



# Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2010–11

New Zealand Aquatic Environment and Biodiversity Report No. 113

O.F. Anderson

ISSN 1179-6480 (online)

ISBN 978-0-478-41461-5 (online)

June 2013



Requests for further copies should be directed to:

Publications Logistics Officer  
Ministry for Primary Industries  
PO Box 2526  
WELLINGTON 6140

Email: [brand@mpi.govt.nz](mailto:brand@mpi.govt.nz)  
Telephone: 0800 00 83 33  
Facsimile: 04-894 0300

This publication is also available on the Ministry for Primary Industries websites at:  
<http://www.mpi.govt.nz/news-resources/publications.aspx>  
<http://fs.fish.govt.nz> go to Document library/Research reports

**© Crown Copyright - Ministry for Primary Industries**

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1. INTRODUCTION</b>	<b>2</b>
<b>2. METHODS</b>	<b>2</b>
<b>3. RESULTS</b>	<b>3</b>
<b>4. ACKNOWLEDGMENTS</b>	<b>12</b>
<b>5. REFERENCES</b>	<b>12</b>



## EXECUTIVE SUMMARY

**Anderson, O.F. (2013). Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2010–11.**

*New Zealand Aquatic Environment and Biodiversity Report No. 113. 57 p.*

Commercial catch-effort data and fisheries observer records of catch by species provided by the Ministry for Primary Industries (MPI) were used to estimate the level of individual fish and invertebrate species bycatch in each fishing year from 1990–91 to 2010–11 for the following Tier-1 deepwater fisheries:

### **Trawl fisheries**

- Arrow squid (SQU)
- Hoki/hake ling (HOK/HAK/LIN)
- Southern blue whiting (SBW)
- Jack mackerel (JMA)
- Orange roughy (ORH)
- Oreo (OEO)
- Scampi (SCI)

### **Longline fisheries**

- Ling (LIN)

The estimation process for the arrow squid fishery stratified according to fishery area, and estimates of precision were calculated using bootstrap methods. For the remaining fisheries no stratification was used and no estimates of precision were calculated.

Summary tables were made for each fishery, and for all fisheries combined, to provide an easy reference for the bycatch trend of each species or species group caught in these fisheries. Improvements in species identification, introduction of new codes, and changes in observer recording practices can have an effect on the apparent increase or decrease in the bycatch of certain taxa and should be considered when interpreting trends.

All of the fisheries examined showed measurable declines or increases in bycatch of certain species over time, and consistent declines or increases were seen for a few species across six or more of the eight fisheries. Those increasing were; starfish (Asteroidea), deepsea skates (*Notoraja* spp.), Baxters lantern dogfish (*Etmopterus baxteri*), Lucifer dogfish (*E. lucifer*), lanternfish (Myctophidae), rough skate (*Zearaja nasuta*), pale ghost shark (*Hydrolagus bemisi*), and javelinfish (*Lepidorhynchus denticulatus*). Those declining were; bluenose (*Hyperoglyphe Antarctica*), shark (unspecified), and skates (Rajidae and Arhynchobatidae). Future analyses will include a breakdown of trends by area and fishery within these New Zealand deepwater fisheries.

## 1. INTRODUCTION

This report was prepared as an output from the Ministry for Primary Industries project DAE2010-02 “Bycatch monitoring and quantification of deepwater stocks” and addresses the following Specific objective for year-2.

4. To provide annual estimates of bycatch for nine Tier-1 species fisheries (SQU, SCI, HAK, HOK, JMA, ORH, OEO, LIN, SBW).

The purpose of this research was to compile an initial list of all species impacted by New Zealand deepwater fisheries, and the degree of that impact, which could be relatively rapidly produced and regularly updated. This would then provide the ability to detect early any downward (or upward) trends in bycatch of individual species in all fisheries, not just in the single fishery typically examined in any one year. By fine-tuning these estimates for one fishery each year (in this year arrow squid) and providing estimates of precision, a complete picture of the annual bycatch of a large number of species, across each fishery, can be built up over multiple years—with increasing precision in each year.

This report provides the first iteration of this plan, with updated estimates of bycatch and discards in the arrow squid trawl fishery (addressing Specific objectives 1–3 of DAE2010-02) presented in more detail in Anderson (2013).

## 2. METHODS

Observer bycatch data for the period 1990–91 to 2010–11 were extracted from the MPI *cod* database for each of the nine Tier-1 target species, arranged into eight fisheries as follows: hoki/hake/ling trawl, jack mackerel trawl, orange roughy trawl, oreo trawl, southern blue whiting trawl, scampi trawl, arrow squid trawl, and ling longline. These data were subjected to error-checking procedures as described in Anderson (2013) for the arrow squid fishery.

The total catch and frequency of capture of each bycatch species was examined in each fishery, and those species for which there was a total of less than 10 kg of observed catch over the entire 21-year period, or which were observed caught on less than six occasions, were disregarded. It was considered that either the capture of such species was so rare as to be irrelevant, or the species code may have been incorrectly recorded by the observer. Annual bycatch ratios for the remaining individual QMS and non-QMS species (fish and invertebrates) were then calculated for each fishery.

Commercial catch records were also obtained from the Ministry for Primary Industries for each fishery, groomed according to the procedures described in Anderson (2013), then used to calculate annual effort (number of tows or longline sets) for each fishery.

For each fishery, excluding the arrow squid fishery, the annual species specific bycatch ratios were multiplied by the annual effort in the fishery, without stratification, to produce simple estimates of total annual bycatch without any estimates of precision. An indication of whether the bycatch of each species increased, decreased, or stayed relatively unchanged over time was calculated in the form of a slope coefficient for a loglinear regression fitted to the data.

For the arrow squid fishery, the procedure was similar but was extended to include an estimate of precision derived from an area-stratified bootstrapping procedure used for the combined species groups (QMS, non-QMS, and invertebrates) in Anderson (2013). This procedure rounds the estimates of total annual catch to the nearest 10 t and so species with less than this level of catch in at least one year were excluded.

See Anderson (2013) for a more detailed description of the general methodology used to extract and groom observer and commercial fishing return data, calculate bycatch ratios and annual levels, and estimate precision.

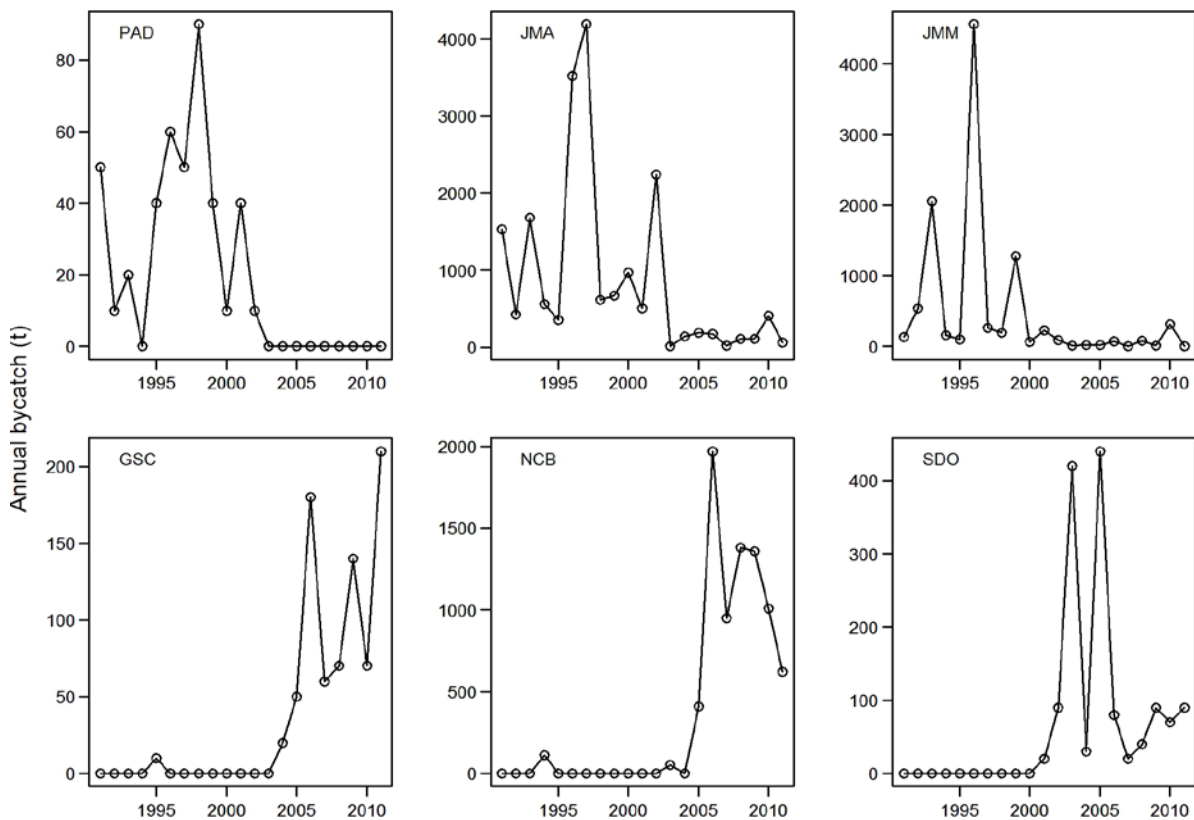
Tables were constructed for each fishery showing the annual estimated bycatch for each species, the slope coefficient and, for the arrow squid fishery, the estimated c.v. for each estimate. Plots were constructed for species within each fishery that showed the strongest declines and increases over time. A summary table was also constructed to allow visual comparison of trends in quantities of bycatch species caught across multiple fisheries.

### **3. RESULTS**

Annual bycatch estimates for individual species in each of the eight combined fisheries are given in Tables 1 to 8. The following is a brief summary of these tables. Note that in some cases the apparent increase or decrease in bycatch of a species is likely to be due to other factors including the introduction of new codes (for example the increase in bycatch of floppy tubular sponges in the hoki/hake/ling trawl fishery reflects the improved identification of these sponges in more recent years) and improvements in species identification over time (for example generic codes being replaced by species specific codes). Some codes may also have been misused, e.g., in the arrow squid fishery, the increase in bycatch of smooth red swimming crabs (*Nectocarcinus bennetti*) appears to be at the expense of bycatch of the similar-looking paddle crabs (*Ovalipes catharus*) with the seemingly generic code (PAD).

### Arrow squid trawl fishery

- The most commonly caught bycatch species were barracouta (*Thyrsites atun*, BAR), silver warehou (*Seriolella punctata*, SWA), and spiny dogfish (*Squalus acanthias*, SPD).
- Of the 101 bycatch species examined, 15 have shown a decrease in catch over time and 54 an increase in catch.
- The species showing the greatest decline were paddle crabs (PAD), jack mackerels (*Trachurus* spp., JMA), and slender jack mackerel (*Trachurus murphyi*, JMM) (Figure 1).
- The species showing the greatest increase were giant spider crab (*Jacquintia edwardsii*, GSC), smooth red swimming crab (NCB), and silver dory (*Cyttus novaezealandiae*, SDO) (Figure 1).

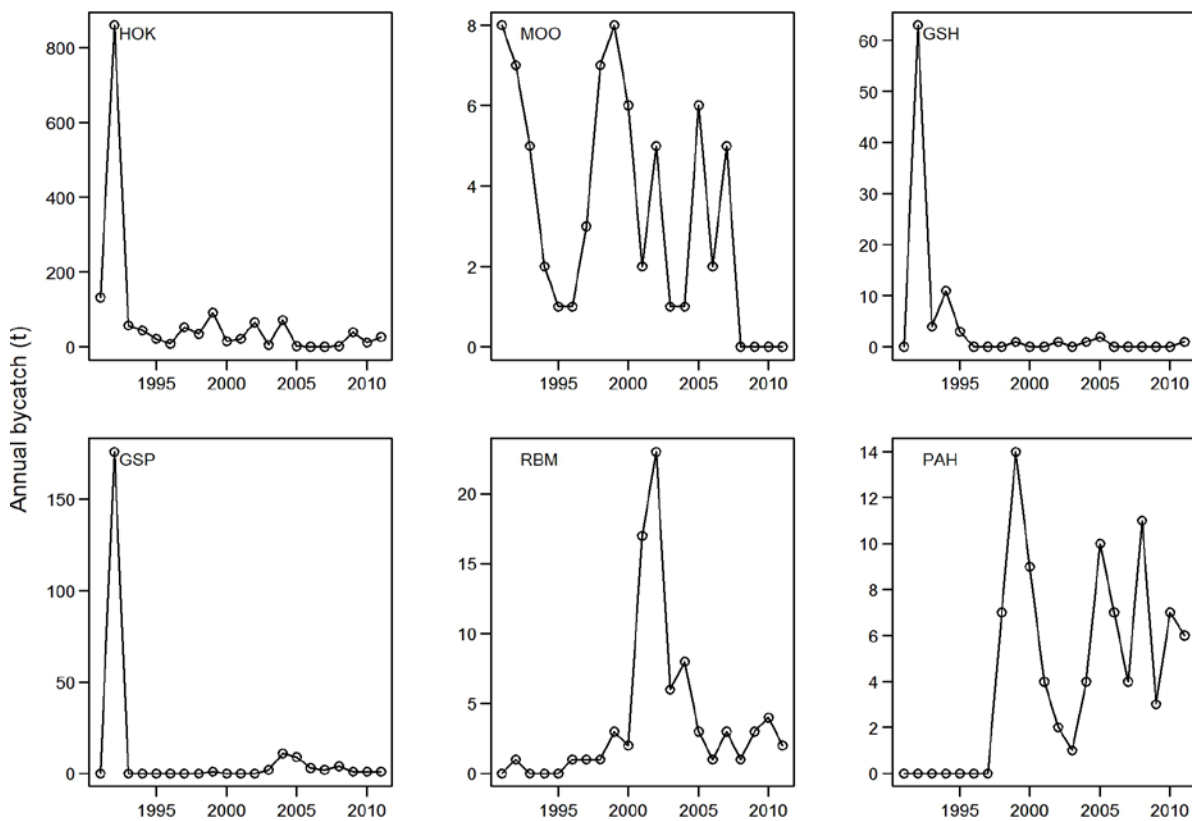


**Figure 1: Annual bycatch estimates in the arrow squid trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**



### Southern blue whiting trawl fishery

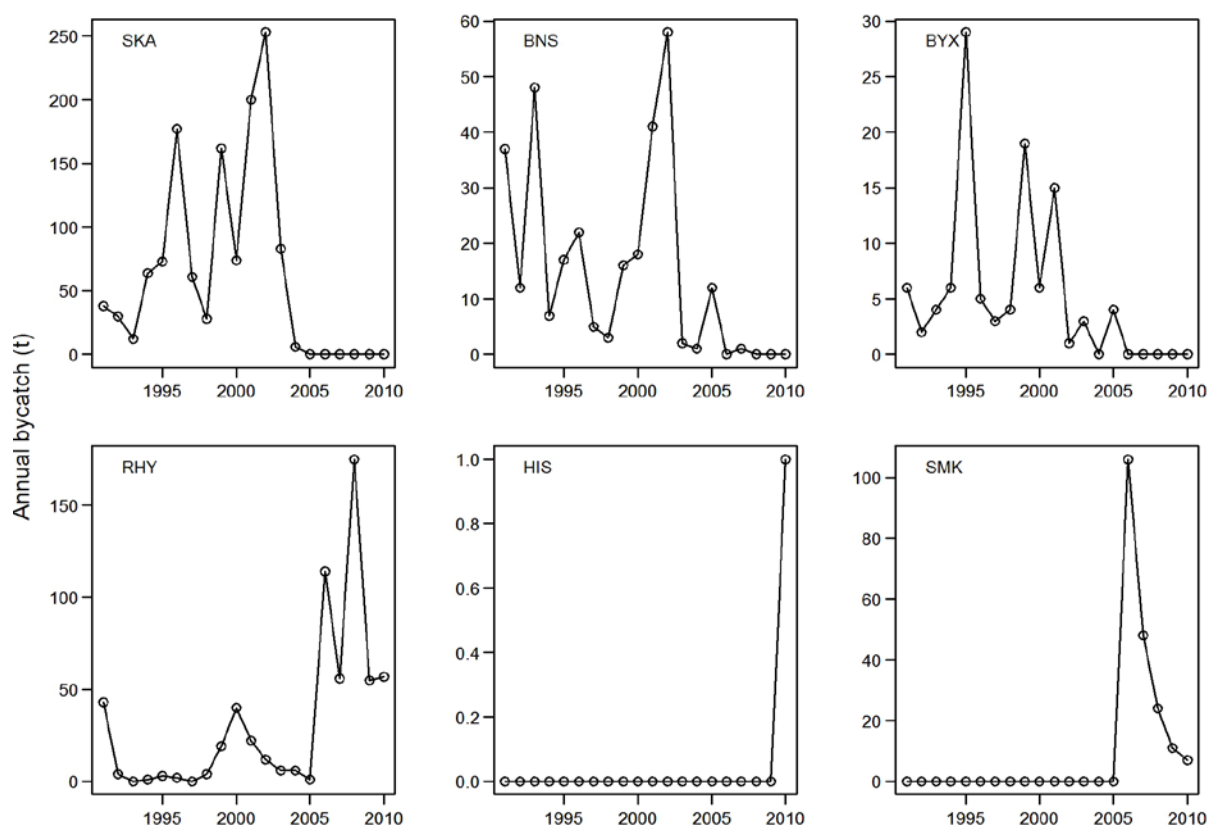
- The most commonly caught bycatch species were ling (*Genypterus blacodes*, LIN), hoki (*Macruronus novaezealandiae*, HOK), and hake (*Merluccius australis*, HAK).
- Of the 65 bycatch species examined, 12 have shown a decrease in catch over time and 4 an increase in catch.
- The species showing the greatest decline were hoki (HOK), moonfish (*Lampris guttatus*, MOO) and dark ghost shark (*Hydrolagus novaezealandiae*, GSH) (Figure 2).
- The species showing the greatest increase were pale ghost shark (*Hydrolagus bemisi*, GSP), ray's bream (*Brama brama*, RBM) and opah (*Lampris immaculatus*, PAH) (Figure 2).



