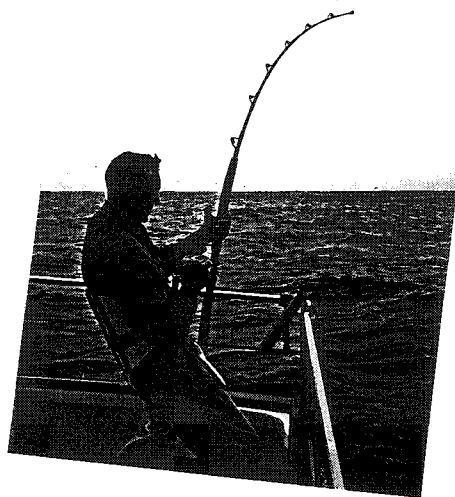


**National marine recreational fishing survey 1996:
overview of catch and effort results**

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Abstract

Bradford, E., Fisher, D., & Bell, J. 1998: National marine recreational fishing survey 1996: overview of catch and effort results. NIWA Technical Report 18. 55 p.

The first national telephone and diary survey of marine recreational fishing in New Zealand was run in 1996. The survey used a random sample of recreational fishers and the numbers given by the diarists can be scaled to give estimates for the total marine recreational fishing population of New Zealand. This report gives a broad overview of the results from that survey.

In this report, the numbers of trips, catches, and so on are totals of the data given by the diarists. However, the numbers given by South region residents are adjusted to be comparable with the numbers from the rest of the country because a different sampling fraction was used in the South when selecting the diarists. Results are given in tables and figures by Quota Management Area (QMA) together with a brief discussion. The report first considers the distribution of fishing effort (methods used, spatial and seasonal patterns, and length of trip) and the species targeted and caught by recreational fishers. The recreational catches of snapper, kahawai, blue cod, and rock lobster and methods used throughout the country are discussed and bag sizes and other data are given for SNA 1, KAH 1, BCO 7, and CRA 2.

Nationally, marine recreational fishing is dominated by the snapper fishery in SNA 1, but there are other important recreational Fishstocks. Line methods dominate and fishing from a boat is the preferred option in most parts of the country. Specialised methods are probably directed towards particular species and may require more skill.

Introduction

The lack of quantitative information on marine recreational fishing catch and effort in New Zealand has been a serious shortcoming for stock assessment and for those involved in making fisheries management decisions. In 1991, the then MAF Fisheries initiated marine recreational fishing catch and effort telephone and diary surveys. The first survey, in 1991–92, was of fishers living in the South region (Bell *et al.* 1993, L. Teirney & A. Kilner, Ministry of Fisheries, Dunedin, unpubl. results), the second, in 1992–93, was of fishers living in the Central region (A. Kilner & E. Coddington, Ministry of Fisheries, Dunedin, unpubl. results), and the third, from December 1993 to November 1994, was of fishers in the North region (Bradford 1996). Recreational fishing activity probably changes from year to year and so these regional surveys may not be comparable. Also, a few fishers fish in a different area to the one in which they live. A national survey was run in 1996 and this report is one of a series on that survey. The purpose of the surveys is to collect quantitative and representative information on the distribution of fishing effort, methods used, species caught, and total harvest in the Ministry of Fisheries management regions.

This report examines the recreational catch and effort by Quota Management Area (QMA) for the main recreational species as recorded by the diarists. As well, the catch, trip, and fishing method data for snapper, kahawai, blue cod, and rock lobster are examined by Fishstock. The

scaling factors to estimate the total recreational harvest from the catches recorded by the diarists were given by Bradford (1998).

David Fisher had overall responsibility for coding the data, entering the punched data into the database, and maintaining the database. John Bell, Department of Marketing, University of Otago (operating as J. D. Bell & Associates) was subcontracted by NIWA and ran the diary survey, maintained contact with the diarists, and hence provided the raw data on which this report is based. Elizabeth Bradford was responsible for writing the report, and any errors and opinions expressed therein.

Funding for this project (RFNA01) was provided by the Ministry of Fisheries.

Programme objectives

The objectives for project RFNA01 are given below. This report gives an overview of the information required by all three objectives and is directed more towards the fisheries management aspects of the project than the fisheries assessment aspects.

1. To estimate the recreational harvest by species and QMA for the entire country from 1 January 1996 to 31 December 1996.
2. To determine the relationship between recreational harvest and daily catches for each fish species.
3. To determine the distribution of the recreational harvest by species and fishing methods within QMAs

Survey methods

The survey was divided into two stages: a telephone survey and then a diary survey. The telephone survey and how the diarists were selected were described by Bell & Associates (1996).

The telephone survey

The telephone survey conducted in October and November 1995 used the 18 New Zealand telephone directories published by Telecom as the sampling frame. The number of households in each of the directories was estimated (the actual number was not known by Telecom) and the percentage of the total sample needed from each directory was calculated. Concerns over the relatively small number of diarists likely to be obtained from the south of New Zealand if the sample (budgeted size 35 000) was drawn totally randomly led to the decision to stratify the sample as follows: 31 000 households were selected totally at random from the 18 telephone

directories and a further 4000 were drawn at random for the South region (that is, Christchurch, Oamaru/Timaru, Otago, and Southland directories), thus effectively providing a top-up to that region to overcome the problem of small sample size. The land areas ascribed to the Ministry of Fisheries regions are shown in Figure 1. The South region covers the coastal areas of QMAs 3 and 5, that is, from the Clarence River to Awarua Point.

The telephone survey identified 4860 households containing people who had been marine recreational fishing in the previous 12 months, that is, 13.9% of the sampled households. The average number of marine recreational fishers per household with fishers was 1.97. The diarists came from the households with marine fishers identified during the telephone survey. To be eligible for inclusion in the diary survey, the fisher interviewed during the telephone survey (the fisher with the most recent birthday) had to meet the following criteria.

1. They had been marine recreational fishing, diving, or gathering in the previous 12 months.
2. They were 15 years of age or older.
3. They could be a commercial fisher describing recreational fishing only.
4. They intended going marine recreational fishing, diving, or gathering in the coming 12 months.

Of the 4860 fishers interviewed, 22 (0.4%) were from households where the only marine recreational fisher was under 15 years, 1000 (20.6%) declined to keep a diary, 86 (1.8%) did not intend marine fishing in 1996, and 3752 (77.2%) agreed to participate. Of the diarists, 882 came from the South region and 2870 from the rest of New Zealand. Further details of the telephone survey and its results were given by Bell & Associates (1996) and Bradford (1998).

As those persons contacted in the telephone survey and the fishers who subsequently kept diaries were randomly selected, the diarists provide a random sample of all marine recreational fishers living in New Zealand. Hence, for example, the data provided by the diarists can be scaled up to give the total recreational harvest of a species by Fishstock.

The exceptions to this survey providing a random sample are any marine recreational fisher households which do not have telephones or have unlisted telephone numbers and thus were not included in the survey. Also, marine recreational fishers from overseas who did some fishing in New Zealand in 1996 are not represented in these results.

The diary survey

The people who agreed to take part in the survey were sent diaries in which they were asked to record information about their fishing trips including: date; fishing locality; hours fishing, diving, or gathering; fishing method; boat departure point; species targeted; species caught; and number caught. The New Zealand coastline was divided into 40 zones designed to fall entirely within a Quota Management Area (QMA) (Table 1). Diarists were asked to place their fishing effort within one of these zones. Rock lobster fishers were asked to place their trips and/or catch within the rock lobster Fishstocks. Fifteen fishing methods were defined.

Appendix 1 contains the instructions and maps given to diarists to enable them to make these assignments, and a sample diary form. The fishing locality information given by the diarists is used as a check on their zone assignments.

At 3 month intervals, diarists were sent a newsletter including a reminder to send in their trip records for the period in the reply-paid envelopes supplied with the diaries. If they did not respond they were phoned and reminded again. The quarterly response rates varied between 69.8% and 84.8%. Quarterly trip records are available from 2930 (average) diarists.

Potential diarists who had caught more than 10 snapper, kahawai, or blue cod in 1995 were asked if they would measure the length of their catch of these species. Many agreed. The length size distributions obtained from the diarists were compared with length size distributions measured at boatramps during 1996 by Bradford *et al.* (1998).

The telephone and diary surveys were carried out by Bell & Associates (subcontracted by NIWA under NIWA's contract with the Ministry of Fisheries). Bell & Associates arranged the punching of the data from January to March. Subsequently, data entry was taken over by NIWA. The data are now available as Empress database tables in the recreational fisheries database maintained by NIWA for the Ministry of Fisheries.

Scaling from the survey catch to the total harvest

The derivation of the scaling factors used to scale from the diary survey results to the total recreational harvest was given by Bradford (1998) who discussed many technical issues, including how non-response was taken into account. Because different sampling fractions (different probabilities of being in the survey) were used for South region residents and the rest of the country, the scaling factors are different when applied to catches made by diarists from the two regions. There are two spatial factors involved in the surveys: one defines where each diarist lived and the other where the fishing trip took place.

The baseline estimate for the scaling factor to be used with catches by South region residents is 80.25 and for residents in the rest of the country is 139.99 (Bradford 1998). The scaling factors may also need to be corrected for a bias which was inadvertently introduced through a potential confusion between "catch" and "harvest" in the diary instructions and there may still be an unknown bias due to non-response in the scaling factors. The Snapper Working Group required different scaling factors for the Ministry of Fisheries North and Central region residents for the estimation of the SNA 1 harvest. No account of the small difference introduced by the different North and Central scaling factors is made in this report.

This report uses the catch and trip information supplied by the diarists. However, when reporting catch and trip totals, the totals from South region residents have been scaled down by 80.25/139.99 to be compatible with the totals from the residents of the rest of the country. No scaling has been done when reporting results for individuals (such as the numbers of trips made and the numbers of fish caught per trip). A reasonable estimate of the total recreational harvest in numbers can be obtained from catch data given by QMA by multiplying the tabulated number

by 140 and rounding the answer. Most of the data are reported both as tables and figures; the numbers given in the tables may change slightly when checking of the database is complete.

The total harvests by Fishstock, together with their *c.v.s*, will be reported in the New Zealand Fisheries Assessment Research Document series.

Distribution of fishing effort

The smallest area used in this report is a QMA and Figure 1 shows the QMA boundaries. Some results for the main species are given by Fishstock which can include more than one QMA.

When dealing with amalgamated data, the trips and catches by South region residents are scaled down to take the different sampling fractions into account. Those data sets, where there was no simple way of allowing for the difference in sampling fraction, are indicated.

A few of the diarist trip records were incomplete and were omitted when they lacked the type of data being tabulated.

Trips made by respondents

Fishers keeping diaries reported about 18 200 trips between 1 January and 31 December 1996. There were 882, 987, and 1883 diarists in the South, Central, and North regions respectively. The numbers of respondents making a given number of fishing trips are shown in Figure 2 for all respondents, and North, Central, and South region residents (no adjustment is made for the larger sampling fraction for South region residents). It was convenient to split the respondents into those from the three regions to show the change in fishing activity from north to south. The number of respondents who made no fishing trips is not shown on Figure 2, but was 665 overall or 160, 186, and 319 for South, Central, and North region diarists respectively. Figure 3 shows similar data for each of the QMAs which have coastal boundaries. Some diarists will have made trips to more than one QMA.

Mean numbers of reported trips by the diarists are given in Figures 2 and 3 and are higher for North region residents than for South region residents. All the most frequent fishers were European males. The most trips made during the year was 162 (by a Hawkes Bay diarist), and the second largest was 93 (by an Otago diarist). The most trips made by a diarist living in the North region was 84.

Fishing methods used on trips

Diarists were asked to specify their fishing method as one of 15 categories defined in Table 2. The numbers of trips made by diarists using each of the fishing methods in each QMA and throughout New Zealand are given in Table 3 and plotted in Figures 4, 5, 6, and 7. The first two of these plots show the distribution of use of the fishing methods throughout New Zealand and for each QMA, and the second two show the relative use of each method in the QMAs. The most popular methods are line fishing from a private boat; line fishing from shore; diving from a private boat; hand gathering; and set netting. The use of more specialised methods, including longlines, is rarer. Fishers used private boats at least 10 times as often as charter boats. The relative frequency of use of methods varies throughout the country.

Seasonal distribution of effort

The numbers of fishing trips made by diarists by month and QMA are given in Table 4 and plotted in Figure 8. There is a strong seasonal pattern throughout, with most fishing done in January and the first three or four months of the year. The number of trips made towards the end of the year is negatively biased because the response rate dropped in the second half of the year. The number of trips made in December was unexpectedly low because of cyclonic weather between Christmas and New Year. Easter was in early April in 1996 and the weather was good. Both Waitangi Day and Anzac Day fell within 1 day of a weekend and both these periods appeared to be 4 day breaks for fishers. Labour Day weekend in October boosted the number of trips made in that month. (As might be expected, more recreational fishing trips are made on weekend and holiday days than on weekdays.)

Average length of fishing trips

The average time spent on fishing trips by diarists is given in Table 5 by fishing method and QMA, together with the average time used on each method and the average time spent on fishing trips in each QMA. Trips with missing data are omitted, as are the trips specified as using "Other" methods. The average time spent on fishing trips tends to be shorter in the south than in the north. The average length of a trip is method dependent: trips with long soak times, for example set netting, are longer than the average (the reported times may sometimes be of the time attending to the gear and not include the soak time); trips involving diving and "hand" activities are shorter than average. The overall mean fishing time did not vary much throughout the year.

Fishing trips lasting several days have been divided into separate trips for each day. These were usually boat trips where there was on-board sleeping accommodation.

An average marine recreational fishing trip lasts about half a day.

Species targeted and caught

This report concentrates on the species most frequently targeted by recreational fishers. Table 6 defines the species codes which are used for the species targeted and caught given in Tables 7, 8, 9, and 10 (some codes are for groups of related species). Recreational fishers misidentify, or do not fully identify, some of the species.

The total catches of several finfish species caught by diarists are given in Table 7 for each QMA and overall. Table 8 gives the numbers of trips on which these species were caught (by QMA). Tables 9 and 10 are similar for some shellfish species.

The numbers of target trips and the numbers of fish caught are plotted in Figures 9–16 for the 16 most commonly targeted finfish and 6 shellfish species for all New Zealand and for each QMA. Snapper in QMA 1 has the largest catch and is the most-targeted fish by recreational fishers. The other popular finfish are kahawai, blue cod, tarakihi, and flatfish. Blue cod is the most frequently caught finfish in the south. However, salmon is the most frequently targeted finfish in QMA 3, though catches are small (partly due to a daily bag limit of two). Species of moderate interest to recreational fishers are butterfish, gurnard, blue moki, trevally, tuna (all species), and yellow-eyed mullet (herring). Barracouta, blue maomao, dogfish, jack mackerel, koheru, and sea perch are caught in reasonable numbers by recreational fishers but are rarely targeted.

Rock lobster is the most-targeted shellfish species and is caught in most places which are accessible to divers (and which have a population of rock lobsters). The largest catches are in QMA 1 (mainly in CRA 2). Paua are mainly targeted and caught in QMA 2. Molluscs are hand gathered from the accessible beaches on which they are available. Catches of molluscs can be large, consistent with the large daily bag limits. Note that in this section, the shellfish numbers are given by QMA and not by the management areas used for shellfish.

Catches of the main species

This section looks at catches of snapper, kahawai, blue cod, and rock lobster in more detail. Fishstocks, including the rock lobster Fishstocks, rather than QMAs are used as the basic groupings though some of the smaller Fishstocks are combined in the figures, for convenience. A map showing the rock lobster areas is included in Appendix 1. Again, the catch and trip data for South region residents are scaled down.

Tables 11, 13, 15, and 17 give the numbers of snapper, kahawai, blue cod, and rock lobster respectively which are caught by the fishing methods important for these species for each Fishstock. Tables 12, 14, 16, and 18 give the numbers of trips on which these species were targeted and/or caught by Fishstock. Note that Table 8 contains the numbers of target trips and corresponding numbers in Tables 12, 14, 16 and 18 will be higher than those in Table 8.

The large numbers of rock lobster given as caught by “Other” methods arise because many of these rock lobsters were specified as being caught by “Lines from private boats”. While we are aware that there is a line method used by recreational fishers for catching rock lobster, we suspect that many of these lobsters were caught by diving during a trip which was otherwise line fishing for finfish.

The catch numbers and the numbers of trips targeting a species by fishing method are plotted by Fishstock in Figures 17, 18, 19, and 20 for snapper, kahawai, blue cod, and rock lobster respectively. Here, the North Island blue cod Fishstocks are combined, and the rock lobster Fishstocks are combined in pairs.

Trip catches and other data in some major Fishstocks

Figures 21 and 22 show the number of trips where a given catch was made, the number of respondents making a given number of trips, and the number of respondents making a given annual catch of snapper, kahawai, blue cod, and rock lobster in SNA 1, KAH 1, BCO 7, and CRA 2. The annual catch by respondents is given mainly for interest as management regimes which limited the total annual catch of a species by individuals would be unenforceable, but the other quantities are of interest to fisheries management.

The effect of the bag limits of nine in SNA 1, and six in BCO 7 and CRA 2 is clear. The limit of 6 applies in the Marlborough Sounds, and is 20 in the remainder of BCO 7, so catches greater than 6 in BCO 7 are likely to be legitimate. Some trips which are shown as catching more than the bag limit will have come from diarists who recorded the number of fish caught rather than the number of fish taken.

The number of unsuccessful trips is defined as the number of trips when a species was among the targeted species but not caught. Thus, the smaller number of trips where no kahawai were caught than where one kahawai was caught may reflect the few trips which target kahawai (kahawai is largely a bycatch species in KAH 1) and the relative ease of catching kahawai once they are seen.

Discussion

This report gives a broad overview of the results from the 1996 national diary survey and some more detailed results from four Fishstocks where the recreational harvest is a major component of the total.

The 1996 national diary survey of marine recreational fishing was the first survey where recreational fishing patterns throughout New Zealand could be examined at the same time. The previous telephone and diary surveys were conducted in the three Ministry of Fisheries regions separately.

Nationally, marine recreational fishing is dominated by the snapper fishery in SNA 1. We should not lose sight of the importance of the other recreational fisheries, such as kahawai in KAH 1, blue cod in BCO 7, and rock lobster in CRA 2. The effect of bag limits in some stocks is clear.

Line methods (rods or handlines) dominate and fishing from a boat is the preferred option in most parts of the country. Other methods tend to be directed towards particular species and probably require more skill. Diving is popular, but requires training except in very shallow water near the shore. The use of charter boats is relatively rare.

Acknowledgments

Funding for this project (RFNA01) was provided by the Ministry of Fisheries. We thank Adrian Colman and Mike Beardsell who improved the clarity of the report. We thank Laurel Teirney who initiated the major marine recreational fishing surveys, Allan Kilner who was involved in the planning of the national survey, Kevin Sullivan who initiated the project, and Kevin McKay for assistance with the database. We thank those people who were involved in the coding of the diary forms for punching: Susan Bell; Larry Paul (who made many insightful, useful comments about the survey); John Kapa; and Peter Benson. Finally, we thank the data entry operators who cheerfully struggled with interpreting the sometimes confused diary forms.

