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**Recent and Future Trends
in the Albacore Longline Fishery**

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RECENT AND FUTURE TRENDS IN THE ALBACORE LONGLINE FISHERY

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This paper examines recent trends in the albacore longline fishery, particularly with regard the domestic longline fleet. An update of an analysis of fisheries oceanographic data is presented to explain recent low catch rates of albacore. The current stock assessment results are discussed. It is intended that this paper will foster some discussion regarding the extent of future developments of the domestic longline fisheries harvesting albacore.

1. Fishery Summary

- The albacore longline fishery principally operates in the sub-equatorial area of the south-western Pacific Ocean (Figure 1).
- Catches of albacore from the longline fishery have steadily increased from the mid 1990s and have approached 50,000 mt in recent years. Most of the increase in catch has been attributed to the development of domestic longline fisheries (Figure 2 and Figure 3).
- Catches from domestic fleets have reached approximately 28,000 mt. Highest catches are taken from Vanuatu, Fiji, French Polynesia, Samoa, and American Samoa EEZs (Table 1).

2. Recent low catch rates attributed to prevailing oceanographic conditions

Monthly trends in the depth of the thermocline in the sub-equatorial area of the western Pacific were examined and related to the longline catch rate of albacore through the region.

In April 2002, a pool of warm water developed in the Solomon Islands EEZ as indicated by a considerable lowering of the thermocline. Over the next few months, the feature promulgated eastwards under the prevailing *El Nino* conditions.

Initially, as this feature developed, relatively high catch rates of albacore were taken on the southern and eastern edge of the feature along the steep gradient in the thermocline. Catch rates were high in Fiji in July, high in Samoa in June–July, and very high in the northern Cook Islands and American Samoa in June–August. Catch rates were considerably lower in all areas over the subsequent 12 months while the feature dominated the oceanographic conditions of the sub-equatorial region (October 2002 to October 2003). The feature began to contract and fragment in late 2003 and there was a corresponding increase in the catch rates of albacore in the Samoa, Cook Islands, and Fiji EEZs.

3. Oceanographic model developed to predict catch rates.

- A model was developed to incorporate oceanographic data to hindcast trends in albacore catch rate for the main longline fisheries.
- The model is not able to predict future catch rates due to [a](#) lack of reliable predictions of oceanographic conditions.
- The model can be applied to historical oceanographic data to predict the frequency of low (and high) catch rate “events”. The model results could be of assistance in strategic planning for fishing companies, in particular for coping with inherent catch rate variability.

4. Albacore stock assessment to be updated in 2005

- No stock assessment of albacore was conducted in 2004, although there has been an examination of the various model inputs in preparation for updating the assessment in 2005.
- Conclusions from 2003 assessment reveal no concerns about sustainability of the albacore stock at the current level of fishing effort. Exploitation rates on juvenile and adult components of the stock are very low.
- The domestic longline fisheries only harvest large, older fish. Current levels of overall albacore fishing activity (longline and troll) are likely to be reducing longline exploitable biomass by about 25%.
- The 2005 assessment will include stock projections for the following 5-year period. What is an appropriate level of future longline fishing effort for inclusion in the assessment? Status quo or increasing, to what extent?
- The updated assessment will be able to examine potential impacts of different levels of fishing effort. For example, we can investigate the extent of the decline in CPUE if fishing effort increases by XX%? This would enable consideration of the optimal level of fishing effort with regard to biological sustainability, total catch, and maximum economic yield (trade off between total catch and maintaining a reasonable level of CPUE). But such estimates carry assumptions regarding spatial homogeneity within MFCL regions, i.e. they will not account for the possibility of local-scale effects due to local depletion or gear competition.

Further reading

SA-4 Langley, A.D. [An examination of the influence of recent oceanographic conditions on the catch rate of albacore in the main domestic longline fisheries](#). Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia. (566kb)

Table 1: Summary small-scale tuna fishing activity including charter fishing operations (Source: OFP databases and *Nearshore Domestic Fisheries Development In Pacific Island Countries And Territories* (Chapman 2004)). Vessel numbers and recent (last few years) annual albacore catches are indicative only.

