Scheme (Vessel Day Scheme). *Sharing the Fish '06. Allocation Issues in Fisheries Management*. 27 February – 2 March 2006. Perth, Australia. See Article II of the Nauru Agreement which places a priority on domestic fishing vessels over foreign fishing vessels.

⁴³² Aqorau, T. (2014). *The Role of PNA in Global Fisheries*. Written statement by Dr. Transform Aquorau, Executive Director of the PNA. 2014 INFOFISH Conference. 21-23 May 2014, Bangkok, Thailand.

⁴³³ Ibid.

⁴³⁴ PNA. (1983). *An Arrangement Implementing the Nauru Agreement Setting Forth Minimum Terms and Conditions of Access to the Fisheries Zones of the Parties*. Adopted at the 2nd Special meeting of the PNA. September 1983. Nauru. -- According to Tamate (2013), the FFA established minimum harvest terms and conditions based on PNA proposals. The PNA could have foregone their own set of MTCs in favor of those set by the FFA. However, the PNA chose not to do so, instead preferring to establish their own MTCs and distinguish themselves from other member countries within the FFA. The PNA also chose to maintain the FFA's vessel registry, which promoted regional solidarity.

⁴³⁵ Ibid at 100.

b) a requirement that vessels fishing in PNA waters report their high seas catch; and c) a requirement for independent on-board observers, with the associated cost to be borne by vessel owners.⁴³⁶

The PNA's Third Implementing Arrangement was agreed to in 2008 and requires: a) catch retention of all bigeye, skipjack and yellowfin taken by purse seine vessels; b) acceptance of a three-month Fish Aggregation Device (FAD) closure for purse seine vessels fishing in PNA waters; c) closure of high seas pockets as a licensing condition; and d) one hundred percent observer coverage on purse seine vessels.⁴³⁷

In addition to the above implementing arrangements (which focus primarily on MTCs for licensing foreign fishing vessel access), the PNA have established measures aimed at controlling fishing effort as well as enhancing the economic benefits flowing to PNA members. These include the Palau Arrangement, FSM Arrangement, and the Vessel Day Scheme.

5.2.1.3 Palau Arrangement

Facing a rapidly growing purse seine fishery, PNA members adopted the Palau Arrangement in 1992.⁴³⁸ The main objective of the Palau Arrangement was to restrict the number of purse seine vessels operating within PNA waters. To this end, the total number of purse seine vessels was capped at 205, with vessel limits being allocated among the various flags⁴³⁹ The leading conservation argument to control the

⁴³⁶ PNA. (2008). *A Second Arrangement Implementing the Nauru Agreement Setting Forth Additional Terms and Conditions of Access to the Fisheries Zones of the Parties*. Adopted at the 1st Ministerial Meeting held September 1990. Koror, Palau. 3.

⁴³⁷ PNA. (2008). *A Third Arrangement Implementing the Nauru Agreement Setting Forth Additional Terms and Conditions of Access to the Fisheries Zones of the Parties*. Adopted at the 27th Annual Meeting of PNA. May 2008. Korro, Palau. 5.

⁴³⁸ PNA. (1992). *Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery*. Opened for signature 1992. Entered into force November 1995. Forum Fisheries Agency. Honiara, Solomon Islands.

⁴³⁹ The Palau Arrangement informally commenced in 1990 with a provisional limit of 164 vessels. In 1992, the vessel limit was capped at 205, remaining in force until the introduction of the Vessel Day Scheme. Hyndman (2005) at 22. See also: Shanks, S. (2010). Introducing a transferable fishing day scheme for Pacific Island Countries. *Marine Policy*, 34, 988-994.

number of purse seine vessels operating in the region was a concern over the stock status of yellowfin.⁴⁴⁰ However, limiting the number of purse seine vessels had an economic rationale as well. It was believed that controlling vessel numbers would improve purse seine catch per unit effort, thus making vessel operations more efficient and paving the way for higher access fees. In addition, a cap on the number of vessels was thought to increase competition for licenses, resulting in higher access fees for PNA members.⁴⁴¹ While a cap on the number of vessels was ultimately adopted, initial consideration had also been given to establishing a TAC. However, a TAC was not adopted as it would have required more involvement by DWFNs, and at the time, there were serious concerns over the accuracy of catch data due to rampant under reporting by DWFN fleets.⁴⁴²

The vessel limits established under the Palau Arrangement focused on limiting foreign flagged vessels in particular, as these vessels were the most active in the fishery. For some PNA members, however, the Palau Arrangement did not result in domestic fisheries development or increased resource rent from selling access agreements.⁴⁴³ To address these issues, the Palau Arrangement was modified in 1995, with the authorized number of non-PNA flagged purse seine vessels being reduced, and 10% of the total vessel limit being reserved for “domestic/locally based” vessels.⁴⁴⁴ This modification was adopted to enhance domestic fisheries development by enticing distant water purse seine vessels to base their operations within the ports of PNA members, thus promoting shore-side development and local employment.⁴⁴⁵ The

⁴⁴⁰ Dunn et al. (2006) further explain that controlling the purse seine fishery targeting skipjack could help reduce fishing pressure on yellowfin and bigeye.

⁴⁴¹ Ibid at 3.

⁴⁴² Tamate (2013) at 120.

⁴⁴³ Opnai, J. L. (2002). *Summary of the Progress of the Work on the Review of the Palau Arrangement*. Working Paper to Standing Committee on Tuna and Billfish. 22-27 July 2002. Honolulu, Hawaii. The lack of resource rent payments from a cap on vessels was understandable given that there was no prohibition on purse seine vessels participating in the fishery in the form of high seas operations.

⁴⁴⁴ Ibid. The modification to the Palau Arrangement became effective in 1997.

⁴⁴⁵ Dunn et al. (2006) at 3.

change coincided with the 1994 Federated States of Micronesia Arrangement for Regional Fisheries Access (FSM Arrangement), which was also established to support domestic fisheries development.⁴⁴⁶

5.2.1.4 FSM Arrangement

The FSM Arrangement provides preferential treatment to domestic or locally based vessels of PNA members.⁴⁴⁷ The early 1990s saw investments in locally based purse seine vessels by some PNA members. Indeed, before this time, most of the domestic catch by PICs came from pole and line vessels.⁴⁴⁸ At the time, the FSM Arrangement was viewed as the primary vehicle to achieve a greater share of the profits derived from tuna fishing in the region. This preferential access was believed to provide PNA vessels with a significant cost advantage over DWFN-flagged vessels, thus driving more vessels to operate under flags of PICs.⁴⁴⁹ The effect would be the eventual phase-out of foreign fishing in the region.⁴⁵⁰ It should be noted, however, that many of the domestically-flagged purse seine vessels were part of joint venture agreements involving foreign investors.⁴⁵¹

The centerpiece of the Arrangement was the establishment of a points-based vessel eligibility criteria system, whereby a vessel had to score at minimum number of points to be listed on the Registry of Eligible Fishing Vessels. The criteria was based on five topics: 1) vessel ownership equity; 2) the flag of the vessel; 3) the nationals employed on the vessel; 4) local purchases; and 5) onshore investment.⁴⁵²

⁴⁴⁶ Tenth Special Meeting (Ministerial Level) of the Parties to the Nauru Agreement. Honiara. November 1994.

⁴⁴⁷ The notion of granting special privileges is found in the Nauru Agreement, such that it instructs parties to establish principles for granting priority to fishing vessels of other parties to the Agreement over foreign fishing vessels. See Article II paragraph (2) of the Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest (1982).

⁴⁴⁸ Aqorau, T., & Bergin, A. (1997). The Federated States of Micronesia Arrangement for Regional Fisheries Access. *International Journal of Marine and Coastal Law*, 12, 37-80.

⁴⁴⁹ While the FSM Arrangement was designed primarily for PNA members, accession was available to FFA members after the arrangement entered into force (which occurred in 1995). Article 22 of the Federated States of Micronesia Arrangement for Regional Fisheries Access.

⁴⁵⁰ Aqorau and Bergin (1997) at 45.

⁴⁵¹ Ibid at 43.

⁴⁵² Annex III- Eligibility Criteria. FSM Arrangement.

A qualifying vessel would be granted access to fish within the FSM Arrangement Area, which is defined as the EEZ or fisheries zone of PNA members, subject to any waters closed by a particular party.⁴⁵³ Most of the prescribed closed areas include a party's territorial and/or internal and archipelagic waters, as well as radiuses around anchored FADs.⁴⁵⁴ In addition to meeting the specified criteria, vessels pay on an individual basis according to vessel size, with payments being calculated in accordance with the following formula: the average catch of the vessel multiplied by the average ex-vessel price of tuna multiplied by five percent.⁴⁵⁵ Payments are made to the FFA, and later disbursed to the relevant members within whose EEZ the catch was harvested.

Upon its entry into force in 1995, there were only two vessels that met the eligibility criteria.⁴⁵⁶ After a slow initial period, authorized FSM Arrangement vessels increased, reaching a peak of 42 vessels in 2012.⁴⁵⁷ The FSM Arrangement served to strengthen PNA member control over their EEZs through the exercise of their sovereign rights, resulting in increased participation and benefits derived from the harvests of tuna from their national waters.⁴⁵⁸ However, the returns from domestic development were modest, and a shift in how the PNA managed the purse seine fishery in their waters was looming.

5.2.1.5 Vessel Day Scheme

Beginning in the late 1990s, there was burgeoning interest by States to gain access to the WCPO purse seine fishery. This, in turn, drew attention to the limit of 205 purse seine vessels under the Palau Arrangement. Pressure was soon mounting on PNA members to remove the flag-based vessel limits they

⁴⁵³ Article 1 and Annex V, Schedule 2 of the FSM Arrangement.

⁴⁵⁴ Annex V, Schedule 2 of the FSA Arrangement.

⁴⁵⁵ Annex I, Schedule 1 of the FSM Arrangement.

⁴⁵⁶ Tamate (2013) at 179.

⁴⁵⁷ Ibid.

⁴⁵⁸ Ibid at 185.

had originally agreed upon, and to instead license additional foreign vessels to fish within their EEZs.⁴⁵⁹

The fact that only around five percent of the economic value of the resource was being captured through fishing access licenses (in the form of resource rents) also weighed heavily in the debate.⁴⁶⁰ The growing tension over the issue began to threaten the group's regional solidarity – a solidarity that had been in place for over a decade.⁴⁶¹ For example, the vessel slots assigned under the Multilateral US Tuna Treaty were scrutinized because there were not enough active US purse seine vessels to fill the US limit (60 vessels). Around the same time, there was keen interest by European Union (EU) vessels to enter the fishery, particularly those from Spain. The choice was made to allow Spanish vessels in, and to assign them the latent US slots. However, once the EU vessels were granted access, other nations sought entry too.⁴⁶² Chinese purse seine vessels soon received authorization, receiving slots that had gone unused in the domestic/locally-based category. The flag-based vessel limits of other countries were also changing as vessel numbers shifted around the available slots, resulting in the program becoming unwieldy.⁴⁶³ This flurry of activity also coincided with worsening stock conditions for bigeye and yellow tuna, and the burgeoning MHLA process to develop an internationally binding agreement. These events essentially 'loosened the screws' and threatened the solidarity that the PNA had forged in managing the fishery.

In 2002, PNA members agreed to restructure the existing Palau Arrangement by moving away from vessel limits and instead focusing on flag-based, transferable purse seine fishing effort limits measured in

⁴⁵⁹ Aqorau, T. (2009). Recent developments in Pacific tuna fisheries. The Palau Arrangement and the Vessel Day Scheme. *The International Journal of Marine and Coastal Law*, 24, 557-581. Aqorau (2009) argues that the outcomes of the Palau Arrangement may have been different if PNA countries were each assigned vessel limits, rather than such limits being assigned to the various fleets. This would have provided PNA States with an increased ability to use zone-based vessel limits to their advantage. Another limitation of the vessel limits under the Palau Arrangement is that they were established within an otherwise open-access fishery, where purse seine vessels could fish on the high seas and in the EEZ of non-PNA members.

⁴⁶⁰ Havice, E. (2013). Rights-based management in the Western and Central Pacific Ocean tuna fishery: economic and environmental change under the Vessel Day Scheme. *Marine Policy*, 42, 259-267.

⁴⁶¹ Dunn (2006) at 5. Initially, the number of US vessels allowed under the US Tuna Treaty and the Palau Arrangement was 50, with a further 5 permitted for joint venture agreements. This number was reduced to 50 in total in 1997. By 1997, however, the US fleet was down to 35 vessels, and by 2002 only 25 vessels were operating. For further information, see: Gillett, R., M.A. McCoy and D. Itano (2002). *Status of the United States western Pacific tuna purse seine fleet and factors affecting its future*. Pelagic Fisheries Research Program, Joint Institute for Marine and Atmospheric Research, University of Hawaii, Honolulu, Hawaii.

⁴⁶² Tamate (2013) at 140.

⁴⁶³ Dunn (2006) at 5.

fishing days. The result was the Vessel Day Scheme (VDS), which was first implemented in 2008. The objective of this transformation was to establish a flexible and more responsive regime that would promote social and economic returns as well as ensuring the conservation and management of tuna stocks.⁴⁶⁴

In light of the quantity and value of tuna being harvested across eight EEZs of PNA members, the VDS has been labeled the largest and most complex fishery management arrangement to date.⁴⁶⁵ The VDS process generally involves PNA members meeting annually to set the Total Allowable Effort (TAE), which is then divided up into member allocations called Party Allowable Effort (PAE) limits.⁴⁶⁶ These PAE limits are capable of being freely transferred among PNA members. At the annual VDS meetings, PNA members also agree on the basic price-per-day fee structure. Prior to fishing, vessels pay on a price per day basis to the government whose waters they are conducting fishing operations, including searching for fish.

As stated in the Palau Arrangement, the specific objectives of the VDS are to:(i) promote the optimal utilization and conservation of tuna resources; (ii) maximize economic returns, employment generation and export earnings from the sustainable harvesting of tuna resources; (iii) support the development of domestic locally based purse seine fishing industries; and (iv) promote effective and efficient administration, management and compliance.⁴⁶⁷

In the short time the VDS has been operating, the annual revenue collected by PNA members through fishing access fees has increased by 500% to nearly \$450 million.⁴⁶⁸ While it is certainly true that the

⁴⁶⁴ Tamate (2013) at 3.

⁴⁶⁵ Havice (2013) at 259.

⁴⁶⁶ Hagrannoknir sf. (2015). *Review of the PNA Purse Seine Vessel Day Scheme*. Final Report. PNA Office. Majuro, Marshall Islands.

⁴⁶⁷ Palau Arrangement, Article 2.1.

⁴⁶⁸ Retrieved from: <http://www.pnatuna.com/node/340>.

PNA VDS is providing economic benefits to member governments, the number of purse vessels operating in the WCPO has also increased, adding exploitation pressure on key tropical tuna stocks.

5.2.1.6 Tokelau Arrangement

In 2014, a subset of FFA members formed the Tokelau Arrangement. Signatories include Australia, the Cook Islands, Niue, New Zealand, Samoa, the Solomon Islands, Tokelau, Tuvalu and Vanuatu.

According to the FFA, the Tokelau Arrangement establishes a framework for the development of cooperative zone-based management of South Pacific albacore tuna fisheries, including a potentially wider implementation of the South Pacific Albacore Harvest Strategy agreed by FFA members in 2013.⁴⁶⁹

A key feature of the Tokelau Arrangement is the establishment of EEZ-based South Pacific albacore limits that are nominated by members, as well as a collective TAC which is the sum of individual EEZ limits.⁴⁷⁰

Under the agreement, all members are entitled to 2,500 tons as a base limit, but if a particular member has higher catches, they can use their highest historical catch.⁴⁷¹ In developing this framework, the FFA envisioned that the WCPFC would adopt a new South Pacific albacore measure - one that established a stock-wide TAC set at MSY and comprised of collective limits for Tokelau Arrangement members, EEZ-limits for non-members, and a total catch limit for the high seas.⁴⁷² As will be described in the following chapter, this scenario has not played-out in the WCPFC or with the Tokelau Arrangement itself.⁴⁷³

Indeed, as the foregoing discussion with explore, the Tokelau Arrangement could be a powerful tool with regard to the establishment of compatible measures for South Pacific albacore within the WCPFC. For example, if there were agreement on EEZ-based catch limits, the Commission would be forced to

⁴⁶⁹ FFA. (2014). *Addendum to FFA members proposal to replace CMM for South Pacific Albacore*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DP05b.

⁴⁷⁰ Ibid.

⁴⁷¹ Ibid.

⁴⁷² Ibid.

⁴⁷³ Personal communication, anonymous, April 2017.

consider the limits with respect to the Principle and Article 8 of the Honolulu Convention. To date, however, this has not come to fruition.

5.2.2 Distant Water Fishing Nations and Coastal States

Within the WCPFC, all non-FFA members tend to be grouped in the DWFN category, although many of these countries are coastal States with EEZ waters contained within the Honolulu Convention Area.⁴⁷⁴

Figure 37 provides the amount of tuna caught in the national waters of non-FFA member coastal States in the WCPO, with the total amount of tuna caught by the fleets of these nations shown in Figure 38.

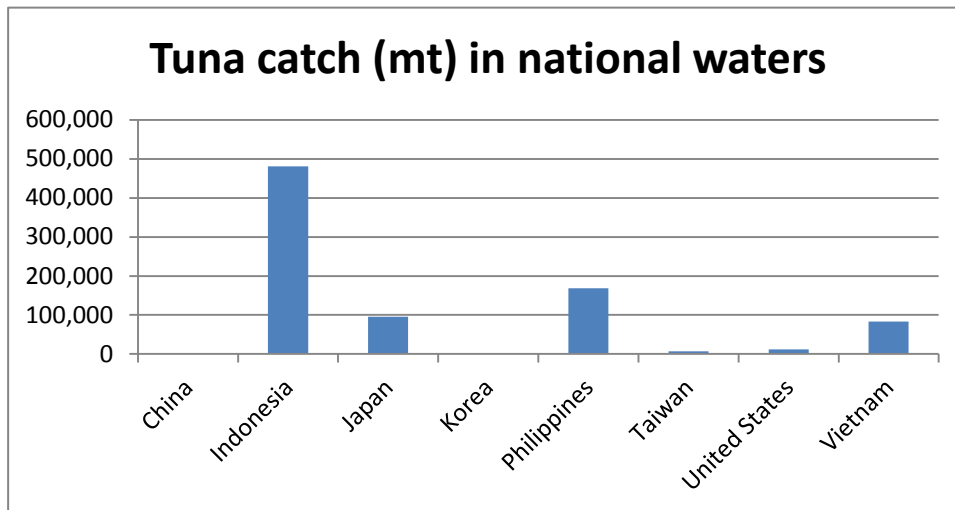


Figure 37: Average tuna catch in national waters of non-FFA coastal States (2013-2015)

Source: SPC data tables. Figure made by author

⁴⁷⁴ The United States, for example, is a coastal State with an EEZ spanning 1.5 million square miles and located within the WCPO. However, it also has a fleet of purse seine vessels that fish in the EEZs of PICs under the Multilateral Tuna Treaty.

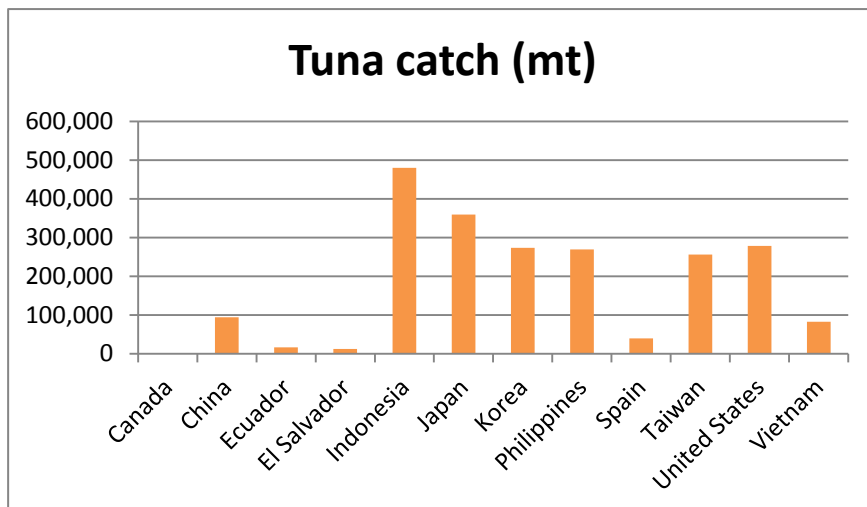


Figure 38: Average tuna catch made by non-FFA coastal States and DWFNs in WCPO (2013-2015)
 Source: SPC data tables. Figure made by author

United States

The United States is both a coastal State and a DWFN. The US EEZ in the WCPO amounts to 1.5 million square miles, due to a combination of waters around Hawaii, Guam, the Northern Mariana Islands, American Samoa, and US uninhabited possessions located in the central equatorial Pacific.⁴⁷⁵ The United States has domestic troll and longline tuna fisheries that occur around Hawaii and American Samoa and adjacent high seas. The United States also has a distant water purse seine fleet that fishes within the EEZs of PICs under a multilateral treaty and on the high seas.⁴⁷⁶ The amount of tuna harvested in US national waters is less than 10,000 mt annually (Figure 37); however, the combined catches of US purse seine and longline vessels is around 250,000 mt annually (Figure 38; over 95% caught by purse seine vessels).

⁴⁷⁵ The US Pacific Remote Island Areas include Johnston, Wake, Howland, Baker, Jarvis, the Palmyra Islands and Kingman Reef.

⁴⁷⁶ Treaty on Fisheries Between the Governments of Certain Pacific Island States and the Government of the United States of America. The treaty came into effect in 1998 and is unique to the United States.

Japan

Japan has EEZ waters within the WCP-Convention Area and extensive domestic coastal fisheries that target tuna and other HMS stocks (Figure 37). Japan also has a fleet of distant water pole and line, longline, and purse seine vessels that fish on the high seas and in the EEZs of PICs (Figure 38).

Collectively, Japan's fisheries are second only to Indonesia, which holds the record for the world's largest tuna catch on an annual basis. Japan's domestic tuna consumption is also the highest per capita, and is the primary market for raw (sashimi) quality tuna.⁴⁷⁷

China

With EEZ waters that are within the WCP-CA, but also located in the South China Sea, it is possible to view China as a coastal State. Very few catches of tuna are made in China's national waters (Figure 37); however, most of the country's tuna fishing is associated with distant water fleets that include longline and purse seine vessels. China first began industrial tuna fishing in the late 1980s.⁴⁷⁸ It rapidly expanded its distant water longline fleet from seven vessels in 1988 to over 450 vessels in 1994. In the years that followed, the fleet reduced dramatically, and by 1999 there were only 66 longline vessels operating.⁴⁷⁹ In the mid-2000s, China again grew its longline fleet, and in 2015 the nation reported that 429 vessels were operating in the WCPO. The number of purse seine vessels flagged to China has also seen an increasing trend within the last decade. The first Chinese purse seine vessel operated in 2001, whereas there are now 20 Chinese purse seine vessels operating in the WCPO. China subsidizes its distant water tuna fleets

⁴⁷⁷ Swartz, W., Sumaila, U. R., Watson, R., & Pauly, D. (2010). Sourcing seafood for the three major markets: The EU, Japan and the USA. *Marine Policy*, 34(6), 1366-1373. For further reading on the globalization of sushi, see: Corson, T. (2009). *The Story of Sushi: An Unlikely Saga of Raw Fish and Rice*. New York, NY: Harper Collins. -- Issenberg, S. (2007). *The sushi economy: Globalization and the making of a modern delicacy*. London, UK: Penguin.

⁴⁷⁸ China. (2016). *Annual report to the Commission, Part 1: information on fisheries, research, and statistics*. Twelfth Regular Session of the Scientific Committee. 3-11 August 2016. Bali, Indonesia. WCPFC-SC12-AR/CCM-03.

⁴⁷⁹ Xu, L. (2003). *National tuna fisheries report of China in the WCPO*. Sixteenth meeting of the Committee on Tuna and Billfish. 9-16 July 2003. Mooloolaba, Australia. 5.

(DWF) to levels which are unmatched elsewhere in the world. The subsidies cover fuel, vessel construction, preferential tax treatment, as well as payments for access to other nation's EEZs.⁴⁸⁰ The extent and magnitude of these subsidies, combined with other support given by the Chinese government to its DWF sector, is extensive and likely provides Chinese DWF fleets with a significant cost advantage over unsubsidized fleets.

Korea

Korea's distant water tuna fishery began in the late 1950s, starting with the Indian Ocean, followed by operations in the Pacific Ocean in the mid-1960s.⁴⁸¹ By the following decade, there were over 270 Korean longliners in the Pacific, which then reduced to around 100 in the mid-1980s.⁴⁸² In 2015, Korea reported to the WCPFC that 84 longline vessels fished in the WCPO, which is down from 126 vessels in 2012.⁴⁸³ Korea's longline vessels are of the larger variety, with 83 reported to have a capacity between 200 and 500 gross tons. Korea began purse seining in the mid-1980s, with the number of flagged purse seiners hovering around 25 vessels since the mid-1990s.⁴⁸⁴

Taiwan

In terms of annual global tuna catches, Taiwan ranks third behind Indonesia and Japan respectively.⁴⁸⁵ Longline fishing began in the offshore waters of Taiwan in the 1913 and was introduced by the

⁴⁸⁰ Ilakini J., & Imo, R. (2014). *Fisheries subsidies and incentives provided by the Peoples Republic of China to its distant water fishing industry*. Prepared for the Forum Fisheries Agency. Honiara, Solomon Islands. 8.

⁴⁸¹ Moon, D.Y. & Kwon, J.N. (1995). Korean tuna fisheries in the Pacific Ocean and interaction between the fisheries. In Shomura, R., J. Majkowski and R. Harman (Eds.), *Status of interactions of Pacific tuna fisheries in 1995. Proceedings of the Second FAO Expert Consultation on Interactions of Pacific Tuna Fisheries*. 23-31 January 199. Shimizu, Japan. FAO Fisheries Technical Paper. No. 365. Rome, FAO.

⁴⁸² Ibid.

⁴⁸³ Korea. (2016). *Annual report to the Commission, Part 1: information on fisheries, research, and statistics*. Twelfth Regular Session of the Scientific Committee. 3-11 August 2016. Bali, Indonesia. WCPFC-SC12-AR/CCM-12. Rev 1.

⁴⁸⁴ Ibid at 1.

⁴⁸⁵ Galland, G., Anthony, R., & Nickson, A. (2016). *Netting Billions: a global valuation of tuna*. Pew Charitable Trusts. Washington, D.C.

Japanese.⁴⁸⁶ In the 1960s, however, Taiwan began to construct a distant water fishing fleet with the aid of government subsidies. By the 1970s, Taiwan shipyards began equipping longline vessels with ultra-low temperature (ULT), which allowed them to access lucrative Japanese sashimi markets. Indeed, with the construction of large longline vessels of around 400 gross tons, Taiwan was now able to ply the world's oceans in search of tuna.⁴⁸⁷ In 2015, Taiwan had 76 large-scale longline vessels and 1,306 small-scale longline vessels fishing in the WCPO.⁴⁸⁸ Taiwanese purse seine fishing began in the early 1980s and rapidly increased to over 40 vessels in 1995.⁴⁸⁹ In 2015, the Taiwanese purse seine fleet numbered 34 vessels.⁴⁹⁰

European Union

While the EU is comprised of 28 countries, the largest interest in WCPO tuna fisheries within the EU comes from Spain. Ranked within the top ten countries in terms of global tuna catches, Spain is a major player not only in fishing for tuna, but also in canning and other value-added seafood processing sectors. Spain, for example, is the EU's largest producer of canned seafood, with tuna comprising two thirds of that production.⁴⁹¹ Spanish purse seine vessels first started fishing in the WCPO in 1996, peaking at five vessels in 2003. By way of comparison, only two seiners fished in 2016.⁴⁹² It should be noted that the size of these purse seine vessels is no trivial matter, with EU purse seine vessels being among the largest in the

⁴⁸⁶ Chen, T-Y. (2009). The evolution and development of the Taiwanese offshore tuna fishery, 1912-2005: *An HMAP Asia Project Paper. Working Paper No. 159*. Murdoch University, Perth, Australia.

⁴⁸⁷ Ibid at 18.

⁴⁸⁸ Chinese Taipei. (2015). *Annual report to the Commission, Part 1: information on fisheries, research, and statistics*. Twelfth Regular Session of the Scientific Committee. 3-11 August 2016. Bali, Indonesia. WCPFC-SC12-AR/CCM-23rev1.

⁴⁸⁹ Ibid at 2.

⁴⁹⁰ Ibid at 3.

⁴⁹¹ Retrieved from: <http://www.fao.org/in-action/globefish/fishery-information/resource-detail/en/c/338172/>

⁴⁹² European Union. (2016). *Annual Part 1 Report to the Commission*. Thirteenth Regular Session of the Scientific Committee of the WCPFC. 9-17 August 2017. Rarotonga, Cook Islands. WCPFC-SC13-AR/CCM-05.

world to fish in the Pacific, exceeding 2,000 mt hold capacities. Since 2004, three Spanish flagged longline vessels have fished in the WCPO targeting swordfish.⁴⁹³

Ecuador

Ecuador is a major player in the EPO, with vessels fishing under its flag being responsible for nearly half of the total EPO tuna catch.⁴⁹⁴ In the WCPO, a handful of Ecuadorian-flagged purse seine vessels operate in the region, but only in the waters of Kiribati.⁴⁹⁵ Ecuador is home to several large canneries, with tuna caught in the WCPO often being transshipped to Ecuador for processing. For several years, Ecuador has actively sought to elevate its status within the WCPFC from cooperating non-member to full member – with hopes that member status would afford its vessels to the rights to fish on the high seas of the WCPO. To date, Ecuador’s request has been rebuffed by WCPFC members.⁴⁹⁶

Philippines

With around 150,000 mt of tuna being harvested within its EEZ on an annual basis, the Philippines ranks fourth among coastal States in terms of tuna production from national waters within the WCPO (Figure 39). Much of the catch is landed by small-scale artisanal fishing gears such as handline, hook and line, and ringnet; however, there are also purse seine fishing vessels that fish on the high seas (high seas pocket 1 in particular).⁴⁹⁷ The majority of the tuna landed in the Philippines comes from purse seine fishing activity, with only a very small percentage of the State’s tuna catch deriving from longline vessels. The

⁴⁹³ Ibid at 9.

⁴⁹⁴ IATTC. (2016). *Tuna, billfishes, and other pelagic species in the EPO*. 92nd Meeting of the IATTC. 24-28 July 2017. Mexico City, Mexico.

⁴⁹⁵ A record number of Ecuadorian-flagged purse seine vessels operated in the WCPO in 2010 (14 in total), with only around seven of such vessels being active in recent years. SPC. (2016). *Tuna Yearbook*. Noumea, New Caledonia: Secretariat of the Pacific Community,

⁴⁹⁶ Ecuador has been a cooperating non-member to the WCPFC for several years. Under WCPFC rules, Ecuador is not entitled to high seas fishing rights within the WCPFC.

⁴⁹⁷ For more information on tuna fisheries of the Philippines, see: Philippines. (2017). *Annual Report to the WCPFC: Part 1 Information on fisheries, statistics, and research*. Thirteenth Regular Session of the Scientific Committee to the WCPFC. 9-17 August 2017. Rarotonga, Cook Islands. WCPFC-SC13-AR/CCM-20.

Philippines also has eight tuna canneries that collectively represent nearly seven percent of global canned tuna production.⁴⁹⁸

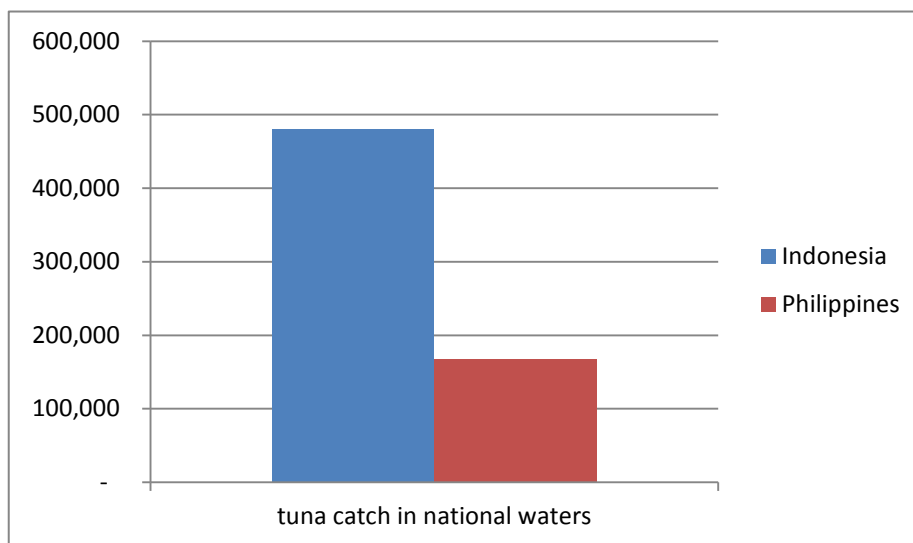


Figure 39: Average tuna catch in national waters of Indonesia, Philippines (2013-2015)

Source: SPC Data tables. Figure made by author

Indonesia

Indonesia is a major tuna fishing nation, with most of the State's catch taken within its national waters (Figures 39). The geographic location of Indonesia is such that it lies both within the Indian and Pacific Oceans. Comprised of over 17,000 islands, Indonesia has extensive archipelagic waters that are fished by a wide range of gears including purse seine, longline, handline, pole and line, troll, gillnet, as well as other artisanal gears. Data collection and catch verification have posed a consistent challenge in Indonesia and there have been dedicated efforts to improve the situation through the West Pacific East Asia Oceanic Fisheries Management Project.⁴⁹⁹

⁴⁹⁸ Greenpeace. (undated). *Tuna cannery ranking: Indonesia and Philippines*. Retrieved from http://m.greenpeace.org/seasia/ph/PageFiles/710346/Tuna_Cannery_Ranking.pdf

⁴⁹⁹ For more information on the West Pacific East Asia Oceanic Fisheries Management Project, see <https://www.wcpfc.int/west-pacific-east-asia-oceanic-fisheries-management-project>.

5.2.3 Scientific Organizations

Secretariat of the Pacific Community

The SPC, which recently changed its name to The Pacific Community, is an international development organization based in Noumea, New Caledonia with membership comprised of 26 country and territory members.⁵⁰⁰ The Oceanic Fisheries Programme (OFP) provides scientific services concerning primarily tuna fisheries for member countries and territories. The OFP is involved in fishery monitoring, data management, ecosystem and biological research and stock assessment for HMS stocks occurring in the WCPO. The SPC OFP is also formally recognized as the scientific sciences provider for the WCPFC and provides services related to: a) data management and statistical analyses, b) stock assessment, c) management analysis and performance monitoring, and d) other advisory and technical services.⁵⁰¹ The OFP conducts the stock assessments for key species managed by the WCPFC including the tropical tuna stocks (skipjack, yellowfin, and bigeye) and albacore. As identified by the important services provided above, the SPC-OFP plays a significant role in the management of HMS stocks within the WCPO.

International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean

The ISC was established in 1995 for the purposes of enhancing cooperation and conducting scientific research on HMS of the North Pacific Ocean. ISC membership is comprised of seven

⁵⁰⁰ For purposes of this thesis and to provide continuity with references cited herein, SPC is maintained throughout this manuscript. For information on the SPC, see: <http://www.spc.int/about-us/>

⁵⁰¹ Memorandum of Understanding between the WCPFC and The Pacific Community. (2016). Retrieved from: https://www.wcpfc.int/system/files/0_Revised%203-year%20MOU%20-%20Service%20Agreement%20-%20Annex%20I%202016%20-%20Final-21Mar2016%20%28for%20website%20posting%29.pdf

Pacific-rim countries, four non-voting members, and one cooperating non-member.⁵⁰² The ISC conducts stock assessments for HMS stocks that occur in the North Pacific Ocean, which principally occur north of 20°N, otherwise known as ‘northern stocks.’ The ISC has formed working groups covering: a) North Pacific albacore, b) Pacific bluefin, c) billfish, and d) sharks.⁵⁰³ Due to its role as providing stock assessments and compiling fisheries statistics for ‘northern stocks,’ the ISC is an important scientific contributor to the management of Pacific HMS stocks.

5.2.4 Environmental and Fishing Industry Non-Governmental Organizations and Academic Institutions

The management of HMS stocks are of significant interest to civil society which is often represented through non-governmental organizations typically focused on environmental issues and sustainability concerns. For such organizations to attend and participate at WCPFC meetings, they must first be accredited as ‘observers’ by approval of WCPFC members. Some of the larger WCPFC-accredited organizations include Pew Charitable Trusts, World Wildlife Fund for Nature, Greenpeace, Environmental Defense Fund, The Nature Conservancy, Birdlife International, and the Marine Stewardship Council. Environmental organizations play an important role in the management of HMS stocks in the Pacific, often advocating various policy positions and producing outreach materials. Although their voice is regularly muted with regards to negotiations, their presence and interests cannot be denied.

⁵⁰² ISC members are: Canada, Chinese Taipei, Japan, Republic of Korea, Mexico, China, and United States. ISC non-voting members: FAO, North Pacific Marine Science Organization, SPC, and WCPFC. ISC cooperating non-member: IATTC.

⁵⁰³ For more information on the ISC, see: <http://isc.fra.go.jp/index.html>

Fishing industry trade organizations also attend WCPFC meetings, primarily to participate in meetings and to ensure that the interests of their members are being tended to by CCM delegates. Examples of industry formed organizations that participate in WCPFC meetings include the American Tunaboat Association, the Organization for Responsible Tuna Fisheries, World Tuna Purse Seine Organization, Pacific Island Tuna and Industry Association, and the International Seafood Sustainability Foundation. Some of these organizations comprise a roster of major, globally-connected industry players involved in catching and processing tuna. Their presence is visible as is their influence undeniable at WCPFC meetings.

Representatives of academic institutions and programs also attend WCPFC meetings as observers including Australian National Centre for Ocean Resources and Security, the International Law Project affiliated with Lewis and Clark College Law School, and the University of the South Pacific. In addition, at any given WCPFC meeting, there are a handful of graduate school students and academic researchers collecting information and networking.⁵⁰⁴

5. 3 Western and Central Pacific Fisheries Commission

The WCPFC, which came into effect in 2004, was born out of the Honolulu Convention. To develop the Honolulu Convention, interested States, territories and sub-regional organizations participated in a series of MLHC between 1997 and 2000.

⁵⁰⁴ Author's personal experience from attending WCPFC meetings since 2006.

5.3.1 Multilateral High-Level Conferences

The first MHLC was convened by the FFA in Honiara, Solomon Islands, in December 1994. It was attended by FFA countries and several DWFNs.⁵⁰⁵ The objective of the meeting was technical in nature, primarily relating to cooperation on data collection and enforcement issues with respect to HMS stocks in the region. It was not, as expressed by the Chairman of MHLC1, Mr. Robin Yarrow of Fiji, a conference to discuss broader issues related to the management of HMS stocks that occur within the WCPO.⁵⁰⁶ This is because at that time, the UNFSA conference was ongoing and MLHC1 participants recognized the need to avoid getting ahead of that process.

At MHLC1, the rapid increase in WCPO tuna catches during the previous 15 years was noted, with bigeye tuna reported to be subject to fishing mortality at levels exceeding those associated with MSY.⁵⁰⁷ Substantial discussion occurred at the MHLC1 on the need to obtain quality fisheries data for stock assessments. Existing consultative forums were duly noted, such as the Standing Committee on Tuna and Billfish, the Western Pacific Yellowfin Research Group, and the South Pacific Albacore Research Group. However, it was highlighted that the type of detailed information required for robust stock assessments was lacking due to the non-participation of major DWFNs in these consultative groups.⁵⁰⁸ The most significant gaps in fisheries data (as reported at the time), included high seas logbook data for longline

⁵⁰⁵ Attending countries included: Australia, the Cook Islands, the Federated States of Micronesia, Fiji, French Polynesia, Japan, Kiribati, the Marshall Islands, Nauru, New Zealand, Niue, Papua New Guinea, China, the Philippines, Korea, the Solomon Islands, the United States, Vanuatu and Western Samoa. FFA. (1994). Record of the Proceedings of the Multilateral High-Level Conference on South Pacific Tuna Fisheries. Solomon Islands 1994. *FFA Report 95/1*. 1995. Honiara. By the time the Honolulu Convention was signed in 2000, additional State party participants included Canada, France, the European Union and Indonesia. Due to its tenuous relationship with China, Taiwan later joined the negotiations as a “Fishing Entity.”

⁵⁰⁶ MHLC. (1994). *Report of First Multi-Lateral High-Level Conference*. 1-5 December 1995. Honiara, Solomon Islands.

⁵⁰⁷ Ibid. Dr. John Hampton, presentation to the MHLC1, at 3.

⁵⁰⁸ Refer to statements made by the FSM representative at MHLC1 and the PNG representative at MHLC1. See MHLC 1994. Other mechanisms for exchanging fisheries data included the Western Pacific Fisheries Consultative Committee, the Trans-Pacific Fisheries Consultative Committee, the APEC Fisheries Working Group, and the Pacific Economic Cooperation Conference.

fisheries and aggregate data for some longline and purse seine fleets.⁵⁰⁹ Japan made an assertion to the effect that it provides fisheries information to organizations to which it is not a member, such as the SPC.⁵¹⁰ The Japan delegate emphasized that the data problem is caused by a lack of formal arrangements between the SPC and some DWFNs, and that the only way to address this issue in the long-term is through formal arrangements governing the collection and dissemination of fisheries data, as well as the carrying out of stock assessments by scientists from all States involved with the fisheries concerned.⁵¹¹ Following MHLC1, there were three technical consultations - one on the collection and exchange of fisheries data, tuna research and stock assessments, and two consultations on vessel monitoring systems.⁵¹²

The Second MHLC, which was held in Majuro in 1997, set the course for developing a broader international framework for managing WCPO tuna stocks. Harnessing the momentum of the recently concluded UNFSA (1995), Ambassador Nandan (Fiji) was named chair of the meeting, again finding himself at the helm of a substantial international effort related to the conservation and management of HMS, albeit this time on a regional level. In his opening remarks at MHLC2, Ambassador Nandan suggested that although developing an appropriate regional organization would be a challenge, the recently agreed UNFSA would serve as a guide, giving practical effect to the provisions of UNCLOS.⁵¹³

⁵⁰⁹ Report provided by Dr. A.D. Lewis at MHLC1. See FFA 95/1, at page 5, paragraph 50. Some 20 years later, operational (logbook) data is still not being provided by all WCPFC members. See Williams, P. (2017). *Scientific data available to the Western and Central Pacific Fisheries Commission*. Thirteenth Regular Session of the Scientific Committee of the WCPFC. Rarotonga, Cook Islands. 9-17 August 2017. 34. WCPFC-SC13-2017/ST-WP-01

⁵¹⁰ Statement made by Japan's representative at MHLC1. MHLC (1994) at 6.

⁵¹¹ Ibid.

⁵¹² The technical consultation on the collection and exchange of fisheries data was held in Noumea in July 1996. The two consultations on fishery vessel monitoring systems were held in September 1995 in Honolulu and November 1996 in Nadi, Fiji.

⁵¹³ MHLC. (1997). *Report of the Second Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fishery Stocks in the Western and Central Pacific*. 10-13 June 1997. Majuro, Republic of the Marshall Islands.

He further noted that UNFSA provides a step-by-step approach towards the implementation of the various duties of coastal States and DWFNs with respect to regional cooperation.⁵¹⁴

A significant outcome of MHLC2 was agreement on the Majuro Declaration, which committed parties to work for a period of three years on establishing a formal agreement in accordance with UNCLOS and UNFSA for the conservation and management of WCPO HMS stocks.⁵¹⁵ Although the type of mechanism to bring about this result was not defined in detail in the Majuro Declaration, the document recognized the need to facilitate cooperation between the participants for the long-term sustainability of HMS stocks throughout their range.⁵¹⁶

The Majuro Declaration committed MHLC2 participants to ensuring that conservation and management measures for fish stocks within areas of national jurisdiction and on the high seas were compatible.⁵¹⁷

With respect to the discussion of the Principle at MHLC2, the opening statement made by Mr. Dennis Renton of Papua New Guinea was the most specific. Mr. Renton stated that UNFSA is clear that existing sub-regional or regional measures must be taken into account when developing compatible measures.⁵¹⁸

This statement signaled that PICs would exercise their rights to establish management measures for their EEZs, for which compatible high seas measures would then need to be established.⁵¹⁹

Following two intercessional technical consultations, one on the use of precautionary limit reference points, and the other on Monitor, Control, and Surveillance (MCS) issues, the third MHLC was held in

⁵¹⁴ Ibid at 9.

⁵¹⁵ Majuro Declaration. (1997). Report of the Second Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. Annex 1. 10-13 June 1997. Majuro, Marshall Islands.

⁵¹⁶ The need for conservation and management throughout a stock's range - i.e., both within waters under national jurisdiction and on the high seas, was voiced strongly by Japan and the United States, whereby both countries have distant water fishing vessels and areas of EEZ within the WCPO.

⁵¹⁷ Majuro Declaration (1997), paragraph 4.

⁵¹⁸ MHLC. (1997). *Statement by Mr. Dennis Renton, Papua New Guinea*. Report of the Second Multilateral High-Level Conference. 10-13 June 1997. Majuro. Republic of the Marshall Islands..

⁵¹⁹ Ibid. Mr. Renton further stated that to ensure compatibility, enhanced cooperation is needed, including by way of developed countries providing assistance to SIDS.

June 1998 in Tokyo. To facilitate discussion at MHLC3, Chairman Nandan introduced a working paper that contained the first draft articles of the regional agreement for consideration.⁵²⁰ As stated by Chairman Nandan, the draft articles utilize the provisions of UNFSA and UNCLOS as a starting point.⁵²¹

In total, seven MHLCs were held, with the last four being held in Honolulu and the final MHLC concluding in September 2000. MHLC7 culminated in a total of 24 countries, participating territories⁵²² and fishing entities⁵²³ voting on whether to adopt the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. The result of the vote was 19 in favor, two against (Japan and the Republic of Korea), with three abstentions (China, France and Tonga).⁵²⁴ The following section provides a review of the MHLC negotiations with respect various provisions of the Honolulu Convention.

5.3.2 Honolulu Convention

The following sections describe the major articles of the Honolulu Convention. Where appropriate, an overview of the negotiations that occurred on a particular subject applicable to this thesis during the MHLC process is included. The Honolulu Convention was the first RFMO established after the adoption of UNFSA and contains several identical or similarly formulated articles. The fact that Ambassador Nandan chaired both the UNFSA and the MHLCs is a likely cause for this outcome.

⁵²⁰ MHLC. (1998). *Introduction of the working paper by the Chairman*. Report of the Third Session of the Multilateral High-Level Conference on the Conservation and Management of the Highly Migratory Fish Stocks in the Western and Central Pacific. Annex 4. 22-26 June 1998. Tokyo, Japan. 36

⁵²¹ Ibid.

⁵²² American Samoa, French Polynesia, Guam, New Caledonia, the Northern Mariana Islands, Tokelau, Wallis and Fortuna.

⁵²³ Chinese Taipei.

⁵²⁴ Prior to the vote, Japan expressed its reluctance to agree to the convention text because it questioned the acceptance by the Conference of the credentials of the delegation of Indonesia and Kiribati. Japan also voiced concern over the decision-making process and the role of the Chairman. See: Sydnes, A. K. (2001). Establishing a regional fisheries management organisation for the Western and Central Pacific tuna fisheries. *Ocean & Coastal Management*, 44(11), 787-811. China abstained because Chinese Taipei was granted permission to participate in the decision-making process of the Commission as a fishing entity. Tonga abstained due to reservations over the decision-making process and suggested that a group of three could veto a majority decision. See: Pacific Island Fishery News. (2000). *Newsletter of the Western Pacific Fishery Management Council*. Fall 2000. Honolulu, Hawaii. Retrieved from <http://www.wpcouncil.org/outreach/newsletters/fall2000.pdf>

5.3.2.1 Convention Area

The Convention's area of application is provided in Article 3 and is bounded longitudinally on its eastern edge at 150° longitude west and 130° longitude west. The latter area is shared jurisdiction between the WCPFC and the IATTC (Figure 40). The Convention Area is also bounded in the south Pacific at 55° latitude south; however, the Convention Area is not bounded to the north or west, thus leaving some uncertainty in the Convention's area of competence in the northern and western Pacific Ocean.



Figure 40: Map showing the Convention Area

Source: <http://www.dfo-mpo.gc.ca/international/dip-wcpfc-cppoc-eng.htm>

Note: Red line bordering blue shaded area delineates WCP-Convention Area. The WCPFC Secretariat is located in Pohnpei, FSM.

During the MHLC process, there was significant debate over the area for which the Convention would be responsible. While there was consensus that the Convention Area should be sufficiently large to encompass the range of managed HMS stocks, defining those boundaries with respect to political

circumstances and biological considerations was challenging. The first draft articles circulated by Nandan at MHLC3 contained two approaches for establishing the Convention Area. The first was a set of coordinates that would serve as the regulatory area, which was proposed as extending from 130° W to 131° E and from 40°S to 23° 30'N. This proposal was criticized on the basis that the boundaries were too small to encompass the full range of HMS stocks.⁵²⁵ The second approach was to leave the geographic area of competence undefined and instead establish regulatory areas for various species and fisheries, depending on fish movement patterns and connectivity. It was acknowledged that such an approach could be feasible from a biological point of view, but could also pose problems from an administrative perspective, particularly where regulatory areas with differing management measures overlap.⁵²⁶

At MHLC4, there was agreement in principle to establish a set of geographic coordinates for the proposed Convention Area, subject to further consideration being given to the northern and western boundaries.⁵²⁷ During the course of the negotiations on the Convention Area, China expressed concern over the western boundary extending into the South China Sea – an area fraught with ongoing maritime jurisdictional claims by several countries in the region (including China itself).⁵²⁸ Japan asserted that the Convention Area should simply cover the entire migratory range of HMS stocks, regardless of the legal or political status of particular areas, and further, that if China's concern held sway, then the northern boundary of the Convention Area should be limited to 20° N so as to avoid splitting Japan's EEZ and "causing shameful treatment" to Japan.⁵²⁹

⁵²⁵ MHLC. (1999). *Information Note on Matters Before the Fourth Session of the Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. Distributed papers to the Fourth Session of the Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. 10-19 February 1999. 4.

⁵²⁶ Ibid at 2.

⁵²⁷ MHLC. (2000). *Report of the Sixth Session of the Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. Annex 4. Information Note on Matters Before MHLC6. 12-19 April 2000. Honolulu, Hawaii.

⁵²⁸ Ibid.

⁵²⁹ Ibid. Opening Statement by Japan at 15.

As has been noted, Article 3 does not include western and northern boundaries, which is evidence that MHLC4 was unable to reach consensus on this matter. To remedy the situation, Article 3(3) states that the Convention applies to all highly migratory fish stocks within the Convention Area, and further, that conservation and management measures shall be applied throughout the range of the stocks.⁵³⁰ After the signing of the Honolulu Convention at MHLC7, Nandan clarified that the Convention applies to waters of the Pacific Ocean but not to waters in South-East Asia (which are not part of the Pacific Ocean) or to those of the South China Sea.⁵³¹ Although the management measures adopted by the WCPFC do not apply within the South China Sea, the SPC-OFP is compiling data and reporting on tuna fisheries that occur within these waters. Agreement on this approach was made at the Twelfth Meeting of the Standing Committee on Tuna and Billfish, creating the WCPF Statistical Area, which for a western boundary include the coastlines of Australia and Asia.⁵³²

While the Convention states that the area of application includes “all waters of the Pacific Ocean” followed by a series of coordinates, consistency with UNCLOS effectively limits the application of conservation and management measures to EEZs and the high seas.⁵³³ This is because under UNCLOS, archipelagic and territorial waters are considered to be subject to the sovereignty of coastal States, whereas coastal States are accorded sovereign rights over their EEZs.⁵³⁴ The Honolulu Convention explicitly states in Article 4 that “nothing in this Convention shall prejudice the rights, jurisdiction, and

⁵³⁰ Article 1 defines various terms used in the convention, including “highly migratory fish stocks”. This term covers all fish stocks listed in Annex I of UNCLOS 1982, as well as other such species the Commission may determine.

⁵³¹ Nandan, S. (2000). *Closing Remarks by the Chairman, Ambassador Satyna N. Nandan, to the Seventh Session of the Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. Report of the Seventh Session of the Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. 5 September 2000. Honolulu, Hawaii. 5.

⁵³² SPC. (1999). *Report of the Twelfth Meeting of the Standing Committee on Tuna Billfish*. Standing Committee on Tuna and Billfish. 16-23 June 1999. Papeete, Tahiti. 24.

⁵³³ Hanich, Q., Schofield, C., & Cozens, P. (2009). Oceans of Opportunity? The limit of maritime claims in the Western and Central Pacific Region. In Q. Hanich & M. Tsamenyi (Eds.), *Navigating Pacific Fisheries: Legal and Policy Trends in the Implementation of International Fisheries Instruments in the Western and Central Pacific Region*. Oceans Publications. Australia National Centre for Ocean Resources and Security. University of Wollongong. Wollongong, Australia.

⁵³⁴ UNCLOS Article 2 provides that coastal States have full sovereignty over their internal waters, which include the territorial seas and archipelagic waters.

duties of States under [UNCLOS] and the [UNFSA].” This implies that the application of the convention does not extend to sovereign waters (i.e., archipelagic waters; territorial sea). As such, archipelagic waters and territorial seas are off limits to the WCPFC; however, nothing prevents coastal States from implementing compatible measures within their archipelagic waters and territorial sea.

The issue of archipelagic waters not being subject to Commission management measures is an important one with regard to the application of the Principle. There are seven archipelagic States in the WCPO: Fiji, Indonesia, Kiribati, Papua New Guinea, the Philippines, Tuvalu and Vanuatu.⁵³⁵ Collectively, there is a substantial amount of tuna harvested within the archipelagic waters of these countries which is outside the management purview of the WCPFC (Figure 41). With respect to compatibility, there could be situations where high catches in one coastal State’s archipelagic waters are substantial enough to affect catches in waters under the national jurisdiction of an adjacent coastal State. Further, the harvesting of fish in archipelagic waters could involve spawning aggregations which, if left unregulated, could later become depleted, impacting both the stock and the ability of adjacent States to maintain their own domestic EEZ measures. In addition, archipelagic waters can serve as essential habitats for juvenile tuna, and if these habitats were to become degraded or overexploited, stock effects would likely be observed, including local depletion.

⁵³⁵ United Nations. (1992). *The Law of the Sea: the practice of archipelagic states*. Office for Ocean Affairs and the Law of the Sea. United Nations. New York.

