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EXECUTIVE SUMMARY

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This report describes the results of a relative abundance survey of blue cod (*Parapercis colias*) off Banks Peninsula carried out using cod pots in 2002.

Forty stations were successfully surveyed (6 pots per station = 240 pot lifts) from five inshore strata and two offshore strata around Banks Peninsula. Seventeen stations were surveyed in January 2002 and 23 in April 2002. Of the total 619 kg of catch, 439 kg (71%) was blue cod, consisting of 837 fish. Bycatch included 12 fish, 1 shark, and 1 octopus species.

Mean catch rates ranged from 0.04 kg per pot per hour near Akaroa Harbour entrance, to 4.74 kg per pot per hour for offshore strata. Overall mean catch rate and c.v. were 2.23 kg per pot per hour and 10.8%. The sex ratio for inshore strata (1–5) was 2.2:1 (male:female), 0.74:1 for offshore strata (6 and 7), and 1.6:1 overall. Length frequency distributions for the five inshore strata were similar with a single modal peak at about 27 cm; blue cod in the two offshore strata were larger with no clear modes. Mean lengths of males were greater than for females from inshore strata, and sexes were of similar length from offshore strata, but in both inshore and offshore strata the largest fish were usually males. The difference between relative abundance and size structure of inshore and offshore blue cod populations is likely to be a result of heavy fishing pressure on the more accessible inshore stocks.

Of 832 blue cod examined, 773 (93%) had resting gonad stages, and 54 females and 5 males from offshore strata had mature stage gonads. Mean length for mature stage fish was 41.2 cm for females and 49.6 cm for males.

Periods of poor water clarity are a feature of the inshore waters off Banks Peninsula and affect the catchability of blue cod in pots – sampling on future surveys should take place only when water clarity is high.

1. INTRODUCTION

Blue cod (*Parapercis colias*) is a highly desirable recreational finfish and the species most commonly landed by recreational fishers in the South Island (Bradford 1998, James & Unwin 2000), where it is usually caught by line from small vessels fishing over reef edges and shingle/gravel or sandy bottoms close to rocky outcrops. In BCO 3, which extends from Clarence River to Slope Point, most blue cod is caught from Taieri Mouth, Karitane, Moeraki, and Motonau Island. Although blue cod is a comparatively small fishery off Banks Peninsula, a survey of recreational fishing from Akaroa in 1996 found that blue cod outside Akaroa Heads was the most common catch (Bell 1997). There are concerns from both charter boat operators (Stuart Doyle, pers. comm.) and commercial fishers (John Wright, pers. comm.) that blue cod abundance has declined off Banks Peninsula. In addition, submissions included in the Review of Sustainability Measures and other Management Controls for 2000–01 (Anonymous 2000) provided anecdotal evidence of a decline in abundance of blue cod around Banks Peninsula. These concerns are supported by a decline in blue cod recreational harvests in BCO 3 between the early 1990s (Teirney et al. 1997) and 1996 (Bradford 1998). In response to these concerns, the maximum daily take of blue cod in BCO 3 was reduced from 30 to 10 per day in 2001, though the minimum legal size for blue cod has remained unchanged since 1986 at 30 cm (Annala et al. 2002). Commercial catches of blue cod in BCO 3 are similar to the recreational catch at about 150 t (Annala et al. 2002), but around Banks Peninsula nearly all the catch is by recreational fishers.

Currently there are no baseline data available to assess the status of BCO 3 stocks to determine if abundance is declining. In the Marlborough Sounds, blue cod catch rates (kg per pot per hour) from potting surveys in 1995 and 1996 were considered to provide a satisfactory index of relative abundance (Blackwell 1997, 1998). Patterns of size and catch rates of blue cod in the Marlborough Sounds, and particularly the inner Sounds, indicate that local depletion and overfishing have occurred.

The objective of this research was to estimate the relative abundance of blue cod around Banks Peninsula. This report describes the results of a relative abundance survey of blue cod off Banks Peninsula between January and April 2002 using cod pots. It is envisaged that regular surveys will be undertaken to provide a time series of relative abundance estimates for blue cod around Banks Peninsula.

2. METHODS

2.1 Timing

January was chosen as the optimum time to conduct the survey because weather conditions then are generally settled off the east coast of the South Island at this time of year. The survey was initially planned to proceed continuously for about 14 days, but interruptions caused by a protracted period of bad weather required the survey to be conducted in two stages. Stage 1 was between 4 and 10 January 2002 and stage 2 between 18 and 23 April 2002. Uncharacteristically poor catch rates in stage 1 on 10 January coincided with a marked decline in water clarity after strong southeasterly winds. This suggests that catchability of blue cod by potting is reduced in these conditions and that continuing with the survey at this time could have biased the estimates of relative abundance. The skipper of the chartered commercial vessel and recreational charter operators are of the view that blue cod cannot be caught off Banks Peninsula when water clarity is poor. Unsettled weather conditions prevailed until autumn when water clarity improved and the survey could be completed.

2.2 Survey area

The southern and northern boundaries of the survey area off Banks Peninsula were based on discussions with a commercial blue cod fisher in Akaroa and several charter boat operators that regularly fish in this

area. These fishers were given charts of the area and asked to mark discrete locations around Banks Peninsula where blue cod are most commonly caught. The survey area selected was between Snuffle Nose in the south and Le Bons Bay in the north, because outside this area water clarity is often poor and considered to reduce catchability (see Methods). In the absence of previous blue cod surveys to provide patterns of relative abundance and distribution on which to base our stratification, we arbitrarily divided the survey area adjacent to the coast into five strata of similar size with boundaries often determined by headlands or bays (Figure 1). The marine reserve extending off Flea Bay was excluded from the survey area. Discussions with fishers also indicated that much of the recreational catch of blue cod is now taken offshore in two large but discrete areas of fowl: Pompeys Rocks (20 km southeast of Pompeys Pillar), and Le Bons Rocks (36 km east of Le Bons Bay) (Figure 1). After consultation with the Ministry of Fisheries, these offshore areas were included by adding two strata to the survey design. The blue cod habitat adjacent to Banks Peninsula constitutes a narrow band of fowl extending out from the cliff faces and exposed headland reefs. It was assumed that this habitat band was reasonably constant in width and that the length of the coastline was proportional to the amount of blue cod habitat. Thus the size of the inshore strata was recorded as length of coast rather than in square kilometres. The area of the two offshore strata (Le Bons Rocks and Pompeys Rocks) could not be quantified in the same manner because they are discrete areas or islands of fowl. To make inshore and offshore areas surveyed comparable, the boundaries of both offshore strata were defined by rectangles (roughly equivalent to the size of the area of fowl), each subdivided into 12 smaller rectangles (3 wide and 4 long). The effective size of each offshore stratum was taken as three times the length of the longest side of each stratum. In this way the fowl was artificially divided into bands analogous to those of inshore strata.

2.3 Survey design

The survey used a two-phase stratified random station design (Francis 1984), adapted to allow for the use of pots. Before the survey, a minimum of 10 stations or sampling sites per stratum were marked on charts as described above, ensuring that they were at least 300 m apart. From this list, five stations per stratum were randomly selected for phase 1. In phase 1, 35 stations (35 sets x 6 pots per set = 210 pot lifts) (87%) were allocated with the remaining 5 (30 pot lifts) (13%) allocated in phase 2. Allocation of phase 2 stations was based on the mean catch rate (kg per pot per hour) of all blue cod per stratum and optimised using the "area mean squared" method of Francis (1984). In this way, stations were assigned iteratively to the stratum in which the expected gain was greatest, where expected gain is given by:

$$expected\ gain_i = A_i^2\ mean_i^2 / (n_i(n_i+1))$$

where for the i th stratum $mean_i$ is the mean weight of blue cod per stratum, and A_i is the area of the stratum (= length of coastline, or equivalent length of offshore strata) and n_i is the number of pots.

2.4 Vessel and gear

The survey was conducted from *CherilynJ* (registration number 63139), an Akaroa-based commercial vessel equipped to set and lift rock lobster and blue cod pots. The vessel was chartered by NIWA and skippered by the owner, John Wright. The vessel specifications are: 10.5 m length, 3.8 m breadth, 3.5 t, aluminum mono hull, powered by a 230 hp Volvo Penta diesel engine with propeller propulsion.

Six custom designed and built cod pots were used to conduct the survey. Pot specifications are: length 1200 mm, width 900 mm, depth 500 mm, synthetic inner mesh, 30 mm diameter; 50 mm cyclone wire outer mesh, entrances 4. Pots were marked with a number from 1 to 6, and baited with paua guts and fish.

