Length and age composition of commercial snapper landings in the Auckland Fishery Management Area, 1994–95

Cameron Walsh
Bruce Hartill
Nick M. Davies

NIWA
Taihoro Nukurangi

New Zealand Fisheries Data Report No. 62
ISSN 0113-2288
1995

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Published by NIWA
Wellington
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Inquiries to:
Publication Services, NIWA,
PO Box 14-901, Wellington, New Zealand.

The *New Zealand Fisheries Data Report* series
continues the *Fisheries Research Division*
Occasional Publication: Data Series.

ISBN 0-478-04649-9

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Introduction

MAF Fisheries staff have sampled the length and age compositions of snapper from commercial landings in port (market sampling) intermittently since 1963 (Davies *et al.* 1993). In the 1988–89 fishing year, a structured sampling programme was designed to establish a time series of length and age composition data for the main snapper fisheries in the Auckland Fishery Management Area (AFMA). A summary of that collection up to March 1994 was presented by Davies & Walsh (1995). This report presents the results of market sampling between March 1994 and February 1995 thus continuing the time series of snapper length and age compositions.

Objective

The objective of the market sampling programme has remained largely unchanged since the programme was established and is as follows.

> To continue the development and analysis of a comparative time series of age and length distributions of snapper in catches taken by the main fishing methods in the Auckland Fishery Management Area.

The programme also supports other snapper stock assessment programmes that require length and age composition information, e.g., daily egg production method and tagging studies for estimating stock biomass. The recapture phase of a tagging programme to estimate the absolute biomass of the SNA 1 stock took place between February 1994 and February 1995. Market sampling during this period provided data on the length composition of commercial catches examined for tagged fish.

Methods

Landings from the snapper fishery were stratified hierarchically by stock or substock, fishing method, and quarterly season, e.g., east Northland – longline – spring. The stock and substocks correspond to the four areas: west coast, Hauraki Gulf, Bay of Plenty, and east Northland (Figure 1). Fishing methods sampled were longline (BLL), single trawl (BT), and Danish seine (DS). Quarterly season strata were defined as spring (September–November), summer (December–February), autumn (March–May), and winter (June–August). The percentages of the annual snapper catch taken by particular methods in each of the stock and substock strata for 1993–94 and 1994–95 are given in Table 1.

A two-stage sampling procedure was used to obtain length frequencies (West 1978). Landings, and bins within landings, represent the first and second stages respectively. The procedure for obtaining a simple random sample for length frequency was modified to account for the grading of fish by length and quality by fishermen before landing (Davies *et al.* 1993). All fish in bins making up the sample were measured to the nearest centimetre below the fork length. As snapper show no differential growth between sexes (Paul 1976), sex was not determined. A detailed description of the sampling design was given by Davies & Walsh (1995).

Otoliths were collected from each stock or substock according to the catch length distribution for the previous year. These allocations were, for the west and east coast otolith samples, based on single trawl and longline length distributions respectively. In the lower

length intervals, a fixed allocation of about 20 otoliths per interval was taken to allow for annual variability.

Otoliths from the Hauraki Gulf were collected entirely from a research trawl survey, and otoliths from the west coast, Bay of Plenty, and east Northland areas were collected from both research trawl surveys and commercial landings (*see* Table 6). Previous comparisons of research and commercial length-at-age data have shown no obvious differences in growth rates. Research trawl surveys are thought to provide a sample that is more spatially representative of the stock than one derived from commercial landings. The stock and substock boundaries (*see* Figure 1) do not correspond exactly with area stratification in research trawl surveys. Consequently, not all otoliths collected from research trawl surveys were used. The otolith collections were processed to produce an age-length key to derive proportion at age estimates for snapper in commercial catches.

A standardised procedure for reading otoliths was followed (Davies & Walsh 1995). Age-length keys were assumed to be representative of each stock or substock for the seasonal strata within which the sample was collected.

The analytical approach for calculating stratum proportions at length and age from the length frequency samples and age-length keys followed that of Davies & Walsh (1995). Proportions at age were calculated for the range of age classes recruited to each stratum, with the maximum age being an aggregate of all age classes greater than 19 years. The variances for the proportion at length and age estimates were calculated as described by Davies & Walsh (1995).

Results

Sample collections

Summaries of the length frequency sample sizes for stock-method-season strata are given in Tables 2–5, and summaries of the otolith sample collections in Table 6.

Length and age distributions

For comparing stock and method strata and identifying year class strengths, catch age compositions were derived from the combined spring and summer length distributions. However, otoliths were not collected consistently in either spring or summer. In combining the seasonal data it is assumed that an age-length key collected from spring and/or summer can be applied to the combined spring and summer length data. Because the growth of snapper over 25 cm long is not considerable between spring and summer, this assumption is probably valid for broad comparisons. This assumption has been accepted for other species with growth rates comparable to that of snapper (Westrheim & Ricker 1978).

Sample length and age distributions for the 1994–95 season are presented as histograms of length and age compositions for stock-method strata (Figures 2–15). These are ordered firstly by stock or substock and secondly by fishing method. The estimated proportions at length and age for the stock-method-season strata are shown in Appendices 1 and 2 respectively. The age-length keys for each stock or substock are presented in Appendix 3.

The estimated total number of fish caught in a stock-method-season stratum was calculated from the reported total weight landed and the mean fish weight derived from stratum length composition. Because mean weight is specific to each season, the estimated total number of fish caught for the spring-summer combined stratum may not correspond exactly to the sum of the individual season estimates (*see* Appendix 1).

West coast snapper (SNA 8)

The length distribution of the single trawl catch was characterised by a strong mode between 29 and 35 cm with a broad tail extending out to over 65 cm (Figure 2). The 29–35 cm mode indicates the presence of a strong 1991 year class of 4 year old fish recruiting into the exploitable stock.

Relative year class strengths were discernable from the age composition with the 1991 year class (4 year olds) appearing extremely strong and the 1988 year class (7 year olds) particularly weak. The mean age of snapper from the west coast single trawl fishery was 6.1 years (Figure 3).

East coast snapper (SNA 1)

Hauraki Gulf

The length distributions of the Hauraki Gulf longline and Danish seine fisheries were both characterised by a strong mode between 27 and 35 cm with a long tail extending to about 65 cm (Figures 4 and 6).

The Hauraki Gulf longline and Danish seine landings had a broad range of age classes reflected in the high mean age of 9.0 years in both fisheries. Relative year class strengths were apparent from the age distributions with the 1989, 1985, and 1981 year classes (6, 10, and 14 year olds) particularly strong, and the 1987, 1983, and 1982 year classes (8, 12, and 13 year olds) comparatively weak (Figures 5 and 7).

Bay of Plenty

The length distributions of the Bay of Plenty longline, Danish seine, and single trawl fisheries were all characterised by a strong mode between 27 and 32 cm (Figures 8, 10, and 12). The longline length distribution showed a long tail extending to over 70 cm resulting in a mean length of 35.9 cm. In contrast, the Danish seine and single trawl length distributions showed a narrower tail extending to 65 cm with lower mean lengths of 30.8 and 31.1 cm respectively.

Longline, Danish seine, and single trawl age distributions consisted mainly of fish less than 11 years old. Longline landings contained more older fish than the other two methods, in particular the 20+ age class (Figures 9, 11, and 13). The mean ages of fish from longline, Danish seine, and single trawl catches were 8.3, 6.4, and 6.6 years respectively.

Similar relative year class strengths were visible in the age distributions for all fishing methods. Most evident were the strong 1989 and weak 1987 year classes (6 and 8 year olds, respectively) with 6 year olds making up 47% of fish in Danish seine and single trawl catches (Figures 9, 11, and 13).

East Northland

The east Northland longline length distribution showed a broad tail extending from a mode centred around 30 cm to over 70 cm with the mean length being 35.3 cm (Figure 14).

The age distribution was broad and characterised by a relatively high proportion of fish 20 years and older with a comparatively high mean age of 9.4 years (Figure 15). Several

peaks in the age distribution indicate strong year classes from 1989, 1982, and 1981 which correspond to 6, 13, and 14 year old fish, respectively.

Discussion

The relative year class strengths inferred from the length and age distributions sampled from the AFMA snapper fisheries in the 1994–95 season are consistent with trends observed in previous years (McKenzie *et al.* 1992, Davies & Walsh 1995).

The west coast single trawl length and age distributions show the marked effect of strong recruitment of the 1991 year class (4 year olds) into the population. This year class, evident in the 1993–94 length frequency and age distribution (Davies & Walsh 1995), accounted for over 40% of snapper in single trawl landings in 1994–95. Results from the 1994 *Kaharoa* trawl survey off the west coast North Island show the 1991 year class to be one of the strongest since the Quota Management System was introduced in 1986 (A. Langley, NIWA, Auckland, unpublished results).

The decline in mean length of snapper in Hauraki Gulf longline landings observed in previous years (Davies & Walsh 1995) appears to have continued in 1994–95. An overall decline from 40.4 cm in 1989–90 to 33.6 cm in 1994–95 has occurred. Recent information on current absolute biomass suggests no significant decline since 1989–90 (Annala 1995). The decline in mean length is therefore indicative of other factors influencing length composition, e.g., strong recent recruitments. This trend was also evident in the Hauraki Gulf Danish seine fishery.

In the Hauraki Gulf, the 1989, 1985, and 1981 year classes appear to be particularly strong. However, the observed 1989 year class strength index estimated from the 1990 *Kaharoa* trawl survey was more than twice the index mean since 1983 (Annala 1995). An age-length key derived from the November 1994 trawl survey shows this year class was not fully recruited to the commercial fishery, so the relative strength of the 1989 year class inferred from the age distributions is negatively biased.

The Bay of Plenty length and age distributions displayed characteristically narrower ranges than those in the Hauraki Gulf and east Northland substocks. The Danish seine and single trawl length distributions consisted predominantly of fish less than 40 cm in length. The longline length distribution showed significant proportions of fish in the longer length classes, probably reflecting differences in selectivity of this method and the areas fished. The longline, Danish seine, and single trawl age distributions mainly consisted of fish ranging from 5 to 10 years of age. The 1989 year class was very strong in the Bay of Plenty with 6 year old snapper making up 34% of longline landings and 47% of Danish seine and single trawl landings. It appears from the age-length key that this year class may be fully recruited to the exploitable stock in the Bay of Plenty.

The increase in mean age of snapper in landings from the Bay of Plenty observed in previous years (Davies & Walsh 1995) appears to have continued in 1994–95. Mean age of snapper in longline landings has increased from 6.4 years in 1989–90 to 8.3 years in 1994–95 and from 5.4 to 6.6 years in single trawl landings.

The east Northland substock appears to show similar year class strengths to those observed in the 1993–94 season (Davies & Walsh 1995), except for the 1989 and 1986 year classes (6 and 9 year olds) which have increased and decreased in their respective estimated dominance. A decline in the mean length and age of snapper in the east Northland longline fishery from those observed in previous years (Davies & Walsh 1995) is probably a reflection of the strong recruiting 1989 year class. The distribution at age of the east Northland longline landings in 1994–95 was characterised by many fish over 20 years of age. This may be attributable to this substock's relatively healthy state in comparison with the other east coast

substocks (Annala 1995), and is consistent with the previous year's findings.

Similarities between the age distributions derived from different methods within substocks (i.e., Hauraki Gulf and Bay of Plenty) probably reflect the assumption that the age-length key is representative of each stock or substock stratum. Information on the presence of dominant or weak year classes is inherent in the age-length key and will therefore largely determine the age distribution irrespective of the length distributions specific to different fishing methods (Davies & Walsh 1995).

Conclusions

1. The length and age distributions sampled from the Auckland Fishery Management Area snapper fisheries in the 1994–95 season are generally consistent with trends observed in previous years.

2. A very strong 1991 year class appears to have recruited fully to the exploitable west coast snapper stock.

3. There are broad similarities in the recruitment patterns of the east coast substocks.

Acknowledgments

We thank Dave Fisher, Dave Banks, and the stock monitoring team for their prompt and efficient handling and storage of length frequency data. Thanks to Helena Cadenhead, Victor Cauty, Paul Fraser, Carmen Gray, Ken Kawiti, and Eddie Sides for collecting market sampling data.

The following licensed fish receivers in the AFMA, and in particular the people mentioned, are thanked for their cooperation in enabling MAF Fisheries staff to sample catches:
Anton's Seafoods Ltd. (Auckland): Milan Barbarich and Greg Bishop,
Coromandel Fish Exporters Ltd. (Coromandel): Trevor Henson and Paul Pakau,
Hikurangi Fisheries Ltd. (Hikurangi): Ned Yovich,
Leigh Fisheries Ltd. (Leigh): Elisha Yahel,
Moana Pacific Ltd. (Pukekohe): Eddie Dodd and Jenny Tonkin,
Ocean Products Columbia Ltd. (Whitianga): Peter Ratcliffe and Bob Finnerty,
Polar Products Ltd. (Auckland): Bill Welch and Dave Bell,
Regent Fisheries Ltd. (Auckland): Gary Brown and Mil Boscovic,
Sanford Ltd. (Auckland): Rod Skelton, Mario Nola, and Lloyd Te Ngaio,
Sanford Ltd. (Tauranga): Ian Hughes and Simon Carter,
Sea Products Ltd. (Drury): Paddy Green,
Simunovich Fisheries Ltd. (Auckland): Vaughan Wilkinson and Tony Dragicevich.

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Table 1: Percentages of annual snapper catches by fishing method for the stock and substocks in the AFMA for the 1993–94 and 1994–95 fishing years*

West coast

	BPT	BT	Other
1993–94	30	65	5
1994–95	34	57	9

Hauraki Gulf

	BLL	BT	DS	BPT	Other
1993–94	54	16	24	0	6
1994–95	49	20	26	2	3

Bay of Plenty

	BLL	BT	DS	BPT	Other
1993–94	33	27	21	16	3
1994–95	31	19	26	20	4

East Northland

	BLL	BT	DS	BPT	Other
1993–94	63	15	2	14	6
1994–95	67	10	1	13	9

* BLL, longline; BT, single trawl; BPT, pair trawl; DS, Danish seine.

1994–95 represents 01/10/94 to 28/06/95 only.

Table 2: Summary of the total number and weight of landings in method–season strata and the length frequency sample sizes (number and weight of landings that were sampled) for the west coast snapper fisheries from autumn 1994 to summer 1994–95*

Method	Season	Number of landings			No. of fish measured	Weight of landings (t)		
		Total	Sampled	% of total		Total	Sampled	% of total
PBT	Autumn	45	0	0	0	36	0	0
	Winter	30	0	0	0	101	0	0
	Spring	31	0	0	0	153	0	0
	Summer	38	0	0	0	139	0	0
BT	Autumn	244	0	0	0	129	0	0
	Winter	116	0	0	0	90	0	0
	Spring	168	10	6.0	5 926	261	59	22.5
	Summer	223	0	0	0	234	0	0

* PBT, pair trawl; BT, single trawl.

Table 3: Summary of the total number and weight of landings in method–season strata and the length frequency sample sizes (number and weight of landings that were sampled) for the Hauraki Gulf snapper fisheries from autumn 1994 to summer 1994–95*

Method	Season	Number of landings			No. of fish measured	Weight of landings (t)		
		Total	Sampled	% of total		Total	Sampled	% of total
BLL	Autumn	1 634	79	4.8	13 416	266	19	7.3
	Winter	1 236	39	3.2	5 131	168	8	5.0
	Spring	1 663	72	4.3	14 451	442	36	8.1
	Summer	1 515	72	4.8	11 553	409	27	6.6
BT	Autumn	103	10	9.7	3 822	116	11	9.6
	Winter	28	0	0	0	13	0	0
	Spring	71	0	0	0	107	0	0
	Summer	104	0	0	0	178	0	0
DS	Autumn	217	21	9.7	6 976	212	29	13.5
	Winter	82	4	4.9	1 796	25	5	20.3
	Spring	205	15	7.3	5 818	148	22	14.6
	Summer	185	18	9.7	8 357	215	32	14.7

* BLL, longline; BT, single trawl; DS, Danish seine.

