

A Review of
New Zealand Albacore Fisheries

by Talbot Murray and Ann Ross

Introduction

Three commercial fisheries catch albacore (Thunnus alalunga) in the waters of the New Zealand exclusive economic zone. The most important of these is the domestic surface troll fishery operating primarily on the west coast of the South Island from January to May. The remaining fisheries are foreign longline fisheries which operate on the east coasts of the North and South Islands and in the waters north of New Zealand. The longline fisheries are distinguished by areas of operation, target species and flag of registry. The most important of these is the northern fishery which targets for albacore from April to September and is dominated by Korean vessels. The second fishery operates from January to September, primarily in more southern waters targeting for southern bluefin tuna (T. maccoyii). The southern fishery, composed entirely of Japanese vessels, is much larger than the northern fishery but catches albacore only as a by-catch.

Surface Troll Fishery

The New Zealand domestic albacore fishery is the largest surface fishery exploiting the South Pacific stock. This fishery has operated during austral summer months (December to March) since 1968. Over this

period the centre of fishing has changed from the east coast of the North Island (East Cape to Hawke Bay) in the late 1960s to the west coast of the North Island (North Taranaki Bight) in the early 1970s. Since about 1974, however, most fishing effort has concentrated on the west coast of the South Island along the shelf edge up to 50 nm offshore. The reasons for the change in fishing areas appear to be due to access to receiving depots, port facilities and favourable weather conditions during summer along the west coast.

The surface troll fishery, originally patterned after the near shore California albacore fishery, has seen only minor changes in gear since it began. Vessels typically troll about 10 surface jigs from dawn to dusk with a mid-day lull in fishing activity generally noted. Jigs are usually hand hauled, most boats not having line haulers, by the 2-3 man crew. Vessels do not fish as a fleet and frequently fish competitively in any area where a neighbouring boat is seen to be catching fish. Interference competition for schools is cited by fishermen as justification for introducing limited access to this fishery. Vessel size ranges from 6 m to 25 m with most vessels between 10 m and 15 m in length. Table 1 summarises the catch of albacore by vessel size class over the 1980 to 1985 period. Over this period 14-24% of the vessels were shorter than 10 m in length and landed 3-6% of the domestic catch. The dominant vessel size class (between 10 m and 15 m) landed 72-89% of the domestic catch. Vessels larger than 15 m (11-17%) landed 9-23% of the catch. The most interesting trend in these data is the change in average catch per vessel with increasing boat length. Averaged over the period 1980 to 1985, boats smaller than 10 m landed 2.6 t each while boats between 10 m and 15 m long landed 13.1 t each and boats longer

than 15 m landed 14.6 t. These relatively low figures reflect the large number of vessels which fish for albacore intermittently. In most years 90% of the catch is made by about 25% of the boats and in a good year individual boats may land up to 70 t each. In the case of all New Zealand albacore fishermen this fishery is secondary to some other inshore fishery and it is not unusual to see trawlers, Danish seiners, gill netters, bottom longliners and crayfish boats rigged for trolling.

Longline Fisheries

Two longline fisheries operate within the New Zealand EEZ and catch albacore. The northern longline fishery is the smaller of the two, targeting for albacore in the waters north of 34°S on the east coast and north of 38°S on the west coast of the North Island. This small fishery has involved between 5 and 20 vessels since 1981 during the April to September period. Albacore, the most abundant tuna species, is primarily caught between June and August. Bigeye and yellowfin, the second and third most abundant species respectively, tend to be caught in August. There is no clear pattern of distribution of these species, but effort tends to be concentrated in the vicinity of the Kermadec, Colville and Norfolk Ridge and Three Kings Rise systems. The southern longline fishery tends to operate further south and is restricted to the waters along the east coast of the North and South Island. Since 1980 between 35 and 85 vessels have fished New Zealand waters, targeting for southern bluefin and bigeye tunas during the January to September period. Albacore is the second most abundant species caught (by number and by weight) in this fishery and tends to be caught north of 42°S during the May to August period. Yellowfin, like bigeye, are primarily

caught north of 38°S, are less abundant and exhibit no obvious seasonality in catch rate.

