POLICY BRIEF
25/2014
Secretariat of the Pacific Community

Sustainability of Pacific tuna fisheries

Yellowfin tuna in a purse-seine net Photo: Jeff Muir, University of Hawaii

This policy brief was prepared by the Oceanic Fisheries Programme of the Secretariat of the Pacific Community

Purpose

The aim of this policy brief is to:

- provide an overview of the tuna fishery in the western and central Pacific Ocean and its importance to the Pacific Islands region;
- summarise the current status of the key tuna stocks and the impacts of fishing; and
- outline key management actions required to ensure the sustainability of tuna stocks and fisheries.

Key messages

The tuna fishery in the western and central Pacific Ocean is of global significance and provides income, employment and food for Pacific Islanders. Stocks of skipjack and yellowfin tuna are still healthy, although threats are appearing due to increases in purse-seine and longline fishing effort. The status of bigeye tuna is not as good and more urgent actions are required to reduce fishing impacts. The status of South Pacific albacore is not currently of biological concern, but stock levels are now too low to maintain profitable, unsubsidised fisheries. Measures are also required to mitigate fishing impacts on some shark species taken as bycatch. A science-based framework, incorporating reference points and harvest control rules, is needed to implement the necessary management actions.

Overview of the western and central Pacific tuna fishery

The tuna fishery in the western and central Pacific Ocean (WCPO, **Figure 1**) provides around 60% of the world's tuna production. Total annual catch in recent years has reached 2.6 million tonnes (**Figure 2**), with a landed value of USD 5–7 billion. The fishery is of profound importance to the people of the Pacific Islands region:

- Approximately half of the total catch occurs in the exclusive economic zones (EEZs) of Pacific Island countries and territories (PICTs).
- Access fees from foreign fishing are now approximately USD 240 million annually, and represent up to 60% of all government revenue in some PICTs.
- Export revenue from tuna products is increasing and is currently about USD 350 million annually.
- Approximately 16,000 Pacific Islanders are employed in the tuna fisheries sector.
- As Pacific populations increase, tuna is likely to play an increasingly important role in meeting dietary protein requirements.

Preliminary estimates indicate that the total catch in 2013 is likely to be close to a record level, around 2.6 million tonnes. The levels of fishing effort using the two major gear types, purse seine and longline, continue to increase (**Figure 3**). The increasing efficiency of purse-seine fishing effort, through the use of satellite-monitored drifting fish aggregating devices (FADs), is also putting additional pressure on stocks.

Management arrangements

Tuna fisheries in the WCPO are managed at several inter-related levels:

- Individual countries, with the support of the Forum Fisheries Agency and Secretariat of the Pacific Community (SPC) regulate fishing for tuna within their EEZs with catch, effort or vessel limits, according to national tuna management plans and licensing policies.
- Several subregional groupings of countries such as the Parties to the Nauru Agreement (PNA; a group of eight tuna resource rich countries where the majority of purse-seine fishing occurs), cooperate jointly to regulate tuna fishing within their collective EEZs.
- The Western and Central Pacific Fisheries Commission (WCPFC), which includes both coastal states and fishing states in its membership, provides the framework for international management of tuna fisheries in the region.

Environmental concerns

Tuna fisheries impact other species of fish, and occasionally marine mammals, turtles and seabirds. Most of these impacts are non-threatening to the stocks concerned; however there are some issues requiring management attention:

- Oceanic whitetip shark (*Carcharhinus longimanus*) and silky shark (*C. falciformis*) are heavily impacted by tuna fisheries, predominantly tuna longline fishing. Stocks of both species are badly depleted and require rebuilding.
- Purse-seine fishing in association with FADs catches several thousand tonnes annually of edible fish bycatch, which is mostly discarded. Utilisation of this bycatch could contribute to food security in several countries of the Pacific.
- Tuna and other pelagic fish are sensitive to the state of the oceanic environment, which is subject to variation at multiple time scales, including long-term climate change. Climate change is predicted to negatively impact the abundance of tuna in the WCPO, and this needs to be carefully considered in the management of the fisheries going forward.