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Table 1: Definitions of the diary zones used by diarists and their relation to Quota Management Areas (QMAs)

Zone	QMA	Description
1	1	North Cape to Cape Brett (excluding the Bay of Islands)
2	1	Bay of Islands (Cape Wiwiki to Cape Brett (including the area around the Ninepin and Piercy Island))
3	1	Cape Brett to Cape Rodney (excluding Whangarei Harbour)
4	1	Whangarei Harbour and entrance area (including Mair Bank)
5	1	Barrier Islands (including the Mokohinau Islands, Little Barrier Island, and Great Barrier Island)
6	1	Western Gulf (Cape Rodney to Piripiri Point)
7	1	Inner Gulf (Piripiri Point to Orere Point)
8	1	Firth of Thames (Orere Point to Deadmans Point)
9	1	Eastern Gulf (Deadmans Point to Cape Colville, including Channel Island)
10	1	Cape Colville to Waihi Bluffs (excluding Mayor Island)
11	1	Waihi Bluffs to Tarawera River (excluding Tauranga Harbour)
12	1	Tauranga Harbour (including both entrance areas)
13	1	Tarawera River to Cape Runaway (including Rurima Islands)
14	2	Cape Runaway to Whareongaonga
15	2	Whareongaonga to Cape Turnagain
16	2	Cape Turnagain to Turakirae Head
17	2	Turakirae Head to Titahi Bay
18	8	Titahi Bay to Waitotara River
19	8	Waitotara River to Tirau Point
20	9	Tirau Point to the southern Manukau entrance (excluding the Manukau Harbour)
21	9	Manukau Harbour and entrance area
22	9	Kaipara Harbour and entrance
23	9	Southern Manukau entrance to northern Kaipara entrance (excluding Manukau and Kaipara Harbours)
24	9	Northern Kaipara entrance to Reef Point (excluding Kaipara Harbour)
25	9	Reef Point to North Cape
26	7	Pelorus, Kenepuru, Mahau Sounds (inside the line from Stephens Island to Cape Jackson)
27	7	Queen Charlotte Sound and Tory Channel
28	7	Stephens Island to Clarence River (excluding Pelorus and Queen Charlotte Sounds)
29	3	Clarence River to Conway River
30	3	Conway River to Sumner Beach
31	3	Sumner Beach to Rakaia River
32	3	Rakaia River to Waitaki River
33	3	Waitaki River to Tokomairiro River
34	3	Tokomairiro River to Slope Point
35	5	Slope Point to Te Waewae Point
36	5	Stewart Island, Ruapuke Island, and outlying islands (excluding Paterson Inlet)
37	5	Paterson Inlet
38	5	Te Waewae Point to Awarau Point
39	7	Awarua Point to Kahurangi Point
40	7	Kahurangi Point to Stephens Island

Table 2: Definitions of the fishing method codes used by diarists during the national diary survey

Code	Definition
1	Rod or handline fishing from a privately owned boat (included bait, jigs, poppers, trolling, etc.)
2	Rod, handline, or longline fishing from a charter boat
3	Longline fishing from a privately owned boat
4	Shore fishing with a rod or handline
5	Shore fishing with a longline (for example, kontiki or kite)
6	Diving from a privately owned boat
7	Diving from a charter boat
8	Diving from shore
9	Dredging
10	Set netting / gill netting
11	Drag netting / beach seining
12	Hand gathering
13	Potting
14	Spearing (for flounder or other flatfish)
15	Other (please specify)

Table 3: Numbers of fishing trips made by diarists by fishing method and QMA. The numbers of trips by South region residents have been scaled down because of the different sampling fraction

Method	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
Lines/private boat	5 179	430	393	115	968	377	465	7 927
Lines/charter boat	318	23	10	21	70	11	31	484
Longlines/priv boat	95	6	5	3	103	63	6	281
Lines/shore	1 584	633	1 007	18	355	600	454	4 651
Longlines/shore	127	11	3	0	4	35	19	199
Diving/private boat	627	60	54	49	86	32	19	927
Diving/charter boat	42	3	0	24	11	1	1	82
Diving/shore	79	198	74	35	23	11	8	428
Dredging	47	0	0	2	166	0	97	312
Set/gill netting	227	111	130	16	172	40	114	810
Drag netting	63	14	31	14	13	34	45	214
Hand gathering	385	54	72	35	106	32	101	785
Potting	65	109	19	5	3	0	0	201
Spearing	27	1	5	6	12	0	17	68
Other	20	12	2	1	16	2	2	55

Table 4: Numbers of fishing trips made by diarists by month and QMA. The numbers of trips by South region residents have been scaled down because of the different sampling fraction

Month	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
January	2 221	521	460	80	649	391	393	4 715
February	1 405	194	316	57	271	175	213	2 630
March	1 017	131	232	56	187	141	126	1 889
April	1 096	161	146	40	232	113	146	1 934
May	427	81	83	10	76	49	49	774
June	381	55	47	17	73	47	44	664
July	253	22	44	9	63	32	32	454
August	278	38	38	11	56	29	38	488
September	381	81	75	22	105	68	96	827
October	418	119	71	17	84	60	86	855
November	357	91	73	11	98	33	52	716
December	656	170	222	14	216	119	110	1 508

Table 5: Average length of fishing trips, in hours, by fishing method and QMA. Trips using the "other" fishing method and with unknown values are omitted. – indicates no data

Method	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
Lines/private boat	3.82	4.12	3.25	2.81	2.93	4.15	4.06	3.70
Lines/charter boat	5.70	3.55	4.27	3.06	4.45	6.41	5.93	5.23
Longlines/priv boat	2.82	3.25	10.20	2.74	3.55	3.85	5.42	3.51
Lines/shore	3.21	2.99	3.87	3.19	2.61	3.19	3.69	3.36
Longlines/shore	3.52	3.41	4.33	–	3.63	3.17	3.78	3.49
Diving/private boat	1.44	2.04	1.31	1.28	1.97	3.57	1.38	1.57
Diving/charter boat	1.71	2.67	–	1.14	1.32	0.70	1.00	1.44
Diving/shore	1.38	1.42	1.50	1.23	1.69	1.95	2.54	1.45
Dredging	1.62	–	–	3.00	1.79	–	1.75	1.76
Set/gill netting	8.02	6.01	5.36	12.46	6.08	7.34	9.07	7.13
Drag netting	1.78	2.61	2.45	1.48	1.94	2.50	2.63	2.20
Hand gathering	0.84	1.45	1.34	1.23	0.92	1.47	1.30	1.05
Potting	7.34	8.11	7.65	8.00	2.67	–	–	7.75
Spearing	1.51	2.50	1.81	1.91	2.23	–	2.15	1.87
Total	3.53	3.56	3.57	2.63	2.94	3.60	3.89	3.47

Table 6: Species codes and common names for the finfish and shellfish species used in this report

Species code	Common name
BAR	Barracouta
BCO	Blue cod (may be confused with other cods, including reef cod)
BMA	Blue maomao
BUT	Butterfish
DOG	Dogfish (all types of spiny dogfish)
EMA	English (blue) mackerel (may be confused with other mackerel)
FLA	Flatfish (all types, mainly flounder)
GMU	Grey mullet
GUR	Red gurnard
HAP	Hapuku
JMA	Jack mackerel (may be confused with other mackerel)
KAH	Kahawai
KIN	Kingfish (may be called yellowtail and confused with JMA and KOH)
KOH	Koheru
MOK	Blue moki
PAR	Parore
RCO	Red cod (may be confused with other cods)
SAM	Salmon
SCH	School shark
SHA	Other sharks
SNA	Snapper
SPE	Sea perch
SPO	Rig
TAR	Tarakihi
TRE	Trevally
TUN	Tuna (mainly albacore and skipjack, with some yellowfin and slender)
YEM	Yellow-eyed mullet or herring
COC	Cockles
CRA	Rock lobster
MUS	Mussels (all types)
PAU	Paua
PPI	Pipi
SCA	Scallops

Table 7: Numbers of the main finfish species caught by diarists in each QMA and the total catch of the species. Catches by South region residents have been scaled down because of the different sampling fraction. Catches from unknown locations are omitted

Species	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
BAR	270	115	103	8	213	309	4	1 022
BCO	230	1 036	1 550	1 218	2 541	1 135	12	7 722
BMA	605	16	0	0	0	28	16	665
BUT	79	278	118	126	43	67	0	711
DOG	16	61	277	95	182	126	19	776
EMA	337	5	0	0	11	16	25	394
FLA	1 198	143	557	246	314	334	1 002	3 794
GMU	85	2	2	0	1	7	702	799
GUR	1 130	270	9	2	185	482	741	2 819
HAP	77	165	29	11	59	3	3	347
JMA	426	138	1	0	2	138	12	717
KAH	4 760	1 015	126	5	385	1 070	1 425	8 786
KIN	442	34	11	0	7	15	14	523
KOH	582	1	2	0	1	0	10	596
MOK	37	145	116	65	247	17	3	630
PAR	175	1	0	0	0	1	30	207
RCO	74	264	693	17	275	366	2	1 691
SAM	0	6	135	2	1	0	0	144
SCH	47	35	24	5	59	76	117	363
SHA	68	11	4	1	28	75	34	221
SNA	17 070	225	1	7	528	450	1 483	19 764
SPE	17	181	200	25	289	80	0	792
SPO	23	27	70	17	138	51	175	501
TAR	3 550	815	24	23	494	328	10	5 244
TRE	1 380	63	14	1	22	186	256	1 922
TUN	797	169	1	11	0	42	69	1 089
YEM	650	571	272	12	469	529	224	2 727

Table 8: Numbers of trips targeting the main finfish species made by diarists in each QMA and the total number of trips for the species. The numbers of trips by South region residents have been scaled down because of the different sampling fraction. Trips with unknown location are omitted

Species	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
BAR	1	0	0	0	0	1	0	2
BCO	3	58	138	108	322	25	0	654
BMA	6	0	0	0	0	1	0	7
BUT	8	29	18	8	4	3	0	70
DOG	0	0	0	1	0	1	0	2
EMA	1	0	0	0	2	0	0	3
FLA	133	9	62	20	39	31	59	353
GMU	6	0	0	0	0	0	20	26
GUR	19	13	1	0	3	14	12	62
HAP	26	33	2	2	9	5	1	78
JMA	2	1	0	0	0	0	0	3
KAH	266	140	17	1	54	135	73	686
KIN	85	7	1	0	2	9	18	122
KOH	1	0	0	0	0	0	0	1
MOK	0	53	15	1	15	0	0	84
PAR	4	0	0	0	0	0	1	5
RCO	0	10	139	1	5	6	0	161
SAM	0	0	409	1	1	0	0	411
SCH	1	1	0	0	0	0	0	2
SHA	1	2	2	0	0	1	2	8
SNA	3 898	114	2	0	364	166	332	4 876
SPE	0	0	1	0	0	0	0	1
SPO	3	1	6	1	1	3	28	43
TAR	161	38	0	0	14	12	0	225
TRE	7	0	1	0	0	5	11	24
TUN	82	6	0	1	1	5	1	96
YEM	9	14	9	1	24	14	1	72

Table 9: Numbers of the main shellfish species caught by diarists in each QMA and the total catch of the species. Catches by South region residents have been scaled down because of the different sampling fraction. Catches from unknown locations are omitted

Species	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
COC	4 067	215	1028	522	2324	253	350	8 759
CRA	2 060	1 045	139	142	246	113	59	3 804
MUS	5 844	568	539	506	2 299	308	1 937	12 001
PAU	309	1 229	584	440	164	263	81	3 070
PPI	15 653	433	392	37	625	412	2 062	19 614
SCA	6 388	0	0	172	12 003	0	2 516	21 079

Table 10: Numbers of trips targeting the main shellfish species made by diarists in each QMA and the total number of trips for the species. The numbers of trips by South region residents have been scaled down because of the different sampling fraction. Trips with unknown location are omitted

Species	QMA 1	QMA 2	QMA 3	QMA 5	QMA 7	QMA 8	QMA 9	Total
COC	23	2	9	6	21	3	1	65
CRA	446	220	42	40	83	28	12	871
MUS	108	12	9	10	44	6	26	215
PAU	22	71	44	33	16	15	1	202
PPI	133	5	7	1	7	6	15	174
SCA	197	0	0	7	145	0	108	457

Table 11: Numbers of snapper caught by diarists by fishing method and Fishstock. The catches by South region residents have been scaled down because of the different sampling fraction

Method	SNA 1	SNA 2	SNA 3	SNA 7	SNA 8
Lines/private boat	14 461	124	1	283	1 364
Lines/charter boat	734	29	0	31	146
Longlines/priv boat	223	0	0	118	68
Lines/shore	1 078	69	0	61	269
Longlines/shore	394	0	0	0	34
Diving/private boat	168	2	7	36	49
Other	12	1	0	0	3

Table 12: Numbers of trips made by diarists targeting or catching snapper by fishing method and Fishstock. The numbers of trips by South region residents have been scaled down because of the different sampling fraction

Method	SNA 1	SNA 2	SNA 3	SNA 7	SNA 8
Lines/private boat	4 033	57	2	222	456
Lines/charter boat	192	6	0	10	26
Longlines/priv boat	83	0	0	65	30
Lines/shore	818	79	1	95	214
Longlines/shore	104	1	1	1	17
Diving/private boat	0	0	0	1	0
Other	89	4	1	30	22

Table 13: Numbers of kahawai caught by diarists by fishing method and Fishstock. The catches by South region residents have been scaled down because of the different sampling fraction

Method	KAH 1	KAH 2	KAH 3	KAH 9
Lines/private boat	3 351	479	702	554
Lines/charter boat	95	20	20	57
Longlines/priv boat	32	2	58	4
Lines/shore	1 096	328	568	682
Longlines/shore	72	20	26	12
Set/gill netting	111	132	173	95
Other	4	2	13	11

Table 14: Numbers of trips made by diarists targeting or catching kahawai by fishing method and Fishstock. The numbers of trips by South region residents have been scaled down because of the different sampling fraction

Method	KAH 1	KAH 2	KAH 3	KAH 9
Lines/private boat	1 278	173	293	150
Lines/charter boat	46	10	12	14
Longlines/priv boat	19	1	20	1
Lines/shore	515	187	367	235
Longlines/shore	33	5	17	9
Set/gill netting	49	36	57	25
Other	3	2	11	4

Table 15: Numbers of blue cod caught by diarists by fishing method and Fishstock. The catches by South region residents have been scaled down because of the different sampling fraction

Method	BCO 1	BCO 2	BCO 3	BCO 5	BCO 7	BCO 8
Lines/private boat	197	892	1 246	929	2 098	973
Lines/charter boat	17	53	52	143	297	75
Longlines/priv boat	6	0	0	16	48	65
Lines/shore	21	80	225	48	84	4
Diving/private boat	0	4	2	29	3	2
Set/gill netting	0	2	10	1	11	16
Other	1	5	16	53	1	0

Table 16: Numbers of trips made by diarists targeting or catching blue cod by fishing method and Fishstock. The numbers of trips by South region residents have been scaled down because of the different sampling fraction

Method	BCO 1	BCO 2	BCO 3	BCO 5	BCO 7	BCO 8
Lines/private boat	109	163	233	166	537	171
Lines/charter boat	12	11	10	31	63	8
Longlines/priv boat	3	0	0	4	10	12
Lines/shore	14	16	84	20	35	3
Diving/private boat	0	1	1	8	2	1
Set/gill netting	0	1	7	3	7	2
Other	1	3	5	15	1	0

Table 17: Numbers of rock lobsters caught by diarists by fishing method and Fishstock. The catches by South region residents have been scaled down because of the different sampling fraction

Method	CRA 1	CRA 2	CRA 3	CRA 4	CRA 5	CRA 7	CRA 8	CRA 9
Diving/private boat	505	1 152	6	191	205	22	59	140
Diving/charter boat	2	104	0	2	13	0	64	3
Diving/shore	15	56	38	258	25	0	27	15
Potting	0	8	0	9	0	0	0	0
Other	6	276	150	385	47	0	8	27

Table 18: Numbers of trips made by diarists targeting or catching rock lobster by fishing method and Fishstock. The numbers of trips by South region residents have been scaled down because of the different sampling fraction

Method	CRA 1	CRA 2	CRA 3	CRA 4	CRA 5	CRA 7	CRA 8	CRA 9
Diving/private boat	153	276	7	56	72	24	33	25
Diving/charter boat	4	33	0	5	5	4	26	1
Diving/shore	8	19	13	88	8	0	11	7
Potting	0	4	0	2	0	0	0	0
Other	16	76	34	77	21	5	7	12

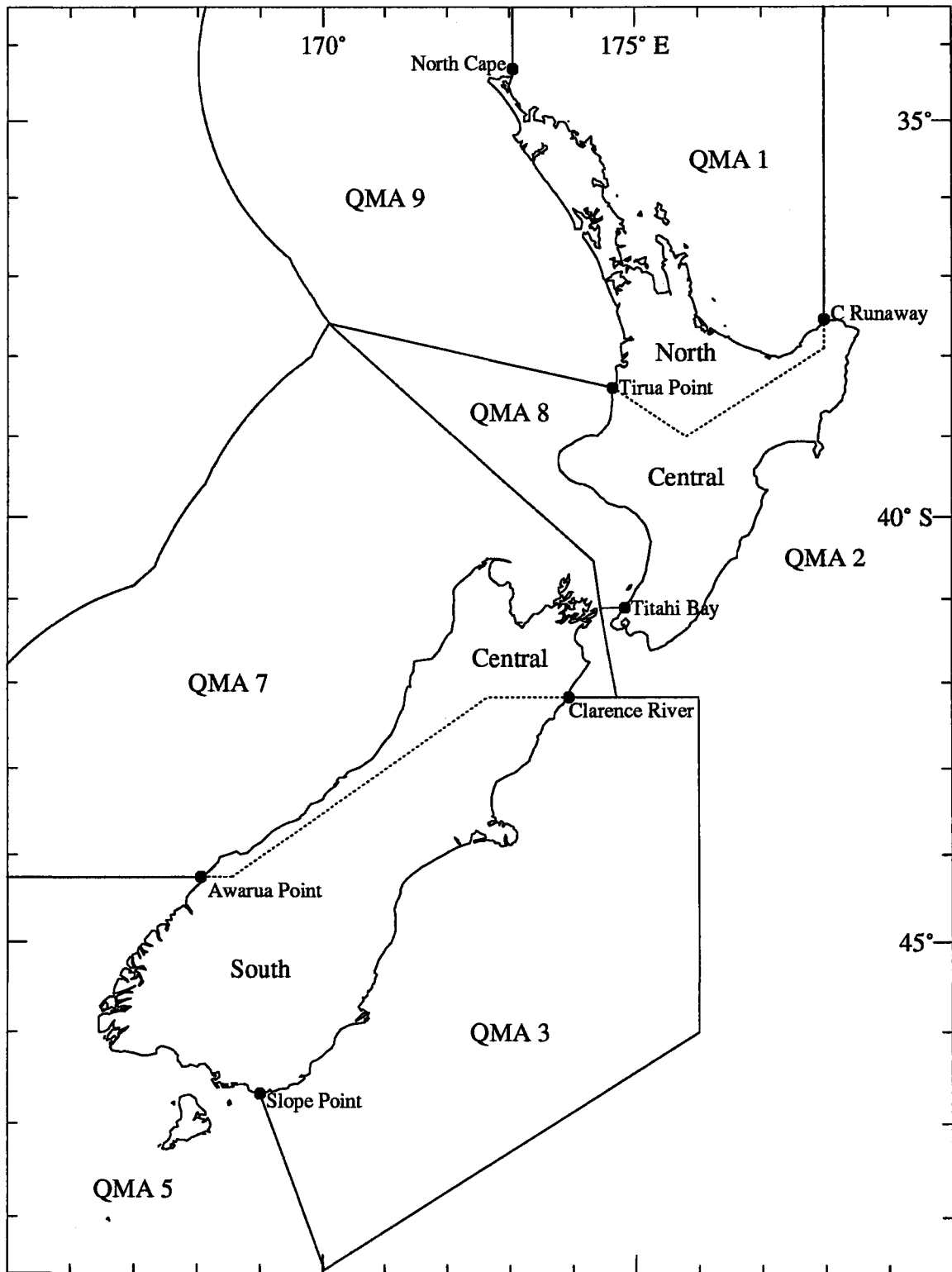


Figure 1: Map of New Zealand showing the QMAs which adjoin the coastline. The dotted lines show the land areas taken to be associated with the three Ministry of Fisheries regions.