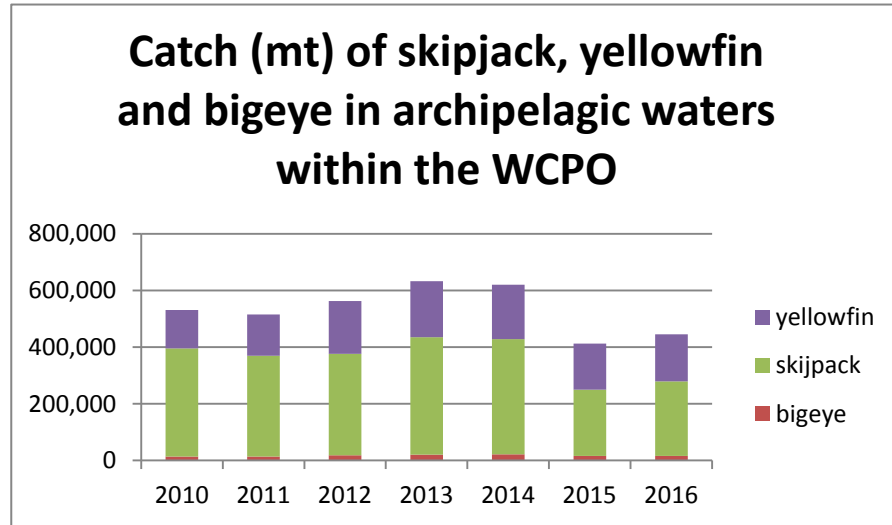


Figure 41: Catch of skipjack, yellowfin and bigeye tuna in the WCPO, 2010-2016

Source: SPC unpublished. Pers. Comm., Peter Williams, SPC. Figure made by author

Note: The catch of tuna in archipelagic waters within the WCPO represents around 20% of the total WCPO tuna catch.

5.3.2.2 Management Scope

As stated in Article 2, the primary objective of the Convention is the long-term conservation and sustainable use of HMS fish stocks in the WCPO in accordance with UNCLOS and UNFSA.⁵³⁶ Article 5 provides the following measures to be adopted by the Commission: (a) measures to ensure the long-term sustainability of highly migratory fish stocks and their optimum utilization; b) measures that use the best scientific evidence available and which are designed to maintain or restore stocks to be able to produce MSY, as qualified by relevant environmental and economic factors; c) measures that apply the precautionary approach; d) measures that assess the impacts of fishing on other activities and environmental factors; e) measures to minimize waste and bycatch including impacts to protected species; f) measures to protect biodiversity; g) measures to prevent overfishing and eliminate excess fishing

⁵³⁶ It is worth noting that the first paragraph of the convention's preamble links long-term conservation with sustainable use, and in particular the use of fishery resources for human consumption. The incorporation of human consumption highlights the importance of tuna fisheries and its relationship to food security within Oceania and the larger WCPO.

capacity; h) measures that take into account artisanal and subsistence fishers; i) the need to collect and share timely fisheries data; and j) measures to promote effective MCS.⁵³⁷

5.3.2.3 Precautionary Approach

The precautionary approach in fisheries management was a hot topic in the early 1990s, and was advanced internationally through several fora at the time, including UNFSA.⁵³⁸ However, at MHLC2 in 1997, it was acknowledged that the application of the precautionary approach to highly migratory fish stocks was unclear.⁵³⁹ Facing potential controversy on this issue, MHLC2 sought scientific advice from the Standing Committee on Tuna and Billfish (SCTB).⁵⁴⁰ The SCTB acknowledged the need to base the application of the precautionary approach on the provisions of UNFSA, including Annex II of that agreement.⁵⁴¹ It was further recognized that the precautionary approach supports the development of limit reference points and stock assessments that incorporate uncertainty and associated risk levels.⁵⁴² Utilizing the advice derived from the SCTB consultation, the draft articles introduced by Nandan at MHLC3 contained several provisions related to the precautionary approach.⁵⁴³ These provisions remained unchanged throughout the subsequent MHLC meetings and were adopted as Article 6 of the convention.

Article 6 provides details on how the Commission is to apply the precautionary approach, such as requiring the WCPFC to apply the guidelines listed in Annex II of UNFSA on the use of reference points.

Other considerations to take into account as they relate to the precautionary approach include: a)

⁵³⁷ Honolulu Convention, Article 5.

⁵³⁸ Hilborn R., Maguire, J.J., Parma, A., & Rosenburg, A. (2001). The precautionary approach and risk management: can they increase the probability of success in fisheries management. *Canadian Journal of Fisheries and Aquatic Sciences*, 58(1), 99-107. The Rio Declaration (1992), UNFSA (1995), and the FAO Code of Conduct for Responsible Fisheries (1995) are examples of internationally recognized instruments that acknowledge the need for a precautionary approach.

⁵³⁹ MHLC2, Annex 3 at page 3.

⁵⁴⁰ Ibid.

⁵⁴¹ MHLC. (1998). *Report to the Third Multilateral High-Level Consultation on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean*. Eleventh meeting of the Standing Committee on Tuna and Billfish. Workshop on Precautionary Limit Reference Points for Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. Honolulu, Hawaii 28-29 May 1998. 6.

⁵⁴² Ibid.

⁵⁴³ Ibid.

uncertainties related to the size of stocks; b) impacts on dependent or associated species; and c) environmental and socio-economic conditions.⁵⁴⁴ Article 6 instructs members to ensure, *inter alia*, that when reference points are approached, that they are not exceeded, and if exceeded, that action is taken without delay to restore the stocks.⁵⁴⁵

Annex II of UNFSA describes two types of precautionary reference points - target and limit reference points. According to the guidelines, limit reference points are used to constrain harvests so that stocks can produce MSY. Target reference points, on the other hand, are used to meet management objectives.⁵⁴⁶ Annex II further lists F_{MSY} and B_{MSY} as minimum standard limit reference points, with the former being associated with fishing mortality and the latter with stock biomass.⁵⁴⁷

5.3.2.4 Compatibility of Conservation and Management Measures

Article 8 is dedicated to the Principle. It largely replicates Article 7 of UNFSA, but with a few notable differences. Unlike Article 7(1) of UNFSA, Article 8(1) does not restate the UNCLOS-associated rights and obligations of States with respect to national waters and the high seas.⁵⁴⁸ Indeed, this is because alignment with UNCLOS is already stated in Article 4. Article 8(1) does, however, mirror UNFSA Article 7(2), such that in order to ensure the conservation and management of HMS fish stocks in their entirety, measures established for the high seas and adopted for areas under national jurisdiction are to be compatible. Article 8(1) then replicates six UNFSA considerations that the Commission is required to take into account. These include: a) the biological unity of the stocks, fisheries, and geographic particularities of the region; b) the need for measures established for the Convention Area to not

⁵⁴⁴ Honolulu Convention Article 6 paragraph 1(b).

⁵⁴⁵ Honolulu Convention Article 6 paragraph 3.

⁵⁴⁶ UNFSA Annex II paragraph 2.

⁵⁴⁷ *Ibid.* For further reading on the precautionary approach and alternative non-MSY based limit reference points, see: Gabriel, W. L., & Mace, P. M. (1999). A review of biological reference points in the context of the precautionary approach. In *Proceedings of the Fifth National NMFS Stock Assessment Workshop: Providing Scientific Advice to Implement the Precautionary Approach under the Magnuson-Stevens Fishery Conservation and Management Act*. NOAA Tech Memo NMFS-F/SPO-40. 34-45.

⁵⁴⁸ UNFSA Article 7(1).

undermine the effectiveness of measures adopted and applied in accordance with UNCLOS Article 61 for waters under national jurisdiction; c) previously agreed high seas measures; d) previously agreed measures adopted by sub-regional organizations; e) the respective dependence of coastal States and high seas fishing States; and f) ensuring that measures do not harmfully impact living marine resources as a whole.

Article 8 also includes two provisions not found in Article 7 of UNFSA. The first is Article 8(3), which requires coastal States to ensure that measures adopted for national waters do not undermine the effectiveness of Commission adopted measures. The inclusion of this provision is significant and appears to rebalance the scale in terms of the rights accorded to various States. As discussed in Chapter 3, some commenters had suggested that UNFSA tilted the scales in favor of coastal States, whereas other commentators had cautioned against placing too much emphasis on the non-parity between UNFSA Article 7(2)(a) and (b) with respect to high seas measures not undermining the effectiveness EEZ-based measures.⁵⁴⁹ Secondly, Article 8(4) adds an additional consideration in that it instructs the Commission to pay special attention to ensuring compatibility between high seas areas entirely surrounded by EEZs of Commission members - i.e., high seas pockets. Also, unlike UNFSA, Article 8 does not reference the need to agree on compatible measures within a reasonable amount a time. Nor does it provide provisions related to the settlement of disputes with respect to the Principle.

At MHLC3, Chairman Nandan stated that the issue of compatibility was important and required a delicate balance to be struck, and further, that the heart of the issue was ensuring a seamless regime for conservation and management throughout the region.⁵⁵⁰ Nandan provided the example of a TAC limit with regard to the balance of rights, noting that the main issue would be how coastal States exercise their “prerogatives” with respect to fish catches in their zones coupled with the rights of fishing nations to fish

⁵⁴⁹ Burke (2000) at 114.

⁵⁵⁰ MHLC3 (1998) at 37.

on the high seas. According to Nandan, both sets of rights have to be exercised within the limits set for the region as a whole.⁵⁵¹

The issue of compatibility played an important role in the negotiations at MHLC3. As evidenced in the opening statements of several PICs, their view of compatibility centered on the ‘EEZ first’ mentality, whereby management measures adopted by the Commission for the high seas would need to be compatible with measures established for EEZs by coastal States in the exercise of their sovereign rights.⁵⁵² Japan, itself a coastal State, acknowledged the sovereign rights of coastal States over HMS stocks in their waters, but added that the ‘EEZ first’ concept should not be construed as coastal States having exclusive rights to management of these stocks, and further, that the ‘in-zone management comes first’ concept with respect to establishing compatible measures would be totally unacceptable.⁵⁵³

At MHLC3, Chairman Nandan introduced the first draft articles of the regional agreement, which included an Article 8 on ‘Compatibility of conservation and management measures.’ As mentioned above, Nandan took several paragraphs from Article 7 of UNFSA in their entirety for the purpose of compiling draft Article 8. Nandan did, however, shift paragraph (d) in UNFSA Article 7, which references the need to account for the biological unity of stocks, to paragraph (a) in draft Article 8. Chairman Nandan did not explain in his paper introducing the draft articles why he reordered some of the paragraphs; however, with the issue of managing fish stocks throughout their range being an important matter for MHLC participants, bringing the issue of biological unity forward was likely an attempt to reflect the importance of this issue.

At MHLC4, which was held in February 1999 in Honolulu, two more provisions were added to draft Article 8. The first was the inclusion of UNFSA Article 7 paragraph 2 in draft Article 8(1), which

⁵⁵¹ Ibid at 38.

⁵⁵² Ibid at 19 and 22.

⁵⁵³ MHLC. (1998). *Statement by Japan*. Report of the Third Session of the MHLC. 22-26 June 1998. Tokyo, Japan. 19.

instructs States to cooperate in the establishment of compatible measures, and further, that conservation and management measures “established” for the high seas and those “adopted” for areas of national jurisdiction are to be compatible. The second was the inclusion, in draft Article 8(4), that where there are high seas areas in the Convention Area surrounded by EEZs (i.e., high seas pockets), that the Commission shall pay special attention to the establishment of measures for high seas pockets that are compatible with those established for the surrounding EEZs. These amendments to draft Article 8 were initiated by PICs, with the representatives of these countries suggesting that the amendments provide for a greater recognition of the rights and interests of coastal States, and further, that the amendments reiterate the obligation to establish high seas measures that are compatible with those established for areas under national jurisdiction.⁵⁵⁴ Following on from MHLC4, no further amendments or additions were made to Article 8 of the draft convention.

5.3.2.5 The Commission and its Functions

Article 9 formally establishes the Commission and further elucidates its capacity as an internationally recognized RFMO.⁵⁵⁵ Article 9 instructs the Commission to meet at least annually and to elect a chairman and vice chairman.⁵⁵⁶ It goes on to state that contracting parties shall determine the location of the Commission’s headquarters and arrange for the appointment of an Executive Director.⁵⁵⁷ Article 9 also directs the Commission to adopt (by consensus) rules of procedure for its meetings and the meetings of its subsidiary bodies.⁵⁵⁸

Article 10 describes the functions of the Commission; however, the chapeau of Article 10(1) acknowledges that the functions of the Commission shall be without prejudice to the sovereign rights of coastal States for the purpose of exploring and exploiting, conserving and managing HMS stocks in areas

⁵⁵⁴ MHLC. (1999). *Report of the Fourth Session of the MHLC*. 10-19 February 1999. Honolulu, Hawaii.

⁵⁵⁵ Honolulu Convention Article 9(1) and Article 9(6).

⁵⁵⁶ Honolulu Convention Article 9(3) and Article 9(4).

⁵⁵⁷ Honolulu Convention Article 9(7).

⁵⁵⁸ Honolulu Convention Article 9(8).

under their national jurisdiction. The inclusion of the “without prejudice” clause in Article 10 has been cited as critically important to PICs during the negotiation of the Convention, as it recognizes their sovereign rights with regard to the functions of the Commission.⁵⁵⁹

Article 10(1)(a) describes the fundamental function of the Commission from a resource management perspective – that is, to determine the TAC or total level of effort for HMS stocks within the Convention Area, as well as the ability to adopt other conservation and management measures to ensure the long-term sustainability of such stocks. Other major stated functions in that appear in paragraphs (b) through (l) of Article 10(1) are: (b) the promotion of cooperation and coordination among Commission members to ensure compatibility; (c) the establishment of measures for non-target, dependent, or associated species; (d) the adoption of data collection standards for the collection, verification and timely exchange and reporting of HMS fisheries data; (e) the compiling and dissemination of accurate and complete statistical data; (f) obtaining and evaluating scientific advice, reviewing status of stocks, and promoting relevant scientific research; (g) developing, when necessary, criteria for allocation of TAC or effort; (h) adopting standards for the responsible conduct of fishing operations; (i) establishing mechanisms for effective monitoring, control, surveillance and enforcement, including a vessel monitoring system; (j) obtaining and evaluating economic and other fisheries related data; (k) agreeing on means by which the fishing interests of new members may be accommodated; and (l) promoting the peaceful settlement of disputes.⁵⁶⁰

To accomplish the Commission’s functions, the Commission is aided by the establishment of four subsidiary bodies: 1) the Scientific Committee; 2) the Technical and Compliance Committee; 3) the

⁵⁵⁹ Clark, L. (2009). Implementation of the Precautionary Approach and Reference Points. In Q. Hanich & M. Tsamenyi (Eds.), *Navigating Pacific Fisheries: legal and policy trends in the implementation of international fisheries instruments in the Western and Central Pacific Region* (pp. 284-302). Ocean Publications. Australian National Centre for Ocean Resources and Security (ANCORS). University of Wollongong. Clark (2009) at 290, further states the “without prejudice” clause in Article 10, coupled with the view that stock levels could be kept below levels associated with MSY due to relevant “environmental and economic factors” in Article 5(b), represents part of the package that PICs signed up for when adopting the convention.

⁵⁶⁰ Honolulu Convention Article 10(1) paragraphs (a)-(o). Omitted from the list above is the Commission’s function to approve a budget and its ability to adopt administrative procedures.

Northern Committee; and 4) the Finance and Administrative Committee. The Scientific Committee was created to ensure that the Commission obtains the best scientific information available for its consideration.⁵⁶¹ Its main functions are to report its findings or conclusions to the Commission on the status of target, non-target, or associated or dependent stocks, and to make recommendations to the Commission concerning the conservation and management of, and research on, such stocks.⁵⁶²

The Technical and Compliance Committee's primary functions are to provide technical advice and recommendations to the Commission on the implementation of, and compliance with, conservation and management measures.⁵⁶³

Article 11 authorizes the Commission to form a committee to make recommendations on the implementation of conservation and management measures for the area north of the 20° N parallel, as well as recommendations on the formulation of measures that apply to stocks which mostly occur in this area. Based on this provision, the Northern Committee was established. Only members whose national waters occur in the north Pacific north of 20° N latitude, or who have fishing vessels operating in the area north of 20° N, are entitled to form part of the Northern Committee.⁵⁶⁴

The Commission and its subsidiary committees are supported by a Secretariat whose functions are to: 1) receive and transmit the Commission's official communications; 2) facilitate the completion and dissemination of data necessary to accomplish the Convention's objectives; 3) prepare administrative reports for the Commission and its subsidiary bodies; 4) administer agreed MCS arrangements and

⁵⁶¹ Honolulu Convention Article 12.

⁵⁶² Honolulu Convention Article 12(d) and (g).

⁵⁶³ Honolulu Convention Article 14. The functions of the TCC are to: (a) provide the Commission with information, technical advice and recommendations relating to the implementation of, and compliance with, conservation and management measures;

(b) monitor and review compliance with conservation and management measures adopted by the Commission and make such recommendations to the Commission as may be necessary; and (c) review the implementation of cooperative measures for monitoring, control, surveillance and enforcement adopted by the Commission and make such recommendations to the Commission as may be necessary.

⁵⁶⁴ Honolulu Convention Article 11(7).

provide scientific advice; 5) publish decisions of the Commission and its subsidiary bodies; and 6) perform treasury, personnel, and administrative functions.⁵⁶⁵

5.3.2.6 Resolutions and Conservation and Management Measures

In developing compatible measures for the management of HMS stocks in the WCPO, adopted agreements under the Commission can take one of two forms: 1) Resolutions; or 2) Conservation and Management Measures (CMMs). Resolutions describe non-binding statements and recommendations addressed to members of the Commission and cooperating non-members. CMMs describe binding decisions of the Commission on members and cooperating non-members.

CMMs are generally composed of an introductory preamble which contains recitals and references to the Convention and other related information. The applicable provisions of CMMs ordinarily take the form of numbered paragraphs. Proposed CMMs and/or Resolutions are either drafted by CCMs or by the Secretariat for consideration by the Commission at regular meetings. Proposed CMMs are to be submitted and made available to CCMs at least 30 days prior to a Regular Commission meeting.⁵⁶⁶

5.3.3.7 Allocation of Catch or Effort Limits within the Convention Area

Article 10(3) instructs the Commission to consider several factors when developing criteria for the allocation of a TAC or total effort levels. The allocation of fishing rights is undoubtedly one of the most contentious issue in any fisheries management setting, and the situation is no different within the

⁵⁶⁵ Honolulu Convention Article 15(4).

⁵⁶⁶ Prior to submitting draft CMMs for consideration by the WCPFC, CCMs are required to evaluate the impact of the proposal on SIDS and territories in the Convention Area. See WCPFC CMM 2013-06, which includes a list of questions which CCMs are, at a minimum, to consider when evaluating the potential for the CMM to transfer a disproportionate conservation burden onto SIDS.

Commission. Given the primacy of this issue, Nandan expressed at MHLC3 that the allocation of a TAC was fundamental in establishing compatible measures.⁵⁶⁷

The MHLC did consider allocations in some detail. One of major issues which was considered at the time was the authority of the Commission to allocate a TAC, and whether the allocation would apply in the EEZ of coastal States or whether the Commission could only allocate a TAC with respect to the high seas.⁵⁶⁸ Coastal States were in favor of the Commission only having the authority to set quotas for the high seas, whereas DWFNs wanted the Commission to be able to set quotas through the range of the stock, including in the EEZs and on the high seas.⁵⁶⁹ Following MHLC3, an *ad-hoc* expert working group was formed to consider how allocations had been dealt with in other RFMOs.⁵⁷⁰ The working group found that in other tuna-RFMOs, the respective conventions authorize parties to make legally-binding decisions regarding catch allocations, and further that allocations cover both high seas areas and EEZs.⁵⁷¹ The report of the working group also asked several questions of MHLC participants, including whether the Convention should prescribe a detailed allocation scheme or simply provide guidance in this area. In addition, the report asked whether or not the Convention should make it clear that allocations do not confer or prejudice any special rights to fishery resources.⁵⁷²

Answers to the two questions above can be viewed in the Convention Text. With regard to the latter question on rights, Article 10 paragraph 1 of the Convention emphasizes that the function of the

⁵⁶⁷ MHLC3 (1998) at 37.

⁵⁶⁸ Cordonnery, L. (2002). A Note on the 2000 Convention on the Conservation and Management of Tuna in the Western and Central Pacific Ocean. *Journal of Ocean Development and International Law*, 33, 1-15, at 8.

⁵⁶⁹ *Ibid.*

⁵⁷⁰ The working group was led by Mr. Brian Hallman (USA) and included representatives from Australia, Chinese Taipei, France, Japan, New Zealand and the United States. See MHLC. (1999). *Report of the Fourth Session of the Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. 10-19 February 1999. Honolulu, Hawaii. The review investigated the following RFMOs: the Inter-American Tropical Tuna Commission, the International Commission for the Conservation of Atlantic Tunas; the Commission for the Conservation of Southern Bluefin Tuna, and the Indian Ocean Tuna Commission.

⁵⁷¹ *Ibid.*

⁵⁷² *Ibid.*

Commission is without prejudice to the sovereign rights of coastal States for the purpose of exploring and exploiting, and conserving and managing, HMS stocks within areas under national jurisdiction.⁵⁷³

With respect to developing an allocation scheme in the convention, MHLC participants did not reach agreement. Instead, the convention suggests that when developing criteria for the allocation of a TAC, the Commission should take into account several issues. In Article 10(3), 10 issues are listed to help guide the Commission when developing allocation criteria, including the status of the stocks, the historical catch in the area, the special requirements of (SIDS), the provision of accurate data, as well as compliance issues (among others).⁵⁷⁴

5.3.2.8 Decision Making: Consensus and Voting

Article 20 instructs the Commission to strive for consensus on matters as a general rule, but if consensus cannot be achieved, voting on questions of procedure is to be taken by a majority of CCMs present and voting. However, all decisions related to allocation of TAC or total effort levels, including decisions related to the exclusion of vessel types, are to be made by consensus.⁵⁷⁵ Amendments to the convention also require consensus among members.⁵⁷⁶

Procedural questions or decisions on questions related to substance, as noted above, can be resolved through voting if all efforts to reach a decision by consensus have been exhausted. The convention prescribes a procedure whereby there are two chambers, one consisting of FFA members and the other of non-FFA members. For a decision to pass, a three-fourths majority in each chamber must be achieved.⁵⁷⁷

⁵⁷³ The “without prejudice” clause in Article 10 did not appear in Nandan’s first draft articles but surfaced after MHLC5. As noted earlier, Clark (2009) emphasized that the “without prejudice” clause was an integral part of the MHLC negotiations and a critical reason for Pacific Island parties ultimately deciding to adopt the convention text.

⁵⁷⁴ Honolulu Convention Article 10(3) paragraphs (a) through (j).

⁵⁷⁵ Honolulu Convention Article 10(4).

⁵⁷⁶ Honolulu Convention Article 40(2).

⁵⁷⁷ Article 20(2).

Moreover, in order to defeat a measure that is being considered in a vote, there must be more than two CCMs in any of the two chambers that oppose approval.⁵⁷⁸

The provisions of the convention related to decision making stirred significant debate within the MHLC process, with one commentator calling it the most intractable of issues before the MHLC.⁵⁷⁹ For example, some participants were of the belief that all decisions required consensus, while others were in favor of voting mechanisms which sought to overcome issues that had reached an impasse.⁵⁸⁰ Nandan's first draft articles introduced at MHLC3 included a decision making process that involved both consensus and voting mechanisms.⁵⁸¹ The draft articles stated that if efforts to reach consensus were exhausted, then decisions by voting on procedural issues required a majority of members participating, and decisions by voting on substantive issues required a three quarters majority of members present and voting.⁵⁸² By including both consensus and decision making, Nandan wanted to avoid situations that had occurred in other RFMOs – situations where a consensus had not been reached and the organization became deadlocked.⁵⁸³ However, given that there were more Pacific Island coastal States participating in MHLC than distant water fishing States, participants from several DWFNs voiced strong opposition to a

⁵⁷⁸ Ibid.

⁵⁷⁹ Tarte (1999) at 278.

⁵⁸⁰ At MHLC5, the Australian representative described how a voting mechanism would alleviate a stalemate on otherwise mundane but important decisions, such as the adoption of the annual budget, and further that a mandatory consensus requirement could potentially allow any single contracting party to “hold the Commission hostage,” which would be damaging to the collective work of the Commission. MHLC5 (1999) at 10.

⁵⁸¹ MHLC3 (1998) at 44.

⁵⁸² Ibid.

⁵⁸³ Tarte(1999). Negotiating a tuna management regime for the Western and Central Pacific: the MHLC process 1994-1999. *Journal of Pacific History*, 34(3), 273-280, at 278.

convention decision making process that included voting procedures, with these countries instead preferring decisions to be based on consensus only.⁵⁸⁴

Nandan countered the ‘consensus-only’ view supported by DWFNs by articulating that UNFSA Article 10 paragraphs (j) and (k) instruct members of RFMOs to agree on decision making procedures that facilitate the adoption of measures in a timely and effective manner, as well as providing for the peaceful settlement of disputes.⁵⁸⁵ In addition, Nandan included in the draft articles related to the decision making process a mechanism whereby if a member disagreed with a majority decision, or was not present at the time of voting, the member could request a third party review of the decision.⁵⁸⁶ The concept of a review panel was new to international fisheries organizations and was used to counter the inclusion of “opt-out” provisions that were supported by some DWFNs during the MHLC process.⁵⁸⁷

During MHLC5, the draft article on decision making was revised to include different procedures on issues where consensus would be required versus others matters where a voting mechanism could be invoked.

For example, the following language was added: “Except where this Convention expressly provides that a decision shall be made by consensus...”⁵⁸⁸ In addition, a conciliation requirement was included to address deadlocks on matters that require consensus (e.g., allocation), such that the Commission could

⁵⁸⁴ Nandan, S. (1999). *Information Note on Matters Before the Fourth Session of the Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. 10-19, February 1999. Honolulu, Hawaii. See also China’s opening statement to MHLC3 and the opening statements of Japan and the United States at MHLC5. At MHLC5, Japan went as far as stating that if a majority decision making model was adopted, it may not participate in the Commission (See: MHLC5(1999) at 14). Several DWFNs also supported the inclusion of an “opt-out” clause that would essentially allow decisions of the Commission to be non-binding. Similarly, the United States at MHLC5, stated that a regime which forces a country with a minority view to be legally bound by decisions made by the majority would be unlikely to receive ratification by the United States. See: MHLC5 (1999) at 27.

⁵⁸⁵ MHLC3 (1998) at 37.

⁵⁸⁶ The third party review provisions were contained in Nandan’s first draft Articles at MHLC3 and are included in the Honolulu Convention in Article 20 paragraphs 6 and 7. To date, the third party review provisions have not been invoked.

⁵⁸⁷ Aqorau, T. (2001). Tuna Fisheries Management in the Western and Central Pacific Ocean: A Critical Analysis of the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean and Its Implications for the Pacific Island States. *The International Journal of Marine and Coastal Law*, 16(3), 379-431, at 391.

⁵⁸⁸ At MHLC5, the draft articles were formulated to specify those issues before the Commission which would require consensus. One such issue was that of allocation of a TAC or effort (MHLC5 (1999) at 40).

appoint a conciliator for the purpose of reconciling the differences in order to achieve consensus on the matter.⁵⁸⁹

At MHLC6, there was still opposition to the decision making article as drafted, and little progress was made. Going into MHLC7, the matter of decision making was one of the more unsettled issues that required agreement. To appease the delegations of Japan and Korea, the United States proposed a two-chambered voting system, with one chamber being FFA member States and other, non-FFA States. While there was opposition to the chambered voting system, it was maintained in the adopted convention text.⁵⁹⁰

5.3.2.9 Dispute Resolution

Procedures for the settlement of disputes, along with several other matters, were identified in the Majuro Declaration as issues to be addressed during the MHLC process.⁵⁹¹ A review of MHLC records indicates that negotiators focused more on dispute settlement in terms of decision making rather than discussing procedures for settling disputes between contracting parties. For example, the Honolulu Convention incorporates by reference the dispute settlement provisions of UNFSA and UNCLOS; however, as previously discussed, the Honolulu Convention added procedures for disputes related to Commission decision making, including the appointment of a third party conciliator, rather than focusing on disputes among members.⁵⁹²

Under the Honolulu Convention, dispute resolution on questions of jurisdiction and other matters (e.g., member non-compliance) would follow the procedures identified Article 31, which points back to Part VIII of UNFSA. Consistent with its linkages with UNCLOS, UNFSA similarly points back to Part XV of

⁵⁸⁹ MHLC5 (1999) at 41. WCPFC decisions that require consensus include: Rules of Procedure (Article 9(8)); decisions on allocations including exclusion of vessel types (Article 10(4)); adoption of financial regulations (Article 17(2)); adoption of the annual budget and the formula for annual budgetary contributions (Article 18(2)); admission of new members (Article 35(2)); as well as the adoption of amendments to the Convention (Article 40(2)).

⁵⁹⁰ Honolulu Convention Article 20.

⁵⁹¹ Majuro Declaration (1997) Paragraph 9(d).

⁵⁹² See Annex II of the Honolulu Convention. To date, the third party review process detailed in Annex II to the Honolulu Convention has not been invoked.

UNCLOS. As such, there are high levels of consistency with regard to the dispute settlement provisions of the Honolulu Convention, UNFSA and UNCLOS. Recalling the so-called high seas fishing crisis of the early 1990s, procedures for the peaceful settlement disputes was deemed a pillar of UNFSA, even though the agreement replicated, for the most part, the existing dispute provisions of UNCLOS.⁵⁹³ Indeed, it appears that neither UNFSA negotiators nor those countries participating in the MHLC process were keen on ‘reinventing the wheel.’

It is worth reiterating that both UNCLOS and UNFSA maintain that compulsory dispute resolution does not apply to fisheries disputes relating to the rights and obligations of coastal State for activities within their national waters.⁵⁹⁴ UNCLOS Article 297(3) provides that coastal States are not obliged to accept compulsory dispute settlement relating to their sovereign rights with respect to living resources in their EEZs.⁵⁹⁵ On the other hand, for disputes relating to high seas fishing matters, any decision by a third party arbiter would be binding on the parties involved.⁵⁹⁶

Dispute resolution is critical to the concept of compatible measures. While compulsory adjudication of fisheries disputes does not apply to areas of national jurisdiction, third party conciliation is an option that States may pursue with respect to settling disputes on issues of compatibility between high seas and EEZ

⁵⁹³ United Nations. (1995). Statement of the Chairman, Ambassador Satya N. Nandan, on 4 August 1995, upon the adoption of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Sixth Session of the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. 24 July -4 August 1995.A/Conf.164/35. See also Balton (1996), who relates that UNFSA added two provisions to the dispute resolution provisions that are not found in UNCLOS. First, UNFSA Article 30(2) provides that compulsory dispute resolution procedures apply to any interpretation or application of a subregional, regional, or global fisheries agreement. Second, Article 30(5) broadens the scope of what can be brought under the dispute resolution process, including generally accepted standards for the conservation and management of straddling and HMS stocks.

⁵⁹⁴ Orebach, P., Sigurjonsson, K., & McDorman, T. (1998). The 1995 United Nations Straddling and Highly Migratory Fish Stocks Agreement: Management, Enforcement, and Dispute Settlement. *International Journal for Marine and Coastal Law*, 13, 119-141.

⁵⁹⁵ UNCLOS Article 297(3) further identifies that dispute resolution or settlements are not binding on coastal States with regard to their discretionary powers for determining the allowable catch, their harvesting capacity, the allocation of surpluses to other States, as well as the terms and conditions established in their conservation and management laws and regulations.

⁵⁹⁶ Orebach et al. (1998) indicate that UNCLOS provides no clear exemptions to compulsory dispute settlement for high seas fishing.

management regimes in the WCP-Convention Area. However, binding dispute resolution procedures can be invoked for disputes with regard to high seas fishing in the WCP-Convention Area.

5.3.2.10 Monitoring, Control, and Surveillance Provisions

The convention provides a comprehensive MCS framework to promote vessel and CCM compliance and support enforcement activities, as appropriate. During the MHLC process, however, not all countries were in favor of such detailed provisions. Japan, for example, expressed concern at MHLC3 that the draft convention text placed too much emphasis on MCS provisions.⁵⁹⁷

Article 24(a) designates the duties of flag States. In the context of the present discussion, it is noteworthy that flag States are to ensure that vessels flying their flag comply with CMMs, and further, that all vessels fishing on the high seas have been authorized to do so by their respective flag State.⁵⁹⁸ Furthermore, Article 24(1)(b) requires members to ensure that vessels flying their flag do not conduct illegal and unauthorized fishing within areas of national jurisdiction of any other contracting party. Article 24(4) requires each CCM to keep a record of vessels flying its flag and authorized to fish in the Convention Area beyond its area of national jurisdiction.

Article 24(8) instructs CCMs to require their vessels fishing for HMS stocks on the high seas of the Convention Area to use a near real-time position-fixing transmitter, which is commonly referred to as a vessel monitoring system (VMS) unit. In the mid-1990s, VMS units were becoming popular in fisheries management for MCS purposes.⁵⁹⁹ The application of VMS in the region was discussed in detail at MHLC1, with general support from all countries indicating that VMS technology could be an effective tool for fisheries enforcement. However, it was also noted that the implementation of a regional VMS

⁵⁹⁷ MHLC3 (1998) at 18.

⁵⁹⁸ This provision is also found in UNFSA Article 18.

⁵⁹⁹ FAO. (1998). Fishing operations. 1. Vessel monitoring systems. *FAO Technical Guidelines for Responsible Fisheries No.1, Suppl.1*. Rome. FAO. VMS units are electronic devices that can track the movement of vessels via satellite transmissions.

program posed great challenges from a legal, technical and cost perspective.⁶⁰⁰ Subsequently, two MHLC technical consultations were held on VMS prior to MHLC2.

Ultimately, however, the challenges posed by VMS issues were overcome, with the Honolulu Convention requiring CCMs in Article 24 paragraph 8 to ensure that vessels flying their flag on the high seas are equipped with VMS units installed to the specification and standards developed by the WCPFC.⁶⁰¹

Similarly, Article 24 paragraph 9 instructs CCMs that have vessels fishing in the national waters of a coastal State to require such vessels to carry VMS-type units that meet the specifications of the coastal State.⁶⁰² Article 24 paragraph 10 instructs CCMs to cooperate so that VMS systems that apply within EEZs and on the high seas are compatible.

Whenever two computer systems are linked, avoiding ‘crossed wires’ is important. Indeed, this is particularly true in the case of VMS units, transmission pathways and data storage systems. During the MHLC process, there was a clear need to ensure that VMS applications used in waters under national jurisdiction and on the high seas were compatible in order to: 1) reduce the regulatory burden on fishing vessels; and 2) ensure the utility of VMS for MCS purposes, regardless of whether the vessel is fishing in an EEZ or on the high seas.

Another MCS issue that received substantial attention during the MHLC process was the high seas boarding and inspection scheme – itself a contentious topic within the UNFSA negotiations. There were several delegations, for example, that wished to modify the UNFSA text that was incorporated by

⁶⁰⁰ MHLC1 (1994) at 9.

⁶⁰¹ This provision is supported by UFSFA Article 18, paragraph 3(g)(iii), which requires parties to develop and implement vessel monitoring systems, including, as appropriate, satellite transmitter systems, in accordance with any national programs and those which have been subregionally, regionally or globally agreed among the States concerned.

⁶⁰² During the time of MHLC negotiations, the FFA was developing a VMS system for tracking vessels while operating in the EEZs of FFA member countries. See Aqorau, T. (2000). Illegal fishing and fisheries law enforcement in Small Island Developing States: the Pacific Islands experience. *International Journal of Marine and Coastal Law*, 15(1), 37-63.

reference.⁶⁰³ To appease the concerns of several delegations, the Honolulu Convention included a mechanism that allowed for the development of alternative boarding and inspection procedures that take into account regional issues. However, if no agreement on alternative boarding and inspection measures has been adopted after two years, the boarding and inspection provisions as laid out in UNFSA would apply.⁶⁰⁴

The Honolulu Convention also prescribes the development of a regional observer program.⁶⁰⁵ The observer program consists of independent and impartial observers that serve two main functions: a) to collect catch data and other scientific information; and b) to monitor the implementation of conservation and management measures.⁶⁰⁶ Under the convention, observers are required on vessels that fish exclusively on the high seas, as well as vessels that fish in waters under the jurisdiction of one or more coastal States. The convention also instructs the regional observer program be coordinated with other regional, sub-regional, and national observer programs.⁶⁰⁷

5.3.2.11 Special Requirements of Developing States

Like other provisions in the Honolulu Convention, the article that pertains to the special requirements of developing States is nearly identical to the UNFSA text on the same topic.⁶⁰⁸ The MHLC process recognized that the special requirements of these countries needed to focus on two general themes: 1) fisheries development aspirations to support long-term economic growth; and 2) assistance to SIDS in order to support their participation in the conservation and management of HMS stocks in the region.⁶⁰⁹

⁶⁰³ MHLC4 (1999) at 3.

⁶⁰⁴ Honolulu Convention Article 26(2). See also the closing statement by the Chairman, Ambassador Satya N. Nandan, to the Fifth Session of the Multilateral High Level Conference. MHLC5 (1999) at 61.

⁶⁰⁵ Honolulu Convention Article 28.

⁶⁰⁶ Honolulu Convention Article 28 paragraph 1.

⁶⁰⁷ Honolulu Convention Article 28 paragraph 3.

⁶⁰⁸ One slight difference is the inclusion of the Participating Territories, which is in recognition of the several territories that exist within the Convention Area.

⁶⁰⁹ Majuro Declaration (1997) at 5.

Article 30 of the Honolulu Convention provides that the WCPFC shall recognize the vulnerability of developing States parties, in particular SIDS and Participating Territories, which are dependent on the exploitation of marine living resources, including for meeting the food security needs of their populations.⁶¹⁰ In addition, Article 30 identifies the need to avoid adverse impacts on, and ensure access to fisheries, by subsistence, small-scale and artisanal fishers and fish-workers.⁶¹¹ Likewise in UNFSA, Article 30 includes the requirement that conservation and management measures not result in transferring, directly or indirectly, a disproportionate burden of conservation action onto developing States parties, and territories and possessions.⁶¹²

With the objective of supporting the participation of SIDS in the conservation and management of shared HMS stocks within the region, the Honolulu Convention establishes a fund to mainly support the travel costs of SIDS representatives so that they can attend meetings of the WCPFC and its subsidiary bodies.⁶¹³

5.5 Chapter Conclusion

This chapter has shown that there are three main categories of nations with fishing interests in the WCPO region, including: a) PICs; b) DWFNs; and c) other countries such as the Philippines and Indonesia. Since the 1970s, PICs have organized themselves sub-regionally and formed the FFA and PNA. Both FFA and PNA members have established domestic measures applicable to their national waters, whereas the former controls over 80% of the purse seine catch in the region and is managed under the VDS. Several non-Pacific Island countries in the region are also coastal States within the Convention Area, including several Asian countries, the United States and France, but can also be considered DWFNs based on the operations of their fleets. The Philippines and Indonesia constitute a separate category of countries with large archipelagic waters and significant artisanal fleets catching a substantial amount of tuna within their

⁶¹⁰ Honolulu Convention Article 30 paragraph 2(a).

⁶¹¹ Honolulu Convention Article 30 paragraph 2(b).

⁶¹² Honolulu Convention Article 30 paragraph 2(c).

⁶¹³ Honolulu Convention Article 30 paragraph 3.

national waters. When combined, the fishing interests of these countries represent the world's largest tuna fishery.

To effectively managed HMS resources in the region, countries with an interest in WCPO tuna fisheries cooperated to establish a binding international agreement through a series of MHLCS. There were seven MHLCS held in total, with the final meeting in 2000 culminating in the signing of the Honolulu Convention. The convention was negotiated to be consistent with UNFSA and UNCLOS, with several articles directly replicating or incorporating by reference the provisions of the former. With regard to the Principle, the Honolulu Convention largely replicates the related UNFSA provisions, but with two additional considerations: 1) EEZ based measures are not to undermine the effectiveness of the measures adopted by the Commission; and 2) special attention should be paid toward compatibility and high seas pocket areas.

Given the unique mosaic of EEZs scattered throughout the Convention Area, the significant economic dependence of PICs on fisheries, as well as the substantial global interest in the world's largest tuna fishery, the application of the Principle by the Commission is an issue ripe for evaluation.

Chapter 6: Evaluating the Application of the Principle in WCPFC Conservation and Management Measures

6.1 Introduction

This chapter analyzes the application of the Principle and associated Article 8 provisions of the Honolulu Convention by the WCPFC. To evaluate the application of the Principle, a scoring system is utilized that assesses performance against a set of criteria. This assessment builds upon similar scoring systems which have been used to evaluate the performance of RFMOs.⁶¹⁴ As described in Section 1.6, the criteria employed in the assessment relate to the application of the Principle and consideration of Article 8 provisions in the development and adoption of WCPFC CMMs.

To assess the application of the Principle within individual CMMs, a review of the measure is conducted, including its various provisions and elements related to the Article 8, against a set of standards and criteria (listed in the following tables). These elements include, but are not limited to, reference to Article 8 in the measure, measures already established for waters under national jurisdiction, the area of application (i.e., the high seas vs EEZs) as well the stock status for the particular stock under management by the WCPFC.

⁶¹⁴ Cullis-Suzuki, S., & Pauly, D. (2010). Failing the high seas: a global evaluation of regional fisheries management organizations. *Marine Policy*, 34(5), 1036-1042. -- Alder J, Lugten G, Kay R, & Ferriss B. (2001). Compliance with international fisheries instruments. In Pitcher T., U.R. Sumaila & D. Pauly (Eds.), *Fisheries impacts on North Atlantic ecosystems: evaluations and policy exploration. Fisheries Centre Research Reports (pp.55-80)*, 9(5). Vancouver, Canada. University of British Columbia. -- Lodge M.W., Anderson, D., Lobach, T., Munro, G., Sainsbury, K., & Willock, A. (2007). Report of an independent panel to develop a model for improved governance by Regional Fisheries Management Organizations. *Recommended best practices for regional fisheries management organizations*. London, UK: Chatham House. 141. -- Gilman, E., & Kingma, E. (2013). Standard for assessing transparency in information on compliance with obligations of regional fisheries management organizations: Validation through assessment of the Western and Central Pacific Fisheries Commission. *Ocean & Coastal Management*, 84, 31-39.

Table 1: Standard 1: Reference to the Principle - Article 8 in general

Standard 1: Article 8 in general	Article 8(1): Conservation and management measures established for the high seas and those adopted for areas under national jurisdiction shall be compatible in order to ensure conservation and management of highly migratory fish stocks in their entirety. To this end, the members of the Commission have a duty to cooperate for the purpose of achieving compatible measures in respect of such stocks.	
	Criteria	Justification
	Does the measure reference Article 8?	Whether the measure references Article 8 is important, as the article acknowledges the Principle in the development and application of the measure.

Table 2: Standard 2: Existing Measures - Article 8(2)(b)(i-ii) and (c)

Standard 2: Article 8(2)(b)(i- ii) and (c)	<p>Article 8(2)(b): In establishing compatible conservation and management measures for highly migratory fish stocks in the Convention Area, the Commission shall take into account:</p> <ul style="list-style-type: none"> i: the conservation and management measures adopted and applied in accordance with article 61 of the 1982 Convention in respect of the same stocks by coastal States within areas under national jurisdiction and ensure that measures established in respect of such stocks for the Convention Area as a whole do not undermine the effectiveness of such measures; ii: previously agreed measures established and applied in respect of the same stocks for the high seas which form part of the Convention Area by relevant coastal States and States fishing on the high seas in accordance with the 1982 Convention and the Agreement; <p>Article 8(2)(c): previously agreed measures established and applied in accordance with the 1982 Convention and the Agreement in respect of the same stocks by a subregional or regional fisheries management organization or arrangement.</p>	
	Criteria	Justification
	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	Reference to those measures adopted for national waters, as well as previous measures adopted for the high seas, is important. This is because the Commission should have an understanding of what EEZ measures are in effect or under development, in addition to what measures have already been agreed to within the high seas of the Convention area.

Table 3 Standard 3: Biological Unity - Article 8(2)(a)

Standard 3: Article 8(2)(a)	Article 8(2)(a): take into account the biological unity and other biological characteristics of the stocks and the relationships between the distribution of the stocks, the fisheries and the geographical particularities of the region concerned, including the extent to which the stocks occur and are fished in areas under national jurisdiction;	
	Criteria	Justification
	What is the extent of the measure’s area of application and does it take into account the biological unity of the stocks concerned and associated fisheries?	The area of application of a WCPFC measure is a basic element which should be consistent with the distribution of the stock, while taking into account other biological characteristics such as spawning and movement.

Table 4: Standard 4: Respective Dependence -Article 8(2)(d)

Standard 4: Article 8(2)(d)	Article 8(2)(d): take into account the respective dependence of the coastal States and States fishing on the high seas on the stocks concerned.	
	Criteria	Justification
	To what extent are considerations of respective dependence on the stocks concerned taken into account?	In the development of compatible measures, the records of the negotiation or the measure would note the respective dependence of members on the stocks concerned. Data collection requirements of a particular CCM could be viewed as supporting information gathering that will aid in identifying respective dependence.

Table 5: Standard 5: High Seas Pockets - Article 8(4)

Standard 5: Article 8(4)	Article 8(4): Where there are areas of high seas in the Convention Area entirely surrounded by the exclusive economic zones of members of the Commission, the Commission shall, in giving effect to this article, pay special attention to ensuring compatibility between conservation and management measures established for such high seas areas and those established in respect of the same stocks in accordance with article 61 of the 1982 Convention by the surrounding coastal States in areas under national jurisdiction.	
	Criteria	Justification
	To what extent are considerations for high seas pockets provided for in the CMM?	Due to the mosaic of EEZs that make up the WCPO, there are several high seas pockets within the Convention area. According to the Honolulu Convention, these areas should be afforded special attention with regard to compatibility.

Table 6: Standard 6: Sustainable Stocks - Article 8(2)

Standard 6: Article 2	Article 2: The objective of this Convention is to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean in accordance with the 1982 Convention and the Agreement	
	Criteria	Justification
	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	The fundamental objective of the Honolulu Convention is to ensure the long-term conservation of WCPO HMS stocks. If fishing pressure is too high and/or biomass levels are too low, management controls will need to be applied to fisheries that impact the stock. The allocation of those controls between EEZs and the high seas has linkages to the Principle.

A scoring system is used to rate the consistency with each standard and associated criteria, and when the scores are combined, each CMM is assigned a compatibility rating.⁶¹⁵ For each criterion, a numerical range between 0 and 1 is used as follows: 0 = not consistent; 0.25 = partially consistent; 0.5 = moderately consistent; 0.75 = nearly consistent; and 1 = fully consistent. The performance against each standard is evaluated and then totaled as a percentage, providing a compatibility score for each CMM (Table 7).

⁶¹⁵ The rating system utilizes evaluative approaches similar to: Alder et al. (2001).

Table 7: Compatibility assessment matrix

Standard	Criteria	Scoring Range	Max Score
1. Article 8 in general	Does the measure reference Article 8?	0 = no reference 0.5 = partial consideration 1 = includes reference	1
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize prior measures established for EEZs or the high seas?	0 = no reference 0.25 - 0.75 = partial consideration 1 = includes reference	1
3. Article 8(2)(a)?	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks concerned and associated fisheries?	0 = no consideration 0.25 - 0.75 = partial consideration 1 = full consideration	1
4 Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	0 = no consideration 0.25 - 0.75 = partial consideration 1 = detailed consideration	1
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	0 = no consideration 0.25 - 0.75 = partial consideration 1 = full consideration	1
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	0 = severely overfished 0.25 - 0.75 = overfished and overfishing is occurring 1 = healthy	1
			Total = (6/6) 100%

Note: For stocks that do not occur in areas of the WCPO where there high seas pockets, these CMMs are not assessed against Article 8(4).

To support the evaluation of CMMs against the standards presented herein, this Chapter provides a detailed account, to the extent practicable, of the developmental history of CMMs. The analysis is centered on the records of Commission meetings, including proposals by CCMs and other relevant information. A description of the various negotiating positions relating to the development of a particular

measure is provided, but subject to such information being available in the records of WCPFC meetings.⁶¹⁶

Since its First Regular Session in 2004, and through 2017, the WCPFC has adopted 87 CMMs, with 44 of these subsequently being replaced with newer versions.⁶¹⁷ Of the 44 that remain in effect today, eight apply to catch or effort limit restrictions on managed HMS. With regard to the Principle and Article 8, the Honolulu Convention does not differentiate between the types of conservation and management measures that are required to be compatible - i.e., the convention leaves unstated whether the compatibility provisions apply to all measures or only for those concerned with catch or effort allocations. However, it can reasonably be argued that the main focus of compatible measures is input or output fisheries management controls. Such controls are concerned with who is catching what, how much is caught, with what type of fishing gear, as well as where the catches are made. In this regard, the compatibility assessment contained in this chapter evaluates CMMs that establish catch or effort restrictions for managed species.

6.2 Tropical Tunas (Skipjack, Yellowfin and Bigeye tuna)

The Commission's CMM on tropical tunas is arguably its marquee measure, involving three stocks that collectively represent over 90% of the combined total catch in the Convention Area.⁶¹⁸ Skipjack, which at 67% of the total 2016 catch comprises the bulk of the WCPO tuna fishery, is followed by yellowfin at 24% and bigeye at 6% of the total catch.⁶¹⁹

⁶¹⁶ The WCPFC Secretariat maintains the following website that contains the summary reports of each WCPFC Regular Session and associated meeting documents. See: <https://www.wcpfc.int/meeting-folders/regular-sessions-commission>

⁶¹⁷ The WCPFC Secretariat also maintains an on-line repository of conservation and management measures. See: <http://www.wcpfc.int/conservation-and-management-measures>

⁶¹⁸ SPC. (2017). *Western and Central Pacific Fisheries Commission Tuna Fishery Yearbook 2016*. Oceanic Fisheries Programme, Secretariat of the Pacific Community. Noumea, New Caledonia. 140-142.

⁶¹⁹ Williams et al. (2017) at 2.

The first CMM with regard to tropical tunas was agreed in 2005, and focused on bigeye and yellowfin, which at the time were believed to be subject to overfishing.⁶²⁰ The measure, however, mainly applied to purse seine and longline fisheries, which also harvest skipjack and other species.⁶²¹ CMM 2005-01 was the first WCPFC measure to identify Article 8 and refer to the implementation of compatible measures.⁶²² Specifically, CMM 2005-01, paragraph 9, states that the Commission “shall implement compatible measures as required to ensure that purse seine effort does not exceed 2004 levels on the high seas in the Convention Area or that the total fishing capacity will not increase in the Convention Area.”⁶²³

Paragraph 9 of CMM 2005-01 was problematic for several reasons. First, the paragraph states that “the Commission” shall implement compatible measures instead of clearly articulating that it is incumbent on each CCM to limit their high seas purse seine effort to 2004 levels. This drafting formulation lacks specificity by placing no distinct obligation on CCMs to ensure that their high seas effort for flagged purse seine vessels does not exceed 2004 levels. Additionally, while paragraph 9 restricts fishing capacity, it is not clear on the metric to measure fishing capacity, such as the number of fishing vessels, vessel size, or the well space of the vessel.⁶²⁴

Although paragraph 9 of CMM 2005-01 lacked specificity, the measure did apply to both national waters and the high seas, as evidenced in paragraph 8, which states that CCMs “shall take necessary measures” to ensure that purse seine effort levels do not exceed 2001 to 2004 average levels or 2004 levels for waters under their national jurisdiction.⁶²⁵ The measure further specifies that FFA member countries who

⁶²⁰ WCPFC SC. (2005). *Report of the First Regular Session of the WCPFC Scientific Committee*. 8-19 August 2005. Noumea, New Caledonia. 25.

⁶²¹ WCPFC. (2005). *Conservation and Management Measure for Bigeye and Yellowfin Tuna in the Western and Central Pacific Ocean (CMM 2005-01)*. Adopted at the Second Regular Session of the WCPFC. 12-16 December 2005. Pohnpei, FSM. In CMM 2005-01, “other commercial fisheries” include hand-line, pole and line, purse seine fisheries north of 20°N or south of 20°S, ring-net, troll, as well as unclassified fisheries.

⁶²² Ibid at 2.

⁶²³ Ibid. Unfortunately, the Summary Report of the WCPFC2 does not contain information on the negotiation positions of CCMs relevant to the development of CMM 2005-01. Nor is there discussion in the records of which CCM introduced the measure that was eventually adopted at that meeting.

⁶²⁴ Ibid at 2, paragraph 9.

⁶²⁵ Ibid.

are members of the PNA will implement EEZ-based effort limits under the VDS by 1 December 2007, with measures under the Palau Arrangement to remain in force until that time.⁶²⁶ Other non-PNA members were required to reduce their purse seine effort limits in their national waters to either 2001-2004 average levels or 2004 levels.⁶²⁷

CMM 2005-01 also spatially confined the applicability of purse seine measures to 20°N to 20°S.⁶²⁸ For longline fisheries, however, no spatial distinction was prescribed, and each CCM was required to limit their bigeye longline catch – regardless of where they fish in the Convention Area – to 2001-2004 average levels or 2004 levels.⁶²⁹ For those CCMs with annual longline bigeye catches of less than 2,000 mt, the measure required them to not exceed 2,000 mt per year.⁶³⁰

CMM 2005-01 also instructed the Commission’s Executive Director to develop a proposal for consideration at the following year’s annual meeting with regard to temporary closures for the purse seine fishery, with the direction that such a proposal be consistent with IATTC arrangements.⁶³¹ Although the intent of CMM 2005-01 was to limit catch and effort for bigeye and yellowfin tuna, the measure, by using 2001-2004 average levels or 2004 levels as the baseline, effectively limited purse seine fishing effort and the longline catch of bigeye with reference to the highest historical catch and effort levels ever

⁶²⁶ Ibid at 2, paragraph 10(i).

⁶²⁷ Ibid at 2, paragraph 10 (ii). Further evidence that the measure applied to national waters is the provision in paragraph 13 that required CCMs to develop management plans for the use of FADs within waters under national jurisdiction (CMM 2005-01 paragraph 13).

⁶²⁸ Ibid at 2, paragraph 7. Notably, Japan’s coastal purse seine fisheries, which caught mostly Pacific bluefin and to lesser extent skipjack, would be exempted. For further reading on Japan’s tuna fisheries, see Annual Report Part 1 submitted to the WCPFC Scientific Committee: <https://www.wcpfc.int/meeting-folders/scientific-committee>.

⁶²⁹ Ibid at paragraph 17. As identified in the measure, only the United States and China were allowed to use 2004 catch levels as the baseline for their bigeye catch limits.

⁶³⁰ Ibid at 3, paragraph 18.

⁶³¹ Ibid at 2, paragraph 11.

recorded.⁶³² Consequentially, CMM 2005-01 was unlikely to achieve conservation objectives of eliminating bigeye and yellowfin overfishing.

