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Time for WCPFC to lead on Tuna Conservation

Western & Central Pacific Fisheries Commission (WCPFC) 6th Regular Session

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WCPFC 6 - Securing the Pacific's Dwindling Bounty for our Future

This year's Commission meeting is a valuable chance for the Members, Cooperating Non-members and Participating Territories (CCMs) to build on last year's success in closing the two high seas enclaves (donut holes) and in putting into place restrictions on the use of fishing aggregation devices (FADs). We must take this as a springboard to take real measures to secure Pacific tuna for future generations.

Mismanagement of tuna stock by tuna Regional Fisheries Management Organisations (RFMOs) is an international disgrace. So much so that the public is starting to reject tuna, and there are increasing demands that the stocks be protected by other multilateral bodies more capable of protecting species, such as CITES. A failure to agree consensus in RFMOs and in this case WCPFC cannot be used as a wall behind which governments hide. The fact is that governments themselves are responsible for the destruction of the world's tuna stocks and the decline of marine biodiversity. To restore faith in management of ocean resources by RFMOs requires bold and effective measures to be agreed to in Tahiti in December 2009 by the CCMs of the WCPFC.

Catching, discarding and processing fish the way we currently do undermines the viability of the fish stocks, the marine ecosystem and the fishing industry itself. Efforts in the WCPFC to return Pacific bigeye and yellowfin tuna stocks to long-term sustainable levels and to protect the broader marine environment have failed so far. Greenpeace urges the 6th meeting of the WCPFC to urgently implement a 50% reduction in tuna fishing effort across the entire West and Central Pacific Ocean (WCPO) sector, based on the average 2001-2004 levels. Greenpeace also calls on the WCPFC to agree to the closure of the 4 high seas pockets to all fishing as a critical tool to curb illegal, unregulated and unreported (IUU) fishing, protect tuna stocks and manage the marine environment of the Pacific from a

more precautionary and ecosystem based perspective, prevent biodiversity loss and start putting into place areas to build resilience against the effects of climate change.

The review of CMM 2008-01 aimed at reducing the mortality of bigeye and yellowfin tunas at the scientific Committee of the WCPFC in August found that it would fail to achieve its objectives.¹ This is not a surprise as this measure fell far short of the recommended scientific advice, let alone precautionary approach to managing the fishery.

It is primarily the large and often distant water fishing nations in the region that must be held accountable for the dire state of bigeye and yellowfin tuna populations, and which must as visiting neighbours act responsibly and participate in consensus. The consequences of their overcapacity, their failure to control their fleets and the abuses of their vessels are already apparent and will be with current and future generations to come unless urgent action is taken and bold measures implemented by the WCPFC to reverse the trend.

In 2002, governments agreed to implement the United Nations Food and Agriculture Organisation's (FAO) Code of Conduct with the goal of restoring global fish stocks by 2015. The goal was laudable: "Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development."² All WCPFC CCMs are signatories to this agreement but they are currently failing to meet this aim.

A precautionary and ecosystem-based approach to fisheries management requires the rejection of unsustainable fishing practices, the use of selective fishing techniques and area based management such as well enforced marine reserves to ensure the sustainability of fisheries. For the WCPFC, the closure of the four high seas pockets is integral to stopping IUU fishing, protecting stocks and to begin to implement the ecosystem approach.

If the WCPFC again fails to agree to the necessary measures, the reputation of tuna as a sustainable choice for the consumer will take yet another blow. Due to increased media attention to dwindling fish supplies, consumers are beginning to seek more sustainable and ethical sources for tuna. The public opinion is turning and the shadowy international networks of fish trade are now being illuminated by questions about the bycatch, legality and source of stock by market savvy retailers. As a result, industrial fisheries are under commercial pressure to provide sustainably caught fish. The WCPFC has a chance to act before it is too late and become a global conservation leader on tuna fisheries and ensure that tuna caught from the Pacific region meets the sustainability criteria markets now increasingly demand. Pacific tuna can be a positive marketing tool rather than a burden. The choice is up to the WCPFC delegates.

