

SUMMARY OF THE ALBACORE SEASONS FROM 1976-77 TO 1985-86

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Introduction

Albacore tuna (*Thunnus alalunga*) is a highly migratory species which is widely distributed between 45°N and 45°S in an area between 150°E and 120°W. The species spawn during the summer in oceanic subtropical waters and its distribution expands to the south with the summer warming of the ocean, and contracts during the winter cooling. Movements southward by juvenile fish bring to the water around New Zealand surface and subtropical schools. These have been targeted by commercial operations from as early as 1970 when 50 tonnes were caught, rising to 890 tonnes in 1974 before dropping to a total catch of 25+ tonnes in 1975-76.

The species is caught all around New Zealand but clearly the dominant commercial area has been off the West Coast of the South Island from 1976 to 1984. Further development of the albacore fishery probably exists off New Plymouth on the West Coast of the North Island, along the whole East Coast of the North Island and the subtropical convergence on the Northern side of the Chatham rise.

Location of the Fishery

South Island West Coast fishery covers an area from Cape Farewell to south of Milford Sound from the coast out to 70 nautical miles, although a majority of the fishery is done between Kahurangi Point and Jackson Bay.

Vessels

Over the ten seasons the number of vessels has risen from 45 in 1976-77 to above 150 vessels in the later seasons, with a maximum of 177 vessels in 1981-82. As a result of a reduction in the price offered to vessels of approximately 30%, there was a large fall in the number of vessels in the 1982-83 season. The vessels ranged in size from 6-33

meters (mean 13-17 meters).

In early years the seasonal nature of the fishery and variability in the distribution and abundance of the resource caused a majority of the vessels to fish part-time during the season while persuing other species such as rock lobster and dermersal wet fish. From 1980-81 there has been a large increase in the number of vessels who have committed themselves to the fishery full-time during the season; the exception occurred in 1982-83 as a result of a price fall.

Gear and Methods

Albacore are predominately caught by trolling. Lures (9-17 depending on vessel size) are towed at speeds of 3-8 knots at various distances and depths behind the vessel.

Crews of 2-9 people hauled the lines by hand or by small hydraulic line hauler fixed to the stern of the vessel. Small quantities of fish have also been landed (1984-85 and 1985-86 seasons) by the live bait and pole method.

However, a lack of consistant local bait supply and detailed knowledge of the method have restricted its use off the South Island.

The fish are normally stored in ice, refrigerated in brine or held in blast freezers at -15°C . Fish are landed within 1-15 days of being caught, then frozen to export specifications in brine tanks before being stored and then exported whole. In the last two seasons a vessel with -50°C freezing capability has operated in the fleet offloading once a month. Using this storage method fish can be loaded directly into containers for export.

Data Collection and Results

Initial data collection was done by placing log books on selected vessels to monitor and record catch, effort, biological

and environmental data. This was supplemented by occasional staff sea trips to help collect this data and to also collect further information from fish landing sites. In later seasons the log book scheme was withdrawn and data was collected from fishing statistic returns and from the processing companies.

Season and Monthly Catches

The albacore catch has varied considerably since its beginning in 1976-77. (Table 1). Poor catches were recorded in 1976-77, 1978-79 and 1982-83 seasons (524-740 tonnes), while the better years recorded catches up to 3392 tonnes.

The numbers of vessels involved in the fishery have also increased over the years from 45 in 1976 to a maximum of 177 in 1981-82. As the catches have risen, the mean catch per vessel has fluctuated quite markedly.

However, the number of landings each vessel has made during the season has not varied as much as could be expected. This is probably due to the holds on vessels generally being bigger than catches made. In peak seasons, the vessels return with larger catches every 1-15 days rather than return to port more often.

When broken down by month, (Table 2), the seasons generally started with small catches in December, rising to a peak in February before tailing off slowly to end in April or May. Only in 1976-77 (March), and 1985-86 (January), did the peak occur in a month other than February. In most cases catches began in the northern part of the area moving slowly south as the season progressed and generally finished in the Cook Canyon, Jackson Bay area in April and May.