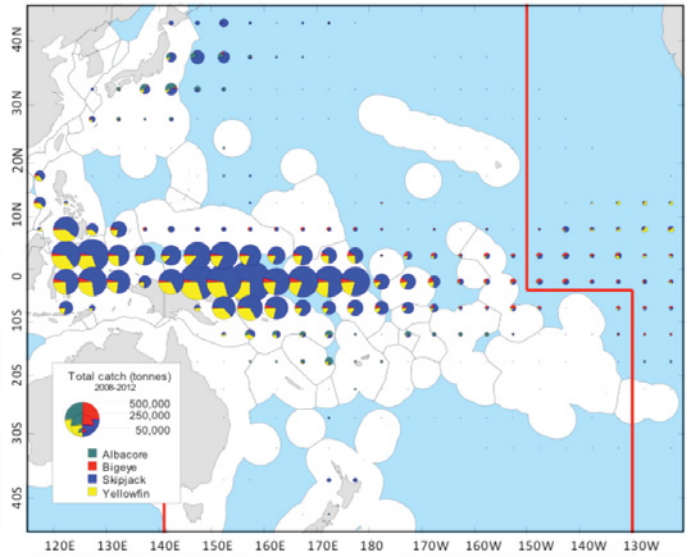

Figure 1. Distribution of tuna catch, by species, 2008-2012. The boundary of the region managed by the Western and Central Pacific Fisheries Commission is shown by the red lines.

Condition of stocks

SPC undertakes regular assessments of the status of the key tuna stocks. This information provides a basis for management decisions made by WCPFC, Pacific Island countries individually, and subregional groupings such as the PNA.

Skipjack (*Katsuwonus pelamis*)

Skipjack is a short-lived (up to about 5 years), highly productive species that dominates the tuna catch in the WCPO. Most of the catch enters the canned tuna market. Impacts of fishing to date have been moderate (**Figure 4a**) and the stock continues to support high catch rates in the purse-seine fishery. However, population modelling predicts that continued catches at the current level (1.5–1.7 million tonnes annually) will reduce the stock below target levels, with possibly negative impacts on catch rates.

Yellowfin (*Thunnus albacares*)

Yellowfin (7+ years) is an important, if secondary, target species for both the purse-seine and longline fisheries. Purse seiners catch a mixture of juveniles and adults for the canned tuna market while longliners target adults for the fresh or frozen sashimi market. Yellowfin catches have peaked during the past 15 years between 500,000 and 600,000 tonnes annually. Stock assessments indicate that the adult biomass has been reduced to around 40% of unexploited levels (**Figure 4b**). While still above the biologically safe limit, the stock is near the bottom of the target range. It is likely that continued catches at recent levels will reduce the stock further, and pose some risk to biological sustainability

Priority management actions

The management measures required to safeguard the sustainability of tuna fisheries and their ecosystem in the WCPO are:

- Reduce the impact of the purse-seine fishery on bigeye tuna through management of FADs;
- Implement stronger controls on purse-seine effort, which, in spite of measures implemented by WCPFC and PNA, continues to increase;
- Halt, and if possible reverse, the build-up of longline effort in the region;
- Identify and implement effective measures to mitigate catches of sharks by tuna longliners; and
- Adopt a framework for precautionary decision-making that is science-based, incorporates the modern management concepts of reference points and harvest control rules, and permits performance to be measured against agreed management objectives.