Table 4: Summary of the total number and weight of landings in method–season strata and the length frequency sample sizes (number and weight of landings that were sampled) for the Bay of Plenty snapper fisheries from autumn 1994 to summer 1994–95*

Method	Season	Number of landings			No. of fish measured	Weight of landings (t)		
		Total	Sampled	% of total		Total	Sampled	% of total
BLL	Autumn	415	21	5.1	5 439	99	7	7.6
	Winter	531	26	4.9	4 843	105	8	7.7
	Spring	416	20	4.8	2 393	58	2	4.1
	Summer	293	26	8.9	4 197	45	9	20.7
BT	Autumn	130	5	3.8	2 344	73	9	12.8
	Winter	120	6	5.0	2 851	77	9	11.2
	Spring	112	6	5.4	3 164	68	9	13.2
	Summer	100	7	7.0	4 190	48	16	32.6
DS	Autumn	48	3	6.3	1 081	40	3	8.3
	Winter	91	10	11.0	3 429	66	9	13.8
	Spring	56	5	8.9	2 274	43	7	16.0
	Summer	42	8	19.0	2 532	40	9	21.8

* BLL, longline; BT, single trawl; DS, Danish seine.

Table 5: Summary of the total number and weight of landings in method–season strata and the length frequency sample sizes (number and weight of landings that were sampled) for the east Northland snapper fishery from autumn 1994 to summer 1994–95*

Method	Season	Number of landings			No. of fish measured	Weight of landings (t)		
		Total	Sampled	% of total		Total	Sampled	% of total
BLL	Autumn	904	24	2.7	6 425	137	12	9.0
	Winter	1 190	36	3.0	6 885	231	16	6.9
	Spring	961	41	4.3	6 482	187	15	7.8
	Summer	857	42	4.9	6 653	198	17	8.7

* BLL, longline.

Table 6: Details of snapper otolith samples collected in 1994–95 from the stock and substocks in the AFMA*

Area	Fishing method	Sampling period	Sample method	Length range (cm)	No. aged
WCNI	BT and RT	Oct 94–Nov 94	SR	25–75	545
HAGU	RT	Oct 94–Nov 94	SR	25–71	635
BPLE	BT and RT	Oct 94–Dec 94	SR	25–75	606
ENLD	BLL and RT	Oct 94–Jan 95	SR	25–80	597

* BPLE, Bay of Plenty; ENLD, east Northland; HAGU, Hauraki Gulf; WCNI, west coast North Island;
BLL, longline; BT, single trawl; RT, research trawl;
SR, stratified random sample.

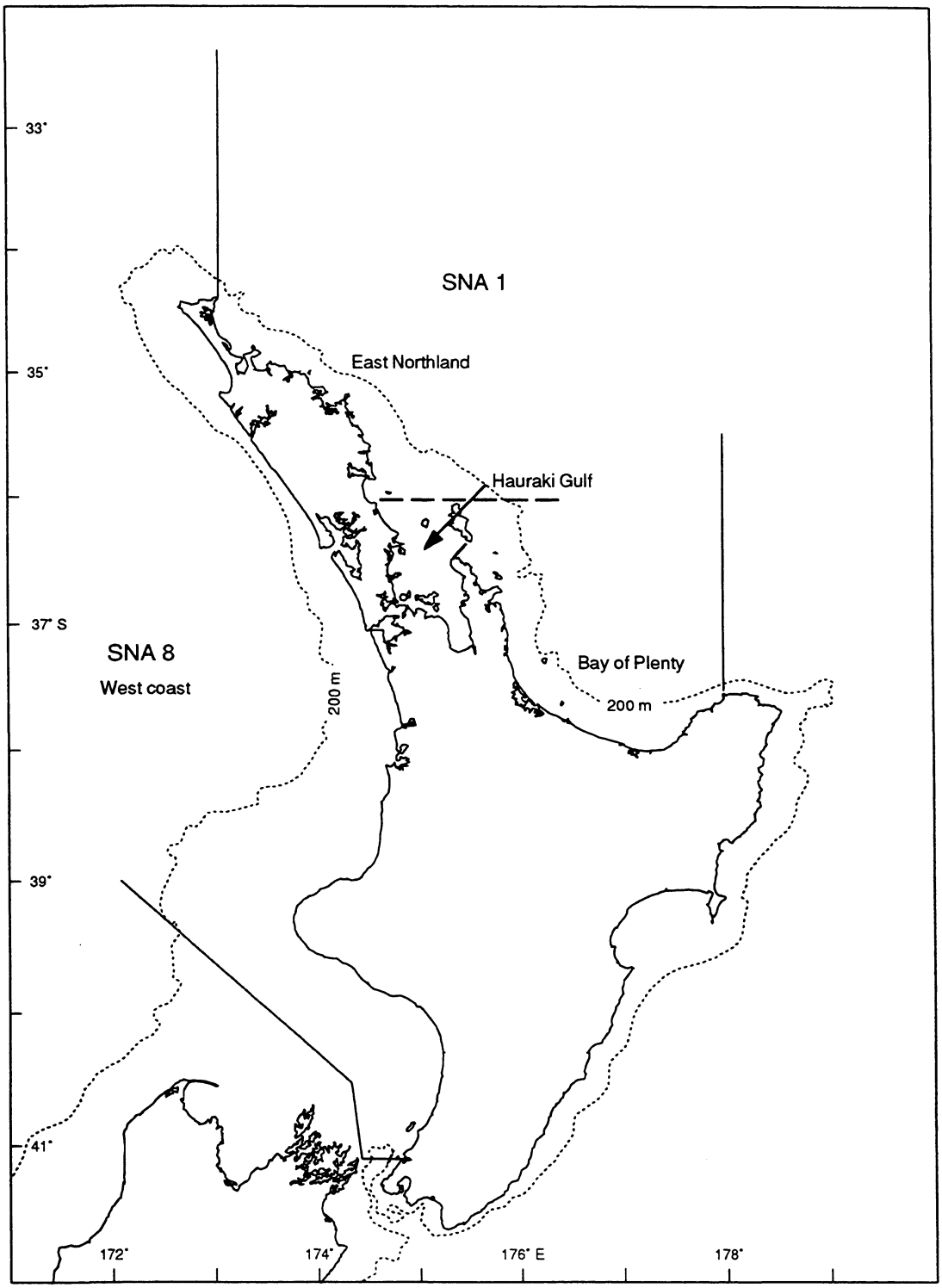

Figure 1: The quota management areas for the west and east coast snapper stocks (SNA 8 and SNA 1 respectively) and the range of the three SNA 1 substocks; east Northland, Hauraki Gulf, and Bay of Plenty.

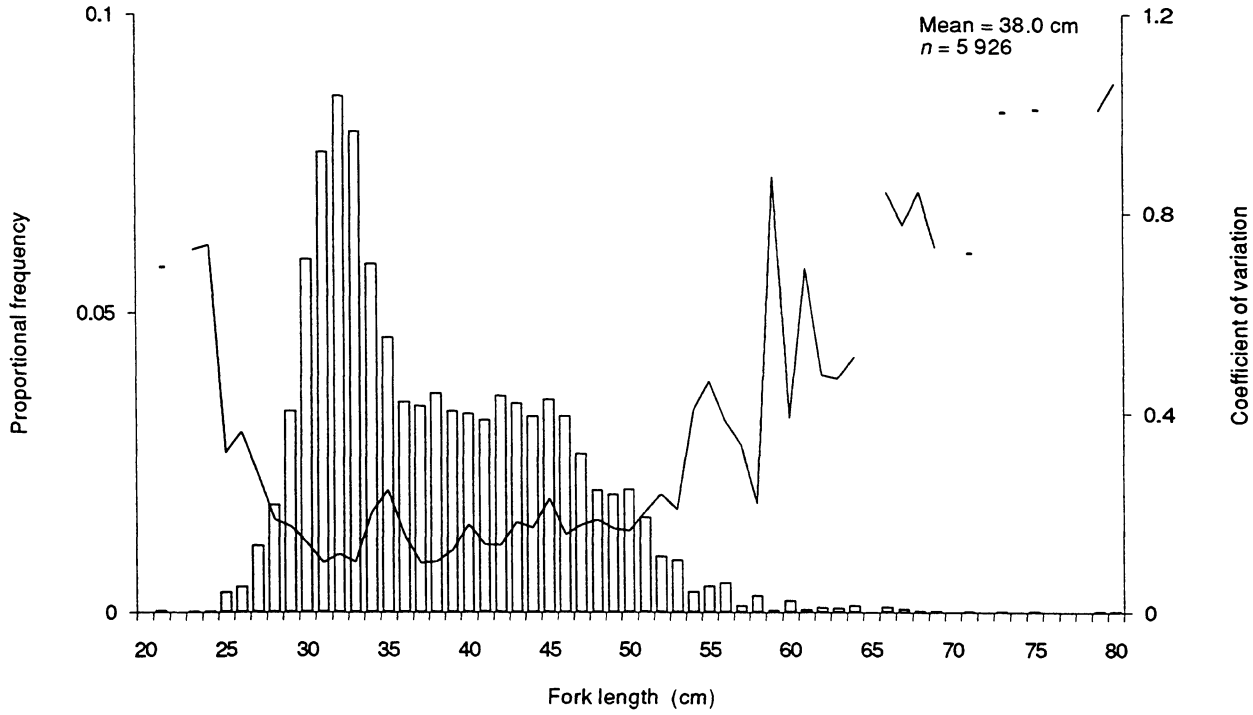

Figure 2: Proportion at length distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the west coast single trawl fishery in 1994–95 (*n* denotes length sample size).

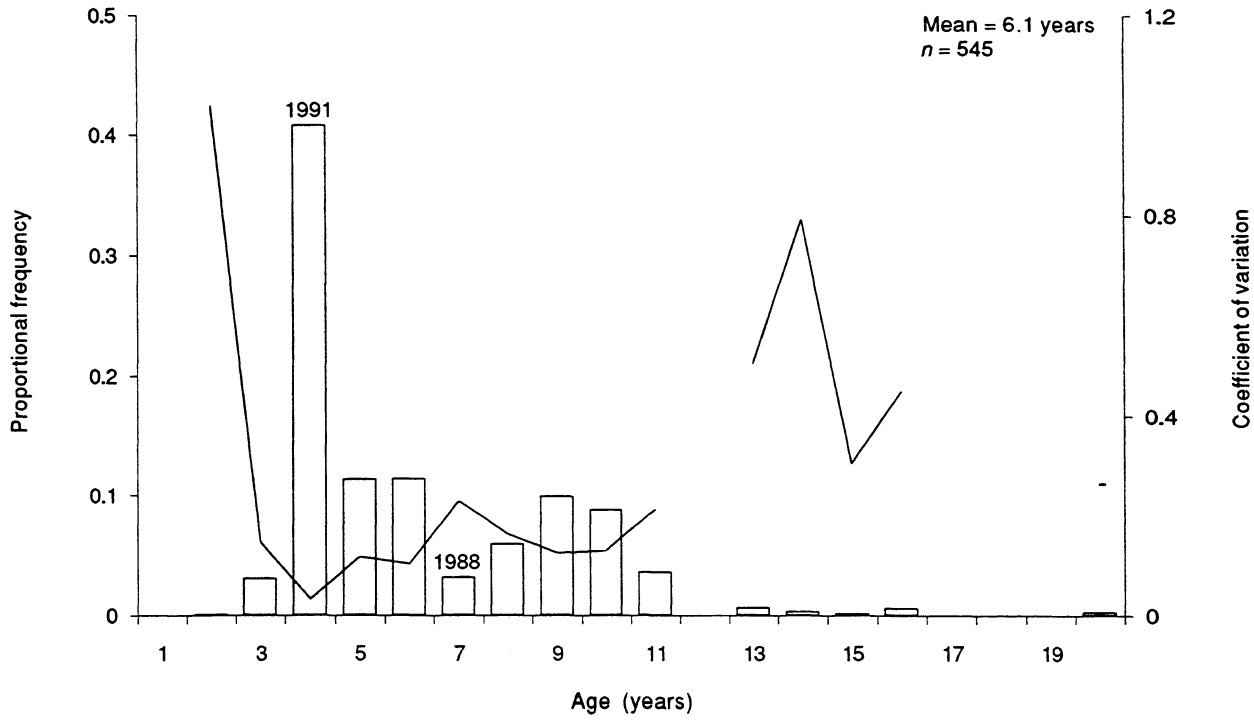

Figure 3: Proportion at age distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the west coast single trawl fishery in 1994–95 (*n* denotes otolith sample size).

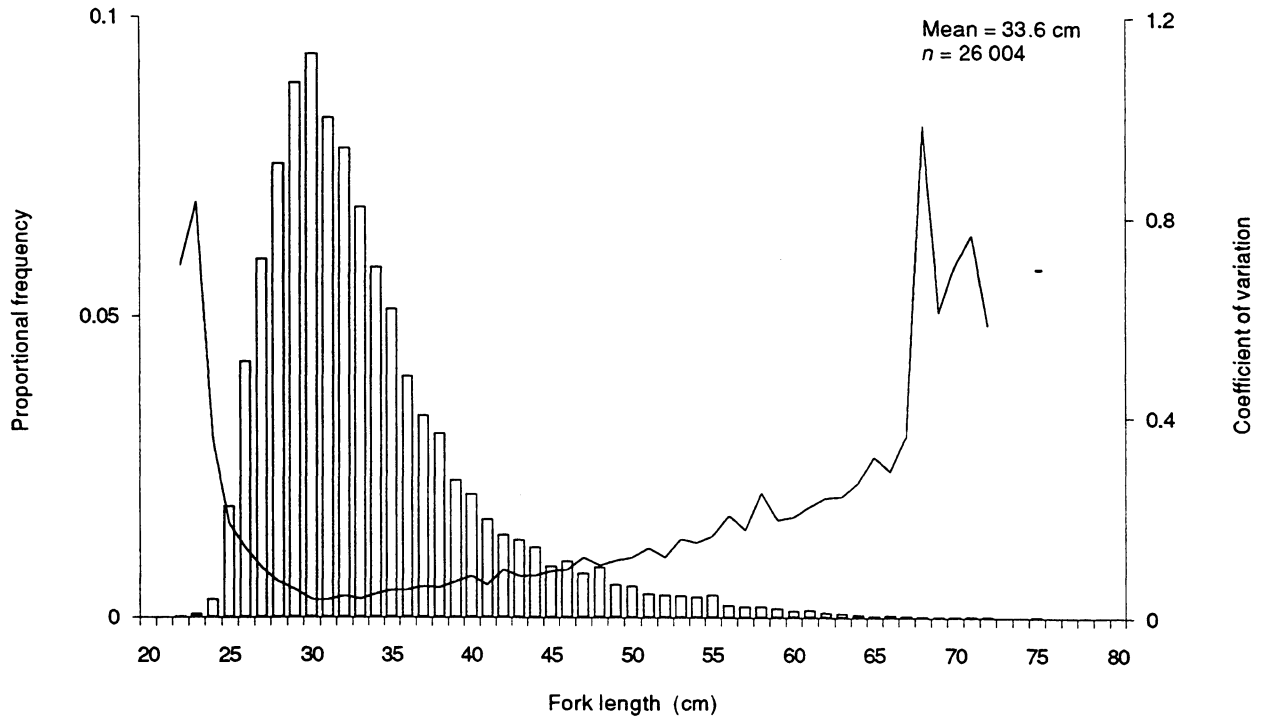

Figure 4: Proportion at length distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the Hauraki Gulf longline fishery in 1994–95 (*n* denotes length sample size).