Closing the Remaining High Seas Pockets - Ending the High Seas Heist

Greenpeace is pleased with the progress made at the WCPFC 5 in Busan last year to close two large high seas pockets to purse seine fishing from 2010 onwards. These areas are still vulnerable to IUU and overfishing by other fishing methods, and especially by the region's large long-line fleets. To complement this measure Greenpeace is calling on the WCPFC 6 to extend the closures to include all fishing. Greenpeace also calls on the Commission, as a priority, also to extend the closures to include the two smaller pockets further east (see Map 1) as proposed by the Pacific Island Countries (PICs) who have agreed to work towards achieving this in the Bikenibeu Declaration.³ Greenpeace calls on other CCMs to embrace and implement the closures as a matter of priority.

Throughout our expeditions in 2006, 2008 and 2009, Greenpeace has continued to discover and reveal the extensive and pernicious nature of IUU fishing in the region and the role that the high seas enclaves play in facilitating these illegal and exploitative activities.⁴ Our expeditions have highlighted how foreign fishing vessels are using these areas as an escape route to launder fish out of the region and how these areas act as a safe haven for pirate fishers due to the lack of regulation and enforcement cover.

The most recent Greenpeace ship tour, *Defending Our Pacific*, found in particular:

1. Illegal fishing by vessels only authorised to fish on the high seas and operating in the high seas pockets, illustrating the need to close the high seas pockets to all forms of fishing. Greenpeace observed *Koyu Maru 3*, a Japanese flagged longliner hauling her longline in the exclusive economic zone (EEZ) of the Cook Islands. *Koyu Maru 3* does not hold a fishing licence with the Cook Islands.
2. Several longline vessels only authorised to fish in the high seas by the Commission but did not hold a valid license to fish in any of the EEZs of the coastal States were documented fishing in the high seas pockets. Given the lack of enforcement capacity in the region, these vessels are free to pillage the surrounding EEZs without fear of being caught. This also puts a serious question mark to the accurate reporting of catches from these areas with no coastal State involvement, as flag States such as Taiwan have recognised that they currently have no means to accurately collect this data.⁵
3. Illegal transshipment at sea by Distant Water vessels authorized to fish in the WCPFC. *Her Hae*, a Taiwanese flagged longliner that is neither on the FFA Good Standing List or a holder of a valid fishing license from any Pacific Island country, was documented during the tour receiving fish from the vessel *Jia Yu Fa* in the high seas south of the waters of the Federated States of Micronesia (FSM). *Jia Yu Fa*, another Taiwanese longliner, was not authorised to transfer fish at sea under the terms of its fishing license with FSM.
4. The bunkering of a non-CCM flagged tanker vessel with a foreign CCM flagged purse-seine vessel in the high seas pockets of the Convention area. The exemption that allows for non-CCM Bunker and Carriers to operate in the convention area provides a significant loophole that encourages IUU fishing. Together, refuelling at sea and transshipment create a gateway for laundering illegally caught tuna out of the region.
5. Greenpeace surveillance activities in high seas areas 1, 2 & 3 during the recently concluded high seas FAD fishing closure period revealed substantial compliance irregularities. The presence of purse seine and support vessels in the vicinity of FADs raises the question of illegal FAD fishing during the closure periods.

These findings yet again show the vulnerable and unregulated nature of the high seas, with evidence of IUU activity commonly occurring alongside legally licensed vessels in the high seas pockets. A detailed summary of findings from our recent expedition is available online.⁶

Keeping up with Market Requirements - Precautionary Scientific Advice must be Followed

Despite warnings and agreements to reduce Pacific tuna catches, the industry in 2008 hauled its largest annual reported tuna catch, at an estimated total of 2,426,195 metric tonnes. The Scientific Committee has acknowledged the inherent uncertainties in fish stock assessments and the recommendations that are given based on the current incomplete data. In addition, the current level of IUU fishing in the WCPO region, estimated at 34% on all fisheries,⁷ is not adequately modeled into the scientific recommendations and hence a more precautionary approach is called for.