**Figure 2: Annual bycatch estimates in the southern blue whiting trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

## Scampi trawl fishery

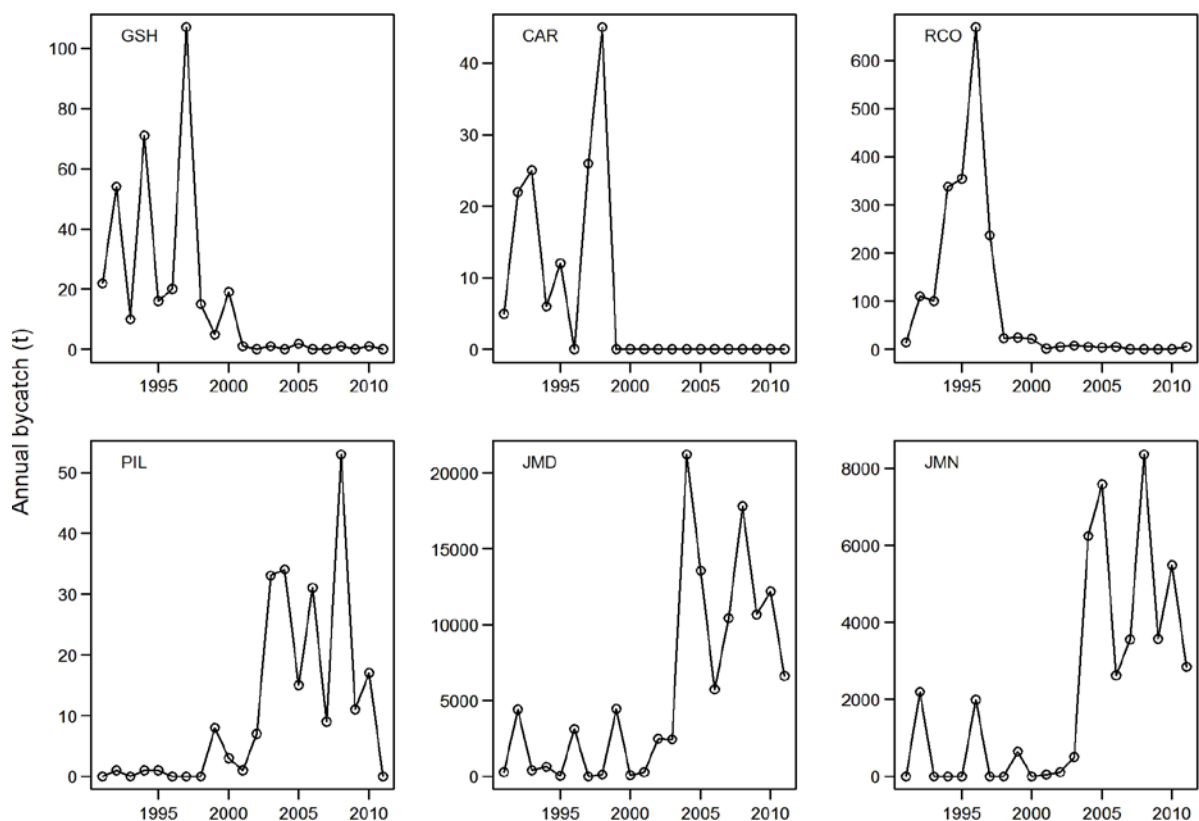
- The most commonly caught bycatch species were javelinfish (*Lepidorhynchus denticulatus*, JAV), unspecified rattails (Macrouridae, RAT), and sea perch (*Helicolenus* spp., SPE).
- Of the 250 bycatch species examined, 49 have shown a decrease in catch over time and 59 an increase in catch.
- The species showing the greatest decline were skates (Rajidae and Arhynchobatidae, SKA), bluenose (*Hyperoglyphe antarctica*, BNS) and alfonsino (*Beryx* spp., BYX) (Figure 3).
- The species showing the greatest increase were common roughy (*Paratrachichthys trilli*, RHY), jackknife prawn (*Haliporoides sibogae*, HIS), and spiny masking crab (*Teratomaia richardsoni*, SMK) (Figure 3).



**Figure 3: Annual bycatch estimates in the scampi trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

### Jack mackerel trawl fishery

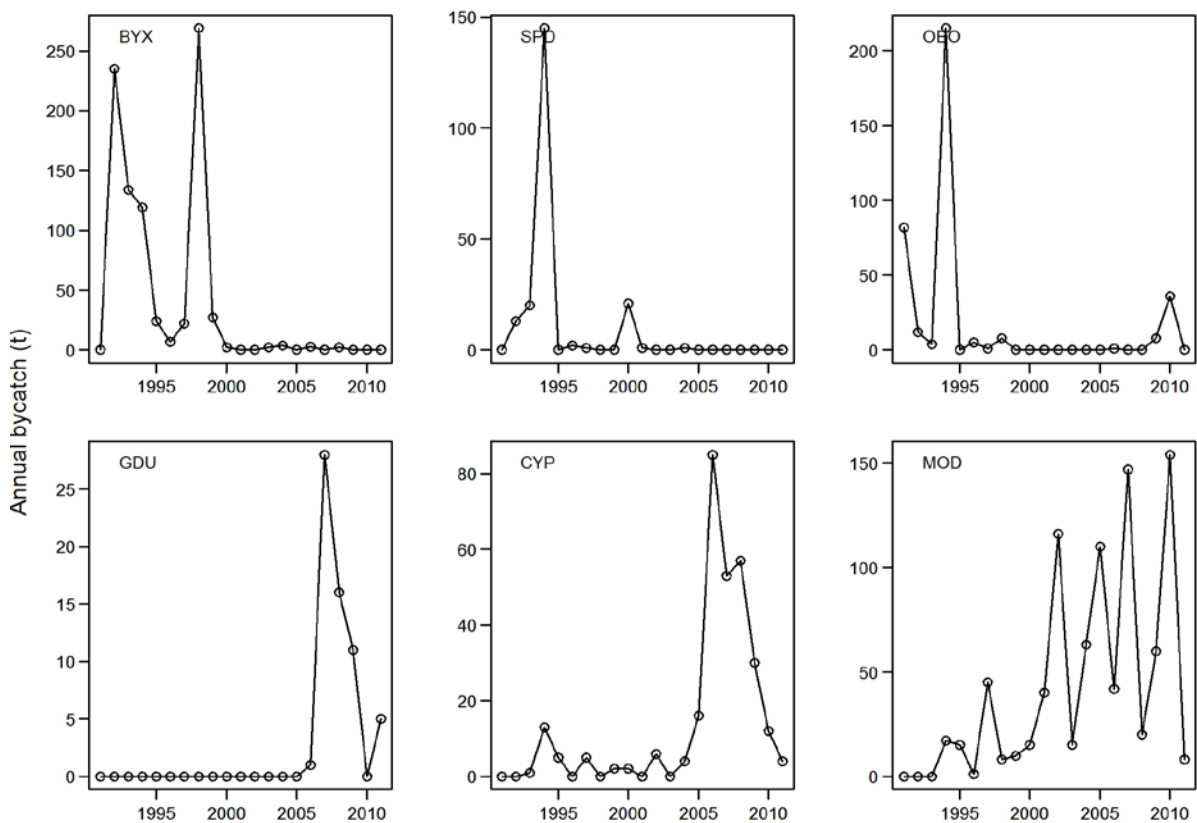
- The most commonly caught bycatch species were barracouta (BAR), blue mackerel (*Scomber australasicus*, EMA), and frostoffish (*Lepidopus caudatus*, FRO).
- Of the 114 bycatch species examined, 32 have shown a decrease in catch over time and 18 an increase in catch.
- The species showing the greatest decline were dark ghost shark (GSH), carpet shark (*Cephaloscyllium isabellum*, CAR), and red cod (*Pseudophycis bachus*, RCO) (Figure 4).
- The species showing the greatest increase were pilchard (*Sardinops sagax*, PIL), greenback jack mackerel (*Trachurus declivis*, JMD), and yellowtail jack mackerel (*T. novaezelandiae*, JMN). Although part of the target species group, the latter two species are included to enable examination of changes in the relative catches of the constituent species under the JMA code. (Figure 4).



**Figure 4: Annual bycatch estimates in the jack mackerel trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

## Orange roughy trawl fishery

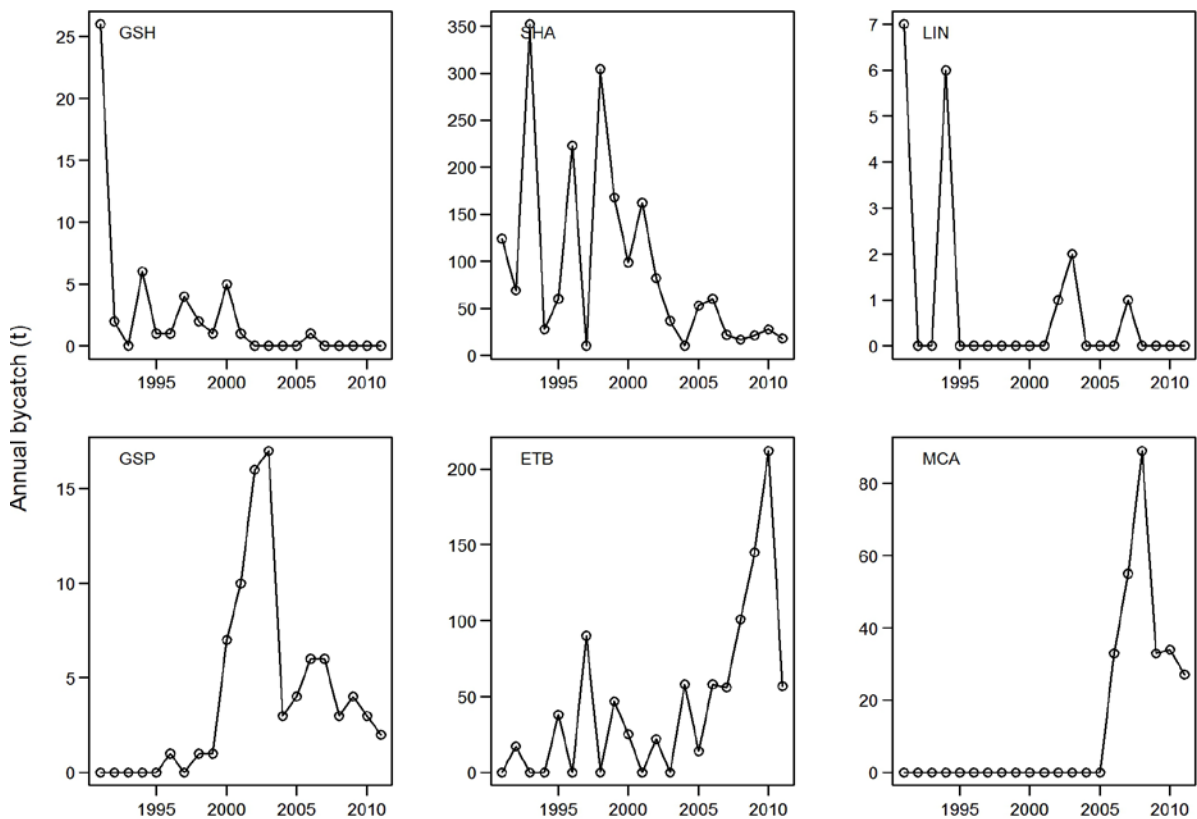
- The most commonly caught bycatch species were smooth oreo (*Pseudocyttus maculatus*, SSO), black oreo (*Allocyttus niger*, BOE), and black cardinalfish (*Epigonus telescopus*, CDL).
- Of the 206 bycatch species examined, 29 have shown a decrease in catch over time and 51 an increase in catch.
- The species showing the greatest decline were alfonsino (BYX), spiny dogfish (SPD), and oreos (Oreosomatidae, OEO) (Figure 5).
- The species showing the greatest increase were bushy hard coral (*Goniocorella dumosa*, GDU), longnose velvet dogfish (*Centroscyrnus crepidater*, CYP), and morid cods (Moridae, MOD) (Figure 5).