The number of different vessels involved in each month and the number of landings also rose and fell with the catches.

Catch Rates

Catch rates were calculated for the vessels in fish per 100 hook hours; the fleet average and range is shown in

Table 3. Catch rate has varied markedly between 1976-77 and 1983-84 seasons. The fluctuations do not appear to correspond with the number of fish caught or the total tonnage landed. Instead catch rate probably relates to the annual migratory pattern of fish. In most years the range of catch rate has been large and mostly represents varying commitment to the fishery. Low values in the monitored fleet were generated by vessels who fished for short periods at low catch rates and the high values were experienced by vessels that only caught fish during the peak of the season. The catch rates varied markedly during the season and between seasons as is shown in the top vessel catch rates (Table 4), that fluctuated between 107 and 195 fish per 100 hook hours. The highest rate taken in a season with a total of 524 tonnes caught and the lowest in a season with 2,773 tonnes caught. The variation occurs as each year the top vessel tows a different number of lures (e.g. 1981-82 - 9 lures; 1984-86 - 16 lures).

Temperature

During the season water temperatures ranged between 15°C and 21°C but fish were generally caught in areas where temperatures ranged between 17°C and 19°C. Comparing the NOAA satellite prints with vessel temperature recorded on intake to engine cooling system or digital thermometers the larger catches were taken between 17°C and 19°C.

Size and Weights

Samples of albacore from random catches were measured and weighed to the nearest 50gm. Data was used to calculate length frequency distributions and length/weight relationships (Table 5).

Future of West Coast South Island Fishery

Over the past ten years the fishery on the South Island West Coast has expanded both in catch taken, and the number of vessels involved. Both are now reaching peak for the method used and size of vessel involved. The present trolling pattern is that vessels move in packs, following experienced tuna trollers

who they hope will lead them to high catches. Unless there are changes in the composition of the fleet, the total catch will probably not increase much above 3,500-4,000 tonnes.

There are two ways in which fleet restructure may improve the annual catch. First, by the introduction of experienced live bait and pole vessels. This method requires a steady supply of the correct bait and training in new techniques. The best source of bait is the Marlborough Sounds. However vessels would have to leave fishing grounds for a minimum of 4 days to travel round Cape Farewell to rebait. If a reliable bait supply could be found closer to fishing grounds this method could become more viable.

Second, by the introduction of larger vessels (in the 30 meter range), which can hold fish at below /20°C and remain at sea when the smaller 15 meter vessels return to port for bad weather. This would allow vessels to fish more days per season. The larger holds and superior freezing capabilities of the 30 meter vessels would further enable them to remain on the grounds until the hold is full before returning to port to unload.

Both the above methods have been tried on the West Coast grounds in the last two seasons with some success. It is expected that vessel size will increase in the West Coast albacore fishery as funds become available. However bait supply and the small fish size on the coast have restricted development of a pole fishery. It is possible that the pole method would be better suited to other grounds presently under development in the New Zealand 200 mile zone.

TABLE 1 : NEW ZEALAND WEST COAST SOUTH ISLAND, ALBACORE FISHERY
1976-86

Year	Catch Tonnes	No. of Vessels	No. of Landings	Mean Catch (t) Per Vessel	Mean No. of Landing Per Vessel
1976-77	524	45	268	11.6	5.9
1977-78	1,536	97	598	15.8	6.2
1978-79	604	101	446	6.0	4.4
1979-80	1,392	140	886	9.9	6.3
1980-81	2,085	166	1,118	12.6	6.7
1981-82	2,398	177	1,401	13.5	7.9
1982-83	740	76	429	9.7	5.6
1983-84	2,773	161	1,232	17.2	7.6
1984-85	3,392	164	1,380	20.7	8.4
1985-86	1,921	157	985	12.2	6.2

TABLE 2 : MONTHLY AND SEASON CATCH OF ALBACORE FOR WEST COAST SOUTH ISLAND BY YEAR.