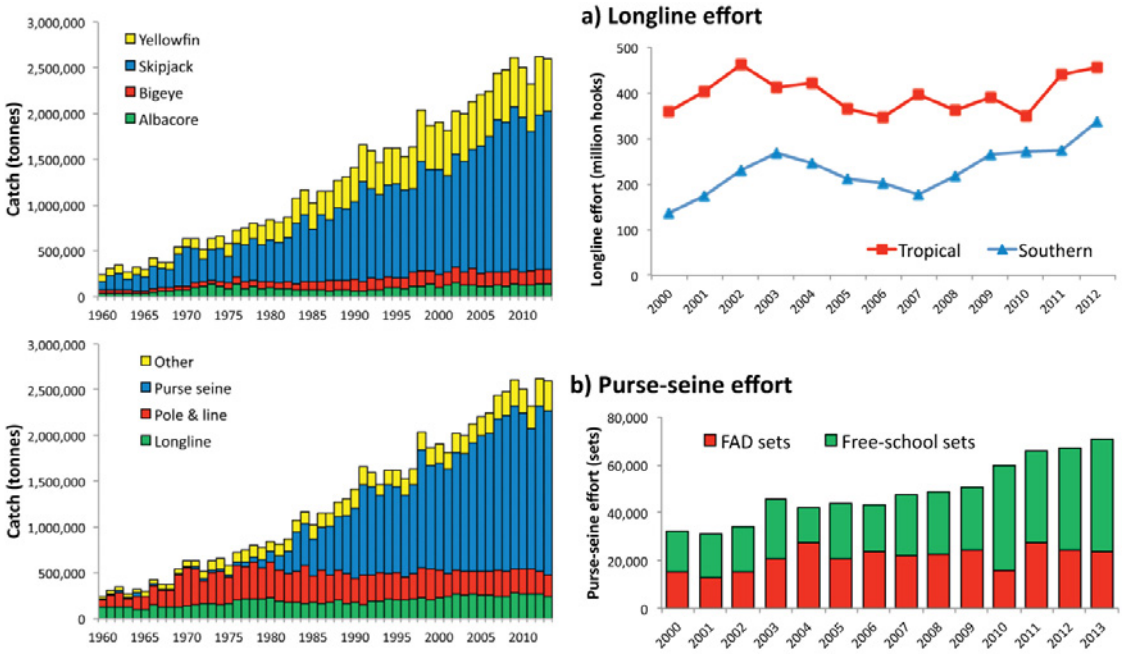

Figure 2. (Left) Tuna catch from the western and central Pacific Ocean by species (top) and gear (bottom).

Figure 3. (Right) Recent trends in fishing effort in a) the longline fishery and b) the purse-seine fishery. For the longline fishery, 'Tropical' refers to 20°N-10°S and 'Southern' refers to 10°S-50°S. For the purse-seine fishery, 'FAD' refers to fish aggregating device.

Bigeye (*Thunnus obesus*)

Bigeye is a longer-lived tuna (15+ years) that is less resilient to fishing than the other species of tropical tuna. They are caught in approximately equal amounts by weight as juveniles by purse seiners, primarily in operations using drifting FADs, and as adults by longliners. Bigeye constitute a small (<10%) component of purse-seine catches, but are the main target species of the tropical longline fishery, providing a high-quality sashimi product. Assessments indicate that the bigeye stock has been severely impacted by fishing, with the current level of adult biomass near the biologically safe limit (**Figure 4c**). Continued catches at recent levels are predicted to push the stock below the limit, increasing the risk of an irreversible decline in the bigeye population.

Albacore (South Pacific) (*Thunnus alalunga*)

Albacore is a moderately long-lived tuna species (10+ years) that is caught mainly by longline in the South Pacific. The catch, which is mainly canned, consists primarily of older fish which have already had the opportunity to reproduce. This reduces the biological impacts of fishing, but the older segment of the stock is more easily depleted by fishing and therefore catch rates and fishery profitability are sensitive to the amount of fishing effort targeting albacore. Longline fishing effort in the South Pacific (**Figure 3a**) and albacore catches have increased greatly over the past five years. Much of the increase has been from vessels subsidised by their flag state. While the overall biological condition of the stock remains at an acceptable level (**Figure 4d**), catch rates have been negatively impacted to the point where less efficient vessels, and those not benefiting from state subsidies, are no longer profitable. If effort continues to increase, it is likely that further decreases in the older portion of the stock will occur and catch rates will continue to decline.