**Figure 5: Annual bycatch estimates in the orange roughy trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

## Oreo trawl fishery

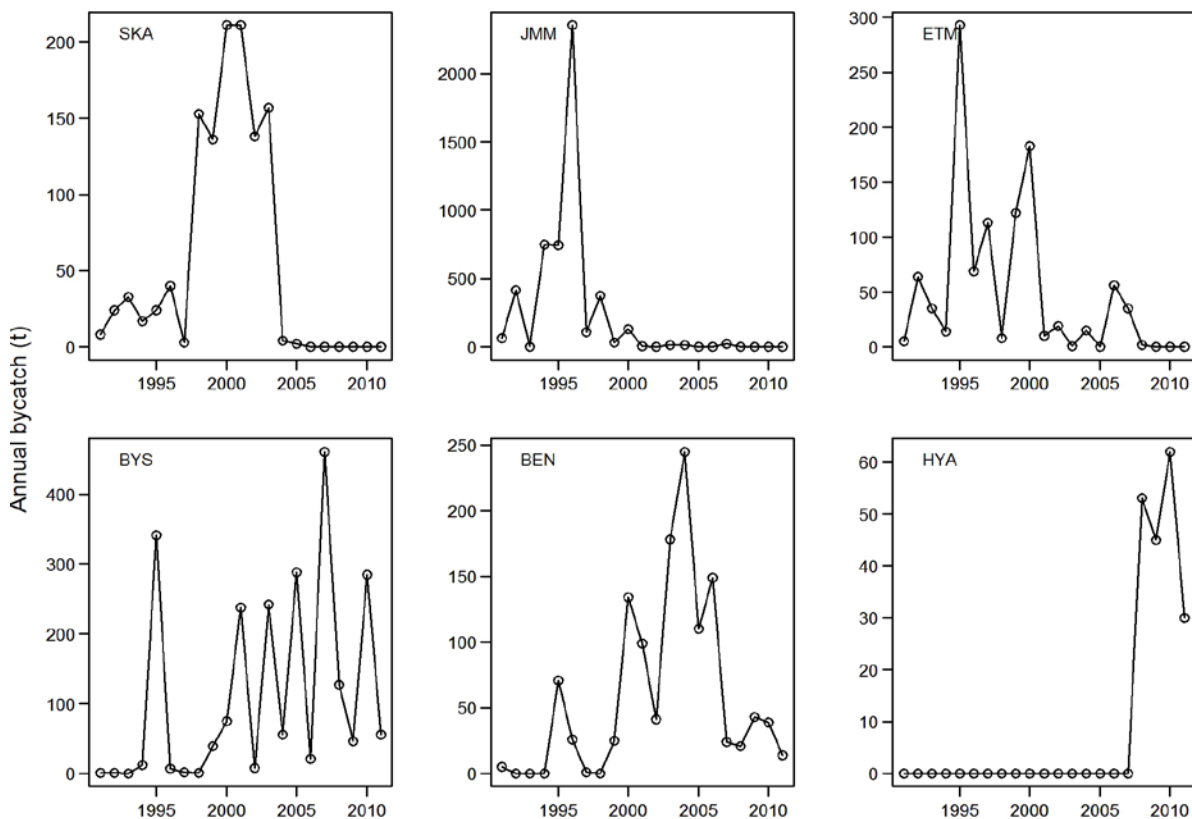
- The most commonly caught bycatch species were orange roughy (*Hoplostethus atlanticus*, ORH), unspecified shark (SHA), and hoki (HOK).
- Of the 110 bycatch species examined, 3 have shown a decrease in catch over time and 27 an increase in catch.
- The species showing the greatest decline were dark ghost shark (GSH), unspecified shark (SHA), and ling (LIN) (Figure 6).
- The species showing the greatest increase were pale ghost shark (GSP), Baxter's lantern dogfish (*Etmopterus baxteri*, ETB), and ridge-scaled rattail (*Macrourus carinatus*, MCA) (Figure 6).



**Figure 6: Annual bycatch estimates in the oreo trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

### Hoki, hake, ling trawl fishery

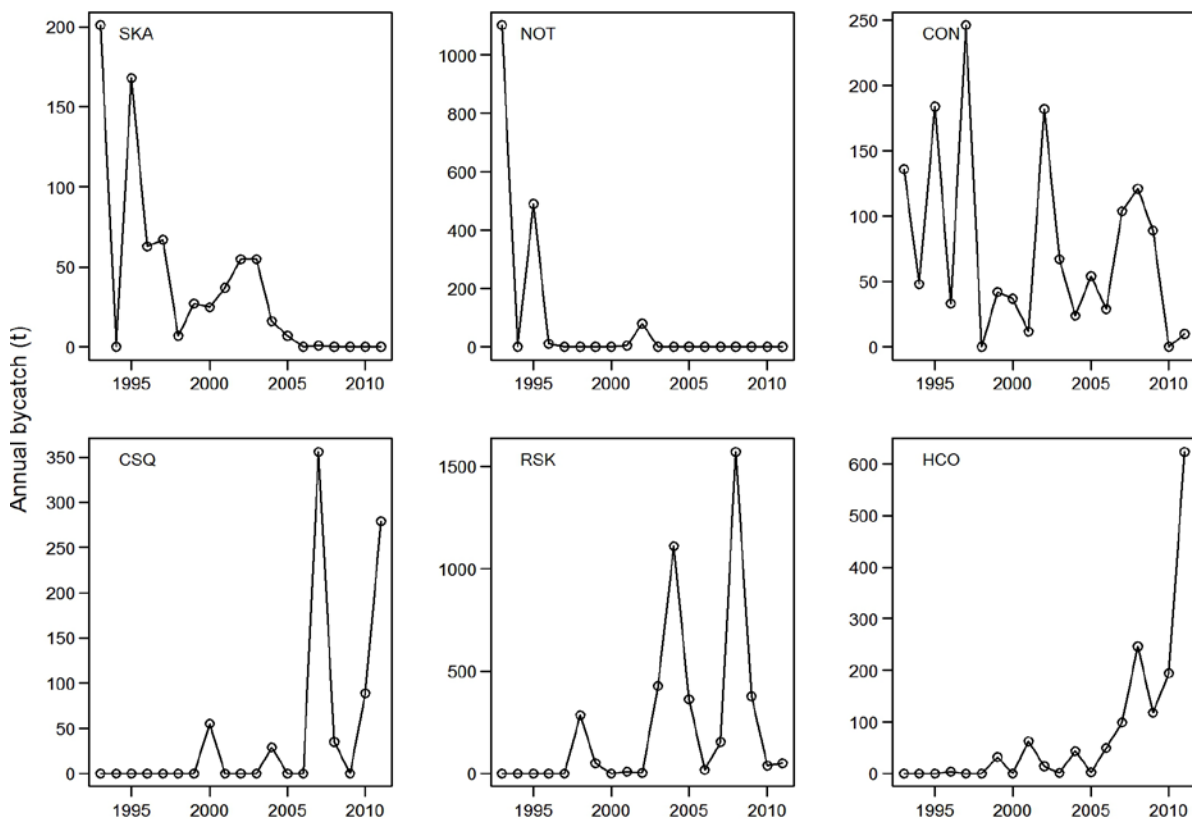
- The most commonly caught bycatch species were silver warehou (SWA), javelinfish (JAV), unspecified rattails (Macrouridae, RAT).
- Of the 342 bycatch species examined, 44 have shown a decrease in catch over time and 102 an increase in catch.
- The species showing the greatest decline were skates (SKA), slender jack mackerel (JMM), and dogfishes (*Etmopterus* spp., ETM) (Figure 7).
- The species showing the greatest increase were alfonsino (*Beryx splendens*, BYS), scabbardfish (*Benthodesmus* spp., BEN), and floppy tubular sponge (*Hyalascus* sp., HYA) (Figure 7).



**Figure 7: Annual bycatch estimates in the hoki, hake, and ling trawl fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

## Ling longline fishery

- The most commonly caught bycatch species were spiny dogfish (SPD), ribaldo (*Mora moro*, RIB), and smooth skate (*Dipturus innominatus*, SSK).
- Of the 103 bycatch species examined, 5 have shown a decrease in catch over time and 35 an increase in catch.
- The species showing the greatest decline were skates (SKA), Antarctic rock cods (Nototheniidae, NOT), and conger eels (*Conger* spp., CON) (Figure 8).
- The species showing the greatest increase were leafscale gulper shark (*Centrophorus squamosus*, CSQ), rough skate (*Zearaja nasuta*, RSK), and hairy conger (*Bassanago hirsutus*, HCO) (Figure 8).



**Figure 8: Annual bycatch estimates in the ling longline fishery for the species which have shown the greatest decrease (top) and greatest increase (bottom) between 1990–91 and 2010–11. See text above for explanation of the species codes.**

In order to examine temporal trends for individual species or species groups across all eight fisheries, a summary of the slope coefficients for each species and fishery is provided in graphical form in Table 9. This shows a consistent increase (in six or more of the eight fisheries) for starfish (Asteroidea), deepsea skates (*Notoraja* spp.), Baxters lantern dogfish (*Etmopterus baxteri*), Lucifer dogfish (*E. lucifer*), lanternfish (Myctophidae), rough skate (*Zearaja nasuta*), pale ghost shark (*Hydrolagus bemisi*), and javelinfish (*Lepidorhynchus denticulatus*); and consistent declines for bluenose (*Hyperoglyphe Antarctica*), shark (unspecified), and skates (Rajidae and Arhynchobatidae).

#### **4. ACKNOWLEDGMENTS**

Thanks to Jim Roberts (NIWA) for his review of this report, and to Richard Ford (MPI) for his useful suggestions for enhancing the utility of the report. This project was funded by the Ministry for Primary Industries (Project DAE2010/02).

#### **5. REFERENCES**

Anderson, O.F. (2013). Fish and invertebrate bycatch and discards in New Zealand arrow squid fisheries from 1990–91 until 2010–11. *New Zealand Aquatic Environment and Biodiversity Report 112*. 62 p.



**Table 1: Arrow squid trawl fishery. Total annual bycatch estimates (t) (with estimated c.v.s in parentheses) for individual species, based on observer catch rates. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code. See <http://marlin.niwa.co.nz> for species code definitions).**

	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
BAR(0)	8220(16)	7010(31)	6220(11)	2650(21)	1250(17)	6380(12)	990(22)	1420(14)	6960(16)	3880(11)	10200(12)	7930(16)	3740(23)	5250(26)	3480(19)	5700(20)	850(30)	3750(18)	2410(23)	3220(20)	2880(19)
SWA(0.1)	250(28)	150(45)	780(49)	640(130)	360(68)	100(47)	1780(29)	2090(23)	3350(23)	970(14)	2150(12)	2390(24)	5280(25)	3190(14)	3170(40)	2020(19)	11280(31)	570(13)	1000(22)	790(13)	710(24)
SPD(0)	420(39)	710(36)	570(39)	1600(16)	120(41)	10(39)	340(41)	210(29)	2230(43)	430(47)	1850(16)	3170(21)	2660(18)	800(20)	2220(39)	860(24)	3410(28)	290(20)	530(27)	840(29)	510(27)
JMA(-0.2)	1530(46)	420(34)	1680(27)	560(47)	350(35)	3520(19)	4190(20)	610(30)	670(44)	970(26)	500(29)	2240(21)	10(22)	140(39)	190(48)	170(33)	20(82)	110(64)	110(41)	410(35)	60(91)
RCO(0)	360(40)	310(33)	280(46)	820(35)	480(29)	160(41)	80(23)	140(82)	980(29)	530(32)	600(23)	480(14)	1890(15)	470(26)	1190(20)	610(24)	370(17)	950(21)	230(30)	660(27)	1160(20)
JMM(-0.2)	130(100)	540(49)	2050(53)	160(59)	100(36)	4560(26)	260(52)	190(47)	1280(66)	60(63)	230(31)	90(44)	10(69)	20(41)	20(71)	70(91)	0(-)	80(92)	10(87)	310(55)	0(-)
WAR(0)	900(48)	1280(46)	2260(24)	40(56)	0(-)	150(102)	460(82)	10(104)	230(59)	560(32)	610(20)	80(36)	60(63)	710(37)	100(50)	690(57)	640(30)	20(53)	90(42)	180(60)	170(61)
NCB(0.5)	0(-)	0(-)	0(-)	110(92)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	50(98)	0(-)	410(21)	1970(21)	950(26)	1380(22)	1360(21)	1010(16)	620(23)
HOK(0)	120(25)	40(58)	740(39)	700(114)	100(29)	110(14)	170(20)	260(34)	490(55)	40(36)	370(82)	560(20)	200(20)	30(28)	370(72)	380(47)	1260(31)	120(19)	250(28)	310(28)	500(21)
RBT(0)	40(112)	90(64)	150(59)	10(62)	0(-)	0(-)	150(54)	1210(39)	400(73)	570(42)	290(27)	750(39)	100(18)	410(44)	430(47)	70(42)	70(82)	80(83)	40(122)	130(61)	10(51)
RAT(0.1)	110(47)	10(30)	100(50)	60(42)	20(51)	10(17)	70(29)	30(46)	230(43)	130(37)	510(18)	410(24)	500(13)	30(40)	960(29)	340(19)	380(25)	90(25)	110(24)	70(19)	220(16)
CRB(-0.1)	50(63)	0(-)	30(79)	40(60)	40(26)	40(25)	410(39)	260(37)	40(53)	40(32)	200(29)	360(23)	630(18)	1180(34)	130(55)	20(38)	20(37)	80(63)	0(-)	0(-)	0(-)
LIN(0.1)	30(72)	30(57)	150(47)	90(29)	90(53)	0(-)	20(47)	40(57)	320(58)	20(29)	120(29)	210(20)	290(18)	110(58)	190(27)	200(24)	290(20)	50(41)	90(40)	90(38)	340(23)
GSH(0.1)	10(63)	0(-)	30(64)	20(53)	10(73)	0(-)	10(54)	10(57)	70(44)	30(52)	360(45)	420(34)	330(18)	20(49)	300(38)	40(44)	630(29)	10(57)	10(42)	40(59)	80(27)
STU(-0.1)	30(23)	80(26)	120(34)	190(47)	70(63)	240(10)	170(48)	10(26)	60(90)	50(15)	40(28)	20(19)	10(26)	10(22)	680(35)	40(24)	10(28)	40(33)	30(41)	20(62)	20(34)
RBM(-0.1)	160(20)	30(92)	410(29)	10(17)	30(23)	140(28)	150(25)	20(60)	20(27)	20(59)	270(14)	180(31)	70(38)	10(17)	80(36)	70(38)	40(37)	10(22)	0(-)	0(-)	10(24)
SDO(0.5)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(19)	90(42)	420(19)	30(63)	440(48)	80(46)	20(42)	40(35)	90(94)	70(40)	90(40)
TAR(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(52)	10(88)	0(-)	280(30)	750(33)	0(-)	160(38)	0(-)	40(50)	0(-)	0(-)	0(-)	0(-)
SPE(0.1)	10(53)	20(67)	20(75)	0(-)	10(45)	0(-)	0(-)	10(45)	30(40)	0(-)	300(101)	60(30)	180(19)	20(35)	180(42)	10(60)	70(48)	0(-)	0(-)	20(64)	40(31)
STA(0.1)	20(30)	20(42)	40(66)	20(24)	20(48)	0(-)	10(30)	10(14)	60(50)	20(23)	30(18)	90(21)	140(14)	20(30)	60(25)	50(21)	180(14)	20(17)	20(25)	50(16)	50(23)
JAV(0.2)	0(-)	0(-)	20(58)	0(-)	0(-)	0(-)	0(-)	0(-)	60(52)	0(-)	50(115)	120(54)	30(27)	10(110)	50(59)	120(40)	410(54)	10(28)	10(69)	10(73)	20(51)
JMD(-0.1)	500(86)	70(59)	0(-)	0(-)	40(122)	10(50)	40(66)	0(-)	80(74)	0(-)	50(74)	20(66)	0(-)	0(-)	30(95)	20(75)	0(-)	0(-)	0(-)	20(53)	0(-)
HAP(0.1)	10(67)	0(-)	20(48)	10(64)	60(29)	10(41)	0(-)	20(21)	30(25)	30(18)	60(12)	90(19)	110(11)	60(20)	150(17)	40(23)	40(13)	20(31)	30(61)	50(21)	20(25)
GSC(0.4)	0(-)	0(-)	0(-)	0(-)	10(32)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(61)	50(20)	180(29)	60(21)	70(22)	140(30)	70(20)	210(17)
SKI(-0.1)	100(14)	120(76)	70(42)	20(39)	30(49)	0(-)	10(30)	10(22)	10(24)	0(-)	0(-)	120(25)	240(12)	10(20)	40(31)	10(47)	10(24)	0(-)	0(-)	0(-)	10(94)
BSK(0.2)	0(-)	0(-)	0(-)	30(144)	0(-)	0(-)	0(-)	0(-)	80(80)	90(36)	290(104)	10(122)	120(37)	30(125)	0(-)	0(-)	100(35)	20(91)	10(155)	0(-)	20(114)
SSK(0)	10(57)	10(35)	30(77)	10(41)	10(52)	0(-)	10(49)	0(-)	140(49)	20(41)	50(21)	70(29)	160(21)	30(51)	40(22)	20(37)	110(33)	10(51)	0(-)	0(-)	10(24)
WWA(0)	0(-)	20(86)	10(108)	10(82)	0(-)	0(-)	0(-)	10(73)	20(58)	70(52)	90(52)	50(23)	150(29)	50(51)	10(57)	10(30)	190(50)	0(-)	10(91)	20(98)	20(48)
SCH(0.1)	0(-)	10(33)	0(-)	0(-)	0(-)	0(-)	10(42)	0(-)	20(28)	10(52)	30(16)	50(23)	90(20)	10(40)	70(37)	30(19)	20(20)	20(22)	10(30)	20(25)	40(32)
FRO(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(86)	0(-)	30(110)	90(34)	100(42)	0(-)	80(65)	10(74)	100(72)	0(-)	0(-)	0(-)	0(-)
PAD(-0.4)	50(37)	10(73)	20(77)	0(-)	40(62)	60(42)	50(76)	90(41)	40(84)	10(32)	40(48)	10(81)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
RSK(0.2)	0(-)	0(-)	20(80)	0(-)	10(55)	0(-)	0(-)	0(-)	20(148)	0(-)	0(-)	0(-)	0(-)	80(86)	50(27)	30(22)	60(28)	20(31)	20(24)	40(19)	70(18)
NCA(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	20(63)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	80(42)	90(87)	0(-)	0(-)	150(79)	0(-)	0(-)	0(-)	0(-)
SSI(0.3)	0(-)	0(-)	0(-)	0(-)	20(106)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(19)	0(-)	30(26)	20(49)	150(28)	50(65)	10(30)	0(-)	10(14)