1976-77

Month	Catch	No. of Vessels	No. of Landings
December	0.07	2	2
January	18.0	16	27
February	205.0	30	92
March	208.0	37	97
April	90.0	18	47
May	3.0	3	3
Total	524	45	268

1977-78

Month	Catch	No. of Vessels	No. of Landings
December	-	-	-
January	158	42	105
February	802	79	221
March	566	84	253
April	10	14	19
May	-		
Total	1,536	97	598

1978-79

Month	Catch	No. of Vessels	No. of Landings
December	0.4	4	4
January	104.0	54	89
February	302.0	81	204
March	126.0	54	119
April	71.0	20	27
May	1.0	3	3
Total	604	101	446

1979-80

Month	Catch	No. of Vessels	No. of Landings
December	0.3	3	3
January	283.0	78	160
February	708.0	130	429
March	337.0	100	258
April	58.0	28	32
May	60	4	4
Total	1,392	140	886

1980-81

Month	Catch	No. of Vessels	No. of Landings
December	0.5	4	4
January	362.6	76	175
February	1,063.7	129	455
March	468.9	129	324
April	189.0	65	153
May	0.5	7	7
Total	2,085.2	166	1,118

1981-82

Month	Catch	No. of Vessels	No. of Landings
December	1.2	3	4
January	715.5	129	312
February	1,200.5	162	686
March	429.5	120	335
April	52.1	46	64
May	-	-	-
Total	2,398.8	177	1,401

1982-83

Month	Catch	No. of Vessels	No. of Landings
December	0.1	1	1
January	42.5	30	53
February	417.7	68	208
March	183.5	56	114
April	95	35	53
May	-	-	-
Total	739.5	76	429

1983-84

Month	Catch	No. of Vessels	No. of Landings
December	0.4	1	2
January	261.8	67	161
February	1,840.8	141	632
March	630.2	125	387
April	40.3	33	50
May	-	-	-
Total	2,773.5	161	1,232

1984-85

Month	Catch	No. of Vessels	No. of Landings
December	11.5	6	8
January	1,276.7	131	434
February	1,300.1	147	531
March	702.0	101	335
April	101.7	49	72
May			
Total	3,392	164	1,380

1985-86

Month	Catch	No. of Vessels	No. of Landings
December	2.0	9	11
January	986.0	140	391
February	604.3	135	367
March	308.0	79	192
April	20.7	20	24
May			
Total	1,921	157	985

TABLE 3 : CATCH RATES OF ALBACORE FROM MONITORED VESSEL IN WEST COAST SOUTH ISLAND FISHERY. 1976-86.

Year	No. of Vessels Monitored	Hours Fished	No. of Hook Hours	No. of Fish	No. Caught per 100 H/H	Monitored Fleet Range 100 H/H
1976-77	4	926	8,227	14,294	174	120-195
1977-78	34	6,577	63,386	79,673	126	22-263
1978-79	12	2,690	29,316	25,356	86	52-131
1979-80	33	10,608	120,578	91,857	86	6-134
1980-81	41	13,001	151,117	174,473	115	15-368
1981-82	69	20,327	234,382	226,324	96	
1982-83	40	14,163	164,463	139,677	85	
1983-84	60	22,288	246,514	344,679	140	
1984-85	No data available to date					
1985-86	No data available to date					

TABLE 4 : CATCH RATES OF TOP VESSEL IN ALBACORE FISHERY WEST COAST SOUTH ISLAND.

1976-86

Month	No. of Hours	No. of Hook Hours	No. of Fish	No. of Fish Caught per 100 H/H
1976-77	699	6,291	12,266	195
1977-78	517	6,024	9,721	157
1978-79	480	5,280	6,937	131
1979-80	693	7,623	8,289	109
1980-81	735	9,555	10,365	108
1981-82	688	6,192	10,456	168
1982-83	705	7,050	7,589	107
1983-84	906	9,966	13,805	138
1984-85	737	11,792	19,212	163
1985-86	No data available to date.			