WCPFC Members are obliged by Articles 5 and 6 of the UN Fish Stocks Agreement, supported by Article 192 of the Law of the Sea Convention, to conserve these highly migratory stocks using both the precautionary and ecosystem approach. This provides a legal basis for the 50% cut across all tuna species in the Pacific, which is required by science and the precautionary approach. The high volume and low value skipjack fisheries particularly are decimating the more valuable and vulnerable bigeye and yellowfin stocks and hence reductions in these sectors alone are not enough. Studies have also shown that large effort reductions are needed across all fleets to make the fisheries more economically viable,⁸ as well as sustainable.

The Commission is yet again faced with the grim reality of severe overfishing of bigeye tuna. The WCPFC scientific advice now recommends fishing effort for yellowfin tuna to be cut by 34-50% to return stocks to sustainability.⁹ This follows last year's recommendation for fishing on bigeye tuna to be cut by 30%.¹⁰ Increasing pressure on stock caused especially by the out-of-control use of FADs in purse seine fisheries where high numbers of juvenile tuna being caught. The average weight of tuna caught in the region is also declining as a consequence.¹¹ Yellowfin tuna stocks long ago reached levels that should be considered overfished from an ecosystem perspective, and would trigger immediate catch reductions in any ecosystem-based, precautionary management scheme.¹² Greenpeace therefore calls for immediate and urgent action from the Commission to address the decline of the regional yellowfin stocks.

No exemptions should be given to any CCM on the conservation and management measures. The increasing fishing effort in the Western waters of the Commission area in the Philippine and Indonesian waters especially is an increasing concern and will end up undermining all other efforts in the region unless addressed. These countries together with two other WCPFC members Papua New Guinea and Solomon Islands are part of a new multilateral sustainable management programme, the Coral Triangle Initiative (CTI) and should as a priority work towards reducing fishing mortality of juvenile tuna in the region and establishing marine reserves to protect key tuna habitats within the CTI area.

It is absolutely critical that both fishing capacity and fishing effort in the region are urgently reduced.

Full Transshipment Ban - Closing the Loopholes for Pirate Fishers

Evidence from around the world, as well as from Greenpeace's expeditions in the region, continue to show how transshipment plays an integral role in laundering fish out of the region. Fish caught in an area can be transferred to another vessel at sea, and not be landed until the catch is far removed from the vessel that caught it and the fishing grounds in which it was caught. This enables vessels to hide illegal catch, catch much greater amounts than they report, or catch fish in one area and report it from another.

Greenpeace regrets the slow progress made toward prohibiting at sea transshipments in the WCPFC convention area and urges CCMs to urgently adopt the draft CMM on transshipment introduced by the Republic of Marshall Islands that proposes the ban of all transshipment operations of highly migratory fish stocks covered by the Convention at sea or on the high seas.¹³

In addition to adopting the proposed transshipment measure and in order to close the net on IUU fishing, Greenpeace is calling on Pacific Island States, Indonesia and Philippines to develop compatible management measures as part of commitments under article 8 paragraph 1 of the Convention,¹⁴ and implement an unconditional ban of all at sea transshipments in the EEZs of member countries thereby ensuring that at-sea transshipments in the entire WCPO is prohibited.

The WCPFC CCMs should also note that tightening market restrictions are now being placed on fish that have been transhipped and similar restrictions are being applied to fish product that cannot be positively traced to origin. The region would be wise to implement this ban rapidly in order to ensure better traceability of products from the region.