**Table 1—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
POS(0.1)	0(-)	10(42)	10(28)	0(-)	0(-)	10(33)	10(26)	20(25)	30(20)	20(13)	30(24)	50(23)	20(17)	10(28)	10(32)	10(35)	20(37)	0(-)	0(-)	10(22)	10(24)
WIT(0.2)	10(20)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(32)	0(-)	10(22)	0(-)	20(22)	10(33)	40(26)	10(10)	40(26)	0(-)	10(14)	10(10)	10(17)
CAR(0.3)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	30(29)	0(-)	30(18)	10(75)	10(22)	10(40)	50(17)	0(-)	10(24)	10(32)	40(35)
SBW(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	100(97)	0(-)	0(-)	0(-)	0(-)	30(139)	0(-)	0(-)	0(-)	10(45)	0(-)	0(-)	10(37)
SPI(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(41)	10(93)	0(-)	20(41)	0(-)	10(32)	80(62)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
SPO(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	30(131)	0(-)	0(-)	0(-)	0(-)	0(-)	100(85)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
MAK(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	10(37)	10(77)	20(39)	20(36)	10(55)	40(86)	0(-)	10(47)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BWS(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	90(31)	10(14)	0(-)	0(-)	0(-)	10(14)	0(-)	0(-)	0(-)	0(-)	0(-)
FHD(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(17)	0(-)	100(28)	0(-)	0(-)	0(-)	0(-)
JMN(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	110(93)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
PIG(0.3)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(14)	0(-)	20(43)	10(28)	10(28)	10(24)	10(33)	10(14)	30(20)
BCO(0.2)	0(-)	0(-)	10(73)	0(-)	0(-)	0(-)	10(47)	0(-)	0(-)	0(-)	10(41)	0(-)	10(50)	10(54)	0(-)	0(-)	20(40)	0(-)	0(-)	0(-)	30(53)
HPB(-0.1)	20(38)	30(39)	30(31)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(68)	0(-)	10(65)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BCD(0.3)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(44)	0(-)	0(-)	60(37)	10(32)	0(-)	10(14)
GON(0.3)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(14)	10(17)	10(17)	10(24)	10(24)	10(20)	10(22)	10(28)	10(20)
HAK(0)	0(-)	0(-)	10(58)	0(-)	0(-)	0(-)	0(-)	0(-)	70(67)	0(-)	0(-)	0(-)	10(17)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
LDO(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(56)	10(30)	0(-)	0(-)	0(-)	10(17)	0(-)	60(26)	0(-)	0(-)	0(-)	0(-)
SSC(-0.2)	0(-)	0(-)	30(92)	50(88)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
CBE(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	50(96)	0(-)	0(-)	0(-)	20(93)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
CDO(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	30(66)	40(68)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
RDO(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(97)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	50(92)
BEL(0.2)	0(-)	0(-)	0(-)	10(160)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(104)	10(37)	0(-)	0(-)	0(-)	0(-)	0(-)	10(89)	0(-)	0(-)	20(57)
OCT(0.1)	0(-)	0(-)	0(-)	10(24)	0(-)	0(-)	0(-)	0(-)	20(49)	0(-)	0(-)	0(-)	10(17)	0(-)	10(33)	0(-)	0(-)	0(-)	0(-)	0(-)	10(10)
TOA(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(14)	0(-)	0(-)	10(22)	20(18)	0(-)	10(10)	0(-)	10(20)
GUR(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	40(49)	10(36)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BSH(-0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	40(85)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
COF(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	40(87)	0(-)	0(-)	0(-)	0(-)
SQI(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(160)	0(-)	0(-)	20(86)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
LAN(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(75)	10(85)	0(-)	0(-)	10(59)
STN(0.1)	0(-)	10(28)	0(-)	0(-)	0(-)	10(36)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(28)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BAS(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(32)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BBE(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(50)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BYS(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	20(82)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
GFL(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(106)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(10)
MDO(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(26)	0(-)	0(-)	0(-)	0(-)	10(66)	0(-)	0(-)	0(-)	0(-)
ONG(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(86)	0(-)	10(56)	0(-)

**Table 1—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
OPE(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(212)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(126)	0(-)
QSC(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(89)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(41)
SKA(-0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(37)	0(-)	0(-)	0(-)	0(-)	10(44)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
SNA(0)	0(-)	0(-)	0(-)	10(97)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(183)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
THR(-0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(24)	10(66)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
YCO(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(17)	0(-)	10(17)	0(-)	0(-)	0(-)	0(-)
ASR(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(22)	0(-)	0(-)	0(-)	0(-)
BGZ(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(46)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BRA(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(95)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
BTH(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(58)	0(-)	0(-)	0(-)	0(-)
BYX(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(51)	0(-)	0(-)	0(-)	0(-)
CON(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(122)
CRA(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(99)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
CRU(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(68)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
DSK(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(40)	0(-)	0(-)	0(-)	0(-)
DSP(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(46)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
EEX(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(69)
FLA(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(40)	0(-)	0(-)	0(-)	0(-)	0(-)
GMU(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(147)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
GSP(0.2)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(53)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
JFI(-0.1)	10(58)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
JGU(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(52)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
LSK(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(22)	0(-)	0(-)	0(-)	0(-)
MOK(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(39)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
SCD(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(87)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
SHA(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(75)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
SNI(0)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(82)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)
WPS(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(86)	0(-)	0(-)	0(-)	0(-)	0(-)
WSQ(0.1)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	0(-)	10(30)	0(-)	0(-)	0(-)	0(-)

**Table 2: Southern blue whiting trawl fishery. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
LIN(-0.1)	85	572	43	87	54	20	14	80	84	42	65	78	30	154	80	15	38	14	21	35	49
HOK(-0.2)	132	860	58	44	22	9	52	34	92	15	22	66	6	72	2		1	2	40	12	26
HAK(-0.1)	223	114	34	80	43	4	40	24	32	17	65	26	37	65	39	19	29	22	6	33	52
SSI(0)	9	75	1	2	3		4	1	2	8	4	14	3	13	4		4	1	1	136	12
POS(0)	3	3	10	3	7	4	5	22	34	53	35	39	5	5	3	9	4	6	10	12	13
RAT(-0.1)	3	42	3	81	2		14	4	17	10	6	4	5	8	2	1		1	3	7	3
GSP(0.1)		176							1				2	11	9	3	2	4	1	1	1
SQU(0)	7	16	1				1	42	10	24	3	6	31	4			1	1	4	1	1
JAV(0.1)	4	52	1				2		1	5	5	7	4	24	21	1	5	2	2	1	9
WWA(0)		43	1	31				1	1	2	1			1	1		6		1	1	1
PAH(0.3)								7	14	9	4	2	1	4	10	7	4	11	3	7	6
GSH(-0.1)		63	4	11	3				1			1		1	2						1
SBI(0)															84						
RBM(0.2)		1				1	1	1	3	2	17	23	6	8	3	1	3	1	3	4	2
SPD(0)	11	15	2	5	1		1	3	2	2	1	4	2	3	3		1	1	4	10	4
MOO(-0.2)	8	7	5	2	1	1	3	7	8	6	2	5	1	1	6	2	5				
WSQ(0)	9	13	1			1	1		1	1	1	6	1	3	1		1	1	1	2	1
LCH(0)		14	1	4										1	1	1	1	1			
LDO(0)	1	12		1								1		3	1	1				1	1
JMD(0)													21								
SBO(0)				20																	
PIG(-0.1)	7	3							1					2							
ONG(0)		7							1		2			2	1						
MAN(-0.1)		9										1									
ETB(0)		7														2					
CBO(-0.1)	8																				
MAK(0)								2					4							1	
BTH(-0.1)		7																			
BRS(0)									7												
RCO(0)	1	1												1					1		2
SKA(-0.1)		3		3																	
SPI(0)														6							
RSK(0)														5							1
WIT(0)		1												2	2						
SOP(0)									1												3
BOA(0)		4																			
DSP(0)						3															
MIQ(-0.1)		2		1																	
SWA(0)			1									1									
TOP(0)		2																			
FRO(0)													2								
BCO(0)		2																			
CON(0)		1														1					
BSH(0)		1															1				
STU(0)	1																				
ASR(0)																1					
GSQ(0)				1																	
GLS(0)																		1			
SHA(0)					1																

**Table 2—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
HCO <sub>(0)</sub>		1																			
POR <sub>(0)</sub>		1																			
MIC <sub>(0)</sub>		1																			
BBE <sub>(0)</sub>					1																
OPA <sub>(0)</sub>			1																		
EMA <sub>(0)</sub>													1								
BAR <sub>(0)</sub>													1								
BSQ <sub>(0)</sub>		1																			
CSQ <sub>(0)</sub>		1																			
DEA <sub>(0)</sub>												1									
SQX <sub>(0)</sub>																					1
STA <sub>(0)</sub>		1																			
OCT <sub>(0)</sub>														1							
POM <sub>(0)</sub>																	1				
RBT <sub>(0)</sub>													1								
SSK <sub>(0)</sub>		1																			

**Table 3: Hoki/hake/ling trawl fisheries. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
SWA(0)	5939	1848	1970	4967	3431	9305	16171	7078	3265	7200	9367	2283	3446	5868	1896	3379	2518	1999	1255	2058	2502
JAV(0.1)	1459	1054	760	750	1486	1979	2801	6300	4257	4494	4633	6659	6382	3462	5007	3385	4123	3371	3045	3677	3203
RAT(0)	1259	1572	514	1011	1564	3503	4088	4990	4283	2688	3789	4831	4828	3190	2814	2412	1466	2172	2250	2898	2749
SPD(0)	704	1112	696	1919	3808	5860	2157	4784	4517	4212	3163	3508	3165	3265	1515	1512	1671	1179	1184	1410	1466
FRO(-0.1)	2457	1435	825	1910	3227	1700	5700	1236	2011	1676	2542	1934	1920	2158	1986	966	1115	787	698	86	106
WWA(0.1)	303	575	457	153	177	756	160	919	526	1133	806	876	943	1035	1097	1582	2785	1161	752	1009	1039
JMA(-0.3)	1752	686	357	1203	5384	2637	2746	280	228	73	32	11	34	634	599	22	4	17	251	3	11
GSP(0.2)	417	464	43	137	68		3		769	1495	1467	1499	1797	1058	872	734	580	762	500	478	549
RIB(0)	845	799	557	182	292	254	350	877	952	1010	518	1408	621	553	351	539	354	966	512	344	405
BAR(-0.1)	391	456	651	244	1142	1358	761	247	163	166	937	334	1007	705	1685	227	181	84	34	86	275
SPE(0)	410	275	132	284	289	497	305	631	752	581	921	969	1127	842	598	369	327	272	154	333	521
LDO(0)	409	305	173	328	285	301	346	528	765	345	664	807	851	491	439	413	394	217	191	223	319
GSH(-0.1)	598	740	396	476	579	634	497	1525	610	320	346	176	242	187	142	73	85	99	103	196	159
SHA(0)	727	329	195	119	63	214	101	482	900	1093	663	439	414	647	207	302	199	241	160	141	135
SQU(0)	285	380	190	265	368	193	139	169	237	296	607	688	657	578	272	335	274	206	129	215	342
SND(0)	542	331	169	342	125	131	102	312	182	647	315	850	314	265	254	388	189	403	240	147	269
BOE(0)	193	315	22	199	154	135	2	1166	227	127	386	389	306	472	95	304	317	402	72	286	22
RBM(0)	41	39	175	193	218	464	917	641	392	367	595	124	309	139	76	30	50	99	125	64	74
JMM(-0.3)	66	415	4	748	743	2353	107	376	34	132	5	1	14	13	4	4	24	3	3	1	
STA(0)	440	270	113	60	104	339	139	246	324	195	407	398	333	349	265	261	190	149	100	179	183
BSH(0)	74	65	108	46	16	17	27	291	523	242	229	1053	295	174	187	67	72	131	52	33	89
SKI(0)	311	98	191	261	44	86	32	195	6	130	39	98	293	931	381	201	37	10	51	34	173
RCO(-0.1)	250	450	147	155	299	605	85	120	202	61	102	62	98	254	169	105	144	46	22	31	71
BSK(-0.1)	196	94		157	98	3	392	839	285	30	111	1	233	198	506			22		28	42
SBW(0.2)	5	54	1		59		1	29	20	65	84	299	390	178	19	1	15	696	789	33	288
SSK(0)	127	100	43	82	111	141	43	179	128	79	155	248	268	236	123	235	109	133	90	133	196
WSQ(0)	145	212	58	80	134	90	65	222	210	281	189	383	191	141	70	61	52	88	51	90	58
ONG(0.1)	8	124		52			64	102	337	651	193	835	114	18	84	67	15	34	37	10	43
BNS(-0.1)	160	110	127	77	70	468	266	485	115	155	74	63	45	61	51	83	51	23	39	44	28
ORH(0)	457	53	57	691	10	8	9	18	64	244	52	56	428	71	64	23	66	81	110	7	8
WAR(-0.2)	307	335	21	54	491	242	131	134	13	3	255	4	8	11	3	3	1	3	421	84	27
BYS(0.3)	1	1		12	341	7	2	1	39	75	238	8	242	56	288	21	461	127	46	285	56
POS(-0.1)	54	30	73	72	110	168	285	321	174	268	164	109	65	45	50	32	17	23	51	22	17
BYX(-0.2)	113	31	29	161	70	78	40	1392	13	12	23	2	28	2	5	3	10	10	21	16	5
SOR(0)	252	64	45	63	16	33	10	168	157	210	171	159	60	47	162	40	97	145	25	24	65
LCH(0)	77	71	15	40	57	50	43	85	86	125	61	135	194	149	169	90	68	85	43	53	62
SSI(0.1)	12	75	134	18	36	22	19	196	87	33	22	61	154	134	52	117	192	189	74	43	85
RBT(0.1)	3	13	65	175	20	52	79	303	4	31	116	44	52	183	113	72	53	66	223	43	19
RUD(0)	60	28	53	61	104	148	136	97	70	123	131	41	98	77	71	45	38	36	38	59	47
DEA(-0.1)	26	26	127	88	103	63	82	380	48	90	223	9	31	54	17	22	20	19	23	4	3
ETB(0.2)	167	114	3					107	53	11			35	40	10	15	46	310	122	279	118
BBE(0.1)	35	15	19	6	36	94	22	67	60	31	94	80	140	244	87	40	152	12	16	50	92
BEN(0.3)	5				71	26	1		25	134	99	41	178	245	110	149	24	21	43	39	14
SKA(-0.3)	8	24	33	17	24	40	3	153	136	211	211	138	157	4	2						
ETM(-0.3)	5	64	35	14	293	69	113	8	122	183	10	19	1	15		56	35	2			
FHD(0.1)	7	19	5	8	21	47	5	36	29	17	31	117	113	112	81	61	51	54	29	39	59
CON(0.1)	18	12	18	5	2	14	23	32	15	15	19	152	91	78	39	28	28	165	55	49	83
SSO(0)	86	49	8	44	12	1	55	6	14	105	52	104	125	24	13	14	93	33	3	12	4
CSQ(0.1)	21	56	37	3	15	16	35	5	3	25	9		22	2	20	90	31	108	96	51	45
SCH(0)	21	37	15	5	11	16	8	36	83	72	55	55	38	55	21	27	26	22	15	35	29
SDO(0.1)	24	2		7	10	1	13	46	93	14	32	35	62	39	49	12	21	49	25	56	32