2.5 Sampling methods

At each station six pots were set and left to fish (soak) for 1 h during daylight hours. Soak time was standardised to be consistent with previous potting surveys in the Marlborough Sounds (Blackwell 1997, 1998). The six pots were set in clusters, separated by about 100 m to avoid pots competing for the same fish. The position of each of the six pots was determined by the skipper using local knowledge and the vessel sounder to locate a suitable area of fowl. After a station was completed (six pot lifts) the next closest station in the stratum was fished and no allowance was made for time of day or tides. The order that strata and stations were surveyed was dependent on the prevailing weather conditions, as exposed strata such as offshore strata 6 and 7 could be surveyed only during calm weather.

As each pot was set, a record was made on customised forms of pot number, latitude and longitude from GPS, depth and bottom type from the sounder, and time of day. Pots were lifted aboard using the vessel's hydraulic pot lifter, emptied, and the contents sorted by species. Total weight per pot was recorded for each species to the nearest 10 g using 5 kg seaway scales, except for hagfish and octopus for which only the number of each fish was recorded. Total length down to the nearest centimetre was measured for blue cod. Blue cod otoliths were removed when time permitted, and sex and maturity were determined by dissection and macroscopic examination of the gonads (Carbines 1998). Gonads were recorded as one of five stages as follows: 1, immature or resting; 2, maturing (oocytes visible in females); 3, mature (hyaline oocytes in females, milt expressible in males); 4, running ripe (eggs and milt free flowing); 5, spent.

2.6 Data analysis

For each stratum and for all strata combined catch rates for all blue cod and for legal sized blue cod (30 cm and over) were estimated as the mean kg per pot per hour. Coefficients of variation (c.v.) for each stratum were determined from:

$$cv_i = se_i / mean_i$$

where for the i th stratum se_i is the standard error, and $mean_i$ is the mean catch rate (kg per pot per hour).

The overall weighted mean catch rate for all strata was determined by weighting each stratum mean by the stratum coastline length ($area_i$) divided by the sum of all coastline lengths ($area_{total}$).

$$mean_{overall} = \sum (mean_i * area_i) / area_{total}$$

The overall weighted mean standard error of the means was determined by squaring each standard error times its weighting, summing them, and then taking the square root.

$$se_{overall} = \text{SQRT} (\sum (se_i (area_i / area_{total}))^2)$$

The overall coefficient of variation for the survey was then determined from the overall mean and standard errors providing a weighted c.v.

$$cv_{overall} = se_{overall} / mean_{overall}$$

Length frequency for blue cod for each sex is presented by individual strata, inshore strata (1–5), and offshore strata (6 and 7). Length frequency data were not scaled because the area fished by a pot is unknown. Mean length for each sex was calculated for individual strata, inshore strata (1–5), offshore strata (6 and 7) and overall for all strata combined.

Weight of individual blue cod was calculated from the length weight relationship $W = aL^b$, where W = weight (g), L = length (cm), $a = 0.0052$, and $b = 3.3$ (data from Southland trawl survey, TAN9502)(Bagley & Hurst 1996). Individual fish weights were used to determine catch rates of blue cod 30 cm and over (minimum legal size).

3. RESULTS

3.1 Stations surveyed

Forty-two stations (= sets) were surveyed (6 pots per station = 252 pot lifts) from five inshore strata and two offshore strata around Banks Peninsula (Table 1, Figure 1). Nineteen stations were surveyed in January 2002, and 23 in April 2002. Stations 3B and 2E (= sets 8 and 19) carried out in January were classified as null sets because of rough sea conditions and poor water clarity. Both stations were repeated in April 2002 (sets 24 and 27 respectively) and the results of the latter were used in the analyses (Appendix 1). Of the 40 successful stations (240 pot lifts), 35 were carried out in phase 1 (5 per stratum) and 5 allocated to strata 1, 3, and 4 in phase 2. Depth ranged from about 11 to 54 m inshore (strata 1–5), and 72 to 88 m for offshore strata 6 and 7.

3.2 Catch

A total of 619 kg of catch was taken on the survey, of which 439 kg (71%) was blue cod, consisting of 837 fish (Table 2). Bycatch included 12 fish, 1 shark, and 1 octopus species. The five most common bycatch species by weight were hagfish (*Eptatretus cirrhatus*), scarlet wrasse (*Pseudolabrus miles*), girdled wrasse (*Pseudolabrus cinctus*), rock cod (*Lotella rhacinus*), and octopus (*Octopus cordiformis*).

Mean catch rates of blue cod (all sizes) ranged from 0.04 kg per pot per hour in stratum 2 near Akaroa Harbour entrance, to 4.74 kg per pot per hour for the offshore stratum 7 located over Pompeys Rock. Overall mean catch rate and c.v. were 2.23 kg per pot per hour and 10.8% (Table 3). For blue cod 30 cm and over (minimum legal size), highest catch rates were also in stratum 7, and inshore strata 2 and 5 had no blue cod of minimum legal size. Overall mean catch rate and c.v. were 1.6 kg per pot per hour and 13.2% (Table 4).

3.3 Biological and length frequency data

Of the 837 blue cod caught on the survey, 832 were sexed and measured for length, and of those, otoliths were taken from about 620 fish and stored. The sex ratio for inshore strata (1–5) was 2.2:1 (male:female), 0.74:1 for offshore strata (6 and 7), and 1.6:1 overall. Length frequency distributions for the five inshore strata were similar with a single modal peak at about 27 cm, while blue cod in the two offshore strata were larger with no clear modes present (Figure 2, Table 5). Mean lengths of males were larger than females from inshore strata, and sexes were of similar length from offshore strata, but in both inshore and offshore strata the largest fish were usually males.

Of 832 blue cod examined, 773 (93%) had resting gonad stages, and 54 females and 5 males from offshore strata had mature stage gonads. The mean length of mature stage fish was 41.2 cm for females and 49.6 cm for males.

4. DISCUSSION

The results of this survey provide the first abundance index of blue cod around Banks Peninsula. The overall c.v. of 10.8% for all blue cod is reasonable given that there were no previous surveys on which to optimise allocation of stations. The mean catch rates varied between strata and were highest offshore in strata 6 and 7 and in inshore stratum 4. Catch rates appear similar to those for blue cod in the Marlborough Sounds for surveys in 1995 and 1998, which were also highly variable between areas (Blackwell 1997, 1998). However, a survey of Marlborough Sounds in 2001 indicates that abundance has declined markedly since 1998 (Blackwell 2002).

The division of the survey into two parts separated by several months was unavoidable due to poor weather. We assume that blue cod catch rates were not affected by the timing of the survey because blue cod in BCO 5 are caught commercially all year round (Warren et al. 1997), and tagging studies in other areas have shown that blue cod populations are temporally stable (Mace & Johnston 1983, Carbines & McKenzie 2001, Blackwell 2002). Advice from fishers, together with two stations sampled during poor water clarity, suggest that blue cod are not vulnerable to pots in these conditions, and that sampling on future surveys should take place only when water clarity is high. Episodes of poor water clarity are a feature of the inshore waters off Banks Peninsula and dictates effort and catch of both the blue cod and rock lobster fisheries (John Wright, pers. comm).

Blue cod catches do not appear to be affected by time of day, but can be influenced by the state of the tide in areas where tidal flow is high, such as in Foveaux Strait (Warren et al. 1997). In our sampling design it was not practical to allow for the effect that tide might have on catch rates, and we cannot rule out the possibility that some catch rates may have been affected, although compared to Foveaux Strait, tidal flow around Banks Peninsula is low.

Blue cod from the five inshore strata had similar size structure and were dominated by males. This contrasts with fish from the two offshore strata, which were about 10 cm longer on average with fewer small fish and more females than males (Table 5, see Figure 2). It is likely that the difference between relative abundance, size structure, and possibly sex ratios of these populations is a result of heavy fishing pressure on the more accessible inshore stocks. This is demonstrated by the lowest catch rate of all blue cod being in stratum 2 encompassing the entrance to Akaroa Harbour and the absence of any fish of legal size (30 cm and over) in strata 2 and 5. Similar conclusions were reached for blue cod in the Marlborough Sounds, where catch rates appear to be inversely proportional to recreational fishing effort (Blackwell 1998, 2002)

The size structure of blue cod from inshore Banks Peninsula is similar to that in Marlborough Sounds but fish from the Banks Peninsula offshore strata are generally larger.

Southland blue cod spawn mainly between September and November but continue through to January (Carbines 1998). The mature gonads observed in 7% of sampled fish may be from late spawners suggesting that the timing of spawning off Banks Peninsula is similar to that off Southland.