Country/territory	Small-scale tuna longlining	Larger-scale longline, number of vessels	Albacore catch (mt)
American Samoa	25 alias	25 (excluding alias)	5,000 mt
Cook Islands	4 vessels fishing out of Rarotonga	Approx. 50	1,500 mt
Fiji	Several boats but these are included in the total number of longline vessels for the country.	Approx. 100	8,000 mt
French Polynesia	Vessels in this category included in the total number of tuna longline vessels.	Approx. 55	4,000 mt
New Caledonia	Nil at present.	Approx. 25	1,000 mt
Niue	Nil at present.	Nil at present.	-
Samoa	9 small-scale alia longliners currently working, which is a large downturn from previous years (around 80 alia vessels in 2002).	Approx. 15 (excluding alias)	5,000 mt
Solomon Islands	Nil at present.	50+	500–1,500 mt ?
Tokelau	6 alia-type longliners, although they are not in operation at present. Plans start fishing in 2004.	Nil at present.	-
Tonga	Several small-scale tuna longliners, but these are included under medium-scale vessels.	Approx. 30	1,000 mt
Tuvalu	Nil at present	Unknown	<500 mt
Vanuatu	Nil at present.	100+ (incl. foreign)	2,000–3,000 mt
Wallis and Futuna	One vessel under construction and due to arrive in mid-2004.	Nil at present.	-

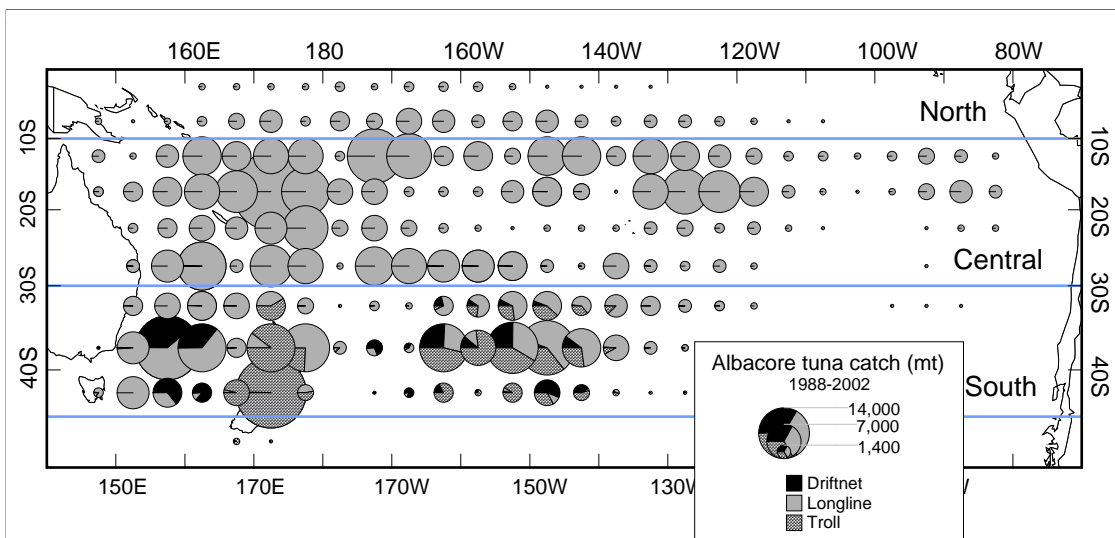


Figure 1. Distribution of South Pacific albacore tuna catch, 1988–2002. The three-region spatial stratification used in stock assessment is shown.