**Table 3—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
JMD(-0.1)	11	3		36	225	1		1	21	204	4	3	18	46	16	13	11	2	2		
TOA(0.1)	6	4	1	1	3	10	22	34	32	34	55	45	94	69	83	43	16	18	9	16	20
ASR(0.2)		9					9	19	127	22	151	58	20	47	10	10	16	17	19	8	9
RSK(0.1)	10	11	10	6	7	1		25	85	1	2	3	4	111	38	47	14	79	20	33	34
SNA(-0.1)						10	24	230	3	17	182			1				3			
CDL(0)	144	11	8	10	2	2	1	30	4	25	99	19	22	5	11	7	7	9	7	17	10
ETL(0.1)	5	30	2	3	9	36	33	14	20	20	17	45	51	7	9	28	16	14	23	30	29
SWO(0)	19	8	12	8	4	4	26	46	53	72	72	8	23	13	8	2	7	13	18	7	9
HAP(0)	20	7	8	7	10	3	3	12	16	19	26	46	29	93	21	7	9	3	1	9	6
THR(-0.2)	10	11	4	4	28	50	78	11	65	6	29	26	6	1	1		6	2	1	1	1
RHY(0.2)	2	1		2	1	8	1	7	6	5	9	38	14	70	38	19	10	14	15	60	9
CYP(0.1)	32	41		1	1	6	3	30	1		9	1	29	10	1	7	18	64	14	36	9
RBV(-0.2)	46	11	21	10	9	2	33	52	5	15	3	19	19	28	22	3	1		1		1
TAR(-0.1)	10	3	2	2	2	25	1	48	15	66	63	3	16	21	6	2	2	2		1	3
MIQ(0)	19	41	57	8							12				9			23	41	61	18
SCI(0.1)		2	3			49	11	26	20	15	41	21	21	17	11	7	4	5	3	7	9
MAK(-0.1)	3	5	2	7	10	28	27	51	15	7	29	14	17	21	4	9	1	6	12	1	1
SLK(0.2)		2		3	1			4	3	12	2	21	43	92	4	8	5	31	15	5	3
GLS(0.1)														46		183	15				
SPO(0)		28				4	59	98	18	1	3	4	1	3	3	1	2	2		1	
NSD(0.2)	2			1	8				1	1	3	56	35	19	28	15	13	2	2	19	21
BEL(0.2)	1	3			1		8	14	46	11	11	2	4	15	5	7	5	32	8	9	42
JMN(-0.1)		1			207				10	1	1			1			2				
HJO(0)	6	14		1	1	1	1	11	9	1	1	104	26	12		1	1	11	12	1	1
SSH(0.2)	1	4	3		2	2				12	4	30	34	35	37	1	2	9	3	9	21
HAG(0.2)	1									1		3		1	1	2	1	5	158	1	20
HYA(0.3)																		53	45	62	30
SCM(0.2)		1				8		61	1		35	2		2	18	14	3	10	1	14	7
PHO(0.1)							150	1			11		1		2		7	2	1		
HOR(0)								7						162							
SCO(0.1)	5	2	7		8	1	1	1	1			1	6	10		62	4	5	6	1	44
SBK(0.1)	5	8	16	1	2	5	1	6	4	5	5	16	10	7	12	10	7	11	14	7	10
STN(0.1)		2	1	1	8		3	4	6	8	13	14	14	40	13		7	3		2	4
WHX(0.2)										1	9	47	1	9		15		52			7
MOO(-0.2)	3	2	10	22	17	11	12	13	4	14	7	6	5	2	5	1	1	1	1	1	
SRH(0.1)	2	2	2	1	1	1	2	2	3	2	1	15	7	14	3	30	2	4	4	13	18
EMA(-0.2)	8	3	4	26	1	17	42		13		1			6			1	1	1		
ERA(0)	5	3	1	3	5	16	5	8	5	7	5	6	5	9	5	4	4	6	7	5	9
RSQ(0.1)	1	1	1		2	1	6	3	4	26	3	1	36	1		1	2	3	3	9	15
BEE(0.1)	3	10	4		8	1	2	3	1	8	2	14	9	3	1	2	3	13	10	4	13
PDG(0.1)	2	3	1	1	1	13	2	3	2	1	5	4	38	3	2	2	2	3	2	10	7
PLS(0)	6	5	13	6	3	3	7		4	5		6				4	3	3	8	8	23
HCO(0)	3	5	4	3	1	3		9	2	23	3	5	2	5		24	5	2	5	3	
SQX(0.1)				1	1	1	22	10	10	10	2	9	2	28		2	1	3	2	2	10
GSQ(0)	2		3	1	2	14	8	8	10	5	10	1	7	9	9	2	3	2	3	2	1
MCA(0)		26			46	1												2	13	12	
CBO(-0.1)	12	44	6				4											34			
WHR(-0.1)	55		2				3			26								8	5		
HPB(-0.2)	9	9	2	3	13	21	5	11	5	3	2	9	2			1		1			1
EEL(0)	1	4			5				9	17	13	27	3	1	4		11				
RDO(0.2)							12	2	16	3	4	2		16	3	9		5	4	9	6
WHE(0)											88							1			
AGR(-0.2)	8		3	3	2	4	47	8	4	1	2		1	3							
NOS(0)				1	23	6				9	17									10	19

**Table 3—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
OCT(-0.1)	3	4	2	1	2	3	2	3	7	20	7	14	5	1	1	1		1		3	2
DWE(0.2)					4						1	18	28		12	2	6	1	2	3	2
LAN(0.1)			9			3		2		25	10	1	4	1	5	2	9	3	3	1	
COL(0)		16	2															29	31		
OEO(-0.1)			12			57		5													
DSK(0.1)		3	1	2	1		4	4	1	4	3	1	3	8		1	8	5	10	8	5
MOD(0.2)	1				1			2		10	1	5	2	13	5	6	1	13	4	3	3
WIT(0.2)	1	1			1				3	7	3	8	6	11	5	1	1	9	3	5	3
BSQ(-0.1)		64		1							1		1								
STU(-0.1)	10	3	1	5	6	3	8	5	2	7	5	1	1	2	1	1	1	3	1		
APR(0.1)	8							20						10		5	1	1		18	2
POR(-0.3)	2	7	3	2	3	6	10	3	16	2	7										
CYO(0.1)	11		1		17	1								3		8	3	7	3	3	4
CRB(0)		1	3		1			3	5	8	5	10	17	2	1	1		1		1	2
BNE(0)					3						34	13		3	2	5					
STG(-0.1)	55		2				2		1												
TOP(0.1)	2	1					1		9	6	7	6	7	4		3	2	3	2	5	
MOK(-0.1)			9			46		3													
EPL(0.2)	3										1	13	1	1		7	1	4	2	5	19
RAG(-0.1)	3		1		6	7	2	21	4		2		1		7	1	2				
OPE(0)	4	3	1				12				7		5	1	2			16			2
CDO(0.2)			1					2	1		5	4	1	16	2	1	5	3	3	2	3
OPI(0.2)																2	1	24	8	3	11
PSK(0.2)			1		1						9	1					7	7	3	6	11
MAN(-0.1)	7	10	2		1		2	2		11		3	3	1				1		2	
OAR(-0.1)		3	2			1	15	4		4	14			1							
BAS(0.1)				1	1			3	7	3	1	5	7	9	2	2			1	1	1
BWS(-0.1)					1	5	19	8	3		3		1					2			
MDO(0)	1					4		16		1	3	5	1	5							2
VSQ(0.2)											10	1		5		1	1	7	2	2	7
SPI(-0.1)		2				1	5		3	3	8	12	1				1				
SRI(0.1)								1				1			27	3		4			
CYL(0.2)													5			15	4	6		3	3
ECH(0)				3				1	2	16		9			3	1					
TSQ(0.1)	4	10										1	1					3	12	1	2
TOR(0.2)														6	14	4	3	1	1	4	1
DWO(0.2)							2					2						4	1	3	21
CAR(0.1)	1							5	2	2	6	2	1	2	1	1	2	1	1	3	3
CSH(0.2)								2	3		1	8		1			2	1	2	10	2
FMA(0.2)																	1	19	2	4	5
SEE(0.1)	5	2										7	2			4	1	1	1	3	4
PDS(0.1)									2	1		1	13	3					10		
HEX(0.1)		1				2	1	4			1		1		2	1		1	2	4	8
SUN(0)	3		1	2		2		3	1	1	7		2		2		1	1		1	
SQA(0.1)													2			23		2			
FOR(0)									19		6		1	1							
BSL(0.1)	1									4		9			4	4		2	2	1	
ANT(0.1)									8			7	1	5		2		1	1	1	
FLA(0)					2	1		1	1	2	12		1		1			1	4		
SOP(0)								18	1			1	6								
RSN(0)								26													
BCA(-0.1)			3	2	1	1	2	7	3	3	1				1			1			
SNR(0)					1		1			1	11	7			1	3					
MOL(0)							4			1		16		4							



**Table 3—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
SNI(0)								2		2	18							1				
NEX(0)								1						22								
BPI(0)																	23					
HYD(0)	1								4	7		6	1					1	1	1		
TAM(0.2)																2	1	2	4	4	9	
SLB(0.1)															19		3					
ACS(0.2)																		3	6	7	5	
CUB(0)			5										16									
BTH(0.1)	3									1	2			1	1	3	1	6	1		2	
PIG(0.1)								3		5			3					4			6	
YBO(0.1)			1		2		1					2	2	3	1	2			1	2	4	
EUC(0.1)														3	1	7	1	7	1			
SHE(0)			5							13		1										
GAS(0.1)		3										3			3	5	1		3			
CCA(0)											17							1				
BSP(0)	1				1	2	2	1	2	1	3	1	2				1				1	
GSC(0.1)					6								1					8			2	
OFH(0)	2							2	6	2	1	1	1					1	1			
HEP(0)	1	2			1				2	1		2		2		1	2		1		1	
SUR(0)								10	1		4		1									
CHI(-0.1)			2	1	7			1		1	1		1			1						
BCR(0)						12							3									
YFN(0)					1					7	1			5	1							
CPD(0)							5	10														
EMO(0)	4									3	1		1		3					2		
PAL(0)											13		1									
RCH(0)														12			2					
ECN(0)							1		5	5		2	1									
BER(-0.1)	2	2				2	1		2		1		1								3	
OSK(0.2)																3		5	1	2	2	
EPR(0.2)																	1	3	3	2	3	
SEV(0.1)								1	2		3	1		1				1		1	2	
COD(0)								12														
LSK(0.1)												1			1				2	4	3	
SSP(0)								2	4			1	2		2							
TVI(0)																						
BDA(0)											11											
CTU(0)								10														
NTU(0)								1	1	4	2	2										
PSI(0.1)																3		2	2	1	1	
PKN(0.1)																		8			1	
LHO(0)																8		1				
PSP(0)										4	3						1	1				
CPA(0.1)																		2	2	5		
BFI(0)												9										
MRL(0)												9										
GRM(0.1)																1	2	5				
HTH(0.1)										1	1				1	1	2			1	1	
KIC(0.1)	1														1	1	2	1	1		1	
CHG(0)										2		5						1				
ZOR(0.1)																		3	1	2	2	
BCO(0)			1			6															1	
RAY(0)		1						4							1			1	1			
CCO(0)																		8				

**Table 3—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
LUC(0)								8													
CAS(-0.1)		6	2																		
SBR(0)		2															4				1
BOT(0)											4	3									
RIS(0.1)														1				1			5
TRA(0)									7												
SMC(0)	5										1	1									
LMU(0.1)	1																	1	1	4	
JFI(0)							1				2							2	2		
SCD(0)												3	1		3						
SNE(0)					1							1						2	3		
FLO(0)					1					5					1						
SAW(0)			1										6								
GUR(0)					1	1							1	1				1			1
CHP(0)				1							2	1	1							1	
TRU(0)								5		1											
PLT(0)																2	4				
LNV(0.1)																		2	1	3	
SBO(0.1)											1	1	2	1							1
TOD(0.1)													1							4	1
BRA(0)															6						
PAH(0)											2		4								
BNT(0)									5			1									
CJA(0.1)																	1	2	1		1
HTR(0.1)																		2	1	1	1
BCD(0)										4			1								
PSQ(0.1)																		2		1	2
CRU(0)									5												
SPZ(0)				1	1			1			2										
BKM(-0.1)	3								2												
CHM(0)											5										
TAY(0.1)																1		2			1
HAL(0)														3		1					
GON(0)																					4
HMT(0.1)																		2		1	1
SBI(0)	3																1				
DSS(0)							1					3									
WPS(0)															4						
CDX(0)		1																3			
BRC(0)														4							
FRX(0)								4													
CST(0)								4													
DMG(0.1)																			1	1	1
COU(0)									3												
JDO(0)				2										1							
WRA(0)															1	2					
MRQ(0)			2																	1	
SPK(0)									1	1			1								
SDE(0)								2	1												
FRS(0)							1	1			1										
LEG(0)													3								
GOR(0.1)																	1				2
LSO(0)							2				1										
CRA(0)							2	1													

**Table 3—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
RMU(0)						3															
SOT(0,1)																		1			1
COF(0)																		2			
PRA(0)												2									
SDM(0)																		2			
NOC(0)																		2			
MST(0)																1	1				
CHQ(0)																			2		
EPD(0)													1								1
SYN(0)																			2		
SNO(0)															1			1			
SSC(0)												1						1			
MOR(0)						1						1									
SSM(0)	1																			1	
OSE(0)											1	1									
DEQ(0)					2																
GSA(0)									1	1											
SDR(0)																		2			
DCS(0)	1				1																
SCG(0)																	2				
BYD(0)																1					1
STO(0)																			2		
CBX(0)										1		1									
CBE(0)													1						1		
BRS(0)								2													
FAN(0)										2											
NOG(0)				2																	
VCO(0)	1												1								
ODO(0)									1		1										
STR(0)								1				1									
SPR(0)									1						1						
GVO(0)																					1
VOL(0)																					1
NCB(0)																					1
KWH(0)																					1
CHA(0)																	1				
CHX(0)																					1
PAO(0)																					1
PRU(0)																					1
PMO(0)																					1
PSY(0)	1																				
ALB(0)										1											
IBR(0)												1									
ETP(0)									1												
PIN(0)																					1
SPF(0)							1														
CBI(0)			1																		
PSO(0)	1																				
CMU(0)					1																
LHE(0)		1																			
DHO(0)																					1
API(0)												1									
SPT(0)																					1
PZE(0)																					1

**Table 3—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
JGU(0)														1							
YBF(0)																				1	
KIN(0)															1						
BOA(0)									1												
SAI(0)																		1			
DPO(0)					1																
BES(0)																		1			
NEB(0)																		1			
CUC(0)												1									
SYD(0)																		1			
ROC(0)											1										
SUH(0)									1												
SPP(0)												1									
HGB(0)												1									
BPE(0)									1												
HOL(0)															1						
SPL(0)											1										
GRC(0)									1												
OSP(0)											1										
BIG(0)			1																		
SWR(0)												1									