5. ACKNOWLEDGMENTS

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Table 1: Stratum coastline length, number of phase 1 and 2 stations, pot lifts, and depth.

Stratum	Length of coastline (km)	Number of sets		Number of pot lifts	Depth (m)	
		Phase 1	Phase 2		Mean	Range
1	7.96	5	2	42	22.1	14-29
2	9.44	5		30	25.0	16-36
3	7.96	5	1	36	20.2	11-27
4	7.78	5	2	42	20.5	11-54
5	8.15	5		30	17.5	12-32
6	16.67	5		30	83.2	79-88
7	16.67	5		30	77.0	72-82
Total	74.63	35	5	240	35.8	11-88

Table 2: Catch weights and/or numbers of blue cod and bycatch species caught on the survey and percentage of total weight. *Estimated weight where average weight estimated at 0.4 kg for hagfish and 5.5 kg for octopus; -did not record numbers.

Common name	Scientific name	Catch	Number	Percent of total catch
		(kg)		
Blue cod	<i>Parapercis colias</i>	439.86	837	71.06
Hagfish	<i>Eptatretus cirrhatus</i> *	38.80	97	6.27
Scarlet wrasse	<i>Pseudolabrus miles</i>	25.15	-	4.06
Girdled wrasse	<i>Pseudolabrus cinctus</i>	23.11	-	3.73
Rock cod	<i>Lotella rhacinus</i>	19.07	-	3.08
Octopus	<i>Octopus cordiformis</i> *	16.50	3	2.67
Sea perch	<i>Helicolenus percoides</i>	15.83	-	2.56
Swollen headed conger	<i>Bassanago bulbiceps</i>	14.60	-	2.36
Spotty	<i>Pseudolabrus celidotus</i>	10.54	-	1.70
Carpet shark	<i>Cephaloscyllium isabella</i>	5.73	-	0.93
Red cod	<i>Pseudophycis bachus</i>	3.97	-	0.64
Banded Wrasse	<i>Pseudolabrus fucicola</i>	3.76	-	0.61
Tarakihi	<i>Nemadactylus macropterus</i>	1.32	-	0.21
Leather jacket	<i>Parika scaber</i>	0.41	-	0.07
Blue moki	<i>Latridopsis ciliaris</i>	0.38	-	0.06
Total		619.01		

Table 3: Mean catch rate, standard error, and c.v. per stratum and overall for all blue cod.

Stratum	Pot lifts (N)	Mean (kg/lift)	s.e.	c.v. %
1	42	1.73	0.44	25.7
2	30	0.04	0.02	49.5
3	36	1.42	0.23	16.4
4	42	2.61	0.67	25.9
5	30	0.08	0.07	85.2
6	30	2.04	0.54	26.7
7	30	4.74	0.79	16.6
Overall	240	2.13	0.23	10.8

Table 4: Mean catch rate, standard error, and c.v. per stratum and overall for blue cod 30 cm or over.

Stratum	Pot lifts (N)	Mean (kg/lift)	s.e.	c.v. %
1	42	0.91	0.30	33.3
2	30	0.00	0.00	–
3	36	0.41	0.09	22.9
4	42	1.15	0.35	30.3
5	30	0.00	0.00	–
6	30	1.78	0.54	30.2
7	30	4.21	0.74	17.7
Overall	240	1.60	0.21	13.2

Table 5: Mean lengths of blue cod by stratum and sex.

Stratum	Sex	N	Mean length (cm)
1	m	151	28.4
	f	47	25.0
2	m	2	26.0
	f	3	23.3
3	m	130	27.0
	f	45	24.0
4	m	140	29.5
	f	98	26.0
5	m	1	24.0
	f	2	26.0
6	m	27	35.4
	f	37	37.6
7	m	60	38.7
	f	80	36.1
1-5 combined	m	424	28.3
	f	195	25.3
6 and 7 combined	m	87	37.7
	f	117	36.6
Overall	m	511	29.9
	f	312	29.5

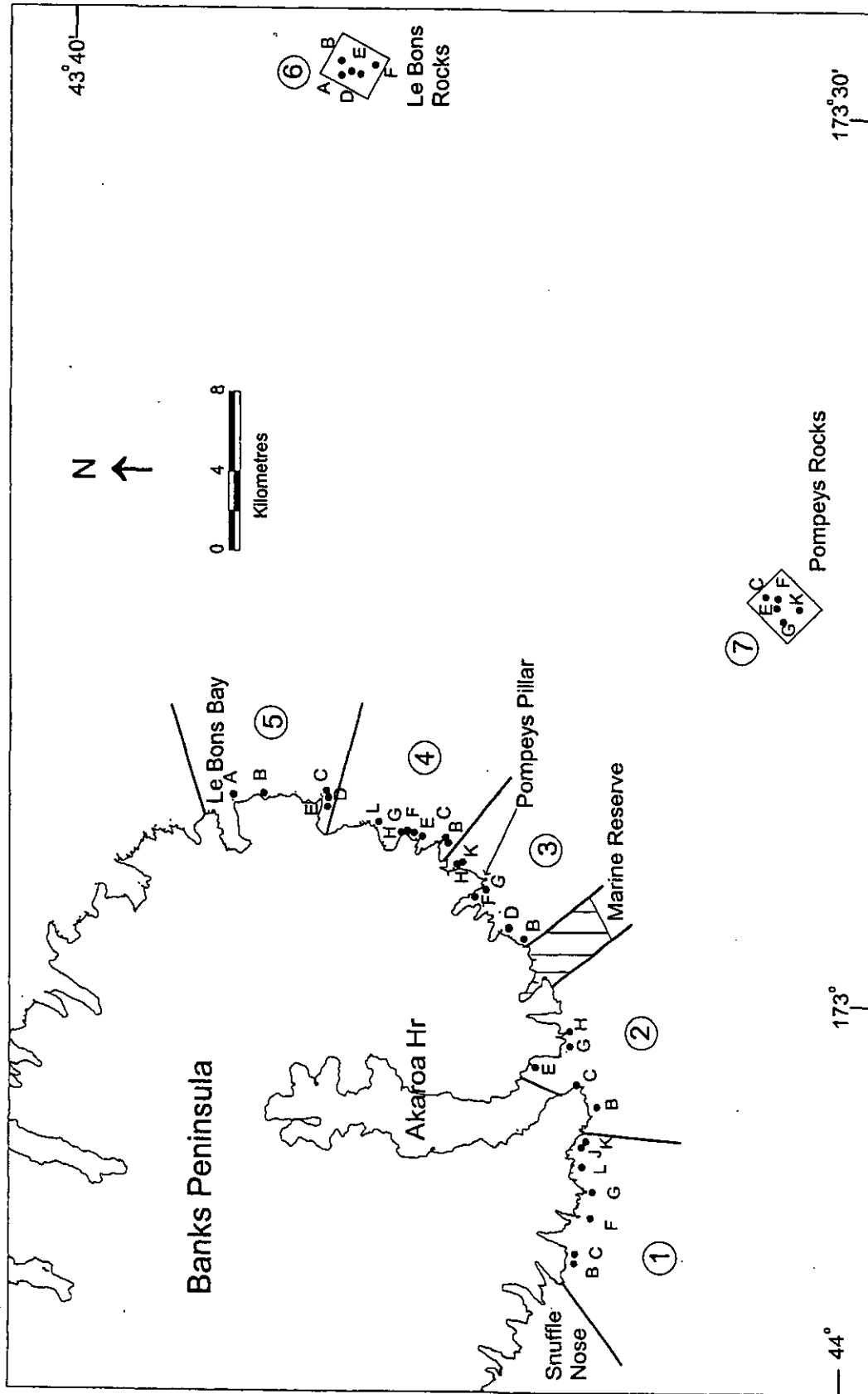


Figure 1: Map of Banks Peninsula showing strata (1-7) and stations surveyed.