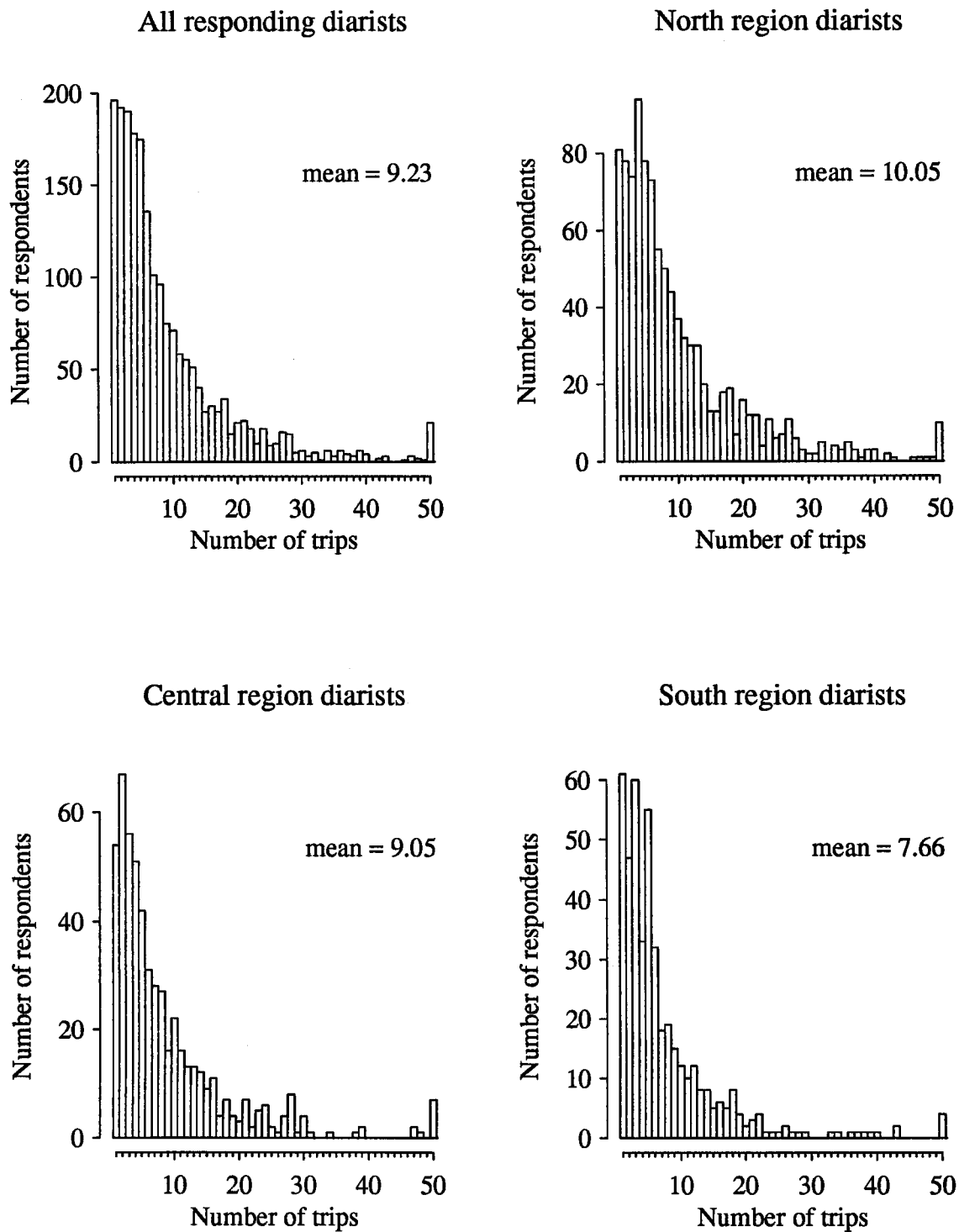


Figure 2: Numbers of respondents making a given number of trips by region of residence. The number of trips for respondents making more than 50 trips is plotted at 50. Note: no allowance is made for the larger sampling fraction for South region residents.

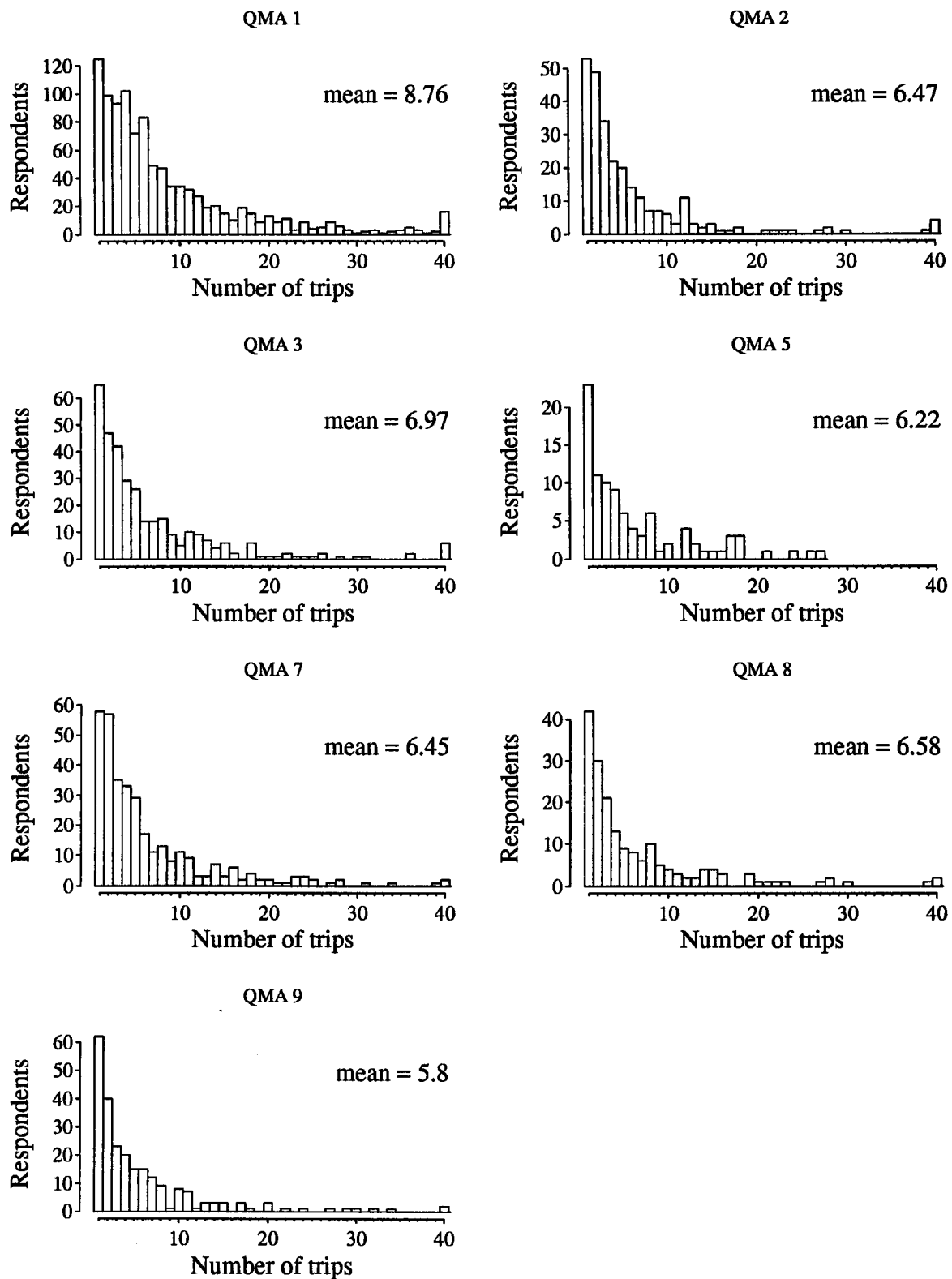


Figure 3: Numbers of respondents making a given number of trips by QMA fished. Some diarists fished in more than one QMA. The number of trips for respondents making more than 40 trips in the QMA is plotted at 40. Note: no allowance is made for the larger sampling fraction for South region residents.

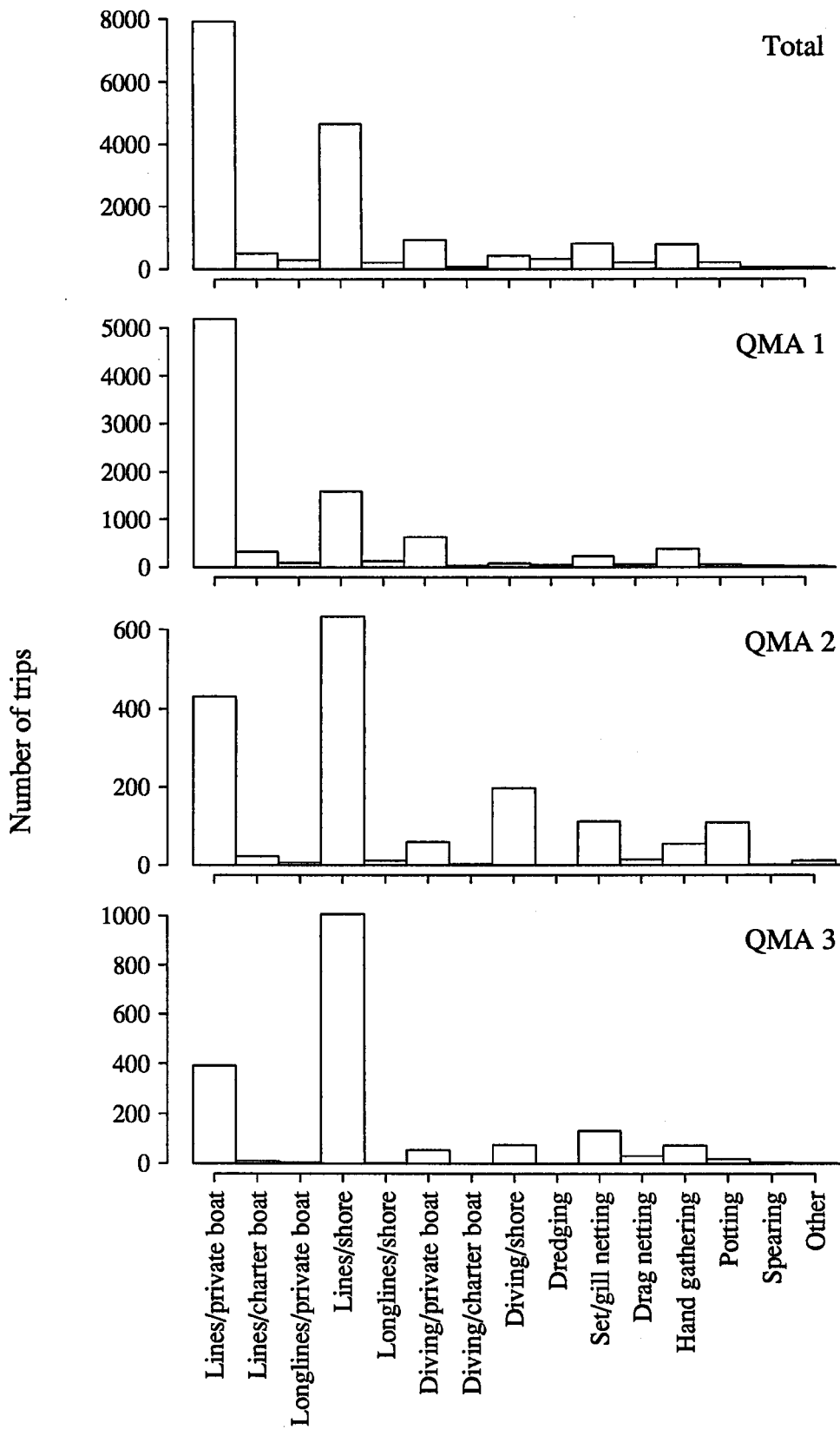


Figure 4: Number of trips using each fishing method throughout New Zealand and in Quota Management Areas 1, 2, and 3.

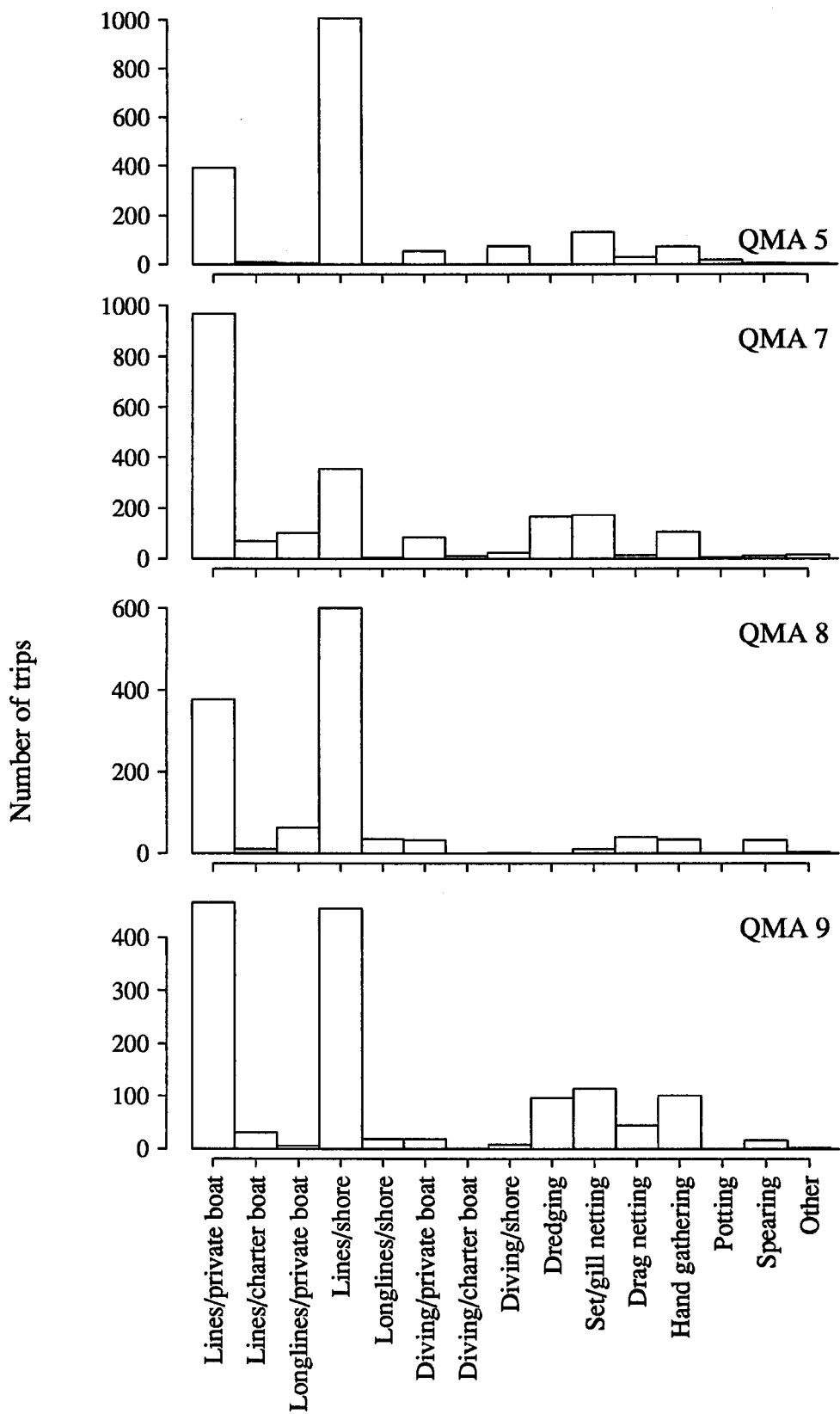


Figure 5: Number of trips using each fishing method in Quota Management Areas 5, 7, 8, and 9.

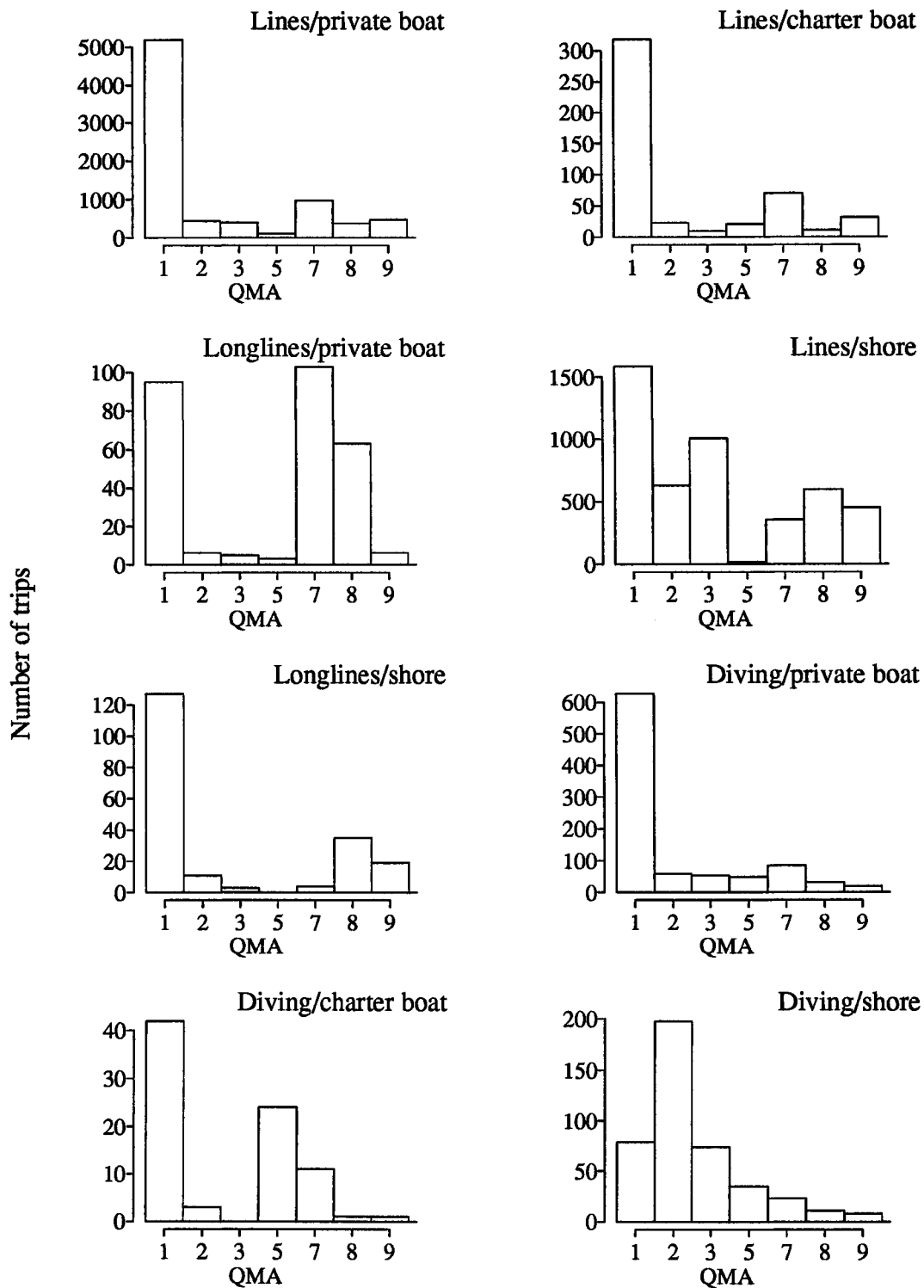


Figure 6: Number of trips in each Quota Management Area using lines, longlines, and diving from private boats, charter boats, and the shore.