At the Third Regular Session of the WCPFC in 2006, it was identified that in order to eliminate bigeye and yellowfin overfishing, a 25% and 10% respective reduction in bigeye and yellowfin fishing mortality was required.⁶³³ The Executive Director of the Commission, with assistance from the WCPFC Scientific Services Provider, presented a paper that analyzed several purse seine closure options.⁶³⁴ The options presented applied to both national waters and the high seas, and as such, could be viewed as being in accord with the Principle. While the terms of reference for the Executive Director's paper were limited to purse seine options, the paper also included a discussion of longline management measures (e.g., catch limits).⁶³⁵ As the analysis revealed, if the purse seine fishery were to meet the conservation objectives for bigeye alone (i.e., in the absence of further longline limits), purse seine fishing effort on FADs would need to be reduced by 75% over baseline levels.⁶³⁶ Recognizing that this would be unacceptable to CCMs that have a strong purse seine interest, the paper included longline high seas catch limit options as a means of mitigating the impact on the stocks by the respective fishing gears.⁶³⁷ The paper also described "key considerations" with regard to evaluating purse seine closure options, which included several issues such as: a) fairness and burden sharing; b) the relative importance of FAD associated fishing to various

⁶³² WCPFC. (2006). *Proposal in respect of paragraph 11 of Conservation and Management Measure 2005-01*. Third Regular Session of the WCPFC. 11-15 December 2006. Apia, Samoa. WCPFC3-2006/16 Rev.1. By including 2004 as a baseline year for purse seine fishery effort, CMM 2005-01 provided for approximately a 15% increase in purse seine effort relative to the 2001-2003 average. Similarly, including 2004 in the baseline for longline catches resulted in a 15% increase over 2001-2003 average levels.

⁶³³ WCPFC. (2006). *Summary Report of the Second Regular Session of the Scientific Committee of the WCPFC*. 7-18 August 2006, Manila, Philippines. v.

⁶³⁴ Ibid.

⁶³⁵ After the paper was presented at the Third Regular Session of the WCPFC, Japan commented that the options presented went beyond the Executive Director's mandate and requested that the paper be recalled due to bias. Japan, Korea, and Chinese Taipei stated their objection to the option that included reductions in longline bigeye catch. See: WCPFC. (2009). *Summary Report of the Third Regular Session of the WCPFC*. 11-15 December 2006. Apia, Samoa. 19.

⁶³⁶ Ibid.

⁶³⁷ Ibid.

CCM purse seine fleets; and c) that the benefits flowing from a measure to reduce the catch of juvenile bigeye will mostly accrue to fisheries targeting adult bigeye (i.e., longline fisheries).⁶³⁸

With the Executive Director's options paper serving as a guide, the Commission considered revisions to CMM 2005-01 but ultimately failed to adopt a stronger measure, such as closing any high seas purse seine fisheries. The Commission did, however, amend the measure to include "other fisheries" that catch bigeye tuna. Specifically, CMM 2006-01 required CCMs to take action to ensure that the total capacity of their respective other commercial tuna fisheries for bigeye and yellowfin (excluding artisanal fisheries), does not exceed 2001-2004 average levels or the level in 2004.⁶³⁹ Another modification found in CMM 2006-01 was that it required CCMs with vessels that fish beyond their national waters to develop management plans for the use of FADs in areas beyond their national jurisdiction.⁶⁴⁰ Recall that in CMM 2005-01, CCM's were required to develop FAD management plans for waters under their national jurisdiction. However, under CMM 2006-01, such plans required development by CCMs for both waters under their national jurisdiction and on the high seas.

CMM 2006-01 was reviewed by the Commission in 2007, with the FFA tabling a proposal that included, *inter alia*, provisions for a three-month FAD closure and a 25% reduction in longline bigeye catches for CCMs with catches more than 2,000 metric tons (mt).⁶⁴¹ The FFA proposal also included a provision that would exempt certain CCMs from the FAD closure (insofar as it applied to their national waters), provided they could demonstrate that more than 20% of their government revenue derived from purse seine fishing access fees.⁶⁴² Certain CCMs stated that this proposal would be ineffective in achieving

⁶³⁸ Ibid at 18. To this day, these considerations are still at the forefront of bigeye conservation within the WCPFC, forming the basis for the tension between purse seine interests and longline interests within the WCPFC.

⁶³⁹ WCPFC. (2006). *Conservation and Management Measure for Bigeye and Yellowfin Tuna in the WCPO (CMM 2006-01)*. Adopted at the Third Regular Session of the WCPFC. Apia, Samoa. 11-15 December 2006. 2.

⁶⁴⁰ Ibid.

⁶⁴¹ FFA. (2007). *Draft Conservation and Management Measure for bigeye and yellowfin tuna in the Western and Central Pacific Region*. Submitted to the Fourth Regular Session of the WCPFC. 3-7 December 2007. Guam, USA. WCPFC4-2007-DP12.

⁶⁴² Ibid at 2. Although not referenced in report, such provisions could related to the 'respective dependence' provisions under Honolulu Convention Article 8(2)(d).

conservation objectives, while others said that the potential FFA member exemption would result in the FAD closure applying only to the high seas and not to national waters within the Convention Area.⁶⁴³ In this regard, it was apparent that some CCMs believed that the consistent implementation of the purse seine FAD closure between the high seas and national waters was important to ensure compatibility.

The proposal, however, was not adopted due to a lack of consensus, but there was general agreement to defer action until the following year with the understanding that a new stock assessment had been scheduled.⁶⁴⁴ Moreover, the Commission agreed that developing compatible measures for fishing on the high seas was a priority work area for 2008.⁶⁴⁵ The Commission directed the SC and the Technical and Compliance Committee (TCC) to provide advice and recommendations to support the adoption of a new measure - one which would take into account bigeye and yellowfin stock status, technological solutions, issues related to fairness and equity, as well as the implementation of MCS measures.⁶⁴⁶

As the Commission delayed agreement on a new bigeye and yellowfin measure, the stock condition of bigeye worsened and overfishing increased. Based on the 2008 WCPO bigeye stock assessment conducted by the SPC, the SC concluded that a 30% reduction in bigeye fishing mortality was needed to eliminate overfishing, as compared to the 25% reduction that had been forecast in 2006.⁶⁴⁷ The TCC meeting in 2008 reviewed various papers related to purse seine catch retention and FADs, including FAD closures and how other RFMOs address FAD management issues.⁶⁴⁸ At this meeting, compliance with the

⁶⁴³ WCPFC. (2007). *Summary Report of the Fourth Regular Session of the WCPFC*. 2-7 December 2007. Guam, USA. 36.

⁶⁴⁴ Ibid at 38.

⁶⁴⁵ Ibid at 9. The Commission Chair further clarified that the development of compatible measures for the high seas, including development of measures for the high seas and for EEZs of other non-PNA CCMs, are to compatible with those measures applicable to the PNA members of the Commission, which is consistent with paragraphs 9 and 10 of CMM-2005-01. Ibid at 48, paragraph 353.

⁶⁴⁶ WCPFC4 (2007) at 287.

⁶⁴⁷ WCPFC. (2008). *Summary Report of the Fourth Regular Session of the Scientific Committee of the WCPFC*. 11-22 August 2008. Port Moresby, Papua New Guinea. xi.

⁶⁴⁸ WCPFC. (2008). *Summary Report of the Fourth Regular Session of the Technical Compliance Committee Meeting of the WCPFC*. 2-7 October 2008. Pohnpei, FSM. 21.

existing measure was also reviewed generally by the Secretariat, and there were calls for the development of a compliance monitoring scheme that included sanctions for non-compliance.⁶⁴⁹

In 2008, while momentum was building for a new tropical tuna measure, the PNA agreed to its Third Implementing Arrangement – establishing new MTCs for all foreign fishing agreements and licensing agreements for vessels fishing in the EEZs of PNA-member countries.⁶⁵⁰ The Third Implementing Arrangement did not involve issues associated with implementation of the VDS, but rather included: 1) a catch retention requirement for all purse seine vessels fishing for skipjack, bigeye and yellowfin. Excluded from this requirement, however, was fish unfit for human consumption and situations where well space was limited at the end of a trip and the catch exceeded storage capacity; 2) a three-month seasonal FAD closure to be implemented from 1 July to 30 September 30 each year;⁶⁵¹ 3) a prohibition on setting on whale sharks; 4) the closure of the two western high seas pockets; and 5) one hundred percent observer coverage levels for all foreign purse seine vessels, with observers sourced from PNA member nations or an existing sub-regional observer program.⁶⁵²

With the implementation of the VDS and agreement on the Third Implementing Arrangement in 2008, PNA members transitioned the management of the purse seine fishery occurring in their national waters, setting the stage for the Commission to establish compatible measures for other portions of the Convention Area. At the Commission meeting in 2008, the Secretariat presented a paper that considered options to limit purse fishing effort on the high seas with regard to the establishment of compatible

⁶⁴⁹ Ibid. The TCC, at its Fourth Regular meeting, also noted that failure to provide information to the Commission constitutes a failure to comply with the measure in question. A CMM to establish a Compliance Monitoring Scheme was adopted two years later, in the form of CMM 2010-03. This CMM has been amended several times since.

⁶⁵⁰ PNA. (2008). *Third Arrangement Implementing the Nauru Agreement Setting Forth Additional Terms and Conditions of Access to the Fisheries Zones of the Parties*. May 2008. Koror, Palau.

⁶⁵¹ Exemptions to the FAD closure were included, such that a party could exclude portions of its EEZ from the closure if it believed that application of the closure would result in the placement of a disproportionate conservation burden on the State member. A party could also exempt its domestically-flagged vessels from the FAD closure if appropriate measures were set forth in a management plan. Ibid at 3.

⁶⁵² Ibid. Recall from Chapter 4 that the PNA decision to adopt the VDS was made in 2004 (with implementation commencing in December 2007) as a revision to the Palau Arrangement.

measures.⁶⁵³ The following options were presented: 1) an Olympic allocation for the high seas; 2) a high seas limit based on historical (2001-2004) effort levels; 3) a total high seas effort limit with a percentage reserved for SIDS development aspirations; and 4) a total high seas limit of 500 days assigned to the Commission and managed by the Secretariat through a funding scheme to support fisheries research.⁶⁵⁴

With the Commission primed to take action at WCPFC5 in 2008, the Commission received a review of the Principle and Article 8 by the Commission's legal advisor, Dr. Martin Tsamenyi. One of the main issues identified by Dr. Tsamenyi related to the area of application of CMMs with respect to national waters, and whether CMMs apply within a country's territorial, archipelagic or internal waters. As noted in the report of the meeting, there was no consensus on how the term "areas under national jurisdiction" should be interpreted and applied with respect to compatible measures. It was further noted that the issued would require further consideration and clarification among members.⁶⁵⁵

As was expected going into the meeting, WCPFC5 proved to be pivotal with regard to the management of tropical tunas in the WCPO. After significant debate on a wide range of proposals and revisions thereof, as well as consideration of scientific information and advice provided by the SPC, SC and TCC, the Commission adopted a multiyear CMM for bigeye and yellowfin (CMM 2008-01).⁶⁵⁶ Like its predecessors, CMM 2008-01 covered purse seine, longline, and other fisheries that target bigeye and yellowfin.

⁶⁵³ WCPFC. (2008). *Purse seine effort in the zones of Non-PNA CCMs and on the high seas*. Paper prepared by the Secretariat. Fifth Regular Session of the WCPFC. 8-12 December 2008. Busan, Korea. WCPFC5-2008/13.

⁶⁵⁴ Ibid at 4.

⁶⁵⁵ WCPFC. (2008). *Summary Report of the Fifth Regular Session of the WCPFC*. 8-12 December 2008. Busan, Korea. 26. At WCPFC6, Papua New Guinea expressed disappointment that the WCPFC Secretariat had revised the initial draft of the summary report of WCPFC5 to reflect non-consensus on the issue of CMMs being able to exclude archipelagic waters. The records of WCPFC6 indicate that there was consensus that CMMs are required in both EEZs and the high seas, and that these CMMs should be compatible for the effective management of HMS stocks in the Convention Area. WCPFC. (2009). *Report of the Sixth Regular Session of the WCPFC*. 7-11 December 2009. Papeete, French Polynesia. 47.

⁶⁵⁶ WCPFC. (2008). *Conservation and management measure for bigeye and yellowfin tuna in the Western and Central Pacific Ocean (CMM 2008-01)*. Adopted at the Fifth Regular Session of the WCPFC. 8-12 December 2008.

CMM 2008-01 includes reference to Article 8 and the Principle in several instances. First, Article 8 is identified in the chapeau section of the measure, serving as reminder that the Convention requires the compatibility of conservation and management measures between the high seas and waters under national jurisdiction.⁶⁵⁷ Second, the Principle is referred to in paragraph 1 of the measure in the ‘Objectives’ section, which states that compatible measures for the high seas and EEZs are to maintain stocks at levels capable of producing MSY, as qualified by relevant factors.⁶⁵⁸ Third, the Principle is mentioned in paragraphs 12 and 18, such that non-PNA CCMs shall implement compatible measures to reduce purse seine fishing mortality on bigeye tuna in their EEZs for years 2009 and 2010 to 2011, respectively.⁶⁵⁹ Lastly, the Principle is mentioned in paragraph 21 in regard to the provision that directs the Commission to consider the development of a high seas VDS, and further to ensure that reductions in fishing effort on the high seas and in adjacent EEZs are compatible.⁶⁶⁰

CMM 2008-01 included a package of measures that applied to purse seine vessels, longline vessels, and other fisheries that target, either directly or incidentally, skipjack, bigeye and yellowfin. The main conservation objective was to eliminate bigeye overfishing, with paragraph 8 of CMM 2008-01 identifying the objective of reducing purse seine bigeye fishing mortality by 30% over a 3 year period.⁶⁶¹ As a result, purse seine vessels were subject to the following four new provisions under CMM 2008-01: 1) a seasonal FAD closure;⁶⁶² 2) the imposition of catch retention for all tunas; 3) a high seas pocket closure; and 4) one hundred percent observer coverage.⁶⁶³ Notably, all four provisions were also contained in the PNA’s Third Implementing Arrangement, which signifies the importance of domestic measures in formulating compatible high seas measures by the Commission.

⁶⁵⁷ Ibid at 2.

⁶⁵⁸ Ibid.

⁶⁵⁹ Ibid at 4-5.

⁶⁶⁰ Ibid at 6.

⁶⁶¹ Ibid at 4.

⁶⁶² CMM 2008-01 required a two-month FAD closure (August through September 2009) and applied to the high seas and EEZs. For 2010 and 2011, CMM 2008-01 required a three-month FAD closure for the high seas and EEZ waters. See CMM 2008-01, paragraphs 11, 13, 17 and 19.

⁶⁶³ The PNA’s Third Implementing Arrangement also included a prohibition the setting on whale sharks, but the Commission did not include this provision in CMM 2008-01.

The objective of the seasonal FAD closure was to reduce the purse seine catch of bigeye, which in the context of this fishery, was composed predominately of juveniles that aggregate to drifting FADs.⁶⁶⁴ The seasonal FAD closure was an important measure agreed to by the Commission, not only with respect to bigeye conservation, but also with respect to the adoption of compatible measures. As opposed to the FFA's 2007 proposal which provided an exemption for SIDS, the Commission endorsed a two-month seasonal FAD closure for 2009 and a three-month FAD closure for 2010 and 2011. During the closure, it was anticipated that PNA members would implement their "domestic processes and legislation."⁶⁶⁵ The Commission also adopted a high seas seasonal two-month FAD closure for 2009 and a three-month FAD closure during 2010 and 2011.⁶⁶⁶ The Commission, however, chose not to apply a seasonal FAD closure for EEZ waters of non-PNA members, but rather instructed these CCMs to implement compatible measures to reduce purse seine fishing mortality in their EEZs.⁶⁶⁷ The records of the meeting do not explain why these CCMs were not required to implement a FAD closure. Nor did the Commission specify what types of measures would constitute compatible measures. As such, CMM 2008-01 required a FAD closure for the high seas and the EEZs of eight CCMs (PNA members), but not for the EEZs of non-PNA members such as the Philippines or Indonesia, which have purse seine fisheries operating within their EEZs with average effort levels of approximately 5,600 and 6,500 vessel days per annum respectively.⁶⁶⁸ The United States, which also falls under the non-PNA category and has EEZ areas within the core

⁶⁶⁴ The significant increase in purse seine catch of mostly juvenile bigeye has been demonstrated to reduce the potential yield from the stock. If the catch of juvenile bigeye were reduced, greater yields of larger bigeye would likely occur, which also would result in greater economic revenues.

⁶⁶⁵ CMM 2008-01 at 4, paragraph 11.

⁶⁶⁶ Ibid at 4, paragraph 13.

⁶⁶⁷ Ibid at 4, paragraph 12.

⁶⁶⁸ Ibid, Attachment B. Other CCMs with purse seine fishing grounds in their EEZ (and to which paragraph 12 would apply) include the Cook Islands, Fiji, Samoa, Tokelau, Tonga and Vanuatu. However, average annual purse seine effort in these EEZs at the time ranged from 0-149 days.

tropical purse seine region (e.g., Howland and Baker Islands), chose to implement a seasonal FAD closure for its national waters in response to the requirement to establish compatible measures.⁶⁶⁹

Another major component of CMM 2008-01 was the closure of the two Western High Seas Pockets to purse seine fishing - an important measure with respect to the application of Article 8 and the Principle (Figure 42). Recall that Article 8(4) instructs the Commission to pay special attention to high seas pockets with respect to compatibility.

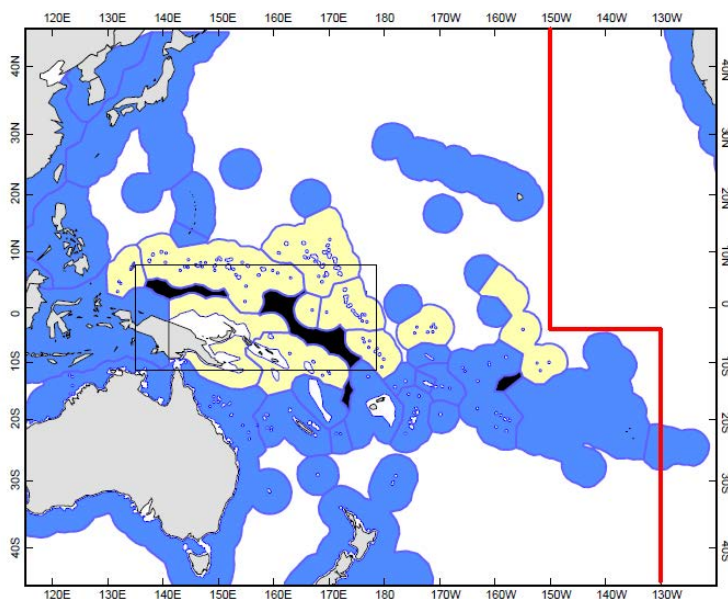


Figure 42: Map of WCP-CA showing high seas pockets

Note: Western High Seas Pockets 1 and 2 shown as shaded black areas in rectangular box.

Source: CMM 2008-01

The Commission's decision to adopt the high seas pocket closure was significant in that it represented a conscious choice to privilege the conservation of stocks and/or other factors over the 'freedom to fish on

⁶⁶⁹ NOAA. (2009). *International Fisheries; Western and Central Pacific Fisheries for Highly Migratory Species; Fishing Restrictions and Observer Requirements in Purse Seine Fisheries for 2009-2011 and Turtle Mitigation Requirements in Purse Seine Fisheries*. Final Rule. Federal Register. 4 August 2009. 74 FR 38544. For 2009, the FAD closure for US waters was two months, extending to three months for 2010 and 2011, consistent with CMM 2008-01.

the high seas' and historical fishing effort in these areas. Prior to closure, the two Western High Seas Pockets represented approximately 14% of the total effort in the WCPO.⁶⁷⁰

The meeting records of the 5th Regular Session do not provide specific details on the rationale for the Commission adopting the high seas pocket closure, but the issue is identified in the records as being linked to the establishment of a high seas VDS.⁶⁷¹ The consideration of management measures for high seas pockets, however, was not new to the Fifth Regular Session, but rather a concern FFA members had been voicing for at least a decade prior (including in the meetings of the MHLIC).⁶⁷² In 2008, PNA members closed the high seas pockets to vessels that fish in their waters as part of the Third Implementing Arrangement.⁶⁷³ The ecological rationale for closing the high seas pockets included reducing pressure on overexploited tuna resources (e.g., bigeye and yellowfin), and supporting more effective controls over illegal fishing.⁶⁷⁴ Thus, it can be argued that the Commission chose to close the high seas pockets in CMM 2008-01 for a variety of reasons, including to support Article 8 and the development of compatible measures.

With respect to the management of bigeye catches by longline fisheries, CMM 2008-01 included the objective of reducing bigeye fishing mortality by 30% over the course of three years.⁶⁷⁵ CMM 2008-01 paragraph 33, for example, required CCMs with longline fisheries catching more than 2,000 mt annually to reduce their baseline quota (as established by the 2001-2004 average or 2004 levels in the case of the

⁶⁷⁰ SPC. (2012). *Review of the implementation and effectiveness of CMM 2008-01*. Eight Regular Session of the of the WCPFC. 25-29 March 2012. Guam, USA. WCPFC8-2011-43-Rev.1. 6.

⁶⁷¹ WCPFC. (2008). *Summary Report of the Fifth Regular Session of the WCPFC*. 208. Aqorau (2009) suggests the following reasons for closing the high seas pockets: (i) it reduces IUU fishing by eliminating safe havens in the high seas; (ii) it reduces fishing mortality and effort; (iii) it provides a sanctuary both for target and non-target species; (iv) it increases the economic value of EEZs; (v) it reinforces other efforts to conserve marine biodiversity. Aqorau. T. (2009). Current legal developments: Western and Central Pacific Fisheries Commission. *The International Journal of Marine and Coastal Law*, 24, 737-746, at 742.

⁶⁷² See Summary Report of MHLIC3. Statements made by Kiribati and Papua New Guinea.

⁶⁷³ PNA (2008) Third Implementing Arrangement at 3, paragraph 3.

⁶⁷⁴ Hampton J. (2010). *Tuna Fisheries Status and Management in the Western and Central Pacific Ocean*. Secretariat of the Pacific Community. Noumea, New Caledonia. 19.

⁶⁷⁵ Notably, CMM 2008-01 did not specify the baseline year from which the purse seine fishery was supposed to reduce bigeye catches by 30%.

United States and China) by 10% each year between 2009 and 2011.⁶⁷⁶ These longline limits applied both within EEZs and on the high seas. Exemptions, however, were provided for CCMs that caught less than 5,000 mt per year and which landed fresh fish for their domestic markets, such that these fisheries only had to reduce bigeye catches by 10% of their baseline levels as opposed to the 30% reduction required by other longline fisheries.⁶⁷⁷ Exemptions to longline bigeye limits were also provided to SIDS and Participating Territories, such that no bigeye catch limits were placed on the longline fisheries of these CCMs provided they were undertaking responsible development of their domestic fisheries.⁶⁷⁸

CMM 2008-01 also applied to “other fisheries” targeting bigeye and yellowfin, such that CCMs were to implement measures to ensure that the total capacity these fisheries did not exceed their respective average levels for the period 2001-2004 or 2004.⁶⁷⁹ The term “other fisheries” includes artisanal fisheries and the following gear types: gillnet, handline, pole and line, ring-net, purse seine (non-tropical), troll and unclassified gear. The catch of yellowfin, skipjack and bigeye by these “other fisheries” represented approximately 25%, 16% and 10% respectively of the total WCPO catch of these stocks.⁶⁸⁰ The Commission chose to exclude artisanal fisheries and other fisheries taking less than 2,000 mt of bigeye and yellowfin per year from the catch and effort restrictions.⁶⁸¹ The Commission did not define “artisanal fisheries” in the measure.

The recognition that other fisheries apart from purse seine and longline fisheries contribute to bigeye and yellowfin fishing mortality is important and supports the application of the Principle. However, the

⁶⁷⁶ As opposed to earlier tropical tuna CMMs, CMM 2008-01 included Attachment F, which provided historical longline bigeye catches by CCMs. This data served to establish the baseline from which to make reductions, as well as aiding in the domestic implementation and compliance monitoring of the measure.

⁶⁷⁷ In effect, this exemption only applies to the United States, as the Hawaii longline fishery only lands fresh, ice-chilled fish primarily for the local seafood market.

⁶⁷⁸ CMM 2008-01 at 8, paragraph 34. Notably, the measure did not include any definition of “responsible fisheries development”. Nor was a definition of this term to be found in other WPFC records. Therefore, each SIDS and PT was able to decide for themselves what constituted “responsible fisheries development,” and thus apply the exemption to catch limits.

⁶⁷⁹ CMM 2008-01 at 8, paragraph 39.

⁶⁸⁰ WCPFC. (2010). *Review of CCM's implementation of, and compliance with, conservation and management measures*. Seventh Regular Session of the WCPFC. 6-10 December 2010. WCPFC7-2010/20 Rev 2. 22.

⁶⁸¹ CMM 2008-01 at 8, paragraph 39.

Commission decided not to impose catch limits for these fisheries, instead applying capacity limits. The vessel capacity provision was problematic because it did not define the metric that CCMs should use when implementing fishing capacity restrictions, e.g., the volume of vessel well space or the number of vessels, etc. In addition to total capacity restrictions, the Commission also required CCMs to provide estimates of fishing effort to the SC, or proposals for the provision of effort data for these fisheries.⁶⁸²

In exempting artisanal fisheries and other fisheries taking less than 2,000 mt of bigeye and yellowfin per year, the Commission appeared to dismiss these fisheries as insignificant. However, without providing a definition of what constitutes “artisanal fisheries,” the decision ultimately rests with individual countries, with the result that there may be substantial variation in the way the term is interpreted. For example, the FAO definition of “artisanal fishing” includes traditional fisheries involving fishing households (not commercial companies) using relatively small vessels. However, the FAO definition also recognizes that depending on the country (developed vs undeveloped), artisanal fishing may include commercial fisheries involving vessels over 20 meters in length and using longline and purse seine gear.⁶⁸³ The catch of bigeye, for example, by artisanal fleets operating in mostly archipelagic waters of Indonesia and the Philippines and territorial waters of coastal Japan represent approximately 3-7 percent of the total WCP-CA catch (in weight).⁶⁸⁴ If going by the number of fish, then the artisanal fisheries of Indonesia and Philippines take nearly the same amount of juvenile bigeye as the purse seine fishery, with most of the

⁶⁸² Ibid. The year after CMM 2008-01 was adopted, a review of the implementation of measures by CCMs revealed that no CCMs provided the fishing effort data required under paragraph 39. See: WCPFC. (2010). *Review of CCM's implementation of, and compliance with, conservation and management measures*. Seventh Regular Session of the WCPFC. 6-10 December 2010. Honolulu, Hawaii. WCPFC-2010/20 Rev 2. 39.

⁶⁸³ The FAO defines artisanal fisheries as: "traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption. In practice, definition varies between countries, e.g. from gleaning or a one-man canoe in poor developing countries, to more than 20 meter trawlers, seiners, or long-liners in developed ones. Artisanal fisheries can involve subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries". FAO. (2005-2011). *Fisheries and Aquaculture topics. Small-scale and artisanal fisheries*. Topics Fact Sheets. Text by Jan Johnson. FAO Fisheries and Aquaculture Department. Rome. Updated 27 May 2005. Retrieved from <http://www.fao.org/fishery/technology/en>.

⁶⁸⁴ Williams et al. (2017) at 42. In 2016, the bigeye catch by “other fisheries” represented 14% of the total WCPO catch.

catch within the 10 cm to 50 cm size class.⁶⁸⁵ The reasons for exempting artisanal fisheries from the measure may be that most of the catch from Indonesia and Philippines fisheries occur within archipelagic waters, and further, that these countries have demonstrated a lack of effective monitoring and control over their fisheries.⁶⁸⁶ CMM 2008-01 included a provision that encouraged CCMs to ensure that the effectiveness of the relevant measures is not undermined by a transfer of effort into archipelagic waters and territorial seas.⁶⁸⁷

By way of contrast, the tropical tuna measure explicitly encouraged coastal States to take measures to reduce fishing mortality on juvenile bigeye and yellowfin tuna in archipelagic waters and territorial seas.

The use of 2,000 mt as the standard for establishing restrictions for non-artisanal fisheries – i.e., if the catch exceeds this weight, then any excess catch is restricted, but if the catch is below the threshold, then additional catches up to 2,000 mt are permissible – seems to have been applied with little evaluation by the Commission. Why, for example, should countries that catch less than 2,000 mt be allowed to increase their catch to that level, when other countries are forced to reduce their catches?⁶⁸⁸ An alternative view is that these countries have contributed very little in terms of bigeye exploitation in comparison to the fleets of other members, and so they should be afforded the ability to catch increased, albeit restricted,

⁶⁸⁵ Ibid at 44.

⁶⁸⁶ Since 2009, the SPC has been spearheading a project to improve fisheries data in Indonesia, the Philippines and Vietnam. The project is called the West Pacific East Asia Oceanic Fisheries Management Project. For more information, see: <https://www.wcpfc.int/west-pacific-east-asia-oceanic-fisheries-management-project>

⁶⁸⁷ CMM 2008-01 at 3, paragraph 5.

⁶⁸⁸ An example of this are the limits placed on longline bigeye tuna. CCMs such as Australia, New Zealand, the EU and others that have historically caught less than 2,000 mt annually were authorized to increase their catch up to that tonnage. On the other hand, the United States, for example, was required to reduce its baseline catch of approximately 4,100 mt by 10% (3,763 mt) in 2009.

quantities of fish.⁶⁸⁹ In reviewing WCPFC records, which consist of meeting reports and other available information, there is scant explanation of why 2,000 mt is used as a threshold figure within the Commission. For example, why not use 1,000 mt as the limit? However, it is reasonable to conclude that these fisheries, even when their catches are combined, represent a minor percentage of total catches for yellowfin and bigeye, and thus they should not be viewed as a major factor in the consideration of conservation and management measures.

CMM 2008-01 was an important achievement for the Commission, representing a multiyear measure developed with the objective of establishing compatible measures for the high seas and EEZs to ensure that bigeye and yellowfin tuna stocks were maintained at levels of capable of producing MSY. The measure included a range of management provisions that applied in EEZs and on the high seas, such as: a) purse seine effort restrictions; b) a seasonal FAD closure; and c) flag-based longline catch limits that were subject to a phased reduction over the course of the measure. While CMM 2008-01 was an important step in supporting conservation and management objectives, its effectiveness is questionable.

In 2011, the SPC completed a new bigeye stock assessment indicating that bigeye overfishing was still occurring.⁶⁹⁰ The SC reviewed the assessment and concluded that a 32% reduction in fishing mortality from 2006-2009 average levels was needed to eliminate bigeye overfishing.⁶⁹¹ As CMM 2008-01

⁶⁸⁹ With regard to the situation where those countries that have impacted the stock the most are required to implement the largest catch reductions, this could be viewed as the “polluter pays” principle. For further reading on this topic, see: Tobey, J. A., & Smets, H. (1996). The Polluter-Pays Principle in the Context of Agriculture and the Environment. *The World Economy*, 19(1), 63-87. -- Gaines, S. E. (1991). The polluter-pays principle: from economic equity to environmental ethos. *Texas International Law Journal*, 26, 463-495. -- Coffey, C., & Newcombe, J. (2000). *The polluter pays principle and fisheries: the role of taxes and charges*. Institute for European Environmental Policy. London, UK. -- Garcia, S. M. (2003). *The ecosystem approach to fisheries: issues, terminology, principles, institutional foundations, implementation and outlook (No. 443)*. Rome. FAO.

⁶⁹⁰ Davies, N., Hoyle, S., Harley, S., Langley, A., Klieber, P., & Hampton, J. (2011). *Stock assessment for bigeye tuna in the Western and Central Pacific Ocean*. Seventh Regular Session of the Scientific Committee of the WCPFC. 9-17 August 2011. Pohnpei, FSM. WCPFC-SC7-2011/SA-WP-02.

⁶⁹¹ WCPFC. (2011). Report of the Seventh Regular Session of the Scientific Committee of the WCPFC. 9-12 August 2012. Pohnpei, FSM. vi. As early as 2009, the Commission received information that CMM 2008-01 would not meet conservation objectives. See SPC. (2009). *Assessment of the potential implications of application of CMM 2008-01 for bigeye and yellowfin tuna*. Sixth Regular Session of the WCPFC. 7-11 December 2009. Tahiti, French Polynesia. WCPFC6-2009/IP17.1.

included purse seine and longline provisions that applied only through 2011, and the stock assessment indicated that bigeye overfishing was continuing, it was anticipated that the December 2011 Commission meeting would feature another round of intense negotiations on the tropical tuna measure.

The Secretariat circulated a paper just prior to the 2011 meeting of the TCC to serve as a starting point for the development of a new bigeye and yellowfin CMM.⁶⁹² While the paper contained a similar mix of CMM 2008-01 provisions for purse seine, longline and other fisheries, as well as maintaining the objective of establishing compatible measures, the paper was ambitious in many respects. Some of the major changes from the 2008-01 CMM were: 1) the inclusion of skipjack tuna within a potential measure; 2) the establishment of interim target reference points; 3) a total allowable catch limit of 1.556 million tons for skipjack tuna; 4) catch limits to be capped at 2010 levels for skipjack tuna in EEZs and on the high seas; and 5) restrictions on the percentage of juvenile tuna caught by purse seine vessels, with monetary penalties for overages of the determined percentage.⁶⁹³ Reactions by CCMs to the Secretariat's paper at TCC7 were mixed. Most CCMs favored the adoption of reference points, but they also recognized that the development of reference points was part of the upcoming Management Objectives Workshop (and thus an inappropriate decision to have been made at the time).⁶⁹⁴ FFA members expressed, *inter alia*, that they would have liked to have seen the area of application for purse seine vessels be extended beyond 20°S and 20°N, while Japan and the United States indicated their preference for spatial management provisions to apply to longline fisheries.⁶⁹⁵ The Philippines expressed that the closure of the Western High Seas Pockets had resulted in increased fishing pressure within their national waters, which they identified as being a nursery and breeding ground for tropical tunas.⁶⁹⁶ For this reason,

⁶⁹² WCPFC. (2011). *Discussion of a possible way forward in the development of a CMM for bigeye, yellowfin, and skipjack tuna in the WCPFC Convention Area*. WCPFC-TCC-2011/01. 15.

⁶⁹³ Ibid.

⁶⁹⁴ WCPFC. (2011). *Summary report of the Seventh Regular Session of the Technical and Compliance Committee of the WCPFC*. Pohnpei, FSM. 28 September-4 October 2011.14.

⁶⁹⁵ Ibid.

⁶⁹⁶ Ibid.

the Philippines advocated for lifting the high seas pocket restriction.⁶⁹⁷ PNA members, on the other hand, argued that they would continue to restrict high seas fishing as a part of their licensing conditions, and further, that any purse seine effort limits should be for the purpose of optimizing skipjack utilization, rather than for bigeye conservation.⁶⁹⁸ Indeed, for PNA members, the purse seine FAD closure provision was the provision that addressed bigeye conservation, and this provision was preferable to a total closure in their view.⁶⁹⁹ Discussion occurred among CCMs on the compatibility of measures with regard to the high seas and EEZs, but the records of the meeting state that there was insufficient time to properly pursue such issues at the meeting.⁷⁰⁰

Going into WCPFC8 in 2011, it was known that several important elements of CMM 2008-01 were due to expire, and thus there was a general understanding among members that the Commission would have to agree to either to extend the provisions found in CMM 2008-01 or adopt a new measure.⁷⁰¹ Proposals for a new tropical tuna measure were submitted by FFA members and the EU.⁷⁰² The main difference between the EU proposal and the FFA proposal centered on FADs. Whereas the EU favored a seasonal total closure similar to IATTC measures, the FFA supported the status quo in the form of a seasonal FAD closure. The EU stated that a seasonal total closure would enhance compliance and better control fishing effort to mitigate increasing vessel capacity.⁷⁰³ The FFA, on the other hand, indicated that total closure would result in major economic impacts on FFA members, with such a closure reducing skipjack and

⁶⁹⁷ Ibid.

⁶⁹⁸ Ibid.

⁶⁹⁹ Ibid. Since 2006, the IATTC has been managing purse seine bigeye catches through the imposition of a 62-day total purse seine closure. For further information on IATTC resolutions, see: <https://www.iattc.org/ResolutionsActiveENG.htm>

⁷⁰⁰ Ibid.

⁷⁰¹ WCPFC8 was postponed until March 2012 because Palau, which was scheduled to host the meeting in 2011, suffered a national power generation breakdown. This forced the meeting to be postponed and rescheduled for March 2012 in Guam.

⁷⁰² FFA. (2011). *FFA members proposal for a CMM for bigeye, skipjack, and yellowfin tunas*. Eighth Regular Session of the WCPFC. 26-30 March 2012. WCPFC8-2011-DP/09.11. See also: European Union. (2011). *EU proposal for a CMM for the conservation and management of tropical tunas (bigeye, yellowfin, and skipjack) in the WCPFC Convention Area*. Eighth Regular Session of the WCPFC. 26-30 March 2012. WCPFC8-2011-DP/24. 10.

⁷⁰³ European Union (2011) at t 4. At the time, there was supporting evidence that there were compliance issues with the seasonal FAD closure, such as observer reports indicating FAD fishing taking place during the FAD closure, as well as an increased use of vessel aggregation lights during the FAD closure.

yellowfin catches by approximately 500,000 metric tons annually.⁷⁰⁴ Moreover, scientific advice at the time had focused on the need to reduce impacts of the purse seine fishery on juvenile bigeye rather than the total catches of yellowfin and skipjack.⁷⁰⁵

The Chairman of the Commission, Dr. Charles Karnella, also tabled a paper in CMM-form that built upon the Secretariat's paper submitted to TCC7.⁷⁰⁶ Although not a full proposal covering tropical tuna stocks, the PNA submitted a proposal for the Commission to prohibit purse seine fishing not just for the Western high seas pockets, but for the entire remaining high seas within the Convention Area.⁷⁰⁷ The PNA proposal referenced the 2010 amendment to the PNA's Third Implementing Arrangement, which established that purse seine vessels licensed to fish in PNA EEZs would be prohibited from fishing on the high seas.⁷⁰⁸ Recall that prior to the 2010 amendment to the PNA's Third Implementing Arrangement, the PNA prohibited fishing in the Western High Seas Pockets as a condition for fishing access to PNA waters.⁷⁰⁹ Similar to what transpired in 2008 with the closure of the Western High Seas Pockets by the PNA for vessels licensed to fish in their waters in 2008, the PNA again requested the Commission adopt compatible measures in line with its restrictions on high seas fishing as a condition for access to PNA waters.⁷¹⁰

⁷⁰⁴ WCPFC. (2012). *Summary Report of the Eighth Regular Session of the WCPFC*. 26-30 March 2012. Guam, USA. 36.

⁷⁰⁵ WCPFC. (2011). *Report of the Seventh Scientific Committee meeting of the WCPFC*. 9-17 August 2011. Pohnpei, FSM. 35.

⁷⁰⁶ WCPFC (2011). *Letter from the Chairman on conservation and management of skipjack, bigeye, and yellowfin tuna*. Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC8-2011/31. 9. The Chair's paper recognized that the revised paper took in account comments, to the extent possible, made by Commission members at the TTC meeting. On issues where common ground seemed unachievable, the Chair listed a number of topics as Longer Term Issues, which included: a) reference points; b) allocation of effort and/or catch; c) catch attribution and charter vessels; and d) reporting requirements.

⁷⁰⁷ PNA. (2011). *PNA proposed CMM to close purse seine fishing in additional high seas areas*. Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC8-2011-DP/01.

⁷⁰⁸ PNA. (2010). *A Third Arrangement Implementing the Nauru Agreement Setting Forth Additional Terms and Conditions of Access to the Fisheries Zones of the Parties*. Amended 11 September 2010.

⁷⁰⁹ Ibid.

⁷¹⁰ PNA (2011). *PNA proposed CMM to close purse seine fishing in an additional high seas areas*. Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC8-2011-DP/01.

Nauru also submitted a proposal that the Commission adopt a measure to prohibit distant-water longline fishing within fully closed high seas pockets between 10°N and 20°S of the Convention Area.⁷¹¹ Nauru's stated reason for this closure was that longline fishing in the high seas was not subject to adequate controls (i.e., the fishery had low levels of observer coverage), and the closure was needed to ensure a higher degree of compliance with Commission conservation and management measures.⁷¹²

CCM views on the various proposals were mixed. The EU, for example, suggested that the FAD closure would be ineffective and thus argued for a total seasonal closure.⁷¹³ Japan expressed concern over skipjack range contraction and urged the Commission to take stronger action in tropical waters.⁷¹⁴ The Philippines stated that the closure of the Western High Seas Pockets had caused fishing effort to shift in the Philippines EEZ, resulting in greater impacts on spawning stocks and juveniles.⁷¹⁵ As such, the Philippines proposed that 36 of their purse seine ice boats be allowed to fish in WHSP1.⁷¹⁶

At WCPFC8, the SPC provided an evaluation of CMM 2008-01. According to the evaluation, if 2009 bigeye catch and purse seine effort levels were projected 10 years into the future, fishing mortality for bigeye tuna would remain well above MSY levels.⁷¹⁷ However, it was noted that 2010 purse seine FAD effort was lower than in previous years (by 32%) which also led to a reduction in the catch of bigeye by purse seine vessels.⁷¹⁸ In 2010, there was also a 33% reduction in the catch of bigeye by Indonesian and

⁷¹¹ Nauru. (2012). *Nauru's proposal for a conservation and management measure to prohibit longlining in certain regions of the WCP-CA*. Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC8-2011-DP/45.

⁷¹² Ibid at 3.

⁷¹³ WCPFC. (2012). *Summary Report of the Eighth Regular Session of the WCPFC*. 26-30 March 2012. Guam, USA. 39.

⁷¹⁴ Ibid.

⁷¹⁵ Ibid.

⁷¹⁶ Ibid. See also Philippines. (2012). *Proposed CMM on High Seas Pocket 1 & 2*. Eighth Regular Session of the WCPFC. 26-30 March 2012. WCPFC8-2011/DP-42. The main justification that the Philippines used to support opening HSP1 to their vessels was that displaced vessels would travel back to Indonesia where spawning and juvenile yellowfin and bigeye occur.

⁷¹⁷ WCPFC. (2012). *Summary Report of the Eighth Regular Session of the WCPFC*. 26-30 March 2012. Guam, USA. 36.

⁷¹⁸ Ibid.

Philippine fleets compared to 2009 levels.⁷¹⁹ When the SPC projected 2010 catch and effort levels 10 years into the future, in combination with recent bigeye recruitment estimates, bigeye overfishing was eliminated and biomass was at levels above MSY.⁷²⁰ This finding might have dissuaded stronger action, because the Commission did not reach consensus on most of the proposals to revise the measure. Instead, the Commission chose to simply extend CMM 2008-01 with a few significant changes.

The most notable change adopted at WCPFC8 was the creation of High Seas Pocket 1 Special Management Area (HSP-1 SMA), and the exemption provided to the Philippines for their purse seine vessels to fish within the otherwise closed area.⁷²¹ As a result of this exemption, 36 Philippines-flagged traditional fresh/ice purse seine vessels (that were noted to operate as a group) were allowed to fish in HSP-1SMA. These vessels were further required to submit entry/exit notification reports to the Commission, carry an observer from a regional observer program, and be equipped with VMS units.⁷²² The measure extended the CMM 2008-01 closure of HSP2 to all members, including the Philippines. Some of the other main features of CMM 2008-01 which were maintained included the three-month seasonal FAD closure and the respective flag-based longline limits.⁷²³

The exemption provided for the Philippines is worthy of further consideration as it relates to the implementation of compatible measures. The Philippines argued that the prohibition on fishing in HSP1 had a major impact on their purse seine fleet, and further, that allowing their ‘traditional fresh/ice chilling’ purse seine vessels to fish in HSP1 was actually a conservation measure because it displaced effort to the

⁷¹⁹ Ibid.

⁷²⁰ Ibid.

⁷²¹ WCPFC. (2012). *Conservation and management measure for the temporary extension of CMM 2008-01 (CMM 2011-01)*. Adopted at the Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA.1.

⁷²² Ibid.

⁷²³ Ibid.

high seas that otherwise would have occurred in the Philippines' EEZ – an area which the Philippines maintained was a tuna spawning and nursery ground.⁷²⁴

To bolster their position, the Philippines provided the Commission with a report on fish catch and size class from operations within their EEZ, which was compiled during the high seas FAD closure period (July-September). Recall that under CMM 2008-01, the seasonal FAD closure only applied to waters of PNA members and the high seas - other CCMs such as the Philippines were required to implement compatible measures for their national waters.⁷²⁵ In 2010 the Philippine government's Bureau of Fisheries and Aquatic Resources (an agency under the Department of Agriculture), promulgated an administrative order that required purse seine and ring net vessels fishing in the Philippines' EEZ during July 1 and September 30 (the same period as the WCPFC FAD closure) to reduce their net depth by 30 meters to a maximum of 125 meters stretched net depth.⁷²⁶ According to the Philippines, ensuring that the net depth is shallower in the water column results in the bigeye incidental catch to be approximately 0.5% of the total catch – a figure which is lower than the typical 2% incidental bigeye catch.⁷²⁷ Instead of showcasing their achievement in reducing bigeye incidental catches, the Philippines suggested that the displacement of fishing effort from HSP1 led to increased fishing on juvenile tuna by its vessels fishing in the Philippines EEZ - thus having a greater impact on bigeye than if the Philippine vessels had been allowed to fish in the HSP1.⁷²⁸

⁷²⁴ Philippines. (2012). *Position paper on Proposal for CMM on bigeye, yellowfin, skipjack. Ninth Regular Session of the WCPFC*. 2-6 December 2012. Manila, Philippines. WCPFC9-2012-DP04. 3.

⁷²⁵ CMM 2008-01 at 4. Other non-PNA CCMs which have purse seine fleets and waters under national jurisdiction within the WCP-CA between 20° N and 20° S include Indonesia, United States and New Zealand.

⁷²⁶ Philippines. (2010). *Fisheries Administrative Order 236 Series 10*. Retrieved from <http://www.bfar.da.gov.ph/LAW?fi=398#post>

⁷²⁷ Philippines. (2007). *Position Paper of the Philippines on the Conservation and Management Measures of Bigeye in the Western and Central Pacific Fisheries Ocean*. Attachment M to the Eighth Meeting of the WCPFC Technical and Compliance Committee of the WCPFC. 29 September - 4 October 2011. Pohnpei, FSM. 138.

⁷²⁸ Dickson, A. C., Demoos, M., de la Cruz, W.S., Tanangonan, I., Dickson, J.O., & Ramiscal, R.V. (2012). *Analysis of purse seine/ring net fishing operations in the Philippines EEZ*. Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC-SC8-2012/ ST-IP-04.

The Philippines exemption to HSP1 is an interesting case as it relates to compatible measures. It is important to state from the outset that the shifting of fishing effort from HSP1 to the national waters of the Philippines under CMM 2008-01 had adverse conservation effects was a position asserted by the Philippines but never demonstrated quantitatively. However, assuming the argument made by the Philippines is accepted, a state of affairs which can only be described as ironic emerges. The irony lies in the fact that the Commission closed HSP1 for various reasons, including conservation objectives and consistency Article 8(4) of the Honolulu Convention. In doing so, however, it displaced effort out of the high seas pocket and into the Philippine's EEZ, thus undermining conservation objectives (as presented by the Philippines). The result was that the Philippines, and only the Philippines, was provided a special exemption to fish in HSP1 under CMM 2011-01.

Another important change included in CMM 2011-01 was the treatment of purse seine effort levels and what was accepted as the new 'baseline.' CMM 2011-01 recognized that PNA members "intended" to implement the VDS in their EEZs to no greater than 2010 levels.⁷²⁹ The Commission's recognition of 2010 levels as the PNA's fishing effort baseline is important with respect to evaluating the application of the Principle. For example, recall that CMM 2008-1 limited purse seine effort in PNA waters under the VDS to 2004 levels, which was 30,587 days (excluding archipelagic waters).⁷³⁰ In 2010, the total number of days fished in the EEZs of PNA members was 44,033, a 44% increase in effort since 2004.⁷³¹ One of the reasons that PNA waters saw an increase in effort was because of the closure of HSP1 and HSP2.⁷³² The displaced effort into PNA waters was one of the main reasons why the closure of HSP1 and HSP2 was ineffective as a conservation measure. Indeed, rather than decreasing fishing effort, the closure

⁷²⁹ The use of the word "intended" was carefully chosen by PNA members to signal that, as coastal States, only *they* would decide how to manage fisheries in their waters, as opposed to the Commission making such decisions on their behalf.

⁷³⁰ CMM 2008-01, paragraph 11.

⁷³¹ WCPFC. (2015). *Information paper: data summaries in support of discussions on the CMMs on tropical tunas (CMM 2013-01 and CMM 2014-01)*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. WCPFC12-2015-IP02. 4.

⁷³² It is further noted in the Summary Report of the Eighth Regular Session that catch reductions observed during 2010 as a result of the high seas pocket closure were attributed to reduced effort from Philippine-flagged vessels that predominately fish in HSP1. See: WCPFC (2012) at 36.

simply moved such effort to a different location.⁷³³ As effort shifted to the national waters of adjacent Pacific Islands, it could be argued that the high seas pocket closures served purposes other than conservation, such as reducing the disproportionate burden of conservation on Pacific Islands by increasing access fee revenue.

In accepting a 44% increase in purse seine fishing effort in PNA waters only three years after much lower effort limits were endorsed under CMM 2008-01, it was clear that the members of the Commission had acquiesced to the PNA ‘setting the pace’ for purse seine fishing effort management in the region. Such action, however, should not come as a surprise, as PNA waters hold most of the skipjack resource and PNA management measures such as the Palau Arrangement have shaped the WCPO purse seine management landscape for decades. The identification of fishing effort (or catch) limits between national waters and the high seas can be viewed as one of the most basic requirements with regard to the application of the Principle. By authorizing higher purse seine effort levels for the waters of PNA members, the Commission had to consider corresponding effort limits for the high seas. Indeed, the Commission sought to ensure that the purse seine effort levels authorized for the high the seas (outside of the HSP1 and HSP2) were compatible with the level of fishing effort established in PNA national waters.⁷³⁴

How then did the Commission respond in light of the increasing purse seine effort occurring within waters under national jurisdiction?⁷³⁵ The Commission chose not to make a downward adjustment for high seas effort limits under CMM 2011-01. Rather, the Commission maintained the existing high seas purse seine effort limits as identified in CMM 2008-01, which required CCMs to limit high seas effort to

⁷³³ Ibid.

⁷³⁴ Recall that under Article 8 (2)(b)(i), the Commission, when establishing compatible measures, must take into account the conservation and management measures adopted within areas under national jurisdiction and ensure that measures established in respect of such stocks for the Convention Area as a whole do not undermine the effectiveness of measures established for waters under national jurisdiction.

⁷³⁵ At the Ninth Regular Session of the WCPFC, it was confirmed that purse seine fishing effort had increased since CMM 2008-01, with most of the effort increases having occurred in EEZs and archipelagic waters. See WCPFC. (2012). *Summary Report of the Ninth Regular Session of the WCPFC*. 2-6 December 2012. Manila, Philippines. 15.

either the 2004 level or 2001-2004 average effort levels. As a result, the Commission authorized increased levels of purse seine fishing effort within the Commission Area, which was contrary to scientific advice and arguably not congruent with tropical tuna conservation objectives.⁷³⁶ The Commission also agreed that high seas effort limits would continue to apply to non-SIDS only, thereby leaving open the potential for further increases in purse seine fishing effort within the Convention Area. Notwithstanding such considerations, CMM 2011-01 was only adopted as a one-year deal.

At the 2012 meeting, management measures for WCPO tropical tuna fisheries was again the main focus of negotiations, but this time there was a heightened sense of a ‘duty to act.’⁷³⁷ Prior to the December 2012 Commission meeting, the SC had concluded the following: 1) the need to strengthen control of FAD activities; 2) the importance of harnessing the apparent success of some fleets in reducing their dependence on FADs to achieve greater control of FAD activity outside the closures, including control of the number of FADs set throughout a year instead of FAD time-closures; 3) reducing the total number of FAD sets to levels no greater than those in the fishery in 2010; 4) clarifying the definition of limits on purse-seine effort that are applicable in different areas; 5) reducing fishing mortality on bigeye tuna from the longline fishery; and 6) adopting management measures that apply to all sectors of the fishery.⁷³⁸

With the Commission deferring the adoption of a new multiyear tropical tuna measure in 2011 to 2012, there was pressure to adopt a long-term measure at WCPFC9. Leading up to the Commission meeting, several members submitted proposals as well as the Chair.⁷³⁹ Like in year’s past, members were negotiating on a package of elements that served both conservation purposes and their own varied

⁷³⁶ Another important consideration with regard to high seas fishing effort is that CMM 2011-01 maintained, like CMM 2008-01, that high seas purse seine effort limits do not apply to SIDS and Participating Territories (PTs). Thus, not only did the Commission agree to higher levels of total purse seine effort levels within the Commission, but the Commission agreed to continue to exempt SIDS and PTs from high seas effort limits.

⁷³⁷ Author’s personal observation as a delegate to WCPFC9. The author has attended each of the Commission’s Regular Sessions since 2010, and each meeting of the TCC since 2006.

⁷³⁸ WCPFC. (2012). *Report of the Eighth Regular Session of the WPFSC Scientific Committee*. 7-15 August 2012. Busan, Korea. 70.

⁷³⁹ Members that submitted proposals and written comments on the tropical tuna measure to WCPFC9 included the Philippines, EU, Japan and the FFA. See list located at: <https://www.wcpfc.int/meetings/9th-regular-session-commission>.

interests.⁷⁴⁰ With respect to members' varied interests (most notably between purse seine and longline interests), it was reported by the SPC at WCPFC9 that the 2011 purse seine catch of bigeye surpassed the longline catch of bigeye for the first time on record.⁷⁴¹ Prior to 2011, it was regularly reported that longline fisheries were having the largest impact on bigeye in the WCPO; however, that changed with the large incidental purse seine catch of bigeye in 2011.⁷⁴²

At WCPFC9, the Commission adopted CMM 2012-01, which applied throughout 2013 only and was labeled an interim measure.⁷⁴³ The single, substantive change to the status quo effected by this CMM related to the purse seine fishery. Specifically, CMM 2012-01 required CCMs to apply an additional month to the existing three-month FAD closure (from July through October). Alternatively, a CCM could choose to implement the three-month FAD closure (July through September), while ensuring that FAD sets for its purse seine vessels remained below the specified level of two-thirds of their 2001-2011 average for non-SIDS, or eight-ninths of their particular 2009-2011 average for SIDS.⁷⁴⁴ The existing flag-based longline bigeye catch limits were maintained at 2011 levels, which frustrated some members (e.g., PNA members) that had greater purse seine interests in comparison to longline interests.⁷⁴⁵

The frustration expressed by PNA members was articulated through their decision to invoke Article 30 of the Honolulu Convention, which requires the WCPFC to ensure that adopted measures do not result in

⁷⁴⁰ For further reading on the varied fisheries interests of Commission members, see: Hanich, Q. (2011). *Interest and Influence – Conservation and Management in the Western and Central Pacific Fisheries Commission*. Doctoral Thesis, University of Wollongong. Wollongong, Australia.