**Table 4: Oreo trawl fishery. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
ORH(0)	704	63	126	85	116	155	355	413	1850	379	92	191	748	426	562	306	267	102	424	543	187
SHA(-0.1)	124	69	352	28	60	223	10	304	168	99	162	82	37	10	53	60	22	17	21	28	18
HOK(0.1)	54			31		291	82	46	15	60	327	143	91	22	16	145	52	12	16	78	13
COU(0)							2	717	8	198	1	128	295	5	19	1	1				
RAT(0.1)	17	5		28	18	40	21	22	29	142	132	98	108	71	76	155	50	57	54	35	46
ETB(0.3)		17			38		90		47	25		22		58	14	58	56	101	145	212	57
BSH(0)			2	14	11	5	80	9	33	39	40	151	66	42	3	4	6	5	3	3	
ETM(0.1)						9	3			40	7	41	142		64	25	4	13			
SLK(0.2)	1			7	1	14	17	8	12	18	13	17	17	24	11	20	15	23	42	35	11
MCA(0.4)																33	55	89	33	34	27
BEE(0.2)	3	2			3	13	2	7	4	7	11	7	21	29	10	15	15	27	11	9	6
WSQ(0.2)	1				1	1	10	3	5	17	14	12	6	8	8	8	10	20	13	9	3
MOD(0.2)						42	3	12	3	7	6	3	7	5	7	9	5	7	13	6	3
JAV(0.2)	16					19	4		1	10	6	5	10	2	18	3	3	7	7	12	5
WOE(0)									55	33	3	3	17								
GSP(0.2)						1		1	1	7	10	16	17	3	4	6	6	3	4	3	2
SPD(0)				71														4			
HJO(0.1)	3	6			6				1	3	16		1	1		11	1	4	3	5	11
HAK(0)	2			1		2	2	1	2	19	6	5	3	7	1	3	3	1	1	1	
SVA(0.1)																		20	37	2	
CSQ(0)						50				5						1				1	1
SSI(0)				1						49	7										
SQA(0.1)															4	48					
GSH(-0.2)	26	2		6	1	1	4	2	1	5	1					1					
LCH(0)	6			1		2	8	2	2	2	2	4	2	3	2	3	2	3	3	2	
GDU(0.2)																	5	17		3	5
ETP(0)										30											
SND(0.1)	1						1	1	1	3	6	4	1	1	2	1	1		2	5	
HTH(0)									21	2			1						4		
GRC(0.1)													1	7	16					3	
VCO(0.1)										2						2		4	12	3	
RIB(0)	3				1	10	1					1	1	1	1				1	1	1
ASR(0)									20	1											
CDL(0)							5							1	12						
LIN(-0.1)	7			6								1	2				1				
ETL(0.1)													11	1				1	4		
ECN(0)									2	8		1	3								
MIQ(0)	6	3																1	1	1	2
CHI(0)	1			3		1			1	1	1			1	1	1		1	1	1	1
CYP(0.1)									2							1	1	3	2	2	
PAB(0.1)															2	2	2	1	1	2	
SKA(0)						1			3	2	2	1									
PSE(0)										8											
TAM(0.1)																1	1	2	1	2	1
PLS(0)										6										1	
MOC(0)																		7			
BSL(0)				4								1						1			1
CHP(0.1)										1				1		1		1	1	1	
ANT(0)									6												
CMU(0)															6						
DWE(0)				3							1					1		1			

**Table 4—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
WWA(0.1)													1	1							4
CBD(0)																	5				
CHG(0.1)										1		1			1				1	1	
BBE(0.1)																					5
SQU(0)				1			1					1	1								
EPL(0)	1				2																1
NOR(0)															4						
ONG(0)									1				3								
RUD(0)			3							1											
CHR(0.1)																		2		1	
APR(0)								1								1				1	
SMC(0)											1	2									
CBI(0)												3									
TOA(0)										1	1					1					
OCT(0)										1	2										
SSK(0)													1								2
COD(0)										3											
ROC(0)																1	2				
VIT(0)										3											
HYD(0)											1								1		
DSK(0)		1		1																	
SNR(0)																			1		1
PSY(0)										1							1				
SPI(0)										2											
SBI(0)		1										1									
LAN(0)																2					
RAG(0)															1		1				
SBW(0)																1		1			
CON(0)											1	1									
LAE(0)		1														1					
SQX(0)				1		1															
EEL(0)										1		1									
GRM(0)																					1
PSK(0)										1											
MOR(0)											1										
KIC(0)				1																	
CAY(0)																			1		
COR(0)											1										
PSL(0)																				1	
IBR(0)																					1
SBR(0)																1					
CUB(0)										1											
BAT(0)							1														
BNS(0)															1						
ISI(0)																1					
BTH(0)																			1		
SCM(0)							1														
SIA(0)																					1
JFI(0)																			1		
ECH(0)											1										
RAY(0)				1																	
DDI(0)																			1		
LDO(0)													1								
CSH(0)							1														

**Table 4—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
CRB(0)											1											
PTO(0)													1									
GOB(0)							1															
OSP(0)															1							
LPS(0)								1														

**Table 5: Orange roughy trawl fishery. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
SSO(-0.1)	12289	10916	2886	9432	11753	7480	7956	10142	3042	2133	4587	1813	2187	3631	3477	1485	892	1930	2005	1136	172
BOE(-0.2)	2476	8734	2134	4938	2055	1628	3879	3361	380	615	948	439	621	707	855	474	86	235	368	395	66
CDL(-0.2)	103	208	806	3203	322	2067	2400	845	340	1034	190	84	177	54	86	91	31	24	94	26	55
SHA(-0.1)	531	233	294	208	381	304	353	255	422	176	118	115	82	71	211	104	72	98	138	140	31
HOK(0)	407	344	15	409	150	134	71	159	90	481	324	91	90	127	87	111	178	134	160	187	26
RAT(0)	91	23	34	70	107	45	173	211	298	181	131	198	100	122	85	387	163	132	96	197	39
SOR(-0.1)	78	142	297	421	168	32	42	218	747	69	49	42	49	41	33	12	12	16	33	36	45
BSH(-0.1)	16	162	86	101	193	48	94	107	282	210	432	155	174	98	32	37	39	50	50	16	20
SLK(0.1)	10	2	7	115	48	29	152	75	90	151	397	411	50	64	78	106	54	93	79	155	15
COU(0.1)					2		11	431	340	265	501	58	52	334	107	24	1	2			
RIB(-0.1)	164	129	484	79	60	60	49	73	115	40	43	62	33	22	42	95	53	26	38	54	78
SND(0.1)	73	31	32	28	34	4	22	26	82	63	89	106	111	79	80	234	174	145	66	127	32
ETB(0.1)	233	83		24	56		123	32	9	1		56		196	43	57	76	83	112	73	31
BYS(0.1)			2	297	101		19	3	91	118	97	4	164	35	22	5	6	7	16	35	10
MOD(0.3)				17	15	1	45	8	10	15	40	116	15	63	110	42	147	20	60	154	8
BYX(-0.3)		235	134	119	24	7	22	269	27	2			2	4		3		2			
BEE(0)	106	25	11	50	130	19	29	25	29	18	30	44	37	47	62	34	35	25	26	27	3
ETM(0)		3		85	99	27	55			24	26	80	133	14	164	11	16	2	1		1
HJO(0.1)	51	6	9	10	33	10	1	14		14	8	46	17	20	22	158	6	106	52	71	14
WSQ(0.1)	2	1	1	8	11	7	31	24	16	14	42	15	20	24	168	79	50	22	42	15	2
LCH(0.1)	21	2	6	8	6	8	13	32	9	36	62	108	17	25	14	56	14	32	25	39	7
JAV(0.1)	8		1	11	3	61	4	49	54	16	23	96	39	5	56	23	33	31	9	8	2
HAK(0)	113	2		20	2	18	22	44	19	27	143	25	15	25	7	10	9	8	9	8	4
OEO(-0.2)	82	12	4	215		5	1	8								1			8	36	
CYP(0.2)			1	13	5		5		2	2		6		4	16	85	53	57	30	12	4
BNS(-0.2)		144	26	4	2	1	34	6	1	10	3	4	2	9	5			1	1	1	
SPD(-0.2)		13	20	145		2	1			21	1			1							
CBB(0.1)													100	34			42	26			
ETL(-0.1)	14	1		71				65	3	1			14	4						1	
WHX(0.1)			1	1		18		4		6		101	7		5	1	25		2		1
PLS(0)		6	21	45	8	4	11		2					7	2	5	1	8	17	7	2
GSP(0.2)	10		1	2	1				1	9	17	18	7	4	10	6	6	7	5	12	3
ASR(0)								2	25	65	3	5	5				1			2	
BSL(-0.1)		3	1	28			1	8	42	13		2	5				2				
WHR(0)	8			1		4					61	10		12					1	4	
GSH(-0.2)	8	5	6	8	7	5	4	31	6	5	1	1	2		3		1	1	2	1	
CSQ(0.1)			4	4	25	6	5							2	8	13	1	6	7	6	
WOE(0)		5	1	14	10		7		7	11	4	10	2	1		1	4	2	2	3	1
SBI(-0.2)	54		8	1		3			2	3	1	1	1	3							
VCO(0.1)			4		2	2	4	5								2	1	30	20	3	2
EPL(-0.1)	4	2		4	33	4	1						2	19					1	1	
GDU(0.2)																1	28	16	11		5
CHI(0.1)						1	22		21	2	1	1	2	1	2	2	1	1	1	1	1
CYO(0.2)	1	3	2				1					2	3	1		12	6	5	5	9	5
SNR(0)					2				5	2		15	24	4	2						
SIA(0.2)																		9	24	14	1
DWE(0)				20	1		8		1	1		8		4			2	1			
SOP(0.1)				1	11		7	3					6			8		2	3	4	
SPE(-0.1)	2		1	4	1		4	1	12	3	2	6			1	1				2	2
COR(0)								1				25			14						
SCM(0.1)					1					12	7	1		4	7	1				2	3



**Table 5—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
LIN(-0.1)	4	2		5				2	2	2	11	2	2	1	1	1	1				
SMC(-0.1)			1	1	6					1	25										
SKA(-0.1)	1						4	3	10	1	1	8	2								
BSK(0)								1	21					8							
MCA(0.2)															1	13	4	4	1	4	1
EPR(0.1)													22	1	3					1	1
MIQ(-0.1)	10		1	4	7													3			1
SQX(0)				1		2	4	2		1	4	2		2	2	3				1	1
LEG(-0.1)	1	1		4	1			1	3	1	2	3	1	2	1	1				1	1
APR(0.1)				1	3		1		1							7	3	2	1	3	
SQU(-0.1)		1		3	3	1	2	4		2	1	2	1	1			1				
RCH(0)			1	2		2		1		6					1		5	1	1	2	
RUD(0)				1		1	4	4	5	3	1			1		1				1	
OPH(0)									20												
SHE(0)										6	12		1								
TOA(0.1)									4	1		1	1	1		3	1	1	1	4	
SSK(0)					3	1	2	3				3		2	1	2	1				
HTH(0.1)									1							4	2	3	1	3	
ONG(0.1)										5		1	1	1	1	1			3	1	
CYL(0.1)										1		5		1				1	1	5	
MAK(-0.1)	13																				
PSK(0.1)												1			1		1	3	1	5	
ECN(0)									4	1		2	4		1						
ETP(0)				6						5		1									
RSQ(-0.1)	9	1		1																1	
CRB(0)				1					2	1		6	1	1							
MOK(0)								12													
SRH(0)									10					1							
SSM(-0.1)	5		1											4							
NEB(0.1)																	4	2	2	2	
ROC(0.1)									1					2		6	1				
JFI(0.1)	1								1		1		1		1	1		3	1		
MDO(0)						10															
SSI(0)												9				1					
BBE(0)		1						1			7										
PDG(-0.1)			1	2		1				1			4								
OFH(0)					2				1	4		1		1							
SRI(0)												8				1					
BRG(0.1)																5	1	1	1	1	
CHP(0)				1	1							2		1	1					1	1
CHG(0)					1				2			1			2		2				
MOC(0.1)																			5	2	1
SQA(0)															1	7					
IBR(0.1)																2	2				4
CON(0)	1					3				1	2					1					
GRC(0)															8						
CSH(0)				1	2			3		1								1			
DSK(0)				1							1	1			1		1				2
CSU(0)											1								6		
RHY(0)									1	2											4
ANT(0.1)															1	1	4				1
SLC(0)							7														
DDI(0)																		7			
EEL(0)									2			4									1

**Table 5—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
PAB(0.1)															3		2		1		
ACS(0.1)																2	1	1	1	1	
KIC(0.1)															1	2	1				2
SVA(0.1)																		1	4		1
SPI(0)							1		1	1	2	1									
SYN(0)		1			1								3		1						
DSS(0)												6									
CEN(0)				4	1							1									
WPS(0)														6							
ERO(0.1)																			5		1
BTH(0.1)																4	1				1
LUC(0)								5	1												
HYD(0)										3	1					1					
GSQ(0)			1							1		1			1						1
MUR(0)						5															
TAM(0.1)																2	1	1			1
SWO(0)		5																			
COD(0)				1						1							2				1
SWR(0)									2	3											
RSC(0)											2	1				1					
BEL(0)									2	1			1								
SBR(0)				1	2										1						
RAG(0.1)														1	1	1		1			
WIT(0.1)																1		1			2
COB(0)													3		1						
LDO(-0.1)	1			1				1			1										
SBO(0)												1		3							
LAN(0)				1												2	1				
CBO(0)					1														3		
SAF(0)														4							
GLS(0.1)																		1	2		
CBD(0)																3					
MST(0.1)																	2				1
OSK(0.1)																1			1	1	
SWA(0)				2			1														
FRS(-0.1)		1	1							1											
SOM(0)													1					2			
CAR(0)		2													1						
BWH(0)													3								
STA(0)	1								1			1									
OCT(0)							1				1				1						
FRO(0)		3																			
SNA(0)			2				1														
OPE(0)									3												
CHX(0)											1	1									
VSQ(0.1)																				1	1
SBK(0)	2																				
HYA(0)																	1	1			
TSQ(0.1)																			1	1	
HCO(0)					1										1						
PSY(0)																	1		1		
TOP(0)											1					1					
MOR(0)								1							1						
HYP(0)													2								

**Table 5—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
BAC(0)				1	1																
NSD(0)												2									
BSQ(0)			1			1															
PSL(0)							2														
WAR(0)											2										
JMD(0)													2								
JMM(0)		2																			
RBM(0)								1			1										
WWA(0)				1																	1
SLR(0)												2									
LAE(0)	1									1											
COL(0)							2														
LPI(0)										1					1						
SUR(0)											2										
SMI(0)													2								
PHO(0)						1															
PSQ(0)																					1
LSK(0)	1																				
SUN(0)																1					
BAT(0)														1							
SDL(0)															1						
SNO(0)																		1			
DEQ(0)					1																
GSC(0)											1										
SAR(0)														1							
EUC(0)				1																	
PIN(0)										1											
EMO(0)										1											
SLG(0)												1									
CRS(0)								1													
LMU(0)																1					
BOO(0)																				1	
HGB(0)																1					
SCO(0)																1					
SDR(0)									1												
DIS(0)												1									
TRS(0)					1																
GAO(0)											1										
BFE(0)												1									
DCS(0)					1																
RSK(0)																		1			
BJA(0)	1																				
ECH(0)							1														
MAN(0)																					1
BRC(0)			1																		
NOT(0)													1								
BFI(0)													1								