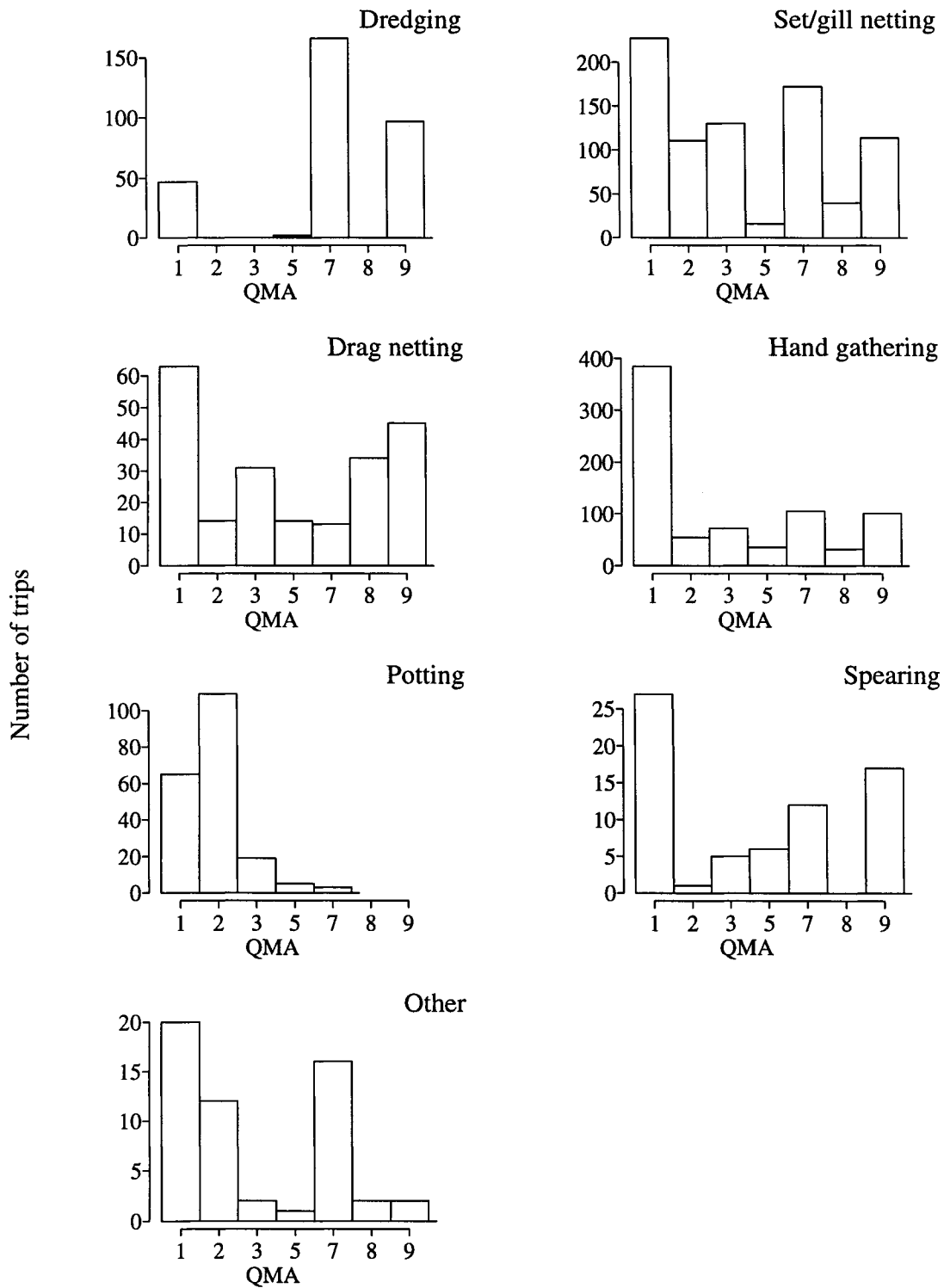


Figure 7: Number of trips in each Quota Management Area using dredging, set or gill netting, drag netting, hand gathering, potting, spearing, or “Other” methods.

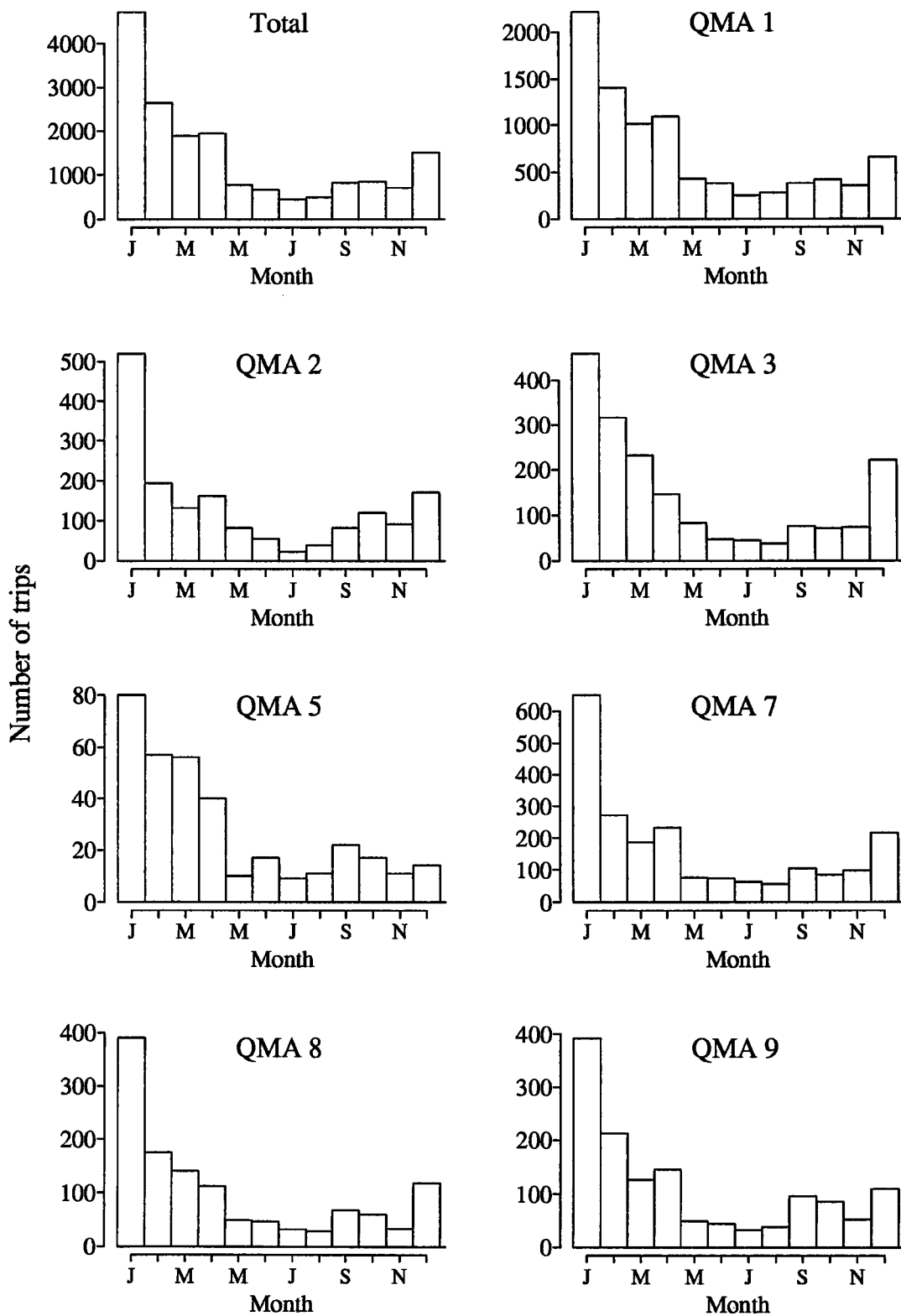


Figure 8: Number of trips in January to December 1996 throughout New Zealand and in individual QMAs.

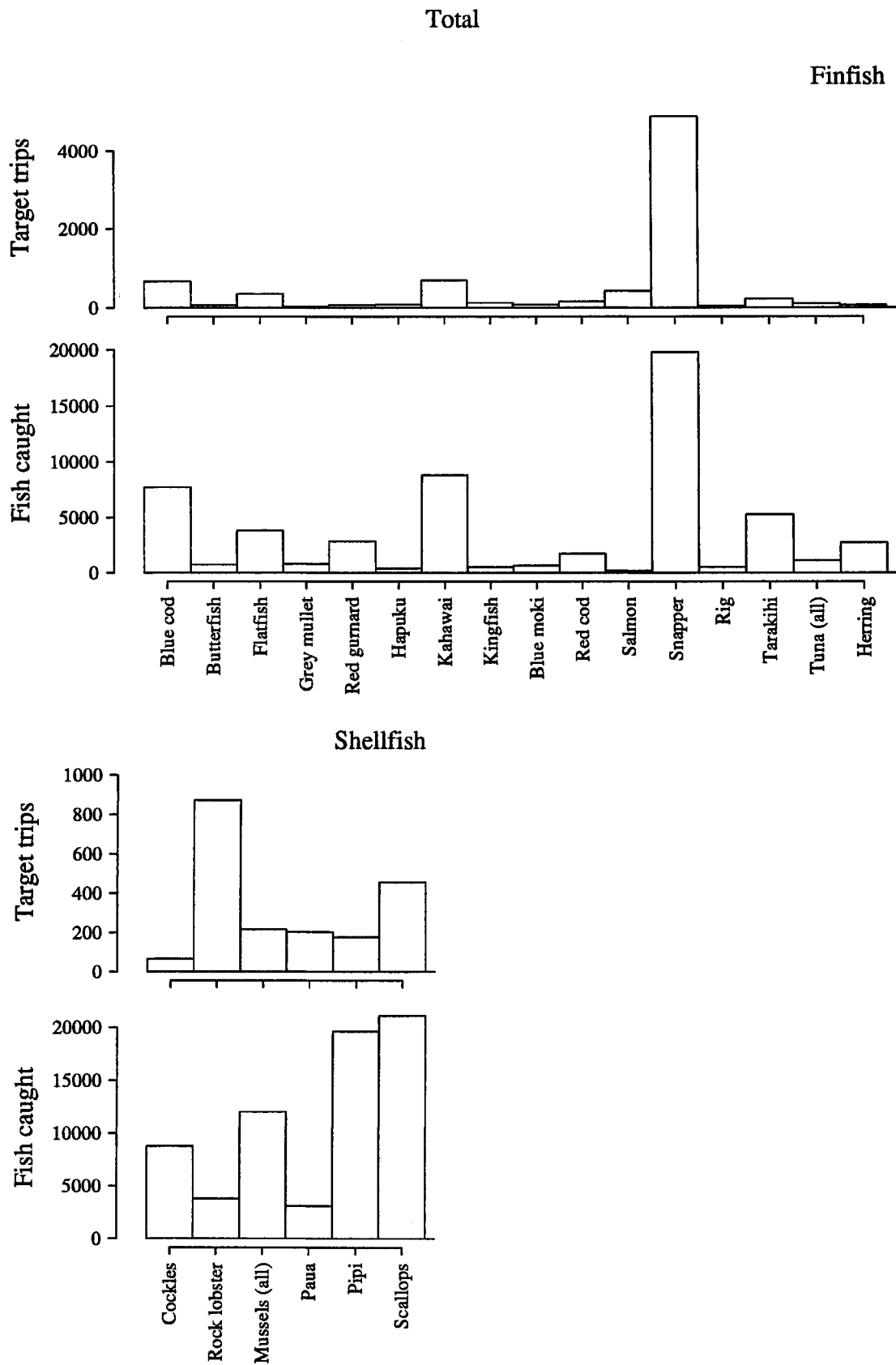


Figure 9: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish throughout New Zealand.

QMA 1

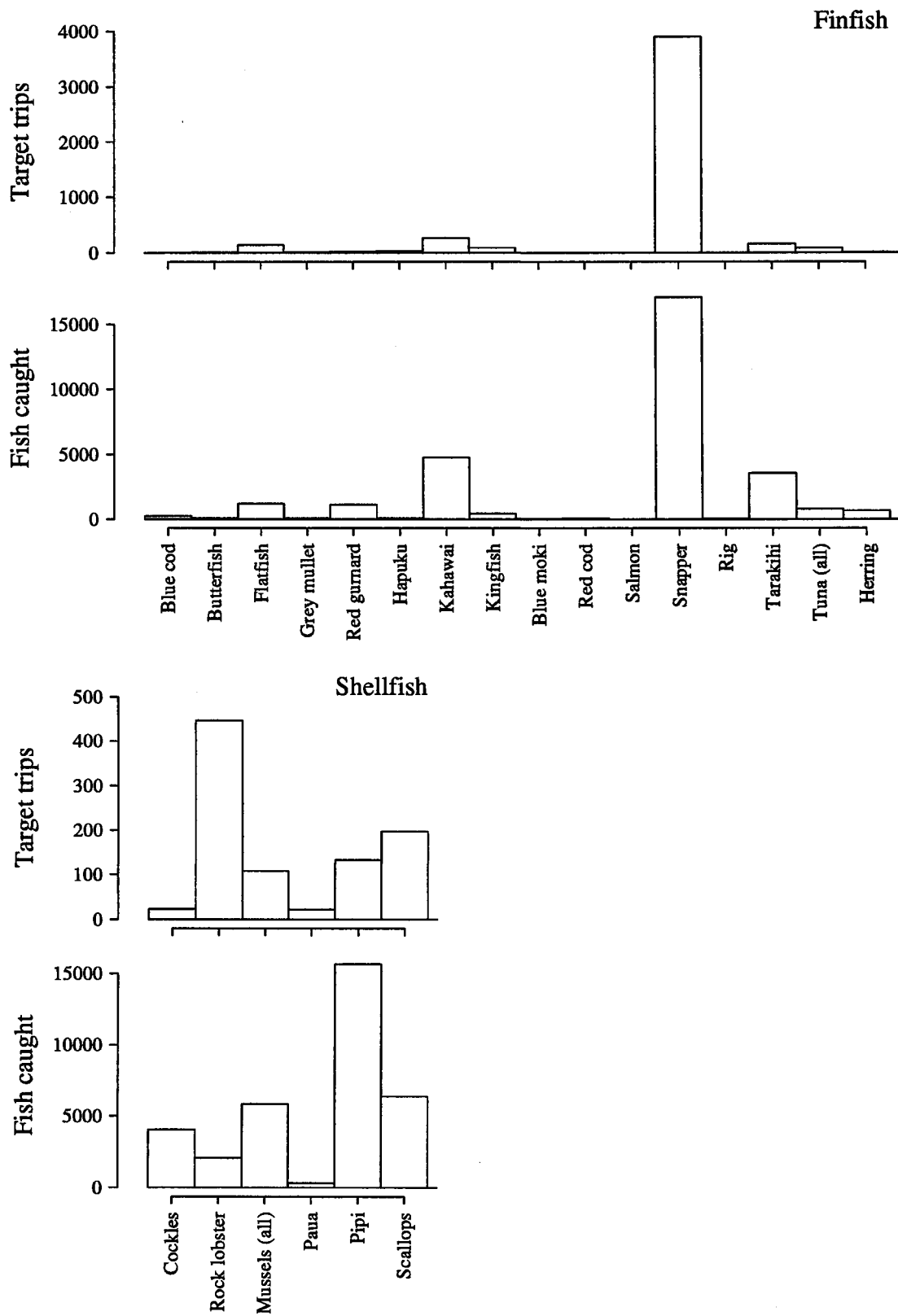


Figure 10: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 1.