Immediately Ban Deadly Fish Magnets

Nobody knows how many FADs are currently drifting in the WCPO and constantly fishing and attracting tuna and other marine life. Nor do we understand the effects on migration and feeding patterns. Not only does this practice undermine all stock abundance estimates as this floating time is not calculated into the CPUE of the fisheries, but it is now also widely recognised that this poses a serious threat to sustainability if the tuna fishery itself.¹⁵ FADs have increased purse seine catches of skipjack and juvenile bigeye and yellowfin tunas and are not a sustainable means of purse seine fishing because of the high catch rate of juveniles and the significant levels of bycatch including endangered species. A 40% increase in the purse seine catch of yellowfin tuna¹⁶ presents a serious threat to this fishery

especially as FAD-caught tuna has a large bycatch of juvenile tuna which undermines the viability of the population by removing these stocks before they have the opportunity to breed. The difference between the composition of a catch between FAD associated and free schooling tuna is dramatic.¹⁷ Juvenile fish are found more frequently with FADs¹⁸ and juvenile bigeye tuna have also shown strong affinity to FADs.¹⁹ Korean researchers recently presented data on how FADs led to overfishing of juvenile bigeye and yellowfin tuna, and result in killing large amounts of by-catch like marlin, barracuda, vulnerable whale and silky sharks and vulnerable olive ridley turtles.²⁰ In addition, FADs are often lost or abandoned and both entangle and kill animals.²¹ These ghost FADs present an ongoing threat to marine life and are a navigational hazard.²²

Greenpeace's expedition during the FAD closed season this year observed a high number of FADs left on the water, still continuously floating and attracting fish hence making the short ban more ineffective as fishers could simply return to fish around these FADs after the ban. FADs also modify the normal behaviour of tuna, tricking them into congregating at sites in which they will not obtain food or shelter but where there can be even less food. This threatens their natural survival instincts of the species²³ and can reduce growth and reproductive rates.

In the face of this mounting evidence on the negative impacts of FAD purse seine fisheries, the WCPFC Science Committee called for an investigation into a 100% ban on the use of FADs, Greenpeace strongly supports a total ban on the use of this fishing method with purse seining.

Marine Reserves - Adapting to Climate Change Now

The value of marine reserves as a versatile and powerful tool for achieving both fisheries management and climate change adaptation objectives is widely recognised by both scientists and policy makers. Networks of marine reserves are the most powerful tool we have for preserving biodiversity and maintaining vital ecosystem functions so enhancing the resilience - the amount of disturbance that can be absorbed by a system before it undergoes a major regime shift - of our ocean ecosystems. As such they are also pivotal to ensuring food security and sustainable fisheries outside of these areas.

A new study revealed that Oceania, which includes Polynesia, Micronesia and Melanesia, is a hotspot for biodiversity and for extinction.²⁴ Among factors such as climate change, ocean acidification and the encroachment of human populations on fragile reef and rainforest habitats fishing was highlighted as one of the factors forcing widespread extinctions. The authors recommend that 30-50% of the marine habitat be closed to fishing to avoid collapse of stocks.²⁵

The Pacific Island Countries are leading the way globally in international negotiations and providing leadership towards the creation of marine reserves to ensure the health and survival of the Pacific Ocean. By creating larger-scale marine reserves across the Pacific as well as globally, the marine ecosystem can be restored to a more natural state. This will be essential to helping the Pacific Ocean's marine life and the people who depend on it to adapt to and survive climate change in the long-term.

Greenpeace produced a proposal for the Convention on Biological Diversity (CBD) highlighting the ecological values of the four high seas pockets.²⁶ This report shows that here is a strong biological case for making the areas fully protected marine reserves as the areas meet a number of the key criteria adopted by the CBD for identifying priority areas for protection. The scientific imperative to protect these areas rich in biodiversity is strongly endorsed by the collective desire by the surrounding Pacific island countries to clamp down on the numerous IUU fishing vessels that use the high seas pockets as refuges where they can evade regulation.

Following the review of CMM 2008-01, it is clear that comprehensive ecosystem based approaches to marine conservation are imperative to protect vulnerable tuna stocks from overfishing. Fundamental to the success of the closures is the removal of this effort from the fishery upon the closure. Establishing fully protected marine reserves in the four high seas pockets is an effective tool for maintaining a healthy Pacific ecosystem.

Greenpeace strongly supports the inclusion of environmental effects (such as the SEAPODYM model commended by the Scientific Committee this year)²⁷ to provide a more ecosystem-based approach to stock assessment. To conserve stocks, conservation and management measures must now provide a buffer to maintain the genetic diversity in stocks to adapt to the decreasing habitat suitable for survival of tuna as a result of climate change.