⁷⁴¹ WCPFC8 (2012) at 15.

⁷⁴² At WCPFC9, it was reported that purse seine fishing had increased considerably since 2008, when CMM 2008-01 was adopted. Most of the increase in purse seine effort occurred in archipelagic waters and within EEZs of PICs. *Ibid* at 15.

⁷⁴³ WCPFC. (2012). *Conservation and management measure for bigeye, yellowfin, and skipjack tuna in the Western and Central Pacific Ocean (CMM 2012-01)*. Adopted at the Ninth Regular Session of the WCPFC. 2-6 December 2012. Manila, Philippines.

⁷⁴⁴ *Ibid* at 5.

⁷⁴⁵ See also letter signed by Dr. Christian Ramofafia, Chair of the Forum Fisheries Committee, to Professor Glen Hurry, WCPFC Secretariat. Dated 17 July 2013. In that letter, it was expressed that the lack of balance between the conservation and management measures for purse seine and longline fisheries was a key weakness of CMM 2012-01. Retrieved from <https://www.wcpfc.int/system/files/WCPFC-2013-WGTT-05%20FFA%20members%20comments%20on%20CMM%202012-01.pdf>.

transferring, directly or indirectly, a disproportionate burden of conservation action onto developing States, territories and possessions. As was the case with the FAD closure, some SIDS members with substantial purse seine interests felt that the extension of the FAD closure from three months to four months came at a significant, disproportionate cost to SIDS, with the benefits of bigeye conservation accruing to developed countries with longline fisheries and bigeye sashimi markets.⁷⁴⁶ Indeed, the national waters of some States are considered to have higher dependence on FAD fishing than free school fishing (e.g., Tuvalu).⁷⁴⁷ In this regard, the FAD closure period has been suggested to make access to waters under the national jurisdiction of SIDS less valuable. PNA members have argued that, as a result of the FAD closure, a disproportionate conservation burden was placed upon them, resulting in lost revenue. Therefore, PNA members affirmed that they would only agree to an additional month of FAD closure if compensation was provided. PNA members, which generally have greater purse seine fishing interests as compared to longline fishing, further argued that since the FAD closure was for the purpose of

⁷⁴⁶ WCPFC9 (2012) at 23, paragraph 176. Purse seine fishing on FADs is often more efficient than ‘free school fishing’, which as the term implies does not involve FADs. For example, when purse seine vessels fish on free schools, the schools have to first be located, which involves transiting, searching, and relying on visual cues of tuna aggregations. Many vessels utilize helicopters to spot schools of tuna, with the aircraft conducting searching missions within a 100 nm radius of the ship. Bird radar is also a common technology found on purse seine vessels. When there are large groups of diving seabirds in the open-ocean, it typically means there are bait fish underneath, which also translates to tuna. Feeding tuna schools have a variety of names, including “foamers,” which visually appear as white foam on the surface of the ocean from voracious tuna feeding. On the other hand, “associated purse seine fishing” involves fishing on drifting logs, anchored FADs, and drifting FADs, with the latter being the most utilized. Drifting FADs are typically equipped with satellite beacons allowing near real-time tracking. Since the mid-2000s, there have been advances in beacon technology, such that most satellite beacons tethered to drifting FADs are also equipped with echosounders, allowing vessel captains (or anyone with access to the data) to remotely determine tuna biomass on individual FADs. Echosounder equipped FADs have been labeled as a “game changer” by fishing industry insiders. Quote attributed to Maurice Brownjohn, PNA Commercial Manager. See: Samoglou, E. (2014, 22 December). A sea of possibilities: how tech is transforming tuna fishing. *The Guardian*. Retrieved from: <https://www.theguardian.com/sustainable-business/2014/dec/22/tuna-fishing-tech-pacific-ocean-tech-environment>. Less time searching for fish results in less fuel consumption, which translates to lower operating costs. Purse seine fishing on FADs is estimated to be 70% less expensive than fishing on free schools. Moreover, FAD fishing produces higher catch per unit effort (CPUE) yields as compared to free school fishing, as much as double the catch per set. During the FAD closure, purse seine catches of bigeye were reduced to nearly zero. For further reading on purse seine FAD management, see: Itano, D., Fukofuka, S., & Brogan, D. (2004). *The development, design and recent status of anchored and drifting FADs in the WCPO*. Standing Committee on Tuna and Billfish, Majuro, Republic of the Marshall Islands. Information Paper No. INFFTWG-3.17 TH. -- Davies, T., Mees, C., & Milner-Gulland, E. (2014). The past, present and future use of drifting fish aggregation devices (FADs) in the Indian Ocean. *Marine Policy*, 45, 163-170. -- Fonteneau, A., Chassot, E., & Gaertner, D. (2015). Managing tropical tuna purse seine fisheries through limiting the number of drifting Fish Aggregating Devices in the Atlantic: food for thought. *ICCAT Collective Volume of Scientific Papers*, 71(1), 460-475.

⁷⁴⁷ WCPFC9 (2012) at 22.

conserving bigeye, they would receive little to no benefits from additional bigeye conservation measures (e.g., an additional month of FAD closure).⁷⁴⁸

Similar to past years, the interests were varied among members, and the Commission failed to adopt a multiyear measure at WCPFC9. It worth noting that at WCPFC9, the tropical tuna measure was negotiated in a small working group by heads of delegation members and not within the full plenary. Furthermore, the working group was chaired by Mr. Masanori Miyahara of Japan, and not the Commission's chair, Dr. Charles Karnella. Members also agreed that a working group meet prior to WCPFC10 and endorsed Japan's offer to host the meeting.⁷⁴⁹

An intersessional meeting of the WCPFC Working Group on Tropical Tuna was held in Japan in August of 2013. The objective of the workshop was to advance discussions on a new multiyear tropical tuna measure prior to WCPFC10 (to be held in December the same year). For the workshop, the SPC prepared a paper that identified various longline bigeye catch levels which, when combined with a particular purse seine FAD closure period or FAD set level, demonstrated that bigeye overfishing would be eliminated by 2018.⁷⁵⁰ While the workshop facilitated the exchange of views on how to achieve bigeye conservation, there was no agreement among participants on a clear path forward. Rather, the outcome of the workshop was a letter circulated by the Commission chair, Dr. Charles Karnella, requesting consideration and comments on a joint proposal submitted by PNA members, the Philippines and Japan.⁷⁵¹ The workshop's outcome letter commended workshop participants in working constructively, but clearly the joint proposal from PNA, the Philippines and Japan would face significant opposition from other members in forthcoming negotiations. For example, the proposal included a provision that required payments by non-

⁷⁴⁸ Ibid.

⁷⁴⁹ Ibid at 26.

⁷⁵⁰ SPC. (2013). *Updated "Table 3" Plus draft evaluation. Working Group on Tropical Tunas*. 27-30 August 2013. Tokyo, Japan. WCPFC-2013-WGTT/11.

⁷⁵¹ Karnella, C. (2013). *Outcome of the Tokyo Tropical Tuna Workshop*. 3 September 2013. Circular No. 2013/85. Retrieved from: https://www.wcpfc.int/system/files/WCPFC%20Circular%202013-85%20WGTT%202013%20Outcome_0.pdf

SIDS totaling up to \$15 million per additional month of FAD closure. The payments would go into a fund as transfer payments to SIDS proportional to the average FAD sets in the additional month(s) in each EEZ between 2010 and 2012.⁷⁵² The concept of side payments was new to the Commission and received little support.⁷⁵³

While the issue of disproportionate conservation burden started to simmer within the Commission at WCPFC9, it was not until WCPFC10 that the issue reached boiling point.⁷⁵⁴ Leading up to WCPFC10, FFA and PNA members submitted two papers on the concept of disproportionate conservation burden, which included an evaluation of the proposed tropical tuna measure tabled by PNA members, the Philippines and Japan.⁷⁵⁵ As noted earlier, the crux of the matter for FFA and PNA members with regard to the tropical tuna measure was that the FAD closure provided a disproportionate conservation burden on them. This was because the closure had the effect of reducing their potential resource rents from purse seine fishing while providing them with little to no benefit in terms of bigeye conservation. Indeed, it was generally believed that bigeye conservation benefits as a result of purse seine measures would only accrue to longline bigeye fisheries. The FFA and PNA offered examples of provisions that would help alleviate any disproportionate conservation burden, including: a) a high seas FAD closure; b) reductions in longline bigeye catch limits; c) high seas purse seine limits; d) a high seas longline seasonal closure; and e) cash side payments.⁷⁵⁶ While non-FFA and PNA CCMs acknowledged the efforts of FFA and PNA in clarifying their position on the issue of disproportionate burden, some members were of the opinion that

⁷⁵² Ibid.

⁷⁵³ For further reading on side payments in the context of WCPO fisheries, see: Dan Ovando, D., G. Libecap, L. Thomas, and K. Millage. A bargain for tuna: market-based solutions to bigeye tuna bycatch. Unpublished. Retrieved from https://extranet.sioe.org/uploads/sioe2017/dan_gary_thomas_millage.pdf

⁷⁵⁴ Author's personal reflection from attending WCPFC9 and earlier meetings of the Commission.

⁷⁵⁵ FFA. (2013). *Discussion paper on avoiding disproportionate burden*. Submitted to the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia. WCPFC10-2013-DP01. -- PNA. (2013). *Paper to support PNA and Tokelau proposal for avoiding disproportionate burden in the tropical tuna CMM*. Submitted to the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia. WCPFC10-2013-DP33.

⁷⁵⁶ PNA (2013) at 6-7.

the concept exceeded their authority to comment upon.⁷⁵⁷ Given the need to adopt a new measure, WCPFC10 was setting up to be a contentious forum.⁷⁵⁸

Like the previous year, the negotiations on a new tropical tuna measure at WCPFC10 were held within a small working group that limited participation to a ‘head of delegation plus 1’ format. After some wrangling argument, observers to the commission, which included globally-active, environmental non-governmental organizations (E-NGOs) such as World Wildlife Fund, Greenpeace and Pew Charitable Trusts, were allowed to select one person among them to attend the working group, but he or she would not be allowed to participate in the negotiations.⁷⁵⁹ The E-NGO observers begrudgingly accepted the offer.⁷⁶⁰

Negotiating key conservation and management measures within small working groups allows for only limited participation and is not a transparent way of conducting business.⁷⁶¹ While it is understandable to hold a small working group in order to facilitate the free exchange of views in a less formal setting, on a high-stakes measure such as the tropical tuna measure, it was incredibly frustrating for the other 400 or so people in attendance at the regular session to be excluded from the discussions. Closed-door small working groups are especially taxing on fishing industry participants. Indeed, for these particular participants, there must be a sense that their livelihoods are being secretly brokered by government bureaucrats, the majority of whom have very little operational fishing experience.⁷⁶²

Nonetheless, the tropical tuna working group at WCPFC10 did produce a multi-year measure through to 2017, applicable to purse seine, longline and other fisheries. Even so, the working group’s CMM was rife

⁷⁵⁷ WCPFC. (2013). *Summary Report of the Tenth Regular Session of the WCPFC*. 2-6 December 2013. Cairns, Australia.16.

⁷⁵⁸ Disproportionate conservation burden was the topic *au jour* at WCPFC10. The Summary Report of WCPFC references “disproportionate burden” a total of 26 times.

⁷⁵⁹ WCPFC10 (2013) at 18.

⁷⁶⁰ Author’s perception of the situation as it unfolded at WCPFC10.

⁷⁶¹ Author’s experience of the negotiations held within a small working group at WCPFC10.

⁷⁶² Author’s experience in his capacity as a member of the delegations to commission meetings, and sentiments communicated to the author by fishing industry participants.

with exemptions. The Commission did, however, endorse the working group's proposal, and adopted CMM 2013-01. New provisions applicable to purse seine fisheries operating between 20°N and 20°S included a fifth month of FAD closure for 2015 and 2016, as well as a FAD set limit, or a three-month FAD closure and associated FAD set limit. For 2017, the Commission agreed to a high seas purse seine FAD closure.⁷⁶³ Longline fisheries catching bigeye were provided scheduled reductions through 2017, with such reductions applying to Japan, Taiwan, Korea, China and the United States. Indonesia was provided a longline bigeye catch limit, but without scheduled reductions. Other non-SIDS CCMs, such as the European Commission, Australia, New Zealand and France, which caught less than 2,000 mt, were required to not exceed 2,000 mt of bigeye per year. The flag-based longline bigeye limits apply to both EEZs and the high seas within the Convention Area, and without any spatial delineation, as opposed to provisions applicable to the tropical purse seine fishery.⁷⁶⁴ Similar to CMM 2012-01, SIDS and Participating Territories (PTs) were exempt from longline bigeye limits under CMM 2013-01.⁷⁶⁵

Like its predecessor measure, CMM 2013-01 included reference to Article 8(1), which requires compatibility between conservation and management measures established for the high seas and those adopted for areas under national jurisdiction. CMM 2013-01 also made reference to Article 8(4), which requires the Commission to pay special attention to the high seas in the Convention Area that are surrounded by EEZs.⁷⁶⁶ CMM 2013-01 established conservation measures that applied to the high seas as

⁷⁶³ The high seas FAD closure has been evaluated as equating to an additional month of FAD closure under the assumption that FAD effort does not shift into the EEZs. See: SPC. (2015). *Evaluation of CMM 2014-01 for bigeye tuna*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. WCPFC12-2015-12 rev.1.

⁷⁶⁴ Recall that the purse seine measures in the tropical tuna CMMs from 2008-01 onwards, such as the seasonal FAD closure and effort limits, apply only between 20°N and 20°S. See: CMM 2013-01, Section II, page 5.

⁷⁶⁵ WCPFC. (2013). *Conservation and Management Measure for Bigeye, Yellowfin, and Skipjack Tuna in the Western and Central Pacific Ocean (CMM 2013-01)*. Adopted at the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia. For provisions related to the purse seine FAD closure and limits, see paragraphs 14-18 and Attachment A. For provisions related to longline bigeye catch limits, see paragraphs 40 and 41 and Attachment F.

⁷⁶⁶ CMM 2013-01 at 1.

well as within waters under national jurisdiction (e.g., purse seine effort limits).⁷⁶⁷ A major change from CMM 2012-01 was the Commission's agreement to establish CCM-specific high seas purse seine effort limits for non-SIDS members.⁷⁶⁸ By way of comparison, CMM 2012-01 prevented non-SIDS CCMs from increasing purse seine effort levels on the high seas, but no baseline period was identified and no specific effort limits by CCM were listed in the CMM.⁷⁶⁹

Under CMM 2013-01, the Commission adopted specific, flag-based high seas purse seine effort limits, but only for non-SIDS fleets. As described previously, the high seas limits could be viewed as supporting the application of the Principle because CMM 2013-01 also endorsed purse seine effort limits for EEZ waters of PNA members and other coastal States members.⁷⁷⁰ Based on values reported by the SPC, but not specified in the measure, the combined members EEZ effort limit was set at the 2010 level of 44,065 days. Similarly, the EEZ limit for non-PNA members, based on the 2006-2010 average, was set at 2,826 days. The high seas purse seine limit for non-SIDS was collectively capped at 6,899 days. When combined, purse seine effort in the Convention Area confined to EEZs and the high seas was (tentatively) restricted to 53,790 days (Figure 43).⁷⁷¹

⁷⁶⁷ Like CMM 2012-01, the area of application defined in the measure contains the high seas and all EEZs in the Convention Area, except where otherwise stated. As such, archipelagic waters are not subject to catch or effort limits as a result of CMM 2012-01.

⁷⁶⁸ CMM 2013-01 at 9, paragraph 20.

⁷⁶⁹ SIDS and PTs were exempted from the provision in CMM 2012-01, although not explicitly. The exemption for SIDS and PTs is found in paragraph 7 of the measure, which lists the obligations of SIDS and PTs, with one notable exception: high seas purse seine effort limits. CMM 2012-01, paragraph 7, provides that unless otherwise stated, nothing in the measure shall prejudice the rights and obligations of those small island developing State Members and Participating Territories in the Convention Area seeking to develop their domestic fisheries, except paragraphs 10, 11, 12, 13, 19, 20, 21, 22 and 23 of the measure.

⁷⁷⁰ CMM2 013-01 at 9, paragraphs 22 and 23.

⁷⁷¹ It is important to recognize that higher purse seine fishing effort (i.e., above 53,790 days) could be realized if SIDS fleets fished greater amounts on the high seas, and with effort in the EEZs of PICs being maintained. Furthermore, effort is not capped in archipelagic waters, and thus further purse seine effort could result from increased fishing in archipelagic waters.

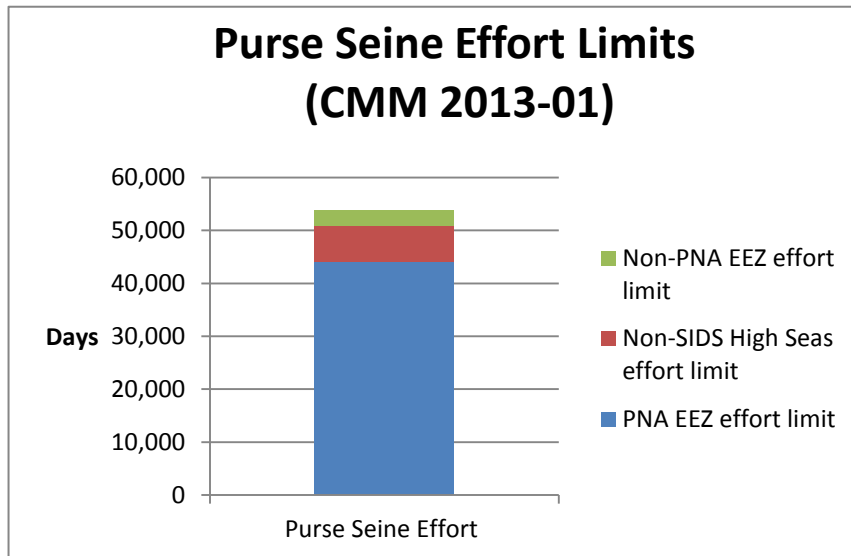


Figure 43: Purse seine effort limits within Convention Area

Source: SPC 2016 (CMM 2015-01 Data Summaries). Figure made by author

The purse seine effort limits established for EEZ waters equate to approximately 87% of the total effort allowed, as compared to 13% for the high seas.⁷⁷² Indeed, these percentages demonstrate that the bulk of the purse seine fishing effort is occurring within waters of national jurisdiction, with only a relatively a small amount of effort agreed for the high seas.⁷⁷³ As indicated earlier, high seas effort limits were one of several management options that PNA countries were seeking to address in the context of their stated disproportionate conservation burden resulting from the FAD closure.⁷⁷⁴

CMM 2013-01 and Disproportionate Conservation Burden

According to CMM 2013-01, the scheduled implementation of the fifth month FAD closure in 2015 (and beyond) was conditional upon arrangements being adopted by the Commission to ensure that the closure did not result in transferring, directly or indirectly, a disproportionate burden of conservation action onto SIDS.⁷⁷⁵ In other words, the agreed fifth month FAD closure could only be implemented if the Commission took additional action to alleviate the disproportionate conservation burden identified by

⁷⁷² SPC (2015) at 4.

⁷⁷³ The percentage of the total effort would increase if one were to include the purse seine effort occurring in archipelagic waters.

⁷⁷⁴ PNA (2013).

⁷⁷⁵ CMM 2013-01 at 7, paragraph 15.

SIDS members. The topic of disproportionate conservation burden played heavily at WCPFC10. The Commission went as far as adopting a FFA-initiated conservation and management measure that required CCMs to conduct a disproportionate burden analysis prior to submitting CMM proposals.⁷⁷⁶ Guiding this evaluation were eight central questions, including “who is required to implement the proposal,” and “what mitigation measures are included in the analysis.” The measure was criticized on the basis that, in order to conduct a proper analysis, the proposing CCM would need to work closely with FFA countries to determine the potential disproportionate burden impact - a difficult task given the nature and timing of developing proposals.⁷⁷⁷ Moreover, given the level of information needed to conduct a rigorous disproportionate analysis, most of the CMM 2013-06 required analyses that have accompanied subsequent conservation and management proposals by non-SIDS members have been cursory at best.⁷⁷⁸

Recognizing that the issue of disproportionate conservation burden was a primary factor in deterring further bigeye conservation measures for purse seine fisheries, there was an interest in 2014 to delve deeper into the issue. Two workshops were held on the issue of disproportionate burden. The first was convened by the Western Pacific Regional Fishery Management Council (WPRFMC), which is based in Honolulu and has jurisdiction over US fisheries operating out of Hawaii, Guam, American Samoa, and the Commonwealth of Northern Mariana Islands.⁷⁷⁹ The WPRFMC workshop was held in September 2014 and attended by FFA staff, representatives of some WCPFC CCMs, economists, academics, as well as other interested participants. The WPRFMC workshop identified that, unlike the concept of

⁷⁷⁶ WCPFC. (2013). *Conservation and management measure on the criteria for the consideration of conservation and management proposals (CMM 2013-06)*. Adopted at the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia.

⁷⁷⁷ Author's personal experience from attending WCPFC10.

⁷⁷⁸ Examples of cursory analyses associated with CMM 2013-06 include: USA. (2014). *Revision to conservation and management measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds*. Submitted to the Eleventh Regular Session of the WCPFC. Apia, Samoa. 1-5 December 2014. WCPFC11-2014-DP01. See also: Japan. (2014). *Draft conservation and management measure on a target reference point for skipjack tuna*. Submitted to the Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DP13.

⁷⁷⁹ The Western Pacific Regional Fishery Management Council is one of eight regional councils established under the US Magnuson-Stevens Fishery Conservation and Management Act. The regional councils have the responsibility and authority to develop fishery management plans and associated regulations, which are then approved and implemented by the US Department of Commerce, National Marine Fisheries Service. See <http://www.wpcouncil.org/> for more information.

proportionality, which is well established as a metric for equity and fairness, the concept of disproportionality is not well defined in international law.⁷⁸⁰ Proportionality involves each country paying a fair share of the costs of meeting a conservation goal; thus, disproportionality can be defined as the deviation from proportionality.⁷⁸¹ In the context of the WCPFC, for example, if the cost to a CCM from the implementation of a management measure exceeds its proportional share of costs in relation to other CCMs, the particular measure would potentially be identified as transferring a disproportionate conservation burden. The WPRFMC workshop further concluded that whether the magnitude of the deviation is sufficiently large to be viewed as an *actual* disproportionate burden is a decision for the Commission.⁷⁸² However, determining one's fair share of a conservation goal is not always easy, and thus the workshop identified various concepts to be considered in this context, such as: a) the 'beneficiary pays' principle, whereby the States that stand to benefit the most from the CMM should pay the highest proportion of the costs involved; b) the 'polluter pays' principle, whereby those States that are responsible for the damage or loss caused to other States should bear the associated costs; and c) a 'means-based' test, which dictates that those States that can afford to pay for the CMM should, in fact, pay.⁷⁸³

The second workshop on the issue of disproportionate conservation burden was held in 2014 and convened by the WCPFC Secretariat a few days prior to WCPFC11.⁷⁸⁴ At this workshop, participants included representatives from CCMs and various fishing industries, as well as WCPFC observers such as the major E-NGOs. The main focus of the workshop was to understand the concept of disproportionate conservation burden and how to avoid it.⁷⁸⁵ The views of FFA members weighed heavily at the workshop, as only these members were claiming a disproportionate burden within the WCPFC. The FFA

⁷⁸⁰ WPRFMC. (2014). *Addressing Disproportionate Burden: A framework for implementation*. Summary report of workshop held 18-20 September 2014. Honolulu, United States. 1.

⁷⁸¹ *Ibid* at 2.

⁷⁸² *Ibid*.

⁷⁸³ *Ibid* at 3.

⁷⁸⁴ For information on the 2014 workshop, including agenda and workshop papers, see:

<https://www.wcpfc.int/meetings/implementation-cmm-2013-06-and-disproportionate-burden-workshop>

⁷⁸⁵ WCPFC. (2014). *Summary report on the implementation of CMM 2013-06 and disproportionate burden workshop*. 27 September 2014. Apia, Samoa. 59.

affirmed that there are two types of disproportionate burden: a) administrative burdens, which stem from the cost of implementing a measure; and b) outcome burdens, whereby a CMM results in direct or indirect losses to a small island developing State or group of members.⁷⁸⁶ The main outcomes of the WCPFC workshop included: a) general agreement for the continuation of prior analyses for proposals under CMM 2013-06; and b) a recognition that formal, independent assessments of disproportionate burden (as recommended by the WPFMC workshop) represent one analytical tool, but that such a high degree of formality may not be required in every circumstance.⁷⁸⁷

Linkages between the concept of disproportionate conservation burden and the Principle do exist. For example, FFA members have identified that a reduction in high seas effort or catch is one means to alleviate a disproportionate burden.⁷⁸⁸ Noted examples include the previously proposed high seas longline closure to be equivalent to the purse seine FAD closure, the existing high seas purse seine effort limits, and 2017 high seas FAD closure.⁷⁸⁹ The proposed seasonal high seas longline closure was to apply to longline fleets that did not offload at SIDS ports, which arguably, could serve a dual purpose with respect to compatibility and addressing disproportionate burden. First, it was suggested that the high seas longline fishery is poorly monitored and responsible for significant catches of bigeye. Therefore, further restriction was necessary for bigeye conservation and for applying compatible measures with those that occur within EEZs.⁷⁹⁰ Second, the proposal targeted longline fleets that operate mostly on the high seas, including high seas transshipments which do not land their catch in the ports of FFA members. By restricting effort on the high seas, fishing effort would be either removed from the fishery (serving a conservation objective),

⁷⁸⁶ Ibid at 7.

⁷⁸⁷ Ibid at 2.

⁷⁸⁸ FFA. (2013). *Discussion paper on avoiding disproportionate burden*. Submitted to the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia. WCPFC10-2013-DP01.

⁷⁸⁹ Ibid.

⁷⁹⁰ Under CMM 2007-01, all longline fleets fishing on the high seas were required to have at least 5% observer coverage by June 2012. However, even by 2016 several DWFN fleets operating on the high seas were yet to achieve this coverage level. Furthermore, it has been estimated that over 40% of the longline bigeye catch is transhipped on the high seas, and further, that this figure is likely to be an underestimate. See WCPFC. (2015). *Annual report on transshipment activities with an emphasis on high seas activities*. Eleventh Regular Session of the Technical and Compliance Committee of the WCPFC. 23-29 September 2015. Pohnpei, FSM. WCPFC-TCC11-2015-RP03.

or displaced to the EEZs of FFA members. The latter would result in economic benefits from access fees, port landing charges and customs duties, thus helping to mitigate disproportionate conservation burden effects resulting from the seasonal FAD closure. For PICs that rely heavily on foreign fishing access fees to support national budgets, high seas restrictions make fishing within their national waters more attractive to foreign fleets. In this regard, PICs have an economic interest in the establishment of high seas restrictions for DWFN fleets, and it is in this way that the Principle and the concept of disproportionate burden can be used to support further limits on the high seas, leading to higher demand for fishing in EEZ waters and increased revenue in the form of access fees.⁷⁹¹

CMM 2014-01

While there was a greater understanding of the issue of disproportionate burden as a result of the two workshops in 2014, there remained a divergence of opinion going into WCPFC11 over how to properly address the issue. There was also a lack of agreement on whether the existing tropical tuna measure needed to be strengthened, as the multiyear measure had only been adopted the previous year. FFA members, for example, believed there was a need to modify the purse seine provisions, including the FAD and high seas effort limits, to reduce effort creep, ensure reductions in longline bigeye catch and effort, and to address the issue of disproportionate burden.⁷⁹² Japan, recognizing the decline in bigeye and skipjack stock conditions, expressed concern over the number of FAD sets recorded in 2013, which was significantly higher than the number recorded in 2010.⁷⁹³ The United States and the European Union, on the other hand, noted that the existing measure was only recently adopted and thus it was too early to gauge its effectiveness. For these reasons, the United States and the European Union maintained that

⁷⁹¹ FFA. (Undated). *A regional roadmap for sustainable Pacific fisheries*. Honiara, Solomon Islands. Of the six strategies listed in the FFA roadmap, Strategy #3 is to progressively restrict fishing on the high seas by foreign fleets through the imposition of access licensing controls and by working with the WCPFC.

⁷⁹² FFA. (2014). *Strengthening of conservation management measure CMM 2013-01 for bigeye, yellowfin, and skipjack tuna*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DP08.

⁷⁹³ WCPFC. (2014). *Summary report of the Eleventh Regular Session of the WCPFC*. 1-5 December 2014. Apia, Samoa.35.

reopening the entire suite of measures was not warranted. Even so, they did concede that there was value in examining the disproportionate burden issue, as well as capacity management, the elimination of exemptions, and other small improvements.⁷⁹⁴

The SPC presented information on 2013 fisheries performance, reporting that: 1) purse seine effort in 2013 was the highest on record; 2) FAD sets were at their all-time highest levels; 3) purse seine bigeye catch was the highest on record; 4) FAD sets during the FAD closure occurred in archipelagic waters and the WCPFC/IATTC overlap area; and 5) longline bigeye catches dropped in 2005 and have since remained consistent with 2007 levels, but with lower CPUE and higher effort in the core tropical longline area.⁷⁹⁵ Given this information, there was concern over the potential further degradation of bigeye stock health. It should be noted, however, that CMM 2013-01 was a multiyear measure that included more restrictive FAD closures, effort limits, and longline bigeye catch limits. If these provisions were applied through 2017 and beyond, the SPC's analysis indicated that: a) the risk of breaching the Commission-adopted limit reference point (LRP) (set at 20% of the recent average spawning biomass in relation to unfished biomass) would only be 4%; b) spawning biomass depletion would increase from 24% to 30% of the recent average unfished level; and c) median fishing mortality would be reduced to approximately MSY level (and thus the stock would no longer be experiencing overfishing).⁷⁹⁶

Notwithstanding the somewhat optimistic outlook of the SPC evaluation, PNA members introduced their proposal to replace CMM 2013-01, which they viewed as part of a package of improvements to the existing measure.⁷⁹⁷ The PNA proposal focused on DWFN high seas longline fleets, which they cited as

⁷⁹⁴ Ibid at 35.

⁷⁹⁵ Ibid at 37.

⁷⁹⁶ Ibid at 37. Such optimistic outcomes were based on the use of recent bigeye recruitment levels. However, if the long-term average had been used in the projections, overfishing would continue and the stock would fall below the LRP (and thus be considered overfished). See: SPC. (2014). *Evaluation of CMM 2013-01*. Eighth Regular Session of the Scientific Committee of the WCPFC. 5-13 August 2014. Pohnpei, FSM. WCPFC11-2014-15.

⁷⁹⁷ PNA. (2014). *Proposal for the conservation and management of bigeye, yellowfin, and skipjack in the Western and Central Pacific Ocean*. Submitted to the Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DP11.

being ineffectively managed and monitored, and for whom bigeye conservation ultimately benefits.⁷⁹⁸

The proposed measure also attempted, *inter alia*, to specify EEZ-based purse seine effort limits, impose an Olympic-style high seas limit of 531 days per quarter, prohibit the transshipment of frozen, longline caught bigeye on the high seas, and require the submission of operational data.⁷⁹⁹ Note that at the time, the CCMs not providing operational data were Japan, China, Chinese Taipei, Korea, the Philippines and Indonesia.⁸⁰⁰

Like in years past, further negotiations on the tropical tuna measure at WCPFC11 were held out of the public domain and within a small working group. After reporting back to the plenary on the small working group's progress (or lack thereof), the chair advised the group to focus on addressing disproportionate burden, capacity issues and yellowfin management.⁸⁰¹ The attempt to narrow the focus of the working group was futile, as consensus on any substantive modifications to CMM 2013-01 was not achieved. However, in a surprising turn of events (at least according to some delegations), Japan introduced a proposal that it had developed with Korea, China, Chinese Taipei, the Philippines, Indonesia and FFA members. Under this proposal, CCMs which were not providing operational level data would be required to do so within three years.⁸⁰²

The submission of operational data is important when considering compatible measures as it provides fine-scale resolution of the location and composition of catches and fishing effort, i.e., within EEZs or on the high seas, retained and discarded species, as well as level of fishing effort. The EU expressed concern over the proposal, noting that the provision of operational data by CCMs is already required (unless

⁷⁹⁸ Ibid at 1.

⁷⁹⁹ Ibid. Other proposed provisions that would have modified CMM 2013-01 included a prohibition on tender vessel operations, including the setting of FADs during FAD closure, individual purse seine vessel FAD set deployment limits (100 per vessel), and a prohibition on pre-dawn sets by purse seine vessels.

⁸⁰⁰ Williams, P.G. (2013). *Scientific data available to the Western and Central Pacific Fisheries Commission*. Ninth Regular Session of the WCPFC Scientific Committee. 6-15 August 2013. Pohnpei, FSM.

⁸⁰¹ WCPFC (2014) at 39.

⁸⁰² Ibid at 44. Note that the operational data to be submitted would be for fishing within the Convention Area that is covered under the tropical tuna measure only (e.g., purse fishing within 20°N and 20°S, longline fishing for yellowfin and bigeye).

contrary to domestic law), and that the three year grace period basically runs through the end of the measure, making the benefits of the amendment questionable.⁸⁰³ In response, Japan affirmed that the data proposal was being offered in good faith for the purposes of stock management and to accommodate SIDS in support of Article 30 of the Honolulu Convention.⁸⁰⁴ Japan noted, however, that only future operational data would need to be submitted under the proposal, not historical data, even though the provision of historical operational data is required under the Data Provision rules.⁸⁰⁵

The Commission adopted the operational data proposal with only minor changes (these changes concerned some dates appearing in the measure). Although not a significant change to the text of the measure, the Commission also agreed to rollover the high seas purse seine effort limit – as established in CMM 2013-01 – for 2014 only (with the effect that the effort limit would also apply in 2015). The Commission adopted these changes and agreed on CMM 2014-01, maintaining 2017 as the expiration date of the measure.⁸⁰⁶

In examining the records of WCPFC11 and CCM proposals for that meeting, the issue of whether compatibility was being achieved with respect to the management of tropical tunas within the high seas and waters under national jurisdiction was not a major topic of discussion. However, as indicated in the summary report of WCPFC11, one CCM noted that the purse seine FAD effort during the FAD closure period in archipelagic waters was a problem.⁸⁰⁷ The apparent lack of management consistency between archipelagic waters and other areas of the Convention Area is a topic ripe for further consideration in terms of how the Principle is being applied. Even so in this instance the concerned CCM did not engage the Commission in such a debate.

⁸⁰³ Ibid at 45.

⁸⁰⁴ Ibid.

⁸⁰⁵ Ibid.

⁸⁰⁶ WCPFC. (2014). *Conservation and management measure for bigeye, yellowfin, and skipjack tuna in the WCPO (CMM 2014-01)*. Eleventh Regular Session of the WCPFC. 1-5 December 2015. Apia, Samoa.

⁸⁰⁷ Ibid at 38.

The continuation of high seas effort limits could also be viewed through a compatibility lens. For example, it is believed purse seine bigeye catch per unit effort (CPUE) increases from west to east in the WCPO.⁸⁰⁸ Due to the geographic composition of WCPO, a greater proportion of the fishing grounds in the central Pacific (north of the equator and east of 175° E) are comprised of the high seas, as opposed to the mosaic of EEZs in the central western Pacific.⁸⁰⁹ For this reason, maintaining high seas effort limits could be viewed as serving bigeye conservation objectives, as opposed to having no such effort limits in place. In other words, greater impacts could occur to bigeye without high seas effort limits. This is because as PNA vessel day prices increase, there is a greater incentive to fish on the high seas and thus avoid the costs associated with fishing in the waters of PNA members (which have increased rapidly since implementation of the VDS). Indeed, it is in this way that, high seas effort limits help promote the conservation and management of tuna stocks (e.g., bigeye) in their entirety.

Maintaining high seas effort limits for non-SIDS also ensures that the effort of these vessels is not displaced to the high seas. Such displacement would certainly impact the government revenue stream of SIDS in a negative way, with a high proportion of such revenue deriving from access fees from purse seine fleets in their waters. In this regard, high seas purse seine effort limits also have linkages to reducing the disproportionate conservation burden that is claimed by SIDS as a result of the tropical tuna measure FAD closure. It is also important to recognize that even though SIDS fleets were exempt from the high seas effort limits, the PNA proposal to establish an Olympic-style, quarterly total high seas limit, suggest that PNA governments would rather have their own flagged vessels fishing in PNA waters than the high seas.⁸¹⁰ A rationale for this position could be that EEZ effort is more tightly controlled, and hence more

⁸⁰⁸ Kawamoto, T. & Nakamae, A. (2017). Catch trend of bigeye tuna *Thunnus obesus* by purse seine using fish aggregating devices, by flag states and area of operation in tropical regions of the Western and Central Pacific Ocean. *Fisheries Science*, 83(2), 161-170.

⁸⁰⁹ See Figure 24.

⁸¹⁰ Olympic-style total catch limits often lead to a 'race to the fish' scenario and are generally not first-best options in managing fisheries.

easily restricted to ensure target effort levels are achieved.⁸¹¹ Another rationale is that PNA flagged vessels are still required to pay for VDS days – albeit at typically discounted rates – and associated revenue is important for some PNA members.⁸¹² Regardless of the rationale, high seas purse seine effort controls can be viewed as important in achieving compatible purse seine measures in the WCPO, taking into account existing effort limits established for waters under national jurisdiction. Surprisingly, there is little in the records of the meetings and submitted proposals that would allow for the drawing of such clear linkages.

CMM 2015-01

Although WCPFC11 did not adopt any modifications to CMM 2013-01 that would have changed the status quo with respect to purse seine and longline fisheries, there was again some interest in revisiting the measure at WCPFC12 held in 2015.⁸¹³ Notwithstanding the apparent interest held by several CCMs to revisit the measure, PNA members (including Tokelau) were, like the previous year, the only CCMs to submit a draft proposal to modify the tropical tuna measure.⁸¹⁴ The PNA proposal, as acknowledged in the submission, was largely a redraft of the major provisions tabled by PNA members at WCPFC11, which together formed a package of measures including a prohibition on high seas longline

⁸¹¹ In 2012, the issue of WCPFC-agreed target reference points for key tuna stocks under a harvest strategy management framework was starting to receive more discussion within the Commission. Indeed, this issue formed the focus of the 2012 Management Objectives Workshop. Since 2012, four Management Strategy Workshops have been held prior to the annual Regular Sessions of the Commission. For more information, see: <https://www.wcpfc.int/harvest-strategy>.

⁸¹² Marko Kamber. WCPO purse seine vessel owner. Personal Communication. September 2015.

⁸¹³ The author, on behalf of the Western Pacific Fishery Management Council, coordinated two internationally attended WCPO bigeye management workshops in 2015 - the first being convened in Honolulu, and the second in Majuro. One of the major themes of the workshops was the evaluation of purse seine measures that would be more effective at mitigating purse seine bigeye catches than the seasonal FAD closures. The workshops served to advance a more robust understanding of potential purse seine management options, including technological remedies (e.g., instrumented FADs) to reduce incidental purse seine bigeye catch, to market-based solutions including a bigeye quota for individual vessels. However, no ‘silver bullet’ was ultimately identified. Leading up to WCPFC12, some CCMs remained concerned with the potential lack of effectiveness of the tropical tuna measure, including that no resolution had been reached on the SIDS disproportionate burden issue and the fifth month FAD closure. See: MIMRA and WPRFMC. (2015). *WCPO Purse Seine BET Management Workshop II (Majuro) report for TCC11*. Eleventh Regular Session of the Technical and Compliance Committee Meeting of the WCPFC. 23-29 September 2015. Pohnpei, FSM. WCPFC-TCC-2015-IP11.

⁸¹⁴ PNA and Tokelau. (2015). *Proposed revisions to the tropical tuna measure (CMM 2014-01)*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. WCPFC12-2015-DP12.

transshipment, a high seas longline seasonal closure equivalent to a FAD closure, a high seas purse seine total effort limit, effecting minor changes to purse seine fishery provisions, and a reconsideration of issues related to fishing capacity.⁸¹⁵ The PNA proposal highlighted that the existing measure, even with high seas effort limits having been imposed, had led to a 30% increase in purse seine bigeye catches on the high seas.⁸¹⁶

Like in years past, negotiations over the tropical tuna measure at WCPFC12 were confined to a small working group that involved a ‘Head of Delegation plus 1’ format. Negotiations deteriorated rather quickly, with Asian CCMs refusing to accept a high seas longline fisheries seasonal closure and transshipment ban. Moreover, as the PNA proposal was a ‘package deal’, the minor purse seine provisions were similarly not accepted by PNA members.⁸¹⁷ While revisions to the tropical tuna measure floundered, an agreement on an interim target reference point of 50% of the unfished biomass for skipjack tuna emerged on the final day of the meeting.⁸¹⁸

The establishment of target reference points is an important component of the Commission’s Harvest Strategy, which is discussed in more detail in the following chapter.⁸¹⁹ Given the mix of EEZ-based effort limits and high seas effort limits, whereby approximately 80% of purse seine fishing effort occurs within

⁸¹⁵ Ibid at 1.

⁸¹⁶ Ibid. The draft CMM, like the previous year’s proposal, sought to cap high seas effort limits at 531 days per quarter. However, the submission lacked any analysis on how an Olympic-style, quarterly total effort limit would improve tropical tuna conservation. At WCPFC13, PNA members asserted that their longline and purse seine measures formed part of a ‘package deal’, not an ‘option buffet’ where measures could be mixed and matched. The PNA proposal lacked scientific analysis and Japan asked how PNA members viewed the package of measures in the context of comparing longline provisions to purses seine provisions - e.g., longline high seas closure vs ban on pre-dawn purse seine sets. The PNA were not to able answer Japan’s question by comparing the effects of the various provisions.

⁸¹⁷ Author’s observations and experience from attending WCPFC12.

⁸¹⁸ WCPFC. (2015). *Conservation and management measure on a target reference point for WCPO skipjack tuna (CMM 2015-06)*. Twelfth Regular Session of the WCPFC. 3-8 August 2015.

⁸¹⁹ Target reference points, and harvest strategies more generally, represent components of third party eco-labeling standards, which can lead to price premiums being paid for eco-certified fish in some markets. In 2011, the PNA achieved Marine Stewardship Certification (MSC) for its branded canned label, *Pacifical*, which is sourced from FAD-free caught yellowfin and skipjack. In addition to their commercial interests deriving from their MSC certified canned tuna brand, PNA members have economic interests associated with a skipjack TRP and revenue generated from fishing access agreements. This is because in order to achieve the skipjack TRP, purse seine fishing effort needs to be capped at current (2012) levels.

the EEZs of PNA countries, the skipjack Target Referent Point (TRP) ensures that existing effort levels are commensurate with current effort levels or vessel days in PNA waters. Moreover, the Principle and Article 8 of the Convention could be invoked by PNA members to maintain the current mix of EEZ and high seas effort limits in order to maintain the TRP. In this regard, the adopted skipjack TRP can be viewed as promoting conservation as it is precautionary relative to other potential target references points closer to those commensurate with MSY. Additionally, the skipjack TRP can be viewed as important in promoting compatibility with the existing mix of effort occurring within national waters and on the high seas.

6.2.1 Findings on Tropical Tunas

The Commission has a record of supporting the Principle as a general objective across successive tropical tuna CCMs. As early as 2005, for example, the Commission adopted a CMM that instructed members to implement compatible measures in relation to limiting purse seine effort on the high seas and in EEZs to 2004 levels. The Principle was again referenced in CMM 2008-01 and maintained as an objective in subsequent measures such as CMM 2013-01 through 2017.

With respect to existing measures in place for national waters and Article 8(b)(i-ii), the Principle has mostly been applied to the establishment of high seas purse seine fishing effort limits for waters under the national jurisdiction of PNA. For example, when fishing effort increased within the waters of PNA members to record levels in 2010, high seas effort limits were established and subsequently ratcheted down over subsequent years. The adopted skipjack TRP also indirectly serves to promote the Principle, as it serves to maintain current levels of purse seine effort, which today, is heavily skewed towards waters under national jurisdiction (e.g., 93.5 % in waters under national jurisdiction vs 6.5% in international waters in 2014).

Also, with regard to Article 8(2)(b), one of primary management measures applicable to the purse seine fishery is the seasonal FAD closure, which was first instituted by the PNA in 2008 for their national waters. The Commission followed suit and adopted a seasonal FAD closure for the high seas, but non-PNA members were to establish compatible measures in their national waters. The Commission later revised the measure, such that the seasonal FAD closure is applicable to EEZ waters of non-PNA members as well.

With respect to Article 8(2)(a), the biological unity of the stocks and associated fisheries have been taken into account in the tropical tuna measure, with the relevant measures having been applied throughout the Convention area. However, territorial and archipelagic waters are excluded from Commission management, and while the catch of skipjack, yellowfin and bigeye taken in archipelagic waters is small compared to the total catch for these stocks, it is not insignificant and requires monitoring. The tropical tuna measures have explicitly encouraged coastal States to ensure that the effectiveness of these measures is not undermined by a transfer of effort into archipelagic waters and territorial seas, and that action be taken to reduce fishing mortality on juvenile bigeye and yellowfin tuna in archipelagic waters and territorial seas. The measure has spatially delineated purse seine management to 20°N and 20° S, which covers most of the tropical tuna purse seine effort, but not all (e.g., Japan and New Zealand have national waters outside of 20°N and 20°S). Longline fisheries for bigeye have been restricted with catch limits that apply in EEZs and on the high seas. Other fisheries such as troll, handline, as well as pole and line, have been subject to effort limits, but comprehensive information on these fisheries is generally lacking.

Concerning the development of compatible measures and linkages to respective dependence on CCM fisheries (Article 8(2)(d)), there has not been detailed consideration of this issue by the Commission. Nor do the rules governing data provision require the furnishing of economic or other information (e.g., employment, food security, etc.) that would help illustrate respective dependence. The issue of disproportionate conservation burden, however, has garnered significant discussion within the

Commission, such that some SIDS members have detailed their dependence with respect to selling fishing access rights within their national waters to purse seine vessels in association with FADs. Moreover, the tropical tuna measures have been replete with exemptions for both SIDS and developed members, which could be viewed as having linkages to ‘respective dependence’ considerations. Taken as a whole, however, the wide range of exemptions within the measures could also be viewed as weakening the effectiveness of the measures, including those relating to compatibility between EEZs and the high seas.

Regarding the consideration of fully enclosed high seas areas (Article 8(4)), the Commission did restrict purse seine fishing between 2009-2011 in the two Western High Seas Pockets. The Commission subsequently lifted that restriction for the Philippines in 2012, and for all members in 2014. The PNA, however, has continued to restrict fishing in the two High Seas Pockets as a condition of access to their national waters by foreign vessels. Moreover, high seas purse seine effort limits in CMM 2013-01 are so low for many non-SIDS members that fishing in these areas (and subject to the stated limits) are likely of minimal concern. The only exception in this regard is the Philippines, which has been provided fishing access to High Seas Pocket 1 (but not 2) commensurate with average historic levels.

The primary driver for the WCPFC’s tropical tuna measures was to address bigeye stock status, which was assessed as having been experiencing overfishing since the early 2000s. The 2017 bigeye stock assessment revealed that bigeye is no longer overfished or experiencing overfishing. However, it is unknown if recent increases in catch rates are due to effective management measures that have reduced fishing mortality or due to environmental factors. Yellowfin is no longer experiencing overfishing, but certainly is exploited at relatively high levels. Skipjack is also considered to be in a healthy condition, with biomass levels well above those associated with the LRP. The objective of the skipjack TRP is to hold skipjack spawning biomass and fishing effort at current levels.

6.2.2 Compatibility Rating

Table 8: Compatibility assessment for tropical tunas

CMM on Tropical Tunas			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	Yes, Article 8 has been referenced in every tropical tuna measure since 2005 (with the exception CMM 2011-01, which was a temporary extension of CMM 2008-01).	1
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	Yes, but principally for PNA management measures associated with the VDS. Purse seine fishing is responsible for nearly 80% of the total catch, so effort limits are not an insignificant issue. Prior high seas measures are not referenced.	0.75
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	For the most part, the tropical CMMs have taken into account the biological unity of the stock as they apply in EEZ waters and on the high seas. Archipelagic waters and territorial seas remain outside of Commission CMMs, but catches of skipjack, yellowfin and bigeye in these waters is not insignificant. The amount of catch taken in archipelagic waters and territorial seas are believed to around 25% of the total catch of skipjack, yellowfin and bigeye.	0.75
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	Explicit consideration of the individual respective dependence on fisheries is not found in the CMMs or in the records of negotiations on tropical tuna measures. However, deliberations on the issue of disproportionate conservation burden have revealed the importance of FAD closures to some SIDS members, which could point towards respective dependence considerations. The measures are also replete with exemptions which could be viewed as reducing the impacts on some members which otherwise would be disproportionately burdened due to their respective dependence on the fishery; however, specific information is largely missing with regard to economic and or other factors such as food security and employment.	0.25
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	The Commission restricted purse seine fishing between 2009-2011 in the two Western High Seas Pockets. The Commission subsequently lifted that restriction for the Philippines in 2012, and for all	0.50

		members in 2014. The PNA, however, has continued to restrict fishing in the two High Seas Pockets as a condition of access to their national waters by foreign vessels.	
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	None of the three tropical tuna stocks are overfished or experiencing overfishing as of 2017. However, bigeye was considered to be experiencing overfishing since the early 2000s.	1
			Total Score (4.25/6) 71%

6.3 South Pacific Albacore

South Pacific albacore is targeted by surface fisheries (e.g., troll) as juveniles in temperate latitudes, and caught as adults with longline gear (generally at depths between 100-300 meters) in the sub-tropical and tropical waters of the South Pacific. Indeed, it is the principle target species for many domestic longline fisheries of PICs, and targeted on the high seas and in the EEZs of PICs by vessels flagged to DWFNs.

The development of domestic longline fisheries of PICs occurred in the early 2000s, resulting in increased catches that remained stable until approximately 2008, when a rapid expansion of catches occurred. The recent expansion is mostly attributable to new, heavily subsidized Chinese longline vessels which have entered the fishery.⁸²⁰ Due to the importance of the fishery to domestic vessels flagged to some PICs and Territories (e.g., Tonga, Samoa, the Solomon Islands, Fiji, the Cook Islands and American Samoa), as well as increased catches from the high seas in recent years, management of the fishery by the Commission is contentious.

The Commission adopted CMM 2005-02 for South Pacific albacore in 2005.⁸²¹ At the time, the stock was not considered to be overfished or experiencing overfishing; however, there were concerns that any increased fishing effort would only provide modest increases in yields, whereas CPUE would be reduced and local depletion in some areas would occur.⁸²² The controlling provision of CMM 2005-02 was the CCM obligation to: a) prevent any increase in the number of their vessels fishing for South Pacific

⁸²⁰ During the mid-2000s, the number Chinese longline vessels increased rapidly. The Chinese government provided subsidies, which continue today, for vessel construction, fuel and labor. -- Ilakini J. and R Imo. (2014). *Fisheries subsidies and incentives provided by the Peoples Republic of China to its distant water fishing industry*. Prepared for the Forum Fisheries Agency. Honiara, Solomon Islands. -- Hongzhou Z. (2015). *China's Fishing Industry: Current Status, Government Policies, and Future Prospects*. China as a "Maritime Power" Conference. July 28-29 2015. Arlington, Virginia.

⁸²¹ WCPFC. (2005). *Conservation and Management Measure for South Pacific Albacore (CMM 2005-02)*. Adopted at the Second Regular Session of the WCPFC. 12-16 December 2005. 1.

⁸²² WCPFC. (2005). *Report of the First Regular Session of the Scientific Committee of the WCPFC*. 8-10 August 2005. Noumea, New Caledonia. 179.

albacore in the Convention Area south of 20°S; and b) not exceed 2005 fishing effort levels or historical levels between 2000 and 2004.⁸²³

Catches of South Pacific albacore are regularly reported for areas north of 20°S; thus, CMM 2005-02 did not cover the entire range of the stock. One reason for limiting the measure to 20°S was that most of the Convention Area north of 20° S is comprised of the mosaic of EEZs belonging to PICs. The restriction on the number of CCM vessels as mandated by the measure could be interpreted as supporting the Principle, as theoretically this should have halted any expansion of effort and catch in the high seas.

In 2010, some members expressed concern over the lack of compliance with the measure, and also that South Pacific albacore catches were not being reported in a comprehensive manner.⁸²⁴ In that year, the Commission adopted CMM 2010-5, with the only change from CMM 2005-2 being a new provision that required CCMs to report the catch levels of their fishing vessels that target South Pacific albacore, as well as the number of vessels that catch South Pacific albacore as bycatch.⁸²⁵

The events that transpired should serve as a lesson to the Commission with regard to establishing conservation and management measures that do not cover the range of the stock. Not only was lack of compliance with reporting vessel limits an issue, but a few years after the adoption of CMM 2010-05, the

⁸²³ CMM 2005-02 at 1, paragraph 1.

⁸²⁴ WCPFC. (2010). *Summary Report of the Seventh Regular Session of the WCPFC*. 6-10 December 2010. Honolulu, USA. 49.

⁸²⁵ WCPFC. (2010). *Conservation and Management Measure for South Pacific Albacore (CMM 2010-05)*. Adopted at the Seventh Regular Session of the WCPFC. 6-10 December 2009. Honolulu, USA.

catch of South Pacific albacore increased by approximately 30%.⁸²⁶ Moreover, the increase was not geographically specific, taking place both in the high seas south of 20° S, and also in the EEZs of PICs, north of 20° S.⁸²⁷

The increase in catch of South Pacific albacore across the range of the stock led to reductions in longline catch rates for domestic longline fleets.⁸²⁸ In addition, at WCPFC8 FFA members tabled a CMM proposal that would have limited the catch (for all fishing gears) of South Pacific albacore in the high seas to 2005 or 2000-2004 levels.⁸²⁹ Importantly, the FFA proposal would have provided an exemption to SIDs and PTs from the high seas catch limits.⁸³⁰ It is also noteworthy that the FFA proposal referenced the need to address economic impacts on domestic fleets due to falling catch rates - impacts which would be exacerbated if catches increased to MSY levels.⁸³¹ In this regard, the FFA was signaling that MSY should not be the target for this stock, because such a target would mean that the domestic fisheries of FFA member countries would be negatively impacted from reduced CPUE levels. Like CMM 2010-05, the FFA proposal also failed to specifically identify Article 8 or the Principle, which is a glaring omission.⁸³²

⁸²⁶ At the Fourth Regular Session of the Commission, the Secretariat expressed to the Commission that the measure did not require the provision of data on fishing effort for South Pacific albacore, and further, that a clear estimation on targeted catch in the area south of 20° degrees S was lacking. Furthermore, it became apparent that CCMs were not complying with the measure and notifying the Commission of their vessel limits. See: WCPFC. (2008). *Review of CCM's Implementation of, and Compliance with, Conservation and Management Measures*. Fifth Regular Session of the WCPFC. 8-12 December 2008. Busan, Korea. WCPFC5-2008/18. The provision of aggregate data only by the Asian distant water fleets, as opposed to operational data, made it almost impossible to determine the annual number of vessels authorized to fish for albacore south of 20° S. See also: SPC. (2014). *Trends in the South Pacific Albacore Longline and Troll Fisheries*. Tenth Regular Session of the Technical and Compliance Committee of the WCPFC. 25-30 September 2014. Pohnpei, FSM. WCPFC-TCC10-2014-IPO9. Catches of South Pacific Albacore in the Convention Area were approximately 55,000 mt in 2008, whereas in 2009, catches increased to almost 72,000 mt.