QMA 2

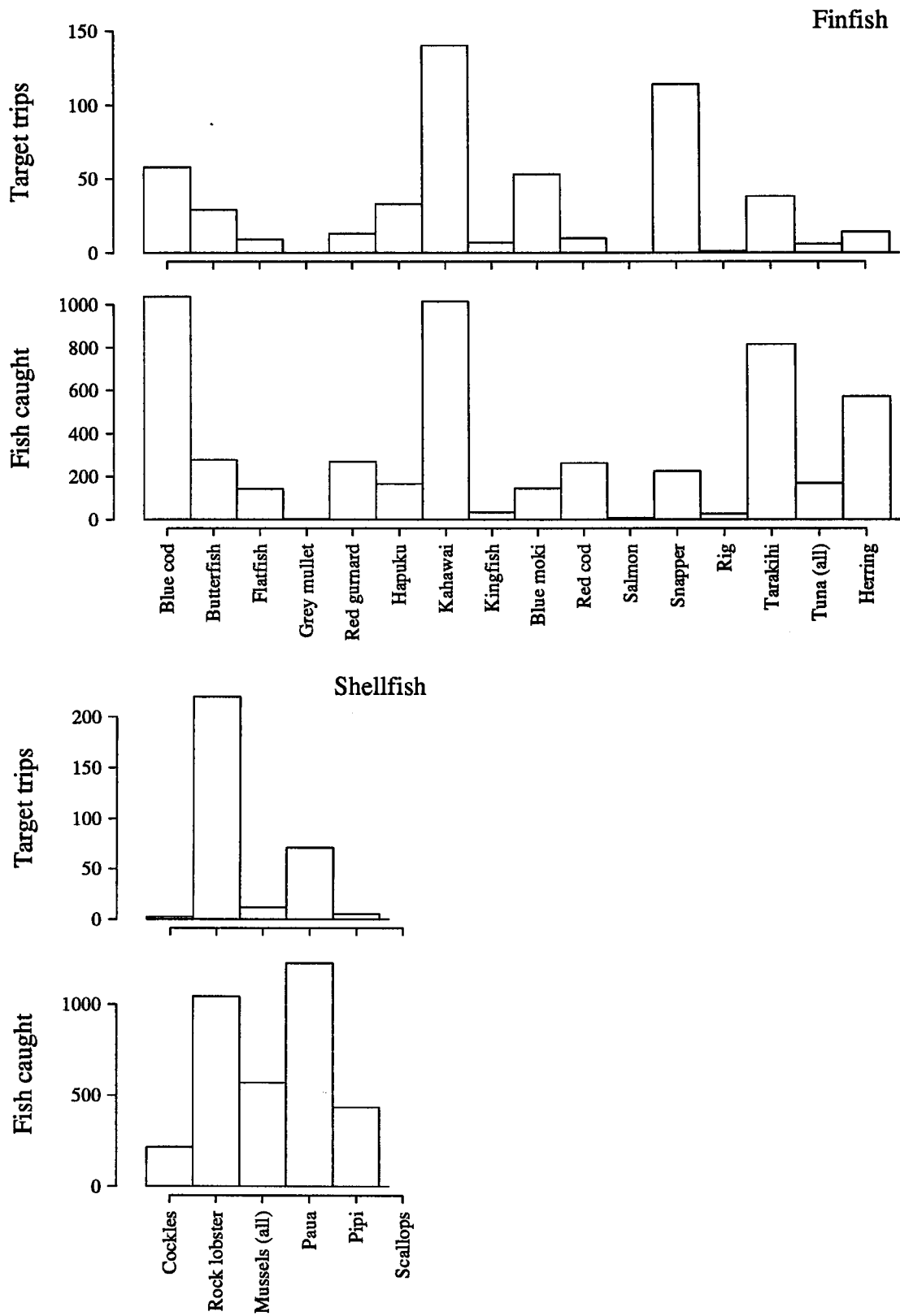


Figure 11: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 2.

QMA 3

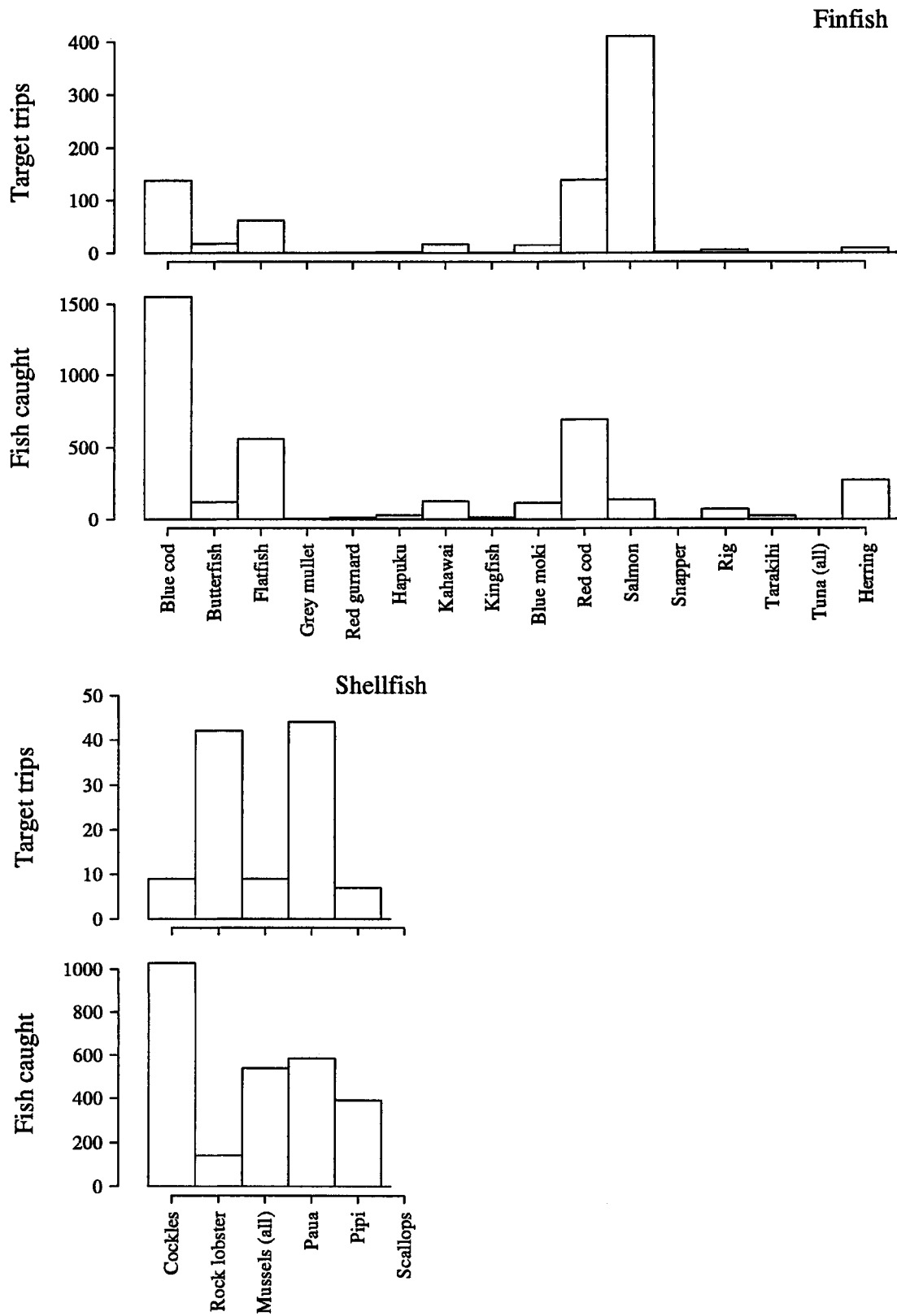


Figure 12: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 3.

QMA 5

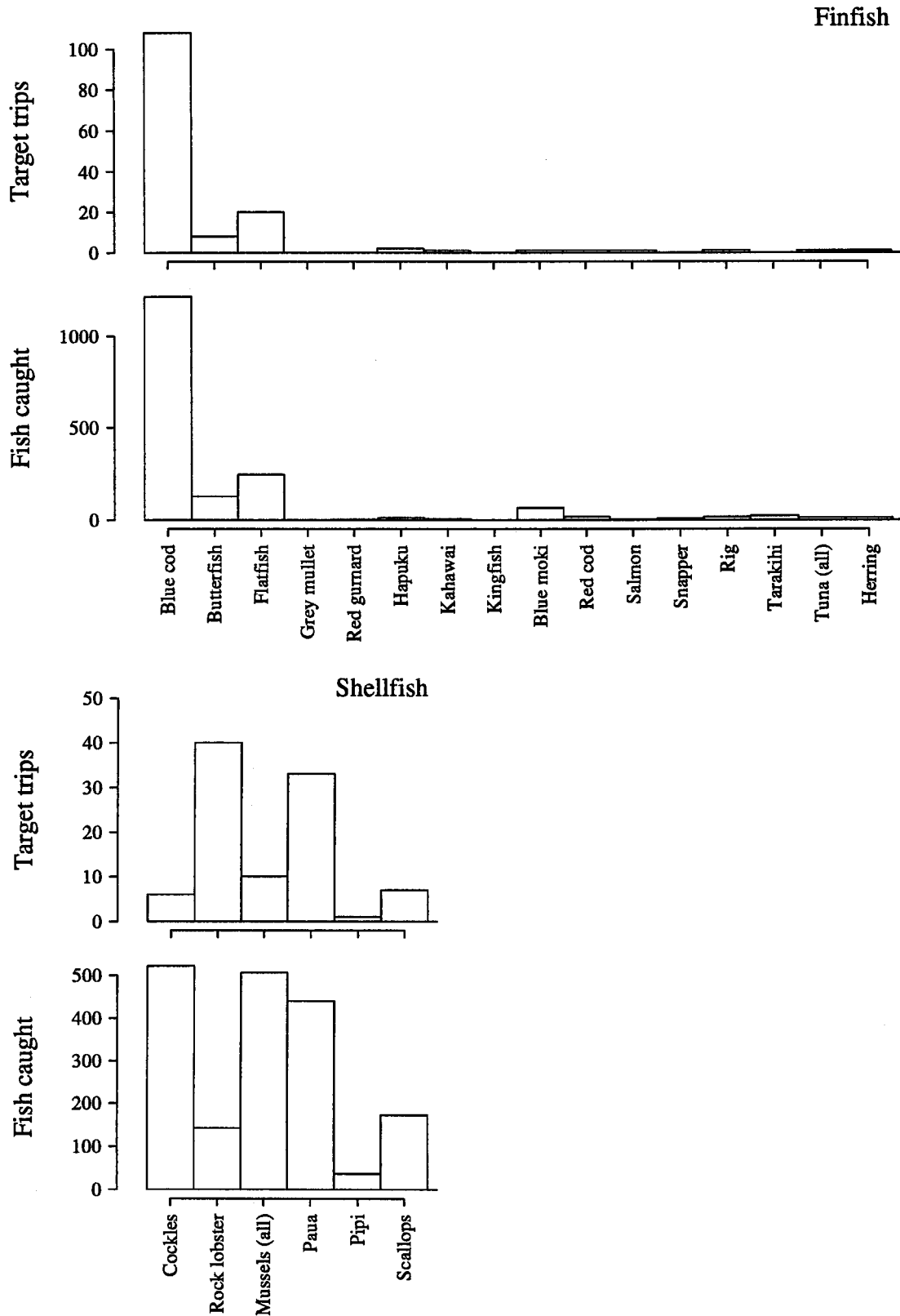


Figure 13: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 5.

QMA 7

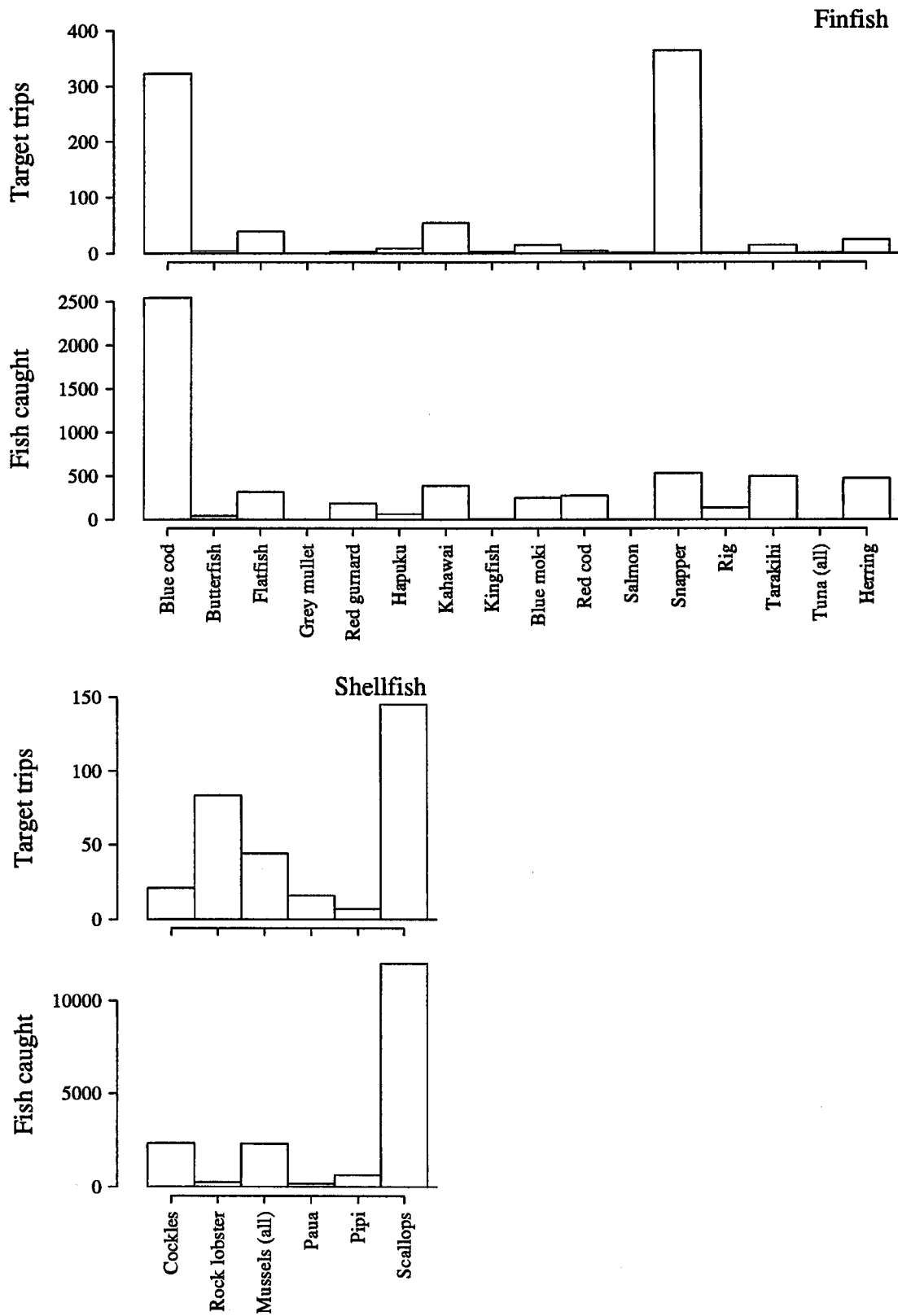


Figure 14: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 7.

QMA 8

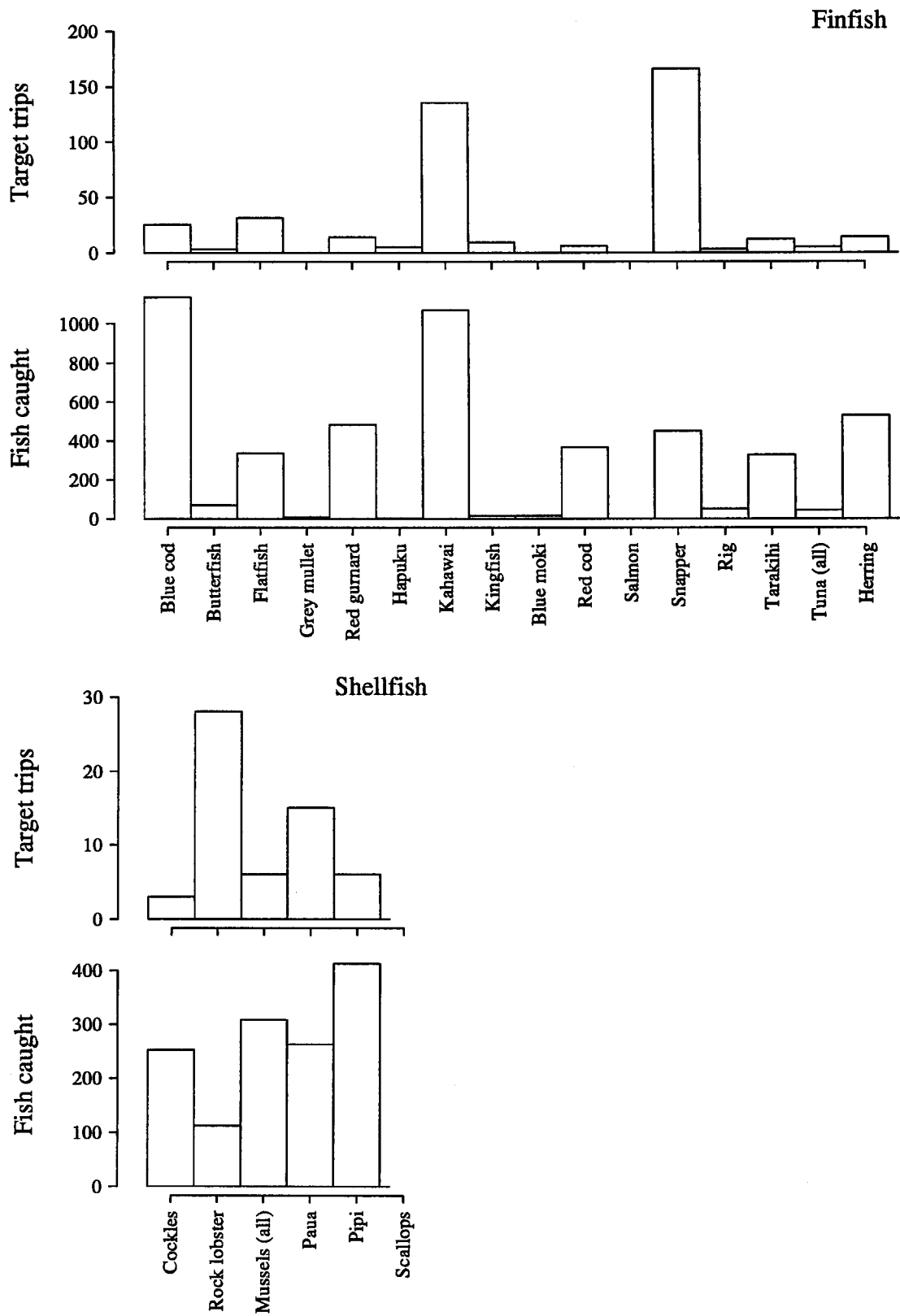


Figure 15: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 8.