In response to the SEAPODYM finding on the impact of climate change on tuna stocks, the closure of the four high seas pockets is even more urgent as a resiliency-based approach to climate change to provide functional refugia for stock recover and to maintain the integrity of marine ecosystems and the genetic diversity needed to adapt to this ongoing threat to the fishery.

Marine reserves are part of a holistic ecosystem approach to both conserve their rich biodiversity and provide a crucial fisheries management measure. These reserves would form part of the growing network of Pacific reserves and their implementation would position the WCPFC, and its CCMs, as global leaders in oceans conservation.



Map 1: The highlighted areas 1, 2 and 3 and 4 are the high seas enclaves. Number 1 and number 2 are closed to fishing from 2010 as per PNA 3rd implementing arrangement and purse seine fishing as per WCPFC decision in December 2008. The Parties to the Nauru Agreement in late October 2009 agreed to work to extend the full protection to Areas 3 and 4.

Summary of Greenpeace Recommendations

Each government that is a member of the WCPFC has a say in the future of the fishery. Therefore, every government present must assume its responsibility as a responsible fishing nation or a coastal State and take a science-based approach to the management of the fishery to ensure its sustainability.

Together the Pacific Island Countries can protect their rich resources and ensure that region's cultures and economies endure and flourish with a sustainable WCPO fishery. In particular, we urge delegates attending WCPFC6 to prioritise the following

recommendations as key outcomes needed in order to ensure the WCPFC delivers what it was mandated to do:

1. To permanently close all four high seas enclaves to all fishing and removal of that fishing effort.
1. To be firmly guided by the precautionary approach and account for the high levels of unknown and uncertainties in fishing data due to the high level of IUU fishing in the region by supporting and adopting a 50% reduction in tuna fishing effort across the entire WCPO sector based on the average 2001-2004 levels.
2. To ban all at-sea transshipments with no exemptions granted to any vessel. CCMs should also adopt compatible measures as outlined under article 8 of the Convention and prohibit all in zone at-sea transshipments.
3. To permanently ban on the use of FADs in association with purse seine fishing in order to protect juvenile tuna and other marine life.
4. To remove all exemptions from CMMs since they are weakening the sustainable management objectives of the WCPFC.

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Annex to Greenpeace Briefing to WCPFC6: Analysis and Recommendations Listed by Agenda Items

CMM 2007-03: Conservation and Management Measure to Establish a List of Vessels Presumed to have Carried Out Illegal, Unreported and Unregulated Fishing Activities in the WCPO

Greenpeace commends efforts to curb IUU fishing in the region and the progress made toward ensuring that adequate sanctions are imposed on vessels that have been engaged in IUU activity in the WCPO and notes with concern the increasing number of vessels in this year's provisional IUU list.

Greenpeace believes, however, that there is room for improving this effort as recent ship tours in the region have highlighted over the years that IUU fishing remains a salient issue and that there is need for tougher measures as vessels remain undeterred and indulge in IUU activities in blatant disregard of current measures. TCC5 had again failed to reach consensus on implementing tough deterrents during discussions on the implementation of paragraph 3(j) of CMM 2007-03.

Greenpeace therefore urges the Commission to implement paragraph 3(j) of CMM 2007-03 to include vessels associated with other IUU vessels through control on the Vessel List. This paragraph, as a matter of priority, must be given effect. The majority of CCMs had at both TCC4 and TCC5 supported the retention of this paragraph. It must be given full effect.

In addition, impose tough sanctions that ensure that vessels with any current or past connection to IUU fishing should be banned from the registry, according to paragraph 1 of CMM 2007-03. The Commission should also consider new refinements to CMM 2007-03 that encourages CCMs to work together to implement national legislation prohibiting its

nationals from engaging in IUU fishing in the WCPO and to take the ultimate moral stance by imposing a lifetime ban for blacklisted vessels from any future fishing in the WCPFC_CA that would help reduce the over-capacity of fishing fleets whilst acting as a significant deterrent to IUU fishing.