⁸²⁷ WCPFC. (2012). *South Pacific Albacore Fishery*. Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC8-2011-IP/04Rev1. 3.

⁸²⁸ Skirten, M., & Reid, C. (2017). Analysis and projections of economic conditions in WCPO fisheries. Thirteenth Regular Session of the Scientific Committee of the WCPFC. 9-17 August 2017. Rarotonga, Cook Islands. WCPFC-SC13-2017/ST-WP-08. 10.

⁸²⁹ FFA. (2011). *FFA members' draft proposal for amendments to the CMM for South Pacific albacore*. Submitted to the Eight Regular Session of the WCPFC. 26-30 March 2012. WCPFC8-2011-DP/03. 3.

⁸³⁰ Ibid at 1, paragraph 2.

⁸³¹ Ibid.

⁸³² FFA. (2011). *FFA members draft amendments to the CMM for South Pacific albacore*. Submitted to the Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. WCPFC8-2011-DP/03.

CCMs opposed to the FFA proposal questioned the relationship between the high seas limits and the status of the stock, which at the time was not considered overfished or to be experiencing overfishing.⁸³³ Other CCMs questioned the need for the proposal to expand the limits to all gears (e.g., troll), the rationale for the baseline periods selected, and the effectiveness of imposing limits for the high seas only.⁸³⁴

The FFA proposal failed at WCPFC8, but the Commission did agree that South Pacific albacore was a priority issue for WCPFC9.⁸³⁵ The SPC conducted a stock assessment for South Pacific albacore in 2012, finding that the stock was not overfished or experiencing overfishing.⁸³⁶ In fact, the 2012 assessment provided similar, but more optimistic results with regard to stock health than the previous assessment in 2009.⁸³⁷ The 2012 assessment did, however, identify that the exploitable biomass for longline fisheries (which target adult sized fish) could be as low as 25% to 35% of unfished levels, suggesting the sub-adult biomass was bolstering the stock results.⁸³⁸ It was further predicted that catch rates for longline vessels would decline by 10-15% in the short term if catches of South Pacific albacore remained at then current levels.⁸³⁹

The WCPFC SC recommended that, given the recent expansion of the fishery and recent declines in the exploitable biomass due to longline fisheries, longline fishing mortality be reduced to support

⁸³³ WCPFC. (2012). *Summary Report of the Eight Regular Session of the WCPFC*. 26-30 March 2012. Guam, USA.48.

⁸³⁴ Ibid. Approximately 95% of the catch of South Pacific albacore is caught with longline gear, with the remaining 5% caught by troll fisheries. Approximately 40% of the South Pacific albacore catch is taken on the high seas, with a range of 29-48% representing high seas catch between 2003 and 2013. -- SPC. (2014). *Trends in the South Pacific Albacore Longline and Troll Fisheries*. Tenth Regular Session of the Technical and Compliance Committee of the WCPFC. 25-30 September 2014. Pohnpei, FSM. WCPFC-TCC10-2014-IPO9. 5.

⁸³⁵ FFA members also expressed frustration at WCPFC8 that little time was spent focusing on South Pacific albacore, and that their proposal was not considered until very late in the meeting. WCPFC8 (2012) at 48.

⁸³⁶ Hoyle, S., Hampton, J., & Davies, N. (2012). *Stock Assessment of Albacore Tuna in the South Pacific Ocean*. Eighth Regular Session of the Scientific Committee of the WCPFC. 7-15 August 2012. Busan, Korea. WCPFC-SC8-2012/SA-WP-Rev1. See also: WCPFC. (2012). *Summary Report of the Eighth Regular Session of the Scientific Committee of the WCPFC*. 7-15 August 2012. Busan, Korea.

⁸³⁷ Ibid at viii.

⁸³⁸ Hoyle et al. (2012) at 108.

⁸³⁹ WCPFC SC8 (2012) at 63.

economically viable catch rates.⁸⁴⁰ Reduced catch rates and concomitant economic impacts would likely be felt the hardest by non-subsidized domestic longline fisheries of PICs, as opposed to the heavily subsidized Chinese vessels.

At WCPFC9, no proposals were submitted to revise the existing South Pacific albacore measure. The following year, at WCPFC10, New Zealand introduced a proposal on behalf of FFA members, noting that improved management of the stock was critical to SIDS' domestic longline fisheries.⁸⁴¹ The proposal, which was not adopted at WCPFC10, would have established high seas catch limits within the Convention Area for CCMs according to their average catch between 2006 and 2010.⁸⁴² Furthermore, it would have instructed CCMs with waters under national jurisdiction south of the equator to establish zone-based longline catch limits for South Pacific albacore applicable to their EEZs. For CCMs with annual catches of South Pacific albacore in excess of 2,500 mt caught in their national waters, the proposal would have allowed these CCMs to set annual longline limits equal to or less than their highest historical catch levels. CCMs that caught less than 2,500 mt per year would have been required to not exceed 2,500 mt in 2014.⁸⁴³

As indicated earlier, the proposal did not achieve consensus at WCPFC10. Some members expressed concern that the proposal would shift the measure's area of application to the equator, as opposed to the measure's stated application area - south of 20°S.⁸⁴⁴ Other members questioned the basis for limiting catches to 2006-2010 average levels rather than establishing limits based on the latest stock assessment.⁸⁴⁵ China also opposed the FFA proposed measure; however, the specific reason for such opposition was not identified in the records of the meeting. Even so, China did indicate that it was capping the number of

⁸⁴⁰ Ibid at 11.

⁸⁴¹ WCPFC. (2013). *Summary Report of the Tenth Regular Session of the WCPFC*. 2-6 December 2013. Cairns, Australia. 45.

⁸⁴² FFA. (2013). *Draft Proposal to Revise Conservation and Management Measure for South Pacific Albacore, CMM 2010-03*. Submitted to the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia. WCPFC10-2013-DP34_rev3.

⁸⁴³ Ibid at 1, paragraph 5.

⁸⁴⁴ WCPFC10 (2013) at 45.

⁸⁴⁵ Ibid.

fishing vessels that would be authorized to target South Pacific albacore at 400.⁸⁴⁶ While some members thanked China for implementing such a cap, it was clear that the identified cap would allow for the expansion of the Chinese fleet over existing levels. For example, the number of Chinese longliners that were reported to have operated in the Convention Area at that time was 286.⁸⁴⁷

As the Commission failed to adopt a new CMM on South Pacific albacore at WCPFC10, reports presented at the following year's meeting highlighted poor catch rates and severe economic conditions experienced by domestic longline fisheries of PICs.⁸⁴⁸ This set the stage for South Pacific albacore management to be a primary topic at WCPFC11. The fact that the meeting was held in Apia, Samoa, which has a domestic longline fishery that targets albacore, added to the tension over the stock's management.⁸⁴⁹

An important development occurred in 2014 leading up to WCPFC11 – the establishment of the Tokelau Arrangement.⁸⁵⁰ Finalized at the FFA's 91st meeting in October 2014, the Tokelau Arrangement is comprised of a sub-set of FFA members and provides a framework for the cooperative development of EEZ-based management of South Pacific albacore fisheries.⁸⁵¹ The Tokelau Arrangement was heralded as a significant development with regard to South Pacific albacore because it involves the majority of South Pacific countries with domestic fisheries targeting albacore in their respective EEZs (where the vast

⁸⁴⁶ Ibid.

⁸⁴⁷ China. (2013). *Annual Report to the Commission Part 1: Information on Fisheries, Research and Statistics*. Ninth Regular Session of the Scientific Committee to the WCPFC. 6-14 August 2013. Pohnpei, FSM. WCPFC-SC9-AR/CCM-03.2.

⁸⁴⁸ There were dozens of media stories on the reported collapse of albacore fisheries in the South Pacific in 2014 due to poor economic conditions. Examples can be found at the following: <http://www.abc.net.au/news/2014-02-26/pacific-tuna-fishing-industry-close-to-collapse/5284016>; <http://www.stuff.co.nz/business/industries/9633151/Fijis-tuna-industry-collapsing-report>; <http://pidp.eastwestcenter.org/pireport/2014/June/06-19-05.htm>

⁸⁴⁹ Author's personal experience from attending WCPFC11 in Apia, Samoa.

⁸⁵⁰ See Chapter 5 for a description of the Tokelau Arrangement.

⁸⁵¹ Tokelau Arrangement. (2014). *Tokelau Arrangement for the Management of the South Pacific Albacore Fishery*. Opened for signature on 31 October 2014 at the 91st meeting of the Forum Fisheries Committee. Honiara, Solomon Islands. See also: FFA. (2014). *Addendum to the WCPFC11-2014-DP-5 Explanatory Note on the Tokelau Arrangement*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DP-5 Addendum. Signatories to the Tokelau Arrangement include Australia, the Cook Islands, Fiji, New Zealand, Niue, Samoa, the Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. In 2017, the Solomon Islands withdrew from the arrangement.

majority of albacore is caught).⁸⁵² The establishment of this sub-regional agreement has important implications for the application of the Principle. In theory, Tokelau Arrangement members could collectively cooperate to establish EEZ-based management measures that the WCPFC, in honoring the Principle and Article 8, would have to take into account with respect to fishing on the high seas.

Coupled with the announcement that the Tokelau Arrangement had recently been established, the FFA submitted a proposal to revise the South Pacific albacore measure at WCPFC11. Opening statements by several Pacific Island CCMs indicated the dire situation of their domestic longline fisheries, as well as the importance of the WCPFC taking action to improve the Commission's management of the stock.⁸⁵³ An explanatory note to the FFA's proposal stated that the existing measure did not cover the range of the stock and failed to take into account recent major increases in catch and vessels targeting the stock.⁸⁵⁴ Notable provisions of the FFA's draft CMM to modify CMM 2010-03 included: 1) applying the measure to encompass the entire range of the stock within the Convention Area; 2) establishing a TAC level commensurate with MSY; 3) setting flag-based limits on the high seas according to a CCM's average catch between 2006 and 2013; 4) establishing a collective, but unspecified catch limit for South Pacific albacore within the EEZs of Tokelau Arrangement members; 5) establishing unspecified, but compatible catch or effort limits for non-Tokelau members with EEZs in the South Pacific; 6) requiring non-SIDS CCMs to reduce high seas catches as fisheries are developed in the EEZs of SIDS and by SIDS on the high seas; 7) developing longer-term reference points, including a formal harvest strategy for South

⁸⁵² Garret, J. (2014). Pacific nations agree to historic tuna fishery pact to protect local industries. *ABC news Australia*. Retrieved from: <http://www.abc.net.au/news/2014-10-22/pacific-nations-agree-to-bring-tuna-fishery-under-their-control/5834354>.

⁸⁵³ WCPFC. (2014). *Summary Report of the Eleventh Regular Session of the WCPFC*. 1-5 December 2014. Apia, Samoa. 22-25. See the opening statements made on behalf of New Zealand, Samoa, American Samoa, Tokelau and the Cook Islands, all of which recognized the need to strengthen South Pacific albacore management measures as one of their top priorities for WCPFC11.

⁸⁵⁴ FFA. (2014). *FFA Member's Proposed Replacement for the Conservation and Management Measure for South Pacific Albacore*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DPO5. 3.

Pacific albacore; and 8) implementing quarterly reporting against EEZ and high seas limits.⁸⁵⁵ Notably, the FFA proposal did not reference Article 8.

Several CCMs opposed the measure, with China voicing the strongest opposition and expressing concern over the approach taken by FFA members with respect to establishing a TAC and the lack of a recent stock assessment.⁸⁵⁶ Many other CCMs supported the measure, including the shift towards catch-based limits and establishing limits for EEZs and the high seas.⁸⁵⁷ Ultimately, however, consensus on the proposed measure could not be achieved at WCPFC11, and thus the FFA proposal was not adopted.⁸⁵⁸

In 2015, the SPC conducted a new stock assessment on South Pacific albacore - one which received praise for incorporating significant improvements as compared to older assessments.⁸⁵⁹ The 2015 assessment estimated MSY at 76,800 mt, which was lower than the 2012 estimate of 99,085 mt. The factors driving the lower MSY estimate were the exclusion of catches made outside the WCPFC Convention Area, as well as a lower estimate of natural mortality (as compared to the 2012 assessment).⁸⁶⁰ With the lower estimate of MSY, the catch of South Pacific albacore in the WCPFC Convention Area was estimated to be at or slightly less than MSY. However, fishing mortality on a stock-wide basis was believed to be below the level associated with MSY.⁸⁶¹ If considering fishing mortality on adult fish only, then the fishing mortality on this portion of the stock was much greater.⁸⁶² Like previous assessments, South Pacific albacore was determined not to be subject to overfishing, but increased fishing

⁸⁵⁵ Ibid at 9-10.

⁸⁵⁶ Ibid.

⁸⁵⁷ Ibid at 86.

⁸⁵⁸ Ibid. Note that the WCPFC can only adopt CMMs that involve allocations through consensus among all members. FFA members and other CCMs expressed disappointment in the WCPFC's failure to adopt a new South Pacific albacore measure at WCPFC11.

⁸⁵⁹ Harley, S.J., Davies, N., Tremblay-Boyer, L., Hampton, J., & McKechnie, S. (2015). *Stock Assessment for South Pacific Albacore Tuna*. Eleventh Regular Session of the Scientific Committee to the WCPFC. 5-13 August 2015. Pohnpei, FSM. WCPFC-SC11-2015/SA-WP-06.

⁸⁶⁰ Ibid.

⁸⁶¹ Ibid.

⁸⁶² Ibid at viii.

effort in the future is unlikely to result in greater yields, and further, catch rates are anticipated to decrease, with concomitant impacts on fleets that target albacore.⁸⁶³

In 2015, South Pacific albacore management was again before the Commission at WCPFC12. Like previous years, FFA members led the way and submitted a proposed CMM for consideration. The 2015 FFA proposal to modify CMM 2010-05 was more tempered than in years past, with the primary changes being: 1) to add an objective to the measure to ensure that longline fishing on the southern high seas of the Convention Area does not contribute additionally to the risk of breaching the LRP for the stock; 2) to define an ‘active vessel fishing for albacore’ as one that catches more than 5 mt per year; and 3) to establish a requirement for those CCMs not submitting operational level data to enter into an agreement with SPC to provide such data, beginning in 2000.⁸⁶⁴

As in years past, the FFA proposal failed to achieve consensus and was not adopted as originally submitted. The WCPFC did, however, agree to revise CMM 2010-5, and to this end adopted CMM 2015-02. This CMM required CCMs to report their annual catch levels of South Pacific albacore taken by each of their fishing vessels (between 2006-2014) in the Convention area south of 20° S to the Commission.⁸⁶⁵

CMM 2015-02 did not reference the Principle or Article 8.

The FFA also submitted a proposal at WCPFC12 to establish an interim TRP for South Pacific albacore.⁸⁶⁶ The FFA proposal would have established a TRP of $45\%SB_{\text{current},F=0}$, which roughly correlated with the ratio of existing assessed spawning biomass to that of unfished biomass (41%). However,

⁸⁶³ Ibid at xiv.

⁸⁶⁴ FFA. (2015). *Proposal for revision to CMM 2010-5 (South Pacific Albacore) to address advice of SC11 and TCC11*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. 3. Like other stocks under the management purview of the Commission, the LRP for South Pacific albacore was set at $SB/SB_{F=0}=20\%$.

⁸⁶⁵ WCPFC. (2015). *Conservation and Management Measure for South Pacific Albacore (CMM 2015-02)*. Adopted at the Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia.

⁸⁶⁶ FFA. (2015). *FFA Proposal for a Conservation and Management Measure on Reference Points for South Pacific albacore*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. WCPFC12-2015-DP03_rev2.

scientific modeling indicated that a 41% reduction in catch would be required to achieve the TRP.⁸⁶⁷ The proposed TRP of 45%SB_{current, F=0} was selected by FFA members because it corresponded to 2007- 2008 fishery conditions – a period during which the domestic fleets of FFA members were performing reasonably well.⁸⁶⁸ If the TRP was to be achieved, it was estimated that future CPUE would increase above 2013 levels by at least 15%.⁸⁶⁹

The FFA proposal also included a provision that would have established a 5% margin as the acceptable risk margin of breaching the already established LRP of 20%SB_{current, F=0}.⁸⁷⁰ If the proposed TRP required substantial reductions in catch, it is important to ask why it would have been in the best interests of FFA member countries to support such a proposal, especially if many of their domestic longline fisheries were dependent on South Pacific albacore.

FFA members acknowledged that the proposed TRP would result in reduced catches and undeniable development impacts, but also that such cuts were needed to maintain the fishery at any level in the future.⁸⁷¹ Establishing a TRP does indeed have implications with regard to the Principle. The FFA proposal to establish a relatively conservative TRP (in terms of needed reductions in catch) could have been used as a mechanism to ratchet down high seas catches by foreign vessels operating in the Convention Area. In 2014, approximately 34% of the total South Pacific albacore catch was taken on the high seas of the Convention Area.⁸⁷² Therefore, FFA countries could have reasonably argued, with the provisions of Article 8 serving as supporting rationale, that catch reductions would have to come largely from the high seas in order to be consistent with the Principle and to achieve the TRP. The establishment of catch limits that apply to EEZs of Tokelau Arrangement members would have bolstered this argument.

⁸⁶⁷ Ibid at 4.

⁸⁶⁸ Ibid at 3.

⁸⁶⁹ Ibid at 1.

⁸⁷⁰ Ibid at 1.

⁸⁷¹ Ibid at 4.

⁸⁷² Brouwer, S., Piling, G., Williams, P., & WCPFC Secretariat. (2017). Trends in the South Pacific albacore longline and troll fisheries. Thirteenth Regular Session of the Scientific Committee of the WCPFC. 9-17 August 2017. Rarotonga, Cook Islands. WCPFC-SC13-2017/SA-WP-08. 6.

There is strong interest to reduce high seas fishing, as evidenced by the FFA’s Regional Roadmap for Sustainable Pacific Fisheries (2015). Strategy 3, for example, is to “Progressively Restrict Fishing on the High seas by Foreign Fleets.”⁸⁷³ Notably, Strategy #3 proclaims that the expansion of foreign fishing in the high seas is of no benefit to PICs.⁸⁷⁴ For stocks such as South Pacific albacore, which are not overfished or experiencing overfishing, establishing a TRP could be viewed as critical in order to achieve compatibility. Based on the performance of the fishery, management measures such as catch limits could be set according to the TRP, and ratcheted either up or down. If the South Pacific albacore fishery was at or exceeding its TRP, then FFA countries would be in a stronger position to invoke the Principle, Article 8, as well as other provisions of the Honolulu Convention to support their position.

Like the failed FFA proposal to revise the South Pacific albacore CMM at WCPFC12, the Commission also failed to reach consensus on the FFA proposal to establish a TRP. Negotiations on the matter were conducted in a small working group and negotiating positions were not made across the floor in plenary. As such, the records of the WCPFC12 meeting do not contain statements made by CCMs that were opposed to the FFA’s TRP proposal. However, the records of WCPFC12 do identify that FFA members were disappointed by the lack of consensus on an interim TRP, and further, that FFA members would continue to develop collaborative zone-based management arrangements.⁸⁷⁵

The issue of how best to achieve the cuts needed to meet the TRP remains, however, unresolved. Under the Tokelau Arrangement, for example, members are allowed to set EEZ-based limits according to their highest historical catch levels.⁸⁷⁶ If the highest historical catch levels are eventually established for EEZs, such levels would still exceed the total annual catch needed to reach the TRP. To date, Tokelau

⁸⁷³ FFA. (2015). *Future of Fisheries. A Regional Roadmap for Sustainable Pacific Fisheries*. Honiara, Solomon Islands.

⁸⁷⁴ Ibid at 2.

⁸⁷⁵ WCPFC. (2015). *Summary Report of the Twelfth Regular Session of the WCPFC*. 3-8 December 2015. Bali, Indonesia.52.

⁸⁷⁶ FFA. (2014). *Addendum to WCPFC11-2014-DP-5 Explanatory Note on the Tokelau Arrangement*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. WCPFC11-2014-DP-5 Addendum. 8.

Arrangement members are yet to agree on collective EEZ-based catch limits for South Pacific albacore, which has been a drawback of further advancing a TRP and a stricter CMM.

6.3.1 Findings on South Pacific Albacore

Although the stock condition of South Pacific albacore is relatively healthy, such that it is not overfished or experiencing overfishing, the Commission has failed to effectively manage the South Pacific albacore longline fishery. Currently, domestic fleets of PICs and PTs are facing economic collapse, even with subsidized Chinese vessels having reduced their effort on the stock in 2016.⁸⁷⁷ Around 70% percent of the catch is taken within EEZs, with the remainder caught in international waters. It should be noted, however, that this ‘remainder’ has varied between 26-51% over the last decade, which indicates that considerations of compatible measures should be regarded as important in the conservation and management of the stock.⁸⁷⁸ However, none of three adopted CMMs applicable to South Pacific albacore have referenced the Principle or Article 8. Reasons for this are unclear, especially given the composition of fishing occurring across a broad range of the stock, including between EEZs and the high seas.

Furthermore, the Commission has provided no recognition of existing measures that apply either to EEZs or the high seas with respect to Article 8(2)(b)(i-ii)-(c). This is surprising given that the Tokelau Arrangement was formed in 2014 and heralded as a major sub-regional initiative that would substantially shape international management of the resource. The Tokelau Arrangement has the potential to collectively establish EEZ-based limits that could serve to drive the implementation of compatible measures for the high seas. Even so, the Tokelau Arrangement has failed to agree on the most basic of EEZ-based limits. Furthermore, to date, the Commission has failed to adopt a TRP for the stock, which if

⁸⁷⁷ Brouwer, S., G. Piling, P. Williams, and WCPFC Secretariat. (2017). *Trends in South Pacific albacore longline and troll fisheries*. WCPFC Intercessional Meeting to Progress the draft Bridging Measure for South Pacific Albacore. 4 October 2017. Pohnpei, FSM. 6.

⁸⁷⁸ Ibid at 7.

established, could serve to guide the achievement of compatible measures by establishing a benchmark biomass target.

Regarding consideration of the biological unity of the stock in accordance with Article 8(2)(a), the first CMM applicable to South Pacific albacore, and subsequent amendments in 2010 and 2015, failed to cover the full range of the stock. The controlling provisions of the measure only applied south of 20° S, while the stock is known to occur from the equator to around 40° S. Moreover, the measure failed to control the number of fishing vessels targeting the stock (its main objective in 2005), and to restrict catches both on the high seas south of 20° S and in EEZs north of 20° S.

With regard to respective dependence considerations consistent with Article 8(2)(d), the measures failed to include any reference to the domestic longline fleets of PICs that target South Pacific albacore. The last revision to the stock's CMM occurred in 2015, and there were certainly several statements in the records affirming the importance of the stock to the domestic fisheries of PICs. Even so, the substantive effect of these statements is conspicuously absent from the CMM.

With respect to Article 8(4) and high seas pockets, the Commission has established an Eastern High Seas Pocket Special Management Area (EHSPSMA), which covers a fully enclosed high seas pocket area bordered by the EEZs of the Cook Islands, French Polynesia and Kiribati.⁸⁷⁹ The EHSPSMA is not a component of the South Pacific albacore measure, but given its location in the South Pacific (and that most of the activity occurring in the pocket involves South Pacific albacore), its establishment is important with regard to Article 8(4).

⁸⁷⁹ WCPFC. (2010). *Conservation and Management Measure for the Eastern High Seas Pocket Special Management Area (CMM 2010-02)*. Adopted at the Seventh Regular Session of the WCPFC. 6-10 December 2010. Honolulu, USA. The Cook Islands proposed the EHSPSMA measure in 2010, which was adopted by the Commission in the same year at WCPFC7. Proponents of the measure stated that high seas pockets were a haven for IUU fishing activity, and that in order to operate in the pocket, vessels have to transit EEZ waters of surrounding coastal states, leaving those waters also vulnerable to IUU fishing. Proponents also mentioned that there was significant fishing occurring in the high seas pocket. See: WCPFC. (2010). *Summary Report of the Seventh Regular Session of the WCPFC*. 6-10 December 2010. Honolulu, USA.51.

The stock status of South Pacific albacore is still considered neither overfished nor subject to overfishing. While that may sound promising, depletion levels of adult biomass are resulting in catch rates that cannot be economically sustained for most fleets, especially those flagged to PICs and PTs.

6.3.2 Compatibility Rating

Table 9: Compatibility assessment for South Pacific albacore

CMM on South Pacific albacore			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	No, none of the three South Pacific albacore CMMs reference the Principle or Article 8.	0
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	No, none of the three South Pacific albacore CMMs reference EEZ-based measures or previously agreed measures applicable to the high seas. This is an unexpected outcome given that the Tokelau Arrangement was established in 2014, and the measure was amended in 2015.	0
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	The CMMs do not cover the entire range of the stock.	0.5
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	No mention is made in the three CMMs to the respective dependence of some members on South Pacific albacore. There are numerous instances in the meeting records of the Commission, however, where PICs highlight their dependence on their respective domestic longline fisheries.	0.5
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	The Commission did establish a special management area for the eastern high seas pocket in the South Pacific. However, reference to that measure is not included in the South Pacific albacore tuna measure(s). There are references in the WCPFC meeting records to the catch of albacore in the eastern high seas pocket and the need for compatible measures.	0.5
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	The stock status of South Pacific albacore is considered neither overfished nor subject to overfishing. However, depletion levels of adult biomass are resulting in catch rates that cannot be economically sustained for most fleets, especially those flagged to PICs and PTs.	0.75
			Total Score (2.25/6) 37.5 %

6.4 Pacific Bluefin

Like other highly migratory species that travel great distances, management of Pacific bluefin is complex, involving multiple jurisdictions and requiring effective international cooperation. Pacific bluefin spawn in the waters off Japan and migrate across the North Pacific Ocean to forage in the productive waters off the West Coast of North America (mainly off the coast of Mexico). North Pacific bluefin are highly prized in sashimi markets and subject to wild capture for mariculture grow-out called ‘tuna ranching.’ Pacific bluefin spawning stock biomass is currently at less than 3% of unfished levels.⁸⁸⁰

As Pacific bluefin migrate between the WCPO and EPO, conservation of this species requires cooperative and compatible management between the WCPFC and IATTC.⁸⁸¹ The Honolulu Convention makes explicit in Article 22, paragraph 4, the need for cooperation with the IATTC in establishing a “consistent” set of CMMs.⁸⁸² Note that the Honolulu Convention does not specifically state that ‘compatible’ measures are required between the WCPFC and IATTC; rather, the term “consistent” is used. There is no information in the records associated with the negotiation of the Honolulu Convention explaining why “consistent” was used rather than the term ‘compatible.’

Although language specific to the Principle was not used in Article 22 of the Honolulu Convention, the IATTC’s Antigua Convention does reference compatibility in Article XXIV relating to cooperation with other organizations. Indeed, the Antigua Convention makes specific references to compatibility in Article XXIV with regard to the overlap areas of shared jurisdiction, and also for stocks that migrate between jurisdictions.⁸⁸³ In 2006, the WCPFC and IATTC entered into a Memorandum of Understanding (MOU),

⁸⁸⁰ ISC. (2016). 2016 Pacific bluefin tuna stock assessment. *Report of the Pacific Bluefin Tuna Working Group*. 13-18 July 2016. Hokkaido, Japan.10.

⁸⁸¹ Not all bluefin spawned in the WCPO migrate to the EPOs. Rather, a variable number make the transoceanic journey.

⁸⁸² Honolulu Convention Article 22, paragraph 4.

⁸⁸³ Antigua Convention. Article XXIV, paragraphs 3 and 4.

which was subsequently revised in 2009.⁸⁸⁴ The MOU is mostly a reiteration of recitals found in the respective conventions related to cooperation with other organizations. However, the following list is included in the MOU as topic areas for cooperation: 1) data exchange; 2) research collaboration; and 3) conservation and management measures for stocks and species of mutual interest.⁸⁸⁵ The manner of cooperation between RFMOs is also prescribed, such that the meetings of both organizations are open to the participation by member nations of each commission.⁸⁸⁶

Due to their connectivity within the Pacific Ocean, there are several HMS fish stocks in the Pacific that could also benefit from compatible measures between the WCPFC and IATTC, including bigeye and yellowfin tuna, several species of billfish, as well as various non-target and dependent species such as sharks and sea turtles.⁸⁸⁷ With regard to compatibility, however, Pacific bluefin is a compelling case study for several reasons, including: 1) the status of the stock is very poor; 2) the stock is caught in significant amounts by only a few countries; 3) most of the catches are made in national waters and not on the high seas; and 4) under the Honolulu Convention Pacific bluefin is designated a “northern stock,” thus requiring the WCPFC’s Northern Committee to formulate the relevant conservation and management measures to be adopted by the Commission.⁸⁸⁸

The WCPFC’s first CMM aimed at Pacific bluefin was adopted in 2009, with the IATTC’s first bluefin resolution adopted in 2012. Although international management measures have only been established recently, the stock status of Pacific bluefin has been discussed internationally within the International

⁸⁸⁴ The 2009 MOU slightly revised the 2006 MOU to include collaboration between RFMOs on Pacific-wide stock assessments. WCPFC and IATTC. (2006). Memorandum of Understanding between the WCPFC and IATTC. 3. -- WCPFC and IATTC. (2009). Memorandum of Understanding between the WCPFC and IATTC.

⁸⁸⁵ WCPFC and IATTC (2006) at 1.

⁸⁸⁶ Ibid.

⁸⁸⁷ The Commission, at its 2nd Regular Session, agreed that the SC and TCC should investigate seabird mitigation measures applied and tested by other RFMOs, and also determine the utility of implementing compatible measures. See: WCPFC2 (2005) at 8. WCPFC Resolution 2005-04 calls for cooperation with the IATTC on sea turtle data and with respect to the development and application of compatible measures between RFMOs to reduce sea turtle bycatch.

⁸⁸⁸ Honolulu Convention Article 11, paragraph 7.

Science Committee for Tuna and Tuna-like Species (ISC) for over two decades.⁸⁸⁹ The ISC conducted a stock assessment on Pacific bluefin in 2010, 2102, 2014 and 2016.⁸⁹⁰

The 2009 WCPFC measure (CMM 2009-07) applied in 2010 only and required CCMs fishing north of 20° N to restrict total fishing effort directed at Pacific bluefin to 2002-2004 levels.⁸⁹¹ An exception was provided for artisanal fisheries; however, like other WCPFC CMMs, the measure lacked a definition of “artisanal.”⁸⁹² The measure applied to waters under national jurisdiction and on the high seas, with an exception being made for fishing in Korea’s EEZ.⁸⁹³ According to the meeting summary records for WCPFC6, Korea requested this exemption so that it could have more time to study the catch of bluefin in its national waters.⁸⁹⁴ Korea also stated that it caught less than 1,500 mt of bluefin on an annual basis, and by purse seine vessels primarily targeting mackerels.⁸⁹⁵ Several CCMs, including two that were members of Northern Committee, expressed concern over Korea’s position and called for the measure to apply to Korea’s waters in 2011.⁸⁹⁶ Japan stated that it would implement a program to collect information on bluefin imports from Korea.⁸⁹⁷ The bluefin catch in Korea’s EEZ represented approximately 5 to 10 percent of the total catch, and given the poor status of the stock, the lack of application of the measure to Korea’s EEZ could have been viewed as incompatible with the measures agreed to by other members.⁸⁹⁸ It appears, however, that other members of the WCPFC were more concerned with putting a measure in place than highlighting Korea’s exemption as being incompatible with the measure. In other words, the

⁸⁸⁹ The ISC was established in 1995, with the Pacific Bluefin working group being formed thereafter. ISC members include Canada, China, Chinese Taipei, Japan, Korea, the United States and Mexico. The IATTC is a cooperating non-member and the WCPFC is a non-voting member of the ISC. See: http://isc.fra.go.jp/working_groups/pacific_bluefin_tuna.html for more information.

⁸⁹⁰ To view stock assessments of North Pacific bluefin, see: http://isc.fra.go.jp/reports/stock_assessments.html

⁸⁹¹ WCPFC. (2009). *Conservation and Management Measure for Pacific Bluefin (CMM 2009-07)*. Adopted at the Sixth Regular Session of the WCPFC. 7-11 December 2009. Papeete, French Polynesia.

⁸⁹² Ibid at 1. The meeting records of WCPFC6 indicate that one CCM questioned the definition of “artisanal” (or lack thereof) in the measure, but no further explanation was provided. WCPFC. (2009). *Summary Report of the Sixth Regular Session of the WCPFC*. 7-11 December 2009. Papeete, French Polynesia. 39.

⁸⁹³ Ibid.

⁸⁹⁴ WCPFC6 (2009) at 15.

⁸⁹⁵ Ibid.

⁸⁹⁶ Ibid.

⁸⁹⁷ Ibid.

⁸⁹⁸ Pacific-wide bluefin catch data is available at: http://isc.fra.go.jp/fisheries_statistics/index.html.

approach taken was ‘better to have a measure than not have one.’ In addition, the measure was only agreed to for one year (2010), and thus it was expected that consideration to include Korea’s EEZ would occur the following year.

At the same WCPFC meeting (WCPFC6), it was announced by IATTC staff that the IATTC would soon consider a similar management measure for Pacific bluefin.⁸⁹⁹ The Northern Committee chair also stated that a joint meeting between the IATTC and the Northern Committee was being planned to discuss coordinated bluefin management.⁹⁰⁰

In 2010, at its 81st meeting, the IATTC was presented with the following IATTC staff conservation recommendations for bluefin: 1) maintaining annual commercial catches in 2011 and 2012 at the 1997-2007 average; 2) allowing no greater effort by the sport fishery than the maximum observed between 2006 and 2010; and 3) requiring monthly reports on catches and effort by the sport fishery.⁹⁰¹ Although there were indications at the 2009 WCPFC meeting that the IATTC would adopt a bluefin resolution, the IATTC did not agree to a bluefin measure in 2010, as negotiations at its 81st meeting were more focused a new tropical tuna resolution.⁹⁰² With Mexico being the only IATTC EPO coastal State member with any significant bluefin catches (43% of the 2010 Pacific-wide catch), bluefin management was low on the 81st IATTC agenda, which centered heavily on tropical tuna negotiations.⁹⁰³

The following year (2011) the IATTC again considered adopting a Pacific bluefin resolution at its 82nd annual meeting held in June. However, this time the proposed resolution was submitted by several

⁸⁹⁹ WCPFC6 (2009) at 15.

⁹⁰⁰ Ibid.

⁹⁰¹ IATTC. (2010). *Summary Report of the 81st meeting of the IATTC*. 27 September-1 October 2010. Antigua, Guatemala. 6. The ‘sport fishery’ is conducted by recreational anglers on day or multiday fishing trips within Mexico’s EEZ, departing from ports in Southern California and Mexico.

⁹⁰² Ibid.

⁹⁰³ Ibid.

countries that were also members of the WCPFC's Northern Committee.⁹⁰⁴ This was indeed significant as it showed an interest by these countries to establish compatible measures across RFMO areas. The proposal was to keep the 2012 and 2013 EPO catch of bluefin at 1994-2007 average levels, which was about 4,500 mt.⁹⁰⁵ Mexico did not agree with the proposal.⁹⁰⁶ The reported bluefin catch of Mexican-flagged vessels the previous year was 7,700 mt, and thus substantial reductions in catch would have been required from this particular State. According to the report of the meeting, the Mexican proposal came too late in the meeting to allow for adequate consideration.⁹⁰⁷ Six IATTC members submitted a joint statement on the lack of consensus to adopt a measure.⁹⁰⁸ The statement reiterated the need for "consistent" management measures throughout the Pacific, and further, that the absence of an IATTC measure would not only harm bluefin sustainability, but also weaken the WCPFC measure.⁹⁰⁹

The following year (2012), the WCPFC rolled-over its existing measure to apply in 2013. The measure maintained the effort and catch limits associated with 2002-2004 levels.⁹¹⁰ With the WCPFC acting to extend its CMM, pressure was again mounting on the IATTC to adopt compatible measures. The IATTC responded and agreed on a bluefin resolution (C12-09), which restricted the total EPO catch in 2012 and 2013 to 10,000 mt, with no more than 5,600 mt to be caught in 2012.⁹¹¹

⁹⁰⁴ IATTC. (2011). *Summary Report of the 82nd meeting of the IATTC*. 4-8 July 2011. La Jolla, USA. The draft resolution was listed as Proposal Q-1 and presented by China, Canada, Chinese Taipei, Japan, Korea and the United States.

⁹⁰⁵ Ibid.

⁹⁰⁶ Ibid at 9.

⁹⁰⁷ Ibid.

⁹⁰⁸ IATTC. (2011). *Joint Statement by Japan, United States, European Union, China, Chinese Taipei, and Korea*. Appendix 4(b) of the Report of the 82nd meeting of the IAATC. 4-8 July 2011. La Jolla, USA.138.

⁹⁰⁹ Ibid. Note that at its previous meeting in December 2010, the WCPFC adopted a two-year measure (applying in 2011 and 2012) to restrict fishing effort north of 20° N and the catch of juveniles (0-3 years) to 2002-2004 levels. See: WCPFC. (2010). *Conservation and Management Measure for Pacific Bluefin Tuna (CMM 2010-04)*. Adopted at the Seventh Regular Session of the WCPFC. 6-10 December 2010. Honolulu, USA. Korea was again provided an exemption, but it applied to the catch of juveniles and not the effort restriction. See paragraph 2 of CMM 2010-04.

⁹¹⁰ WCPFC. (2012). *Conservation and Management Measure for Pacific Bluefin (CMM 2012-06)*. Adopted at the Ninth Regular Session of the WCPFC. 2-6 December 2012. Manilla, Philippines.

⁹¹¹ IATTC. 2012. *Conservation and Management Measures for Bluefin in the Eastern Pacific Ocean (C-12-09)*. Adopted at the 83rd Meeting of the IATTC. 25-29 June 2012. La Jolla, USA.

The IATTC resolution, in combination with the WCPFC measure, was believed to support stock recovery; however, that was short-lived. Information provided the following year (2013) by the ISC indicated low recent recruitment and the likelihood of bluefin biomass declining to its lowest levels on record. This prompted further international action, leading the WCPFC to adopt CMM 2013-09. The WCPFC measure removed exemptions provided for artisanal fisheries and the Korean EEZ, and extended the requirement that CCMs reduce 2014 catches by at least 15% of 2002-2004 levels.⁹¹² In this regard, the WCPFC took additional steps to strengthen its measure by removing the exemptions for artisanal fisheries and fisheries occurring in Korea's EEZ. Such action could be viewed as further developing compatible measures, insofar as the application of the measure to the national waters of Korea and artisanal fisheries contribute to a reduction in bluefin overfishing.

With regards to the effectiveness of the IATTC measure, Mexico reported that its 2012 catch was 6,668 mt.⁹¹³ Indeed, this figure exceeded the agreed 5,600 mt EPO limit for 2012 by over 1,000 mt. Although the EPO catch limit was exceeded, the WCPFC catch reduced significantly in 2012 and 2013, with total Pacific-wide catches for this two-year period being 14,840 mt and 11,325 mt respectively, significantly less than the 2002-2004 average of 21,030 mt.⁹¹⁴ As catches were reduced from historical levels, one could argue that the two RFMOs did implement compatible measures; however, any conservation gains were most likely attributable to reduced catches in the WCPO.

While it appeared that bluefin conservation was heading in a positive direction with regard to Pacific-wide management measures, the next bluefin stock assessment by the ISC in 2014 revealed continued poor stock status and the need for additional measures. The 2014 stock assessment indicated that if the

⁹¹² WCPFC. (2013). *Summary Report of the Tenth Regular Session of the WCPFC*. 2-6 December 2013. Cairns, Australia. 31. See also: WCPFC. (2013). *Conservation and Management Measure for Pacific Bluefin (CMM 2013-09)*. Adopted at the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia.

⁹¹³ Mexico. (2013). National Report of Mexico. 13th meeting of the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. 17-22 July 2013. The combined two year total (2012 and 2013) for the United States and Mexico was 11,301 mt, which exceeded the IATTC EPO catch limit of 10,000 mt by over 1,300 mt.

⁹¹⁴ ISC. (2015). *Report of the Fifteenth Meeting of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean*. 15-20 July 2015. Kona, USA. 71.

recent low recruitment persisted, and if the existing WCPFC and IATTC measures were maintained, bluefin spawning stock biomass would not be capable of being rebuilt.⁹¹⁵ The stock assessment further concluded that substantial reductions in fishing mortality and juvenile catch over the whole range of juvenile ages would reduce the risk of spawning biomass falling below its lowest historical level.⁹¹⁶

Both commissions responded and adopted new bluefin measures in 2014. First, the IATTC agreed on a resolution that restricted the combined total catch for 2015 and 2016 to 6,600 mt.⁹¹⁷ Under the measure, no country was permitted to land more than 3,500 mt in 2015, which for all intents and purposes was Mexico's (unassigned) catch limit. Other IATTC members and cooperating nonmembers (CPCs) with a history of catching bluefin (excluding Mexico), were not to exceed a total catch of 600 mt, with no one country allowed to take more than 425 mt in any one year (this was essentially the assigned catch limit for the United States).⁹¹⁸ In addition to the total catch limits, CPCs were instructed to "endeavor" to reduce the catches of bluefin weighing less than 30 kg to 50% of historical levels. Furthermore, IATTC Scientific Staff were directed to report on the 2015 catch and the implementation of reducing the catch of juvenile bluefin.⁹¹⁹ The resolution also required CPCs to limit sport fishing vessels catching bluefin in their national waters to levels comparable with the catch limits provided to commercial fisheries.⁹²⁰ The measure, however, did not specify the "comparable levels of catch reductions" that the sport fishery was to achieve. This is likely due to the sports fishery's small impact on bluefin, which accounts for less than 10% of the commercial EPO bluefin catch. Therefore, the requirement for sport fish reductions to comparable levels was likely more about achieving equity across fishing gears – that is, distributing the impacts across all fishing gears, rather than producing material conservation benefits.

⁹¹⁵ ISC. (2014). *Stock assessment for bluefin tuna in the Pacific Ocean*. Report of the Pacific Bluefin Tuna Working Group. International Science Committee for Tuna and Tuna-like Species in the North Pacific Ocean.

⁹¹⁶ Ibid at 7.

⁹¹⁷ IATTC. (2014). *Measures for the conservation and management of Pacific Bluefin Tuna in the Eastern Pacific Ocean, 2015-2016 (Resolution C-14-06)*. Adopted at the 87th (resumed) meeting of the IATTC. 27 October-1 November 2014. La Jolla, USA.

⁹¹⁸ Ibid at 2, paragraph 2.

⁹¹⁹ Ibid at 2, paragraph 3.

⁹²⁰ Ibid at 2, paragraph 4.

The WCPFC, at its 11th Regular Session in 2014, also agreed on a new bluefin measure. In the lead up to measure being adopted, Japan articulated that it was committed to bluefin conservation, providing an overview of its recent unilateral efforts to reduce juvenile catches by 50% of historical levels and to develop a comprehensive catch monitoring program.⁹²¹ The chair of Northern Committee also referenced the need for compatible measures with the IATTC, noting that the IATTC recently adopted a bluefin measure that aimed to reduce catch by 40%. Without much deliberation, the WCPFC adopted the Northern Committee's proposed bluefin measure, which included the following two main provisions: a) a provisional multi-annual rebuilding plan starting in 2015, with the initial goal of rebuilding the spawning stock biomass to the historical median (42,592 mt within 10 years with at least 60% probability; and b) a 50% reduction in catches of > 30 kg fish from 2002-2004 average levels.⁹²² The measure also instructed the WCPFC Executive Director to communicate the CMM to the IATTC Secretariat and its contracting parties whose fishing vessels engage in fishing for Pacific bluefin tuna, requesting that they take equivalent measures in conformity with the CMM.⁹²³ The following year (2015), the IATTC did not make any adjustments to its existing bluefin measure (C-14-06), as it already applied through 2016.

At its 12th Regular Session, the WCPFC discussed bluefin management in considerable detail. The chair of the Northern Committee, Mr. Masa Misahara, presented the report of the 11th meeting of the Northern Committee, which included bluefin management issues. Even though the Commission had adopted a bluefin measure the previous year, several Commission members expressed disappointment that the Northern Committee did not consider a long-term rebuilding plan, criticizing the existing measures as providing only minor conservation gains on a critically depleted stock.⁹²⁴ The Northern Committee was further criticized for not having a quorum to make decisions at its annual meeting, thus forcing the

⁹²¹ WCPFC. (2014). *Report of the Eleventh Regular Session of the WCPFC*. 1-5 December 2014. Apia, Samoa. 59.

⁹²² WCPFC. (2014). *Conservation and Management Measure for Pacific Bluefin (CMM 2014-04)*. Adopted at the Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa.

⁹²³ Ibid at 3.

⁹²⁴ WCPFC. (2015). *Summary Report of the Twelfth Regular Session of the WCPFC*. 3-8 December 2015. Bali, Indonesia. 343 at 64-65. Refer to statements made by members including the United States, the European Union, FFA members, China, Canada and others with regard to bluefin management.

committee to hold a special session at the Commission's meeting to adopt the report of its own meeting.⁹²⁵ As reported by the Northern Committee chair, the Northern Committee recommended that the Commission amend the existing Pacific bluefin CMM to develop a rule in 2016 that would prescribe emergency action if bluefin recruitment was observed to take a drastic reduction.⁹²⁶

The Northern Committee chair also reported that the Northern Committee agreed to convene a joint meeting with the IATTC.⁹²⁷ The Commission supported the notion of a joint meeting, with several members noting the importance of collaboration with the IATTC on the management of bluefin.⁹²⁸ At WCPFC10, the Executive Director of the IATTC, Dr. Guillermo Compean, communicated the IATTC's commitment to participate in a joint meeting with the WCPFC in 2016, as well as to work bilaterally with WCPFC members to rebuild the stock.⁹²⁹ The Commission adopted the Northern Committee's recommendation for amending the bluefin measure to include a provision relating to the development of emergency measures in 2016.⁹³⁰ The emergency measure would involve pre-agreed actions in the event that bluefin recruitment experienced a drastic drop from then-current levels.⁹³¹ Note that the Commission did not consider what emergency measures could be taken, but directed the Northern Committee to develop such measures in 2016.⁹³²

At its 90th meeting held in June 2016, the IATTC received a report on the status of Pacific bluefin that was based on a new stock assessment conducted by the ISC earlier in the year. According to this assessment, which incorporated catch data up to 2014 as well as recent estimates of recruitment, the Pacific bluefin stock remained at historically low levels.⁹³³ For example, the ratio of 'current' spawning

⁹²⁵ Ibid.

⁹²⁶ Ibid.

⁹²⁷ Ibid.

⁹²⁸ Ibid.

⁹²⁹ Ibid.

⁹³⁰ WCPFC. (2015). *Conservation and Management Measure for Pacific Bluefin Tuna (CMM 2015-04)*. Adopted at the Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia.

⁹³¹ Ibid.

⁹³² WCPFC (2015) at 196.

⁹³³ ISC. (2016). *2016 Pacific Bluefin Stock Assessment*. Report of the Pacific Bluefin Tuna Working Group. 140.

stock biomass to unfished spawning biomass was estimated at 2.6%, making it the most depleted tuna stock on Earth.⁹³⁴ Several IATTC members expressed concern and called for urgent action, as well as the need to collaborate with the WCPFC in order to adopt compatible measures.⁹³⁵ Recalling C-14-06, Japan asked if the IATTC staff were able to present information on whether the 50% reduction in fish weighing less than 30 kg in 2015 was achieved. In making this request, Japan undoubtedly realized that data demonstrating reduced juvenile catches in the EPO could be used domestically to require coastal Japanese fishermen to implement similar catch reductions.⁹³⁶ IATTC staff informed Japan that they were not in a position to comment on the issue, not having the required information on hand.⁹³⁷ Mexico stated that fishing operations and tuna ranches under its jurisdiction had endeavored not to catch bluefin smaller than 30 kg, but no data was presented to confirm this assertion.⁹³⁸ Mexico also gave a presentation at the meeting which centered on its tuna ranches and how it voluntarily established a catch limit of 2,750 mt due to an overage of its 3,300 mt limit the previous year.⁹³⁹

Abiding by standard practice, which involves IATTC scientific staff providing conservation recommendations, the 2016 scientific staff recommendation for bluefin was to extend the existing measures in the IATTC resolution for two more years.⁹⁴⁰ The recommendation also encouraged the WCPFC to take additional measures to reduce the catch of adult fish, and thus reduce the risk of low spawner abundance on recruitment. While chiefly directed at the WCPFC, the IATTC scientific staff's recommendation was supported by the EU. Even so, other CPCs that were members of the WCPFC voiced opposition towards the need of the WCPFC to take additional action, instead suggesting that such

⁹³⁴ Gilhooly, Rob. (2016). Facing Extinction: Can the Pacific Bluefin be saved. *The Asia Pacific Journal*, 14(15), 9.

⁹³⁵ IATTC. (2016). *Summary Report of the 90th Meeting of the IATTC*. 27 June – 1 July 2016. La Jolla, USA. 3.

⁹³⁶ Ibid at 4.

⁹³⁷ Ibid.

⁹³⁸ Ibid.

⁹³⁹ Ibid at 15.

⁹⁴⁰ Ibid at 6.

issues be discussed in a joint WCPFC/IATTC workshop to be held in association with the Northern Committee.⁹⁴¹

The IATTC adopted Resolution C-16-03 at its 90th meeting with regard to bluefin conservation. Like previous bluefin resolutions, C-16-03 contained preamble language that recognized the importance of collaborative and compatible measures between the WCPFC and IATTC in order to reduce bluefin fishing mortality and rebuild the stock.⁹⁴² Moreover, C-16-04 referenced the impact of fishing on the stock in the WCPO and EPO at 84% and 16% respectively. Indeed, this represented a statement by the IATTC that it was limited in what action it could take to help rebuild the stock.⁹⁴³ The 2016 resolution did not contain additional measures to restrict catches in the EPO; rather, it prescribed how collaboration with the WCPFC should occur. Specifically, the resolution directs CPCs to work with the WCPFC through jointly-held annual meetings, beginning in 2016 and continuing until conservation objectives have been accomplished.⁹⁴⁴ The main objective of the collaborative meetings is to develop and reach agreement on a Pacific-wide bluefin rebuilding plan that will return the stock to an agreed target reference point.⁹⁴⁵ The resolution also specifies that the joint meetings will be used to develop harvest control rules that include pre-agreed management actions, and further, that management strategy evaluation will be used to identify the appropriate harvest control rule(s).⁹⁴⁶ The process and organization of the joint meetings were further prescribed in the resolution, including the requirement that an IATTC member and a WCPFC member serve as co-chairs.⁹⁴⁷

⁹⁴¹ Ibid at 6 and 15.

⁹⁴² IATTC. (2016). *Resolution on Pacific Bluefin Tuna (C-16-04)*. Adopted at the 90th meeting of the IATTC. 27 June – 1 July 2016. La Jolla, USA.

⁹⁴³ Ibid.

⁹⁴⁴ Ibid. Note that Mexico had been participating in the Northern Committee as a WCPFC cooperating non-member since 2012.

⁹⁴⁵ Ibid.

⁹⁴⁶ Ibid.

⁹⁴⁷ Ibid.

In early September 2016, the joint WCPFC/IATTC meeting occurred in the margins of the Northern Committee meeting in Fukuoka, Japan.⁹⁴⁸ In a report to the WCPFC, the Northern Committee chair indicated that the joint WCPFC/IATTC meeting had made good progress in discussing a Pacific-wide management framework including a rebuilding strategy, precautionary management framework, catch documentation scheme, emergency rule(s) and existing bluefin management measures.⁹⁴⁹ One of the main outcomes of the joint meeting was agreement on the need for a second biomass target reference to be achieved by 2030. The Northern Committee adopted the recommendations of the joint meeting, incorporating them into a draft bluefin measure for consideration at WCPFC13.⁹⁵⁰

The Northern Committee's bluefin recommendations were met with strong criticism by several members and observers of the Commission at WCPFC13, with many statements suggesting that the management of bluefin by the Northern Committee had been a failure.⁹⁵¹ Recall that under the Honolulu Convention, the Northern Committee has an obligation to formulate CMMs for Northern Stocks managed by the Commission. The Northern Committee's recommendation for bluefin included the use of step-wise rebuilding conservation targets; however, such targets were not identified. Also included in the recommendation was the adoption of a rebuilding target by the IATTC, as well as the convening of a stakeholders meeting in coordination with the IATTC in 2017. The Northern Committee did not agree on emergency measures in the event of drastic reductions in bluefin recruitment, which was targeted for 2016 under CMM 2015-04.⁹⁵²

⁹⁴⁸ WCPFC. (2016). *Summary Report of the Twelfth Regular Session Northern Committee of the WCPFC*. Attachment D: Results of Joint IATTC-WCPFC NC working group meeting on the management of Pacific bluefin tuna. 29 August – 2 September 2016. Fukuoka, Japan.

⁹⁴⁹ WCPFC. (2016). *Summary Report of the Thirteenth Regular Session of the WCPFC*. 5-9 December 2016. Denarau, Fiji. 63.

⁹⁵⁰ WCPFC. (2016). *Summary Report of the Twelfth Regular Session Northern Committee of the WCPFC*. Attachment E- Conservation and Management Measure to establish a multi-annual rebuilding plan for Pacific Bluefin Tuna. 29 August – 2 September 2016. Fukuoka, Japan.

⁹⁵¹ WCPFC. (2016). *Summary Report of the Thirteenth Regular Session of the WCPFC*. 5-9 December, 2016, at 61-69.

⁹⁵² WCPFC. (2016). *Summary report of the Twelfth Regular Session of the Northern Committee of the WCPFC*. 29 August - 2 September 2016. Fukuoka, Japan. 13.