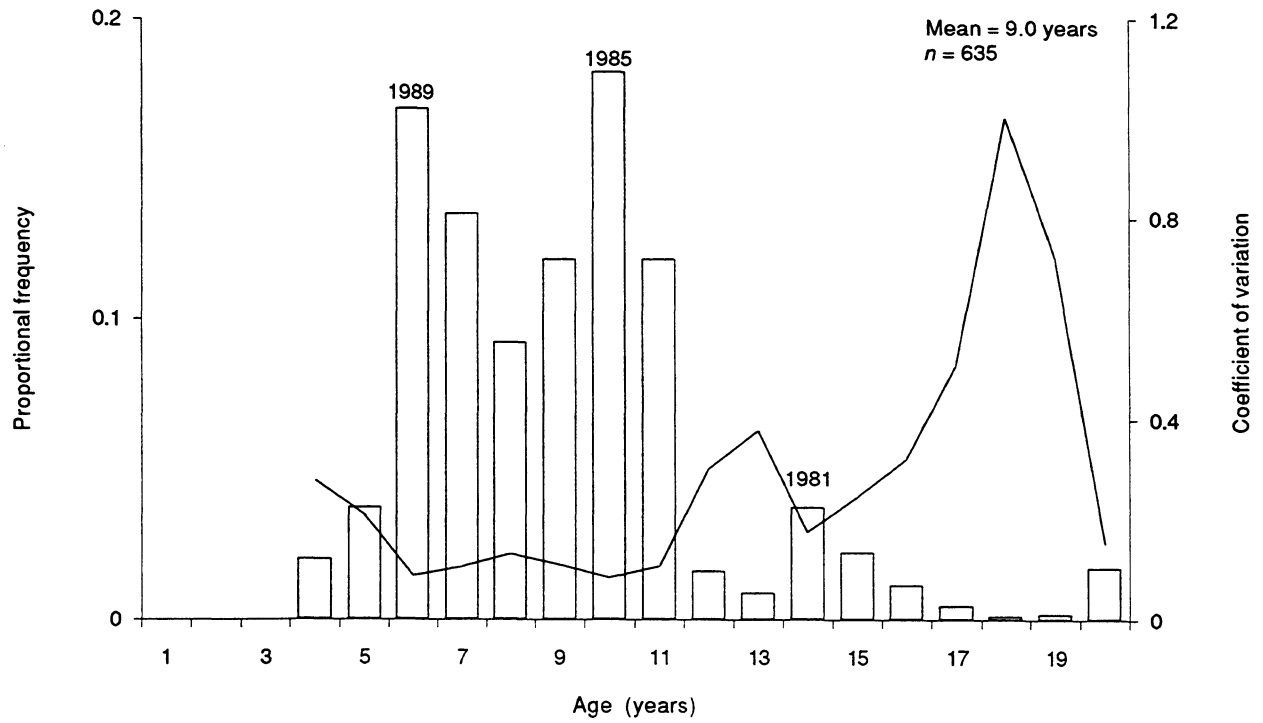

Figure 5: Proportion at age distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the Hauraki Gulf longline fishery in 1994–95 (*n* denotes otolith sample size).

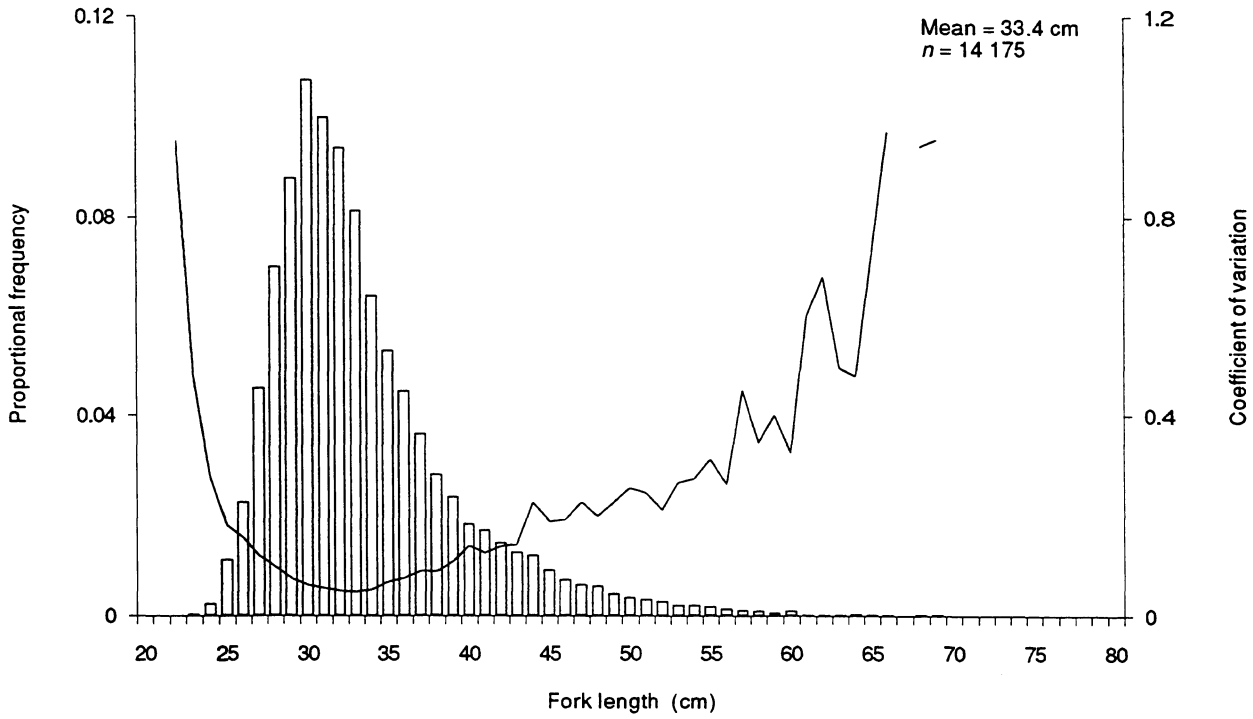

Figure 6: Proportion at length distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the Hauraki Gulf Danish seine fishery in 1994–95 (*n* denotes length sample size).

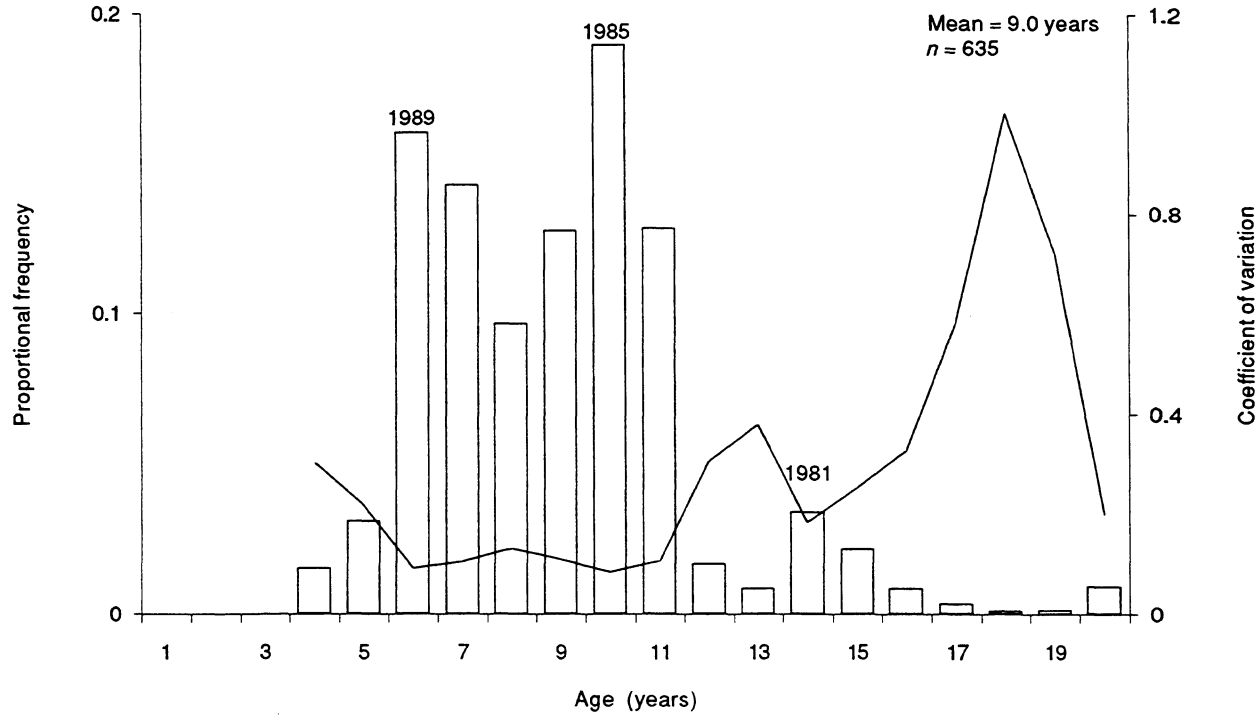

Figure 7: Proportion at age distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the Hauraki Gulf Danish seine fishery in 1994–95 (*n* denotes otolith sample size).

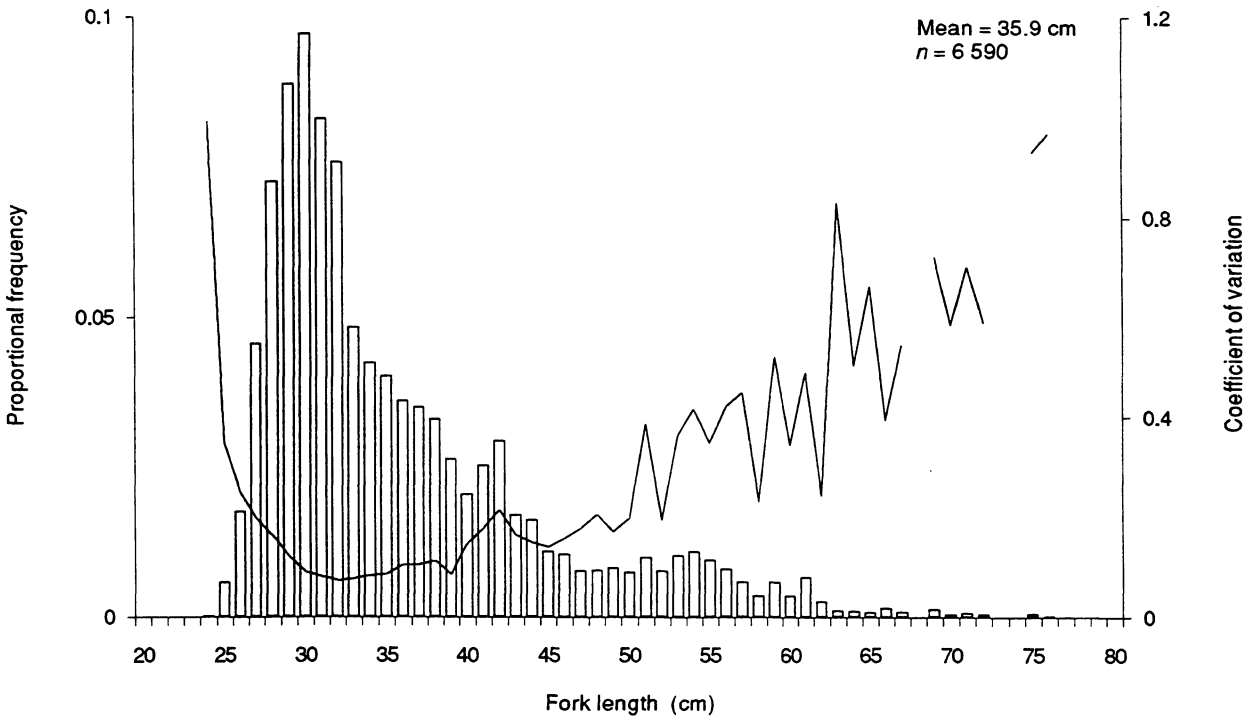

Figure 8: Proportion at length distribution (histogram) and *c.v.s* (solid line) determined from snapper landings sampled from the Bay of Plenty longline fishery in 1994–95 (*n* denotes length sample size).

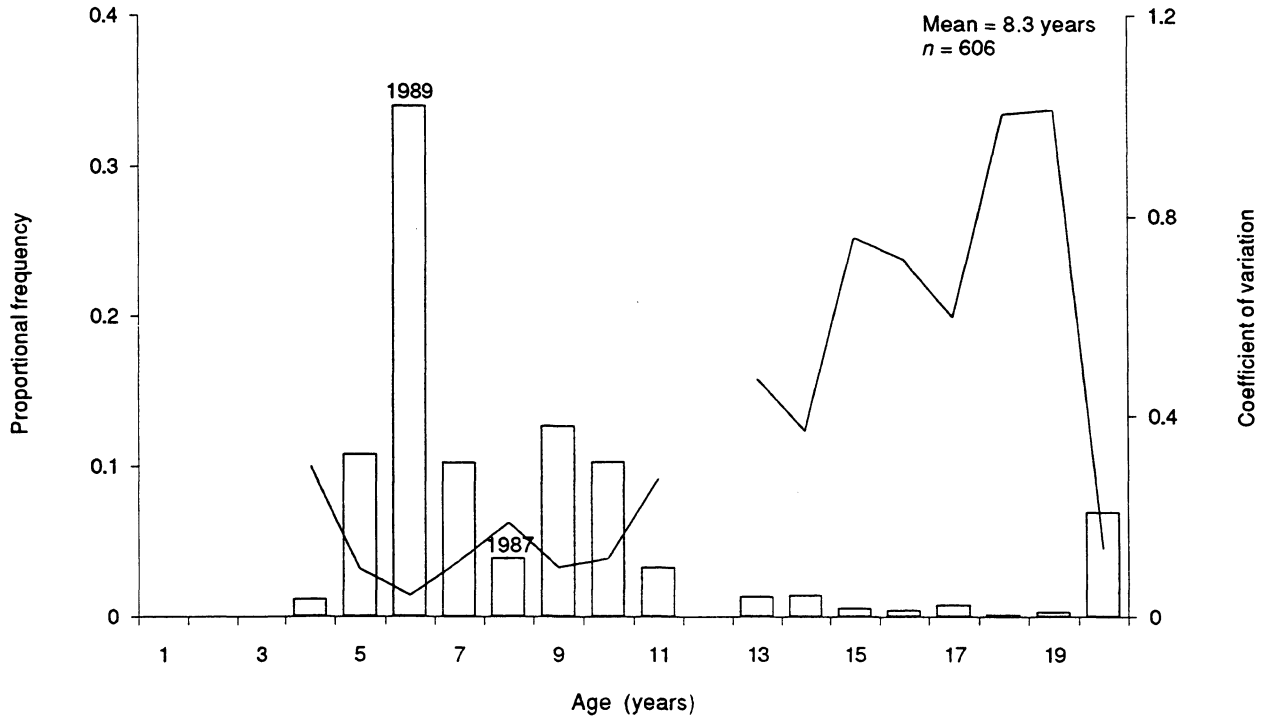

Figure 9: Proportion at age distribution (histogram) and *c.v.s* (solid line) determined from snapper landings sampled from the Bay of Plenty longline fishery in 1994–95 (*n* denotes otolith sample size).

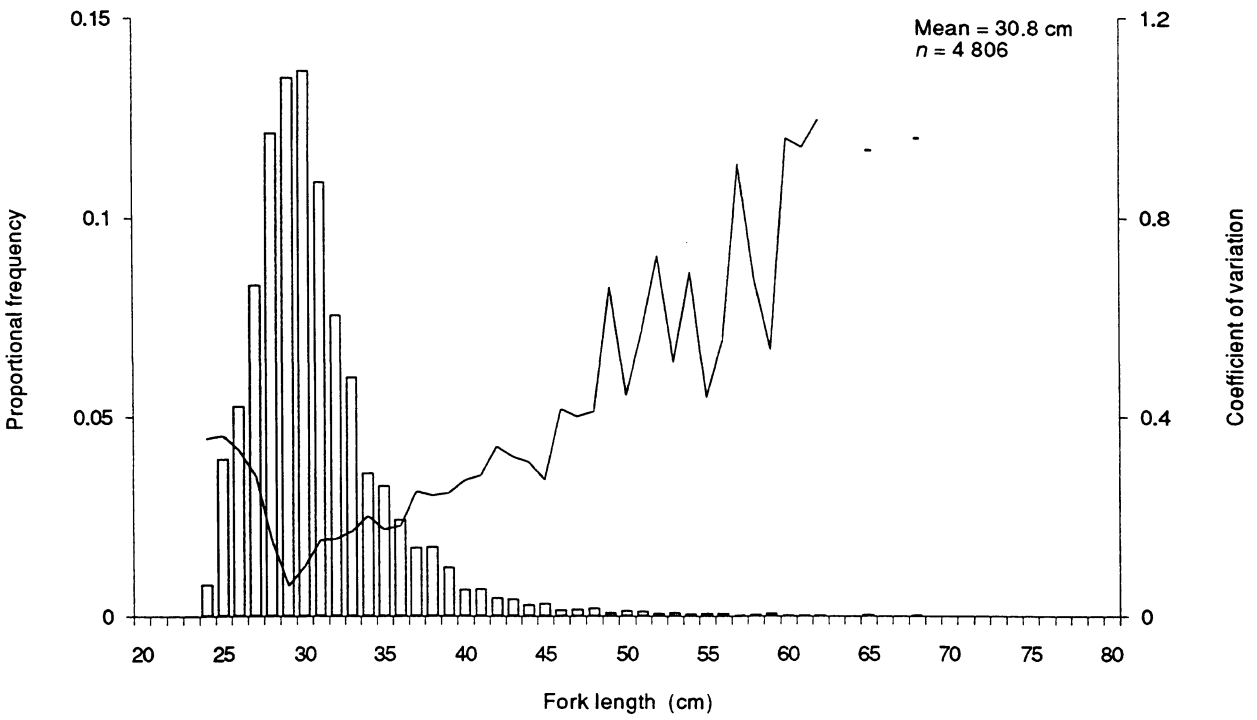

Figure 10: Proportion at length distribution (histogram) and *c.v.s* (solid line) determined from snapper landings sampled from the Bay of Plenty Danish seine fishery in 1994–95 (*n* denotes length sample size).