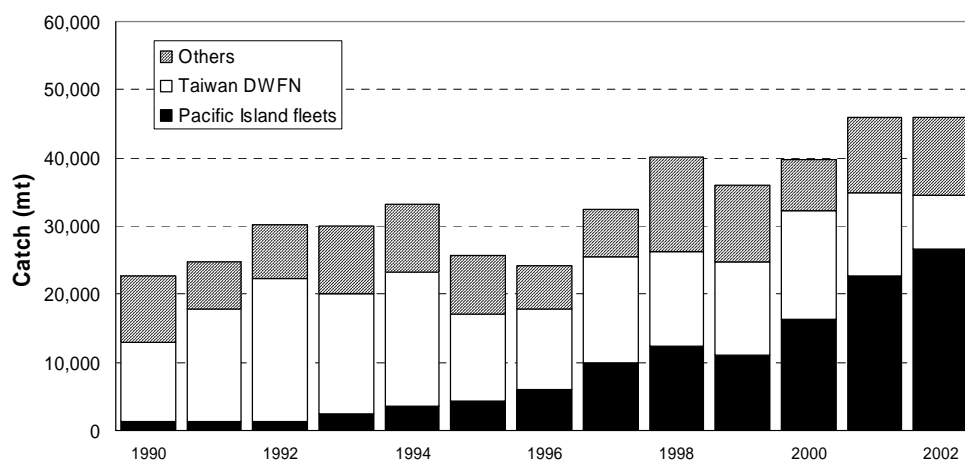


Figure 2. South Pacific albacore longline catch (mt) by fleet category

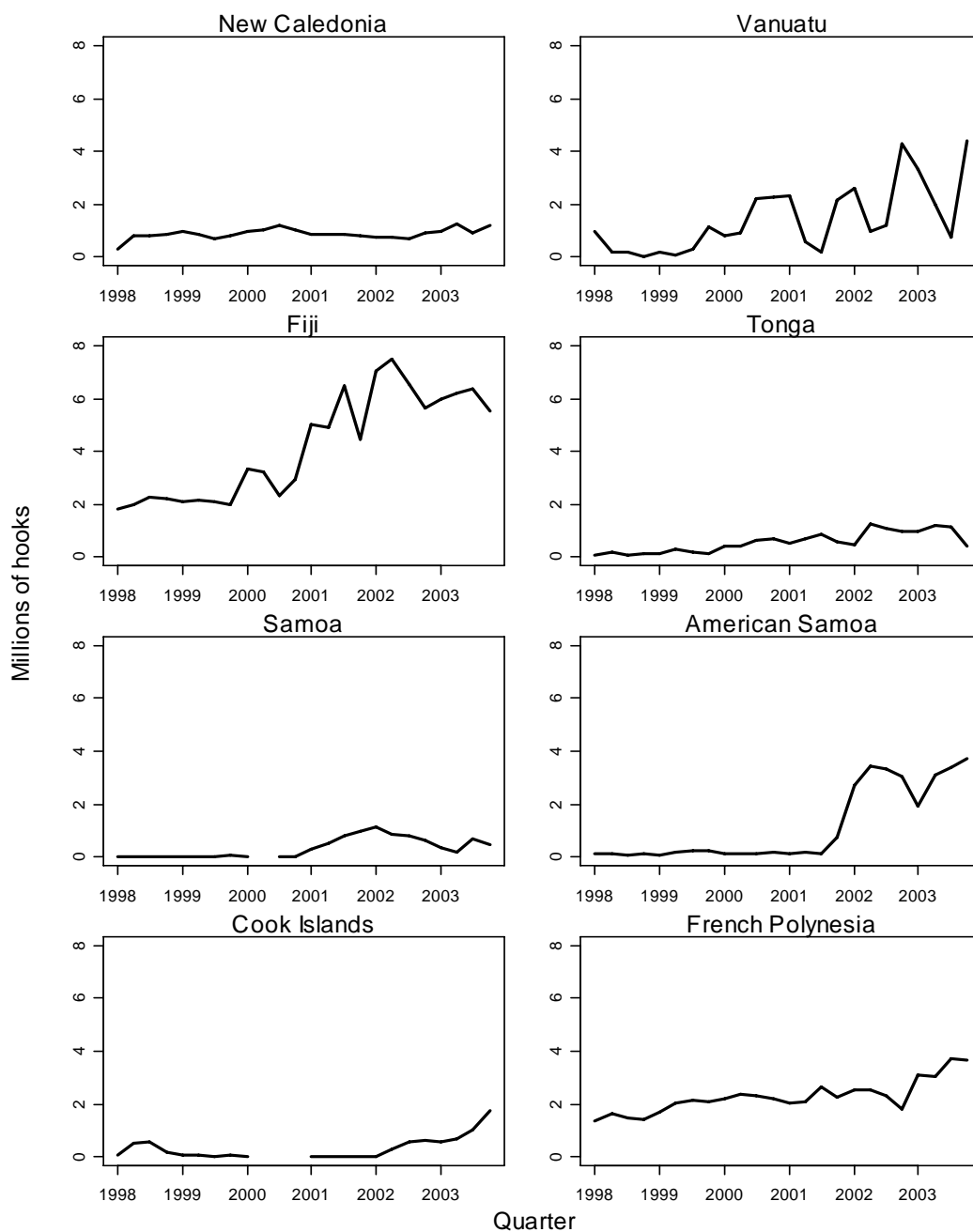


Figure 3: Number of longline hooks set per quarter by EEZ for the fisheries in the sub-equatorial area of the WCPO from 1998 to 2003. Source: logsheet data held by SPC. The level of effort is likely to be under-estimated, particularly in the earlier years.