Strong opposition was voiced by some members who thought the Northern Committee's recommendation was too weak, did not include emergency measures, and lacked specificity regarding future step-wise rebuilding targets. Taking these criticisms into account, the only existing recommendation that had been agreed upon was a rebuilding target of 7% of the unfished spawning biomass to be achieved by 2024.⁹⁵³ The Commission members that were critical of the Northern Committee's recommendation were left in a quandary: either accept the recommendation in its current form or ask the Northern Committee to do more. The latter won out and the Commission requested that the Northern Committee convene an extraordinary meeting on the margins of WCPFC13, with the charge to consider recommending additional measures to expedite bluefin rebuilding.⁹⁵⁴ The Northern Committee did meet during the week of WCPFC13, but no additional recommendations were produced due to a "lack of mandate by some members to go further."⁹⁵⁵ Notwithstanding the lackluster result of the extraordinary meeting, Japan and Korea agreed to impose voluntary measures. Japan offered to transfer a portion of its catch limit for fish smaller than 30 kg to its catch limit for fish larger than 30 kg.⁹⁵⁶ Korea indicated that it would make a voluntary payback for its overharvest of bluefin larger than 30 kg.⁹⁵⁷ Recognizing that the Commission could not adopt stronger measures without the Northern Committee's endorsement, the Commission (led by the EU and FFA) directed the Northern Committee to consider the following in 2017: 1) measures to rebuild the stock to 20% $SB_{F=0}$ levels by 2032; and 2) emergency measures that stipulate specific rules if a drastic reduction in recruitment is observed.⁹⁵⁸

Clearly, there were several members of the Commission that sought stronger measures to reduce bluefin catches, especially juvenile fish less than 30 kg. With most of the bluefin catch deriving from Japanese vessels fishing in their national waters, it has proven difficult for the Northern Committee to agree on

⁹⁵³ Ibid at 13.

⁹⁵⁴ WCPFC. (2016). *Summary Report of the Thirteenth Regular Session of the WCPFC*. 5-9 December, 2016. Denarau, Fiji. 67.

⁹⁵⁵ Ibid.

⁹⁵⁶ WCPFC. (2016). *Outcomes of the Extraordinary Meeting of the Northern Committee*. WCPFC 13-2016-NCPBF9. December 2016. Fiji.

⁹⁵⁷ Ibid.

⁹⁵⁸ WCPFC13 (2016) at 81.

stricter measures. Furthermore, as the stock is so depleted, the management of bluefin is a significant global concern and a test case in international management, including with respect to the application of the Principle across RFMO jurisdictions. Generally, fisheries issues receive short shrift in the media, but the high value of Pacific bluefin, combined with its poor stock status, has piqued global interest in the conservation and management of the stock. Undoubtedly the world is watching and waiting to see what action will be taken by the international community.⁹⁵⁹

6.4.1 Findings on Pacific bluefin

The Principle is being applied in the form of management collaboration between the IATTC and WCPFC. Measures to restrict catches throughout the range of the stock, in both the WCPO and EPO, have been implemented. Although Article 8 is not referenced in the WCPFC measures, Article 22, which promotes consistency between the IATTC and WCPFC, is referenced and has played a prominent role in harmonizing Pacific bluefin management between the commissions. One could view such coordination as being in support of the Principle, as management measures apply in both commission areas and within national waters and the high seas.

With respect to Article (8)(2)(i-ii) and (c), recognition of existing measures that apply within national waters or the high seas areas prior to commission management is not found in WCPFC measures. The records do, however, mention the voluntary measures taken by Japan and Korea, suggesting that controls being implemented within the national waters of these countries are independent of WCPFC measures. Even so, there is little in the WCPFC meeting records on existing management measures applicable to Pacific bluefin.

⁹⁵⁹ Lubchencko, J., and M. Damanaki. (2016, December 4). Save the Pacific Bluefin Tuna. *New York Times*. The Opinion Pages. Retrieved from: https://www.nytimes.com/2016/12/04/opinion/save-the-pacific-bluefin-tuna.html?_r=0.

Regarding the biological unity of stock in accordance with Article 2(a), the WCPFC and IATTC have cooperated on the development of management measures that take into account the range of the stock as it occurs in both the WCPO and EPO. In addition, management measures apply within national waters and the high seas, further promoting the comprehensive management of the stock. The WCPFC measure also applies to artisanal fisheries in Japan, which mostly occur within Japan's territorial sea waters.

Concerning the respective dependence of CCMs on Pacific bluefin in accordance with Article 8(2)(d), the WCPFC measures do not refer to any particular CCM. In the records of WCPFC meetings, however, Japan has consistently affirmed the importance of bluefin to artisanal fishermen operating within its coastal waters. Japan is the largest market for bluefin globally, with most of the bluefin caught in Mexico's waters destined for Japanese markets after being grown-out in offshore cages. Japan likely has a higher dependence on Pacific bluefin with regard to consumption than any other CCM, but this consideration is not mentioned in WCPFC measures.

Pacific bluefin is a northern stock that predominately occurs north of 20°N. For this reason, there is no need to take into account special consideration of high seas pockets. With regard to the stock status of Pacific bluefin, it is the most significantly depleted tuna stock subject to international management ($SB/SB_{F=0} = < 3\%$). The recent catches of bluefin in the WCPO and EPO are within the limits established under both commissions, and if adhered to, will likely lead to the rebuilding of bluefin spawning stock biomass to 7% $SB_{F=0}$ by 2024. As stated by several members of the WCPFC, however, a 7% spawning biomass ratio represents the bare minimum as a conservation standard and should not be considered an appropriate rebuilding target. To achieve greater stock conservation, such as 20% $SB_{F=0}$, catches will need to be further reduced from current levels. In this regard, the application of the Principle may be subjected to further testing, as greater catch reductions will have to come from the major fishing nations of Japan and Mexico in order to achieve such conservation objectives.

6.4.2 Compatibility Rating

Table 10: Compatibility assessment matrix for Pacific bluefin

CMM on Pacific bluefin			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	No, none of the WCPFC bluefin measures reference Article 8. However, Article 22 is referenced which promotes consistency between WCPFC and IATTC management areas.	0.5
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	No, none of the WCPFC bluefin measures reference existing measures applicable to national waters or prior measures for the high seas.	0
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	The WCPFC measures apply within national waters and the high seas. When these measures are combined with IATTC measures, they cover the range of the stock. The WCPFC measure also applies to Japanese artisanal fisheries occurring within Japan's coastal waters.	1
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	References to the respective dependence of some CCMs on Pacific bluefin are absent from WCPFC measures. There are numerous instances in the records of Commission meeting, however, where the importance of the fishery to Japan is made clear.	0.5
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	Pacific bluefin is a northern stock, and as such its distribution is concentrated at latitudes greater than the two equatorial high seas pockets.	Not assessed
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	Pacific bluefin is experiencing overfishing and is in a severely overfished condition. However, given recent recruitment and catch restrictions, the stock is expected to rebuild to higher levels. Even so, large gains in stock recovery may not occur.	0.25
			Total Score (2.25/5) 45%

6.5 North Pacific Albacore

One of the first CMMs adopted by the Commission with regard to a targeted species was for North Pacific albacore.⁹⁶⁰ At the time of adopting CMM 2005-03, it was believed that North Pacific albacore was fully exploited or experiencing fishing mortality at levels not sustainable in the long term.⁹⁶¹ The main objective of the measure is to ensure that fishing effort by CCM vessels does not increase beyond “current” levels.⁹⁶² In addition, CCMs are obliged to report catches of North Pacific albacore to the WCPFC every six months, with an exception being made for small coastal fisheries, which are required to report on an annual basis. Annual reporting obligations also apply to CCMs with respect to their catches and fishing effort on North Pacific albacore by each gear type.⁹⁶³

CMM 2005-03 applies throughout the Convention Area and does not specify any spatial differences in its area of application between the high seas and EEZs. CMM 2005-03 also recognizes the need for coordination and consultation between the WCPFC and IATTC, instructing the WCPFC Executive Director to communicate with the IATTC on the need for both commissions to adopt uniform measures with respect to northern albacore.⁹⁶⁴ The use of the term “uniform” suggests that the two commissions adopt identical measures. Had an alternative phrasing been used (such as “compatible” or “consistent” measures), then this would have militated against the need for identical provisions or requirements. In this case, however, the WCPFC and IATTC did adopt near identical measures. The IATTC adopted a resolution in 2005 requiring that the total fishing level for North Pacific albacore in the EPO not increase

⁹⁶⁰ WCPFC. (2005). *Conservation and Management Measure for North Pacific Albacore (CMM 2005-03)*. Adopted at the Second Annual Session of the WCPFC. 11-16 December 2005. Pohnpei, FSM. As described in Chapter 4, North Pacific albacore is a Pan-Pacific stock that occurs north of the equator within the Convention Area and the IATTC area.

⁹⁶¹ ISC. (2014). *Stock Assessment of the Albacore Tuna in the North Pacific Ocean in 2014*. Report of the Albacore Working Group. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. 16-21 July 2014.

⁹⁶² CMM 2005-03 at paragraph 2. Fishing effort is to be reported, at a minimum, as the number of vessel-days fished for North Pacific albacore. The CMM does not define what is meant by “current levels.”

⁹⁶³ Ibid at paragraph 4.

⁹⁶⁴ Ibid at paragraph 8.

beyond current levels.⁹⁶⁵ The IATTC resolution, like the WCPFC CMM 2005-3, requires members of the IATTC to ensure that the level of fishing effort by their vessels fishing for North Pacific albacore does not increase.⁹⁶⁶

The latest stock assessment for North Pacific albacore, completed in 2017, indicates that the stock is healthy and that current productivity is sufficient to sustain recent levels of fishing mortality. The assessment also revealed the stock is not overfished relative to the LRP adopted by the WCPFC.⁹⁶⁷ Notwithstanding the current health of the stock, CMM 2005-03 continues to apply today. The IATTC revised its North Pacific albacore resolution in 2013 (C-13-03) to supplement its 2005 measure, with the main modification being to define “current effort” and require members to provide catch and effort information to the IATTC Secretariat.⁹⁶⁸ C-13-03 also provides that the IATTC will continue efforts to promote compatibility with WCPFC measures for North Pacific albacore.⁹⁶⁹

The Northern Committee has also initiated an interim harvest strategy approach for North Pacific albacore, with the management objective being to maintain the stock’s biomass around its current level, with reasonable variability, in order to allow recent exploitation levels to continue with a low risk of breaching the LRP.⁹⁷⁰ The Northern Committee has also recommended conducting a Management Strategy Evaluation to help determine a TRP for the stock.⁹⁷¹

⁹⁶⁵ IATTC. (2005). *Resolution on Northern Albacore Tuna (Resolution C-05-02)*. Inter-American Tropical Tuna Commission. 73rd meeting. Lanzarote, SP. 20-24 June 2005.

⁹⁶⁶ Ibid at paragraph 2. The IATTC later went on to adopt a clarifying resolution on how to define “current fishing effort.” See IATTC. (2013). *Supplemental Resolution on North Pacific Albacore (Resolution C-13-03)*. 85th Meeting of the IATTC. 10-14 June 2013. Veracruz, Mexico.

⁹⁶⁷ ISC. (2017). *Stock assessment for albacore tuna in the North Pacific Ocean in 2017*. Report of the Albacore Working Group. 12-17 June 2017. Vancouver, Canada.

⁹⁶⁸ IATTC. (2013). *Supplemental resolution on North Pacific albacore*. Adopted at the 85th meeting of the IATTC. 10-14 June 2013. Veracruz, Mexico.

⁹⁶⁹ WCPFC. (2005). *Conservation and Management Measure for North Pacific Albacore*. Western and Central Pacific Fisheries Commission. Adopted at the Second Regular Session of the WCPFC. Pohnpei, FSM. 12-16 December 2005.

⁹⁷⁰ WCPFC. (2017). *Summary Report of the Thirteenth Regular Session of the Northern Committee*. 28 August--1 September 2017. Busan, Republic of Korea. 49.

⁹⁷¹ Ibid at 42.

6.5.1 Findings on North Pacific albacore

With regard to the Principle in general, Article 8 is not referenced in CMM 2005-03. However, the measure does reference Article 22 which recognizes the importance of consistent measures between IATTC and WCPFC jurisdictions. In relation to Article 8(2)(b)(i-ii) and (c), prior measures for North Pacific albacore applicable in either EEZs or international waters are not referenced. The existing measure applies throughout the Convention Area, which signifies that the biological unity of stock and associated fisheries have been taken into account. Moreover, and as previously mentioned, the measure does reference Article 22 with regard to the need for consistent WCPFC/IATTC measures.

In relation to Article 2(d), there is no reference to the respective dependence of the stock by any CCM in the measure. The measure, however, does require additional data reporting requirements, including data covering small coastal fisheries. This information would be useful in any future consideration of respective dependence by a CCM on the stock. As Northern Albacore is a northern stock, and there are no high seas pockets north of 20° N, Article 8(4) does not apply. The latest stock assessment for North Pacific albacore, completed in 2017, indicates that the stock is healthy and not overfished or experiencing overfishing. An interim harvest strategy has been initiated to maintain biomass at its current level – an action measure which should also reduce or prevent tensions between CCMs with respect compatibility. However, this could change with regard to identification of a TRP as an outcome of the Management Strategy Evaluation (MSE) process.

6.5.2 Compatibility Rating

Table 11: Compatibility assessment for North Pacific albacore

CMM on North Pacific albacore			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	No, the CMM does not reference Article 8. Reference is made to Article 22 which recognizes consistent management measures between the WCPFC and IATTC.	0.5
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	No, none of the North Pacific albacore measures reference existing measures in place for EEZs or the high seas prior to the CMM.	0
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	The WCPFC measures apply within national waters and high seas, and when combined with IATTC measures, cover the range of the stock.	1
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	No references to the respective dependence of some CMMs on the stock are made within the measure.	0
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	Since North Pacific albacore is a northern stock, its stock distribution is concentrated at latitudes greater than the two equatorial high seas pockets.	Not assessed
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	North Pacific albacore is not overfished or experiencing overfishing. The Northern Committee is initiating a harvest strategy for the stock, including a MSE to help determine an appropriate TRP.	1
			Total Score (2.5/5) 50%

6.6 Southwest Pacific Striped Marlin

In 2006, the Commission adopted a CMM for Southwest Pacific striped marlin (CMM 2006-04).⁹⁷² At the time, the advice from the SC was that there should be no increase in fishing mortality on the stock, as fishing mortality was likely equal to or exceeded F_{MSY} and ‘current’ biomass was at or below B_{MSY} .⁹⁷³

The Southwest Pacific striped marlin stock is distributed between the equator and 40°S latitude and 140°E to 130°W longitude.⁹⁷⁴ Japanese longline vessels targeting bluefin and other pelagic stocks began harvesting Southwest Pacific striped marlin in the 1950’s.⁹⁷⁵ In 1987, the New Zealand government prohibited commercial fishing vessels from retaining striped marlin caught in New Zealand waters.⁹⁷⁶

CMM 2006-04 requires CCMs to limit the number of fishing vessels fishing for striped marlin in the Convention Area south of 15°S to a number in any one year between 2000-2004.⁹⁷⁷ The measure does not specify if the stated limits are to apply only on the high seas or within the EEZs of CCMs. Under the measure, SIDS and PTs are afforded the ability to develop their fisheries, and as such they are not restricted in the number of vessels that fish for striped marlin in the high seas or EEZ areas south of 15° S.⁹⁷⁸ The measure also exempts those CCMs that have already implemented measures that establish a commercial moratorium on the landing of striped marlin caught within waters under their national jurisdiction.⁹⁷⁹ To facilitate compliance monitoring and the provision of data on striped marlin, CCMs are required to nominate the maximum number of vessels that are allowed to fish for striped marlin south of

⁹⁷² WCPFC. (2006). *Conservation and Management Measure for Striped Marlin in the Southwest Pacific Ocean (CMM 2006-04)*. Adopted at the Third Regular Session of the WCPFC. 11-15 December 2006. Apia, Samoa.

⁹⁷³ WCPFC. (2006). *Report of the Second Regular Session of the Scientific Committee of the WCPFC*. 7-8 August 2006. Manila, Philippines. 214.

⁹⁷⁴ Langley, A., Molony, B., Bromhead, D., Yokawa, K., & Wise, B. (2006). *Stock assessment of striped marlin (Tetrapturus audax) in the southwest Pacific Ocean*. 7-18 August 2006. Manila, Philippines. WCPFC SC2 SA WP-6. 4.

⁹⁷⁵ Ibid.

⁹⁷⁶ Holdsworth, J.C., & Kopf, R.K. (2011). Characterization of striped marlin fisheries and biology in New Zealand and wider southwest Pacific Ocean. *New Zealand Fisheries Assessment Report*. 2011/2012 6. 6.

⁹⁷⁷ WCPFC. (2006). *Conservation and Management Measure for Striped Marlin in the Southwest Pacific Ocean (CMM 2006-04)*. Adopted at the Third Regular Session of the WCPFC. 11-15 December 2006. Apia, Samoa.

⁹⁷⁸ Ibid at 1, paragraph 2.

⁹⁷⁹ Ibid at 1, paragraph 5.

15° S. CCMs are also required to report annually to the Commission their catches of striped marlin as a result of targeted fishing and as bycatch.⁹⁸⁰

6.6.1 Findings on Southwest Pacific Striped Marlin

With regard to the Principle, Article 8 is not referenced in the measure. However, the CMM explicitly identifies that the measure does not apply to areas under the national jurisdiction of coastal States that already have a commercial moratorium in place. This can be viewed as consistent with Article 8(2)(b)(i) with respect to measures already in place prior to the CMM. Concerning the biological unity of the stock under Article 8(2)(c), CMM 2006-04 is spatially limited to south of 15°S within the Convention area; however, the stock occurs north of 15° S to the equator. This indicates that the measure does not cover the range of the stock in its entirety - a weakness with respect to Article 8(2)(a). Reasons for not extending the measure to stock boundary (as delineated in the stock assessment) are not clear from the WCPCF records. One reason may be that there is relatively little area of high seas north of 15°S in the Southwestern Pacific, as most of the ocean area is comprised of the EEZs of PICs. However, the measure also provides exemptions to SIDS and PTs, so excluding their EEZs seems illogical with regard to how the measure is formulated. In light of these factors, the Commission may not be appropriately taking into account the biological unity of the stock with respect to developing compatible measures.

Regarding the relative dependence on the stock pursuant to Article 8(2)(d), CMM 2006-04 also requires CCMs to nominate the total number of vessels fishing for Southwest Pacific striped marlin in the Convention Area south of 15°S between 2000 and 2004, and to report annually on the catch of this species. These provisions support compliance monitoring but could also be used when considering the respective dependence of CCMs on Southwest Pacific striped marlin in the future. The measure does not mention the need to take special consideration of high seas pocket areas of the Southwestern Pacific

⁹⁸⁰ Ibid at 1, paragraph 4.

Ocean; however, the EHSPSMA does occur within the range of stock and exit/entry vessel notifications do apply. The most recent stock assessment for Southwest Pacific striped marlin was completed in 2012, indicating that overfishing is not occurring, but that the stock is approaching an overfished condition.⁹⁸¹

⁹⁸¹ Davies, N., S. Hoyle, and J. Hampton. (2012). *Stock assessment for striped marlin (Kajikia audax) in the Southwest Pacific*. Eighth Regular Session of the Scientific Committee of the WCPFC. 7-15 August 2012. Busan, Korea. WCPFC-SC8-2012/SA-WP-05.

6.6.2 Compatibility Rating

Table 12: Compatibility assessment for Southwest Pacific striped marlin

CMM on Southwest Pacific Striped Marlin			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	No, the CMM does not reference Article 8.	0
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	Yes, the CMM does reference existing measures in place for those CCMs that already have a commercial moratorium in effect.	1
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	The CMM does apply to the entire range of the stock, as the area north of 15° degrees S is not subject to the measure. The stock is believed to extend to the equator.	0.5
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	No references are made to the respective dependence on the stock by CCMs. However, the measure does require some level of reporting, which in the future could be used to identify respective dependence.	0.25
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	There is no mention of high seas pockets in the measure. However, the EHSPSMA does occur within the range of stock and exit/entry vessel notifications do apply.	0.25
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	Southwest Pacific striped marlin is not experiencing overfishing, but it is approaching an overfished condition.	0.5
			Total Score (2.5/6) 42%

6.7 Southwest Pacific Swordfish

In 2006, the Commission adopted a conservation and management measure (CMM 2006-03) for the swordfish stock occurring in the Southwest Pacific Ocean.⁹⁸² The stock boundaries are believed to be between 0°-50°S latitude and 140°E-175°W longitude, with most of the catches occurring between 20 °S and 40 °S.⁹⁸³ At the time the measure was adopted, there were concerns that catch rates and the average size of swordfish within the core harvest area were in decline.⁹⁸⁴ For example, if the 2004 level of effort and catch continued, further declines in the stock's biomass were predicted.⁹⁸⁵

Prior to CMM 2006-03 being adopted, proponents argued that the measure was needed based on the SC's management advice and the precautionary approach; however, the EU questioned the science behind the stock assessment and its results.⁹⁸⁶ The Cook Islands asserted that the EU was rapidly expanding its fleet of vessels that target swordfish, and that such expansion threatened the fishery development aspirations of SIDS.⁹⁸⁷ Although a small working group was formed, the records of WCPFC3 shed no further light on the development of the CMM.

Nonetheless, the Commission adopted the measure, with CCMs being required to limit their vessels fishing for swordfish in the Convention Area south of 20° S to the number in any one year between 2000

⁹⁸² WCPFC. (2006). *Conservation and Management Measure for Swordfish in the Southwest Pacific (CMM 2006-03)*. Third Regular Session of the WCPFC. 11-15 December 2006. Apia, Samoa.

⁹⁸³ Kolody, D., Campbell, R., & Davies, N. (2006). *A MULTIFAN-CL Stock Assessment for South-West Pacific Swordfish 1952-2004*. Second Regular Session of the Scientific Committee of the WCPFC. 7-18 August 2006. Manila, Philippines. WCPFC-SC4-2008/SA-WP-6. 4.

⁹⁸⁴ WCPFC. (2006). *Report of the Second Regular Session of the Scientific Committee of the WCPFC*. 7-18 August 2006. Manila, Philippines. 16. The 2006 stock assessment was unable to determine whether the stock was overfished or experiencing overfishing.

⁹⁸⁵ Ibid.

⁹⁸⁶ WCPFC. (2006). *Report of the Third Regular Session of the WCPFC*. 11-15 December 2006. Apia, Samoa. 15. The EU doubted the conclusions of the stock assessment, noting that their vessels had not been experiencing declining catch rates.

⁹⁸⁷ Ibid at 19.

and 2005.⁹⁸⁸ The measure applied to the entire Convention Area south of 20° S, yet the stock assessment at the time was limited to the South-West Pacific to around 175° W.⁹⁸⁹

The measure also required CCMs to report the number of vessels that fished for swordfish between 2000 and 2005, and to nominate the maximum number of vessels permitted to fish for swordfish south of 20° degrees S.⁹⁹⁰ Like other CMMs, SIDS and PTs were exempt from the vessel limit restriction, provided they were pursuing responsible development of their fisheries in the area.⁹⁹¹

In 2008 a new stock assessment for south Pacific swordfish was conducted.⁹⁹² An important objective of the assessment was to evaluate the entire stock, as the Commission had only been managing the stock beyond the south-western Pacific. Accordingly, the stock assessment evaluated swordfish in two regions of the Convention Area: 1) the south-western Pacific; and 2) the south-central Pacific.⁹⁹³ The assessment identified that swordfish catches in the south-central Pacific were historically much lower than in the south-west Pacific, but began to increase rapidly in 1990s, with a similar trend occurring around the same in the south-west region.⁹⁹⁴ Most of the catch in the south-central region was taken as bycatch in equatorial longline fisheries, but in 2004 a rapidly expanding Spanish fleet began targeting swordfish. By 2006, swordfish catches by Spanish vessels were greater than all nations combined in the south-west and south-central regions.⁹⁹⁵ The stock assessment found that the status of swordfish in the south-west region

⁹⁸⁸ WCPFC. (2006). *Conservation and Management Measure for Swordfish in the Southwest Pacific (CMM 2006-03)*. Third Regular Session of the WCPFC. 11-15 December 2006. Apia, Samoa.

⁹⁸⁹ Ibid.

⁹⁹⁰ Ibid at paragraph 4.

⁹⁹¹ Ibid at paragraph 2.

⁹⁹² Kolody, D., Campbell, R., & Davies, N. (2008). A MULTIFAC-CL stock assessment of South-West Pacific Swordfish, 1952-2007. Fourth Regular Session of the Scientific Committee of the WCPFC. 11-22 August 2008. Port Moresby, Papua New Guinea. WCPFC-SC4-2008/SA-WP-6.

⁹⁹³ Ibid at 8. The demarcation between the south-west Pacific and south-central Pacific regions is 175° W.

⁹⁹⁴ Ibid at 7.

⁹⁹⁵ Ibid.

was not overfished or experiencing overfishing. However, the stock assessment for the south-central Pacific was unable to determine an overfished/not overfished status due to a lack of data.⁹⁹⁶

After reviewing the 2008 stock assessment, the WCPFC SC recommended there be no further increase in catch or effort for the south-western area.⁹⁹⁷ For the south-central region, the SC recommended that constraining the (existing) fishing mortality level was appropriate.⁹⁹⁸ Based on the SC's advice, and the recognition that the number of Spanish vessels (and their catches) had rapidly increased, New Zealand (on behalf of FFA members) proposed a new measure at WCPFC5 that would replace CMM 2006-03. The proposal would have restricted catch and effort levels to the maximum amount in any one year between 2000 and 2006.⁹⁹⁹ New Zealand argued that the existing measure, while it might have constrained vessels fishing for swordfish south of 20° S, did not impose catch or effort restrictions and failed to control fishing mortality.¹⁰⁰⁰ Some CCMs opposed the FFA's proposal, arguing that the stock status did not indicate overfishing or an overfished condition, and further, that the Commission should focus on stocks that are in much worse condition and establish longline limits for those fisheries, as appropriate.¹⁰⁰¹ An alternative view was expressed by another CCM, which declared that although the stock was not in a precarious situation, management action should not be deferred. In making this pronouncement, the CCM reminded the other members that the objective of the Commission is to ensure the long-term conservation and sustainable use of fish stocks in the Convention Area.¹⁰⁰²

Notwithstanding the arguments against the proposal, the Commission agreed to a new measure, CMM 2008-05, which included the provision that CCMs limit the amount of swordfish caught on an annual

⁹⁹⁶ Kolody et al. (2008) at 5.

⁹⁹⁷ WCPFC. (2008). *Report of the Fourth Regular Session of the Scientific Committee of the WCPFC*. Port Moresby, Papua New Guinea. 11-22 August 2008. 20.

⁹⁹⁸ Ibid.

⁹⁹⁹ FFA. (2008). *Proposal from FFA Members to replace CMM-2006-03*. Submitted to the Fifth Regular Session of the WCPFC. 8-12 December 2008. Busan, Korea. WCPFC5-2008/04 rev1.

¹⁰⁰⁰ WCPFC. (2008). *Report of the Fifth Regular Session of the WCPFC*. 8-12 December 2008. Busan, Korea.38.

¹⁰⁰¹ Ibid. Members who voiced their opposition to New Zealand's proposal are unnamed in the report of WCPFC5.

¹⁰⁰² Ibid.

basis south of 20° S to the amount in any one year between 2000 and 2006.¹⁰⁰³ The vessel limits established under CMM 2006-03 were maintained in the new measure. CCMs were also required to nominate their respective maximum total catch for 2009 in the area south of 20° S.¹⁰⁰⁴

The new measure included a data verification provision which was specific to one member only - the EU.¹⁰⁰⁵ This was because during the negotiation of the new measure, the EU delegate indicated that the 2005 swordfish catch data previously submitted by the EU was actually 2-4 times higher than the data indicated.¹⁰⁰⁶ This led other member delegations to believe the EU was fabricating data to ensure a higher catch limit under the new measure. Therefore, the EU was required to be subject to an independent catch verification review.¹⁰⁰⁷ CMM 2008-05 also identified that New Zealand and Australia had domestic catch limits already in place at 885 mt and 1400 mt respectively.¹⁰⁰⁸

In 2009, the Commission again revised the swordfish measure, largely because CMM 2008-05 had established catch limits applicable to 2009 only. The Commission agreed on CMM 2009-03, which maintains most of the provisions of CMM 2008-05.¹⁰⁰⁹ Under the new measure, if a CCM exceeds its nominated catch limit, that CCM is to reduce the next year's catch limit by the overage in the previous year.¹⁰¹⁰ A data verification scheme was also introduced, such that operational data is to be verified by the

¹⁰⁰³ WCPFC. (2008). *Conservation and Management of Swordfish (CMM 2008-05)*. Adopted at the Fifth Regular Session of the WCPFC. 8-12 December 2008. Busan, Korea.

¹⁰⁰⁴ Ibid at 1, paragraph 5.

¹⁰⁰⁵ Ibid.

¹⁰⁰⁶ WCPFC. (2008). *Report of the Fifth Regular Session of the WCPFC*. 8-12 December 2008. Busan, Korea. 35.

¹⁰⁰⁷ Ibid.

¹⁰⁰⁸ Note that when New Zealand and Australia notified the Commission of their 2009 catch limits, both CCMs identified higher catch amounts than those listed in CMM 2008-05. The limits nominated were 1,027 mt and 2,126 mt respectively. See WCPFC. (2009). *Review of CCMs' Implementation of, and Compliance with, Conservation and Management Measures*. Fifth Regular Session of the Technical and Compliance Committee of the WCPFC. 1-6 October 2009. Pohnpei, FSM. WCPFC-TCC5-2009/31rev1. 21.

¹⁰⁰⁹ WCPFC. (2009). *Conservation and Management Measure for Swordfish (CMM 2009-3)*. Adopted at the Sixth Regular Session of the WCPFC. 7-11 December 2009. Papeete, French Polynesia.

¹⁰¹⁰ WCPFC (2009), CMM 2009-03. This was the first Commission-adopted measure to include a provision whereby a CCM's annual limit for the following year would be reduced by any overage of its limit in the preceding year. A later example can be found in CMM 2013-01, paragraph 40.

SPC for CCMs that have vessels catching south-west Pacific swordfish either through direct targeting or as bycatch in waters south of 20°S.¹⁰¹¹

The stock status of South Pacific swordfish was assessed in 2017, with the results indicating that the stock is likely not overfished or subject to overfishing. However, spawning biomass appears to on a gradual, continued decline.¹⁰¹² Taking into account the stock assessment, the WCPFC SC recommended that the Commission consider developing management measures for the area north of 20° S, which is currently not covered under the existing CMM. If one considers that catches in the northern area represent half of the total catch of the stock, the SC's recommendation is both timely and appropriate.¹⁰¹³

¹⁰¹¹ Ibid.

¹⁰¹² Takeuchi, Y., Pilling, G., & Hampton, J. (2017). *Stock assessment of Swordfish (Xiphias gladius) in the Southwest Pacific Ocean*. Thirteenth Regular Session of the Scientific Committee of the WCPFC. 9-17 August 2017. Rarotonga, Cook Islands. WCPFC-SC13-2017/SA-WP-13.

¹⁰¹³ WCPFC. (2017). *Summary Report of the Thirteenth Regular Session of the Scientific Committee of the WCPFC*. 9-17 August 2017. Rarotonga, Cook Islands. 108.

6.7.1 Findings on South Pacific Swordfish

Neither the Principle nor Article 8 are referenced in any of the agreed WCPFC conservation and management measures for South-western Pacific swordfish. In CMM 2008-05, the predecessor to the existing measure in place, domestically established catch limits in effect for Australia and New Zealand were identified, representing consistency with Article 8(2)(b)(i). In the replacement measure (CMM 2009-03), however, the domestic limits for Australia and New Zealand have been removed. There is no indication in the records as to why this information was omitted from the replacement measure.

With regard to Article (2)(a) and the biological unity of South-western Pacific swordfish, the measure does not cover the entire range of the stock. Moreover, around half of the total catch occurs outside of the measure's area of application (i.e., north of 20° S). While the existing measure instructs CCMs not to shift effort north of 20° S, the measure provides a blanket exemption to SIDS and PTs, whereby catch limits do not apply provided these CCMs are undertaking responsible development of their fisheries. CMM 2009-03 acknowledges the importance of the WCPFC and IATTC in establishing complementary measures for species of mutual interest, and that swordfish stocks likely occur within the area of responsibility of both RFMOs.

The measure also maintains provisions that require the submission of catch data on an annual basis. Indeed, these provisions support the application of the Principle and could potentially be used to identify respective dependence in accordance with Article 8(2)(d). However, there is no clear indication in the records of any CCM having made claims of substantial dependence on South Pacific swordfish.

The EHSPSMA does occur within the range of the stock, and thus vessels are required to notify the Commission of their entry and exit within the area, including the quantity of fish they have on board. In this regard, the EHSPSMA can be viewed as supporting compatibility with respect to Article 8(4).

6.7.2 Compatibility Rating

Table 13: Compatibility assessment for Southwest Pacific Swordfish

CMM on Southwest Pacific Swordfish			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	No, the CMM does not reference Article 8. The measure does reference the need for consistent measures between the WCPFC and IATTC.	0.25
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	The predecessor measure did reference domestic catch limits in place for Australia and New Zealand. However, reference to those limits were removed from the CMM currently in place.	0.5
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	The CMM does not apply to the entire range of the stock as the area north of 20° S is not subject to the measure. Around half of the total catch occurs outside of the measure's area of application.	0.5
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	No references relating to the respective dependence on the stock by CCMs appear in the CMM. However, the measure does require some degree of reporting, which in the future could be used to identify respective dependence.	0.25
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	There is no mention of high seas pockets in the measure. However the EHSPSMA does occur within the range of the stock and entry/exit vessel notifications do apply to swordfish.	0.5
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	Southwest Pacific swordfish is not overfished or experiencing overfishing.	1
			Total Score (3/6) 50%

6.8 North Pacific Striped Marlin

In 2010, the Commission adopted CMM 2010-01 on north Pacific striped marlin. Indeed, available information at the time suggested that the stock was subject to overfishing and likely overfished with regard to spawning biomass.¹⁰¹⁴ The main controls in CMM 2010-01 are provisions that establish flag-based catch limits, beginning in 2011 with phased reductions through 2013, with 2013 catch levels restricted to 80% of each CCMs highest catch between 2000 and 2003.¹⁰¹⁵ After 2013, CCMs are to maintain the catch limits that apply in 2013. Interestingly, the measure establishes flag-based catch limits that apply irrespective of fishing gear. Typically, WCPFC measures identify the gear types to which the provisions apply (e.g., longline, purse seine etc.) However, this measure is void of such specificity and thus applies to all commercial fisheries of a CCM harvesting North Pacific striped marlin.

CMM 2010-01 identifies the area of application to be in the high seas and EEZs within the Convention Area north of the equator.¹⁰¹⁶ The measure requires each CCM to report “verifiable” information regarding its catch of North Pacific striped marlin, as well as the status of domestic implementation of the measure on an annual basis in their Part 2 Reports.¹⁰¹⁷ Exemptions to the catch limits are provided to SIDS and PTs.¹⁰¹⁸

¹⁰¹⁴ WCPFC. (2010). *Conservation and Management Measure for North Pacific Striped Marlin (CMM 2010-01)*. Seventh Regular Session of the WCPFC. 6-10 December 2010. At the time the measure was adopted, the latest stock assessment for North Pacific striped marlin had been completed in 2007. See WCPFC. (2010). *Sixth Regular Session of the Scientific Committee of the WCPFC*. 10-19 August 2010. Nukualofa, Tonga. xvi.

¹⁰¹⁵ CMM 2010-01 at 1, paragraphs 5(a)-(c).

¹⁰¹⁶ CMM 2010-01 at 1, paragraph 1.

¹⁰¹⁷ *Ibid* at 7.

¹⁰¹⁸ *Ibid* at 1, paragraph 3.

6.8.1 Findings on North Pacific Striped Marlin

With respect to the Principle, Article 8 is not referenced in CMM 2010-01. The measure does, however, reference FFA members adopting a system of zone-based longline limits to replace the current system of flag-based arrangements that are applicable to their EEZs. This reference has linkages to Article 8(2)(b)(i) with respect to the development of compatible measures and measures in place for areas under national jurisdiction.

Regarding the need to consider the biological unity of stock (Article 8(2)(d)), the measure applies to EEZs and the high seas of the Convention Area north of equator, which indicates that it does take into account the full range of the stock. One potential weakness of the measure is the exemptions provided to SIDS and PTs, such that any increases in catch by SIDS and PTs would likely occur on the high seas. Increased catches on the high seas could be viewed as problematic if those catches are incompatible with catches taken within waters under national jurisdiction. However, the likelihood of this eventuating is low. The measure requires verifiable fisheries information to be provided, which could be used for future respective dependence considerations. However, the provision of such information finds greater resonance with the issue of compliance monitoring than Article 8(2)(d).

The stock occurs in the North Pacific predominately in northerly latitudes where there are not high seas pockets, and therefore the measure is not assessed in accordance with Article 8(4). The latest (2015) stock assessment for North Pacific striped marlin found that the stock continues to be subject to overfishing and was overfished with regard to MSY-related biomass reference points.¹⁰¹⁹

¹⁰¹⁹ ISC. (2015). *Stock assessment update for striped marlin (Kajikia audax) in the Western and Central North Pacific Ocean through 2013*. Report of the Billfish Working Group. 15-20 July 2015. Kona, USA.

6.8.2 Compatibility Rating

Table 14: Compatibility assessment for North Pacific striped marlin

CMM on North Pacific Striped Marlin			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	No, the CMM does not reference Article 8.	0
2. Article 8(2)(b)(i-ii) and(c)	Does the measure recognize measures established for EEZs or prior measures established for the high seas?	The measure does mention that FFA members will be adopting a system of zone-based longline limits to replace the current system of flag-based arrangements that are applicable to their EEZs. However, there is no indication that the limits were in place prior to the adoption of the measure.	0.5
3. Article 8(2)(a)	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	The CMM applies throughout the entire range of the stock and to all gears catching North Pacific striped marlin.	1
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	No references to the respective dependence on the stock by CCMs appear in the CMM. However, the measure does require some degree of reporting, which in the future could be used to identify respective dependence.	0.25
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	Although North Pacific striped marlin is not considered a northern stock, its distribution is concentrated at latitudes greater than the two equatorial high seas pockets.	Not assessed
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	North Pacific striped marlin is overfished and experiencing overfishing.	0
			Total Score (1.75/5) 35%

6.9 Sharks

The WCPFC first agreed to a CMM on sharks in 2006.¹⁰²⁰ The measure (CMM 2006-05) required CCMs to, *inter alia*, implement the following: a) the FAO International Plan of Action for the Conservation and Management of Sharks.¹⁰²¹ This plan encourages the development of National Plans of Action for shark conservation; b) the submission of shark catch data for key shark species identified by the SC; and c) a requirement that shark fins retained by vessels on board total no more than 5% of the weight of sharks retained on board.¹⁰²² The area of application of the shark measure was not specified; thus, *ipso facto*, the measure applied throughout the Convention Area.¹⁰²³ However, the measure also provided an exemption to areas under national jurisdiction, stating that nothing in the measure prejudices the sovereign rights of coastal States to implement alternative measures for the purposes of exploring, exploiting, conserving and managing sharks in waters under national jurisdiction.¹⁰²⁴ The term “exploiting” suggests that domestic laws within waters under national jurisdiction that allow for shark finning could be maintained, depending on how a particular member chose to implement the measure domestically. In this regard, international waters within the Convention Area were likely managed more conservatively with respect to the practice of shark finning than the national waters of some members. On the other hand, some members already had anti-shark finning prohibitions in place, with such prohibitions attaching to their flagged vessels operating on the high seas and in national waters. However, the measure does not identify these countries,

¹⁰²⁰ WCPFC. (2006). *Conservation and Management Measure for Sharks in the Western and Central Pacific Ocean (CMM 2006-05)*. Adopted at the Third Regular Session of the WCPFC. 11-15 December 2016. Apia, Samoa.

¹⁰²¹ FAO. (1998). *The International Plan of Action for Conservation and Management of Sharks*. The IPOA on Sharks is a non-binding international instrument developed by the FAO.

¹⁰²² CMM 2006-05 at 1, paragraph 7.

¹⁰²³ There is no discussion in the records of the WCPFC’s Third Regular Session of the shark measure not applying in the archipelagic waters of coastal States within the WCPO.

¹⁰²⁴ CMM 2006-5, at 2, paragraph 11.

nor does it require CCMs to identify domestic measures that are in effect.¹⁰²⁵ Another important exemption found in the measure is that it only applied to vessels greater than 24 meters, so vessels less than 24 meters could continue to conduct shark finning.¹⁰²⁶ As there are thousands of longline vessels operating in the Convention Area less than 24 meters, the narrow application of the measure substantially reduced its conservation potential.

The WCPFC revised the shark measure in 2008 to require CCMs to, among other things: a) report on the implementation status of the shark IPOA in their Part 2 Annual Reports, including the status of their National Plans of Action and/or assessment of the need to have a National Plan; b) provide catch and effort data by gear type for SC-identified key shark species (blue, oceanic white tip, mako and thresher sharks; and c) apply the measure to all their flagged vessels fishing for HMS species within the Convention Area.¹⁰²⁷ Unfortunately, Part 2 Annual Reports are not available in the public domain, drastically reducing transparency of the implementation of the measure.¹⁰²⁸

During the negotiation of the shark measure at WCPFC5, Papua New Guinea intervened to ensure that their domestic shark fishery operating in PNG waters was exempted from the measure. Indeed, PNG argued for the inclusion of the term “traditional fisheries” in the paragraph referencing the sovereign

¹⁰²⁵ In the United States, for example, the Shark Fin Prohibition Act of 2000 prohibited shark finning but allowed a 5% fin to carcass ratio. In 2010, the statute was amended to require all sharks loaded on board to have their fins naturally attached. See US Public Law 106-557. There are also shark sanctuaries across the WCPO, including in the national waters of Palau, the Marshall Islands, the Federated States of Micronesia, Kiribati, New Caledonia, the Cook Islands and French Polynesia. See: <http://www.pewtrusts.org/en/research-and-analysis/factsheets/2016/03/shark-sanctuaries-around-the-world>.

¹⁰²⁶ Ibid.

¹⁰²⁷ WCPFC. (2008). *Conservation and Management Measure for Sharks (CMM 2008-06)*. Adopted at the Fifth Regular Session of the WCPFC. 8-12 December 2008. Busan, Korea. The United States introduced the proposal to amend CMM 2006-05, referencing the Scientific Committee’s finding that there is no substantial difference in shark catches by vessels greater than and less than 24 meters in length.

¹⁰²⁸ Gilman, E., & Kingma, E. (2013). Standard for assessing transparency in information on compliance with obligations of regional fisheries management organizations: Validation through assessment of the Western and Central Pacific Fisheries Commission. *Ocean & Coastal Management*, 84, 31-39.

rights of coastal States.¹⁰²⁹ In this regard, the measure only applies to national waters of coastal States if they so choose, with such States still being able to implement alternative measures for sharks.

The following year, the WCPFC again revised the shark measure, but only by adding silky sharks to the list of key shark species.¹⁰³⁰ The Commission also tasked the SC to evaluate whether or not hammerhead and porbeagle sharks should be added to the list of key shark species, and to consider reviewing the shark measure the following year.¹⁰³¹ With little to no debate indicated in the meeting records, the shark measure was again revised in 2010, but only to include hammerhead and porbeagle sharks on the key species lists. The measure, CMM 2010-07, maintained the exemption for national waters and did not specify a timeframe to review the measure's effectiveness.¹⁰³²

Shark management was again on the agenda at the 2011 Commission meeting, but this time the focus was on oceanic whitetip sharks. Based on fisheries data showing a steep decline in the catch rates and size of whitetips, the outlook of the stock was grim, prompting a strong call to action by civic society and environmental organizations for both the WCPFC and IATTC to adopt species specific measures for oceanic whitetips.¹⁰³³ The WCPFC responded by adopting a CMM specific to oceanic whitetip sharks (CMM 2011-04), such that CCMs are to implement regulations that prohibit their vessels from retaining, transshipping or landing any oceanic whitetip shark (in whole or in part) within the Convention Area.¹⁰³⁴ Unlike previous shark CMMs, this measure did not contain express language exempting coastal States

¹⁰²⁹ WCPFC. (2008). *Report of the Fifth Regular Session of the WCPFC*. 8-12 December, 2008. Busan, Korea. 36.

¹⁰³⁰ WCPFC. (2009). *Conservation and Management Measure for Sharks (2009-04)*. Adopted at the Sixth Regular Session of the WCPFC. 7-11 December 2009. Papeete, French Polynesia. The key shark species list dictates which data reporting obligations apply to CCMs with regard to sharks.

¹⁰³¹ WCPFC. (2009). *Summary Report of the Sixth Regular Session of the WCPFC*. 7-11 December 2009. Papeete, French Polynesia. 39.

¹⁰³² WCPFC. (2010). *Conservation and Management Measure for Sharks (CMM 2010-07)*. Adopted at the Seventh Regular Session of the WCPFC. 6-10 December 2010. Hawaii, USA.

¹⁰³³ WCPFC. (2011). *Summary Report of the Seventh Regular Session of the Scientific Committee of the WCPFC*. 9-17 August 2011. Pohnpei, FSM. 91.

¹⁰³⁴ WCPFC. (2011). *Conservation and Management Measure for Oceanic Whitetip Shark (CMM 2011-04)*. Adopted at the Eighth Regular Session of the WCPFC. 26-30 March 2012. Guam, USA. The IATTC adopted a similar non-retention measure for oceanic whitetip sharks earlier in 2011. See: IATTC. (2011). *Resolution on the Conservation of Oceanic Whitetip Sharks Caught in Association with Fishing in the Antigua Convention Area*. Adopted at the 82nd Meeting of the IATTC. 4-8 July 2011. La Jolla, USA.

from the retention-ban in their national waters. In this way, the WCPFC had adopted a measure to be applied uniformly throughout the Convention area - one which left little to no room for discretion in its domestic implementation by CCMs.

Whale sharks were next on the WCPFC shark management agenda, with a measure (CMM 2012-04) adopted the following year prohibiting the intentional setting of purse seine gear around a whale shark.¹⁰³⁵ Importantly, Article 8 is specifically referenced in the preamble section of the WCPFC whale shark measure.¹⁰³⁶ The reference to Article 8 immediately follows mention of the PNA's Third Implementing Arrangement, which is listed as already prohibiting vessels operating in PNA waters from encircling whale sharks as part of purse seine fishing operations.¹⁰³⁷ In referencing Article 8 immediately after referring to the existing PNA whale shark measures, it denoted that management gap existed on the high seas and for the EEZs of non-PNA members – a gap which the measure would resolve through the adoption of compatible measures.

In 2013, the Commission adopted a CMM to prohibit the retention, transshipment and landing of silky sharks throughout the Convention Area.¹⁰³⁸ The CMM followed a stock assessment which found there had been significant reductions in the catch rates of silky sharks, coupled with excess fishing mortality (which indicated that overfishing was occurring).¹⁰³⁹ Likewise, silky shark biomass was estimated to be below levels associated with MSY; thus, the stock was also considered overfished.¹⁰⁴⁰ After reviewing the stock assessment, the SC acknowledged that the greatest impact on the stock was attributable to bycatch from the longline fishery in the tropical and subtropical areas, but that there were also significant impacts

¹⁰³⁵ WCPFC. (2012). *Conservation and Management Measure for Protection of Whale Sharks from Purse Seine Fishing Operations (CMM 2012-02)*. Adopted at the Ninth Regular Session of the WCPFC. Manila, Philippines. 2-6 December 2012.

¹⁰³⁶ Ibid at 1.

¹⁰³⁷ Ibid. See PNA (2008). Third Implementing Arrangement. 3.

¹⁰³⁸ WCPFC. (2013). *Conservation and management measure for silky sharks (CMM 2013-08)*. Adopted at the Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia.

¹⁰³⁹ Rice, J., & Harley, S.. (2013). *Updated stock assessment of silky sharks in the Western and Central Pacific Ocean*. Ninth Regular Session of the WCPFC Scientific Committee. 6-14 August 2013. Pohnpei, FSM. WCPFC-SC9-2013/SA-WP-03.

¹⁰⁴⁰ Ibid at 3.

from the associated purse-seine fishery that catches predominantly juvenile sharks.¹⁰⁴¹ The SC advised the Commission to consider measures directed at bycatch mitigation, as well as measures directed at targeted catch (such as from shark lines), to improve the status of the silky shark population.¹⁰⁴²

As opposed to the whale shark measure, CMM 2013-09 does not refer to any pre-existing measures for silky sharks adopted by CCMs for their national waters. The measure required members to collect data on the catch of silky sharks and their release condition (e.g., dead or alive), with members to provide such information in their Part 1 Annual Reports to the Commission.¹⁰⁴³ The data collection requirement can further be evaluated as supporting the Principle, as silky shark data was not being provided by members prior to the measure being adopted. Good data supports effective management, and for severely depleted species such oceanic white tips and silky sharks, coordinated and compatible measures based on comprehensive data supplied by Commission members are essential for the long-term sustainability of these shark species in the WCPO.

In 2014, the Commission adopted CMM 2014-05, which requires members to prohibit their longline vessels from using shark lines and wire tracers as branch liners.¹⁰⁴⁴ The measure's area of application was not identified, but it is reasonable to conclude that the measure applies within EEZs and the high seas of the Convention Area. The measure did not include any reference to similar measures already in place for waters under national jurisdiction.

¹⁰⁴¹ WCPFC. (2013). *Summary Report of the Ninth Regular Session of the WCPFC Scientific Committee*. 6-14 August 2013. Pohnpei, FSM.12.

¹⁰⁴² Ibid.

¹⁰⁴³ Ibid.

¹⁰⁴⁴ WCPFC. (2014). *Conservation and management measure for sharks (CMM 2014-05)*. Adopted at the Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa.

6.9.1 Findings on Sharks

Article 8 is generally not referenced in the Commission's shark measures. The one exception is the CMM on whale sharks, which references Article 8 and prior measures in effect for PNA waters. For the most part, the Commission's shark measures apply throughout the Convention Area, which is consistent with the biological unity of shark stocks and their wide dispersion. However, a notable exception with respect to the applicability of measures is the 5% fin to carcass ratio for waters under national jurisdiction. There is a growing concern that this ratio is unenforceable and that shark finning is occurring on the high seas of the WCPO, and quite possibly in the national waters of some members as well.¹⁰⁴⁵ For example, the WCPFC TCC has concluded that compliance with the 5% fin to carcass ratio cannot be assessed with the Commission's Compliance Monitoring Scheme.¹⁰⁴⁶ On the other hand, there are several members that have implemented domestic regulations that prohibit shark finning, and further, require sharks to be landed whole, with fins naturally attached.¹⁰⁴⁷ For shark species that are severely depleted such as oceanic whitetips and silky sharks, retention is prohibited throughout the Convention Area.

The Commission has required data reporting on key shark species, which could be used in the future with regard to considerations of respective dependence in accordance with Article 8(2)(d). There has been no specific consideration regarding sharks and high seas pockets; however, the EHSPSMA does prohibit transshipment within the area, as well as requiring vessel notification of the amount of retained species on board prior to entry and upon exit. These measures could indeed have linkages to Article 8(4). With respect to the stock status of sharks, two species are known to be overfished (silky shark and oceanic

¹⁰⁴⁵ European Union. (2016). *Proposal for a conservation and management measure on sharks caught in association with fisheries managed by the WCPFC*. Submitted at the Thirteenth Regular Session of the WCPFC. 5-9 December 2016. Denarau, Fiji. WCPFC13-2016-DP07.

¹⁰⁴⁶ WCPFC. (2016). *Summary Report of the Twelfth Regular Session of the Technical and Compliance Committee of the WCPFC*. 21-27 September 2016. Pohnpei, FSM. 56.

¹⁰⁴⁷ Several countries that are members of the WCPFC either prohibit the commercial harvest of sharks in their national waters or require sharks to be landed whole. These countries include, but are not limited to, French Polynesia, Palau, the Republic of the Marshall Islands, Kiribati (Phoenix Island Protected Area), the Cook Islands, the United States, Australia, New Zealand (territory waters only) and Chinese Taipei. See <https://awionline.org/content/international-shark-finning-bans-and-policies>.

whitetip), with poor stock status for several other species, including hammerhead, thresher, porbeagle, mako and whale sharks.¹⁰⁴⁸

¹⁰⁴⁸ IUCN. (2017). *Status of pelagic elasobranchs (sharks and rays) of the Western and Central Pacific Ocean*. Prepared by the IUCN shark specialist group at the New Zealand and Oceania shark red list assessment workshop. 26-27 June 2017. Auckland, New Zealand.

6.9.2 Compatibility Rating

Table 15: Compatibility assessment for Sharks

CMMs on Sharks			
Standard	Criteria	Justification	Score
1. Article 8 in general	Does the measure reference Article 8?	The majority of the shark measures have not referenced Article 8, with the one exception being the CMM on whale sharks. The measure to prohibit the retention of oceanic whitetip sharks called upon the IATTC to adopt a similar prohibition.	0.25
2. Article 8(2)(b)(i-ii) and (c)	Does the measure recognize measures established for EEZs or: prior measures established for the high seas?	Only the whale shark measure references prior measures in place for national waters of PNA members.	0.25
3. Article 8(2)(a)?	What is the extent of the measure's area of application and does it take into account the biological unity of the stocks and fisheries concerned?	Shark CMMs do apply generally throughout the Convention Area.	1
4. Article 8(2)(d)	To what extent are considerations of respective dependence on the stocks concerned taken into account?	The main shark measure that prohibits shark finning in the Convention Area does provide exemptions to waters under national jurisdiction, such that the measure shall not prejudice the sovereignty and sovereign rights of coastal States, including for traditional fishing activities and the rights of traditional artisanal fishers, to apply alternative measures for the purposes of exploring, exploiting, conserving and managing sharks.	0.5
5. Article 8(4)	To what extent does the CMM accommodate considerations for high seas pockets?	There are no specific references to high seas pockets and shark management, but transshipment is prohibited in the EHSPSMA and entry and exit notifications with associated catch information are required in that area. Illegal transshipment of shark fins is a known problem within the WCPO. ¹⁰⁴⁹	0.25
6. Article 2 Stock Status	What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	The stock status of several shark species within the WCPO is of substantial concern, with two known to be overfished and others likely facing similar conditions. However, the shark species caught in the greatest number, blue sharks, is not experiencing overfishing.	0.50
			Total Score (2.75/6) 46%

¹⁰⁴⁹ M. McCoy. (2007). *Regulation of transshipment by the Western and Central Pacific Fisheries Commission: Issues and consideration for FFA member countries*. FFA Report #2007/26. Honiara, Solomon Islands. 37.

6.10 Which WCPFC members make more references to the Principle?

A review of WCPFC meeting records was conducted to determine the occurrence of references to the Principle, as well as gain an understanding of which CCMs most often provide statements recognizing the Principle (see Appendix 3). The inquiry revealed that the CMMs of SIDS referenced the Principle with much greater frequency than other members (Figure 44). This is not a surprising result, as SIDS are invariably coastal States within the Convention area, and thus more likely to voice concern over compatibility with respect to high seas fishing. However, as previously noted, the vast proportion of the WCPO total catch derives from fishing within the EEZs of these CCMs, in particular the EEZs of PNA members. Thus, the balance of fishing effort occurs mostly within national waters as opposed to the high seas. If this situation were reversed, one would anticipate that SIDS members would place even greater emphasis on the need for compatible measures.