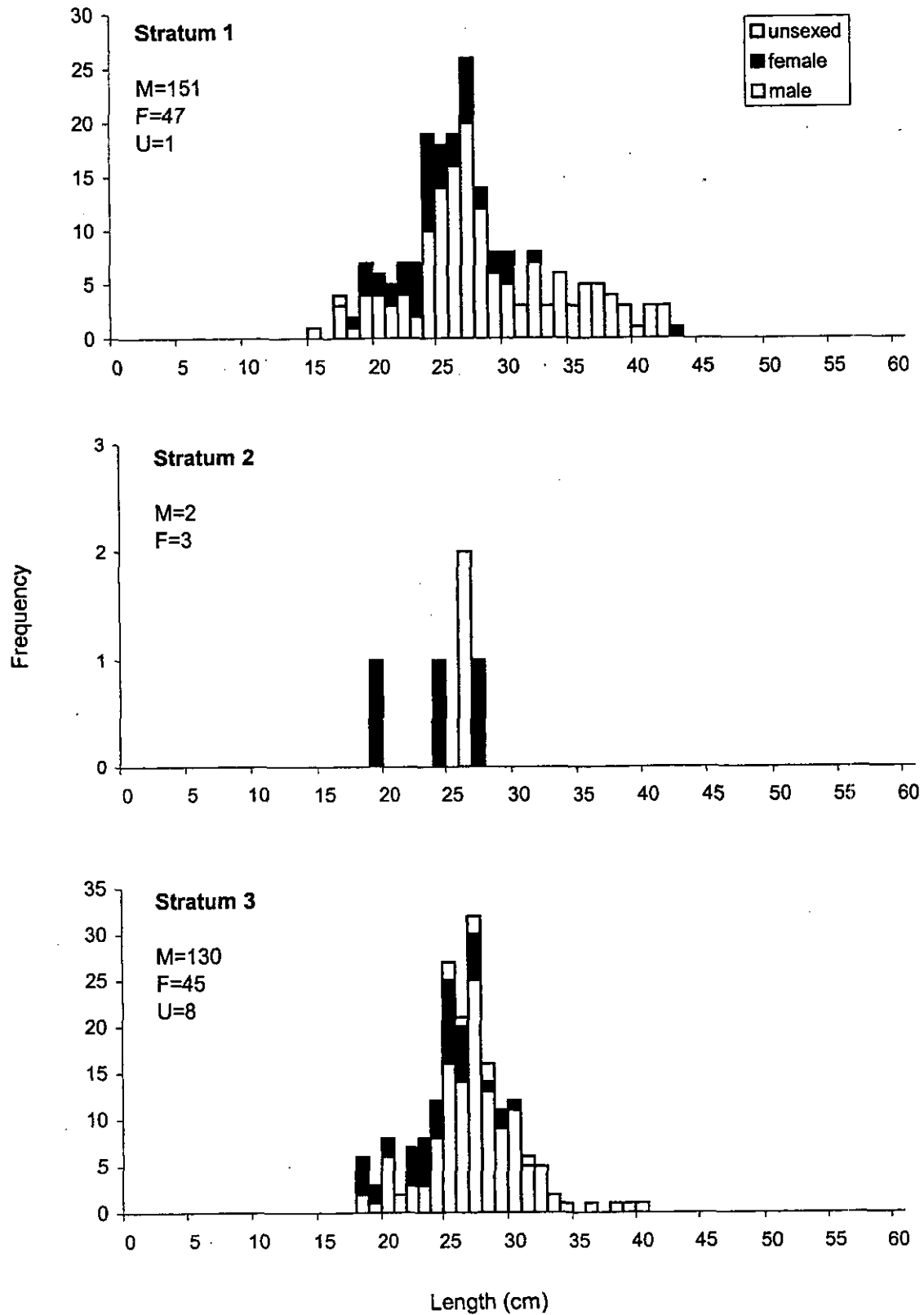


Figure 2: Length frequency distributions of blue cod for each stratum (1-7), for inshore strata combined (1-5), and offshore strata combined (6 & 7).