**Table 6: Jack mackerel trawl fishery. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
JMD <sup>1</sup> (0.2)	277	4418	414	631	47	3127	1	109	4433	89	293	2485	2457	21236	13556	5752	10449	17824	10670	12179	6609
BAR(0.1)	1363	2596	1732	3268	2988	3008	4208	7223	3420	6194	6031	10863	9174	7942	2826	8865	9458	4847	4447	7300	3978
JMM <sup>1</sup> (0)	64	1138	5812	2827	3158	7634	654	6561	8288	857	1486	2777	252	602	785	418	492	2473	1129	1614	252
JMN <sup>1</sup> (0.5)	0	2194	0	0	0	1990	0	0	641	0	40	110	500	6235	7576	2620	3558	8363	3577	5481	2850
EMA(0)	2234	1751	1143	1060	1842	300	2086	1809	9378	296	1141	2170	699	3820	1703	1448	2420	1855	1886	2838	1207
FRO(0)	449	1252	2210	1157	1665	134	644	1160	244	140	279	764	818	1342	1857	1920	1411	1848	1335	1478	920
RBT(0.1)	149	725	874	888	59	114	700	499	1031	1893	1175	1437	1574	170	990	1684	1576	2283	1380	548	375
SPD(-0.1)	143	966	968	1108	503	901	1308	1287	130	538	490	571	195	25	66	209	175	47	76	96	99
WAR(-0.1)	323	112	338	221		6	461	309	223	2511	500	386	638	10	43	7	6	15	60	18	20
SQU(-0.1)	154	527	110	174	581	401	618	362	51	244	221	1092	412	43	35	227	283	125	44	131	45
SWA(0)	4	45	400	30	30	467	196	1097	255	341	109	271	248	6	2	458	62	30	6	148	61
TAR(-0.2)	50	244	248	301	231	153	293	498	17	52	6	17	34	5	6	16	40	29	16	25	12
RCO(-0.3)	15	111	100	338	354	669	237	23	24	22	2	6	8	6	4	5	1		1	1	6
SCH(-0.2)	66	268	63	212	61	219	164	170	6	16	21	26	34	6	14	16	15	15	10	11	7
JDO(-0.1)	26	144	139	84	75	66	98	174	3	1	7	7	40	11	30	33	50	29	28	42	21
SDO(0.2)		1	1	6	10	35	37	113	33	3	3	69	125	41	121	105	126	95	102	39	11
HOK(-0.1)	4	5	9	121	68	214	102	55	7	7		18	76	38		20	3	45	18	4	
RBM(0)	5	45	41	7	5	52	12	1	4	15	257	14	39	6	43	34	46	13	75	10	13
SNA(0.2)	13	18	8	25	1	1	3	8		1	1	57	13	86	96	43	28	87	51	73	54
STU(0)	1	4	5	4		87	8	34	303	38	22	19	36		1	10	2	4	2	11	64
GUR(0)	10	95	18	35	30	32	47	55	6	7	21	30	94	5	15	27	29	21	9	26	12
POP(0)	9	66	59	28	39	19	21	93	1		2	13	41	8	8	31	32	33	18	51	18
KIN(0.2)	1	10	1	3		4	9	15	47	1	11	93	9	12	71	16	55	56	25	64	29
THR(0)	69	26	6	3	28	11	38	43	33	39	24	18	21	15	33	5	11	16	11	12	22
TRE(0)		46	11	1	1	2		2	1			164		101	4	9	1	1	2	3	1
GSH(-0.3)	22	54	10	71	16	20	107	15	5	19	1		1		2			1		1	
SPE(-0.3)	7	18	15	42	37	59	60	42					1			1			1	1	
NOS(0)			5								262										
PIL(0.2)		1		1	1				8	3	1	7	33	34	15	31	9	53	11	17	
STA(-0.3)	8	38	5	23	5	8	28	41		37	3	1	4				1	1	1		
LEA(-0.1)	6	39	51	2	5	11	10	21			1		19		1	7	9	2		1	1
SKA(-0.2)	1	33		5	1		70	47			1	1	4								
SSK(-0.2)	9	29	14	23	6	29	1	21	15	4	1		2		2	1	1	1		1	1
SUN(0.1)	2	4	3	1	19	1	2	1	5			1	2	6	13	18	15	31	8	10	14
RAT(-0.1)	1			32	10	5	14	2	77	2	2	1			2				1	1	1
HAP(0)		5	1	3	4		8	41	7	15	4	19	14	1	1	6	3	2	3	5	1
SKI(-0.1)	5	16	3	10	5	1	5	6	57	12		5	5	3		1		2	3	2	1
CAR(-0.3)	5	22	25	6	12		26	45													
SPO(-0.3)	7	26	2	10	2	29	46	3	2										4		
POS(-0.1)	2	2	3	4	1	5	6	20	18	13	11	10	5	1	1	1	2	1	1	2	2
MAK(0.1)	1			2	5	11	6	4	8	3	2	3	2	8	8	7	3	11	12	4	5
KAH(0)	6	1	2			17	20							4		1	6	14			27
SNI(0)									92												
RDO(0.1)							12		3	1		8						2	65		
LIN(-0.2)	2	12	2	16	3	4	4	10	1	4	3	5	2	2	1			4	1	1	
JFI(0)														72				1			
RSK(-0.1)	1	13	27	4	15											1	2		1	1	1

<sup>1</sup> Although part of the target species group, these species are included to enable examination of changes in the relative catches of the constituent species under the JMA code.

Table 6—continued

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
RHY(0)		1		3	1	1		40				2		4		2	2	1		2	1
BPE(-0.1)		2		1	18		4	33										1	1		
CDO(0.1)									1				7	22			23				1
NSD(-0.1)	2	39		6																	
RHY(0)	1	8	2	2	6		4	3	1				1	2	2	2	2	2	3	1	1
HAK(0)				1		1	11	6	1			10		11			2				
BWS(0)			3	2	4	3	1	5	3	2	1	3	1		2	3	1	4	2	1	1
SCG(0.1)	1	1		2			5	1					3		9	3	5	2	3	4	2
HPB(-0.2)	1	9	6	5	6	7	1			1			1		1						
LDO(0.1)									9			2		1	3	1		21	1		
RBV(0)		15					1	4								3	1	1			12
SWO(0.1)		1	1		1		4	2	8		2				2	1	2	4	1	2	3
BEN(0.1)							2			1			3	7	5			14	1		
OPE(0)			1	3	4	1		15								4				3	2
JGU(-0.1)		1		2	7		3	17						1			1				
SSI(0)				1	5	2	7	6		3					1	1	1	1			
SQX(0)																28					
CSH(-0.1)				12		14															
EGR(0.1)		4		1				3						1		3	1	5	2	3	1
STR(0)	1	3	1	1		2	3						1	2	1	1	1	3	2	1	1
NOG(0)					23																
ALB(0.1)						4								5		1	1		1		5
BRA(-0.1)	1	3	3					2		3		5									
MOO(0)				1		2	2	2	2			2									
ELE(0)									2	1			4				1				1
BWH(0.1)				4									1		1	1			1	1	
SHA(-0.1)	1			1		1	1		1	2										1	
SEV(0)			1				1	1		1			1			1				1	1
RSN(-0.1)		1			3	1	2	1													
RAY(0)		1		1	1			2						1							1
STN(0)										1		4	2								
PRO(0)								1								6					
ANC(0)																6					
JAV(0.1)												1			1				4		
FOR(0)										1			4								
CUC(0)	2				1												1		1		
RUD(0)						1		1						2	1						
TRU(0)												4									
BYX(0)				1										3							
BNS(-0.1)	1		1				1		1												
WPS(0)											3						1				
STG(0)									4												
ODO(0)		3								1											
CDL(0)									3												
POR(0)									3												
YFN(0)												3									
CON(-0.1)		2		1																	
BCO(-0.1)		1		1			1														
WRA(0)					1											1					
BNE(0)															2						
BSK(0)				1					1												
LAN(0)																					2
WSE(0)								1													
BKM(0)																					1

HEX(0)

1

**Table 6—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
SPF(0)										1											
TRA(0)									1												
HAT(0)					1																
OCT(0)					1																
HEP(0)		1																			
WWA(0)											1										
SPP(0)																	1				
TOA(0)								1													
RPI(0)					1																
SND(0)									1												
CBE(0)																	1				
NEX(0)														1							
SMA(0)															1						
NTU(0)											1										
SPT(0)									1												

**Table 7: Scampi trawl fishery. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
JAV(0)	507	1400	1581	657	980	1283	424	592	762	1295	1250	1445	765	664	1238	388	877	831	687	959
RAT(0)	147	501	858	1558	1488	1458	576	308	505	511	574	1417	753	744	714	195	416	369	367	634
SPE(0)	253	389	684	449	909	723	103	467	260	344	407	929	980	469	904	230	382	356	211	260
LIN(-0.1)	592	741	915	682	712	405	445	327	310	348	496	631	502	234	296	49	154	97	98	79
HOK(-0.1)	410	529	979	395	523	298	413	143	219	289	593	575	285	131	247	122	179	221	202	164
GSH(0)	10	173	330	98	70	100	181	123	23	51	77	126	139	105	195	126	188	118	83	49
FHD(0)	84	13	91	108	112	401	2	51	92	212	8	249	114	121	80	133	73	102	94	84
STA(-0.1)	67	184	255	258	200	109	86	67	56	61	69	188	226	120	26	35	41	51	62	9
RCO(-0.1)	31	234	136	242	145	82	49	45	67	36	108	195	170	208	23	16	51	23	17	17
SWA(-0.1)	48	52	145	80	183	75	15	54	40	78	77	284	256	37	4	3	13	2	8	12
SSK(0)	109	29	116	27	84	47	40	84	22	153		12	55	118	148	76	122	90	78	43
SPD(0.2)		23	37	38	24	51	305	15	2	55	61	83	131	92	43	48	139	82	130	66
SKA(-0.4)	38	30	12	64	73	177	61	28	162	74	200	253	83	6						
CRB(-0.1)	4	97	64	40	96	160	59	85	31	76	70	129	94	156	33	12	11	17	11	1
ASR(0.2)			7	52	1	220	158	80	8	63	23	171	77	18	41	19	28	33	30	41
SRH(0)	114	50	6	14	91	152		11	18	37	13	19	8	1	65	14	155	50	29	34
HAK(0)		43	58	51	94	25	69	48	22	33	43	128	66	63	23	4	18	5	5	7
CDO(0)	113	88	2	10	58	20		3	21	7	4	26		2		56	161	79	48	64
BBE(0)	39	1	12	22	16	50	1	29	122	124	144	40	45	37	4	7	3	22	6	10
SKI(-0.1)	96	32	37	10	24	59	42	5	44	33	74	47	7	1	14	23	42	36	7	22
RHY(0.2)	43	4		1	3	2		4	19	40	22	12	6	6	1	114	56	175	55	57
TOA(0)	3	8	61	21	5	14	116	47	33	74	24	53	23	51	2	13	21	14	11	4
SSI(0)	2	16	90	34	20	16	69	39	2	2	18	29	27	38	1	37	37	25	39	45
LDO(0)	11	17	37	24	65	51	40	16	10	35	61	36	23	27	28	15	23	24	18	6
WWA(0)		28	18	14	39	20	77	15	15	8	28	19	127	11	63	2	27	6	8	3
SQU(0)	10	47	21	20	27	19	8	22	9	12	45	71	29	14	10	35	35	25	17	32
RSK(0.1)		57	17	5	1		93	10	1		9	8	21	16	55	39	26	26	12	16
ANT(0)		53	22	21			96	53	1	57	2	11	28	1		1	40	11	12	
BEL(0)			6	3	29	27	1	1	72	76	33	29	14	1	52		4	18	1	1
HTH(0.1)	2		9	8			130	92	1		1	37	20			16	17	12	15	4
PRK(0.2)					1	76		34	1					1		2	197	23	5	3
BNS(-0.3)	37	12	48	7	17	22	5	3	16	18	41	58	2	1	12		1			
MDO(0.1)	29	8	1		2	27	2	11	20	9	2	18	1	12	13	19	15	29	8	9
RIB(-0.2)	1	1	6	18	149	12			5	13	10	3	5	7	2			1		
DSK(-0.2)	2	5	48	12	39		64	27	9	7						5		2	1	4
SDO(0)		1	14	6	4	77						22	10	2	73	4	5			2
HAG(0)	25	15	4	15	5	10	9	2	18	21	25	17	10	3	8	5	8	8	5	6
ERA(0)	14	5	5	5	8	12		2	6	6	18	76	4	7	7	12	8	5	1	7
CSH(0)	2		5	2	2		54	32	2		1		5	6		14	52	15	6	
SMK(0.3)																106	48	24	11	7
BER(-0.1)		5	21	11	65	2	1	8	10	26		10	18	5	5			1	3	4
CAR(0.2)		12	1		1	17	1		5	25	15	22	7	6	6	8	10	10	10	10
SCH(0)	12	9	5	5	7	29	4	4	4	18	18	8	9	1	8	3	8	5	3	5
CON(0)	1		6	21	15	4		4	12	23	20	5	14	17		1	6	5	1	6
SBW(0)			5	6		3	106	3				12	2	8		4	1		7	
HSI(0.2)	9	1						1		2				7	34	14	11	39	30	4
CRU(-0.1)		16							1		72	61								
ECN(0.1)		7						1	1	7	17	82	3	2	12			13	1	1
DCS(-0.1)	1	7	83	2	2			25				14				4	1	1	2	
SPI(-0.1)			3	16		34	45	24	3			8							1	1
COU(0.1)									83	42	1						2	3		

**Table 7—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
FLA(0)		12				6		10		2	59	21				20	1			
WSQ(0.1)		1	1	7	5		29	3	1	1		10	17	20		5	4	3	4	3
GSC(0.1)		12		5			10						3			30	47	5	2	
BYX(-0.3)	6	2	4	6	29	5	3	4	19	6	15	1	3		4					
EEL(-0.1)	2	15	15						11	10	30	18	5							
SHA(-0.1)		3	1	6	3	14	15	4	3	6	13	2	22	2				1	5	3
CDX(0.2)																		28		75
OCT(0)	1	1	2	4	6	6	1	3	2	4	2	11	1	46		3	2	2	2	2
YBO(0.2)	13							1	1	4		18			6	16	13	2		19
HAP(-0.1)		5	4	1	1	1	2	1	11	7	11	33	3	2			5	1		
HPB(-0.2)	18	3	6	2	5	2	1		5		1	14	5		13					
PSK(0.1)					3				22	29	6					3	6			1
ETL(0.1)	2	1		1	3	3	1	5	3	2		1	2		2	2	14	13	1	11
GAS(0.2)											7	24		3				8	20	4
BSH(-0.1)	1	1	6	2	1	7			2	1	11	29	2					1		1
SND(0)	2	2	1	2	2	3		1	1	1	2	29	1	8		4	1	1		2
BRZ(0)	7	5			1	4	1	3	1	7						4	11	12	1	4
ECH(-0.1)		13						3	1			38	4							
VOL(0.1)							36	12								3		4		1
BWH(0.1)		1														27	28			
NSD(0)	12	3	1					12	5					2	3		10	1	1	
TOP(0)		1			15	1		10	8	7	2							1		3
SCO(0)						17	20	1	2		1		6					1		
PRA(0.1)						1	2	3		7			1				1		2	30
MOL(0.1)		1		18			6			4					1	2	8	5	1	1
YSG(0)								41								5				
GSP(0.2)								6		3	1	12	2	5		4	3	5	1	
PDG(0)		1	4	5	5	1		2	2	4		2	3	6	2	1	1	1	1	1
MIQ(-0.1)			37	3				1												
TAR(-0.1)	1	4		1	1	8		5				17				2				
BAS(-0.2)	10	3	3	3	3	2	1	2	1	3	3	4								1
TFA(0.2)																		19	15	4
OPI(0.1)										32										2
PIG(0.1)			11	1			1	1		1						1	7	10	3	1
BYS(0)			3			2		1	1	4	17	3	2		1			2		
SCG(-0.1)				2	27			7												
SUR(-0.1)	36																			
SPT(0.2)																	14	6	14	1
PSI(0.2)																2	21	8		3
STR(0)					9	2	1	2	1			2				13	2			
HCO(0)		2		1			6					7			4		9	1		
BTH(0.1)							5	4								3	1	14		3
SHL(0)					9	3	1		3				1	1		11				
SBR(-0.1)			1		2			1	1			22								
WIT(0.1)		3	1	2	6		1						2	2	1	1	3	1	3	1
ACS(0.2)																10	2	5		9
TAY(0.2)																4	8	10	1	3
SNI(0)					2		14			6							1		2	
JFI(-0.1)		1					12	10					2							
JMA(-0.2)	18	2			2	2						1								
OFH(-0.1)					21				1	1										
CUC(-0.1)	1	1		1	2	3	5	2	1	2		1	1	1		2				
GMC(0.2)																9	1	8	2	3
LSK(0.1)		1			1								8			2	2		8	