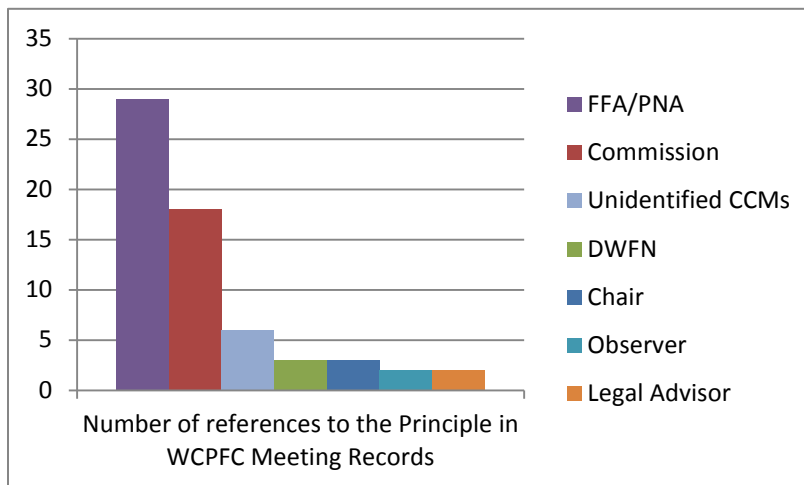


Figure 44: Number of references to the Principle in WCPFC meeting records, 2004-2016

Source: Records of WCPFC meetings. Figure made by author.

Note: References to the Principle have been assigned to the categories listed above. For the 'commission' category, references to compatibility are found in agreed decisions made by the commission, such as participatory rights for cooperating non-members.

6.11 MCS measures that support compatibility

While controlling catch and/or fishing effort is an important duty of the Commission, there are other components of a sound fisheries management regime that support the development of compatible measures. Generally, such measures relate to the Monitoring, Control, and Surveillance (MCS) of fishing vessels. The Honolulu Convention is a comprehensive instrument with respect to MCS and covers the following: 1) a record of fishing vessels;¹⁰⁵⁰ 2) vessel monitoring systems;¹⁰⁵¹ 3) the provision of data;¹⁰⁵² 4) a regional observer program;¹⁰⁵³ 5) transshipment;¹⁰⁵⁴ 6) high seas boarding and inspection;¹⁰⁵⁵ and 7) compliance monitoring.¹⁰⁵⁶

Each MCS element identified above contributes to effective fisheries management, which in turn supports the application of the Principle. For example, it is critical to know how many fishing vessels are operating

¹⁰⁵⁰ Honolulu Convention. Article 24, paragraph 4. See also: Annex IV “Information Requirements” of the Honolulu Convention for the list of requirements CCMs must include to list a vessel on the WCPFC RFV. --WCPFC. (2013). *Conservation and Management Measure on WCPFC Record of Fishing Vessels and Authorizations to Fish (CMM 2013-10)*. Tenth Regular Session of the WCPFC. 2-6 December 2013. Cairns, Australia. Note that CMM 2013-10 replaced earlier RFV CMMs (2009-01 and 2004-01). -- WCPFC. (2014). *Standards, Specifications, and Procedures for the WCPFC Record of Fishing Vessels (CMM 2014-03)*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa.

¹⁰⁵¹ Honolulu Convention. Article 10, paragraph 1(i). --WCPFC. (2014). *Commission Vessel Monitoring System*. Eleventh Regular Session of the WCPFC (CMM 2014-02). 1-5 December 2014. Apia, Samoa. 4. CMM 2014-02 replaced earlier VMS CMMs (2011-01, 2007-02 and 2006-06).

¹⁰⁵² Honolulu Convention. Article 5, paragraph i. --See: Scientific Data to be Provided to the Commission. Available at:

<https://www.wcpfc.int/system/files/Scientific%20Data%20to%20be%20Provided%20to%20the%20Commission%20-%20decision%20made%20by%20WCPFC10%20%28clean%29.pdf>. These requirements were last refined and adopted at the 9th Regular Session of the Commission, held 2-6 December 2012, in Manila, Philippines.

¹⁰⁵³ Honolulu Convention. Article 28, paragraph. 1. --WCPFC. (2007). *Conservation and Management Measure for the Regional Observer Program (CMM 2007-01)*. Fourth Regular Session of the WCPFC. 2-7 December 2007. Guam, USA.

¹⁰⁵⁴ Honolulu Convention. Article 29. -- WCPFC. (2009). *Conservation and Management for the Regulation of Transshipment (CMM 2009-06)*. Sixth Regular Session of the WCPFC. 7-11 December 2009. Papeete, French Polynesia. Pursuant to the Honolulu Convention, at-sea transshipment is prohibited for purse seine vessels. Longline fisheries are allowed to transship at-sea under certain conditions.

¹⁰⁵⁵ Honolulu Convention, Article 26. -- WCPFC. (2006). *WCPFC High Seas Boarding and Inspection Procedures (CMM 2006-08)*. Third Regular Session of the WCPFC. 11- 15 December 2006.

¹⁰⁵⁶ Honolulu Convention. Article 14(b). --WCPFC. (2015). *Conservation and Management Measure for the Compliance Monitoring Scheme (CMM 2015-07)*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. Note that CMM 2015-07 replaced earlier CMR CMMs (2014-07, 2013-02, 2012-02, 2011-06 and 2010-03).

and where (i.e., EEZs, high seas), as well as the catch of these vessels and their associated fishing effort. A strong enforcement capability is also needed to promote compliance and respond to non-compliance as required. Ensuring a level playing field among fishing vessels and member States is vital to maintaining confidence and effectiveness in the management regime, which is also key to the establishment of compatible measures.

Since the Honolulu Convention came into effect, the Commission has implemented and refined a wide range of MCS measures – a process which continues to this day. For brevity, this analysis does not provide further details on the effect of MCS measures or their negotiating history. However, the work of the WCPFC in the MCS arena is to be commended, and arguably, is essential to the Commission’s development of compatible measures for reasons outlined above.

6.12 Chapter Conclusion

As this chapter has demonstrated, the Commission is inconsistently applying the Principle and provisions of Article 8. The assessment conducted in this chapter has yielded an average compatibility rating of 47% for the Commission’s application of the Principle – a rating which leaves significant room for improvement (Table 10; scores range from 35% to 71%). The Commission’s marquee tropical tuna measure received the highest rating, referencing Article 8 and identifying the Principle as a main objective. Several provisions of the measure apply to both the high seas and national waters. The main focus of compatibility within the tropical tuna measure is centered on the balance of purse seine fishing effort limits between EEZs and the high seas. The current balance is being driven by the PNA, whose collective EEZs comprise the main purse seine fishing grounds within the Convention area. The Commission’s adoption of a skipjack TRP serves to solidify the existing balance of purse seine effort among EEZs and the high seas.

While the tropical tuna measure has received a relatively high rating in terms of the application of the Principle, the Commission seems to have performed under par with respect to other key measures. Take, for example, the South Pacific albacore conservation and management measure, which does not even reference the Principle. Moreover, recent proposals have sought to reduce high seas catches while establishing EEZ based limits under sub-regional agreements (e.g., the Tokelau Arrangement) or through unilateral action. And yet the Principle is conspicuously and consistently absent from these discussions.¹⁰⁵⁷ Opposition to the proposals has come from DWFNs that have substantial high seas catches of South Pacific albacore, such as China and Chinese Taipei. The primary factor preventing the Commission from adopting stronger conservation measures is that South Pacific albacore is not overfished or experiencing overfishing. Without ‘red light’ biomass conditions which threaten stock collapse, let alone overfishing, it is safe to say that some members do not feel compelled to adopt stricter controls on catches, whether in support of the Principle or not.

Relatedly, when FFA members sought the adoption of a South Pacific albacore TRP, the same countries voiced opposition. The TRP proposed by the FFA was 45% of recent unfished biomass – a figure which modeling indicated would bring back profitable economic returns for domestic longline fisheries of PICs. The problem, however, was that in order to achieve the proposed TRP, a 37% reduction in current catch within a rebuilding program was required.¹⁰⁵⁸ Thus, perhaps it was not the TRP that some members did not support, but rather the means by which to achieve it.

The management of Pacific bluefin is an interesting case study as it relates to the establishment of compatible measures between the WCPFC and IATTC. While measures have been adopted to restrict catches in both RFMO jurisdictions, the extremely low biomass levels of the stock are cause for substantial concern (and of global interest with respect to measures necessary for recovery). Given the stock’s precarious status, compatibility between RFMOs is critical to ensure the stock’s long-term

¹⁰⁵⁷ See discussion in Chapter 5 on the Tokelau Arrangement.

¹⁰⁵⁸ WCPFC12 (2015) at 50.

conservation. With regard to other stocks harvested to lesser degrees and/or caught as bycatch, the Commission has largely not been focused on applying the Principle.

The preceding analysis indicates that the Principle is being applied to some extent for some fisheries, but overall the Commission is applying the Principle and Article 8 provisions in an inconsistent manner. The Commission has generally followed an *ad-hoc* process with regard to developing measures consistent with the Principle. Moreover, there is currently no formal process in place by which the Commission can methodically evaluate proposals against Article 8 (or any other compatibility standard). By contrast, every CMM proposal must undergo a disproportionate conservation burden analysis in accordance with CMM 2013-6.¹⁰⁵⁹ To improve this situation, the Commission needs to develop a formal process to apply the Principle. Such a process is described in the following chapter.

¹⁰⁵⁹ CMM 2013-06.

Table 16: Overall Compatibility Assessment

		Compatibility Standards, Criteria, and Assessed Score					Rating
Conservation and management Measure	Article 8: Does the measure reference Article 8?	Article 8(2)(b)(i-ii) and(c): Does the measure recognize prior measures established for EEZs or the high seas?	Article 8(2)(a): What is the extent of the measure’s area of application and does it take into account the biological unity of the stocks and fisheries concerned?	Article 8(2)(d): Respective Dependence considerations	Article 8(4): To what extent does the CMM accommodate considerations for high seas pockets?	Article 2(Stock status): What is the status of the stock(s) concerned given the collective obligation to ensure long-term conservation through effective management?	Compatibility Rating
Tropical Tunas	Yes, Article 8 is referenced in every tropical tuna measure since 2005 (with the exception of CMM 2011-01, which was a temporary extension of CMM 2008-01). (1)	Yes, but principally for PNA management measures associated with the VDS. No other prior measures are mentioned. Purse seine fishing is responsible for over 60% of the catch, so effort limits are certainly not insignificant. (0.75)	For the most part, the tropical CMMs have taken into account the biological unity of the stock as they apply in EEZ waters and on the high seas. Archipelagic waters and territorial seas remain outside the purview of Commission CMMs, and yet the catch of skipjack, yellowfin and bigeye is not insignificant in these waters. The amount of catch taken in archipelagic waters and territorial seas is believed to be less than 25% of the total catch of skipjack, yellowfin and	Explicit consideration of the respective dependence of CCMs on fisheries is not found in the negotiation records on the tropical tuna measures. However, deliberations on the issue of disproportionate conservation burden have revealed the importance of FAD closures to some SIDS members. The measures are also replete with exemptions which could be viewed as reducing the impacts on some members which may be disproportionately	The Commission did restrict purse seine fishing from 2009-2011 in the two western high seas pockets. The Commission subsequently lifted that restriction for the Philippines in 2012 and for all members in 2014. The PNA, however, has continued to restrict fishing in the two high seas pockets as a condition of access to their national waters by foreign vessels. (0.50)	None of the three tropical tuna stocks are overfished or experiencing overfishing as of 2017. However, since the early 2000s bigeye was considered to be experiencing overfishing. (1)	71%

			bigeye. (0.25)	burdened due to their respective dependence on the fishery. However, specific information is largely missing with regard to economic and or other factors such as food security and employment. (0.25)			
South Pacific albacore	No, none of the three South Pacific albacore CMMs reference the Principle or Article 8. (0)	No, none of the three South Pacific albacore CMMs reference previously agreed measures applicable to EEZs or the high seas. (0)	The CMMs do not cover the entire range of the stock. (0.5)	No references to the respective dependence of some members on South Pacific albacore are included in the three CMMs. There are numerous instances in the records of Commission meetings, however, where PICs refer to their dependence on domestic longline fisheries. (0.5)	The Commission has established a special management area for the eastern high seas pocket in the South Pacific. However, reference to that measure is not included in the South Pacific albacore tuna measure(s). (0.5)	South Pacific albacore is not considered overfished or subject to overfishing. However, depletion levels of adult biomass is resulting in catch rates that cannot be economically sustained for most fleets, especially those flagged to PICs and PTs. (0.75)	37.5%
Pacific bluefin	No, none of the WCPFC bluefin measures reference Article 8. However, Article 22 is referenced,	No, none of the WCPFC bluefin measures reference existing measures. (0)	The WCPFC measures apply within national waters and the high seas, and when combined with IATTC measures, cover the range of the stock. The	No references to the respective dependence of some CMMs on Pacific bluefin are made within WCPFC measures. There are numerous instances in the records of	Since Pacific bluefin is a northern stock, and there are no high seas pockets north of 20° N, this standard does not apply to Pacific bluefin. (not assessed)	Pacific bluefin is experiencing overfishing and is in a severely overfished condition. Given recent recruitment and existing catch restrictions, the stock is expected to rebuild	45%

	which promotes consistency between WCPFC and IATTC management areas. (0.5)		WCPFC measure also applies to Japanese artisanal fisheries occurring within Japan's coastal waters. (1)	Commission meetings, however, where Japan affirms the importance of the fishery to its domestic fishermen and seafood markets. (0.5)		to higher levels, but large gains in stock recovery may not occur. (0.25)	
North Pacific albacore CMM 2005-03	No, the CMM does not reference Article 8. Reference is made to Article 22 which recognizes consistent management measures between WCPFC and IATTC. (0.5)	No, none of the measures reference existing measures in place for EEZ or high seas prior to the CMM. (0)	Yes, the WCPFC measures apply within national waters and high seas, and when combined with IATTC measures, cover the range of the stock.	No references to the respective dependence of some CMMs are made within the measure. (0)	Since North Pacific albacore is a northern stock, and there are no high seas pockets north of 20° N, this standard does not apply. (not assessed)	North Pacific albacore is not overfished or experiencing overfishing. The Northern Committee is initiating a harvest strategy for the stock, including MSE to help determine an appropriate TRP. (1)	50%
Southwest Pacific striped marlin CMM 2006-04	No, the CMM does not reference Article 8. (0)	Yes, the CMM does reference existing measures in place for those countries that already have a commercial moratorium in effect. (0.5)	The CMM does apply to the entire range of the stock, as the area north of 15° South is not subject to the measure. The stock is believed to extend to the equator. (0.5)	No references exist to the respective dependence on the stock by CCMs. However, the measure does require some degree of reporting, which in the future could be used to identify respective dependence. (0.25)	There is no mention of high seas pockets in the measure, but the EHSPSMA has been established in the South Pacific. (0.25)	Southwest Pacific striped marlin is not experiencing overfishing, but it is approaching an overfished condition. (0.5)	42%

<p>Southwest Pacific swordfish CMM 2009-03</p>	<p>No, the CMM does not reference Article 8. The measure does reference the need for consistent measures between the WCPFC and IATTC. (0.25)</p>	<p>The predecessor measure did reference domestic catch limits in place for Australia and New Zealand. However, these limits do not appear in the CMM currently in place. (0.5)</p>	<p>The CMM does not apply to the entire range of the stock, as the area north of 20° South is not subject to the measure. Around half of the total catch occurs outside of the measure's area of application. (0.5)</p>	<p>There are no references to the respective dependence on the stock by CCMs. However, the measure does require some degree of reporting, which in the future could be used to identify respective dependence. (.25)</p>	<p>There is no mention of high seas pockets in the measure. However, the EHSPSMA does occur within the range of stock and entry/exit vessel notifications do apply to swordfish. (0.5)</p>	<p>Southwest Pacific swordfish is not overfished or experiencing overfishing. (1)</p>	<p>50%</p>
<p>North Pacific striped marlin CMM 2010-01</p>	<p>No, the CMM does not reference Article 8. (0)</p>	<p>The measure does refer to FFA members adopting a system of zone-based longline limits to replace the current system of flag-based arrangements that are applicable to their EEZs. However, there is no indication that the limits were in place prior to measure. (0.5)</p>	<p>The CMM applies throughout the entire range of the stock, and to all gears catching North Pacific striped marlin. (1)</p>	<p>No references exist to the respective dependence on the stock by CCMs. However, the measure does require some degree of reporting, which in the future could be used to identify respective dependence. (0.25)</p>	<p>Although North Pacific striped marlin is not considered a northern stock, its stock distribution is concentrated at latitudes greater than the two equatorial high seas pockets. (Not assessed)</p>	<p>North Pacific striped marlin is experiencing overfishing and is in an overfished condition. (0)</p>	<p>35%</p>

Sharks	Most of the shark measures have not referenced article 8, with the exception of the CMM on whale sharks. The measure to prohibit the retention of oceanic whitetip sharks called upon the IATTC to adopt a similar prohibition. (0.25)	Only the whale shark measure references prior measures in place for national waters of PNA members. (0.25)	Shark CMMs do apply generally throughout the Convention Area. (1)	The main shark measure that prohibits shark finning in the Convention Area does provide exemptions to waters under national jurisdiction, such that the measure shall not prejudice the sovereignty and sovereign rights of coastal States, including for traditional fishing activities and the rights of traditional artisanal fishers, to apply alternative measures for the purpose of exploring, exploiting, conserving and managing sharks. (0.5)	There are no specific references to high seas pockets and shark management, but transshipment is prohibited in the EHSPSMA, and entry and exit notifications with associated catch information are required in that area. (0.25)	The stock status of several shark species within the WCPO is of substantial concern, with two known to be overfished and others likely facing similar conditions. However, the shark species caught in the greatest number, blue sharks, is not experiencing overfishing. (0.5)	46%
Compatibility rating across 8 CMMs (35%-71%): Average: 47% Median: 45.5%							

Chapter 7- Harvest Strategies: a process to achieve to compatibility?

7.1 Introduction

The previous chapter provided a comprehensive review of each of the CMMs adopted by the Commission with respect to the application of the Principle. Through 2017, the Commission has adopted a total of 87 CMMs, of which 44 have been replaced with subsequent measures. The number of CMMs adopted by the Commission is impressive, covering a wide range of fisheries management measures that support data collection, the sharing of information, catch and effort allocations, as well as MCS activities.

In 2014, the Commission adopted a Harvest Strategy approach to manage key stocks and fisheries within the WCPO.¹⁰⁶⁰ This chapter will explore how the WCPFC Harvest Strategy approach and associated processes may promote a more consistent and formal application of the Principle.

7.2 What is a Harvest Strategy Approach?

A harvest strategy framework for fisheries is widely considered to be a management best practice, with several models having been employed around the world by nations with the best fishery management systems.¹⁰⁶¹ Australia, for example, has been credited with developing the first harvest strategy policy in 2007, but other nations such as the United States implemented elements of a harvest strategy several years earlier.¹⁰⁶² A harvest strategy has been defined as: “a framework that specifies the pre-determined

¹⁰⁶⁰ WCPFC. (2014). *Conservation and management measure for establishing a harvest strategy for key fisheries and stocks in the Western Pacific Region (CMM 2014-06)*. Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa.

¹⁰⁶¹ McIlgorm A. (2013). *Literature study and review of international best practice, fisheries harvest strategy policy approaches*. A report to the Department of Agriculture, Fisheries and Forestry (DAFF), Canberra, by ANCORS, University of Wollongong, Australia. . -- The 1996 reauthorization of the United States’ Magnuson-Stevens Fisheries Conservation and Management Act required the establishment of LRPs and status determination criteria, including rebuilding timeframes for overfished stocks. US Public Law 94-265.

¹⁰⁶² Ibid at 69.

management actions in a fishery for defined species (at the stock or management unit level) necessary to achieve the agreed ecological, economic and/or social management objectives.”¹⁰⁶³ Figure 45 shows a conceptual model of a harvest strategy framework and associated processes.

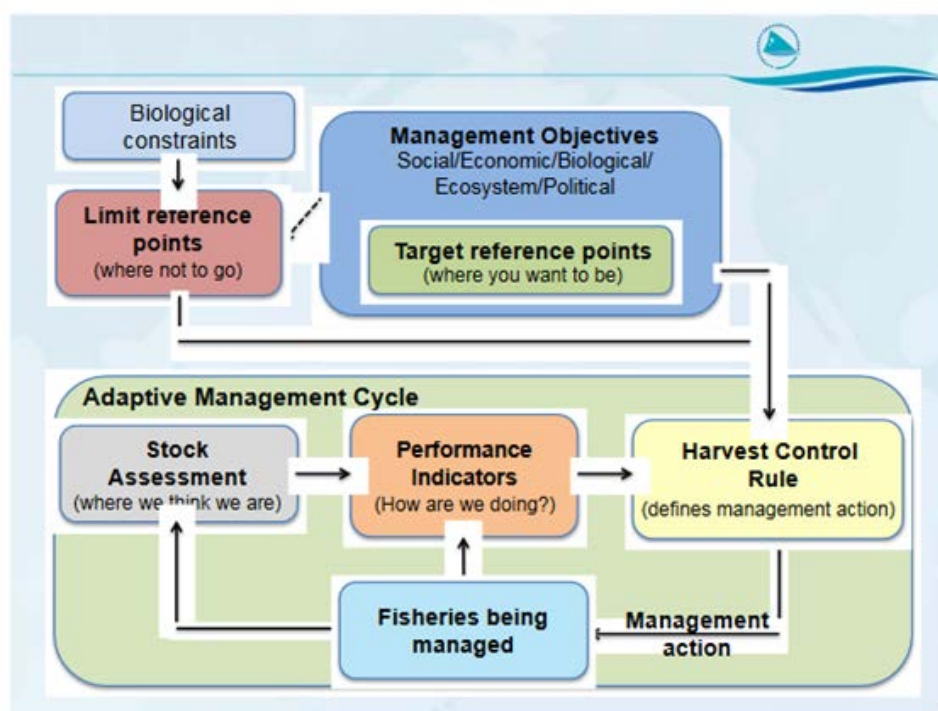


Figure 45 Conceptual model of elements and processes associated with a fisheries harvest strategy
 Source: Cartwright, I. 2012. Presentation to the WCPFC Management Objectives Workshop.
<https://www.wcpfc.int/node/5620>

7.2.1 Management Strategy Evaluation

An important aspect of a harvest strategy approach is Management Strategy Evaluation (MSE). MSE in a general sense involves assessing the consequences of a range of management options and presenting the results as trade-offs with respect to fisheries performance across a range of management objectives.¹⁰⁶⁴

¹⁰⁶³ Sloan, S., Smith, T., Gardner, C., Crosthwaite, C., Triantafillos, L., Jefferies B., & N. Kimber. (2014). *National Guidelines to Develop Harvest Strategies*. Adelaide, Australia. Fisheries Research and Development Corporation. Project No.2010/061. 11.

¹⁰⁶⁴ Smith, A. D. M. (1994). Management strategy evaluation: the light on the hill. In D.A. Hancock (Ed.) *Population dynamics for fisheries management; Australian Society for Fish Biology Workshop Proceedings*. (pp. 249-253). 24-25 August 1993. Perth, Australia.

MSE supports the needs of decision makers by providing potential outcomes and associated uncertainty levels related to a range of management alternatives. In doing so, MSE allows for the identification of a best management strategy or a determination of how well an existing management strategy is performing (or both).¹⁰⁶⁵ Moreover, MSE allows for the estimation of a full range of uncertainty which decision-makers can use to consider longer term trade-offs among the management objectives, instead of focusing on short-term considerations.¹⁰⁶⁶ In the context of fisheries management, MSE can apply to single stocks as well as multispecies fisheries and ecosystems.¹⁰⁶⁷

7.3 WCPFC's Harvest Strategy Approach

Following three WCPFC workshops convened between 2012 and 2014 on developing management objectives, the Commission adopted its Harvest Strategy measure (CMM 2014-06) in 2014 at WCPFC11.¹⁰⁶⁸ The WCPFC Harvest Strategy measure outlines the following elements to be developed for key stocks or fisheries:¹⁰⁶⁹

- 1) Defined operational objectives, including timeframes, for stocks or fisheries;
- 2) Target and limit reference points for each stock;
- 3) Acceptable levels of risk associated with not breaching LRPs;
- 4) A monitoring strategy to assess performance;
- 5) Decision rules aimed at achieving TRPs and avoiding LRPs; and
- 6) MSE of harvest control rules against management objectives.

Article 8 is referenced in the CMM 2014-06, such that the Commission shall take into account harvest strategies or elements thereof already implemented in the region. The measure does not identify any

¹⁰⁶⁵ Punt, A. E., Butterworth, D. S., Moor, C. L., De Oliveira, J. A., & Haddon, M. (2014). Management strategy evaluation: best practices. *Fish and Fisheries*, 17, 303-334.

¹⁰⁶⁶ Ibid at 304.

¹⁰⁶⁷ Ibid at 305.

¹⁰⁶⁸ Cartwright, I. (2012). *Report of the Management Objectives Workshop*. 28-29 November 2012. Manila, Philippines. . -- Cartwright, I. (2014). *Report of the Second Management Objectives Workshop*. 28-29 November 2013. Cairns, Australia. . -- Cartwright, I. (2014). *Report of the Third Management Objectives Workshop*. 28-29 November 2013. Apia, Samoa. -- Cartwright, I. (2015). *Report of the Harvest Strategy Workshop (MOW4)*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia.

¹⁰⁶⁹ WCPFC. (2014). *Conservation and management measure on establishing a harvest strategy for key fisheries and stocks in the Western and Central Pacific Ocean (CMM 2014-06)*. Adopted at the Eleventh Regular Session of the WCPFC. 1-5 December 2014. Apia, Samoa. 2.

existing harvest strategies that apply within the Convention Area, but one could surmise that certain Commission members may pursue the opportunity to establish such measures ahead of other members. This is because, in establishing a harvest strategy, the Commission member would also be shaping the development of compatible measures. It is important to note, however, that the measure refers to “compatibility...on harvest strategies or elements thereof,” which could mean the establishment of management objectives with respect to stocks occurring in national waters.

Management objectives are the key to harvest strategies and essential for MSE. Under the Commission’s Harvest Strategy measure, conceptual management objectives shall be determined for each fishery or stock, and if there are trade-offs between each objective, as well as trade-offs between objectives for different fisheries or stocks, then any contradictions or tensions between competing objectives should be reconciled to the extent possible.¹⁰⁷⁰ The measure further instructs that the SC or other relevant subsidiary bodies translate the conceptual management objectives into operational objectives, against which performance can then be evaluated.¹⁰⁷¹

Other elements of the measure include the development of a Harvest Strategy workplan with indicative timeframes to adopt or refine harvest strategies for skipjack, yellowfin, bigeye, South Pacific albacore, Pacific bluefin and northern albacore tuna.¹⁰⁷² The Commission instructed that the work plan be adopted no later than WCPFC12, with a review to occur in 2017.¹⁰⁷³

The Commission did indeed adopt a Harvest Strategy work plan at WCPFC12, but it is limited to South Pacific albacore, skipjack, bigeye and yellowfin.¹⁰⁷⁴ The work plan identifies annual targets to be

¹⁰⁷⁰ Ibid at 5.

¹⁰⁷¹ Ibid at 5.

¹⁰⁷² Ibid.

¹⁰⁷³ Ibid at 3. The measure also indicates that the Northern Committee will recommend draft timeframes and harvest strategies for northern stocks.

¹⁰⁷⁴ Note that North Pacific albacore was not included in the adopted work plan, because the Northern Committee had already initiated a harvest strategy approach for this stock.

achieved for these stocks from 2015 to 2018.¹⁰⁷⁵ With the adoption of a skipjack TRP in 2015, the Commission showed initial promise following the work plan. In 2016, however, the Commission's record in meeting workplan targets was sub-par.

According to the work plan for 2016, the Commission was supposed to: a) record management objectives for skipjack, South Pacific albacore, bigeye and yellowfin tuna; b) agree to acceptable levels of risk for breaching LRPs for each stock; c) agree on the following for skipjack: a monitoring strategy, harvest controls and a MSE; d) agree on the following for South Pacific albacore: a TRP, a monitoring strategy, harvest controls and a MSE; and e) agree on a rebuilding timeframe for bigeye tuna. Of the work plan targets listed above, the Commission at WCPFC13 was able to agree on: 1) a range of acceptable levels of risk for breaching LRPs for each stock (0-20%);¹⁰⁷⁶ and 2) a timeframe for bigeye rebuilding of up to 10 years.¹⁰⁷⁷

In a deviation from the work plan, the Commission agreed on an interim list of performance indicators for the tropical purse seine fishery.¹⁰⁷⁸ The Commission was supposed to record management objectives for the four tuna stocks in 2016, but negotiations quickly deteriorated at WCPFC13.¹⁰⁷⁹ The negotiation chasm was primarily between Asian DWFNs and FFA members, with the latter group supporting a 'strawman' list of management objectives developed out of the Second MOW workshop. Indeed, FFA members stated that this workshop was a two year process involving independent experts and was

¹⁰⁷⁵ WCPFC. (2015). *Agreed work plan for the adoption of Harvest Strategies under CMM 2014-06 (suppl_CMM 2014-06)*. Adopted at the Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia.

¹⁰⁷⁶ WCPFC(2016) at 43. The Commission did not agree on specifying acceptable levels of risk for each species, but rather agreed to: i) refrain from specifying acceptable levels of risk for breaching the LRP for each stock for the time being; ii) consider any risk level greater than 20% to be inconsistent with the LRP-related principle in UNFSA (as referenced in Article 6 of the Convention), including that the risk of breaching LRPs be very low; and iii) determine the acceptability of potential Harvest Control Rules (HCRs) where the estimated risk of breaching the LRP is between zero and 20%.

¹⁰⁷⁷ Ibid at 44. At WCPFC13, the chair stated that although the work plan was developed to be aspirational, the Commission should keep Harvest Strategy elements moving forward. Ibid at 45.

¹⁰⁷⁸ WCPFC (2016) at 36-39.

¹⁰⁷⁹ Ibid at 36.

appropriate for the purpose of initial analysis.¹⁰⁸⁰ China, on the other hand, stated that Harvest Strategies were a means of achieving objectives found in the Convention, including the need to base reference points on MSY.¹⁰⁸¹ China further voiced concern over the potential for reference points to be applied only to the high seas and not waters under national jurisdiction.¹⁰⁸² In response, PNA members voiced support for the development of Harvest Strategies within the Commission, noting that although such strategies were not a means to reshape existing agreements such as the VDS, they could help ensure sustainability in certain circumstances.¹⁰⁸³ PNA members further stated that they would support Harvest Strategies that strengthen (rather than undermine) the rights of resource-owning CCMs to manage resources and fisheries in their waters compatibly with measures applied within other areas of the Convention Area.¹⁰⁸⁴

The less than nuanced statements by China and PNA members are indicative of the continued tension between FFA/PNA members and DWFNs regarding the Principle and the role of the Commission. The FFA/PNA position seems to be one to proceed with measures that apply to their national waters and which further their economic interests, and in doing so, force the Commission to adopt compatible measures for the high seas. The position of some DWFNs seem content with status quo and that there is no rush to develop pre-determined harvest control rules for stocks that are not overfished or subject to overfishing.

These competing interests were made strikingly apparent in the case of the Commission's consideration of a TRP for South Pacific albacore, which the Commission should have adopted by 2016 according to the Harvest Strategy Work Plan. At WCPFC13, FFA members re-introduced a proposal to establish a TRP of $45\%SB/SB_{F=0}$, which they stated could serve as a guide for other members to work with in terms

¹⁰⁸⁰ Ibid.

¹⁰⁸¹ Ibid.

¹⁰⁸² Ibid at 37.

¹⁰⁸³ Ibid at 37.

¹⁰⁸⁴ Ibid at 38.

of testing different harvest control rules.¹⁰⁸⁵ China was the most vocal of the DWFNs opposing the FFA's proposal, citing the need to evaluate various TRP levels and reminding the other members that the Commission was still observing how the skipjack TRP was functioning.¹⁰⁸⁶ Noting the lack of consensus on a TRP, FFA members stated that the interim TRP for South Pacific albacore agreed to by members of the Tokelau Arrangement remains in place and will guide their decision making for management actions applicable to waters under national jurisdiction. FFA members further directed the attention of other CCMs to the requirements of Article 8, and in particular paragraphs 2(b)(i), 2(c) and 2(d) of the Article.¹⁰⁸⁷

If the stalemate situation described persists, it is likely the Commission will be formally tested in the near future with regard to the application of the Principle and the instructions provided under Article 8 of Convention. Indeed, if that much is accepted, then South Pacific albacore management is ripe for consideration. On the one hand, there are several coastal States with domestic longline fisheries that target South Pacific albacore within their flag-EEZs. Generally, these States are not PNA States (the Solomon Islands being an exception), and most of their largest fisheries are dependent on South Pacific albacore as a target species.¹⁰⁸⁸ Moreover, most of these coastal States comprise the parties to the Tokelau Arrangement, with the same EEZs being fished by DWFN fleets (under access agreements) and by domestic longline vessels. The collective catch within these national waters is approximately 60-70% of the total catch within the Convention Area. Even so, the high seas catch increased significantly between 2009-2013, bringing the combined high seas/EEZ catch to record high levels in 2012. Catch rates for

¹⁰⁸⁵ Ibid at 44.

¹⁰⁸⁶ Ibid at 45.

¹⁰⁸⁷ Ibid at 45. Note that Article 8(2)(b)(1) instructs the Commission to take into account measures applied for waters under national jurisdiction. Article 8(2)(c) instructs the Commission to take into account previously agreed measures established by subregional management organizations. Under Article 8(2)(d), the Commission is to take into account the respective dependence of coastal States and States fishing on the high seas on the stocks concerned.

¹⁰⁸⁸ Coastal states and PTs in this category include Fiji, Tonga, Samoa, the Cook Islands, Niue, French Polynesia and American Samoa.

domestic South Pacific albacore longline fisheries subsequently reduced, leaving several domestic fleets facing substantial economic challenges.¹⁰⁸⁹

Despite repeated attempts by FFA members to either strengthen the existing South Pacific albacore measure or establish a TRP for the stock, the Commission has failed to reach agreement. It could be argued that the lack of agreement on a TRP is restricting the Commission's ability to develop and implement compatible measures. The setting of a TRP is just that - a target level for stock biomass associated with a specific management objective. Defined targets facilitate the evaluation of various harvest control rules, which can be linked to management objectives identified for a particular fishery or stock. Absent a TRP, the Commission must rely on the Convention, which states that stocks should be maintained or restored to levels capable of producing MSY.¹⁰⁹⁰ The dilemma (of sorts), is that South Pacific albacore has been assessed as not being overfished or experiencing overfishing, and the recent catch rate for the stock is well below MSY levels. However, in recent years, catch rates and yields derived from the domestic longline fishing operations of Pacific Island fleets within the Central Pacific Ocean (e.g. Fiji, American Samoa) have been economically sub-optimal. To fish at MSY levels, substantial increases in fishing effort would be need to be realized, but CPUE would fall by nearly 65%, further exacerbating the already dire economic conditions for some fleets.¹⁰⁹¹ Fishing at MEY for South Pacific albacore would require approximately a 25% to 40% reduction in catch rates from 2013 levels.¹⁰⁹²

Another factor contributing to the apparent indifference of some CCMs to make management changes is that their fishing industries are being heavily subsidized. In this way, it is possible for subsidized vessels to still make a profit despite lower catches. China is among the global leaders in fisheries subsidies, providing indirect (e.g., tax incentives) and direct (e.g., fuel offsets) to hundreds of longline vessels

¹⁰⁸⁹ Reid, C., & Raubani, J. (2015). *Trends in Economic Conditions in the Southern Longline Fishery*. Eleventh Regular Session of the Scientific Committee of the WCPFC. 5-13 August 2015. Pohnpei, FSM. WCPFC-SC11-2015/MIWP-03-Rev1. 13. In addition to poor catch rates, fluctuating fish prices and operating costs play a significant role in the economic conditions facing domestic South Pacific longline fleets.

¹⁰⁹⁰ Article 5(b) of the Honolulu Convention.

¹⁰⁹¹ SPC. (2015). *Potential Target Reference Points for South Pacific Albacore Fisheries*. WCPFC Harvest Strategy Workshop. 30 November -1 December 2015. Bali, Indonesia. 2.

¹⁰⁹² Ibid at 3.

targeting South Pacific albacore.¹⁰⁹³ The extent and magnitude of the subsidies and other support given by the Chinese government to its distant-water longline fleet is substantial, resulting in Chinese vessels having a significant cost advantage over unsubsidized fleets.

With China blocking further advancement of the harvest strategy approach for South Pacific albacore, the Commission is losing the opportunity to conduct an endorsed MSE process on a range of harvest control rate scenarios – a process which would better inform the management of the stock.¹⁰⁹⁴ Of course, the blocking by China could be remedied through a voting process within the Commission. Indeed, establishing a TRP is not an allocation issue, and therefore does not have to be agreed by consensus by all members. Instead, the TRP could be the subject of a vote. To date, however, FFA members and other proponents of a South Pacific albacore TRP have not demanded a Commission vote on the matter.¹⁰⁹⁵ There are two reasons for this: 1) Chinese Taipei and other DWFNs would undoubtedly support China's position; and 2) there may not be a clear consensus within the FFA membership favoring a very conservative TRP.

Although the Commission has yet to agree on a TRP for South Pacific albacore, it has agreed to prioritize the development and adoption of TRP at WCPFC15.¹⁰⁹⁶

As previously discussed in relation to skipjack, the adoption of a TRP is providing a means to design compatible measures associated with purse seine effort. However, if the Commission fails in this regard for South Pacific albacore, tensions among members may increase, a situation which could be construed

¹⁰⁹³ Ilakini, J., & Imo, R. (2014). *Fisheries subsidies and incentives provided by the Peoples Republic of China to the its distant water fishing industry*. Prepared for the Forum Fisheries Agency. Honiara, Solomon Islands. 8.

¹⁰⁹⁴ Punt et al. (2014) state that: "The evaluation of management strategies using simulation is widely considered to be the most appropriate way to evaluate the trade-offs achieved by alternative management strategies and to assess the consequences of uncertainty for achieving management goals."

¹⁰⁹⁵ At WCPFC14, the Fiji delegation did call for a vote on the issue of establishing a South Pacific albacore TRP; however, the vote did not occur, as there was agreement that consensus could be achieved on the matter in the future. See: WCPFC. 2017. Draft Summary Fourteenth Regular Session of the WCPFC. 3-7 December 2017. Manila, Philippines. 36.

¹⁰⁹⁶ Ibid at 38.

as resulting from a failure to adopt compatible measures in the first place. To avoid such an outcome, the Commission should look towards identifying the Principle as a management objective within the Harvest Strategy approach. This would lead to the identification of compatible measures for certain species or fisheries, which could further be assessed in MSE. In other words, compatibility is better served if the Commission defines with precision what it means with respect to management objectives and performance indicators.

7.3.1 The Role of the Principle within the WCPFC Harvest Strategy Approach

In the development of the WCPFC's Harvest Strategy Approach, the Principle has been cursorily referenced in the Commission's workshops on Management Objectives. However, to date, compatibility has not been a major consideration within the Commission's Harvest Strategy.¹⁰⁹⁷ Based on the present analysis, which included a review of the importance of the Principle during the Commission's formation in the MHLC process, through to its deliberations and agreed CMMs, the Principle does hold a high level of importance within the Commission. Under the existing Commission framework, however, there is no agreed method to review measures with respect to compatibility, and to date, the application of the Principle and consistency with Article 8 has been *ad-hoc*. While an *ad-hoc* process could serve the interests of the two opposing camps within the Commission – i.e., those who advocate for the application of the Principle and those who prefer to rely on other elements of Honolulu Convention, continued ambiguity will likely impede the work of the Commission.¹⁰⁹⁸

The development and implementation of the Commission's Harvest Strategies has the potential to change the current *ad-hoc* approach to developing compatible measures within the WCPFC. This is because

¹⁰⁹⁷ This is based on a review of the records of the MOW workshops. Article 8 has been referenced in the WCPFC's Harvest Strategy measure, but the reference seeks to ensure that harvest strategies already implemented in the region are accounted for in the further development of the Commission's Harvest Strategies. See CMM 2014-06.

¹⁰⁹⁸ One only needs to look at the issue of disproportionate conservation burden and the development of CMM 2013-01 to see how ambiguity can impede Commission decisions.

harvest strategies allow for the identification and definition of operational objectives and performance indicators.

Article 8 does indeed contain provisions which require the taking into account of biological and socio-economic factors when developing compatible measures. In this regard, the Principle could be linked to biological and economic management objectives.¹⁰⁹⁹ However, the Honolulu Convention does not offer any more detail on how to treat these considerations in the development of compatible measures in a manner which allows for the Commission's performance to be evaluated. It is in this ambiguous space that we see the Commission's continued reference to the importance of the Principle, whereas Article 8 has been (and continues to be) applied in an *ad-hoc* manner.

This analysis suggests that compatibility should be treated as a management objective within the Commission's Harvest Strategy approach for the following reasons. First, the mosaic of EEZs that occur throughout the core fishing grounds within the Convention Area elevates the importance of, and need for, compatible measures. This much is reflected in the records of the Commission. Moreover, that fact that 80% of the current total catch within the WCPO is caught within waters under national jurisdiction, and that the revenue generated by selling access rights to fisheries is incredibly important for many Pacific Island SIDS in region, further supports the need for compatible measures. In addition, the main tuna stocks in the region, which make up the world's largest fishery, are fully exploited, and in some cases have been subject to fishing levels that exceed MSY (bigeye) and/or MEY (South Pacific albacore). It is undoubtedly apparent that the balance of the existing catch and/or fishing effort levels between the high seas and EEZ is an incredibly important issue, and critical to the political and socio-economic well-being of several members of the Commission.

¹⁰⁹⁹ For example, Article 8, paragraph 2(a) requires consideration of the biological unity of stocks. Article 8, paragraph 2(d) requires consideration of the relative dependence of coastal States and States fishing on the high seas on the stocks concerned.

Secondly, based on UNCLOS and UNFSA, all States have the right to fish on the high seas, subject to their obligation to cooperate in the management of transboundary stocks. Coastal States also have sovereign rights to exploit transboundary fish stocks while they occur in their EEZs. Both coastal States and States fishing on the high seas are obligated to cooperate in order to ensure stock sustainability, while also ensuring that compatible measures exist with respect to the relevant maritime jurisdictional zones. If there is no organized process to evaluate compatibility, claims with little supporting evidence could be made that the Commission, and/or member(s), are not fulfilling their obligations to establish compatible measures.¹¹⁰⁰ Such claims would suggest an abdication of the rights and responsibilities of Commission members.

Third, the establishment of compatible measures could help avoid transferring a disproportionate conservation burden onto SIDS - a long-standing point of controversy within the Commission. Like the earlier point regarding the need for a clear process to evaluate compatibility, the issue of disproportionate conservation burden suffers from a similar problem. Indeed, at present, there is no clear process or independent review of claims made by members that certain CMMs, or elements thereof, will transfer a disproportionate conservation burden onto SIDS. The issue of disproportionate conservation burden is probably the most controversial within the Commission, and continues to hinder Commission outcomes. Similarly, without a clear process to evaluate and agree on what compatibility means, the work of the Commission could be stymied by claims that compatibility is not being achieved. The effect of this would be diluted conservation and management measures that have varying degrees of success, and which depending on the particular member's interest, could either be the very objective of the particular measure

¹¹⁰⁰ See Summary report of WCPFC10. For example, at WCPFC10, Tuvalu stated that it was highly dependent on FAD fishing, and that the seasonal FAD closure had resulted in the State sustaining a direct loss of \$1.5 million (USD) per month. This led Tuvalu to assert that additional FAD closures would lead it bear an unfair and disproportionate conservation burden. While it is appropriate for a CCM to provide a statement with respect to the costs of conservation, there is no independent verification process within the Commission to evaluate such claims. The WPFMC workshop on disproportionate burden in 2014 (WPFMC 2014) recommended an independent review process to address claims of disproportionate burden, but to date the Commission has not adopted such a process. For additional reading on the issue of transparency related to conservation burden claims, see: Hanich, Q., & Ota, Y. (2013). Moving beyond rights-based management: a transparent approach to distributing the conservation burden and benefit in tuna fisheries. *The International Journal of Marine and Coastal Law*, 28(1), 135-170.

or a major point of contention among other members. The numerous exemptions found within the tropical tuna measure exemplify how a measure's effectiveness may be reduced due to perceived inconsistency with the Convention.

Although the WCPFC's Harvest Strategy Approach is still in its infancy, recent work in this area by the Commission has failed to include compatibility as a relevant consideration with respect to management objectives and the various strategies to achieve such objectives. This is questionable given the clear obligation under the Honolulu Convention for the Commission to establish compatible measures. As shown in Figure 45, the introductory material provided by the SPC to the Commission on Harvest Strategies includes the identification of biological, economic, social and political management objectives. However, recent work by the Commission to develop Harvest Strategies has not included the identification or evaluation of any political management objectives.¹¹⁰¹ As outlined above, because the requirement to establish compatible measures requires Commission members to carry out their agreed duties *both* as they apply to waters under national jurisdiction and on the high seas, it is justifiable for the Principle to be categorized as a political management objective within the Commission's Harvest Strategy approach.

As previously explored in Chapter 5, the recourse in the event of a claim being brought for non-compatibility (and assuming all attempts to reconcile the parties' differences within the Commission have failed), would be to seek dispute resolution according to the UNFSA/UNCLOS procedures. Resorting to such action would indicate a failure by both the Commission and individual members to work cooperatively to achieve the long-term conservation of tuna and tuna-like stocks within the Convention Area. Certainly, dispute resolution regarding a failure to achieve compatibility would involve a long and

¹¹⁰¹ The products below both failed to include 'political objectives' within the list of management objectives. 1) Scott, R., G. Pilling, J. Hampton. (2016). *Performance Indicators and Monitoring Strategies for Skipjack and South Pacific Albacore Commensurate with: Candidate management objectives for the tropical purse seine fishery and Southern longline fishery*. 5-9 December 2016. Denarau, Fiji. 9. -- 2) WCPFC. (2016). *Results of Small Working Group on Management Objectives*. 5-9 December 2016. Denarau, Fiji. 6.

difficult legal process.¹¹⁰² Thus, the first best option is to achieve compatibility through a clear and transparent manner – and the Commission’s Harvest Strategy approach represents such a mechanism.

In order to consider the Principle in clear and transparent process, as opposed to its current inconsistent and *ad-hoc* incantation, the Commission should assess compatibility through a deliberative evaluation of applicable objectives and performance indicators. The difficult part, however, is to identify and reach agreement on what would constitute an appropriate management objective with respect to compatibility. Clearly, the Principle is about striking a balance between the amount of fishing occurring on the high seas and within waters under national jurisdiction. Therefore, the Commission would need to identify management objectives and performance indicators for stocks and fisheries that reflect such a balance, such as fishing effort or catch levels. For example, what level of purse seine fishing effort within national waters versus high seas fishing effort may be considered compatible? On this particular question, the Commission has already adopted a TRP that generally corresponds to current purse seine effort levels. Thus, the Commission could decide that the current purse seine balance – approximately 80% within EEZs versus 20% on the high seas – is compatible. As such, a management objective could be recorded as “existing levels of purse seine high seas and EEZ fishing effort levels, 20% and 80%, respectively,” with the monitoring of both high seas and EEZ-based purse fishing effort serving as a performance indicator.

Similarly, the Commission could record a management objective relative to the high seas and EEZ catches for South Pacific albacore. This notion has already found expression in the FFA’s draft South Pacific albacore proposal that was introduced to WCPFC13. The draft proposal referenced a total catch limit and a table identifying the percent of catch limit to be taken in national waters versus the percent to be taken on the high seas.¹¹⁰³ Similar to the purse seine example, a management objective for South

¹¹⁰² For the complexities associated with international fisheries disputes, one need only look to the Southern Bluefin Tuna Case between New Zealand, Australia and Japan. For further reading on this case, see: Sturtz, L. (2001). Southern Bluefin Tuna Case: Australia and New Zealand v. Japan. *Ecology Law Quarterly*, 28(2), 455-486.

¹¹⁰³ FFA. (2016). *Consultative draft measure to establish a limit for South Pacific albacore*. Thirteenth Regular Session of the WCPFC. 5-9 December 2016. Denarau, Fiji. WCPFC13-2016-DP13. 5.

Pacific albacore could be “an EEZ catch of 70% vs 30% for high seas,” which is essentially the current breakdown of the catch between the relevant areas. An important factor when considering EEZ/high seas percentage limits, whether related to catch or effort, is that they need to be rationally supported. If the EEZ limits are too aspirational, high seas fishing nations will likely rebuff the proposed limits. Such a scenario represents the current landscape with respect to the PNA’s longline VDS initiative. Indeed, PNA would like to see more longline fishing in their waters (which comes at a cost to foreign vessels through access fees), and less high seas longline fishing. This issue is certainly set to cause further controversy within the Commission, as PNA members attempt to transform historical longline fishing patterns within the WCPO.

Table 11 provides a suggested list of objectives and performance indicators related to the Principle and the provisions of Article 8 which could be used within the Commission’s Harvest Strategy approach.

Table 17: Suggested list of objectives and performance indicators related to the Principle

Fishery or Species	Management Objective (political)	Operational Objective	Performance Indicator
Tropical purse seine (skipjack)	Compatibility	Balance of EEZ effort vs high seas effort (e.g., 80/20)	Annual percentage of purse seine catch/effort within EEZs and high seas
South Pacific albacore	Compatibility	Balance of EEZ catch (e.g., 70%) vs high seas catch (e.g., 30%)	Annual percentage of total catch/effort within EEZs and high seas
Tropical longline (20 N-20 S)	Compatibility	EEZ (effort or catch) vs 50% high seas (effort or catch)	Annual percentage of total catch/effort within EEZs and high seas
Bigeye	Compatibility	Purse Seine (e.g., 40 %) longline (e.g., 40%) / other fisheries (10%).	Annual percentage of total catch by fishing gear or impact on the stock by fishing gear
Bigeye	Compatibility	Limit high seas transshipment	Annual percentage of bigeye catch transshipped on high seas
N. Pacific bluefin	Compatibility	WCPO (e.g., 60% catch) / EPO (e.g., 40% catch)	Annual percentage of total catch by area
All fisheries	Compatibility	Special attention to high seas pockets	Annual amount of fishing effort, catch and transshipment activity in high seas pockets
All fisheries	Compatibility	Take into account respective dependence on fisheries	X% of fisheries generated revenue divided by GDP of flag State

As discussed earlier, a key component of Harvest Strategies is MSE, which involves applying a proposed management strategy to a model of a fishery and projecting that model into the future under various scenarios to see how well the strategy performs in achieving its objectives.¹¹⁰⁴ An adjustable parameter within an MSE evaluation could be the location of catch or effort, whether in the high seas or waters under national jurisdiction. The existing WCPFC data reporting requirements (under which operational level data must be submitted, among other data sources), support a monitoring strategy that is able to

¹¹⁰⁴ Cartwright, I. (2015). *Report on the Harvest Strategy Workshop (MOW4)*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia.8.

discern catch and effort spatially. Moreover, recent progress has been made in addressing gaps in the provision of operational level data by some CCMs.

In addition, the current development of the WCPFC's Harvest Strategy includes economic and social objectives. The identification and further elucidation of social and economic management objectives will support performance indicators that help assess compatibility between harvest control rules. MSE could support analyses that assist in discerning trade-offs that impact CCMs and provide further insight into the respective dependence of CMMs on the stocks concerned. In turn, this information could be used in the development of compatible measures.

7.4 Complicating Factors in Developing Operational Objectives for Compatibility

7.4.1 Fishing capacity, Increasing SIDS Fleets, and High Seas Access

As discussed in Chapter 4, it is believed that there is excess fishing vessel capacity in the WCPO purse seine fleet, and likely the longline fleet as well. The WCPFC has addressed fishing capacity in a non-binding resolution (2005) and in the tropical tuna CMM beginning in 2013. Under the tropical tuna measure, vessel limits only apply to purse seine vessels operating between 20° N and 20° S, and to the longline fleets of non-SIDS. Indonesian vessels and those belonging to SIDS are exempted from the vessel limits.¹¹⁰⁵ Moreover, there is only a cap on longline vessels that target bigeye, not for those targeting yellowfin or albacore. As the measure provides exemptions to SIDS and Indonesia, and only covers longline bigeye vessels, it is clear that the Commission has not taken comprehensive steps to cap overall capacity within the Convention Area. Furthermore, because the measure provides exemptions to SIDS, it is expected that the size of SIDS fleets will increase. Indeed, this trend is already becoming evident, with the purse seine fleets of SIDS having steadily increased since the early 1990s. In 2016,

¹¹⁰⁵ WCPFC CMMs 2013-01 through 2016-01. Only purse seine vessel capacity is spatially constrained between 20°N and 20°S, whereas longline vessel capacity limits for non-SIDS apply wherever they fish for bigeye.

approximately one-third of the large scale purse seine vessels operating in the WCPO belonged to SIDS (116 out of 309 vessels).¹¹⁰⁶

The increase in the size of fleets flagged to SIDS can be viewed as beneficial in that it offers greater local benefits and management control in comparison to foreign vessels. However, the expansion of SIDS fleets could also prove problematic with respect to the FFA’s current fisheries roadmap, which seeks to reduce high seas fishing effort.¹¹⁰⁷ In 2015, for the first time on record, the high seas fishing effort of purse seine fleets flagged to SIDS exceeded the fishing effort of purse seine vessels flagged to DWFNs (Figure 46).¹¹⁰⁸

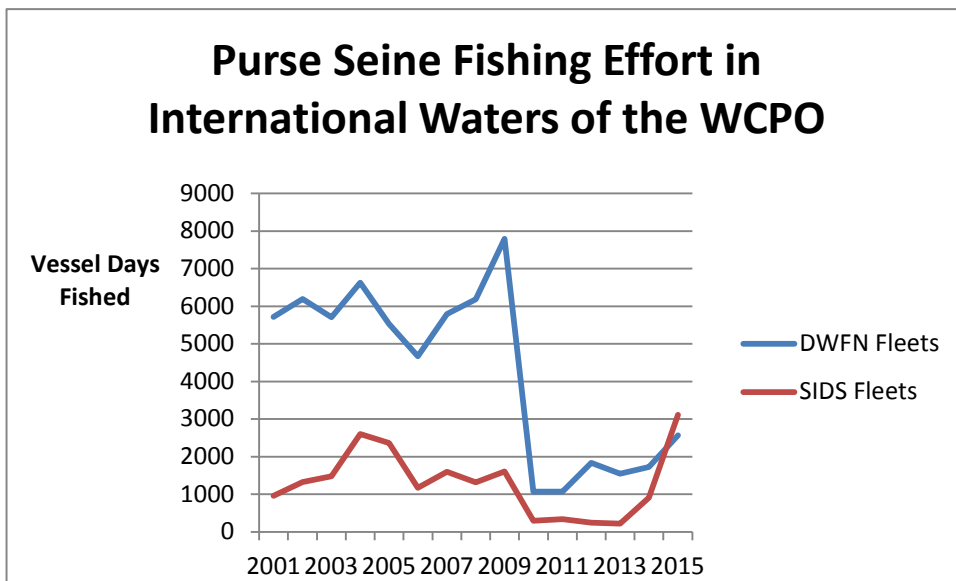


Figure 46: Purse seine fishing effort on the high seas of the WCPO
 Source: SPC Tropical Tuna CMM data summaries. Figure made by author.