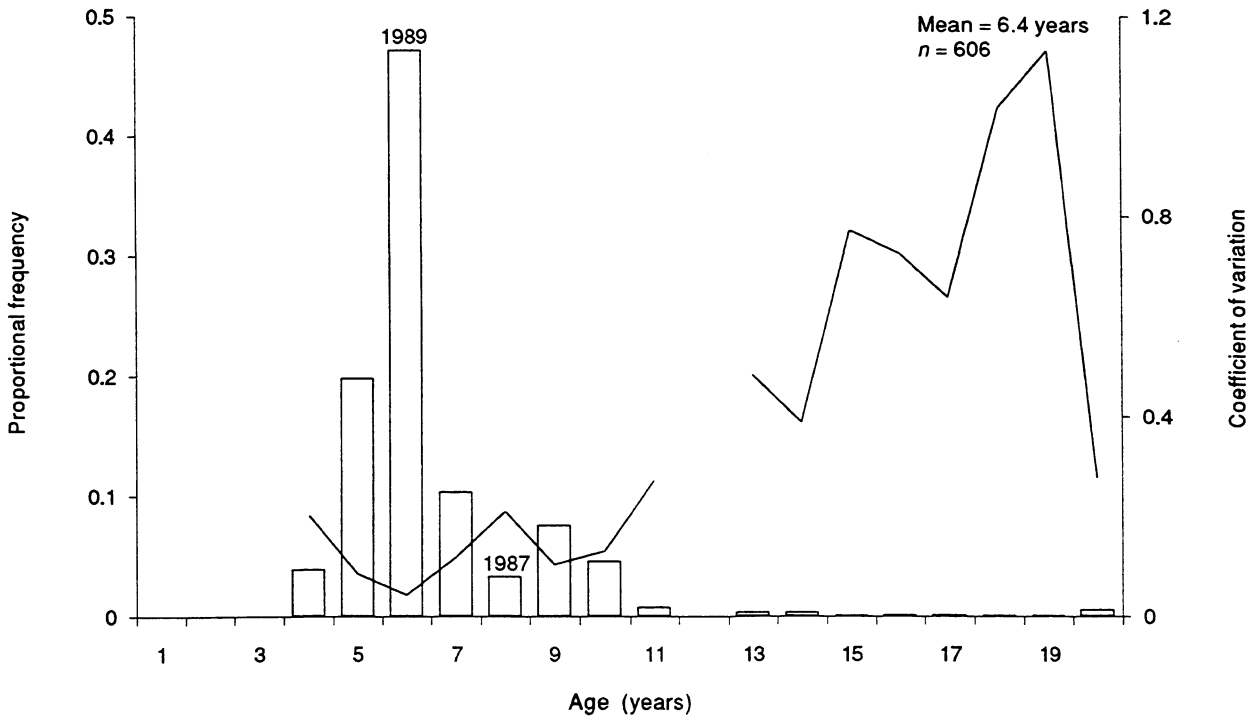

Figure 11: Proportion at age distribution (histogram) and *c.v.s* (solid line) determined from snapper landings sampled from the Bay of Plenty Danish seine fishery in 1994–95 (*n* denotes otolith sample size).

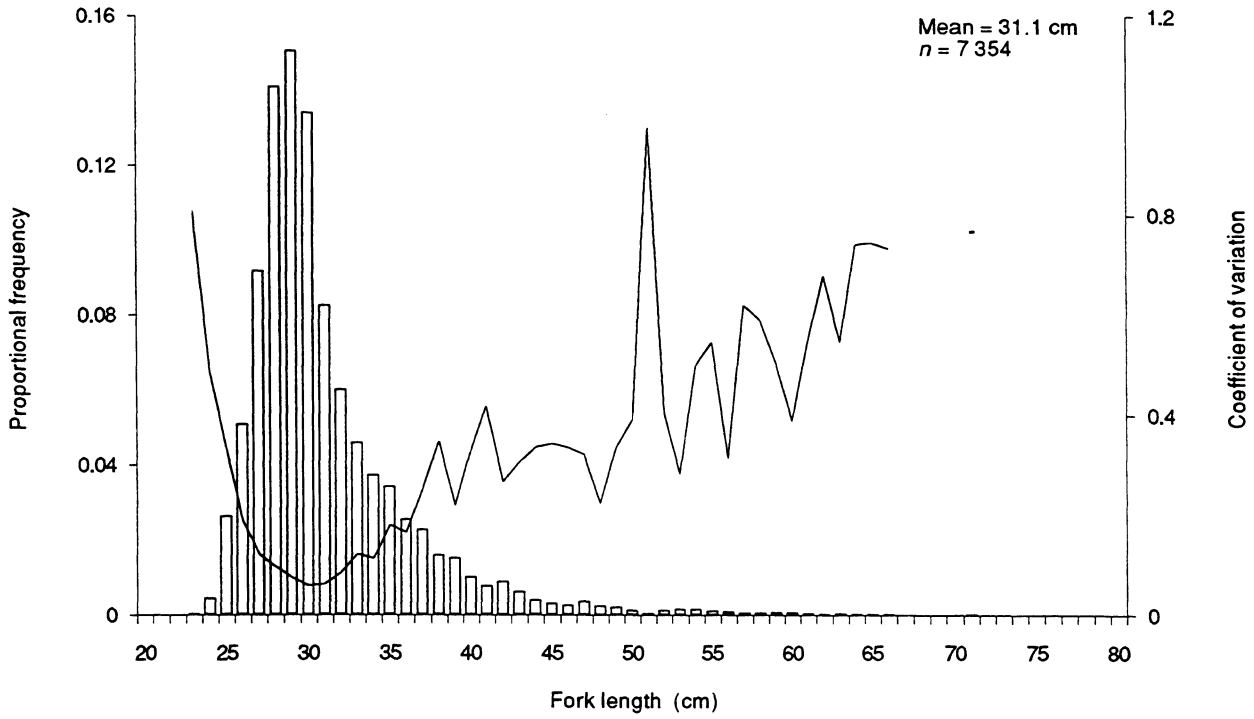

Figure 12: Proportion at length distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the Bay of Plenty single trawl fishery in 1994–95 (*n* denotes length sample size).

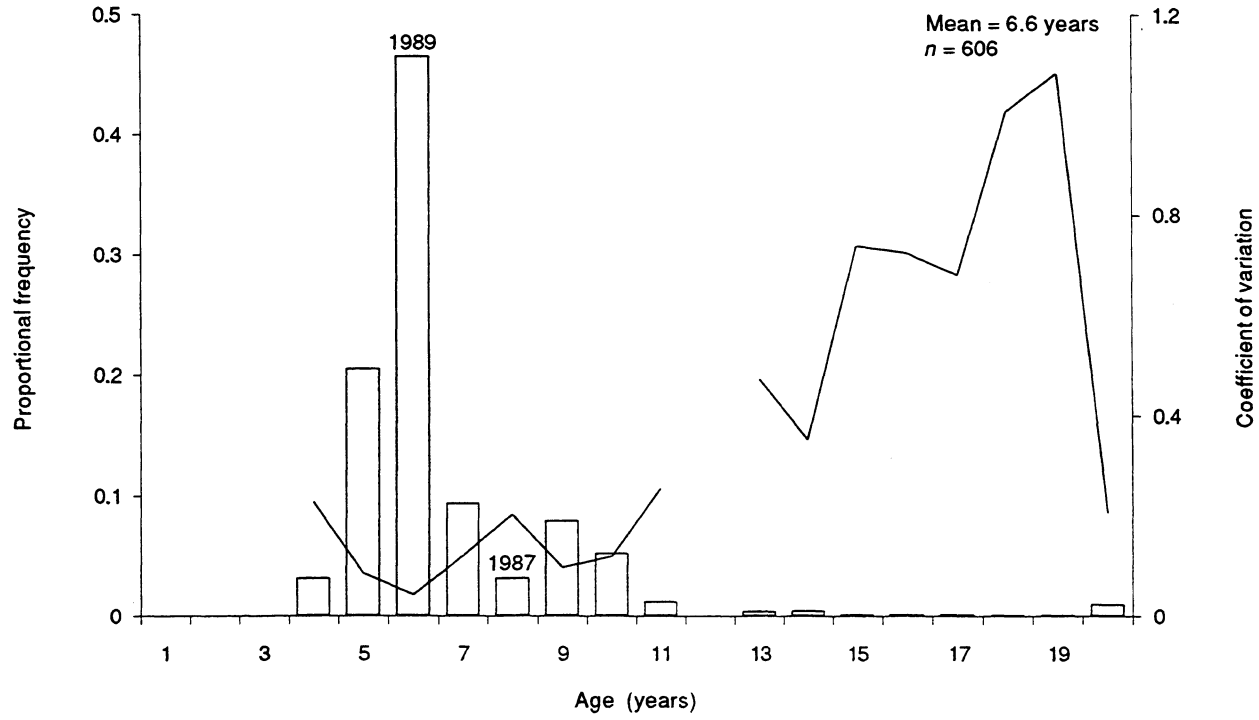

Figure 13: Proportion at age distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the Bay of Plenty single trawl fishery in 1994–95 (*n* denotes otolith sample size).

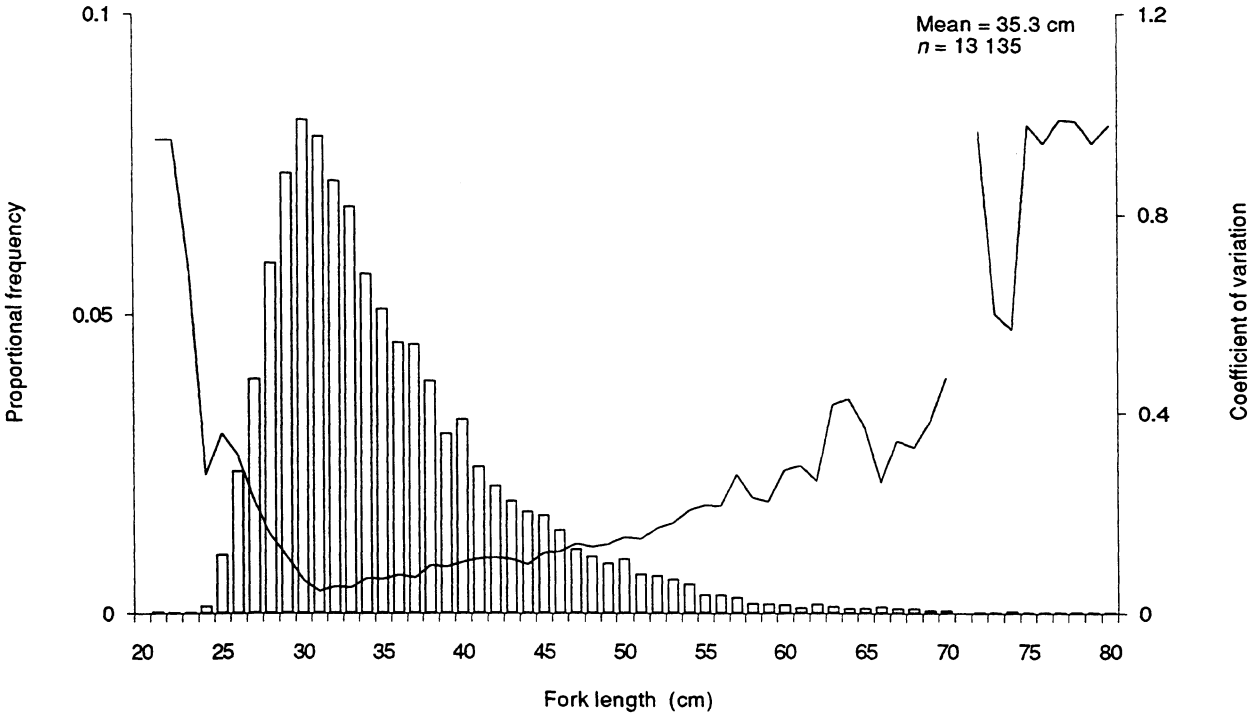

Figure 14: Proportion at length distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the east Northland fishery in 1994–95 (*n* denotes length sample size).

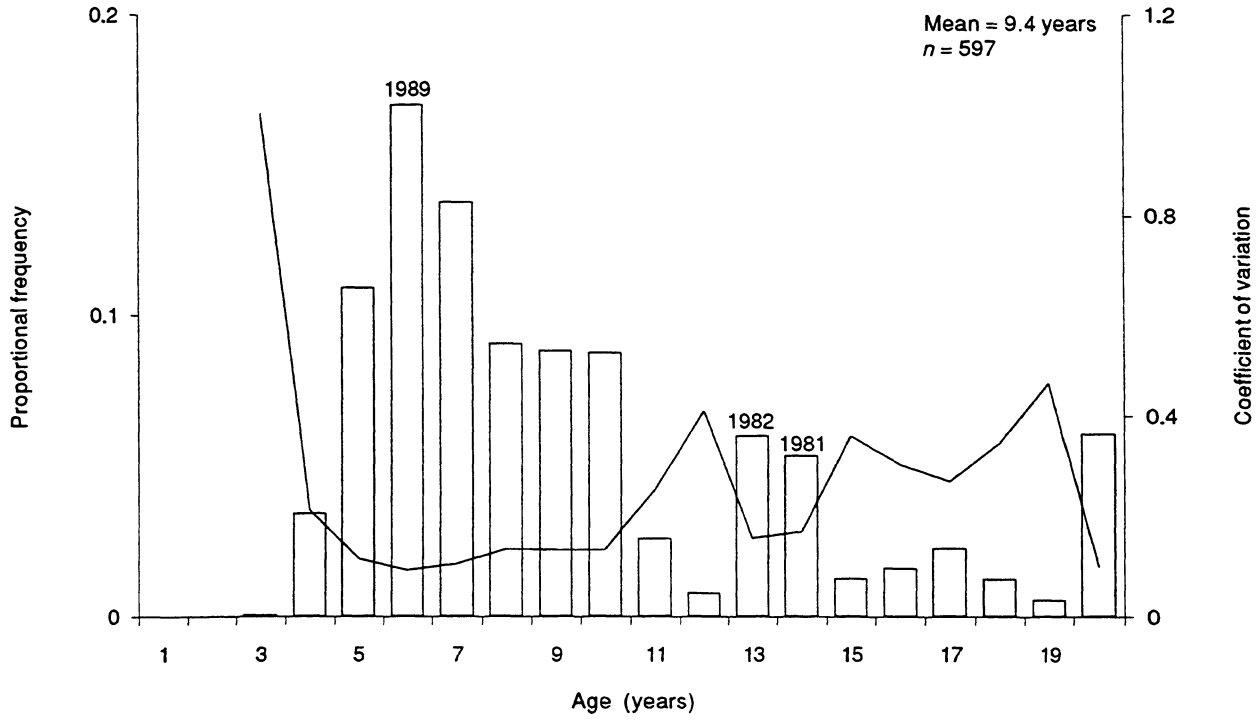

Figure 15: Proportion at age distribution (histogram) and *c.v.*s (solid line) determined from snapper landings sampled from the east Northland longline fishery in 1994–95 (*n* denotes otolith sample size).