Catch and effort statistics in the longline fisheries from 1980 to 1985 are shown in Table 2. In the northern fishery catch, effort and catch rate have varied between 1981 and 1984. The highest catch rate was achieved in 1983. The number of sets made by each vessel was also largest in 1983. Catch rates in the southern fishery are lower than in the northern fishery since vessels do not target for albacore. There has also been a decrease in the number of sets made in the southern fishery since 1980. Both line length and the number of hooks per set have increased, indicating that the fewer vessels fishing are increasing their unit effort to catch southern bluefin. Albacore catches in the southern fishery have declined since 1982 while catch rates have remained at a similar level indicating more effort is directed at the target species rather than in more northern waters where albacore predominate.

Fishery Management

There is no evidence to suggest a need for managing the albacore fishery around New Zealand. Seasons when catches are small appear to be related to cooler than average summers limiting the southern extent of albacore movement into New Zealand waters rather than depleted stocks. The change in area of operation for the domestic fishery from the east coast of the North Island in the late 1960's to the west coast of the South Island in recent years, appears to be the result of weather conditions and location of processing facilities. Areas which in

earlier years supported fisheries for albacore still support commercial concentrations of fish in the summer. Given the occurrence of albacore concentrations in areas where they are not fished and the belief that they could be fished earlier and later than at present as they move through the New Zealand EEZ there seems no reason to restrict fishing effort. Similarly, longliners operating in New Zealand waters have not been restricted since the catches in local waters relative to the South Pacific as a whole are small (about 3%). Longliners operating in our waters are considered to be part of a South Pacific-wide fishery operating at about MSY (Wetherall and Yong, 1984).

There is among New Zealand fishermen a growing interest in longlining for tunas and billfishes. To date, however, that interest has been directed towards fishing for southern bluefin, bigeye, yellowfin, as well as swordfish and marlins. No interest has been expressed in alternative methods for fishing albacore.

Fisheries statistics have been gathered in the domestic troll fishery since 1972, in the southern longline fishery since 1980 and in the northern longline fishery since 1981. Domestic troll fishermen complete a daily catch summary which is returned monthly. An example of this form is given in figure 1, it provides information on area of capture, number and weight of fish landed as well as effort information. Effort data was not required prior to 1983 and early data is limited to landed weight and area of capture. Longline log sheets are completed for each set and as can be seen from figure 2 provide considerably more detail than is required from domestic fishermen. The longline logbooks are returned before vessels leave New Zealand waters in the case of the southern fishery. In the northern fishery vessels are not required to

clear a New Zealand port and therefore return logbooks sometime before the next fishing season. Failure to complete logbooks or fishing returns can result in refusal to relicense the vessel in subsequent years.

Literature Cited

Wetherall, J.A., and M.Y.Y. Yong. 1984. Assessment of the South Pacific albacore stock based on changes in catch rates of Taiwanese longliners and estimates of total annual yield from 1964 through 1982. NOAA/NMFS/SWFC Admin. Rept. H-84-11, 7 pp.

Table 1. Albacore tuna catch (whole weight) and number of vessels in the New Zealand domestic fishery 1980-1985 by vessel size.

Year	Vessel length (m)	No. Vessels	Weight (t)
1980	0 - 9.9	28	46.73
	10 -14.9	70	577.18
	15 -19.9	14	159.14
	20+	3	21.52
	Unknown	3	11.98
Total		118	816.55
1981	0 - 9.9	28	72.60
	10 -14.9	80	1168.88
	15 -19.9	14	216.61
	20+	5	75.70
	Unknown	6	88.53
Total		133	1622.32
1982	0 - 9.9	26	46.48
	10 -14.9	97	1123.39
	15 -19.9	23	318.38
	20+	3	30.70
	Unknown	7	16.40
Total		156	1535.35
1983	0 - 9.9	12	20.32
	10 -14.9	61	629.28
	15+	10	60.71
Total		83	710.31
1984	0 - 9.9	33	71.97
	10 -14.9	128	2136.25
	15 -19.9	15	234.74
	20+	5	83.79
Total		181	2526.75
1985	0 - 9.9	27	134.94
	10 -14.9	130	1785.56
	15 -19.9	14	253.34
	20+	5	161.31
Total		176	2335.15