QMA 9

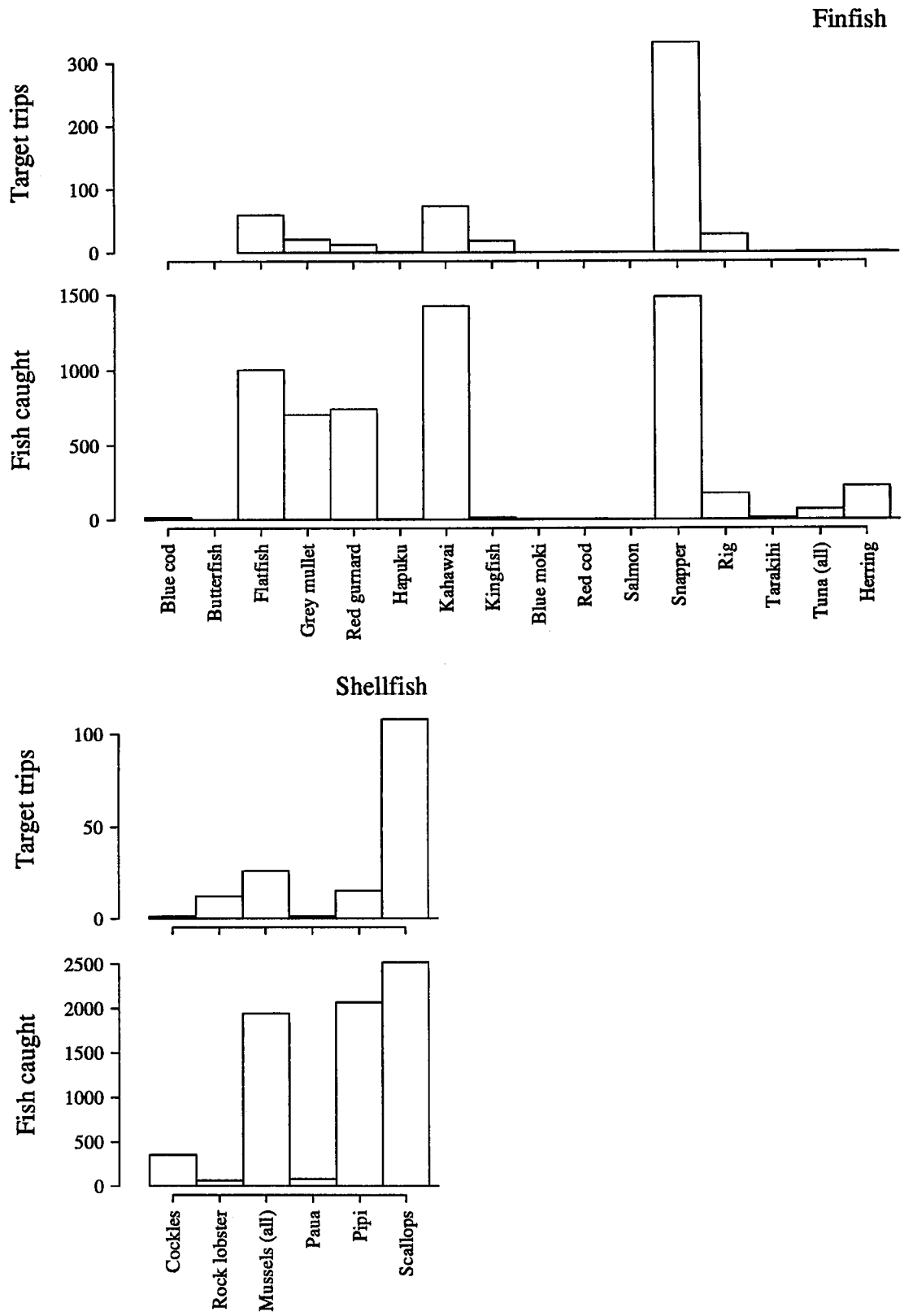


Figure 16: Number of target trips and the number of fish caught for the 16 most targeted recreational finfish and 6 shellfish in QMA 9.

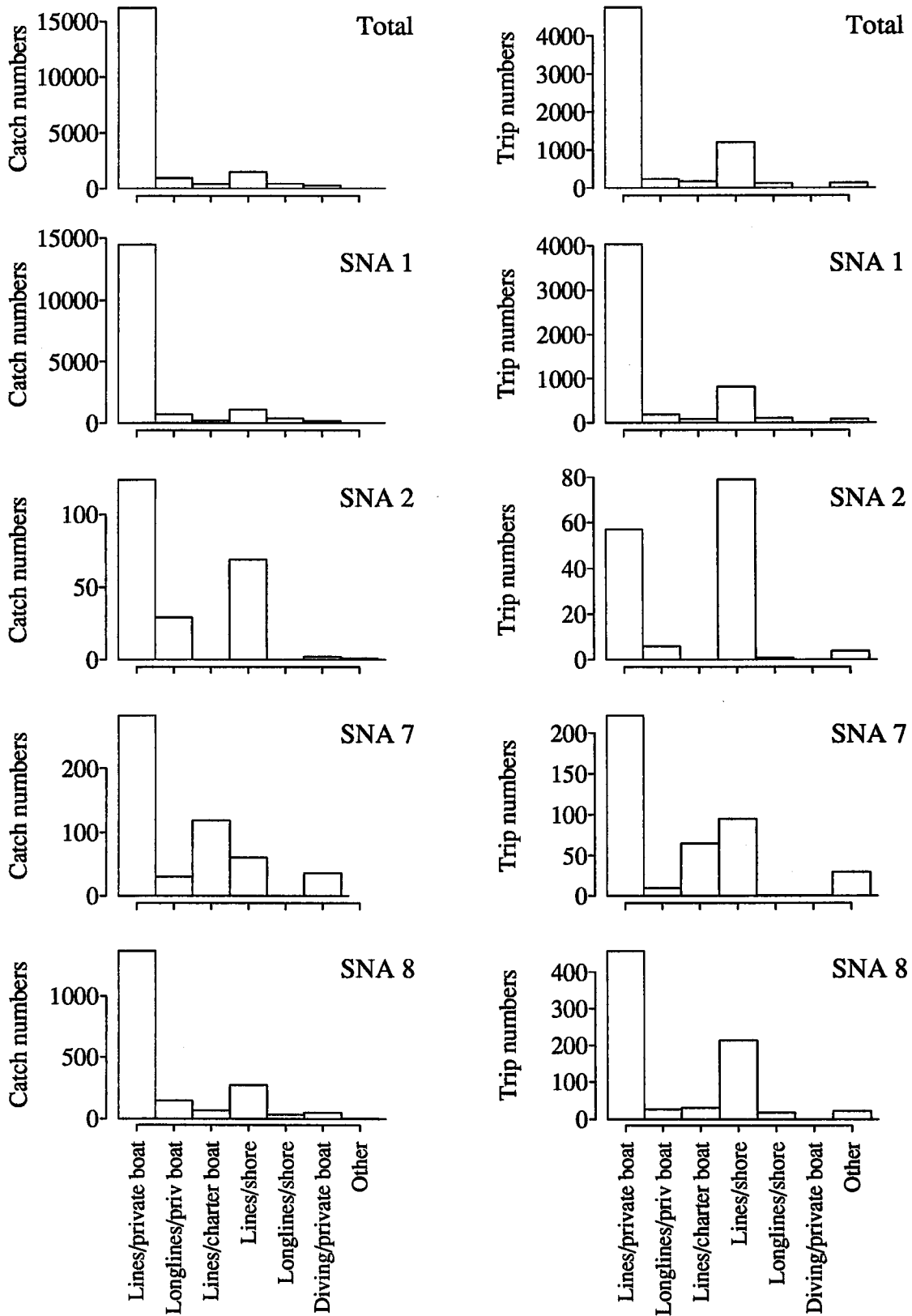


Figure 17: Number of snapper caught and the number of trips catching and/or targeting snapper by fishing method throughout New Zealand and for the main Fishstocks.

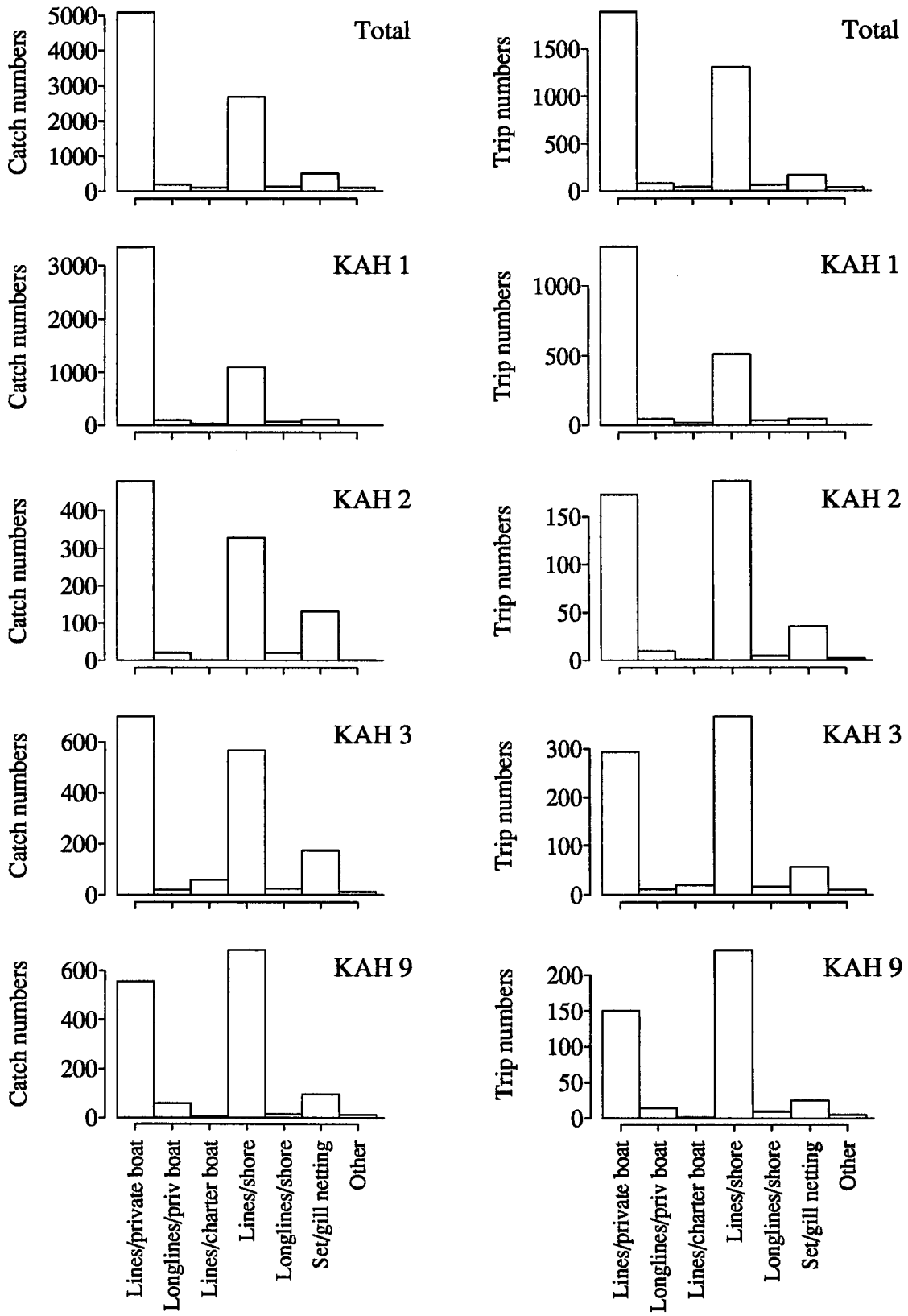


Figure 18: Number of kahawai caught and the number of trips catching and/or targeting kahawai by fishing method throughout New Zealand and for the main Fishstocks.

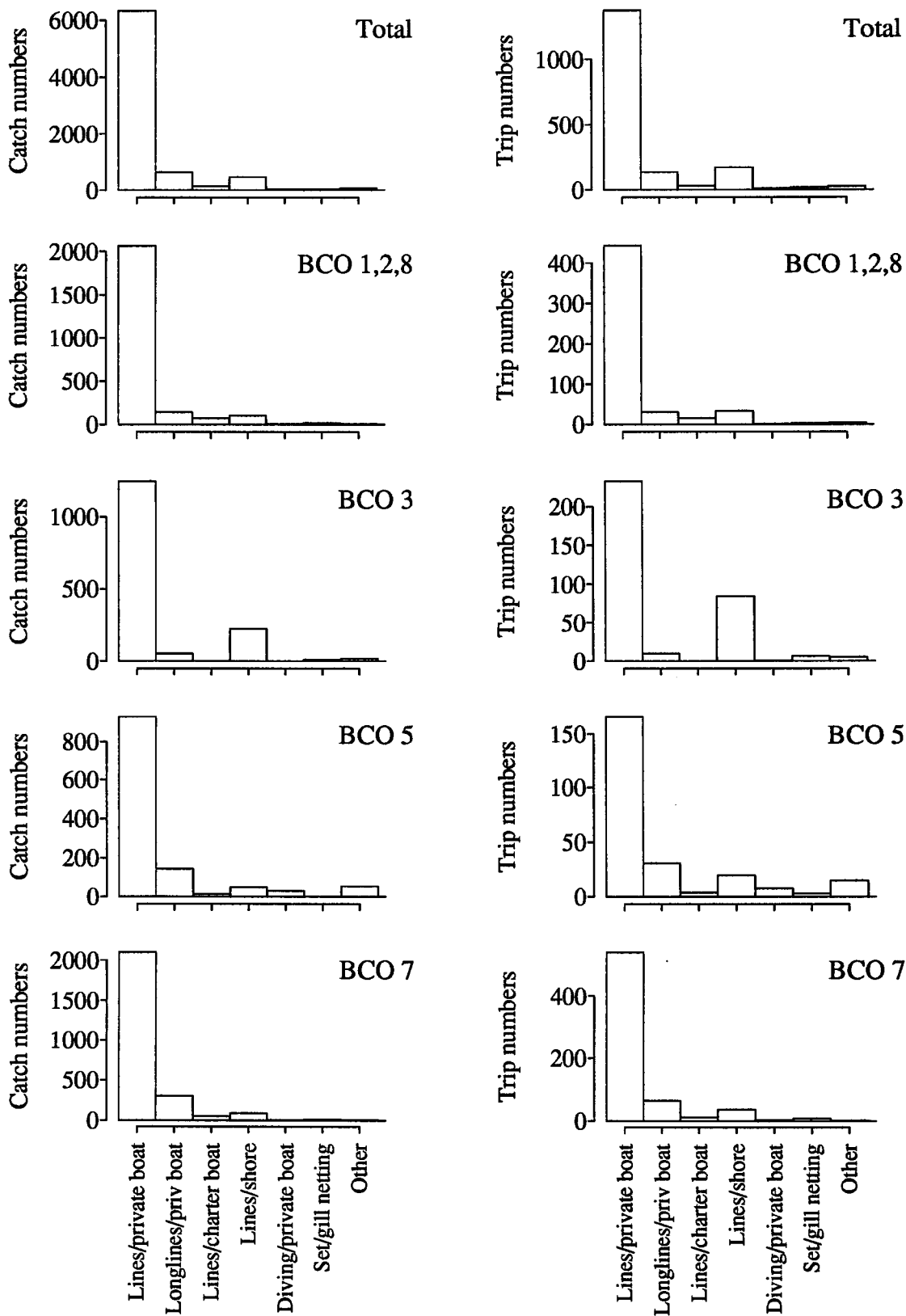


Figure 19: Number of blue cod caught and the number of trips catching and/or targeting blue cod by fishing method throughout New Zealand and for the main Fishstocks. The North Island Fishstocks are combined for convenience.

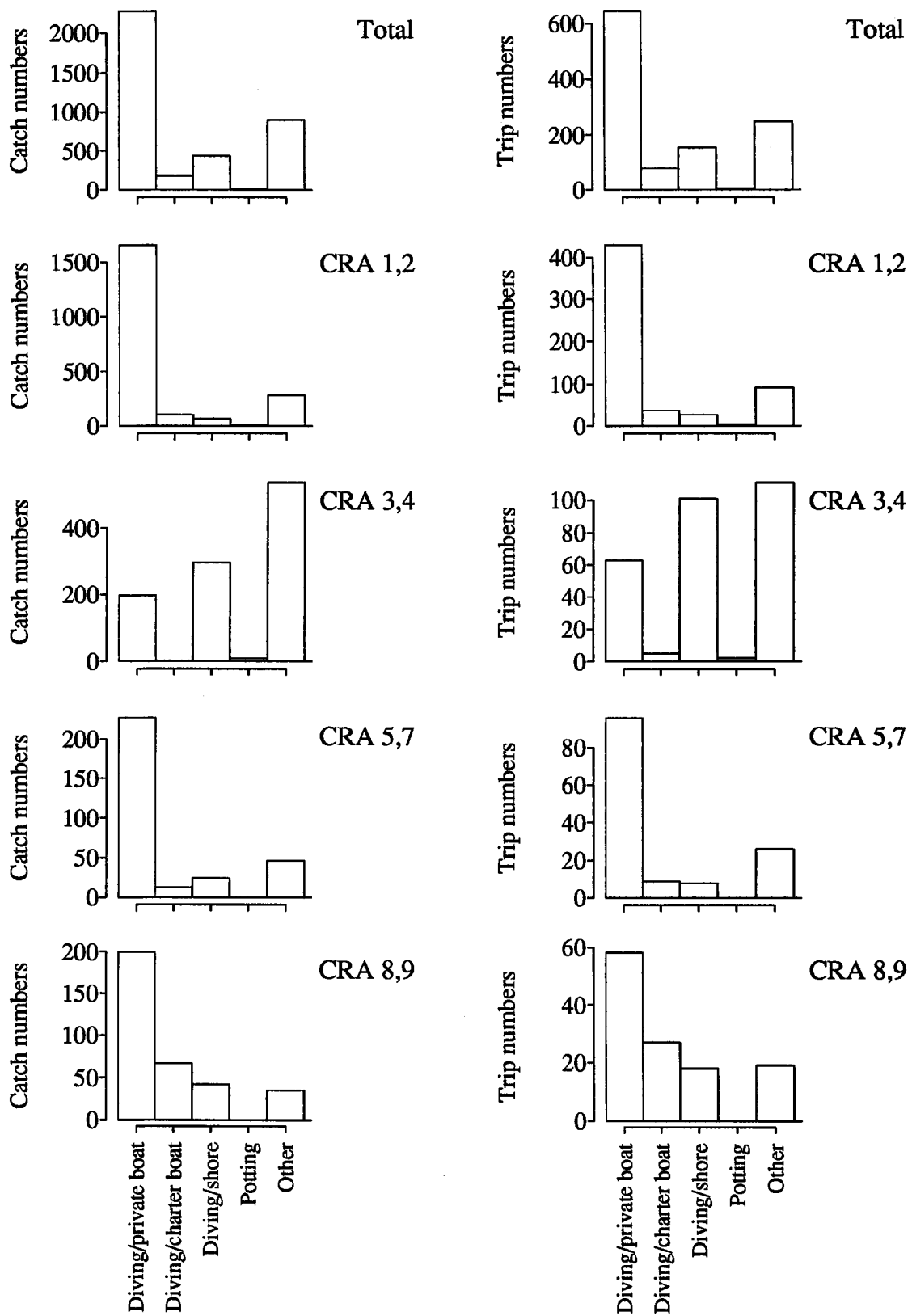


Figure 20: Number of rock lobster caught and the number of trips catching and/or targeting rock lobster by fishing method throughout New Zealand and for the indicated combinations of Fishstocks.