Appendix 1: Estimated seasonal proportion at length and c.v.s for snapper fisheries in the AFMA from autumn 1994 to summer 1994–95.

P.i. = proportion of fish in length class. *Nt* = total number of fish caught.
c.v. = coefficient of variation. *n* = total number of fish sampled.

Estimates of the proportion at length of snapper from the west coast single trawl fishery in spring 1994.

Length	Single trawl	
	Spring	
(cm)	*P.i.*	*c.v.*
20	0.0000	0.00
21	0.0002	0.69
22	0.0000	0.00
23	0.0002	0.73
24	0.0001	0.74
25	0.0033	0.32
26	0.0043	0.36
27	0.0112	0.28
28	0.0180	0.19
29	0.0337	0.17
30	0.0589	0.14
31	0.0768	0.10
32	0.0864	0.12
33	0.0803	0.10
34	0.0581	0.20
35	0.0459	0.25
36	0.0352	0.15
37	0.0345	0.10
38	0.0366	0.10
39	0.0336	0.13
40	0.0333	0.18
41	0.0322	0.14
42	0.0362	0.14
43	0.0349	0.18
44	0.0328	0.17
45	0.0356	0.23
46	0.0328	0.16
47	0.0265	0.18
48	0.0205	0.19
49	0.0197	0.17
50	0.0206	0.16
51	0.0159	0.20
52	0.0093	0.24
53	0.0088	0.21
54	0.0034	0.41
55	0.0043	0.46
56	0.0049	0.38
57	0.0011	0.34
58	0.0028	0.22
59	0.0003	0.87
60	0.0019	0.39
61	0.0004	0.69
62	0.0008	0.48
63	0.0007	0.47
64	0.0010	0.51
65	0.0000	0.00
66	0.0008	0.84
67	0.0005	0.78
68	0.0003	0.84
69	0.0002	0.73
70	0.0000	0.00
71	0.0001	0.72
72	0.0000	0.00
73	0.0001	1.00
74	0.0000	0.00
75	0.0000	0.00
76	0.0000	0.00
77	0.0000	0.00
78	0.0000	0.00
79	0.0000	0.00
80	0.0001	1.06
Nt	206 837	
n	5 926	

Appendix 1 – continued:
Estimates of the proportion at length of snapper from the Hauraki Gulf longline fishery from autumn 1994 to summer 1994–95.

									Longline	
Length	Autumn		Winter		Spring		Summer		Spr-sum	
(cm)	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*
20	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
21	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
22	0.0001	0.71	0.0000	0.00	0.0003	0.69	0.0000	0.00	0.0002	0.70
23	0.0028	0.36	0.0001	0.94	0.0008	0.87	0.0001	0.98	0.0005	0.83
24	0.0174	0.23	0.0050	0.35	0.0035	0.44	0.0022	0.59	0.0030	0.35
25	0.0491	0.13	0.0175	0.22	0.0191	0.23	0.0175	0.33	0.0185	0.19
26	0.0847	0.12	0.0556	0.21	0.0456	0.16	0.0372	0.26	0.0424	0.14
27	0.0975	0.09	0.0736	0.16	0.0681	0.10	0.0458	0.24	0.0596	0.10
28	0.0986	0.07	0.0825	0.11	0.0877	0.07	0.0559	0.20	0.0756	0.07
29	0.0868	0.05	0.0851	0.09	0.1029	0.06	0.0664	0.11	0.0891	0.06
30	0.0866	0.04	0.0865	0.07	0.1039	0.04	0.0773	0.08	0.0939	0.04
31	0.0765	0.04	0.0796	0.08	0.0888	0.05	0.0746	0.05	0.0834	0.04
32	0.0643	0.07	0.0808	0.05	0.0794	0.06	0.0763	0.07	0.0782	0.04
33	0.0557	0.07	0.0660	0.07	0.0674	0.05	0.0698	0.06	0.0683	0.04
34	0.0448	0.08	0.0517	0.11	0.0582	0.05	0.0584	0.09	0.0583	0.05
35	0.0396	0.09	0.0514	0.08	0.0490	0.07	0.0550	0.08	0.0512	0.06
36	0.0335	0.10	0.0359	0.11	0.0343	0.07	0.0494	0.08	0.0401	0.05
37	0.0256	0.10	0.0354	0.12	0.0305	0.08	0.0385	0.09	0.0335	0.06
38	0.0202	0.09	0.0255	0.14	0.0259	0.08	0.0383	0.09	0.0306	0.06
39	0.0167	0.10	0.0214	0.16	0.0187	0.09	0.0296	0.10	0.0228	0.07
40	0.0163	0.11	0.0183	0.15	0.0160	0.11	0.0278	0.11	0.0205	0.08
41	0.0117	0.13	0.0147	0.18	0.0130	0.10	0.0216	0.08	0.0163	0.07
42	0.0113	0.09	0.0169	0.20	0.0104	0.12	0.0192	0.15	0.0137	0.10
43	0.0084	0.12	0.0128	0.20	0.0115	0.10	0.0152	0.15	0.0129	0.08
44	0.0065	0.15	0.0120	0.19	0.0092	0.12	0.0159	0.13	0.0118	0.08
45	0.0072	0.13	0.0108	0.21	0.0060	0.14	0.0126	0.10	0.0085	0.09
46	0.0052	0.14	0.0053	0.22	0.0076	0.13	0.0122	0.15	0.0093	0.10
47	0.0038	0.15	0.0060	0.16	0.0064	0.16	0.0090	0.19	0.0074	0.12
48	0.0042	0.21	0.0060	0.23	0.0072	0.14	0.0102	0.15	0.0083	0.10
49	0.0030	0.17	0.0057	0.26	0.0040	0.17	0.0078	0.16	0.0054	0.11
50	0.0031	0.21	0.0041	0.32	0.0038	0.19	0.0076	0.15	0.0053	0.12
51	0.0029	0.20	0.0043	0.27	0.0026	0.18	0.0063	0.21	0.0040	0.14
52	0.0021	0.24	0.0031	0.26	0.0027	0.20	0.0056	0.13	0.0038	0.12
53	0.0013	0.31	0.0034	0.35	0.0023	0.25	0.0059	0.20	0.0037	0.16
54	0.0024	0.22	0.0022	0.36	0.0024	0.22	0.0051	0.21	0.0035	0.15
55	0.0016	0.24	0.0042	0.30	0.0025	0.30	0.0058	0.19	0.0037	0.16
56	0.0018	0.26	0.0022	0.44	0.0016	0.34	0.0027	0.25	0.0020	0.20
57	0.0010	0.28	0.0019	0.36	0.0016	0.25	0.0023	0.25	0.0018	0.18
58	0.0008	0.33	0.0025	0.29	0.0015	0.42	0.0024	0.28	0.0019	0.25
59	0.0009	0.37	0.0013	0.47	0.0009	0.34	0.0024	0.24	0.0015	0.19
60	0.0006	0.42	0.0018	0.33	0.0006	0.34	0.0021	0.25	0.0011	0.20
61	0.0005	0.48	0.0013	0.37	0.0006	0.33	0.0022	0.29	0.0012	0.22
62	0.0005	0.37	0.0006	0.52	0.0004	0.37	0.0014	0.31	0.0008	0.24
63	0.0004	0.54	0.0015	0.40	0.0002	0.44	0.0013	0.27	0.0006	0.24
64	0.0005	0.57	0.0009	0.43	0.0001	0.61	0.0011	0.30	0.0005	0.27
65	0.0006	0.41	0.0011	0.41	0.0001	0.53	0.0005	0.41	0.0003	0.32
66	0.0002	0.50	0.0005	0.60	0.0001	0.61	0.0007	0.33	0.0004	0.29
67	0.0001	0.99	0.0005	0.60	0.0001	0.61	0.0005	0.43	0.0003	0.36
68	0.0002	0.52	0.0003	1.01	0.0000	0.00	0.0001	0.99	0.0000	0.00
69	0.0003	0.51	0.0000	0.00	0.0002	0.61	0.0000	0.00	0.0001	0.61
70	0.0002	0.58	0.0000	0.00	0.0001	0.71	0.0000	0.00	0.0000	0.00
71	0.0000	0.00	0.0000	0.00	0.0001	0.99	0.0000	0.00	0.0001	0.77
72	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0001	0.71	0.0001	0.58
73	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
74	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
75	0.0000	0.00	0.0001	1.01	0.0001	0.99	0.0001	0.97	0.0001	0.70
76	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
77	0.0000	0.00	0.0002	0.99	0.0000	0.00	0.0000	0.00	0.0000	0.00
78	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
79	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
80	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Nt	345 428		187 373		529 738		399 786		939 608	
n	13 416		5 131		14 451		11 553		26 004	

Appendix 1 – continued:
Estimates of the proportion at length of snapper from the Hauraki Gulf Danish seine fishery from autumn 1994 to summer 1994–95.

									Danish seine	
Length	Autumn		Winter		Spring		Summer		Spr-sum	
(cm)	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*
20	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
21	0.0003	0.95	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
22	0.0003	0.81	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
23	0.0050	0.47	0.0050	0.93	0.0001	1.02	0.0004	0.52	0.0002	0.48
24	0.0142	0.26	0.0244	0.84	0.0014	0.30	0.0030	0.35	0.0023	0.28
25	0.0412	0.21	0.0326	0.85	0.0118	0.30	0.0107	0.22	0.0111	0.18
26	0.0641	0.16	0.0484	0.63	0.0248	0.27	0.0209	0.18	0.0226	0.16
27	0.0935	0.13	0.0613	0.35	0.0519	0.17	0.0403	0.18	0.0454	0.12
28	0.0879	0.11	0.0984	0.38	0.0776	0.16	0.0638	0.11	0.0699	0.10
29	0.0869	0.07	0.1023	0.36	0.0961	0.12	0.0813	0.10	0.0878	0.07
30	0.0854	0.06	0.1196	0.28	0.1196	0.09	0.0979	0.08	0.1075	0.06
31	0.0900	0.07	0.1073	0.18	0.1081	0.06	0.0937	0.09	0.1000	0.06
32	0.0779	0.09	0.0924	0.15	0.0955	0.05	0.0928	0.08	0.0940	0.05
33	0.0727	0.11	0.0649	0.20	0.0847	0.05	0.0784	0.08	0.0812	0.05
34	0.0642	0.11	0.0560	0.42	0.0667	0.08	0.0619	0.06	0.0640	0.05
35	0.0470	0.16	0.0537	0.43	0.0519	0.14	0.0537	0.06	0.0529	0.07
36	0.0364	0.11	0.0256	0.42	0.0412	0.13	0.0474	0.09	0.0447	0.08
37	0.0257	0.16	0.0260	0.49	0.0330	0.20	0.0386	0.07	0.0361	0.09
38	0.0213	0.15	0.0194	0.61	0.0250	0.15	0.0305	0.11	0.0281	0.09
39	0.0145	0.15	0.0131	0.77	0.0190	0.15	0.0275	0.15	0.0237	0.11
40	0.0133	0.19	0.0135	0.73	0.0171	0.26	0.0192	0.16	0.0183	0.14
41	0.0112	0.19	0.0062	0.54	0.0115	0.23	0.0213	0.14	0.0170	0.13
42	0.0058	0.28	0.0048	0.68	0.0106	0.23	0.0175	0.17	0.0144	0.14
43	0.0064	0.29	0.0041	0.50	0.0103	0.22	0.0145	0.18	0.0126	0.14
44	0.0067	0.30	0.0003	1.20	0.0106	0.32	0.0131	0.32	0.0120	0.23
45	0.0048	0.31	0.0030	0.82	0.0067	0.32	0.0110	0.23	0.0091	0.19
46	0.0036	0.37	0.0035	0.72	0.0041	0.26	0.0095	0.24	0.0071	0.19
47	0.0033	0.32	0.0013	0.85	0.0042	0.28	0.0077	0.30	0.0061	0.23
48	0.0021	0.49	0.0042	0.75	0.0037	0.32	0.0075	0.24	0.0058	0.20
49	0.0011	0.40	0.0000	0.00	0.0021	0.36	0.0062	0.26	0.0044	0.23
50	0.0019	0.41	0.0021	0.78	0.0018	0.46	0.0051	0.29	0.0037	0.25
51	0.0013	0.52	0.0009	0.91	0.0015	0.40	0.0046	0.28	0.0032	0.24
52	0.0021	0.51	0.0009	0.91	0.0017	0.39	0.0038	0.24	0.0029	0.21
53	0.0013	0.56	0.0004	1.12	0.0009	0.43	0.0031	0.30	0.0021	0.26
54	0.0019	0.52	0.0006	0.85	0.0011	0.43	0.0029	0.33	0.0021	0.27
55	0.0010	0.45	0.0009	0.91	0.0008	0.45	0.0027	0.37	0.0018	0.31
56	0.0016	0.57	0.0000	0.00	0.0009	0.47	0.0016	0.32	0.0013	0.26
57	0.0002	0.95	0.0009	0.91	0.0002	1.00	0.0016	0.48	0.0010	0.45
58	0.0005	0.86	0.0009	0.91	0.0005	0.49	0.0012	0.43	0.0009	0.35
59	0.0001	0.98	0.0003	1.20	0.0005	0.57	0.0005	0.57	0.0005	0.40
60	0.0003	0.77	0.0000	0.00	0.0006	0.44	0.0011	0.43	0.0009	0.33
61	0.0005	0.58	0.0009	0.91	0.0001	1.01	0.0003	0.74	0.0002	0.60
62	0.0001	0.98	0.0000	0.00	0.0000	0.00	0.0003	0.67	0.0001	0.68
63	0.0000	0.00	0.0000	0.00	0.0001	1.02	0.0003	0.55	0.0002	0.49
64	0.0000	0.00	0.0000	0.00	0.0002	0.97	0.0004	0.56	0.0003	0.48
65	0.0002	0.95	0.0000	0.00	0.0000	0.00	0.0003	0.72	0.0001	0.72
66	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0001	0.98	0.0001	0.97
67	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
68	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0001	0.92	0.0000	0.00
69	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0001	0.95	0.0001	0.96
70	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
71	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
72	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
73	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
74	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
75	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
76	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
77	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
78	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
79	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
80	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Nt	287 030		35 662		184 594		233 155		417 661	
n	6 976		1 796		5 818		8 357		14 175	

Appendix 1 – continued:
Estimates of the proportion at length of snapper from the Hauraki Gulf single trawl fishery in autumn 1994.

Length (cm)	Single trawl Autumn *P.i.*	*c.v.*
20	0.0000	0.00
21	0.0000	0.00
22	0.0000	0.00
23	0.0007	0.79
24	0.0061	0.39
25	0.0337	0.30
26	0.0893	0.13
27	0.1292	0.13
28	0.1247	0.11
29	0.1018	0.12
30	0.0915	0.08
31	0.0850	0.07
32	0.0707	0.10
33	0.0517	0.19
34	0.0428	0.11
35	0.0431	0.14
36	0.0269	0.21
37	0.0163	0.26
38	0.0153	0.17
39	0.0094	0.10
40	0.0079	0.32
41	0.0062	0.23
42	0.0072	0.19
43	0.0059	0.38
44	0.0036	0.39
45	0.0038	0.50
46	0.0029	0.32
47	0.0026	0.26
48	0.0015	0.31
49	0.0020	0.26
50	0.0024	0.43
51	0.0019	0.84
52	0.0016	0.47
53	0.0017	0.63
54	0.0017	0.66
55	0.0013	0.81
56	0.0019	0.56
57	0.0005	0.64
58	0.0008	0.59
59	0.0010	0.51
60	0.0003	0.79
61	0.0003	0.79
62	0.0002	1.00
63	0.0006	0.71
64	0.0012	0.49
65	0.0000	0.00
66	0.0002	1.04
67	0.0000	0.00
68	0.0003	0.94
69	0.0000	0.00
70	0.0000	0.00
71	0.0000	0.00
72	0.0002	0.96
73	0.0000	0.00
74	0.0000	0.00
75	0.0000	0.00
76	0.0000	0.00
77	0.0000	0.00
78	0.0000	0.00
79	0.0000	0.00
80	0.0000	0.00
Nt	163 803	
n	3 822	

Appendix 1 – continued:
Estimates of the proportion at length of snapper from the Bay of Plenty longline fishery from autumn 1994 to summer 1994–95.