¹¹⁰⁶ Williams et al. (2017) at 4. These vessel numbers do not include the large number of ring net boats and small purse seine vessels operating in the domestic fisheries of Indonesia, Japan’s coastal areas and the Philippines.

¹¹⁰⁷ See discussion of the FFA roadmap in Chapter 6.

¹¹⁰⁸ It should be noted that the sharp reduction in high seas fishing effort by DWFN-flagged purse seine vessels was a result of PNA countries restricting high seas effort by these vessels as a condition of access to fish in PNA waters. See discussion of this issue in Chapter 6.

If this trend continues, SIDS will have difficulty in advocating for further reductions in high seas fishing effort limits for DWFNs while the effort of their own fleets in the area increases. This would clearly be seen as a double-standard. For example, what provisions of the Honolulu Convention will SIDS rely on to support the notion that SIDS effort on high seas is more justifiable than DWFN fishing effort? One likely possibility is Article 30, which supports the concept of responsible fisheries development by SIDS. Indeed, SIDS could argue that the current high seas limits agreed under the tropical tuna measure represent historic fishing levels when SIDS fleets were much smaller than what they are today.

Notwithstanding a reasonable justification for SIDS fishing effort on the high seas, if the expansion of SIDS effort continues in the future, coupled with current levels of purse seine fishing effort within the main EEZ fishing grounds (PNA national waters), the existing balance between EEZ and high seas fishing effort may shift. Such a shift would have implications for the compatibility between fishing effort in national waters versus international waters. Moreover, if a lack of compatibility were to result in an increase in overall effort, skipjack catches would most likely also increase, thus leading to a breach of the skipjack TRP.

A remedy which has been proposed by PNA members is for the Commission to establish a “global TAC” for the high seas, as well as the elimination of flag based high seas effort limits for non-SIDS and the exemptions currently in place for SIDS fleets.¹¹⁰⁹ This would likely result in a ‘race to fish’ on the high seas, as foreign fleets would not be liable to pay the exorbitant, daily VDS costs associated with fishing in the national waters of PNA members. Even so, such a proposal would surely mean that the “global TAC” would be fulfilled in a short space of time. This would serve the PNA objective of forcing fishing effort into their national waters, thus allowing them to charge fishing access fees. PNA members also charge a

¹¹⁰⁹ PNA Members and Tokelau. (2015). *Proposed Revisions to the Tropical Tuna Measure (CMM 2014-01)*. Twelfth Regular Session of the WCPFC. 3-8 December 2015. Bali, Indonesia. 9 at 2. Specifically, PNA members proposed a quarterly fishing effort limit of 531 days for the high seas, with unused effort to be carried over to the following quarter. The proposal included an exemption for Kiribati-flagged vessels.

VDS fee for vessels flying their own flag, albeit at a discounted rate compared to the costs incurred by foreign vessels.

However, it is axiomatic that the interests of PNA national governments, which include generating revenue from the VDS, likely do not overlap with those of vessel owners of purse seine vessels flagged to PNA members. Vessels owners, regardless of flag, would rather see operational flexibility with regard to high seas access, as opposed to being limited to fishing grounds within national waters. This is certainly the case during El Nino conditions, where fishing effort by purse seine vessels fishing in the WCPO has been observed to shift eastward by 2,000 nm.¹¹¹⁰ As SIDS fleets increase, SIDS will find it difficult to justify restricting DWFN fleets on the high seas while advancing the right of their own flagged vessels to fish in the same area. On this issue, SIDS will undoubtedly face mounting pressure from both DWFNs and vessel owners of vessels flying SIDS flags.

7.4.1 Climate Change, Redistribution of Tuna Resources, and Compatibility

The preceding section discussed the expansion of purse seine SIDS fleets, which has been the trend for the last two decades. Historically, under the PNA VDS, the members with the largest allocations of the VDS TAE have been Papua New Guinea, Kiribati and the FSM.¹¹¹¹ Since the WCPO purse seine fishery began in the mid-1980s, PNG waters have seen the highest levels of catch and effort. However, the impacts of climate change may change this situation.

As our planet becomes increasingly warmer, productivity in the tropical Pacific Ocean is expected to decrease, with changes in ocean circulation, vertical stratification, and mesoscale eddy activity poised to

¹¹¹⁰ Lehodey et al. (1997).

¹¹¹¹ Havice, E. (2013). Rights-based management in the Western and Central Pacific Ocean tuna fishery: Economic and environmental change under the Vessel Day Scheme. *Marine Policy*, 42, 259–267.

affect tuna spawning distribution and foraging locations.¹¹¹² By the end of the 21st century, it is predicted that the surface waters of the Western Pacific warm pool will exceed the skipjack upper temperature threshold (above 30° C), forcing skipjack further east or south to cooler waters, or to a greater depth (which will reduce tuna catchability).¹¹¹³ Where the eastern edge of the warm pool converges with the equatorial cold tongue, differences in sea surface temperature and salinity are observed. This area of convergence, which constitutes a prime fishing ground for skipjack tuna, is generally centered between 160°E and 170° E longitude.¹¹¹⁴ Increases in sea surface temperature of the Western Pacific warm pool as a result of a warming planet is predicted to result in an eastward shift of skipjack in the latter half of the 21st century.¹¹¹⁵ Such a shift would likely see reduced levels of catch and effort by the tropical purse seine fishery in and around PNG waters.¹¹¹⁶

The effects of El Nino serve as a model for how purse seine effort shifts from west to east along the equatorial Pacific as the warm pool pushes eastward towards the central Pacific. One of the strongest El Nino events on record occurred in early 2015 to mid-2016.¹¹¹⁷ In 2015, purse seine catch within PNG national waters was reported to be around 186,000 mt - a 67% decrease from the previous five-year

¹¹¹² Lehodey P., Hampton, J., Brill, R.W., Nicol, S., Senina, I., Calmettes, B., Pörtner, H.O., Bopp, L., Ilyina, T., Bell, J.D., & Sibert J. (2011). Vulnerability of oceanic fisheries in the tropical Pacific to climate change. In J. Bell, J.E. Johnson & A.J. Hobday AJ (Eds.), *Vulnerability of tropical pacific fisheries and aquaculture to climate change* (pp. 447–506). Secretariat of the Pacific Community, Noumea, New Caledonia.

¹¹¹³ Brown, J. N., Langlais, C., & Gupta, A. S. (2015). Projected sea surface temperature changes in the equatorial Pacific relative to the Warm Pool edge. *Deep Sea Research Part II: Topical Studies in Oceanography*, 113, 47-58.

¹¹¹⁴ Maes, C., Sudre, J., and Garçon, V. (2010). Detection of the eastern edge of the equatorial Pacific warm pool using satellite-based ocean color observations. *Sola*, 6, 129-132 at 130.

¹¹¹⁵ Lehody et al. (2011) at 475.

¹¹¹⁶ Ibid.

¹¹¹⁷ Lian, T., Chen, D. & Tang, Y. (2017) *China Earth Science*. In press. The 2015-16 El Nino was preceded by a weak El Nino in 2014.

average of approximately 570,000 mt.¹¹¹⁸ By contrast, the 2015 purse seine catch taken from Kiribati national waters increased 63% over the 2010-2014 average.¹¹¹⁹

As discussed above, human induced climate change is predicted to result in an eastward shift of the warm pool, with a concomitant redistribution of tropical tuna stocks. In addition, the frequency of El Niño conditions is predicted to increase.¹¹²⁰ Both of these scenarios do not bode well for countries such as PNG, which are likely to see decreased tuna production from their national waters as a result of climate change. For a country like PNG, which is rich in other natural resources, the economic impact could be dampened, whereas countries such as Nauru would face greater economic effects. On the other hand, countries with large EEZs such as Kiribati and the Cook Islands could stand to benefit from a redistribution and shift eastward of skipjack tuna. Moreover, there are greater international waters east of 180° than west, which could create implications for the application of the Principle as fleets seek access to these high seas waters.

If tuna (and particularly skipjack) distribution shifts more eastward beyond 180° longitude as a result of climate change, there will likely be greater interest in international waters for purse seine fishing grounds due to the possibility of higher CPUE levels and lower per day costs absent any VDS for fishing in national waters of a PNA member. As a shift towards greater reliance on international waters for purse seine fishing occurs in the future, the application of the Principle within the WCPFC will come into play. The Commission will need to decide how much effort should be allowed on the high seas, while taking into consideration purse seine fishing effort and other factors within national waters of coastal States,

¹¹¹⁸ Calculation based on data found at <http://ffa.int/node/1877>. At the time of drafting, 2016 catch information was unavailable.

¹¹¹⁹ Ibid. In 2014, the purse seine catch in Kiribati waters was reported to be approximately 707,000 mt - a record for the country. Prior to 2014, the highest purse seine catch in Kiribati national waters was reported to be around 345,000 mt (in 2002).

¹¹²⁰ Timmermann, A., Oberhuber, J., Bacher, A., Esch, M., Latif, M., & Roeckner, E. (1999). Increased El Niño frequency in a climate model forced by future greenhouse warming. *Nature*, 398(6729), 694-697.

including SIDS and their high respective dependence on revenue generated from selling fishing access to their national waters.

It is expected that sub-regional agreements such as the PNA VDS will also need adjustment to reflect shifting tuna distributions.

7.4 Shifting Effort and Avoiding a Disproportionate Burden

Another complicating factor in developing operational objectives associated with the Principle and balancing EEZ/high seas fishing is the issue of disproportionate conservation burden. For example, if the predicted shift in skipjack distribution occurs as a result of increasing ocean temperatures, more effort may be expended on the high seas versus what is observed today. Under this scenario, coastal States may choose to claim a disproportionate conservation burden if tasked to reduce catch or effort in their waters due to what may be considered overexploitation in the high seas.

The issue of disproportionate conservation burden can also manifest when establishing the catch or effort split for national waters versus the high seas, and also for such allocations within waters under national jurisdiction. The current composition of PICs is that they collectively form the FFA; however, the PNA, which is a subgroup of FFA members, control a large proportion of skipjack fishing grounds. While there is strong regional solidarity among FFA members, there has been (and continues to be) conflict between PNA members and non-PNA members with regard to the balance of fishing effort. In 2017, for example, several non-PNA members of the FFA developed a proposal to pool EEZ purse seine effort, allowing transfers of such effort among their small membership to be used on the high seas.¹¹²¹ When the significant domestic catches of the Philippines, Indonesia and Japan are factored into the equation, along with shifting effort on the high seas and fishing in PNA waters, calibrating each country's fair share of

¹¹²¹ Cook Islands, Fiji, Niue, Samoa, Tonga, and Vanuatu. (2017) Proposal of Cook Islands, Fiji, Niue, Samoa, Tonga, Vanuatu to Draft Bridging Measure for Tropical Tunas Rev5. WCPFC Interessional Meeting to Progress the Draft Bridging Measure for Tropical Tunas. 22-24 August 2017. Honolulu, Hawaii.

conservation costs to achieve a TRP is vital to avoid claims of disproportionate conservation burden and to ensure compatibility.

7.5 Chapter Conclusion

The WCPFC Harvest Strategy approach is recognized as a best practice with regard to effective fisheries management, incorporating a general framework involving management objectives, operational performance indicators and MSE. This chapter has argued that the Commission's Harvest Strategy approach is a mechanism to facilitate a more consistent application of the Principle by recognizing compatibility as a political management objective which sits on an equal footing with social, economic and biological management objectives. Furthermore, the process would involve defining operational indicators that focus on the balance of catch or fishing effort between EEZs and the high seas, including acceptable ratios of catch or effort between jurisdictions. Following a deliberative, transparent process would provide for a more consistent application of the Principle, while also reducing the potential for claims being brought that the Commission is not achieving compatible measures. Indeed, claims of incompatibility between high seas measures and those adopted for national waters have the ability to lead to conflict among members, thereby eroding international cooperation.

The chapter has also identified that, even if a more deliberative process to achieve compatibility is undertaken within the Harvest Strategy approach, future challenges lie ahead. These challenges include the expansion of fleets flagged to PICs, which will lead to greater interest in fishing on the high seas. An increase in high seas fishing by Pacific Island fleets could disrupt any balanced ratio of EEZ/high seas fishing established under the Harvest Strategy. Furthermore, PICs could find it difficult justifying their greater interest in high seas fishing while trying to restrict such fishing by DWFNs.

Even if Pacific Island fleets do not expand, the chapter has shown that climate change is predicted to redistribute tuna stocks further to the east, where there are greater high seas areas. This may also lead to a shift in fishing grounds and a greater reliance on the high seas or the EEZs of a smaller group of countries. In turn, any balance between EEZ/high seas fishing effort agreed to under an existing framework will likely become strained.

Lastly, the chapter identified that as fishing effort shifts in the future, the issue of disproportionate conservation burden will likely continue to be a central focus of the Commission. This is particularly true in circumstances where developing countries are asked to take measures in EEZ waters in support of stock-wide conservation efforts, but where a greater percentage of exploitation occurs in the high seas or in the EEZs of neighboring countries. As this occurs, the application of the Principle will be tested on several fronts.

Chapter 8: Thesis Summary and Conclusions

8.1 Summary

The WCPO supports the world's largest tuna fishery, and its geopolitical composition is unique with regard to the mosaic of EEZs made up of mostly SIDS, high seas pockets, and other high seas areas within primary fishing grounds. This distinctive seascape, coupled with the high levels of dependence by PICs on tuna for their long-term economic stability and food security, brings the importance of the Principle into sharp focus. The preceding analysis has evaluated the application of the Principle within this region, and specifically by the WCPFC.

Chapter 2 traced the development of international fisheries law and the emergence of the Principle at a time when generally accepted delineations of marine jurisdictional zones and high seas freedoms were being called into question. While *Mare Liberum*, or freedom of high seas, had been recognized as a customary international law rule since the 19th century, coastal State jurisdictional boundaries were not settled until the early 1980s. UNCLOS cemented international agreement on the 200 nm EEZ, with attention then turning towards high seas fisheries management. Rapid increases in high seas fishing on transboundary stocks, coupled with a lack of adequate controls, led to a global high seas fishing crisis in the years after UNCLOS was concluded.

The international community responded in the mid-1990s with new legally-binding agreement covering straddling and highly migratory fish stocks - UNFSA. The Principle was borne out of UNFSA and established in recognition of the rights and obligations of coastal States with regard to managing fishery resources within their EEZs, as well as the rights and obligations of States with vessels fishing on the high seas. Specifically, the Principle was the management bridge between EEZs and the high seas, and foundational in coastal States and high seas fishing States reaching agreement during the UNFSA negotiations.

Chapter 3 analyzed the development of Principle within UNFSA, which is contained within Article 7 and includes several considerations to take into account when developing compatible measures. The main provision of Article 7 specifies the need to consider existing management measures, whether in place and applicable to EEZs or the high seas, when developing compatible measures. Additional considerations to take into account pursuant to Article 7 include: a) the biological unity of the stocks; b) the respective dependence of coastal States and States fishing on the high seas on the stocks concerned; and c) the need to ensure that adopted measures do not have a harmful impact on living marine resources as a whole. Another important element of Article 7 is the instruction that measures established for the high seas not undermine measures adopted within areas of national jurisdiction. It has been stated that this provision provides a noticeable tilt in favor of coastal States with regard to the development of compatible measures. Even so, it does not obviate the overarching requirement for international cooperation on the management of transboundary stocks.

The obligation for international cooperation was maintained within UNFSA, with a further direction for cooperating States to form RFMOs. These RFMOs are required to take into account the specific characteristics of the subregion or region over which they exert control, thus ensuring effective conservation and management of the relevant fish stocks. To encourage participation with RFMOs, UNFSA established a mechanism whereby if States are unable or unwilling to pursue cooperation, they risk losing access to fisheries resources within the RFMO's area of competence.

Chapter 4 presented the central case study of the thesis, which focused on the management of the world's largest tuna fishery, which occurs in the WCPO. Descriptions of key tuna stocks (skipjack, yellowfin, bigeye, albacore and Pacific bluefin) were provided, including biology, stock delineations, catch data and stock status. Information on fishing capacity was also presented, suggesting that excess fishing capacity already exists in purse seine and longline fleets operating within the WCPO. A description of the problems associated with overcapacity was also provided.

Chapter 5 examined the development of international fisheries management within the WCPO, including a description of key players such as PICs, DWFNs and other coastal States. The extensive history of subregional management through the FFA and PNA was described - a management regime which has shaped, and continues to shape, the development of compatible measures within the region. A review of the negotiations that culminated in the Honolulu Convention was also provided, with particular focus on the deliberations related to the Principle. An analysis of Article 7 of the Honolulu Convention was also conducted, including a comparative analysis with the compatibility provisions contained within UNFSA. Other key articles and provisions of the Honolulu Convention and functions of the WCPFC were also described.

Chapter 6 evaluated the application of the Principle and provisions of Article 8 by the Commission using an evaluation tool. Each of the CMMs that pertain to catch or effort allocations of managed stocks were evaluated against a set of standards and associated criteria. Using a scoring system, a compatibility rating was provided for each of these CMMs. Particular emphasis was placed on the application of the Principle in the WCPFC's marquee measure for tropical tunas (skipjack, yellowfin and bigeye). A detailed review was also conducted for South Pacific albacore and Pacific bluefin. Results of the assessment demonstrated that the Commission is applying the Principle and Article 8 in an inconsistent and *ad hoc* manner, with an overall rating of 47% being achieved. However, the highest rating received by an individual CMM (71%) did involve tropical tuna stocks, with these particular stocks collectively representing over 90% of the WCPO tuna catch.

Chapter 7 proposed that the Commission incorporate the Principle within its Harvest Strategy approach as a political management objective alongside social, economic and biological objectives. The Principle is a pillar of international management for HMS stocks as it serves to bridge the gap between the rights and obligations governing EEZ management and high seas fishing freedoms. Given the unique geographic mosaic that makes up the Convention Area, Chapter 7 argued that identifying the Principle as a political management objective is necessary for the long-term conservation of fisheries in the region. The chapter

also identified challenges with regard to compatibility and the future balance of fishing effort between EEZs and the high seas, including: a) the increasing number of vessels flagged to PICs; b) tuna stock redistribution as a result of climate change; and c) reconciling claims by SIDS of disproportionate conservation burden in response to potentially greater high seas fishing activity.

8.2 Conclusion

The Commission has not developed any deliberative guidance on how to implement compatible measures within the Convention Area, but rather continues to rely on Article 8 of the Honolulu Convention, which must be interpreted and applied in the context of, and in a manner consistent with, UNCLOS and UNFSA. This thesis has demonstrated that the Commission has applied the Principle and the associated provisions of Article 8 in an inconsistent manner. According to the assessment undertaken, the Commission has achieved a combined average compatibility rating of 47% with respect to the application of the Principle within CMMs that cover catch or effort allocations. However, the tropical tuna measure does stand out as achieving the highest compatibility rating, which is noteworthy because it applies to three tuna stocks that together make up around 90% of the WCPO tuna catch, driven mostly by the disproportionately large catch of skipjack tuna by purse seine vessels (around 70% of the total catch).¹¹²² With regard to the tropical tuna measure, the Principle has mostly been invoked in relation to balancing purse seine fishing effort between EEZs and the high seas.¹¹²³ This is hardly surprising, as the WCPO tuna purse seine fishery is the largest in the world, boasting an annual wholesale value of approximately \$3 billion. While this figure is certainly impressive, it is satisfying that a significant proportion of the fishery's value flows to PICs.¹¹²⁴ Indeed, it is in this regard that the Commission should be credited. However, the Commission has done little to advance the Principle with respect to other important fishing

¹¹²² Skipjack stock status in the WCPO is considered healthy, not subject to overfishing or overfished with regard to the established biomass-related LRP. Moreover, the Commission has further supported the Principle by adopting a skipjack TRP, which seeks to keep skipjack stock biomass at near current levels.

¹¹²³ The EEZ/high seas purse seine fishing balance has been fortified through the Commission-adopted skipjack TRP of holding skipjack biomass at current levels.

¹¹²⁴ Williams et al. (2017) at 19.

gears that catch tropical tuna, such as the tropical longline fishery, which has value of over \$1 billion annually, as well as the artisanal fisheries of both Indonesia and the Philippines.¹¹²⁵

There are also examples where, to date, the Commission has failed to achieve compatibility, such as with the management of South Pacific albacore. The rapid increase in the catch of South Pacific albacore between 2008-2012 has led to decreased catch rates across the range of the stock. Suffering most from the reduced catches have been the domestic longline fleets of South Pacific countries that depend on albacore as their main target catch – a situation which should trigger ‘respective dependence’ considerations consistent with Article 8. Several domestic fleets have lost vessels to attrition because of poor economic conditions, while China continues to expand its longline fleet. Chinese vessels are able to operate in poor economic conditions as they receive a wide range of subsidies from the Chinese government, allowing them to out-compete the domestic fleets of PICs.

There are two main reasons why the Commission has failed to establish compatible measures for South Pacific albacore: 1) the stock is considered healthy – that is, it is not overfished or subject to overfishing (and thus there is no collective urgency on the part of CCMs to act); and 2) a significant portion of the increased catch in recent years has not solely been derived from the high seas but also national waters. Even though there have been desperate pleas by South Pacific countries for the Commission to amend the measure for the stock, there has been not been consensus among WCPFC members to restrict high seas catches in favor of EEZ catches. Such unwillingness to act can also be seen with the proposals to establish a Commission-adopted TRP. With a relatively healthy stock in terms of low fishing mortality and high biomass levels, and the fact that the largest fleet catching South Pacific albacore is heavily subsidized, establishing a TRP has proven extremely difficult. As discussed earlier with respect to evaluating compatibility, a TRP can be helpful as it can serve as a performance indicator.

¹¹²⁵ Ibid at 32.

The ability to measure performance against a set of management objectives is critical for effective fisheries management. The Commission's Harvest Strategy approach, despite being in its infancy, offers a distinctive opportunity to formally recognize compatibility as a high-level management objective. For SIDS in the region, which tend to have little in the way of natural resources apart from tuna, ensuring compatibility can surely be viewed as a political objective. Thus, incorporating the Principle into the Harvest Strategy approach as a political management objective would be a wise choice for the Commission. This would require the Commission to develop metrics and associated performance indicators to measure and assess whether compatibility is being achieved or not. Formally recognizing compatibility within the Harvest Strategy framework would represent a vast improvement on how the Commission has addressed compatibility to date. Indeed, as the analysis has demonstrated, the Commission's current track-record with respect to Article 8 provisions can be described as inconsistent at best.

Failure to institute a defined process and detailed guidelines for establishing compatible measures within the Convention Area will lead to problems in the future. A prime example is the requirement to avoid transferring a disproportionate conservation burden onto SIDS. To date, the failure to adequately address disproportionate conservation burden, as claimed by several SIDS, has hamstrung the work of the Commission and reduced the effectiveness of conservation measures.¹¹²⁶ Ensuring that compatibility is achieved will reduce the potential for conservation measures to transfer a disproportionate conservation burden onto SIDS, which makes reaching consensus on allocations and other management measures a much easier and effective process.

Based on the analysis presented herein, which found an average rating of 47% in the Commission's application of the Principle, it is clear that the Commission could be doing more in terms of both process (consistency) and outcomes (objectives). Unequivocally, mechanisms to achieve compatibility should be

¹¹²⁶ Refer to WCPFC CMM 2013-01 for examples of exemptions and several references to disproportionate conservation burden.

embraced by the Commission. The Commission's Harvest Strategy approach offers such a mechanism, providing opportunities to define compatibility with respect to key fisheries or stocks, and a process to evaluate the performance of measures against identified indicators. Failing to achieve compatibility would constitute a contravention of the Honolulu Convention and UNFSA - a situation which would not only jeopardize the sustainability of tuna stocks which collectively comprise the world's largest tuna fishery, but also result in significant economic impacts and food security risks to PICs and territories of the Western and Central Pacific. Indeed, the consequences of not taking swift and decisive action – politically, socially and economically – will be both substantial and long-lasting.

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Appendix 1: Article 7 of the UN Fish Stocks Agreement

Article 7 Compatibility of Conservation and Management Measures

1. Without prejudice to the sovereign rights of coastal States for the purpose of exploring and exploiting, conserving and managing the living marine resources within areas under national jurisdiction as provided for in the Convention, and the right of all States for their nationals to engage in fishing on the high seas in accordance with the Convention:

(a) with respect to straddling fish stocks, the relevant coastal States and the States whose nationals fish for such stocks in the adjacent high seas area shall seek, either directly or through the appropriate mechanisms for cooperation provided for in Part III, to agree upon the measures necessary for the conservation of these stocks in the adjacent high seas area;

(b) with respect to highly migratory fish stocks, the relevant coastal States and other States whose nationals fish for such stocks in the region shall cooperate, either directly or through the appropriate mechanisms for cooperation provided for in Part III, with a view to ensuring conservation and promoting the objective of optimum utilization of such stocks throughout the region, both within and beyond the areas under national jurisdiction.

2. Conservation and management measures established for the high seas and those adopted for areas under national jurisdiction shall be compatible in order to ensure conservation and management of the straddling fish stocks and highly migratory fish stocks in their entirety. To this end, coastal States and States fishing on the high seas have a duty to cooperate for the purpose of achieving compatible measures in respect of such stocks. In determining compatible conservation and management measures, States shall:

(a) take into account the conservation and management measures adopted and applied in accordance with article 61 of the Convention in respect of the same stocks by coastal States within areas under national jurisdiction and ensure that measures established in respect of such stocks for the high seas do not undermine the effectiveness of such measures;

(b) take into account previously agreed measures established and applied for the high seas in accordance with the Convention in respect of the same stocks by relevant coastal States and States fishing on the high seas;

(c) take into account previously agreed measures established and applied in accordance with the Convention in respect of the same stocks by a subregional or regional fisheries management organization or arrangement;

(d) take into account the biological unity and other biological characteristics of the stocks and the relationships between the distribution of the stocks, the fisheries and the geographical particularities of the region concerned, including the extent to which the stocks occur and are fished in areas under national jurisdiction;

(e) take into account the respective dependence of the coastal States and the States fishing on the high seas on the stocks concerned; and

(f) ensure that such measures do not result in harmful impact on the living marine resources as a whole.

3. In giving effect to their duty to cooperate, States shall make every effort to agree on compatible conservation and management measures within a reasonable period of time.

4. If no agreement can be reached within a reasonable period of time, any of the States concerned may invoke the procedures for the settlement of disputes provided for in Part VIII.

5. Pending agreement on compatible conservation and management measures, the States concerned, in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature. In the event that they are unable to agree on such arrangements, any of the States concerned may, for the purpose of obtaining provisional measures, submit the dispute to a court or tribunal in accordance with the procedures for the settlement of disputes provided for in Part VIII.

6. Provisional arrangements or measures entered into or prescribed pursuant to paragraph 5 shall take into account the provisions of this Part, shall have due regard to the rights and obligations of all States concerned, shall not jeopardize or hamper the reaching of final agreement on compatible conservation and management measures and shall be without prejudice to the final outcome of any dispute settlement procedure.

7. Coastal States shall regularly inform States fishing on the high seas in the subregion or region, either directly or through appropriate subregional or regional fisheries management organizations or arrangements, or through other appropriate means, of the measures they have adopted for straddling fish stocks and highly migratory fish stocks within areas under their national jurisdiction.

8. States fishing on the high seas shall regularly inform other interested States, either directly or through appropriate subregional or regional fisheries management organizations or arrangements, or through other appropriate means, of the measures they have adopted for regulating the activities of vessels flying their flag which fish for such stocks on the high seas.

Appendix 2: Article 8 of the Honolulu Convention

Article 8 Compatibility of Conservation and Management Measures

1. Conservation and management measures established for the high seas and those adopted for areas under national jurisdiction shall be compatible in order to ensure conservation and management of highly migratory fish stocks in their entirety. To this end, the members of the Commission have a duty to cooperate for the purpose of achieving compatible measures in respect of such stocks.

2. In establishing compatible conservation and management measures for highly migratory fish stocks in the Convention Area, the Commission shall:

(a) take into account the biological unity and other biological characteristics of the stocks and the relationships between the distribution of the stocks, the fisheries and the geographical particularities of the region concerned, including the extent to which the stocks occur and are fished in areas under national jurisdiction;

(b) take into account:

(i) the conservation and management measures adopted and applied in accordance with article 61 of the 1982 Convention in respect of the same stocks by coastal States within areas under national jurisdiction and ensure that measures established in respect of such stocks for the Convention Area as a whole do not undermine the effectiveness of such measures;

(ii) previously agreed measures established and applied in respect of the same stocks for the high seas which form part of the Convention Area by relevant coastal States and States fishing on the high seas in accordance with the 1982 Convention and the Agreement;

(c) take into account previously agreed measures established and applied in accordance with the 1982 Convention and the Agreement in respect of the same stocks by a subregional or regional fisheries management organization or arrangement;

(d) take into account the respective dependence of the coastal States and the States fishing on the high seas on the stocks concerned; and

(e) ensure that such measures do not result in harmful impact on the living marine resources as a whole.

3. The coastal State shall ensure that the measures adopted and applied by it to highly migratory fish stocks within areas under its national jurisdiction do not undermine the effectiveness of measures adopted by the Commission under this Convention in respect of the same stocks.

4. Where there are areas of high seas in the Convention Area entirely surrounded by the exclusive economic zones of members of the Commission, the Commission shall, in giving effect to this article, pay special attention to ensuring compatibility between conservation and management measures established for such high seas areas and those established in respect of the same stocks in accordance with article 61 of the 1982 Convention by the surrounding coastal States in areas under national jurisdiction.

Appendix 3: Review of WCPFC Annual Meeting Records with Regards to Statements on Compatibility (2004-2016)

Meeting #	Issue	CCM	Statement	page	paragraph #
WCPFC2	Compatible seabird measures as other RFMOs (e.g. CAMLR)	Comm. adopted report language		8	36
WCPFC2	Compatibility between HS and national waters	FSM- opening remarks by FSM President	Need to implement compatible measures to ensure our precious tuna resource is not squandered.	20	
WCPFC3 NC Report	Seabirds	several CCMs	Several CCMs also expressed concerns about the adoption of seabird catch mitigation measures applicable north of 20°N latitude and the compatibility of those measures with CMMs that apply to the entire Convention Area.	14	60
WCPFC3	Proposal for purse seine closures (YFT and BET measures)	Taiwan, supported by several CCMs	Measures should strive for compatibility between high seas and waters under national jurisdiction in accordance with Article 8 of the Convention.	23	134
WCPFC3	MCS measures	Samoa (Prime Minister opening remarks)	There is an urgent need to develop a comprehensive package for monitoring and controlling. FFA members like Samoa are taking appropriate measures for their EEZs and therefore the Commission must adopt compatible measures for the high seas. IUU fishing (illegal, unreported, and unregulated) in the high seas and in the Convention Area, continue to threaten and undermine fisheries conservation and management efforts by both national fisheries administrations and regional fisheries organizations like FFA.	34	119

WCPFC4	High seas pockets	PNG	PNG expressed strong reservations against any actions that would continue to allow fishing in high seas areas just outside EEZs (“high seas pockets”). PNG believes this is leading to illegal incursions into EEZs and loss of coastal State resources, which is preventing the development of SIDS. It requested the Commission to take immediate action to impose compatible management measures on the high seas and in the EEZs of other non-Parties to the Nauru Agreement (PNA) CCMs.	13	61
WCPFC4	High seas	Comm. adopted report language	The Commission agreed that providing for compatible management measures for fishing on the high seas was a priority area of work over the coming year	13	62
WCPFC4	Transshipment	several CCMs	Those CCMs who proposed to allow transshipment at sea looked to the factors defined in TCC3 Summary Report para 75 as elements of a transshipment measure. They cited the importance of compatibility with other RFMOs that allow such activities, and consistency with the WCPF Convention text.	26	151
WCPFC4	CMM proposal on SIDS aspirations (RMI asserting that Taiwan blocking their attempt to get PS vessel)	Legal Advisor	The VDS applies to purse-seine capacity in the EEZs of PNA Member CCMs. Further, the Commission is required to implement compatible measures on the high seas and in waters under the national jurisdiction of non-PNA CCMs to control total capacity and total fishing effort in the Convention Area.	48	323
WCPFC4	Commission work plan to develop measures compatible with PNA measures	Chair	development of compatible measures for the high seas, including development of measures for the high seas and for EEZs of other non-PNA CCMs, which are compatible with those measures applicable to the PNA members of the Commission consistent with paras 9 and 10 of CMM-2005-01;	52	353

WCPFC4	New members, high seas MCS	PNG Opening Statement	We see more and more non-Commission Members applying to join the WCPFC without the Commission first putting in place measures compatible with our in-zone measures, which have been in place since 2004 but so far were not adequately implemented in the high seas because MCS measures for the high seas were never put in place to ensure compliance.	98	Attachment F
WCPFC5	Meeting priorities	Chair	The Chair made an opening statement (Attachment C), highlighting four key items before the Commission at WCPFC5, including a conservation and management measure (CMM) for bigeye and yellowfin tuna, a CMM for transshipment, compatible measures between exclusive economic zones (EEZs) and the high seas, and decisions on the application process for CNMs.	6	10
WCPFC5	Compatibility with PNA VDS	PNA members	Effort is being limited to 2004 levels according to CMM 2005-01, with a provision to allow transfer of days between PNA members. For these limits to be effective in reducing fishing mortality on the stocks, it will be important for the Commission to adopt compatible measures for high seas areas and other areas not covered by the Third Implementing Arrangement of the Parties to the Nauru Agreement.	29	163
WCPFC5	High seas VDS	FFA members	FFA members noted their support for a high seas VDS and the establishment of compatible arrangements for controlling purse-seine effort. These members suggested that the issue be referred to SC5 and TCC5 for further consideration.	29	167

WCPFC5	compatibility in general	Legal Advisor	<p>Martin Tsamenyi provided an introduction to WCPFC5's consideration of compatibility issues. Article 8 of the Convention requires that "conservation and management measures established for the high seas and those adopted for areas under national jurisdiction shall be compatible in order to ensure conservation and management of highly migratory stocks in their entirety." In his presentation, Tsamenyi considered that, because the term "areas under national jurisdiction" is not defined in the Convention or UNFSA, that the Rules of Treaty interpretation under the Vienna Convention on the Law of Treaties may provide for this term to be interpreted in several ways, including: i) literally to include the EEZ, territorial sea, archipelagic waters and internal waters; and ii) in the context of the fisheries provisions under the 1982 Convention to refer only to the EEZ. Tsamenyi noted that consistent with the objective to manage the stocks in their entirety, Commission Members are obliged to seek a cooperative approach to the requirement under the Convention for compatibility of measures between the high seas and areas under national jurisdiction. In the discussion that followed, it was apparent that there were many differences of view among Members as to how the term "areas under national jurisdiction" should be interpreted and applied with respect to implementation of the WCPF Convention. The issue will require further consideration and clarification among Members.</p>	30	174
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WCPFC5	Special requirements of developing states	FFA members	Another FFA member stressed the importance of cooperation of Commission Members on a wide range of fronts, including not only the Special Requirements Fund, but also the development of equitable and compatible management measures and issues of vessel provision and licensing.	43	264
WCPFC5	Compatibility with PNA measures	Kiribati opening statement	Kiribati has signed up to the PNA Third Implementation Arrangements on the Conservation and Management of Bigeye and Yellowfin and we are proud to be associated with this initiative. The measures to be undertaken under this initiative although could be painful for us smaller island developing states who depend very much for revenue and economic development on the harvest of these tuna species, this is the sacrifice that we have taken to ensure the long-term security of the species and future of the industry. We encourage members of the Commission to consider and endorse compatible measures for the high seas. The burden of conservation measures should be shared in an equitable manner in order to work. Kiribati maintains the belief of coastal states' sovereign right over their 200 mile EEZ and we believe that the Commission's responsibility on matters of conservation and management of any species, should be for the high seas and that such measures should be no less stringent or effective as those measures that are in place in-zone.	105	Attachment K

WCPFC5	Compatibility with PNA measures	RMI opening statement	To this end, it is equally critical for the Commission to develop and implement compatible measures for areas beyond national jurisdiction of coastal states, particularly SIDS, whose national waters account for a significant proportion of the catch harvested in the WCPO.	177	Attachment V
WCPFC6	Participatory rights	WCPFC	WCPFC6 encouraged Indonesia to apply compatible measures within its archipelagic waters given that the significance of these waters for juvenile yellowfin and bigeye catches.	9	30
WCPFC6	Participatory rights	WCPFC	Noting the need for cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, WCPFC6 agreed to grant CNM status to Vietnam for 2010 on the understanding that CNM status would only relate to the acquisition and exchange of fishery information and data and that Vietnam would require assistance in that regard.	11	44
WCPFC6	Striped marlin compatibility between WCPFC and IATTC	WCPFC	FFA members called attention to the need to scrutinize reference points for northern stocks before such reference points are applied, and stated that since striped marlin in the North Pacific has not been designated as a northern stock, it would be inappropriate for the NC to lead the development of a CMM for this species. However, these CCMs welcomed the development of a management measure for striped marlin in the North Pacific in the margins of WCPFC6 and encouraged compatibility in management measures between WCPFC and IATTC for northern stocks.	18	83

WCPFC6	Seasonal FAD closure on high seas as compatible with existing PNA FAD closure	PNA members	PNA members noted that the proposal represents a potential extension to the high seas of rules, which are already applicable inside PNA waters and which contain the majority of tropical tuna catches. These CCMs stated that if compatibility is to be ensured, the high seas rules should conform to the PNA rules. It was also pointed out that compatibility of rules will benefit the ROP.	37	267
WCPFC6	Compatibility with PNA measures	WCPFC decision	On the understanding that some CCMs' domestic regulations are compatible with, but not identical to, the PNA rules, and that those CCMs will submit copies of these regulations to the WCPFC Secretariat prior to the 2010 FAD closure, WCPFC6 agreed to permit some flexibility in the implementation of the measure for 2010 for those CCMs.	38	272
WCPFC6	High seas VDS	WCPFC	The Secretariat prepared WCPFC6-2009/17 in response to the requirement of CMM 2008-01, para. 21 for the Commission to consider development of a VDS for the high seas, which would be compatible with the PNA VDS. Efforts by the Philippines to provide catch and effort data for the high seas were acknowledged. Because no substantive comments on the issue were provided by SC5 or TCC5, the Commission was invited to consider recommendations for any further work necessary for a high seas VDS in 2010.	40	294

WCPFC6	Archipelagic waters	PNG	PNG expressed grave disappointment in the WCPFC Secretariat in allowing certain CCMs to manipulate the opinion of the WCPFC Legal Advisor regarding the application of the Commission's CMMs to archipelagic and internal waters, and changing the initial draft of the WCPFC5 Summary Report, as it was further noted that the Commission's area of competence is the EEZs and the high seas, not territorial seas and archipelagic waters, quoting Article 56 of UNCLOS.	50	396
WCPFC6	Archipelagic waters	Chair	The WCPFC Chair agreed that the issue of application of CMMs to support sustainable use of the stock throughout their range remained open for discussion. The Chair also noted that the purpose of the Convention is to establish a framework for cooperation between coastal States' management and high seas management, and to harmonize the interests of all parties while implementing best practices.	50	397
WCPFC6	Archipelagic waters	WCPFC	There was consensus that CMMs are required in both EEZs and high seas waters, and that these should be compatible in order to effectively manage fisheries resources throughout their range for sustainable benefit.	50	398
WCPFC7	Archipelagic waters/participatory rights	WCPFC	WCPFC7 encouraged Indonesia to apply compatible measures within its archipelagic waters given the significance of these waters for juvenile yellowfin and bigeye catch.	11	50

WCPFC7	Participatory rights	WCPFC	Noting the need for cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, WCPFC7 agreed to grant CNM status to Vietnam for 2011 on the understanding that CNM status would only relate to the acquisition and exchange of fishery information and data and that Vietnam would require assistance in that regard. Vietnam has no participatory rights for fishing for highly migratory fish stocks in the high seas of the Convention Area.	12	57
WCPFC7	CDS/compatibility with other RFMOs	unspecified CCMs	CCMs also stressed the need for an open and transparent process, and compatibility with measures taken by other RFMOs.	34	222
WCPFC7	Tropical tuna measure	WCPFC	The advice and recommendations will, inter alia, include consideration of the status and distribution of stocks, fairness, equity, enforceability, compatibility, multi-species effects, socio-economic factors involved and the special requirements of developing members, SIDS and territories.	45	308(iii)
WCPFC7	Commission measures to be compatible with measures adopted by PNA and FFA	FFA and PNA members	FFA and PNA members expressed their disappointment with the progress achieved at the meeting, and concern that some members were being threatened in response to possible license closures. They looked forward to future development of conservation measures by the Commission compatible with measures adopted by the PNA and FFA.	61	448

WCPFC7	Compatibility with FFA zone-based limits	Niue opening statement	Secondly, exploring the implementation of zone based limits for albacore, skipjack, bigeye and yellowfin tunas and swordfish, to preserve and protect TVM participants' interests in these fisheries and to fulfil our international obligations. The group's obligations include a requirement to develop compatible measures in 2008-01 for Bigeye and Yellowfin, and that 05-02 for South Pacific Albacore, 06-03 for Striped Marlin, 08-01 and 09-03 for Swordfish contain exemptions for our development. Furthermore, the in-zone measures that will be developed and implement	114	Attachment I
WCPFC7	Compatibility with EEZ measures	PNG Opening Statement	Importantly though, Mr. Chairman, we wish to remind members of this Commission that unlike other RFMOs this Commission is very special and unique because most of the productive waters within the Western and Central Pacific Commission Convention area are found within the EEZs of coastal states. This Commission was established purposely to put in place compatible measures in the high seas, so we preserve our fish for our future generations going by the theme of the PIF Leaders meeting in Vava'u, Tonga, "Our Fish Our Future"	117	Attachment J
WCPFC7	Compatibility with EEZ measures	Greenpeace observer statement	Greenpeace would like to commend the leadership and continued efforts by all the Pacific Island countries that are members of the Commission to secure ad safeguard the future of this fishery. In particular, The Parties to the Nauru Agreement (PNA) for taking the bold and positive step by agreeing to the implementation of the 3rd Implementing Arrangement and we urge this Commission to adopt compatible measures as mandated by the Convention.	128	Attachment P

WCPFC8	Participatory rights/compatibility/archipelagic waters	WCPFC	WCPFC8 encouraged Indonesia to apply compatible measures within its archipelagic waters given the significance of these waters for juvenile yellowfin and bigeye catch.	12	47
WCPFC8	Participatory rights/compatibility/archipelagic waters	WCPFC	Noting the need for continued cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, as well as on the acquisition and exchange of fishery information and data, for which Vietnam would require assistance, WCPFC8 agreed to grant CNM status to Vietnam for 2012. Vietnam has no participatory rights for fishing for highly migratory fish stocks in the high seas of the Convention Area.	13	53
WCPFC8	High seas purse seine fishing	FFA members	They noted that the PNA's ban on high seas fishing by those purse seiners operating in PNA waters would continue and as such they would expect to see compatible measures implemented by the WCPFC.	38	318
WCPFC8	South Pacific albacorer	WWF, Greenpeace and PEW	These observers encouraged management efforts by Te Vaka Moana members and urged the Commission to support compatible measures.	48	418

WCPFC8	Purse Seine VDS	Tokelau opening statement	Tokelau is in the process of implementing the relevant provisions of CMM 2008-01. As part of this process, we have decided to impose an EEZ limit for purse seine fisheries. The EEZ limit has initially been set at 1000 vessel days. This limit may be subject to minor changes as a result of the Commission's decisions on the replacement of CMM 2008/01 and the renegotiation of the US Tuna Treaty. It is our intention that Tokelau's purse seine fisheries be managed under a regime that is fully compatible with the PNA's Vessel Day Scheme. I can advise the Commission that Tokelau has recently gained PNA observer status.	99	Attachment E
WCPFC9	Participatory rights	WCPFC	WCPFC9 encouraged Indonesia to apply compatible measures within its archipelagic waters given the significance of these waters for juvenile yellowfin and bigeye catch.	8	65
WCPFC9	Participatory rights	WCPFC	Noting the need for continued cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, as well as on the acquisition and exchange of fishery information and data, for which Vietnam would require assistance, WCPFC9 agreed to grant CNM status to Vietnam for 2013.	9	71
WCPFC9	WCPFC/IATTC compatibility/overlap area	unspecified CCMs	Some CCMs pointed to the low amount of catch taken in the overlap area (0.175% of the entire catch from the WCPFC and IATTC Convention Areas), and suggested that while the issues associated with overlap area management itself do not constitute a high priority for either Commission overall, the issue of management compatibility between them does, and should be given attention through the proposed joint working group.	10	77

WCPFC9	PNA measures	PNA	PNG on behalf of PNA countries, emphasized the importance of recognizing the sovereignty of Island States' and the need to recognise their existing in-zone anchored FAD management plans and the obligation of other members in assisting with their development aspirations. CCMs were encouraged to recognize the advanced management systems being put in place by the PNA and to focus on implementing compatible measures.	20	144
WCPFC9	FAD closure/PNA measures	FFA members	FFA members noted that whilst PNA nations have imposed FAD closures and other conservation measures in their waters, to date there is no evidence of other CCMs applying compatible measures to their purse seine and Big eye longline fishing effort in WCP waters.	22	175
WCPFC9	Catch retention/PNA measures	unspecified CCMs	Some CCMs supported the catch retention requirements as written, including covering additional species, noting that they are compatible with PNA measures, create a disincentive for FAD sets, and will contribute to food security.	24	188

WCPFC9	South Pacific albacore	FFA members	Several CCMs, including FFA and TVM members, urged the Commission to move toward stronger control of the South Pacific ALB fishery through a combination of measures including vessel/effort limits, catch limits based first on biological reference points and later on economic reference points, national allocations to allow rights-based management, and a compatible and consistent management approach to both EEZ and high seas fishing grounds. These CCMs noted the high reliance of some of the most vulnerable SIDS on this fishery and the importance of taking action before the stock reached critical levels. Overcapacity in high seas areas, dynamic targeting switching, and recent declines in the market price for ALB were cited as examples of a need to manage the fishery to maximize long-term economic benefits to SIDS.	42	324
WCPFC9	Whale sharks	unspecified CCMs	Several CCMs expressed support for the proposal citing its compatibility with measures already in place in PNA waters and its benefits for conservation of the whale shark.	46	359
WCPFC9	Shark conservation	FFA members	FFA members reiterated their support for the proposal on the basis of the precautionary approach, their desire for high seas measures compatible with national shark sanctuaries, and the need to implement effective mitigation measures to reduce shark mortality. These CCMs registered their disappointment that the proposal was not adopted and called for the Commission to continue its work on shark management.	49	389

WCPFC9	IUU guidelines	Tonga	Tonga expressed its disappointment at the lack of support within the Commission for the development of guidelines to ensure coastal State satisfaction plays a major role in the resolution of WCPFC IUU Vessel listing decisions. Tonga noted it will continue to progress development of these guidelines for application in national waters, regardless of whether the Commission accepts them as compatible measures for the high seas.	51	409
WCPFC10	Participatory rights/Vietnam	WCPFC	WCPFC10 noted the need for continued cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, as well as on the acquisition and exchange of fishery information and data, for which Vietnam would require assistance. The Commission noted the significant improvements in the collection and provision of data from Vietnam fisheries through the GEF WPEA project, administered by the WCPFC, and encouraged Vietnam to continue to cooperate with the Commission to improve the acquisition and exchange of fishery information and data. The participatory rights of Vietnam in the WCPO are limited to the provision of carrier and bunker vessels only.	13	82

WCPFC10	High Seas purse seine fishing effort	FFA	<p>With regard to the high seas purse seine effort levels, FFA members stated that these should be based on 2010 levels. FFA members would prefer that these limits are allocated but in the short term if this is not possible the high seas fishery should be closed when the 2010 limits are reached. Reverting to baseline levels in CMM 2008-01 is not supported because it is considered i) incompatible with the scientific advice, ii) contrary to the requirement to implement compatible measures in EEZs and the high seas, and iii) would lead to increases in high seas and overall effort.</p>	17	112
WCPFC10	North Pacific Bluefin/archipelagic waters/territorial waters	Japan	<p>Japan stated that the relevant provisions of UNCLOS, UNFSA and Article 4 of the WCPFC convention make it very clear that the Convention applies only to the high seas and EEZs in the Convention Area but does not apply to territorial seas, archipelagic waters and internal waters, unless otherwise specified such as measures for inspection at port. Japan stressed that its view on the area of the application on the Convention does not mean that Japan would allow the Pacific bluefin tuna fisheries in its territorial seas and internal waters to be operated without regard to the new Pacific bluefin tuna measure. Rather, Japan assured WCPFC10 that it would fulfil its responsibility as a major Pacific bluefin tuna fishing nation by conserving and managing this stock in its territorial seas and internal waters in a way that is compatible with the newly adopted CMM.</p>	32	214

WCPFC11	Vietnam/participatory rights	WCPFC	WCPFC11 noted the need for continued cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, as well as on the acquisition and exchange of fishery information and data, for which Vietnam would require assistance. WCPFC11 agreed to approve the application for renewal of CNM status in 2015 from Vietnam. The Commission notes the significant improvements in the collection and provision of data from Vietnam fisheries through the GEF WPEA project, administered by the WCPFC and encourages Vietnam to continue to cooperate with the Commission to improve the acquisition and exchange of fishery information and data. The participatory rights of Vietnam in the WCPO are limited to the provision of carrier and bunker vessels only.	21	152
WCPFC11	NP Bluefin/IATTC compatibility	Japan	Japan noted that the draft measure for Pacific bluefin was adopted at NC considering the stock status, which is currently at its historically lowest level. Japan reminded the Commission that IATTC was requested to introduce a compatible measure in the eastern Pacific Ocean and it has adopted measures for 2015-2016, introducing a 40% reduction of the commercial catch in October 2014.	59	396
WCPFC11	Shark conservation	FFA members	FFA members introduced (WCPFC11-2014-DP03_rev1), advising that they are working towards more comprehensive measures for sharks taken in their waters, through increasingly stringent Harmonized Minimum Terms and Conditions for access and through National Plans of Action. These CCMs noted that for these measures to be fully effective they need to be complemented by compatible measures on the high seas.	83	566

WCPFC11	South Pacific albacore/high seas pockets	Cook Islands	The Cook Islands commented that coastal states are moving towards zone-based management and seek some high seas compatibility, observing that there is a tremendous amount of albacore being caught in the high seas pocket next to the Cook Islands EEZ.	87	596
WCPFC12	Archipelagic waters	Indonesia	Indonesia noted that it is developing a harvest strategy and/or harvest control rule for yellowfin and skipjack tunas within Indonesia's archipelagic waters (Indonesia Fisheries Management Areas 713, 714 and 715) to ensure that tuna resources in Indonesian waters are managed with compatible measures adopted by RFMOs.	10	43
WCPC12	Vietnam/participatory rights	WCPFC	The Commission noted the need for continued cooperation between Vietnam and the Commission to achieve compatibility of fisheries management and conservation, as well as on the acquisition and exchange of fishery information and data, for which Vietnam would require assistance.	20	134
WCPFC12	Zone based limits vs flag based limits	FFA members	FFA members explained that in the purse-seine fishery, the main management measure is zone-based effort limits, so flag-based arrangements for FADs are particularly incompatible.	35	248
WCPFC12	Purse seine high seas limits	PNA members	The purse-seine proposals included a hard limit on high seas purse seine effort at the 2010 level, compatible with the limits being applied in PNA EEZs, a pre-dawn set ban during the FAD closure, extending coverage to the deployment and servicing of FADs by support vessels, providing for observers to be carried by support vessels, and a requirement for observers on ROP purse-seine trips to be sourced from other CCMs.	42	295

WCPFC12	Indonesian archipelagic waters	Indonesia	Indonesia supported the work plan, and stated that when Indonesia ratified the WCPFC convention in 2013 it also attached a declaration that the Convention area did not cover certain Indonesian waters, noting that archipelagic waters play an important role in Indonesian fisheries – 320,000 tonnes of tuna is taken from these waters. Indonesia seeks to ensure measures within these waters are compatible with WCPFC measures, and understand this is their obligation under UNCLOS and the FSA. The WPEA project and other organisations had assisted the development of high seas fisheries for yellowfin and skipjack, with a plan to finish this work by 2017.	85	642
WCPFC13	High seas longline	Solomon Islands	Solomon Islands looked forward to the day when the Commission implements compatible longline measures for the high seas.	8	28

WCPFC13	High seas pockets	FFA members	<p>FFA members introduced WCPFC13-2016-DP14, a proposed CMM for the special management of certain high seas areas. If adopted, the measure would prohibit transshipment in the Eastern High Seas Pocket (EHSP) Special Management Area that was created in CMM 2010-02, and extend the same conditions to five fully- or semi-enclosed areas of high seas adjacent to FFA member EEZs. It was noted that these areas are either difficult or impossible to access except by going through the surrounding EEZs. Currently, foreign fishing vessels and carriers are not obliged to report their entry or exit to most of these EEZs if they are not licenced to also fish in them, which complicates monitoring and increases the risk of IUU fishing in EEZ waters. FFA members reiterated their concern about longline vessels transshipping to carriers on the high seas and noted that the Commission had not been able to agree that high seas purse-seine transshipment should be prohibited, particularly in areas distant from port. These CCMs considered the high seas pockets to be a special case, with a unique status under the Convention which provides that “special attention” be paid to compatibility between CMMs and national measures established in EEZs for the same stocks. FFA members took the view that it is practicable to prohibit transshipment in these limited areas. For FFA members, coordinating the management of high seas fishing is one of WCPFC’s priority responsibilities. They can cooperate among themselves in the sustainable management and conservation of fish stocks in their EEZs, but only the Commission can deal effectively with high seas fishing.</p>	24	163
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WCPFC13	Harvest strategies	PNA	<p>PNA members were pleased to see this work being undertaken at WCPFC13. These CCMs supported the work on harvest strategies and the application of the precautionary approach as a way of improving decision-making on management and conservation of key stocks and saw the potential benefits of having pre-agreed rules for how fishing will be adjusted as status of stocks change, and better taking account of uncertainty. These CCMs commented that harvest strategies were not a way of reshaping arrangements and approaches already agreed, except where necessary to ensure sustainability. On this basis, PNA would continue to strongly support harvest strategy outcomes that strengthen and do not undermine the rights of resource-owning CCMs to manage resources and fisheries in their waters compatibly with measures applied in other areas within the Convention area.</p>	38	267
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