Upper SNA 1; lower KAH 1

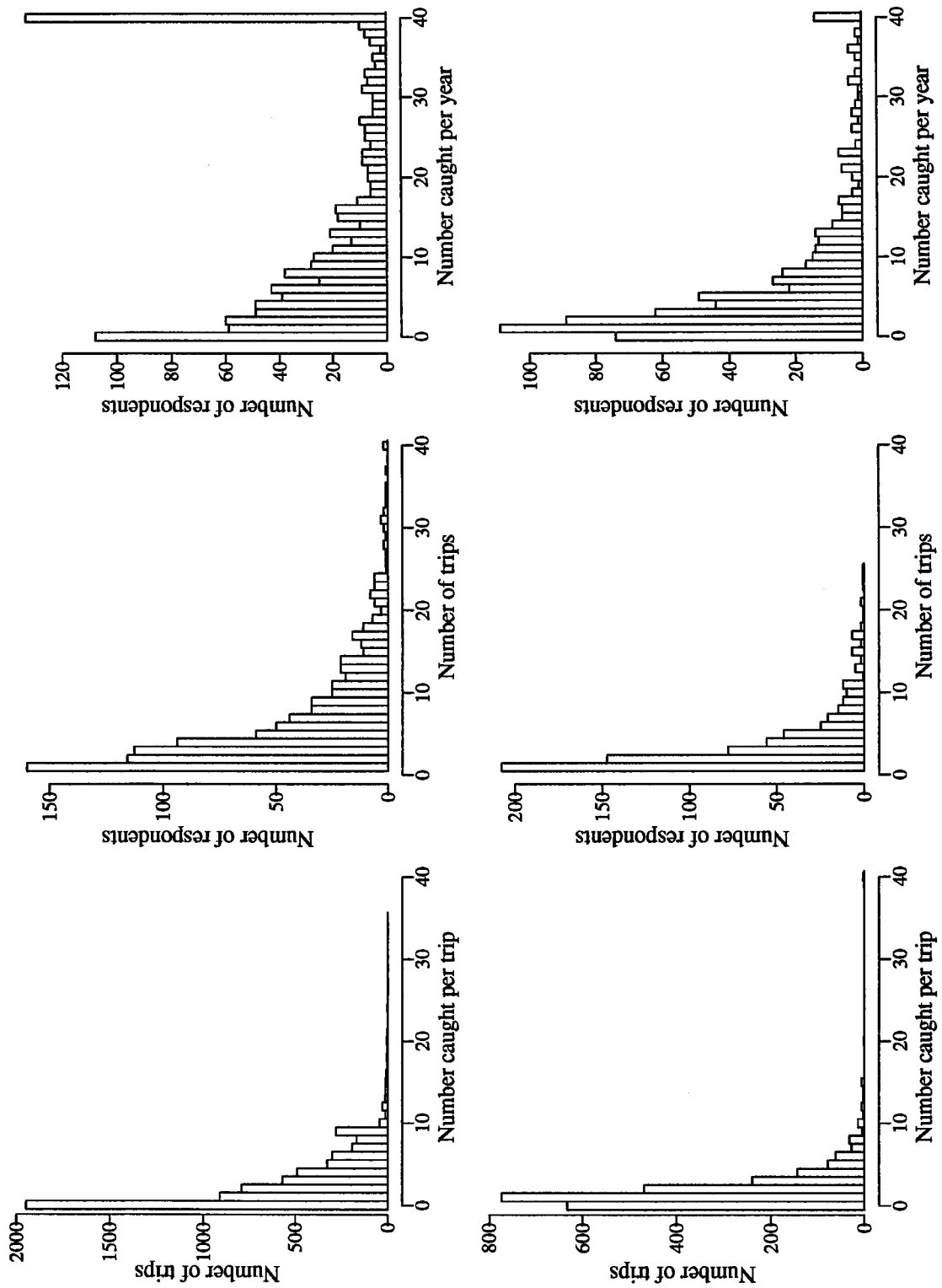


Figure 21: Upper plots SNA 1: number of trips on which a given number of snapper were caught in SNA 1; number of trips made by a given number of respondents; the number of respondents with a given year's total catch. Lower plots KAH 1: as above for kahawai in KAH 1. The data set includes all trips where species was targeted and/or caught; all x-values greater than 40 are plotted at 40.

Upper BCO 7; lower CRA 2

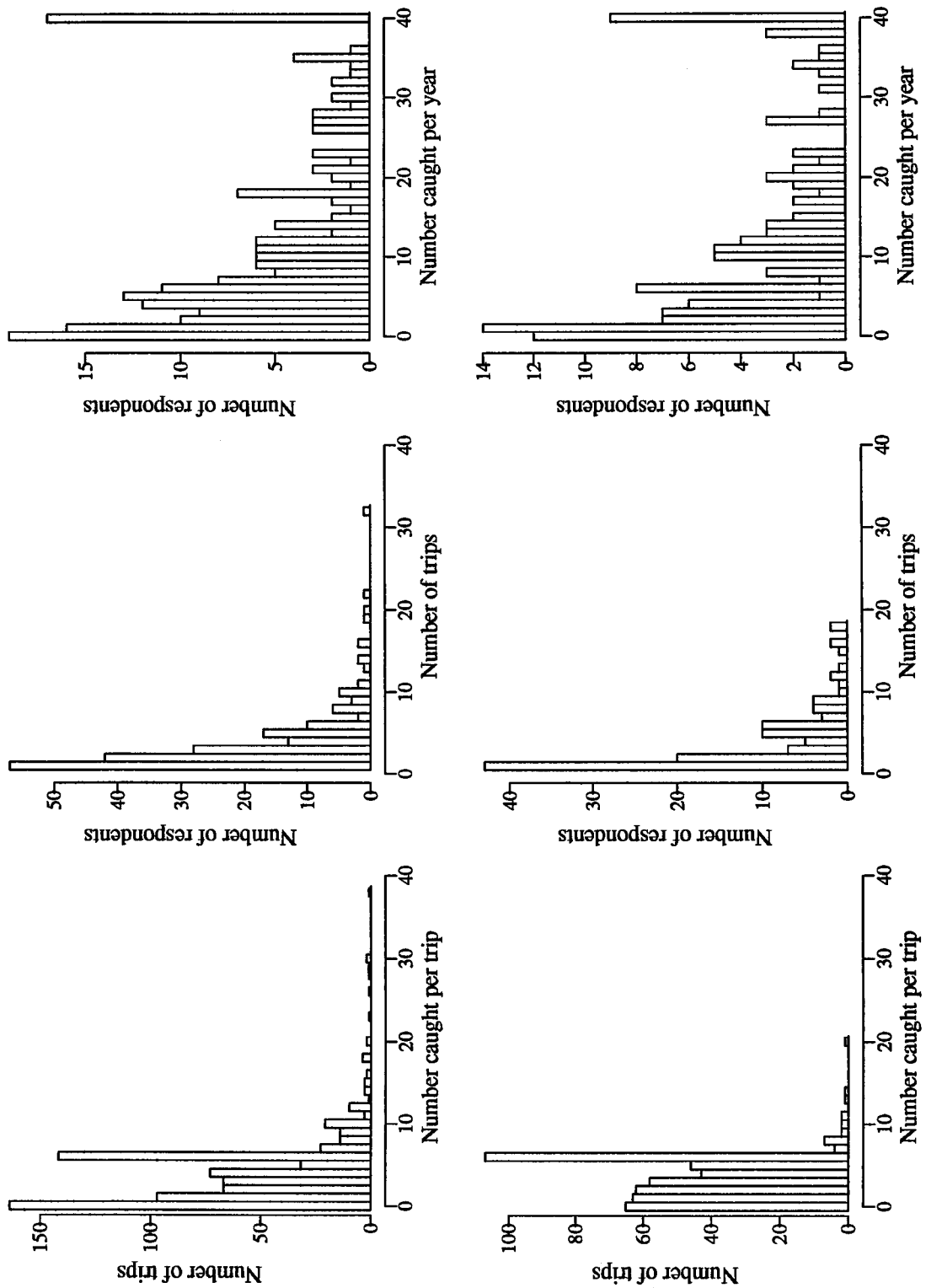


Figure 22: Upper plots BCO 7: number of trips on which a given number of blue cod were caught in BCO 7; number of trips made by a given number of respondents; the number of respondents with a given year's total catch. Lower plots CRA 2: as above for rock lobster in CRA 2. The data set includes all trips where species was targeted and/or caught; all x-values greater than 40 are plotted at 40.

Appendix 1

Diary survey instruction forms

This appendix contains copies of the following material which was included in the diaries.

1. Instructions to diarists
2. Maps of diary zones and rock lobster Fishstocks
3. Fish identification diagrams
4. Blank diary page

The conversion of the letter codes used to define the rock lobster areas to rock lobster Fishstock areas is given below. The Chatham Islands were not part of the survey and there is no recreational rock lobster catch recorded from CRA 6.

Diary area	Rock lobster Fishstock
A	CRA 1
B	CRA 2
C	CRA 3
D	CRA 4
E	CRA 5
F	CRA 7
G	CRA 8
H	CRA 9

Thank you for participating in this, the biggest study ever done on saltwater recreational fishing in New Zealand. The records of your fishing trips along with those of about 5000 other diarists will provide the Ministry of Fisheries with vital information on catch rates and the level of fishing activity. This information will allow the Ministry to improve the management of our fisheries.

Every 3 months we will send you a newsletter, and also, every 3 months you will go into a draw to win fishing equipment from Kilwell Sports or boating equipment from Hutchwilco. At the end of the year you will also have a chance to win a fish finder or VHF radio from Stabi-Craft Marine.

Thank you once again for taking part.

John Bell
Survey Coordinator

INSTRUCTIONS

1. Please fill in the diary each and every time you go out to catch fish or gather shellfish.
2. Record YOUR catch and fishing effort only. DO NOT record the catch and fishing effort of anyone else.
3. Please keep this diary from the day you receive it until December 31, 1996. Every 3 months we will write to or ring you, asking you to send in your record for that period. Simply tear out the relevant page(s) from the diary and post them back in the reply paid envelopes supplied.
4. It is very important to fill in the diary for EVERY TRIP you make, even if you catch nothing.
5. Please send in your 3-monthly trip record sheet even if you didn't go fishing! (Just write "didn't fish" across the sheet). This is because it is vitally important we know what times of the year people DON'T go fishing.
6. REMEMBER, every 3-monthly return that we receive, whether it be blank (showing that you didn't go fishing during the period) or one detailing several trips, will go into a draw to win fishing equipment from Kilwell Sports or boating equipment from Hutchwilco. At the end of the year all returns will go into a draw to win a fish finder or VHF radio from Stabi-Craft Marine.
7. The examples over the page show how the diary should be filled in.
8. If you are a commercial fisher, please DO NOT include any trips where you caught fish or shellfish to sell.
9. If you have any questions about the diary or the survey please phone John Bell (03) 479 8165 during the day, or (03) 464 0994 after hours.

FOR EXAMPLE

Date of trip	Zone number (see maps on pages 4 and 5) Rock lobster fishers: please see pg 6 also	Locality name (Please name the bay, island, reef, headland, point, beach or rock etc. you fished at)	Hours spent fishing, diving, gathering etc.	Type of fishing method (see pg 3)	Boat departure point (if fishing from a boat please name the boat ramp or marina you left from. Please be as specific as you can and indicate whether it was a marina or a ramp)	Species targeted (see pg 7 for some of the more popular species)	Species caught	Number of each species caught
13/12/95	Zone 7	The Noises	4 1/2 hrs	Rod fishing from privately owned boat	Westhaven boat ramp	Snapper	Snapper King fish	3 1
14/12/95	Zone 7 Area B	Rangitoto Channel	1/2 hr	Diving from privately owned boat	Westhaven Marina.	Rock lobster	Rock lobster	1
10/1/96	Zone 26	Pelorus Sound	2hrs	Handgathering	—	Pipi	Pipi Cockles	70 55
22/2/96	Zone 33	Otago Harbour	2 1/2 hrs	Shore Fishing with rod	—	Salmon	NONE	

1. **Date of trip:** Please record the day / month / year.

2. **Zone number:** Please record the zone where you went fishing, diving or gathering etc. (refer to the maps on pages 4 and 5).

If you fished in more than one zone during a trip, please treat each zone as being a separate trip and fill out a record for each zone fished in.

Rock lobster fishers - please also record the area code from the map on page 6 as well as the zone from pages 4 and 5.

3. **Locality name:** Please record the name of the bay, island, reef, headland, point, beach or rock etc. where you went fishing, diving or gathering etc.

4. **Hours spent fishing, diving, gathering etc:** Please record to the nearest half hour the time you actually spent fishing, diving or gathering etc. DO NOT count the time you spent travelling or resting. If you used a net or pot, please record the length of time the net or pot was in the water.

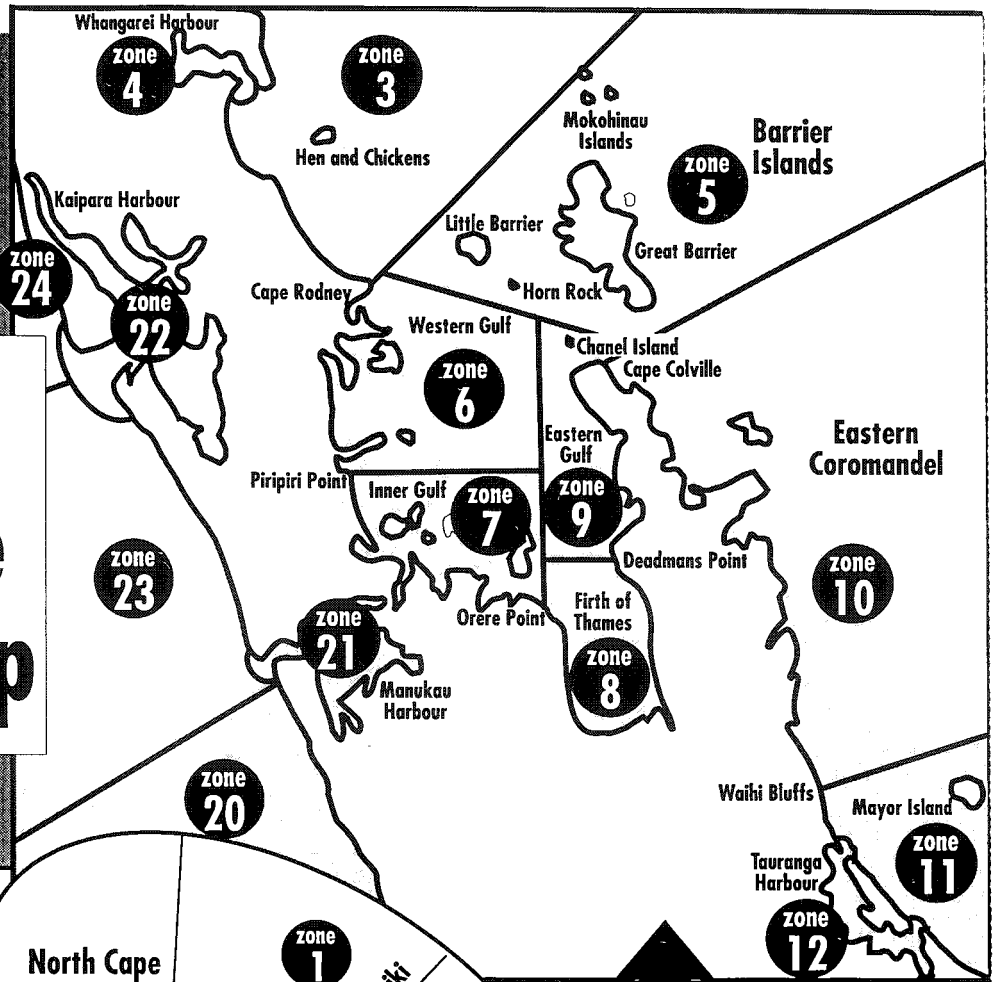
5. **Type of fishing method:** Please specify the fishing method you used. The options are:

- | | |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| 1) Rod or handline fishing from a privately owned boat (includes bait, jigs, poppers, trolling etc.) | 9) Dredging |
| 2) Rod, handline or longline fishing from a charter boat | 10) Set netting / gill netting |
| 3) Longline fishing from a privately owned boat | 11) Drag netting / beach seining |
| 4) Shore fishing with a rod or handline | 12) Hand gathering |
| 5) Shore fishing with a longline (e.g. kon-tiki or kite) | 13) Potting |
| 6) Diving from a privately owned boat | 14) Spearing (for flounder or other flatfish) |
| 7) Diving from a charter boat | 15) Other (please specify) |
| 8) Diving from the shore | |

If you used more than one fishing method on a trip, please treat each method as being a separate trip and fill out a trip record for each method.

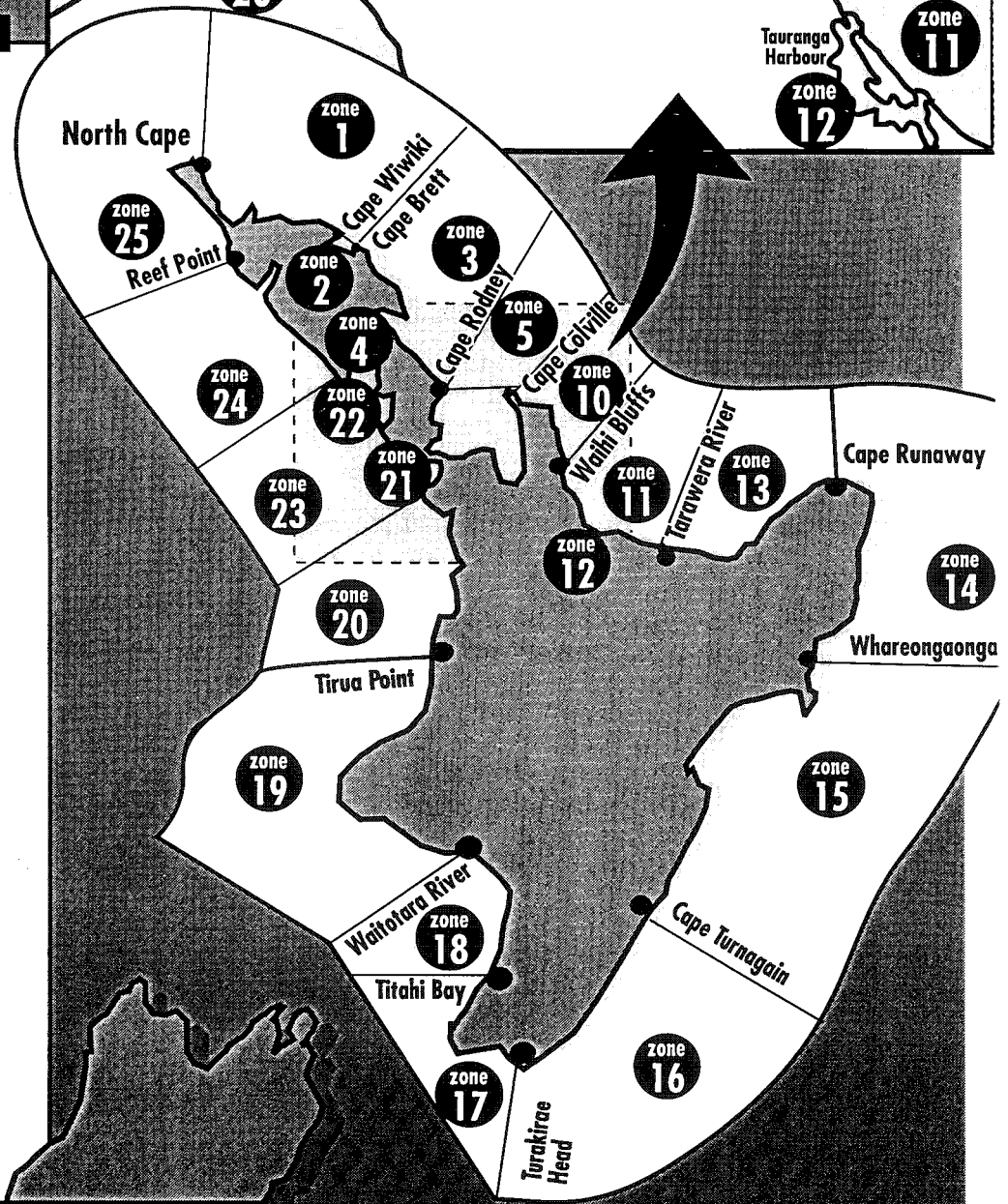
6. **Boat departure point:** If you fished from a boat, please name the ramp or marina you left from. Please be as specific as you can and indicate whether it was a marina or ramp. If you launched from a private jetty or boat shed or mooring just write "private" in this column. If you launched through the surf please write "surf".
7. **Species targeted:** Please specify ALL the species of fish and/or shellfish that you set out to catch. Please be as precise as you can when naming the species. For example, was it a rig or school shark? Please make sure you record cockles and pipi separately. Please do not use the general name of "yellowtail", instead say whether the fish was a kingfish, a jack mackerel or a koheru.
8. **Species caught:** Please record ALL the different species of fish and/or shellfish that you caught and killed. Include any dead fish that you discarded or used as bait. Please do not include any fish that you returned to the water alive.
As with species targeted, please be as precise as you can when naming the species caught.
9. **Number of each species caught:** Please record only your own catch (including fish discarded or used as bait). However, if the catch was the result of a group effort (e.g. set netting, longlining), please divide the catch evenly among the people involved, even if in reality some people received more than others, and record your share.
10. **Comments:** If you have any comments that you would like to make, please write these on the back of the trip record page.