Length	Autumn		Winter		Spring		Summer		Longline Spr-sum	
(cm)	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*
20	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
21	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
22	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
23	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
24	0.0011	0.45	0.0013	0.41	0.0003	1.01	0.0000	0.00	0.0001	0.99
25	0.0116	0.24	0.0105	0.34	0.0099	0.34	0.0041	0.55	0.0058	0.35
26	0.0479	0.16	0.0364	0.21	0.0312	0.18	0.0120	0.39	0.0175	0.25
27	0.1021	0.12	0.0764	0.18	0.0616	0.20	0.0391	0.27	0.0455	0.20
28	0.1555	0.09	0.1141	0.10	0.1138	0.10	0.0562	0.22	0.0726	0.16
29	0.1522	0.07	0.1245	0.06	0.1270	0.07	0.0735	0.16	0.0887	0.12
30	0.1358	0.06	0.1282	0.08	0.1135	0.09	0.0905	0.12	0.0971	0.09
31	0.0898	0.07	0.1037	0.08	0.1018	0.09	0.0756	0.11	0.0830	0.08
32	0.0695	0.08	0.0809	0.07	0.0821	0.12	0.0733	0.09	0.0758	0.07
33	0.0562	0.13	0.0638	0.11	0.0579	0.09	0.0445	0.10	0.0483	0.08
34	0.0423	0.10	0.0574	0.11	0.0497	0.09	0.0395	0.11	0.0424	0.08
35	0.0354	0.13	0.0473	0.12	0.0378	0.12	0.0411	0.11	0.0401	0.09
36	0.0269	0.15	0.0304	0.12	0.0389	0.16	0.0348	0.13	0.0360	0.10
37	0.0185	0.19	0.0226	0.14	0.0304	0.19	0.0367	0.12	0.0349	0.10
38	0.0147	0.17	0.0222	0.15	0.0225	0.30	0.0370	0.10	0.0328	0.11
39	0.0105	0.21	0.0134	0.19	0.0240	0.21	0.0270	0.09	0.0262	0.09
40	0.0068	0.21	0.0119	0.20	0.0147	0.31	0.0226	0.15	0.0203	0.15
41	0.0036	0.27	0.0069	0.22	0.0120	0.21	0.0304	0.17	0.0251	0.18
42	0.0034	0.31	0.0106	0.24	0.0139	0.26	0.0354	0.21	0.0293	0.21
43	0.0036	0.22	0.0057	0.22	0.0072	0.26	0.0208	0.15	0.0169	0.16
44	0.0020	0.32	0.0056	0.26	0.0055	0.24	0.0203	0.14	0.0160	0.15
45	0.0021	0.31	0.0021	0.37	0.0077	0.25	0.0122	0.15	0.0109	0.14
46	0.0013	0.37	0.0040	0.31	0.0039	0.38	0.0130	0.13	0.0104	0.16
47	0.0008	0.58	0.0019	0.30	0.0022	0.42	0.0099	0.17	0.0077	0.18
48	0.0014	0.32	0.0027	0.21	0.0048	0.39	0.0090	0.24	0.0078	0.20
49	0.0005	0.52	0.0024	0.40	0.0025	0.31	0.0105	0.17	0.0082	0.17
50	0.0012	0.44	0.0019	0.31	0.0024	0.49	0.0095	0.20	0.0075	0.20
51	0.0002	0.73	0.0032	0.73	0.0026	0.43	0.0128	0.40	0.0099	0.39
52	0.0001	1.02	0.0009	0.56	0.0032	0.64	0.0094	0.17	0.0077	0.19
53	0.0003	0.60	0.0007	0.63	0.0023	0.39	0.0134	0.36	0.0102	0.36
54	0.0006	0.52	0.0010	0.56	0.0032	0.35	0.0140	0.43	0.0109	0.42
55	0.0001	1.00	0.0007	0.47	0.0011	0.52	0.0129	0.32	0.0095	0.35
56	0.0004	0.79	0.0008	0.67	0.0011	0.76	0.0107	0.40	0.0080	0.42
57	0.0002	0.72	0.0009	0.61	0.0007	0.72	0.0079	0.44	0.0059	0.45
58	0.0001	1.01	0.0002	0.73	0.0005	0.97	0.0047	0.21	0.0035	0.23
59	0.0003	0.72	0.0007	0.59	0.0016	0.47	0.0076	0.55	0.0059	0.52
60	0.0005	0.74	0.0004	0.63	0.0008	0.71	0.0047	0.33	0.0036	0.34
61	0.0003	0.72	0.0004	0.74	0.0008	0.65	0.0089	0.47	0.0066	0.49
62	0.0000	0.00	0.0002	1.00	0.0009	0.69	0.0033	0.22	0.0026	0.24
63	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0016	0.82	0.0011	0.83
64	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0014	0.49	0.0010	0.50
65	0.0000	0.00	0.0004	0.74	0.0004	0.98	0.0009	0.75	0.0007	0.66
66	0.0000	0.00	0.0000	0.00	0.0007	0.92	0.0018	0.41	0.0015	0.39
67	0.0000	0.00	0.0004	0.74	0.0000	0.00	0.0013	0.53	0.0009	0.55
68	0.0000	0.00	0.0001	1.01	0.0000	0.00	0.0000	0.00	0.0000	0.00
69	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0018	0.71	0.0013	0.72
70	0.0001	1.02	0.0000	0.00	0.0000	0.00	0.0006	0.59	0.0004	0.59
71	0.0000	0.00	0.0000	0.00	0.0007	0.92	0.0007	0.91	0.0007	0.70
72	0.0000	0.00	0.0000	0.00	0.0003	1.01	0.0004	0.70	0.0004	0.59
73	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
74	0.0000	0.00	0.0001	1.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
75	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0007	0.91	0.0005	0.93
76	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0002	0.97	0.0001	0.97
77	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
78	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
79	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
80	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Nt	149 386		139 843		71 270		35 294		90 115	
n	5 439		4 843		2 393		4 197		6 590	

Appendix 1 – continued:
Estimates of the proportion at length of snapper from the Bay of Plenty Danish seine fishery from autumn 1994 to summer 1994–95.

									Danish seine	
Length	Autumn		Winter		Spring		Summer		Spr-sum	
(cm)	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*
20	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
21	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
22	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
23	0.0000	0.00	0.0023	0.64	0.0000	0.00	0.0000	0.00	0.0000	0.00
24	0.0000	0.00	0.0070	0.51	0.0111	0.40	0.0049	0.54	0.0079	0.36
25	0.0042	0.62	0.0192	0.17	0.0700	0.28	0.0098	0.53	0.0393	0.36
26	0.0313	0.73	0.0479	0.14	0.0966	0.20	0.0101	0.40	0.0525	0.33
27	0.0664	0.27	0.0828	0.19	0.1360	0.21	0.0322	0.31	0.0831	0.28
28	0.1267	0.21	0.1377	0.13	0.1520	0.19	0.0913	0.11	0.1210	0.15
29	0.1609	0.18	0.1546	0.07	0.1381	0.06	0.1317	0.11	0.1349	0.06
30	0.1648	0.11	0.1480	0.06	0.1045	0.08	0.1675	0.08	0.1366	0.10
31	0.1238	0.08	0.1073	0.11	0.0779	0.24	0.1385	0.12	0.1088	0.15
32	0.0795	0.20	0.0637	0.14	0.0520	0.29	0.0981	0.08	0.0755	0.15
33	0.0713	0.17	0.0513	0.16	0.0413	0.33	0.0776	0.11	0.0598	0.17
34	0.0488	0.17	0.0361	0.13	0.0217	0.50	0.0493	0.08	0.0358	0.20
35	0.0330	0.28	0.0286	0.11	0.0206	0.34	0.0442	0.10	0.0326	0.17
36	0.0208	0.37	0.0251	0.22	0.0179	0.39	0.0302	0.13	0.0242	0.18
37	0.0242	0.23	0.0209	0.18	0.0146	0.50	0.0195	0.25	0.0171	0.25
38	0.0112	0.31	0.0154	0.37	0.0090	0.51	0.0253	0.20	0.0173	0.24
39	0.0091	0.51	0.0106	0.15	0.0068	0.46	0.0172	0.23	0.0121	0.25
40	0.0030	0.72	0.0068	0.22	0.0041	0.30	0.0088	0.35	0.0065	0.27
41	0.0067	0.38	0.0055	0.52	0.0062	0.48	0.0074	0.36	0.0068	0.28
42	0.0039	0.37	0.0058	0.18	0.0042	0.59	0.0047	0.42	0.0045	0.34
43	0.0007	1.19	0.0025	0.42	0.0026	0.67	0.0056	0.34	0.0042	0.32
44	0.0016	0.54	0.0023	0.39	0.0023	0.50	0.0032	0.39	0.0028	0.31
45	0.0016	0.54	0.0018	0.35	0.0035	0.46	0.0028	0.35	0.0031	0.27
46	0.0020	0.32	0.0045	0.34	0.0008	0.74	0.0020	0.48	0.0014	0.41
47	0.0000	0.00	0.0033	0.37	0.0003	1.04	0.0028	0.37	0.0016	0.40
48	0.0000	0.00	0.0009	0.56	0.0015	0.65	0.0023	0.54	0.0019	0.41
49	0.0009	0.80	0.0040	0.37	0.0003	1.04	0.0011	0.79	0.0008	0.66
50	0.0009	0.80	0.0006	0.78	0.0008	0.67	0.0018	0.56	0.0013	0.44
51	0.0000	0.00	0.0012	0.78	0.0000	0.00	0.0023	0.51	0.0012	0.57
52	0.0000	0.00	0.0000	0.00	0.0004	0.95	0.0009	0.93	0.0007	0.72
53	0.0009	0.80	0.0003	0.84	0.0003	1.04	0.0011	0.57	0.0007	0.51
54	0.0000	0.00	0.0007	0.56	0.0004	1.06	0.0006	0.93	0.0005	0.69
55	0.0000	0.00	0.0000	0.00	0.0008	0.67	0.0006	0.63	0.0007	0.44
56	0.0000	0.00	0.0008	0.47	0.0004	0.95	0.0009	0.67	0.0007	0.55
57	0.0000	0.00	0.0000	0.00	0.0004	0.95	0.0000	0.00	0.0002	0.91
58	0.0000	0.00	0.0001	1.06	0.0004	1.05	0.0003	0.93	0.0004	0.68
59	0.0000	0.00	0.0005	0.97	0.0000	0.00	0.0014	0.45	0.0007	0.54
60	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0003	0.92	0.0002	0.96
61	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0004	0.88	0.0002	0.94
62	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0002	0.99	0.0001	1.00
63	0.0007	1.19	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
64	0.0009	0.80	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
65	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0007	0.87	0.0003	0.93
66	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
67	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
68	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0003	0.92	0.0002	0.96
69	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
70	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
71	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
72	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
73	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
74	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
75	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
76	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
77	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
78	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
79	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
80	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Nt	59 805		98 491		70 587		53 807		122 305	
n	1 081		3 429		2 274		2 532		4 806	

Appendix 1 – continued:

Estimates of the proportion at length of snapper from the Bay of Plenty single trawl fishery from autumn 1994 to summer 1994–95.

									Single trawl	
Length	Autumn		Winter		Spring		Summer		Spr-sum	
(cm)	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*
20	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
21	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
22	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
23	0.0000	0.00	0.0006	0.60	0.0004	0.94	0.0000	0.00	0.0002	0.81
24	0.0086	0.62	0.0053	0.80	0.0081	0.52	0.0019	0.87	0.0044	0.49
25	0.0304	0.28	0.0362	0.54	0.0414	0.41	0.0159	0.42	0.0263	0.33
26	0.0753	0.26	0.0754	0.30	0.0722	0.16	0.0361	0.24	0.0509	0.19
27	0.1410	0.15	0.1329	0.21	0.1136	0.12	0.0763	0.15	0.0916	0.12
28	0.1865	0.12	0.1713	0.07	0.1577	0.12	0.1293	0.12	0.1409	0.10
29	0.1618	0.10	0.1509	0.05	0.1663	0.09	0.1397	0.09	0.1506	0.07
30	0.1320	0.11	0.1297	0.09	0.1445	0.05	0.1268	0.09	0.1340	0.06
31	0.0827	0.16	0.0814	0.12	0.0789	0.10	0.0848	0.08	0.0824	0.06
32	0.0569	0.07	0.0575	0.27	0.0509	0.14	0.0663	0.08	0.0600	0.08
33	0.0416	0.15	0.0442	0.36	0.0309	0.23	0.0563	0.05	0.0459	0.12
34	0.0253	0.29	0.0316	0.38	0.0287	0.16	0.0430	0.11	0.0372	0.11
35	0.0124	0.38	0.0277	0.51	0.0212	0.27	0.0431	0.16	0.0341	0.18
36	0.0152	0.21	0.0166	0.64	0.0181	0.25	0.0305	0.17	0.0254	0.17
37	0.0107	0.30	0.0132	0.34	0.0160	0.40	0.0273	0.29	0.0227	0.25
38	0.0052	0.13	0.0077	0.40	0.0068	0.44	0.0220	0.37	0.0158	0.35
39	0.0029	0.45	0.0047	0.18	0.0116	0.50	0.0176	0.19	0.0151	0.22
40	0.0038	0.36	0.0024	0.27	0.0059	0.47	0.0131	0.37	0.0101	0.33
41	0.0022	0.35	0.0026	0.56	0.0032	0.57	0.0106	0.46	0.0076	0.42
42	0.0011	0.78	0.0019	0.30	0.0055	0.36	0.0112	0.31	0.0089	0.27
43	0.0011	0.71	0.0010	0.60	0.0018	0.56	0.0092	0.25	0.0062	0.30
44	0.0008	0.96	0.0018	0.59	0.0021	0.55	0.0053	0.35	0.0040	0.33
45	0.0000	0.00	0.0004	0.83	0.0015	0.72	0.0041	0.33	0.0031	0.34
46	0.0009	0.65	0.0000	0.00	0.0010	0.81	0.0036	0.30	0.0025	0.34
47	0.0005	1.04	0.0008	0.51	0.0016	0.61	0.0050	0.30	0.0037	0.32
48	0.0009	0.65	0.0004	0.80	0.0019	0.46	0.0027	0.23	0.0024	0.22
49	0.0000	0.00	0.0004	0.86	0.0007	0.75	0.0031	0.29	0.0021	0.33
50	0.0000	0.00	0.0000	0.00	0.0006	0.84	0.0016	0.41	0.0012	0.39
51	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0006	0.98	0.0003	0.98
52	0.0000	0.00	0.0002	1.13	0.0007	0.75	0.0014	0.46	0.0011	0.41
53	0.0000	0.00	0.0005	0.82	0.0011	0.45	0.0020	0.34	0.0016	0.28
54	0.0000	0.00	0.0000	0.00	0.0011	0.83	0.0018	0.63	0.0015	0.50
55	0.0000	0.00	0.0002	1.15	0.0004	0.84	0.0014	0.60	0.0010	0.55
56	0.0000	0.00	0.0002	1.13	0.0006	0.72	0.0012	0.28	0.0009	0.31
57	0.0000	0.00	0.0000	0.00	0.0003	1.14	0.0008	0.70	0.0006	0.62
58	0.0000	0.00	0.0000	0.00	0.0006	0.70	0.0005	0.95	0.0005	0.59
59	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0013	0.43	0.0008	0.50
60	0.0000	0.00	0.0000	0.00	0.0007	0.59	0.0006	0.57	0.0006	0.39
61	0.0000	0.00	0.0000	0.00	0.0001	1.14	0.0006	0.57	0.0004	0.55
62	0.0000	0.00	0.0000	0.00	0.0002	1.10	0.0002	0.91	0.0002	0.68
63	0.0000	0.00	0.0000	0.00	0.0001	1.14	0.0005	0.58	0.0003	0.55
64	0.0000	0.00	0.0000	0.00	0.0002	1.10	0.0003	0.98	0.0003	0.74
65	0.0000	0.00	0.0000	0.00	0.0003	0.83	0.0000	0.00	0.0001	0.75
66	0.0000	0.00	0.0000	0.00	0.0002	1.14	0.0003	0.91	0.0002	0.73
67	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
68	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
69	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
70	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
71	0.0000	0.00	0.0000	0.00	0.0004	0.87	0.0000	0.00	0.0002	0.77
72	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
73	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
74	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
75	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
76	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
77	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
78	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
79	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
80	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Nt	126 500		128 783		107 525		62 868		163 490	
n	2 344		2 851		3 164		4 190		7 354	

Appendix 1 – continued:
Estimates of the proportion at length of snapper from the east Northland longline fishery from autumn 1994 to summer 1994–95.