The WCPFC must also recognise the importance of the participation of civil society in their work. Very recently, ICCAT has created a positive precedent by considering the information from NGOs and making it possible for those to be formally presented to the Compliance Committee for debate. The increasing consideration of information from NGOs must be expanded but also coupled with greater access to information.

Greenpeace recommends that the Commission allow civil society groups that have a demonstrated record and capacity to assist member countries of the Commission carry out their monitoring and surveillance responsibilities the privilege of providing information directly to the WCPFC through the Commission's Technical and Compliance Committee on matters concerning illegal, unreported and unregulated fishing activities in the WCPO region through a refinement of the Commission's listing procedures in CMM 2007-03.

CMM-2004-01: Record of Fishing Vessels and Authorization to Fish

This measure is an important tool in combating IUU fishing in the WCPO by ensuring that only CCM vessels are authorised to fish in the WCPFC_CA. However, this measure is significantly undermined by a decision that allows non-CCM flagged vessels into the WCPFC_CA by establishing a temporary register of carriers and bunkers.

Although WCPFC5 adopted a TCC4 recommendation that the exemption for non-CCM carrier and bunker vessels be extended for a further year, it identified as a priority for 2009 the determination of a more lasting solution to the issue of non-CCM flagged carriers and bunkers.

Greenpeace has highlighted from its surveillance activity in September 2009 that the exemption has literally allowed for the fueling of overfishing in the WCPO and encourages at sea transshipment of which both activities provide the support structures for IUU fishing in the region.

Greenpeace therefore urges the Commission to immediately repeal exemptions for non-CCM bunkers and carriers to operate in the WCPFC_CA.

Adopt FAO Port State Measures

At WCPFC5, the Commission identified as a priority developing port State measures pursuant to the outcome of the FAO consultations. Greenpeace welcomes the new FAO Agreement on Minimum Standards for Port State Control to shut ports to pirate vessels. The agreement establishes requirements for controls of fishing vessels at port, including denying services to vessels identified as having engaged in pirate fishing including support vessels.

Other rules in the new agreement will enable States to refuse entry to vessels which cannot produce a valid fishing license, or can be evidenced to be carrying illegally caught fish, or having supplied another pirate vessel. Criteria will also be in place to prioritise inspections or mechanisms to collect and share information on port controls among States.

WCPFC must ensure that members agree, ratify and implement, as a matter of priority, the FAO Agreement on Minimum Standards for Port State Control. The Commission must begin work toward establishing strict guidelines in line with these measures to CCMs on implementation of the provisions of the Agreement pending its entry into force.

End notes

¹ Hampton, J., and Harley, S., 2009, Assessment of the potential implications of application of CMM 2008-01 to bigeye and yellowfin tuna. WCPFC-SC5-2009/GN-WP-17.

² FAO (1995). *Code of conduct for responsible fisheries*. Food and Agriculture Organisation of the United Nations (FAO), Rome, Italy.

³ The Bikenibeu Declaration by Ministers for Fisheries of the Parties to the Nauru Agreement (PNA) was issued in Bikenibeu, Kiribati on the 21st October 2009. Ministers noted the serious impact on the bigeye stock from fishing by distant water longliners and purse seiners in the high seas and that the high seas continues to provide a safe haven for IUU fishing. The Ministers agreed that further work would be taken on closures of additional high seas areas.

⁴ Summaries of findings from our past ship tours can be found at <http://www.greenpeace.org/australia/resources/reports/overfishing>.

⁵ Proposal for Distant Water Fishery Management and Industrial Restructuring (Ratified version), Fisheries Agency, Council of Agriculture Executive Yuen, Taiwan (2008).

⁶ Defending our Pacific 2009 summary findings: <http://www.greenpeace.org/defending-our-pacific2009-summary-report>.

⁷ MRAG and Fisheries Ecosystems Restoration Centre, British Columbia University. (2008). The global estimate of illegal fishing.