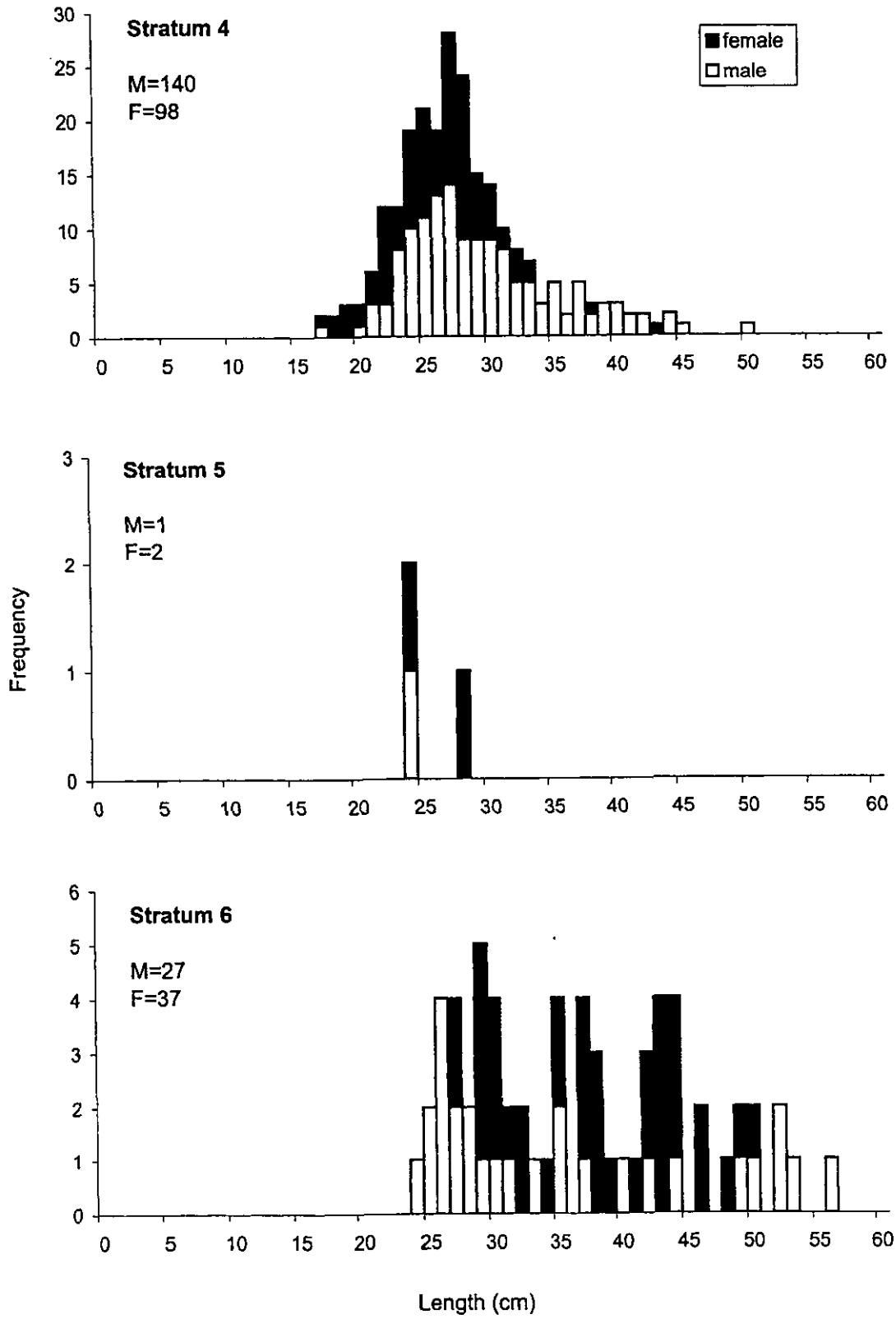


Figure 2 – continued

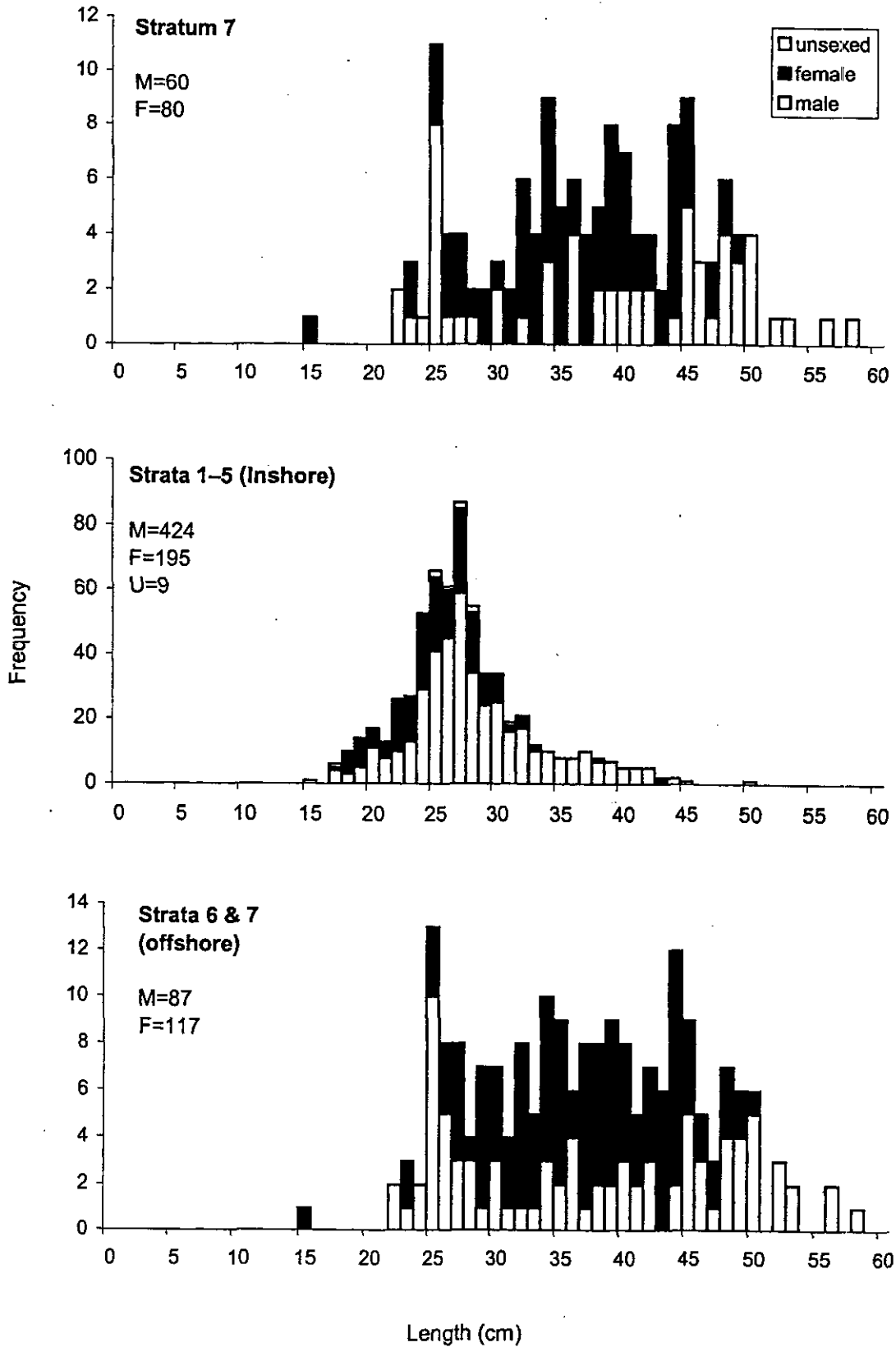


Figure 2 – continued

Appendix 1: Summary of pot lift station data. Sets 8 and 19 were null sets and not included in the analyses.

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot number	Catch of blue cod	
											(kg)	Number of fish
1	4-Jan-02	1	1	1C	Long Bay	43 53.62	172 50.78	19	750	1	0.00	0
1	4-Jan-02	1	1	1C	Long Bay	43 53.67	172 50.70	20	755	2	2.69	10
1	4-Jan-02	1	1	1C	Long Bay	43 53.65	172 50.65	18	800	3	0.00	0
1	4-Jan-02	1	1	1C	Long Bay	43 53.65	172 50.67	18	805	4	0.00	0
1	4-Jan-02	1	1	1C	Long Bay	43 53.67	172 50.49	21	815	5	1.70	5
1	4-Jan-02	1	1	1C	Long Bay	43 53.64	172 50.49	14	819	6	0.00	0
2	4-Jan-02	1	1	1F	Long Bay	43 54.03	172 51.93	26	1015	6	8.62	16
2	4-Jan-02	1	1	1F	Long Bay	43 54.31	172 51.95	27	1020	5	0.87	4
2	4-Jan-02	1	1	1F	Long Bay	43 54.04	172 51.99	25	1023	4	0.29	2
2	4-Jan-02	1	1	1F	Long Bay	43 54.06	172 52.03	27	1025	3	0.54	2
2	4-Jan-02	1	1	1F	Long Bay	43 54.97	172 52.10	22	1030	2	0.00	0
2	4-Jan-02	1	1	1F	Long Bay	43 54.27	172 53.92	24	1033	1	1.60	8
3	4-Jan-02	1	1	1G	Whakamoa Reef	43 54.11	172 52.82	27	1300	1	1.21	7
3	4-Jan-02	1	1	1G	Whakamoa Reef	43 54.14	172 52.85	25	1303	2	1.15	1
3	4-Jan-02	1	1	1G	Whakamoa Reef	43 54.18	172 52.88	27	1305	3	1.60	8
3	4-Jan-02	1	1	1G	Whakamoa Reef	43 54.22	172 52.91	29	1310	4	14.52	31
3	4-Jan-02	1	1	1G	Whakamoa Reef	43 54.27	172 53.05	27	1314	5	2.65	7
3	4-Jan-02	1	1	1G	Whakamoa Reef	43 54.13	172 53.17	23	1317	6	0.85	5
4	4-Jan-02	1	1	1I	Whakamoa Reef	43 53.78	172 53.75	16	1523	6	4.03	13
4	4-Jan-02	1	1	1I	Whakamoa Reef	43 53.80	172 53.81	17	1525	5	4.80	12
4	4-Jan-02	1	1	1I	Whakamoa Reef	43 53.82	172 53.87	17	1527	4	1.25	5
4	4-Jan-02	1	1	1I	Whakamoa Reef	43 53.97	172 53.97	20	1534	3	3.97	12
4	4-Jan-02	1	1	1I	Whakamoa Reef	43 53.85	172 54.02	17	1536	2	4.13	8
4	4-Jan-02	1	1	1I	Whakamoa Reef	43 53.90	172 54.19	19	1540	1	0.29	1
5	5-Jan-02	1	1	1J	Squally Bay	43 53.81	172 54.56	22	702	1	6.44	19
5	5-Jan-02	1	1	1J	Squally Bay	43 53.81	172 54.61	22	705	2	4.91	10
5	5-Jan-02	1	1	1J	Squally Bay	43 53.86	172 54.67	23	707	3	3.76	11
5	5-Jan-02	1	1	1J	Squally Bay	43 53.90	172 54.76	24	710	4	0.34	1
5	5-Jan-02	1	1	1J	Squally Bay	43 53.99	172 54.89	25	714	5	0.00	0
5	5-Jan-02	1	1	1J	Squally Bay	43 54.04	172 54.99	26	715	6	0.34	1

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
6	5-Jan-02	1	2	2B	Wright Rock	43 54.33	172 56.07	34	915	6	0.00	0
6	5-Jan-02	1	2	2B	Wright Rock	43 54.29	172 56.08	31	918	5	0.00	0
6	5-Jan-02	1	2	2B	Wright Rock	43 54.30	172 56.14	36	920	4	0.40	2
6	5-Jan-02	1	2	2B	Wright Rock	43 54.28	172 56.22	33	922	3	0.29	1
6	5-Jan-02	1	2	2B	Wright Rock	43 54.26	172 56.29	35	925	2	0.25	1
6	5-Jan-02	1	2	2B	Wright Rock	43 54.22	172 56.45	32	927	1	0.00	0
7	5-Jan-02	1	2	2C	Timutimu Head	43 53.86	172 57.08	24	1043	1	0.00	0
7	5-Jan-02	1	2	2C	Timutimu Head	43 53.01	172 57.06	25	1045	2	0.00	0
7	5-Jan-02	1	2	2C	Timutimu Head	43 53.77	172 57.04	24	1048	3	0.00	0
7	5-Jan-02	1	2	2C	Timutimu Head	43 53.71	172 57.04	20	1051	4	0.00	0
7	5-Jan-02	1	2	2C	Timutimu Head	43 53.65	172 56.98	21	1054	5	0.00	0
7	5-Jan-02	1	2	2C	Timutimu Head	43 53.58	172 56.90	19	1055	6	0.00	0
8	6-Jan-02	1	3	3B	Redcliffe Point	43 52.54	173 02.35	35	1121	6	0.00	0
8	6-Jan-02	1	3	3B	Redcliffe Point	43 52.55	173 02.35	34	1124	5	0.00	0
8	6-Jan-02	1	3	3B	Redcliffe Point	43 52.46	173 02.41	25	1128	4	0.00	0
8	6-Jan-02	1	3	3B	Redcliffe Point	43 52.38	173 02.43	24	1132	3	0.00	0
8	6-Jan-02	1	3	3B	Redcliffe Point	43 52.36	173 02.48	27	1136	2	0.00	0
8	6-Jan-02	1	3	3B	Redcliffe Point	43 52.35	173 02.57	28	1141	1	0.00	0
9	7-Jan-02	1	7	7C	Pompeys Rocks	43 58.63	173 15.43	72	639	1	7.07	8
9	7-Jan-02	1	7	7C	Pompeys Rocks	43 58.68	173 15.56	73	644	2	5.19	9
9	7-Jan-02	1	7	7C	Pompeys Rocks	43 58.74	173 15.71	73	647	3	2.28	4
9	7-Jan-02	1	7	7C	Pompeys Rocks	43 58.87	173 15.66	73	652	4	5.09	7
9	7-Jan-02	1	7	7C	Pompeys Rocks	43 58.89	173 15.49	74	656	5	3.00	3
9	7-Jan-02	1	7	7C	Pompeys Rocks	43 58.74	173 15.32	74	702	6	14.68	11
10	7-Jan-02	1	7	7F	Pompeys Rocks	43 59.02	173 15.66	77	913	6	12.71	10
10	7-Jan-02	1	7	7F	Pompeys Rocks	43 59.04	173 15.49	77	916	5	4.70	3
10	7-Jan-02	1	7	7F	Pompeys Rocks	43 59.04	173 15.34	76	917	4	2.96	1
10	7-Jan-02	1	7	7F	Pompeys Rocks	43 59.14	173 15.34	77	922	3	9.15	10
10	7-Jan-02	1	7	7F	Pompeys Rocks	43 59.13	173 15.54	77	924	2	0.00	0
10	7-Jan-02	1	7	7F	Pompeys Rocks	43 59.12	173 15.68	74	926	1	6.74	5