									Longline	
Length	Autumn		Winter		Spring		Summer		Spr-sum	
(cm)	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*	*P.i.*	*c.v.*
20	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
21	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0004	0.91	0.0002	0.95
22	0.0001	1.01	0.0000	0.00	0.0000	0.00	0.0002	0.91	0.0001	0.95
23	0.0000	0.00	0.0001	0.70	0.0001	1.00	0.0002	0.96	0.0001	0.69
24	0.0025	0.45	0.0030	0.45	0.0017	0.32	0.0007	0.46	0.0012	0.28
25	0.0250	0.35	0.0134	0.33	0.0137	0.43	0.0058	0.58	0.0098	0.36
26	0.0496	0.28	0.0385	0.21	0.0344	0.35	0.0127	0.48	0.0235	0.31
27	0.0787	0.16	0.0548	0.20	0.0536	0.24	0.0244	0.35	0.0390	0.22
28	0.1044	0.12	0.0673	0.13	0.0689	0.19	0.0482	0.23	0.0586	0.15
29	0.0961	0.10	0.0741	0.10	0.0820	0.15	0.0649	0.14	0.0734	0.11
30	0.1054	0.08	0.0863	0.08	0.0874	0.10	0.0772	0.07	0.0822	0.07
31	0.0967	0.06	0.0824	0.06	0.0825	0.06	0.0764	0.06	0.0795	0.04
32	0.0917	0.09	0.0786	0.06	0.0689	0.09	0.0754	0.06	0.0722	0.05
33	0.0677	0.09	0.0618	0.09	0.0665	0.08	0.0694	0.06	0.0679	0.05
34	0.0556	0.12	0.0554	0.07	0.0544	0.11	0.0590	0.08	0.0567	0.07
35	0.0442	0.14	0.0512	0.07	0.0465	0.11	0.0553	0.07	0.0509	0.07
36	0.0337	0.14	0.0453	0.12	0.0425	0.12	0.0480	0.09	0.0453	0.08
37	0.0253	0.14	0.0323	0.09	0.0393	0.10	0.0505	0.09	0.0449	0.07
38	0.0206	0.18	0.0338	0.11	0.0358	0.16	0.0418	0.11	0.0388	0.10
39	0.0166	0.22	0.0305	0.08	0.0286	0.15	0.0312	0.11	0.0299	0.09
40	0.0138	0.21	0.0224	0.13	0.0301	0.17	0.0344	0.11	0.0322	0.10
41	0.0111	0.16	0.0197	0.15	0.0224	0.19	0.0262	0.10	0.0243	0.11
42	0.0095	0.19	0.0184	0.13	0.0194	0.20	0.0227	0.11	0.0211	0.11
43	0.0081	0.24	0.0128	0.18	0.0165	0.18	0.0206	0.12	0.0186	0.11
44	0.0070	0.23	0.0138	0.16	0.0153	0.12	0.0184	0.14	0.0169	0.10
45	0.0079	0.24	0.0109	0.16	0.0142	0.19	0.0182	0.14	0.0162	0.12
46	0.0038	0.31	0.0114	0.15	0.0122	0.17	0.0153	0.16	0.0137	0.12
47	0.0044	0.28	0.0110	0.16	0.0091	0.17	0.0119	0.20	0.0105	0.14
48	0.0034	0.33	0.0086	0.20	0.0086	0.22	0.0101	0.15	0.0094	0.13
49	0.0029	0.33	0.0064	0.19	0.0065	0.22	0.0100	0.15	0.0083	0.14
50	0.0034	0.29	0.0072	0.24	0.0058	0.25	0.0122	0.15	0.0090	0.15
51	0.0027	0.22	0.0062	0.27	0.0046	0.26	0.0082	0.15	0.0064	0.15
52	0.0021	0.30	0.0057	0.18	0.0050	0.26	0.0074	0.20	0.0062	0.17
53	0.0008	0.54	0.0025	0.20	0.0034	0.29	0.0076	0.19	0.0055	0.18
54	0.0009	0.40	0.0044	0.28	0.0040	0.31	0.0056	0.26	0.0048	0.20
55	0.0011	0.38	0.0036	0.37	0.0018	0.33	0.0042	0.25	0.0030	0.21
56	0.0012	0.34	0.0044	0.22	0.0018	0.32	0.0041	0.26	0.0030	0.21
57	0.0002	0.74	0.0030	0.35	0.0016	0.37	0.0036	0.36	0.0026	0.28
58	0.0003	0.73	0.0045	0.19	0.0008	0.42	0.0024	0.25	0.0016	0.23
59	0.0001	1.00	0.0018	0.53	0.0016	0.35	0.0015	0.27	0.0015	0.22
60	0.0003	0.72	0.0008	0.45	0.0010	0.47	0.0018	0.35	0.0014	0.29
61	0.0001	1.00	0.0017	0.56	0.0009	0.42	0.0009	0.42	0.0009	0.29
62	0.0000	0.00	0.0016	0.40	0.0017	0.37	0.0012	0.36	0.0015	0.26
63	0.0001	1.01	0.0013	0.34	0.0004	0.70	0.0017	0.46	0.0011	0.42
64	0.0000	0.00	0.0008	0.79	0.0003	0.61	0.0013	0.48	0.0008	0.43
65	0.0002	0.72	0.0018	0.45	0.0008	0.52	0.0007	0.54	0.0007	0.37
66	0.0000	0.00	0.0002	0.98	0.0004	0.59	0.0017	0.26	0.0011	0.26
67	0.0003	0.73	0.0008	0.48	0.0007	0.58	0.0008	0.41	0.0007	0.34
68	0.0003	0.94	0.0014	0.39	0.0008	0.43	0.0006	0.51	0.0007	0.33
69	0.0000	0.00	0.0001	1.01	0.0000	0.00	0.0010	0.36	0.0005	0.38
70	0.0000	0.00	0.0007	0.54	0.0002	0.73	0.0006	0.53	0.0004	0.47
71	0.0000	0.00	0.0001	1.01	0.0000	0.00	0.0000	0.00	0.0000	0.00
72	0.0000	0.00	0.0002	0.97	0.0000	0.00	0.0003	0.95	0.0001	0.97
73	0.0000	0.00	0.0002	0.77	0.0001	1.00	0.0002	0.74	0.0002	0.60
74	0.0000	0.00	0.0004	0.67	0.0000	0.00	0.0006	0.53	0.0003	0.57
75	0.0000	0.00	0.0003	0.71	0.0000	0.00	0.0002	0.97	0.0001	0.98
76	0.0000	0.00	0.0000	0.00	0.0003	0.91	0.0000	0.00	0.0002	0.94
77	0.0000	0.00	0.0000	0.00	0.0001	1.00	0.0000	0.00	0.0001	0.99
78	0.0000	0.00	0.0000	0.00	0.0001	1.00	0.0000	0.00	0.0001	0.99
79	0.0000	0.00	0.0000	0.00	0.0003	0.91	0.0000	0.00	0.0002	0.94
80	0.0000	0.00	0.0001	1.01	0.0000	0.00	0.0001	0.97	0.0001	0.98
Nt	179 997		238 237		192 853		175 291		366 796	
n	6 425		6 885		6 482		6 653		13 135	

Appendix 2: Estimated seasonal proportion at age and c.v.s for snapper fisheries in the AFMA in 1994–95.

P.j. = proportion of fish in age class. *c.v.* = coefficient of variation.

Estimates of proportion at age of snapper from the west coast single trawl fishery in 1994–95.
Otolith sample size = 545

Age (years)	Single trawl Spring *P.j.*	*c.v.*
1	0.0000	0.00
2	0.0002	1.02
3	0.0303	0.15
4	0.4076	0.03
5	0.1133	0.12
6	0.1140	0.10
7	0.0317	0.23
8	0.0592	0.16
9	0.0993	0.12
10	0.0876	0.13
11	0.0358	0.21
12	0.0000	0.00
13	0.0067	0.50
14	0.0030	0.79
15	0.0018	0.30
16	0.0061	0.45
17	0.0000	0.00
18	0.0000	0.00
19	0.0000	0.00
>19	0.0028	0.26

Estimates of proportion at age of snapper from the Hauraki Gulf longline and Danish seine fisheries in 1994–95.
Otolith sample size = 635

Age	Longline						Danish seine					
	Spring		Summer		Spr-sum		Spring		Summer		Spr-sum	
(years)	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*
1	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
2	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
3	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
4	0.0220	0.28	0.0170	0.28	0.0201	0.28	0.0168	0.30	0.0143	0.30	0.0154	0.30
5	0.0415	0.21	0.0302	0.21	0.0372	0.21	0.0342	0.22	0.0285	0.22	0.0310	0.22
6	0.1864	0.09	0.1429	0.09	0.1700	0.09	0.1744	0.09	0.1497	0.09	0.1605	0.09
7	0.1414	0.11	0.1239	0.11	0.1348	0.11	0.1510	0.11	0.1369	0.11	0.1431	0.11
8	0.0953	0.13	0.0869	0.13	0.0921	0.13	0.1006	0.13	0.0935	0.13	0.0966	0.13
9	0.1204	0.11	0.1186	0.11	0.1197	0.11	0.1301	0.11	0.1257	0.11	0.1276	0.11
10	0.1762	0.09	0.1922	0.08	0.1823	0.08	0.1852	0.09	0.1934	0.08	0.1898	0.08
11	0.1154	0.11	0.1268	0.10	0.1197	0.11	0.1249	0.11	0.1314	0.11	0.1285	0.11
12	0.0145	0.31	0.0184	0.30	0.0160	0.30	0.0152	0.32	0.0182	0.30	0.0169	0.31
13	0.0073	0.39	0.0114	0.37	0.0089	0.38	0.0065	0.40	0.0103	0.38	0.0086	0.38
14	0.0302	0.18	0.0487	0.17	0.0372	0.17	0.0264	0.21	0.0400	0.18	0.0340	0.18
15	0.0187	0.25	0.0280	0.24	0.0223	0.24	0.0185	0.27	0.0241	0.25	0.0216	0.25
16	0.0087	0.33	0.0155	0.32	0.0113	0.32	0.0055	0.36	0.0110	0.33	0.0086	0.33
17	0.0035	0.56	0.0061	0.47	0.0045	0.51	0.0026	0.65	0.0042	0.56	0.0035	0.58
18	0.0008	1.01	0.0016	1.00	0.0011	1.00	0.0008	1.01	0.0014	1.01	0.0011	1.00
19	0.0013	0.73	0.0025	0.72	0.0018	0.72	0.0008	0.77	0.0016	0.73	0.0012	0.72
>19	0.0115	0.17	0.0263	0.15	0.0171	0.15	0.0049	0.26	0.0126	0.20	0.0092	0.20

Appendix 2 – continued:
Estimates of proportion at age of snapper from the Bay of Plenty longline and Danish seine fisheries in 1994–95.
Otolith sample size = 606

Age	Longline						Danish seine					
	Spring		Summer		Spr-sum		Spring		Summer		Spr-sum	
(years)	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*
1	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
2	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
3	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
4	0.0178	0.29	0.0090	0.32	0.0115	0.30	0.0651	0.20	0.0141	0.29	0.0391	0.20
5	0.1525	0.09	0.0900	0.10	0.1078	0.10	0.2791	0.08	0.1203	0.12	0.1981	0.09
6	0.4357	0.04	0.3017	0.04	0.3399	0.04	0.4450	0.05	0.4970	0.04	0.4715	0.04
7	0.1126	0.11	0.0979	0.11	0.1021	0.11	0.0764	0.13	0.1294	0.12	0.1034	0.12
8	0.0402	0.19	0.0383	0.19	0.0388	0.19	0.0237	0.22	0.0419	0.21	0.0330	0.21
9	0.1070	0.10	0.1344	0.10	0.1266	0.10	0.0506	0.11	0.1000	0.10	0.0758	0.10
10	0.0741	0.12	0.1140	0.12	0.1026	0.12	0.0328	0.14	0.0586	0.13	0.0459	0.13
11	0.0163	0.26	0.0394	0.28	0.0328	0.27	0.0052	0.29	0.0101	0.28	0.0077	0.27
12	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
13	0.0066	0.51	0.0161	0.48	0.0134	0.47	0.0023	0.52	0.0040	0.49	0.0032	0.48
14	0.0054	0.41	0.0173	0.37	0.0139	0.37	0.0016	0.55	0.0044	0.38	0.0031	0.39
15	0.0029	0.75	0.0067	0.77	0.0056	0.76	0.0008	0.88	0.0009	0.80	0.0008	0.77
16	0.0024	0.73	0.0048	0.72	0.0041	0.71	0.0011	0.74	0.0011	0.75	0.0011	0.73
17	0.0030	0.62	0.0098	0.61	0.0079	0.60	0.0007	0.92	0.0016	0.66	0.0012	0.64
18	0.0010	1.01	0.0016	1.01	0.0015	1.00	0.0003	1.05	0.0006	1.02	0.0005	1.02
19	0.0008	1.12	0.0038	1.02	0.0029	1.01	0.0000	0.00	0.0007	1.13	0.0004	1.13
>19	0.0176	0.24	0.0900	0.13	0.0694	0.14	0.0032	0.41	0.0077	0.30	0.0055	0.28

Estimates of proportion at age of snapper from the Bay of Plenty single trawl fishery in 1994–95.
Otolith sample size = 606

Age	Single trawl					
	Spring		Summer		Spr-sum	
(years)	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*
1	0.0000	0.00	0.0000	0.00	0.0000	0.00
2	0.0000	0.00	0.0000	0.00	0.0000	0.00
3	0.0000	0.00	0.0000	0.00	0.0000	0.00
4	0.0444	0.22	0.0229	0.26	0.0317	0.23
5	0.2479	0.08	0.1748	0.09	0.2047	0.09
6	0.4892	0.05	0.4486	0.04	0.4652	0.04
7	0.0798	0.14	0.1037	0.12	0.0940	0.12
8	0.0247	0.23	0.0364	0.20	0.0316	0.20
9	0.0522	0.11	0.0985	0.10	0.0796	0.10
10	0.0325	0.14	0.0658	0.12	0.0522	0.12
11	0.0068	0.28	0.0149	0.26	0.0116	0.26
12	0.0000	0.00	0.0000	0.00	0.0000	0.00
13	0.0022	0.56	0.0052	0.47	0.0040	0.47
14	0.0020	0.43	0.0061	0.35	0.0044	0.35
15	0.0006	0.84	0.0014	0.75	0.0011	0.74
16	0.0005	0.76	0.0017	0.73	0.0012	0.72
17	0.0005	0.81	0.0019	0.68	0.0013	0.68
18	0.0004	1.03	0.0009	1.01	0.0007	1.01
19	0.0000	0.00	0.0007	1.09	0.0004	1.08
>19	0.0065	0.27	0.0120	0.22	0.0097	0.21

Appendix 2 – continued:
Estimates of proportion at age of snapper from the east Northland longline fishery in 1994–95.
Otolith sample size = 597

Age	Longline					
	Spring		Summer		Spr-sum	
(years)	*P.j.*	*c.v.*	*P.j.*	*c.v.*	*P.j.*	*c.v.*
1	0.0000	0.00	0.0000	0.00	0.0000	0.00
2	0.0000	0.00	0.0000	0.00	0.0000	0.00
3	0.0006	1.01	0.0003	1.01	0.0004	1.00
4	0.0426	0.21	0.0261	0.23	0.0343	0.21
5	0.1281	0.11	0.0898	0.13	0.1089	0.12
6	0.1852	0.09	0.1551	0.10	0.1701	0.09
7	0.1391	0.11	0.1364	0.11	0.1377	0.11
8	0.0886	0.14	0.0925	0.14	0.0906	0.14
9	0.0860	0.13	0.0904	0.13	0.0882	0.13
10	0.0830	0.14	0.0921	0.13	0.0875	0.13
11	0.0240	0.26	0.0280	0.25	0.0260	0.25
12	0.0073	0.42	0.0088	0.41	0.0080	0.41
13	0.0548	0.16	0.0656	0.16	0.0602	0.16
14	0.0490	0.17	0.0578	0.17	0.0534	0.17
15	0.0115	0.37	0.0141	0.36	0.0128	0.36
16	0.0147	0.31	0.0178	0.30	0.0162	0.30
17	0.0201	0.27	0.0253	0.27	0.0227	0.27
18	0.0110	0.35	0.0141	0.34	0.0126	0.35
19	0.0045	0.48	0.0068	0.46	0.0056	0.46
>19	0.0462	0.12	0.0753	0.10	0.0608	0.10

Appendix 3: Age-length keys derived from otolith samples collected from snapper fisheries in the AFMA from 1994 to 1995.