⁸ The World Bank and the FAO (2008). The Sunken Billions, The Economic Justification for Fisheries Reform (October 2008).

⁹ See Scientific Committee SC-5 Summary Report, at <http://www.wcpfc.int/doc/summary-report-pre-edited-version>, page 6. No assessment of bigeye tuna was made in 2008. Page 50. See SC-4 Summary Report, at <http://www.wcpfc.int/doc/summary-report-edited-version>, found that the bigeye stock was overfished with respect to adult biomass. Page vi. The SC recommended a minimum 30% reduction. Page xi.

¹⁰ SC-4 Summary report page xi.

¹¹ International Seafood Sustainability Foundation, Status of the World's Tuna Fisheries (2009) Page 2. At <http://www.bumblebee.com/Sustainability/Tuna%20Status%20of%20the%20stocks.pdf>.

¹² Dorey C. 2009. A tail of yellowfin tuna. Greenpeace presentation to Italian industry.

¹³ Marshall Islands - Draft Conservation And Management Measure On Regulation Of Transshipment WCPFC-TCC5-2009/DP-08 (Rev.3). 5 October 2009.

At <http://www.wcpfc.int/system/files/documents/meetings/technical-and-compliance-committee/5th-regular-session/delegation-papers/WCPFC-TCC5-2009-DP-08%20%28Rev.3%29%205BRMI%20%20Draft%20CMM%20on%20Regulation%20of%20Transshipment%5D.pdf>.

¹⁴ Convention On The Conservation And Management Of Highly Migratory Fish Stocks In The Western And Central Pacific Ocean, Article 8, Para 1 Compatibility of Management Measures; 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.

¹⁵ A SC-4 paper last year noted that increased bigeye tuna purse seine catches coincided with the introduction of drifting FADs in 1996. See Peter Williams and Peter Terawasi, Overview of Tuna Fisheries in the Western and Central Pacific Ocean including Economic Conditions- 2007, WCPFC-SC4-2008/GN WP-1. At <http://www.wcpfc.int/doc/gn-wp-1/overview-tuna-fisheries-western-and-central-pacific-ocean-including-economic-conditions->.

¹⁶ Williams P. Terawasi S. 2009. Overview of Tuna Fisheries in the Western And Central Pacific Ocean, Including Economic Conditions - 2008. WCPFC-SC5-2009/GN WP-1. At <http://www.wcpfc.int/doc/gn-wp-01/williams-p-and-p-terawasi-overview-tuna-fisheries-western-and-central-pacific-ocean-inc>.

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- ²⁰ Jesse March, Seafood Watch, Monterey Bay Aquarium, Yellowfin Tuna (2007), page 58.
- ²¹ Delgado de Molina, A.1, J. Ariz, J.C. Santana and S. Déniz. 2006, Study of Alternative Models of Artificial Floating Objects for Tuna Fishery (Experimental Purse-seine Campaign in the Indian Ocean). IOTC-2006-WPBy - 05.
- ²² Alicia Delgado de Molina, Javier Ariz, Pilar Pallarés, Rosa Delgado de Molina and Santiago Déniz 2005. Project on new FAD designs to avoid entanglement of by-catch species, mainly sea turtles and acoustic selectivity in the Spanish purse seine fishery in the Indian Ocean. WCPFC-SC1 FT WP-2
- ²³ Grégory Fléchet 2008, Does fishing on drifting fish aggregation devices endanger the survival of tropical tuna? Institut de recherche pour le développement.
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- ²⁴ Kingsford *et al.* 2009, Major Conservation Policy Issues for Biodiversity in Oceania. *Conservation Biology*, Volume 23, No. 4, 834-840.
- ²⁵ Kingsford *et al.*, page 35.
- ²⁶ Greenpeace 2009, High Seas Enclaves of the Western and Central Pacific A Greenpeace Briefing to the CBD, 29 September - 2 October 2009, Ottawa, Canada.
- ²⁷ SC-5 Summary Report. Recommendation 45 (ii). Page 14. SEAPODYM stands for Spatial Ecosystem and Population Dynamics Model.