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
11	7-Jan-02	1	7	7E	Pompeys Rocks	43 59.01	173 15.21	77	1130	1	3.69	9
11	7-Jan-02	1	7	7E	Pompeys Rocks	43 58.99	173 15.12	76	1134	2	4.21	7
11	7-Jan-02	1	7	7E	Pompeys Rocks	43 58.99	173 15.02	75	1137	3	9.68	9
11	7-Jan-02	1	7	7E	Pompeys Rocks	43 59.12	173 15.02	82	1141	4	10.19	8
11	7-Jan-02	1	7	7E	Pompeys Rocks	43 59.19	173 15.19	81	1146	5	5.51	4
11	7-Jan-02	1	7	7E	Pompeys Rocks	43 59.19	173 15.35	78	1148	6	14.70	10
12	7-Jan-02	1	7	7G	Pompeys Rocks	43 59.27	173 14.74	79	1336	6	0.90	2
12	7-Jan-02	1	7	7G	Pompeys Rocks	43 59.24	173 14.66	78	1339	5	0.40	1
12	7-Jan-02	1	7	7G	Pompeys Rocks	43 59.20	173 14.54	78	1342	4	1.02	3
12	7-Jan-02	1	7	7G	Pompeys Rocks	43 59.30	173 14.47	78	1346	3	2.23	2
12	7-Jan-02	1	7	7G	Pompeys Rocks	43 59.37	173 14.64	79	1348	2	4.03	2
12	7-Jan-02	1	7	7G	Pompeys Rocks	43 59	173 14	82	1351	1	6.32	4
13	7-Jan-02	1	7	7K	Pompeys Rocks	43 59.59	173 14.90	79	1514	1	0.00	0
13	7-Jan-02	1	7	7K	Pompeys Rocks	43 59.66	173 15.09	78	1517	2	0.06	1
13	7-Jan-02	1	7	7K	Pompeys Rocks	43 59.70	173 15.25	79	1521	3	0.60	1
13	7-Jan-02	1	7	7K	Pompeys Rocks	43 59.83	173 15.22	79	1525	4	0.72	2
13	7-Jan-02	1	7	7K	Pompeys Rocks	43 59.82	173 15.10	77	1529	5	0.00	0
13	7-Jan-02	1	7	7K	Pompeys Rocks	43 59.79	173 14.90	79	1532	6	4.28	4
14	8-Jan-02	1	6	6B	Le Bons Rocks	43 46.99	173 35.66	82	755	6	1.50	3
14	8-Jan-02	1	6	6B	Le Bons Rocks	43 46.98	173 35.57	80	800	5	1.22	3
14	8-Jan-02	1	6	6B	Le Bons Rocks	43 46.98	173 35.45	82	803	4	0.00	0
14	8-Jan-02	1	6	6B	Le Bons Rocks	43 47.09	173 35.39	84	806	3	1.03	3
14	8-Jan-02	1	6	6B	Le Bons Rocks	43 47.12	173 35.53	83	810	2	3.44	6
14	8-Jan-02	1	6	6B	Le Bons Rocks	43 47.14	173 35.65	81	813	1	1.00	3
15	8-Jan-02	1	6	6A	Le Bons Rocks	43 47.14	173 35.11	84	936	1	2.70	3
15	8-Jan-02	1	6	6A	Le Bons Rocks	43 47.12	173 34.98	82	940	2	4.55	4
15	8-Jan-02	1	6	6A	Le Bons Rocks	43 47.12	173 34.87	80	942	3	0.00	0
15	8-Jan-02	1	6	6A	Le Bons Rocks	43 47.01	173 34.86	83	946	4	9.34	6
15	8-Jan-02	1	6	6A	Le Bons Rocks	43 47.00	173 34.99	84	948	5	1.51	4
15	8-Jan-02	1	6	6A	Le Bons Rocks	43 47.02	173 35.17	86	952	6	0.00	0
16	8-Jan-02	1	6	6D	Le Bons Rocks	43 47.30	173 35.03	85	1120	6	12.15	7

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
16	8-Jan-02	1	6	6D	Le Bons Rocks	43 47.27	173 35.17	86	1124	5	0.00	0
16	8-Jan-02	1	6	6D	Le Bons Rocks	43 47.31	173 35.30	80	1128	4	1.40	1
16	8-Jan-02	1	6	6D	Le Bons Rocks	43 47.38	173 35.31	85	1131	3	0.00	0
16	8-Jan-02	1	6	6D	Le Bons Rocks	43 47.40	173 35.13	83	1135	2	0.00	0
16	8-Jan-02	1	6	6D	Le Bons Rocks	43 47.42	173 34.97	82	1140	1	0.79	1
17	8-Jan-02	1	6	6E	Le Bons Rocks	43 47.55	173 35.04	84	1306	1	0.00	0
17	8-Jan-02	1	6	6E	Le Bons Rocks	43 47.53	173 35.14	84	1310	2	0.00	0
17	8-Jan-02	1	6	6E	Le Bons Rocks	43 47.26	173 35.25	82	1313	3	2.72	2
17	8-Jan-02	1	6	6E	Le Bons Rocks	43 47.65	173 35.19	82	1317	4	0.00	0
17	8-Jan-02	1	6	6E	Le Bons Rocks	43 47.66	173 35.06	86	1320	5	7.71	7
17	8-Jan-02	1	6	6E	Le Bons Rocks	43 47.65	173 34.91	88	1324	6	2.11	2
18	8-Jan-02	1	6	6F	Le Bons Rocks	43 47.99	173 35.37	82	1456	6	0.00	0
18	8-Jan-02	1	6	6F	Le Bons Rocks	43 47.99	173 35.45	79	1500	5	2.03	2
18	8-Jan-02	1	6	6F	Le Bons Rocks	43 48.00	173 35.52	81	1504	4	1.60	4
18	8-Jan-02	1	6	6F	Le Bons Rocks	43 48.07	173 35.45	84	1507	3	4.25	3
18	8-Jan-02	1	6	6F	Le Bons Rocks	43 48.02	173 35.37	86	1510	2	0.00	0
18	8-Jan-02	1	6	6F	Le Bons Rocks	43 47.99	173 35.24	87	1515	1	0.00	0
19	11-Jan-02	1	2	2E	East harbour mouth	43 52.486	172 57.574	18	601	1	0.00	0
19	11-Jan-02	1	2	2E	East harbour mouth	43 52.463	172 57.539	17	605	2	0.00	0
19	11-Jan-02	1	2	2E	East harbour mouth	43 52.444	172 57.493	19	607	3	0.00	0
19	11-Jan-02	1	2	2E	East harbour mouth	43 52.37	172 57.446	18	612	4	0.00	0
19	11-Jan-02	1	2	2E	East harbour mouth	43 52.303	172 57.412	19	617	5	0.00	0
19	11-Jan-02	1	2	2E	East harbour mouth	43 52.194	172 57.180	17	622	6	0.00	0
20	18-Apr-02	1	3	3K	Red Bluff	43 50.473	173 05.367	21	749	2	0.75	2
20	18-Apr-02	1	3	3K	Red Bluff	43 50.375	173 05.37	20	751	5	1.02	3
20	18-Apr-02	1	3	3K	Red Bluff	43 50.583	173 05.348	22	755	1	2.41	6
20	18-Apr-02	1	3	3K	Red Bluff	43 50.639	173 05.348	24	759	6	0.00	0
20	18-Apr-02	1	3	3K	Red Bluff	43 50.402	173 05.28	18	803	3	2.54	10
20	18-Apr-02	1	3	3K	Red Bluff	43 50.459	173 05.33	19	807	4	0.18	1
21	18-Apr-02	1	3	3G	Otanerito Bay	43 51.261	173 04.438	26	900	6	1.85	7
21	18-Apr-02	1	3	3G	Otanerito Bay	43 51.222	173 04.387	26	904	1	4.71	21