Estimates of proportion of length at age for snapper sampled from the west coast, October 1994 to November 1994. (Note: Aged to 01/01/95)

Length	Age (years)																				No.
(cm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	>19	Aged
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
26	0	0.05	0.85	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
27	0	0	0.60	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
28	0	0	0.45	0.55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
29	0	0	0.25	0.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
30	0	0	0	0.95	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
31	0	0	0	0.91	0.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
32	0	0	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
33	0	0	0	0.90	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
34	0	0	0	0.64	0.32	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
35	0	0	0	0.56	0.36	0.08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
36	0	0	0	0.30	0.52	0.15	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	27
37	0	0	0	0.23	0.45	0.27	0	0.05	0	0	0	0	0	0	0	0	0	0	0	0	22
38	0	0	0	0	0.35	0.57	0	0	0.04	0.04	0	0	0	0	0	0	0	0	0	0	23
39	0	0	0	0	0.29	0.43	0.05	0.10	0.10	0	0.05	0	0	0	0	0	0	0	0	0	21
40	0	0	0	0.05	0.09	0.45	0.05	0.23	0.14	0	0	0	0	0	0	0	0	0	0	0	22
41	0	0	0	0	0.05	0.45	0.25	0.15	0.05	0.05	0	0	0	0	0	0	0	0	0	0	20
42	0	0	0	0	0	0.32	0.14	0.32	0.18	0.05	0	0	0	0	0	0	0	0	0	0	22
43	0	0	0	0	0	0.18	0.12	0.24	0.29	0.18	0	0	0	0	0	0	0	0	0	0	17
44	0	0	0	0	0	0.13	0.13	0.19	0.31	0.19	0.06	0	0	0	0	0	0	0	0	0	16
45	0	0	0	0	0	0.07	0.07	0.07	0.29	0.43	0.07	0	0	0	0	0	0	0	0	0	14
46	0	0	0	0	0	0.06	0	0.25	0.31	0.31	0.06	0	0	0	0	0	0	0	0	0	16
47	0	0	0	0	0	0.08	0	0.08	0.23	0.31	0.31	0	0	0	0	0	0	0	0	0	13
48	0	0	0	0	0	0	0	0.08	0.46	0.46	0	0	0	0	0	0	0	0	0	0	13
49	0	0	0	0	0	0	0.18	0.09	0.18	0.36	0.18	0	0	0	0	0	0	0	0	0	11
50	0	0	0	0	0	0	0	0	0.27	0.45	0.09	0	0.09	0	0	0.09	0	0	0	0	11
51	0	0	0	0	0	0	0	0	0.40	0.30	0.30	0	0	0	0	0	0	0	0	0	10
52	0	0	0	0	0	0	0	0	0.25	0	0.25	0	0.25	0.25	0	0	0	0	0	0	4
53	0	0	0	0	0	0	0	0	0.50	0.50	0	0	0	0	0	0	0	0	0	0	4
54	0	0	0	0	0	0	0	0	0	0.50	0.50	0	0	0	0	0	0	0	0	0	2
55	0	0	0	0	0	0	0	0	0.33	0	0.33	0	0.33	0	0	0	0	0	0	0	3
56	0	0	0	0	0	0	0	0	0.33	0	0	0	0	0	0	0.67	0	0	0	0	3
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	1
58	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	0	0	0	0	1
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	1
60	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0.50	0	0	0	0	2
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	1
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0	0.50	2
64	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	0	0	1
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
68	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	0	1
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
73	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	0	0	0	1
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total																					545

Appendix 3 – continued:
Estimates of proportion of length at age for snapper sampled from the Hauraki Gulf, October 1994 to November 1994. (Note: Aged to 01/01/95)

Length	Age (years)																				No.
(cm)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	>19	Aged
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0.26	0.21	0.37	0.11	0	0.05	0	0	0	0	0	0	0	0	0	0	0	19
26	0	0	0	0.14	0.19	0.38	0.14	0.10	0	0.05	0	0	0	0	0	0	0	0	0	0	21
27	0	0	0	0	0.06	0.58	0.10	0.06	0.10	0.06	0.03	0	0	0	0	0	0	0	0	0	31
28	0	0	0	0.04	0.13	0.24	0.13	0.09	0.13	0.16	0.07	0	0	0	0	0	0	0	0	0	45
29	0	0	0	0.04	0.07	0.33	0.16	0.13	0.11	0.16	0	0	0	0	0	0	0	0	0	0	45
30	0	0	0	0	0.04	0.19	0.19	0.13	0.17	0.13	0.15	0	0	0	0	0	0	0	0	0	53
31	0	0	0	0.02	0.02	0.20	0.29	0.09	0.04	0.18	0.11	0.04	0	0	0	0	0	0	0	0	45
32	0	0	0	0	0	0.17	0.17	0.10	0.07	0.29	0.21	0	0	0	0	0	0	0	0	0	42
33	0	0	0	0	0	0.16	0.16	0.11	0.29	0.11	0.11	0	0	0.03	0.05	0	0	0	0	0	38
34	0	0	0	0	0	0.03	0.17	0.14	0.23	0.14	0.23	0.03	0	0.03	0	0	0	0	0	0	35
35	0	0	0	0	0	0.03	0.18	0.21	0.06	0.21	0.24	0	0.03	0.03	0.03	0	0	0	0	0	34
36	0	0	0	0	0	0	0.16	0.16	0.24	0.24	0.12	0	0	0.04	0.04	0	0	0	0	0	25
37	0	0	0	0	0	0.05	0.14	0.05	0.18	0.32	0.14	0.05	0	0.05	0	0	0.05	0	0	0	22
38	0	0	0	0	0	0	0.05	0	0.23	0.50	0.09	0	0	0.09	0.05	0	0	0	0	0	22
39	0	0	0	0	0	0.06	0	0.06	0.17	0.33	0.11	0.06	0	0.11	0.11	0	0	0	0	0	18
40	0	0	0	0	0	0	0	0.11	0.05	0.42	0.16	0	0	0.16	0.11	0	0	0	0	0	19
41	0	0	0	0	0	0	0	0.06	0.12	0.24	0.35	0	0	0.18	0	0	0	0	0	0.06	17
42	0	0	0	0	0	0	0	0	0.08	0.33	0.08	0.17	0.17	0.08	0.08	0	0	0	0	0	12
43	0	0	0	0	0	0	0	0	0	0.11	0.33	0.22	0.11	0.11	0.11	0	0	0	0	0	9
44	0	0	0	0	0	0	0	0	0	0.40	0.10	0.10	0	0	0.20	0.20	0	0	0	0	10
45	0	0	0	0	0	0	0	0	0.13	0.13	0.38	0	0.13	0.13	0	0	0	0.13	0	0	8
46	0	0	0	0	0	0	0	0	0	0.57	0	0	0	0.14	0	0.14	0.14	0	0	0	7
47	0	0	0	0	0	0	0	0	0	0.20	0	0.20	0.20	0.40	0	0	0	0	0	0	5
48	0	0	0	0	0	0	0	0	0	0	0.40	0	0	0	0.20	0.40	0	0	0	0	5
49	0	0	0	0	0	0	0	0	0	0	0.40	0	0.20	0	0.20	0.20	0	0	0	0	5
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0.83	0.17	0	0	0	0	0	6
51	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0.50	0	0.25	0	0	0	0	4
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	0	0	0	0	0.20	0.60	5
53	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0.25	0.25	0.25	0	0	0	0	4
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0	0.50	2
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.33	0	0	0	0.67	3
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0.50	0	2
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	3
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	3
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	0	0	0	1
64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total																					635

Appendix 3 – continued:
Estimates of proportion of length at age for snapper sampled from the Bay of Plenty, October 1994 to December 1994. (Note: Aged to 01/01/95)

Length (cm)	Age (years) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	>19	No. Aged
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0.63	0.31	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
26	0	0	0	0.09	0.68	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
27	0	0	0	0.04	0.75	0.21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
28	0	0	0	0.04	0.33	0.59	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	46
29	0	0	0	0	0.11	0.83	0.04	0.02	0	0	0	0	0	0	0	0	0	0	0	0	46
30	0	0	0	0	0.15	0.80	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	54
31	0	0	0	0	0.06	0.61	0.20	0.08	0.02	0.02	0	0	0	0	0	0	0	0	0	0	49
32	0	0	0	0.02	0.06	0.56	0.26	0.02	0.06	0.02	0	0	0	0	0	0	0	0	0	0	50
33	0	0	0	0	0	0.40	0.29	0.07	0.20	0.04	0	0	0	0	0	0	0	0	0	0	45
34	0	0	0	0	0.06	0.27	0.24	0.03	0.33	0.06	0	0	0	0	0	0	0	0	0	0	33
35	0	0	0	0	0	0.07	0.25	0.14	0.36	0.18	0	0	0	0	0	0	0	0	0	0	28
36	0	0	0	0	0	0.07	0.07	0.18	0.36	0.29	0.04	0	0	0	0	0	0	0	0	0	28
37	0	0	0	0	0	0.04	0.17	0.13	0.35	0.30	0	0	0	0	0	0	0	0	0	0	23
38	0	0	0	0	0	0.04	0.09	0.09	0.43	0.30	0	0	0.04	0	0	0	0	0	0	0	23
39	0	0	0	0	0	0	0.18	0.12	0.29	0.24	0.18	0	0	0	0	0	0	0	0	0	17
40	0	0	0	0	0	0	0	0.07	0.36	0.29	0.14	0	0	0.07	0	0	0	0.07	0	0	14
41	0	0	0	0	0	0	0	0	0.09	0.45	0.09	0	0.09	0.18	0	0.09	0	0	0	0	11
42	0	0	0	0	0	0	0.09	0	0.27	0.45	0.18	0	0	0	0	0	0	0	0	0	11
43	0	0	0	0	0	0	0	0	0.57	0.29	0.14	0	0	0	0	0	0	0	0	0	7
44	0	0	0	0	0	0	0	0	0.29	0.29	0.29	0	0.14	0	0	0	0	0	0	0	7
45	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0.17	0.17	0.17	0	0	0	6
46	0	0	0	0	0	0	0	0	0.33	0.33	0	0	0.33	0	0	0	0	0	0	0	3
47	0	0	0	0	0	0	0	0	0	0.20	0.20	0	0	0.60	0	0	0	0	0	0	5
48	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0	0	0.50	2
49	0	0	0	0	0	0	0	0	0	0	0.33	0	0	0	0	0	0.33	0	0	0.33	3
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0.33	0	0	0.33	0	0	0.33	3
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0.50	2
53	0	0	0	0	0	0	0	0	0	0	0.50	0	0	0	0	0	0	0	0	0.50	2
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	2
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	3
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0.50	2
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total																					606

Appendix 3 – continued:
Estimates of proportion of length at age for snapper sampled from east Northland, October 1994 to January 1995. (Note: Aged to 01/01/95)

Length (cm)	Age (years) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	>19	No. Aged
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0.05	0.36	0.32	0.14	0.09	0.05	0	0	0	0	0	0	0	0	0	0	0	0	22
26	0	0	0	0.20	0.55	0.20	0	0	0.05	0	0	0	0	0	0	0	0	0	0	0	20
27	0	0	0	0.19	0.38	0.38	0	0	0	0.05	0	0	0	0	0	0	0	0	0	0	21
28	0	0	0	0.10	0.36	0.31	0.15	0.05	0.03	0	0	0	0	0	0	0	0	0	0	0	39
29	0	0	0	0.08	0.15	0.38	0.15	0.08	0.15	0.03	0	0	0	0	0	0	0	0	0	0	40
30	0	0	0	0.04	0.29	0.36	0.18	0.11	0	0.04	0	0	0	0	0	0	0	0	0	0	28
31	0	0	0	0.03	0.14	0.35	0.30	0.03	0.03	0.05	0.03	0	0	0.05	0	0	0	0	0	0	37
32	0	0	0	0.03	0.09	0.17	0.37	0.14	0.14	0.03	0.03	0	0	0	0	0	0	0	0	0	35
33	0	0	0	0	0.03	0.16	0.34	0.24	0.18	0.03	0	0	0	0.03	0	0	0	0	0	0	38
34	0	0	0	0	0.04	0.14	0.21	0.18	0.21	0.14	0	0	0.04	0.04	0	0	0	0	0	0	28
35	0	0	0	0	0	0.08	0.23	0.27	0.23	0.12	0	0	0.04	0.04	0	0	0	0	0	0	26
36	0	0	0	0	0	0.03	0	0.21	0.24	0.24	0.07	0	0.10	0.03	0	0	0.03	0.03	0	0	29
37	0	0	0	0	0	0.11	0.07	0.11	0.11	0.07	0.18	0	0.21	0.07	0	0.04	0	0.04	0	0	28
38	0	0	0	0	0.05	0.09	0	0.09	0.09	0.32	0.05	0.09	0.09	0.05	0.05	0	0.05	0	0	0	22
39	0	0	0	0	0	0.05	0.05	0.09	0	0.18	0.05	0.09	0.18	0.09	0	0.14	0	0	0	0.09	22
40	0	0	0	0	0	0	0	0	0.07	0.21	0.14	0	0.21	0.14	0.07	0.07	0.07	0	0	0	14
41	0	0	0	0	0	0	0	0	0	0.13	0	0	0.31	0.19	0.06	0.06	0.19	0	0	0.06	16
42	0	0	0	0	0	0	0	0	0.08	0.31	0	0	0.23	0.23	0	0.08	0.08	0	0	0	13
43	0	0	0	0	0	0	0	0	0	0.18	0.09	0	0.18	0.09	0.09	0	0.09	0.27	0	0	11
44	0	0	0	0	0	0	0	0	0	0	0	0	0.13	0.50	0	0	0.13	0.13	0	0.13	8
45	0	0	0	0	0	0	0	0	0.15	0.15	0.08	0	0.08	0.15	0.15	0	0	0.08	0	0.15	13
46	0	0	0	0	0	0	0	0	0	0.13	0	0	0.13	0.25	0	0.13	0.13	0	0.13	0.13	8
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0.11	0	0.22	0.11	0	0	0.56	9
48	0	0	0	0	0	0	0	0	0	0.20	0	0	0.20	0	0.20	0	0.20	0	0	0.20	5
49	0	0	0	0	0	0	0	0	0	0	0	0	0.29	0.14	0.14	0	0	0	0	0.43	7
50	0	0	0	0	0	0	0	0	0	0.11	0	0	0	0	0	0	0.11	0.11	0.11	0.56	9
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.17	0	0	0.17	0.67	6
52	0	0	0	0	0	0	0	0	0	0	0	0.29	0.14	0	0	0	0	0	0.14	0.43	7
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0.75	4
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	0	0	0	0	0.20	0.60	5
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	3
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0.75	4
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	3
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	2
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	2
62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	2
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.00	1
Total																					597

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