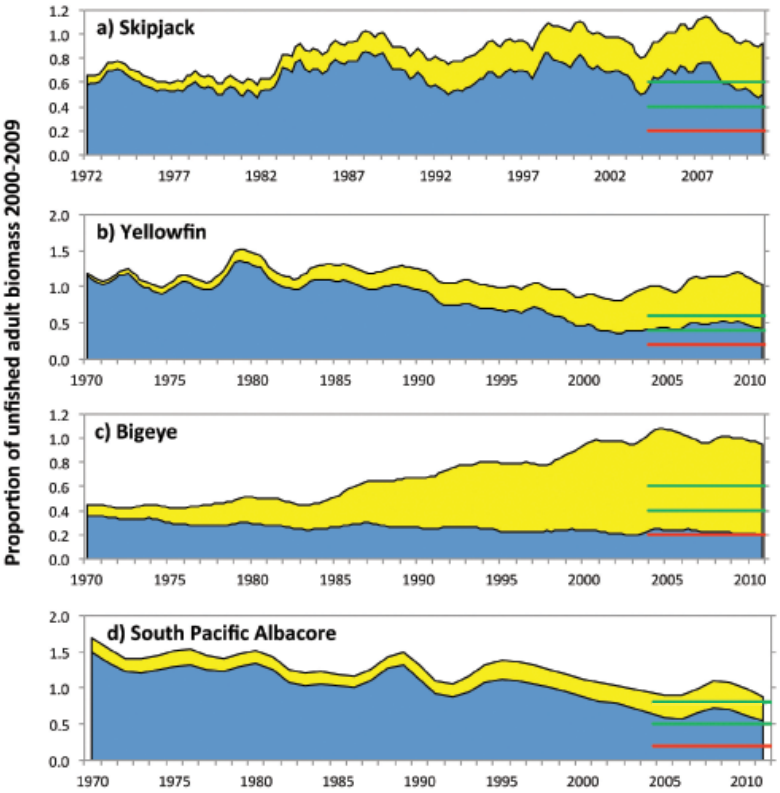

Figure 4. Estimates of adult biomass relative to 2000-2009 average unfished levels of **a)** skipjack, **b)** yellowfin, **c)** bigeye and **d)** South Pacific albacore tuna in the western and central Pacific Ocean. Yellow areas indicate the portion of the stock removed by fishing and the blue areas indicate stock remaining; the red lines indicate the level of adult biomass depletion (20% of unfished levels) that is considered to be biologically risky; and the green lines indicate the ranges that the remaining adult biomass needs to be within to provide for both biological sustainability and profitable fisheries.

Further reading

- *The western and central Pacific tuna fishery: 2012 overview and status of stocks.* Tuna Fisheries Assessment Report No. 13, Secretariat of the Pacific Community, Noumea, New Caledonia.

  http://www.spc.int/DigitalLibrary/Doc/FAME/Reports/Harley_14_Western_Tuna_2012_overview.pdf

- *A scientific perspective on current challenges for PICT domestic tuna longline fleets that are dependent on south Pacific albacore.* Secretariat of the Pacific Community, Noumea, New Caledonia.

  http://www.spc.int/oceanfish/en/ofpsection/sam/395-a-scientific-perspective-on-current-challenges-for-pict-domestic-tuna-longline-fleets-that-are-dependent-on-south-pacific-albacore-

- *Balancing the needs: industrial vs artisanal tuna fisheries. Policy Brief 22/2013*, Secretariat of the Pacific Community, Noumea, New Caledonia.

  http://www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Anon13_PolicyBrief22_Artisanal_Industrial.pdf

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