North Island Fishing Zone Location Map

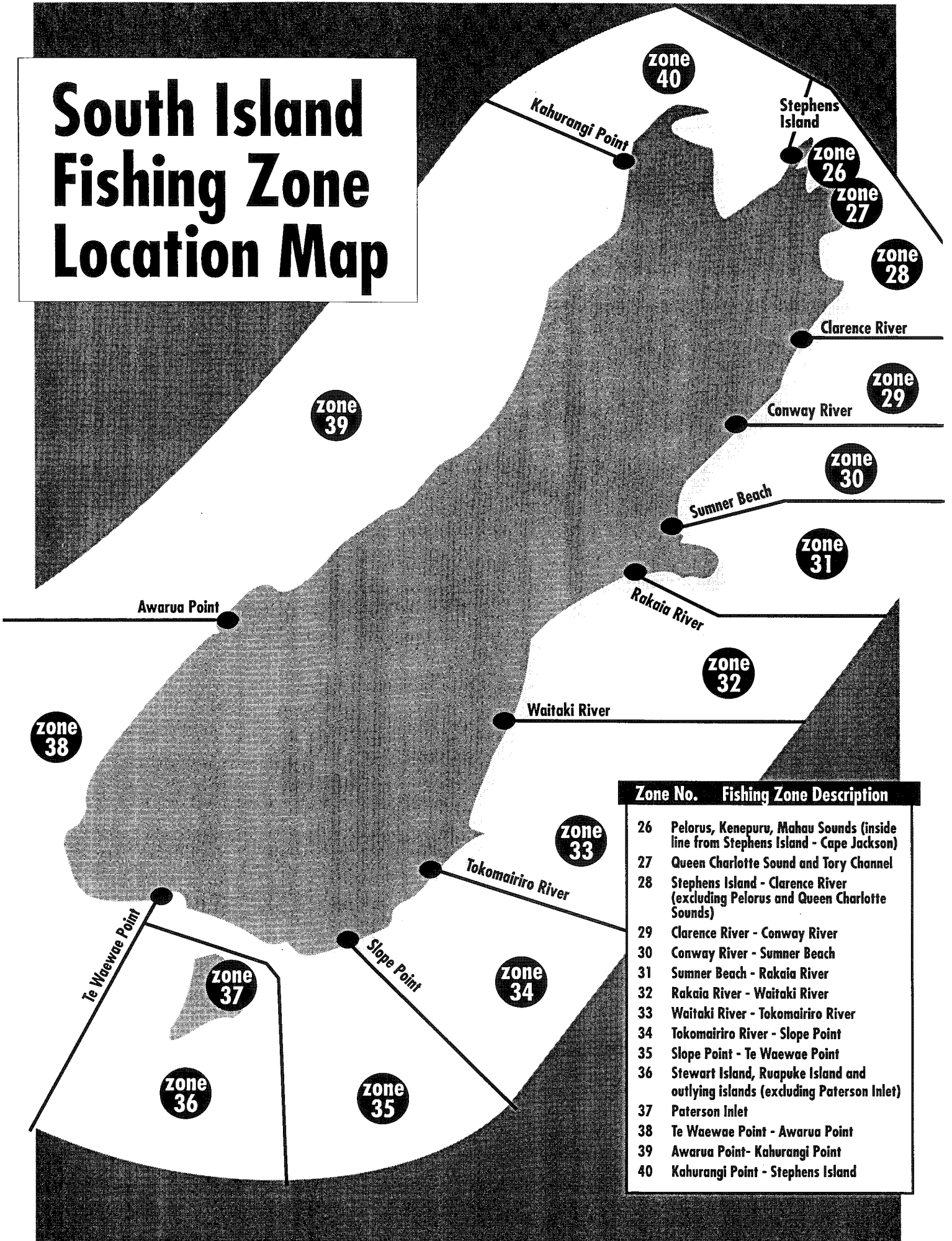


Zone No.	Fishing Zone Description
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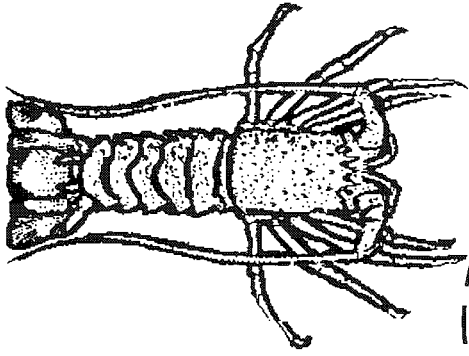
- | | |
|----|---------------------------------------------------------------------------------------------------------|
| 1 | North Cape - Cape Brett (excluding the Bay of Islands) |
| 2 | Bay of Islands (Cape Wiwiki - Cape Brett including the area around the Ninepin and Piercy Island)) |
| 3 | Cape Brett - Cape Rodney (excluding Whangarei Harbour) |
| 4 | Whangarei Harbour and entrance area (including Mair Bank) |
| 5 | Barrier Islands (including the Mokohinau Islands, Little Barrier and Great Barrier) |
| 6 | Western Gulf (Cape Rodney - Piripiri Point) |
| 7 | Inner Gulf (Piripiri Point - Orere Point) |
| 8 | Firth of Thames (Orere Point - Deadmans Point) |
| 9 | Eastern Gulf (Deadmans Point to Cape Colville, including Chanel Island) |
| 10 | Eastern Coromandel (Cape Colville to Waihi Bluffs, excluding Mayor Island) |
| 11 | Waihi Bluffs to Tarawera River (excluding Tauranga Harbour) |
| 12 | Tauranga Harbour (including both entrance areas) |
| 13 | Tarawera River - Cape Runaway (including Rurima Islands) |
| 14 | Cape Runaway - Whareongaonga |
| 15 | Whareongaonga - Cape Turnagain |
| 16 | Cape Turnagain - Turakirae Head |
| 17 | Turakirae Head - Titahi Bay |
| 18 | Titahi Bay - Waitotara River |
| 19 | Waitotara River - Tirua Point |
| 20 | Tirua Point - entrance area of Manukau Harbour |
| 21 | Manukau Harbour and entrance area |
| 22 | Kaipara Harbour and entrance area |
| 23 | Southern Manukau entrance to the northern Kaipara entrance (excluding the Manukau and Kaipara Harbours) |
| 24 | Northern Kaipara entrance - Reef Point (excluding the Kaipara Harbour) |
| 25 | Reef Point - North Cape |



South Island Fishing Zone Location Map

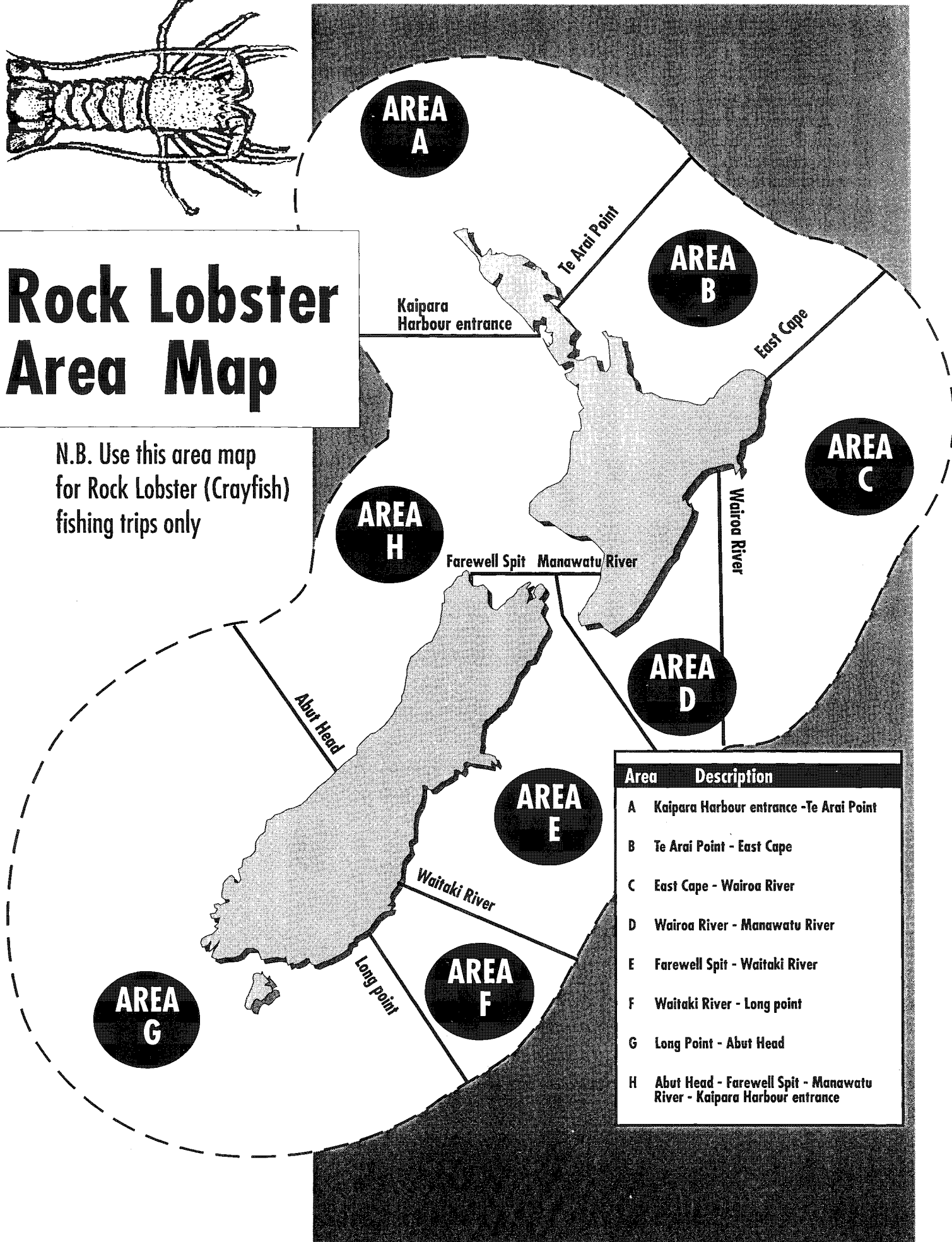


Zone No.	Fishing Zone Description
26	Pelorus, Kenepuru, Mahau Sounds (inside line from Stephens Island - Cape Jackson)
27	Queen Charlotte Sound and Tory Channel
28	Stephens Island - Clarence River (excluding Pelorus and Queen Charlotte Sounds)
29	Clarence River - Conway River
30	Conway River - Sumner Beach
31	Sumner Beach - Rakaia River
32	Rakaia River - Waitaki River
33	Waitaki River - Tokomairiro River
34	Tokomairiro River - Slope Point
35	Slope Point - Te Waewae Point
36	Stewart Island, Ruapuke Island and outlying islands (excluding Paterson Inlet)
37	Paterson Inlet
38	Te Waewae Point - Awarua Point
39	Awarua Point - Kahurangi Point
40	Kahurangi Point - Stephens Island

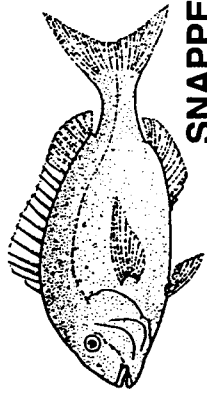


Rock Lobster Area Map

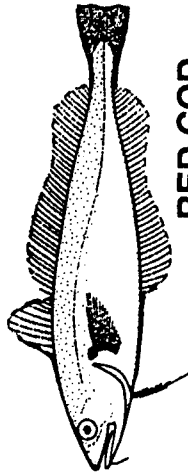
N.B. Use this area map for Rock Lobster (Crayfish) fishing trips only



Area	Description
A	Kaipara Harbour entrance - Te Arai Point
B	Te Arai Point - East Cape
C	East Cape - Wairoa River
D	Wairoa River - Manawatu River
E	Farewell Spit - Waitaki River
F	Waitaki River - Long point
G	Long Point - Abut Head
H	Abut Head - Farewell Spit - Manawatu River - Kaipara Harbour entrance



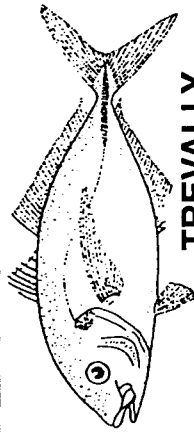
SNAPPER Brim



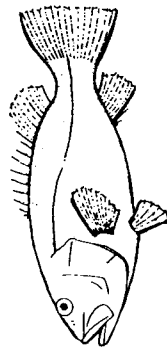
RED COD



JACK MACKEREL Horse Mackerel



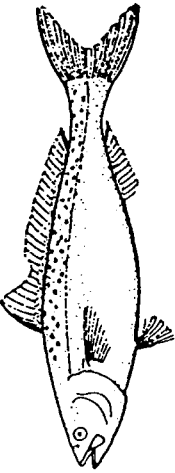
TREVALLY



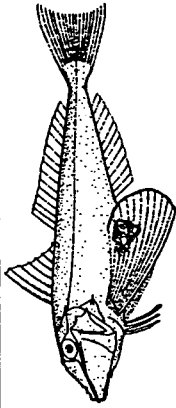
HAPUKU Groper



SCHOOL SHARK Tope, Greyboy



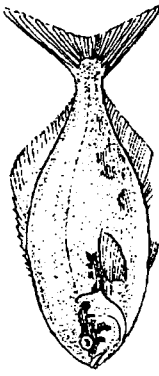
KAHAWAI



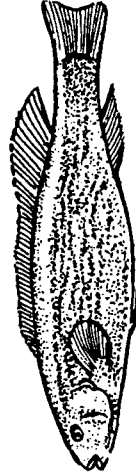
RED GURNARD



ENGLISH MACKEREL Slimy or Blue Mackerel



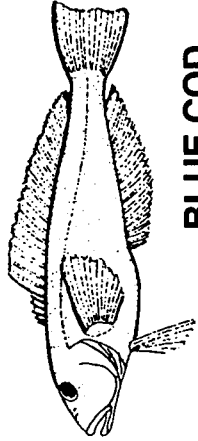
BLUE MAOMAO



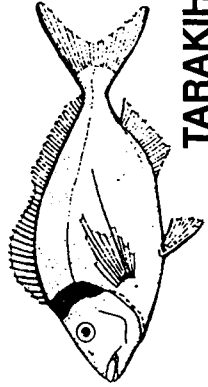
BUTTERFISH Greenbone



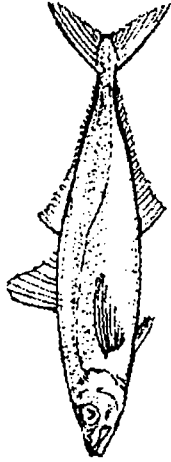
RIG Spotted Dogfish



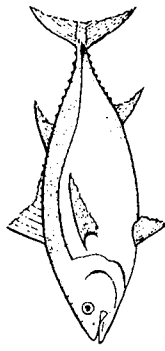
BLUE COD



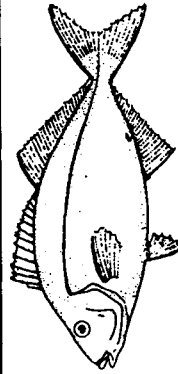
TARAKIHI



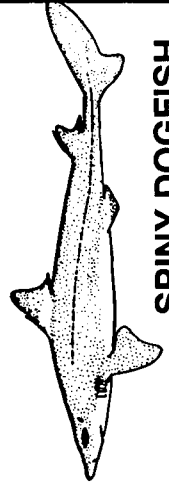
KOHERU



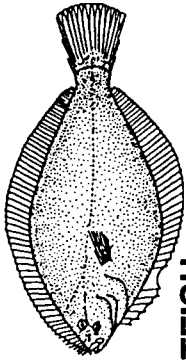
TUNA SPECIES Yellowfin or Skiplack or Albacore



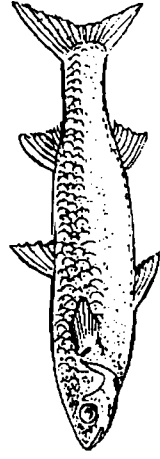
BLUE MOKI



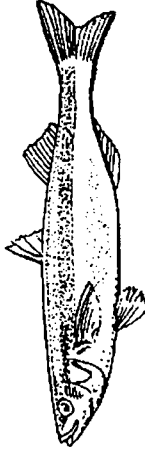
SPINY DOGFISH



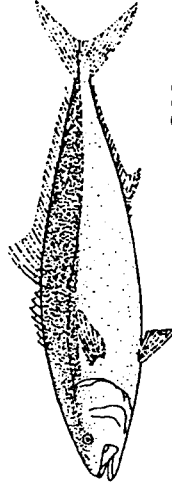
FLATFISH Flounder, Sole



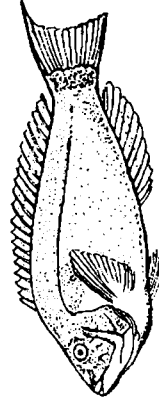
GREY MULLET



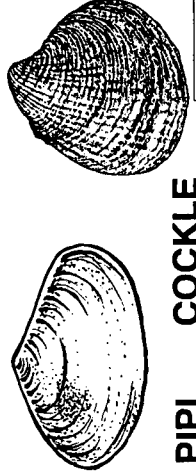
YELLOW-EYED MULLET Herring, Sprat



KINGFISH



PARROTFISH Wrasse



PIPI COCKLE

TRIP RECORD (this copy for the Ministry of Fisheries)

See page 1 for instructions

Date of trip	Zone number (see maps on pages 4 and 5). Rock lobster fishers: please see pg 6 also	Locality name (Please name the bay, island, reef, headland, point, beach or rock etc. you fished at)	Hours spent fishing, diving, gathering etc.	Type of fishing method (see pg 3)	Boat departure point (if fishing from a boat please name the boat, ramp or marina you left from. Please be as specific as you can and indicate whether it was a marina or a ramp)	Species targeted (see pg 7 for some of the more popular species)	Species caught	Number of each species caught

(tear here)

If you have any comments, please write these on the back of this page.