Table 2. Albacore tuna catch (number and processed weight) and effort statistics in the foreign longline fisheries off N.Z. 1980-1985

Fishery	Year	Processed weight (t)	Number	Average processed weight (kg)	Number of vessels	Number of sets	Average line length (km)	Average number of hooks per set	Average number of fish per 1000 hooks
Northern	1981	296.6	26728	11.5	11	473	104	2310	24.94
	1982	119.9	11946	12.7	5	221	105	2682	20.15
	1983	378.7	31853	12.1	5	314	118	2618	39.25
	1984	461.4	40657	11.5	20	524	98	2732	28.56
Southern	1980	215.2	19459	11.6	86	10705	102	2417	0.75
	1981	447.2	49009	10.3	85	10345	108	2530	1.88
	1982	720.9	68428	12.1	72	8864	107	2652	2.91
	1983	503.3	48126	11.1	55	5736	113	2719	3.09
	1984	457.6	38436	12.5	34	4431	121	2856	3.04
	1985	336.4	31415	11.2	36	3926	123	2891	2.77

Figure 1

06

TROLL and POLE FISHING RETURN

Registered no.

Name of vessel

Month

Year

Port of landing

Tick main method

Trolling

Polling

No. of jigs

Fishing information								Landed catch					
Day of mth	Tick each day fished	Area no. see map	No. of hours fished	Albacore numbers	Skipjack numbers	Southern bluefin numbers	Other species		Albacore kg	Skipjack kg	Southern bluefin kg	Other species	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

SIGNATURE

Figure 2

START NEW SHEET EACH SET

POSITION AT START OF SET

TARGET SPECIES

2		
---	--	--

CODE

LATITUDE			LONGITUDE		
DEG	MIN		DEG	MIN	E/W
		S			

SETTING LINE

START OF SET	DATE			TIME NZST	SEA SURFACE TEMP (°C)	FINISH OF SET	DATE			TIME NZST	CLOUD	
	DAY	MONTH	YEAR				DAY	MONTH	YEAR		COVER	TYPE
											8	

HAULING LINE

START OF HAULING	DATE			TIME NZST	WIND FORCE	FINISH OF HAULING	DATE			TIME NZST	WIND FORCE
	DAY	MONTH	YEAR				DAY	MONTH	YEAR		

GEAR

TOTAL LENGTH OF LINE(KM)	TOTAL No. OF HOOKS	TOTAL No. OF BASKETS

BAIT USED SPECIFY NUMBER OF HOOKS

1	SQUID		2	LURE		3	MACKEREL		4	SAURY		9	OTHER
---	-------	--	---	------	--	---	----------	--	---	-------	--	---	-------

TOTAL NUMBER OF SOUTHERN BLUEFIN

CATCH

STN	PROCESSED WEIGHT OF EACH SOUTHERN BLUEFIN (KG)												
40													
40													
40													
40													
40													
40													
40													
40													
40													

	CODE	SPECIES	TOTAL PROC'D WEIGHT (KG)	No. OF FISH	CODE	SPECIES	TOTAL PROC'D WEIGHT (KG)	No. OF FISH
41	NTU	NORTHERN BLUEFIN			ALB	ALBACORE		
41	BIG	BIGEYE			YFN	YELLOWFIN		
41	BTU	BUTTERFLY TUNA			SWO	BROADBILL SWORDFISH		
41	STM	STRIPED MARLIN			BEM	BLUE MARLIN		
41	BKM	BLACK MARLIN			OFH	OILFISH		
41	SSF	SHORTBILL SPEARFISH			MAK	MAKO SHARK		
41	SAI	SAILFISH			SUN	SUNFISH		
41	MOO	MOONFISH			STU	SLENDER TUNA		
41								

	CODE	SPECIES	NUMBER OF FISH	CODE	SPECIES	NUMBER OF FISH
42	BWS	BLUE SHARK		THR	THRESHER SHARK	
42	BWH	BRONZE WHALER SHARK		SHA	OTHER SHARK	
42	RBM	RAYS BEAM				