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
21	18-Apr-02	1	3	3G	Otanerito Bay	43 51.212	173 04.343	27	908	5	1.80	6
21	18-Apr-02	1	3	3G	Otanerito Bay	43 51.186	173 04.301	24	912	2	0.98	4
21	18-Apr-02	1	3	3G	Otanerito Bay	43 51.161	173 04.259	23	913	4	0.67	2
21	18-Apr-02	1	3	3G	Otanerito Bay	43 51.114	173 04.246	21	915	3	0.37	2
22	18-Apr-02	1	3	3F	Otanerito Bay	43 50.995	173 04.085	20	1033	3	3.34	12
22	18-Apr-02	1	3	3F	Otanerito Bay	43 50.964	173 04.068	17	1037	4	2.67	9
22	18-Apr-02	1	3	3F	Otanerito Bay	43 50.847	173 04.011	12	1041	1	4.68	21
22	18-Apr-02	1	3	3F	Otanerito Bay	43 50.759	173 04.0	11	1045	6	2.53	7
22	18-Apr-02	1	3	3F	Otanerito Bay	43 50.976	173 04.109	20	1049	2	2.04	11
22	18-Apr-02	1	3	3F	Otanerito Bay	43 50.912	173 04.109	13	1053	5	3.68	12
23	18-Apr-02	1	3	3D	Stony Bay	43 51.723	173 02.925	18	1200	6	1.05	4
23	18-Apr-02	1	3	3D	Stony Bay	43 51.747	173 02.963	19	1204	1	0.16	1
23	18-Apr-02	1	3	3D	Stony Bay	43 51.889	173 02.892	19	1208	4	2.69	8
23	18-Apr-02	1	3	3D	Stony Bay	43 51.922	173 02.841	21	1212	3	2.31	6
23	18-Apr-02	1	3	3D	Stony Bay	43 51.804	173 02.960	21	1216	5	1.76	5
23	18-Apr-02	1	3	3D	Stony Bay	43 51.837	173 02.940	22	1220	2	1.53	8
24	18-Apr-02	1	3	3B	Redcliffe Point	43 52.144	173 02.653	23	1330	3	0.00	0
24	18-Apr-02	1	3	3B	Redcliffe Point	43 52.185	173 02.595	21	1334	4	3.60	9
24	18-Apr-02	1	3	3B	Redcliffe Point	43 52.228	173 02.521	21	1338	2	0.00	0
24	18-Apr-02	1	3	3B	Redcliffe Point	43 52.279	173 02.507	22	1342	5	0.26	1
24	18-Apr-02	1	3	3B	Redcliffe Point	43 52.353	173 02.479	18	1346	1	0.62	2
24	18-Apr-02	1	3	3B	Redcliffe Point	43 52.392	173 02.467	27	1350	6	0.66	2
25	19-Apr-02	1	2	2H	Akaroa Head	43 53.512	172 58.940	26	715	6	0.00	0
25	19-Apr-02	1	2	2H	Akaroa Head	43 53.558	172 58.982	25	719	1	0.00	0
25	19-Apr-02	1	2	2H	Akaroa Head	43 53.570	172 59.076	30	723	5	0.00	0
25	19-Apr-02	1	2	2H	Akaroa Head	43 53.516	172 59.075	27	727	2	0.00	0
25	19-Apr-02	1	2	2H	Akaroa Head	43 53.434	172 59.089	27	731	4	0.00	0
25	19-Apr-02	1	2	2H	Akaroa Head	43 53.370	172 59.129	23	735	3	0.00	0
26	19-Apr-02	1	2	2G	Te Ruahine Point	43 53.575	172 58.727	28	843	3	0.00	0
26	19-Apr-02	1	2	2G	Te Ruahine Point	43 53.582	172 58.645	25	847	4	0.00	0
26	19-Apr-02	1	2	2G	Te Ruahine Point	43 53.520	172 58.546	26	851	2	0.00	0

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
26	19-Apr-02	1	2	2G	Te Ruahine Point	43 53.508	172 58.483	26	855	5	0.00	0
26	19-Apr-02	1	2	2G	Te Ruahine Point	43 53.505	172 58.416	24	859	1	0.00	0
26	19-Apr-02	1	2	2G	Te Ruahine Point	43 53.553	172 58.292	22	903	6	0.00	0
27	19-Apr-02	1	2	2E	Inner Harbour	43 52.563	172 57.867	16	1017	6	0.18	1
27	19-Apr-02	1	2	2E	Inner Harbour	43 52.581	172 57.817	20	1021	1	0.00	0
27	19-Apr-02	1	2	2E	Inner Harbour	43 52.550	172 57.754	16	1025	5	0.00	0
27	19-Apr-02	1	2	2E	Inner Harbour	43 52.537	172 57.697	17	1029	2	0.00	0
27	19-Apr-02	1	2	2E	Inner Harbour	43 52.518	172 57.618	20	1033	4	0.00	0
27	19-Apr-02	1	2	2E	Inner Harbour	43 52.475	172 57.544	19	1037	3	0.00	0
28	21-Apr-02	1	5	5A	Steep Head	43 44.267	173 07.737	16	830	1	0.00	0
28	21-Apr-02	1	5	5A	Steep Head	43 44.205	173 07.604	13	834	6	0.00	0
28	21-Apr-02	1	5	5A	Steep Head	43 44.113	173 07.995	19	838	3	0.00	0
28	21-Apr-02	1	5	5A	Steep Head	43 44.139	173 07.949	20	842	4	0.00	0
28	21-Apr-02	1	5	5A	Steep Head	43 44.154	173 07.870	20	846	2	0.00	0
28	21-Apr-02	1	5	5A	Steep Head	43 44.194	173 07.737	17	850	5	0.00	0
29	21-Apr-02	1	5	5B	East Head	43 45.233	173 07.885	14	959	4	0.00	0
29	21-Apr-02	1	5	5B	East Head	43 45.342	173 07.880	13	1003	3	0.00	0
29	21-Apr-02	1	5	5B	East Head	43 44.993	173 07.891	12	1007	5	0.00	0
29	21-Apr-02	1	5	5B	East Head	43 45.036	173 07.856	13	1011	2	0.00	0
29	21-Apr-02	1	5	5B	East Head	43 44.848	173 07.898	13	1015	6	0.00	0
29	21-Apr-02	1	5	5B	East Head	43 44.918	173 07.922	14	1019	1	0.00	0
30	21-Apr-02	1	5	5C	Putakolo Head	43 46.626	173 07.861	18	1123	2	0.00	0
30	21-Apr-02	1	5	5C	Putakolo Head	43 46.725	173 08.006	32	1127	5	0.00	0
30	21-Apr-02	1	5	5C	Putakolo Head	43 46.452	173 07.652	16	1131	3	0.00	0
30	21-Apr-02	1	5	5C	Putakolo Head	43 46.545	173 07.706	17	1135	4	0.00	0
30	21-Apr-02	1	5	5C	Putakolo Head	43 46.808	173 08.072	29	1139	1	0.00	0
30	21-Apr-02	1	5	5C	Putakolo Head	43 46.769	173 08.032	27	1143	6	0.00	0
31	21-Apr-02	1	5	5D	Hickory Bay	43 46.804	173 07.750	19	1249	5	0.00	0
31	21-Apr-02	1	5	5D	Hickory Bay	43 46.820	173 07.668	18	1253	2	0.00	0
31	21-Apr-02	1	5	5D	Hickory Bay	43 46.823	173 07.873	25	1257	1	0.00	0
31	21-Apr-02	1	5	5D	Hickory Bay	43 46.803	173 07.815	21	1301	6	0.00	0

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
31	21-Apr-02	1	5	5D	Hickory Bay	43 46.804	173 07.601	15	1305	4	0.37	2
31	21-Apr-02	1	5	5D	Hickory Bay	43 46.798	173 07.521	17	1309	3	0.00	0
32	21-Apr-02	1	5	5E	Inner Hickory Bay	43 46.770	173 07.370	14	1446	2	0.00	0
32	21-Apr-02	1	5	5E	Inner Hickory Bay	43 46.765	173 07.311	16	1450	5	0.00	0
32	21-Apr-02	1	5	5E	Inner Hickory Bay	43 46.786	173 07.464	15	1454	3	0.00	0
32	21-Apr-02	1	5	5E	Inner Hickory Bay	43 46.780	173 07.408	16	1458	4	0.00	0
32	21-Apr-02	1	5	5E	Inner Hickory Bay	43 46.745	173 07.452	14	1502	6	0.00	0
32	21-Apr-02	1	5	5E	Inner Hickory Bay	43 46.702	170 07.180	12	1506	1	1.99	4
33	22-Apr-02	1	4	4H	Inner Goughs Bay	43 48.930	173 06.389	15	759	6	0.00	0
33	22-Apr-02	1	4	4H	Inner Goughs Bay	43 48.954	173 06.452	17	803	1	0.00	0
33	22-Apr-02	1	4	4H	Inner Goughs Bay	43 48.890	173 06.262	12	807	2	0.00	0
33	22-Apr-02	1	4	4H	Inner Goughs Bay	43 48.906	173 06.332	14	811	5	0.00	0
33	22-Apr-02	1	4	4H	Inner Goughs Bay	43 48.863	173 06.162	11	815	3	0.00	0
33	22-Apr-02	1	4	4H	Inner Goughs Bay	43 48.876	173 06.214	13	819	4	0.77	2
34	22-Apr-02	1	4	4G	Goughs Bay	43 48.995	173 06.496	18	911	1	3.54	6
34	22-Apr-02	1	4	4G	Goughs Bay	43 49.024	173 06.516	16	915	6	0.00	0
34	22-Apr-02	1	4	4G	Goughs Bay	43 49.060	173 06.534	16	919	5	5.85	7
34	22-Apr-02	1	4	4G	Goughs Bay	43 49.080	173 06.524	18	923	2	1.89	2
34	22-Apr-02	1	4	4G	Goughs Bay	43 49.136	173 06.515	18	927	4	1.67	4
34	22-Apr-02	1	4	4G	Goughs Bay	43 49.191	173 06.500	18	931	3	0.77	2
35	22-Apr-02	1	4	4E	Paua Bay	43 49.513	173 06.319	18	1040	6	0.29	1
35	22-Apr-02	1	4	4E	Paua Bay	43 49.512	173 06.269	18	1044	1	4.23	14
35	22-Apr-02	1	4	4E	Paua Bay	43 49.312	173 06.365	18	1048	3	0.61	2
35	22-Apr-02	1	4	4E	Paua Bay	43 49.362	173 06.332	17	1052	4	2.30	6
35	22-Apr-02	1	4	4E	Paua Bay	43 49.427	173 06.328	14	1056	2	6.19	17
35	22-Apr-02	1	4	4E	Paua Bay	43 49.454	173 06.351	16	1100	5	2.38	6
36	22-Apr-02	1	4	4C	Goat Point	43 50.131	173 06.302	36	1209	4	18.94	33
36	22-Apr-02	1	4	4C	Goat Point	43 50.162	173 06.314	54	1213	3	20.28	30
36	22-Apr-02	1	4	4C	Goat Point	43 50.222	173 06.210	22	1217	5	2.05	8
36	22-Apr-02	1	4	4C	Goat Point	43 50.097	173 06.277	34	1221	2	8.88	19
36	22-Apr-02	1	4	4C	Goat Point	43 49.	173 06.	18	1225	1	0.90	3

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
36	22-Apr-02	1	4	4C	Goat Point	43 49.930	173 06.184	22	1229	6	3.09	12
37	22-Apr-02	1	4	4B	Fishermans Bay	43 50.148	173 05.993	25	1338	6	3.01	4
37	22-Apr-02	1	4	4B	Fishermans Bay	43 50.157	173 05.921	27	1342	1	3.01	8
37	22-Apr-02	1	4	4B	Fishermans Bay	43 50.221	173 06.195	36	1346	3	3.94	15
37	22-Apr-02	1	4	4B	Fishermans Bay	43 50.206	173 06.140	32	1350	4	5.01	14
37	22-Apr-02	1	4	4B	Fishermans Bay	43 50.191	173 06.104	32	1354	2	3.01	7
37	22-Apr-02	1	4	4B	Fishermans Bay	43 50.172	173 06.062	29	1358	5	2.81	9
38	23-Apr-02	2	4	4I	Crown Island	43 48.283	173 06.786	16	814	4	0.00	0
38	23-Apr-02	2	4	4I	Crown Island	43 48.319	173 06.722	15	818	3	0.00	0
38	23-Apr-02	2	4	4I	Crown Island	43 48.187	173 06.961	18	822	5	0.00	0
38	23-Apr-02	2	4	4I	Crown Island	43 48.220	173 06.880	14	826	2	0.00	0
38	23-Apr-02	2	4	4I	Crown Island	43 48.157	173 06.936	16	830	1	0.08	1
38	23-Apr-02	2	4	4I	Crown Island	43 48.190	173 06.928	14	834	6	0.00	0
39	23-Apr-02	2	4	4F	South Head	43 49.273	173 06.430	20	940	6	1.89	4
39	23-Apr-02	2	4	4F	South Head	43 49.305	173 06.397	19	944	1	0.00	0
39	23-Apr-02	2	4	4F	South Head	43 49.136	173 06.515	19	948	3	0.00	0
39	23-Apr-02	2	4	4F	South Head	43 49.170	173 06.505	16	952	4	0.00	0
39	23-Apr-02	2	4	4F	South Head	43 49.199	173 06.504	19	956	2	1.76	3
39	23-Apr-02	2	4	4F	South Head	43 49.236	173 06.478	20	1000	5	0.30	1
40	23-Apr-02	2	3	3H	Pompeys Pillar	43 50.390	173 05.215	14	1052	1	0.35	1
40	23-Apr-02	2	3	3H	Pompeys Pillar	43 50.417	173 05.294	16	1056	6	0.00	0
40	23-Apr-02	2	3	3H	Pompeys Pillar	43 50.513	173 05.386	19	1100	4	0.00	0
40	23-Apr-02	2	3	3H	Pompeys Pillar	43 50.560	173 05.361	23	1104	3	0.00	0
40	23-Apr-02	2	3	3H	Pompeys Pillar	43 50.458	173 05.333	18	1108	5	0.00	0
40	23-Apr-02	2	3	3H	Pompeys Pillar	43 50.487	173 05.359	21	1112	2	0.00	0
41	23-Apr-02	2	1	1B	Snuffles east	43 53.663	172 50.216	22	1233	4	0.00	0
41	23-Apr-02	2	1	1B	Snuffles east	43 53.696	172 50.163	23	1237	3	0.00	0
41	23-Apr-02	2	1	1B	Snuffles east	43 53.640	172 50.355	18	1241	5	0.00	0
41	23-Apr-02	2	1	1B	Snuffles east	43 53.640	172 50.275	18	1245	2	0.00	0
41	23-Apr-02	2	1	1B	Snuffles east	43 53.699	172 50.575	21	1249	1	0.00	0
41	23-Apr-02	2	1	1B	Snuffles east	43 53.671	172 50.493	19	1253	6	0.00	0

Appendix 1 – continued

Set	Date	Phase	Stratum	Pot lift station	Location	Latitude ° ' S	Longitude ° ' E	Depth (m)	Time set	Pot Number	Catch of blue cod	
											(kg)	Number of fish
42	23-Apr-02	2	1	1K	Squally east	43 54.051	172 55.028	26	1438	1	0.00	0
42	23-Apr-02	2	1	1K	Squally east	43 53.906	172 54.777	23	1418	3	0.00	0
42	23-Apr-02	2	1	1K	Squally east	43 53.920	172 54.814	22	1422	4	0.00	0
42	23-Apr-02	2	1	1K	Squally east	43 53.956	172 54.856	24	1426	2	0.00	0
42	23-Apr-02	2	1	1K	Squally east	43 53.997	172 54.911	23	1430	5	0.00	0
42	23-Apr-02	2	1	1K	Squally east	43 54.021	172 54.967	22	1434	6	0.00	0