**Table 7—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
FMA(0.1)															16		4		2	
HEX(-0.1)			3	1	4	1			2	1	3		2				5			
SSH(0)	6	1						3	2	1					1	2	3	3		
DWE(-0.1)			19			1							1							
FRO(-0.1)	1		3	2	3	1					6	1				1		1	1	
SLG(0)							14	3					1							
BRC(-0.1)		1		2	3	8				1	2									
HMT(0.1)															10	1	1		4	
SPK(0)										15	1									
HYM(0.1)																			16	
ODO(0)															16					
OSK(0.1)																1	12		2	
SEE(0)	4		2		4											2	1		2	
API(0)		2		1		1		4			1		1	2			1	1	1	
DMG(0.1)																8	6			
OPE(-0.1)		10		1		2											1			
NOS(-0.1)				11	3															
NUD(0.1)															10	3			1	
RAY(-0.1)				4		9				1										
LAN(0)												14								
LHO(0.1)																			13	
SPO(-0.1)	5		1		2	2				1	1	1								
MSL(0.1)							2	3									2	4	1	
WHE(0)			5									7								
SYN(0)						7													4	
SSC(-0.1)		11																		
ONG(0)							7					1					1	2		
JGU(-0.1)		2	1		6					1									1	
COL(0.1)																		11		
ZOR(0.1)																10		1		
LCH(0)				1	1	3		1		1							1	1	1	
GVO(0.1)																7		2	1	
PLZ(-0.1)	10																			
NOG(0)				10																
RCK(0)													10							
AST(0)								10												
SPZ(0)						1						7						1		
RPE(0)					9															
DAP(0.1)																5	1	1	2	
SQX(-0.1)					2	5	1	1												
PCO(-0.1)	8																			
SMC(0)																	8			
TTA(0.1)																			8	
BTS(-0.1)		4	4																	
SBK(0)		1			3					1							2			
CBB(0)																	7			
PMU(0.1)																	6		1	
EMO(0)					1					6										
RBV(-0.1)	1	1	1	1		2						1								
HEP(0)	1				1				1		2			1				1		
BOA(0)					1	1		1	2			1				1				
ROC(0)								6		1										
SLR(0)		2								5										
DIR(0.1)																	1	2	1	2

**Table 7—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
APR(0.1)												2						1		3
PSY(0)		5									1									
BEE(0)												6								
GIZ(0)									6											
SBO(0)			1									2								2
ETM(0)		1					1		1	1							1			
HYA(0)																		5		
OCP(0)														5						
CPA(0)																5				
SOL(0)												5								
GDU(0.1)																	3	1		
CHI(0)					4															
RDO(0)							2					1	1							
COR(0)								4												
RUD(-0.1)		1	1	1	1															
LUC(-0.1)	4																			
HJO(0)												4								
CAM(0.1)																1		1		1
MNI(0.1)																			1	2
LAG(0.1)																		2		1
AFO(0)										1							1	1		
CHX(0)				2	1															
EPR(0)														1				2		
PRU(0)																		3		
MOD(0)				2						1										
CSQ(0)		1																	2	
HTR(0)																3				
TAM(0.1)																1		1		1
AIR(0)										3										
CBE(0)				3																
CTU(0)										3										
SCM(0)											3									
BPE(0)					3															
SMT(0)																1		1		
DWO(0)							1											1		
ETB(0)																1		1		
JMD(0)									1									1		
PNE(0)																				2
STG(0.1)																			1	1
PLS(0)					1														1	
ORH(0)					1					1										
PSE(0)													2							
DAS(0)																2				
CYP(0)																2				
EZE(0.1)																1				1
PED(0)	2																			
BOC(0.1)																1				1
CVI(0)																				2
CBO(0)				2																
CCO(0)																		2		
SEV(0)													1					1		
RBT(0)												1							1	
SNA(0)							1	1												
NOT(0)			2																	

**Table 7—continued**

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
SDM(0)																		1		
CJA(0)																				1
EPL(0)																		1		
OPA(0)																				1
HIS(0)																				1
ALL(0)																		1		
EUC(0)																		1		
PAM(0)																		1		
PCH(0)																		1		
CDY(0)																1				
SUN(0)																		1		
KWH(0)																		1		
BAR(0)										1										
JMM(0)				1																
BCR(0)							1													
DCO(0)										1										
BCD(0)							1													
KIC(0)				1																
PDO(0)												1								
GUR(0)												1								
MAK(0)										1										
GAT(0)																			1	
TOD(0)																			1	
WHX(0)																	1			
CAL(0)																				1
PNN(0)																				1
DHO(0)																			1	
BCO(0)										1										
RSN(0)									1											
EGA(0)																				1
PLT(0)																				
EPO(0)					1											1				
MOK(0)										1										
LAE(0)													1							
TLO(0)																1				
BTA(0)														1						
STN(0)					1															

**Table 8: Ling longline fishery. Total annual bycatch estimates (t) for individual species with at least 1 t of bycatch in at least one year, based on observer catch rates; blank cells less than 1 t. Species are ordered by decreasing total catch. The slope of a regression through the data points is shown in parentheses alongside each species code (see <http://marlin.niwa.co.nz> for species code definitions).**

	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
SPD(0.1)	101	696	1504	590	1802	2893	750	429	611	3517	2110	1516	2420	2197	801	4613	4802	1679	2225
RIB(0)	436	218	720	255	3001	107	489	383	261	344	125	255	137	887	386	482	412	2316	2254
SSK(0.2)		35	515	1384	182		373	792	452	157	124	183	122	196	246	351	192	185	142
RSK(0.5)						286	50		9	3	427	1112	362	17	154	1572	376	37	50
BCD(0.1)			111	504				307	63		243	558	195			807	1192		6
RCO(0.1)	55	196	37	89	17	20	11	517	308	642	218	367	106	217	186	255	146	292	13
SPE(0.1)	96	8	274	53	359	223	90	45	54	340	137	180	227	282	248	317	293	15	317
GSP(0.4)	57						91	43	55	83	119	96	346	23	15	944	682	91	190
SCH(0.1)	1	53	128	23	171	107	20	70	78	147	93	106	63	137	129	368	265	396	37
SHA(0.2)		102	103	13	20		13	128	357	88	56	102	362	32	84	28	478	243	149
SND(0.3)			25		39		29	93	94	97	30	141	15	657	308	90		124	585
BNS(0)	1198	106		2	27	73	67	6	20	2	8	6	43	47	117	15	24	2	8
ETM(0)							1251	228	152	30	16			3	47				
NOT(-0.3)	1102		491	12					4	79									
HCO(0.5)				3			32		62	14	1	44	2	50	99	246	118	194	624
CON(-0.1)	136	48	184	33	246		42	37	12	182	67	24	54	29	104	121	89		10
GSH(0)	70	6	178	128	114	87	6	37	1	119	67	24	123	66	79	125	142	13	21
BSH(0.2)	5		30	80	6	11	26	7	74	24	109	23	24	190	153	29	22	350	62
CSQ(0.4)								55				29			356	35		89	279
SKA(-0.4)	201		168	63	67	7	27	25	37	55	55	16	7		1				
HAG(0.3)		81			25	1		1	10	18	22	11	48	14	119	46	36	32	45
HAP(0.1)	60		4	3	40	19		14	20	12	21	7	6	34	80	27	17	66	8
NSD(0.2)					26		117			21	9	53	86	23	68	3	4		
RAT(0.3)			13	14			12	28	18	18	33	56	28	10	17	34	88	21	6
PLS(0.2)					17							15			19			1	239
HAK(0.2)	2		2	2	4	1	3	2	1	5	2	3	2	2	3	3	28	2	215
CAR(0.3)					2		2		2	1	7	1	13	16	92	32	2	6	46
ASR(0.2)							9	2	8	49	60	61	3	6	3		10	1	6
BAS(0.2)			1		10	19	18		8	3	6	4	21	18	38	2	1		39
ETL(0.1)			16	35	15	1	3	9	1	6	7	4	12	3	2	4		9	28
DWE(0)						128	1					5			20				
SSH(0)							145				1		1		2				
CHI(0.1)							64		1	14	35	9							25
SEE(0.2)													76	8			53		1
RBM(-0.1)	57		4		29		8	5	1	3	1	1	1	5				2	1
CHP(0)	23																93		
HPB(-0.1)		37	4	3	10	4				1		1			29	13			
SCO(0)			64								21						14		
ETB(0.2)									1	40	4	28				11	1	5	6
CHG(0.1)							1			13						29	30		
HEX(0.2)										6	2	1	26	1		7	13		
CYO(0)							55												
POS(0)			1	1	1		3	12	9	2	7	5	2		4		1		6
ANT(0)								2	3		11	21		1					
DSK(0)										1	12	20							
BWS(0)				1	7		2	6	6	1	1		2	3	4				
SQA(0)														32					
SCM(0)							2	30											
PTO(0.1)							3												22
HOK(0.2)								1				1		2	3		3		14

**Table 8—continued**

	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
SPO(0)					20					1		1							
CYP(0)								2	1			1				13			
BCO(0)				5							2				1	6			
DCS(0.1)													2			1	1		9
STA(0)								1	1	2	1	3		3					
JAV(0.1)								2	1	2	1		1	1					2
CRB(0)									1		2	6							
TOA(0.1)							2		1	1			1				1	1	1
AST(0)							4	1							2				
BRC(0)															7				
BTH(0)													7						
CEN(0)										5									
EEL(0)									5										
SBR(0)											1	2	1						
BYS(0)															4				
MAK(0.1)											1			1					2
CSH(0)															4				
HEP(0.1)												1							3
GSC(0)				1												1	1		
PSK(0)											1	1	1						
PKN(0)																3			
TRU(0)											3								
HYD(0)											2	1							
APR(0)							1	1					1						
SEV(0)						1					1	1							
HYB(0)											1		2						
GAS(0)												1		1					
PSI(0)																2			
BYX(0)	1						1												
OFH(0)															2				
THR(0)																	2		
PNE(0)																	2		
ETP(0)																		2	
SNR(0)														2					
ONG(0)											1	1							
WWA(0)	2																		
SKI(0)													1		1				
ELT(0)																2			
TAR(0)															1				
COU(0)												1							
MOD(0)																			1
TOP(0)																			1
HMT(0)																	1		
SOT(0)															1				
SPI(0)										1									
ECN(0)							1												
OCT(0)												1							
ROC(0)															1				
CPA(0)																			1
SBO(0)															1				
ODO(0)																1			
BSP(0)					1														
ECH(0)							1												

**Table 9: Regression slopes for each species/species group and fishery, from Tables 1–8. Slopes indicating a decline in bycatch over time are highlighted in red, and slopes indicating an increase in bycatch over time are highlighted in green. Species/species groups are ordered alphabetically; blank cells = not estimated; LLL = ling longline fishery; HHL = hoki/hake/ling fishery.**

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
ABR						0.00	0.00		<i>Alepisaurus brevirostris</i>
ACA			0.00			0.00	0.00	0.00	<i>Acanthephyra</i> spp.
ACN						0.00	0.00		<i>Acanella</i> spp.
ACS	0.00	0.02	0.18	0.00		0.11	0.00	0.17	Actinostolidae
ACT		0.00	0.00			0.00	0.00	0.00	<i>Achiropsetta tricholepis</i>
ADT			0.00						<i>Aphrodita</i> spp.
AER		0.00	0.00			0.00	0.00	0.00	<i>Aeneator recens</i>
AFO			0.05			0.00	0.00	0.00	<i>Aristaeomorpha foliacea</i>
AGR	0.00	0.00	0.00		0.00	0.00	0.00	-0.21	<i>Agrostichthys parkeri</i>
AIR			0.00				0.00		<i>Argyripnus iridescens</i>
ALB		0.04	0.00		0.10			0.00	<i>Thunnus alalunga</i>
ALL			0.03			0.00		0.00	<i>Alcithoe larochei</i>
AMA		0.00	0.00				0.00	0.00	<i>Acesta maui</i>
ANC					0.02	0.00			<i>Engraulis australis</i>
ANO						0.00	0.00	0.00	<i>Anoplogaster cornuta</i>
ANP						0.00	0.00	0.00	<i>Anotopterus pharao</i>
ANT	0.00	0.01	-0.02	0.03		0.07	-0.01	0.11	Anthozoa
ANZ		0.03	0.00					0.00	<i>Ecionemia novaezelandiae</i>
APD		0.00	0.00						Aphroditidae
API	0.00	-0.04	0.02					0.00	<i>Alertichthys blacki</i>
APR		0.03	0.08	-0.01	0.00	0.08	0.04	0.10	<i>Apristurus</i> spp.
ARN					0.00				<i>Argonauta nodosa</i>
ASR	0.01	0.16	0.18	0.22	0.00	0.03	-0.02	0.23	Asteroidea <sup>2</sup>
AST		0.00	-0.02	0.00		0.00	0.00		Astronesthinae (Subfamily)
ATR			0.00			0.00	0.00	0.00	Actiniaria (Order)
AWA	0.00		0.00			0.00	0.00	0.00	<i>Astrothorax waitei</i>
AWI		0.00	0.00					0.00	<i>Alcithoe wilsonae</i>
BAC						-0.04		0.00	<i>Bathygadus cottoides</i>
BAF						0.00	0.00	0.00	Black anglerfish
BAM			0.00					0.00	<i>Bathylotes</i> spp.
BAR	0.01	-0.01	0.00		0.06	0.00	0.00	-0.08	<i>Thyrsites atun</i>
BAS		0.02	-0.22	0.15	0.00	0.00		0.08	<i>Polyprion americanus</i>
BAT		-0.01	0.00			0.01	-0.01	0.00	<i>Rouleina</i> spp.
BBA					0.00	0.00		0.00	<i>Nesiarchus nasutus</i>
BBE	-0.02	0.07	-0.02		0.00	-0.04	0.05	0.05	<i>Centriscops humerosus</i>
BCA	0.00	0.00				0.00	0.00	-0.11	<i>Magnisudis prionosa</i>
BCD	0.00	0.27	-0.01	0.14		0.00		0.00	<i>Paranotothenia magellanica</i>
BCO	-0.04	0.16	0.00	0.03	-0.06	0.00	0.00	-0.02	<i>Parapercis colias</i>

<sup>2</sup> Includes the MPI code SFI

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
BCR		0.00	-0.01			0.00	0.00	-0.02	<i>Brotulotaenia crassa</i>
BDA								0.00	<i>Sphyræna novaehollandiae</i>
BEE		0.00	0.01		0.00	-0.04	0.16	0.06	<i>Diastobranchnus capensis</i>
BEL	0.00	0.18	0.04		0.00	0.00	0.00	0.19	<i>Centriscope spp.</i>
BEN	0.00		0.00		0.10	0.00	0.00	0.26	<i>Benthodesmus spp.</i>
BER		0.00	-0.07		0.00	0.00	0.00	-0.06	<i>Typhlonarke spp.</i>
BES		0.00	0.00			0.00	0.00	0.02	<i>Benthopecten spp.</i>
BFE						0.00	0.00		<i>Bathysaurus ferox</i>
BFI						0.01	0.00	0.01	<i>Bathophilus filifer</i>
BFL		0.01						0.00	<i>Rhombosolea retiaria</i>
BGZ		0.12						0.00	<i>Kathetostoma binigrasella</i>
BHE		0.00	0.00			0.00	0.00	0.00	<i>Bathypsectinura heros</i>
BIG		0.03			0.00			-0.02	<i>Thunnus obesus</i>
BIV		0.00	0.00			0.00	0.00	0.00	Bivalvia
BJA						-0.03		0.00	<i>Mesobius antipodum</i>
BKM					0.03			-0.05	<i>Makaira indica</i>
BLO						0.00		0.00	<i>Bathypterois longifilis</i>
BNE	0.00		0.00		0.02	0.00	0.00	0.03	<i>Benthodesmus elongatus</i>
BNO			0.00			0.00	0.00	0.00	<i>Benthoctopus spp.</i>
BNS	0.00	-0.06	-0.29	-0.04	-0.07	-0.15	0.01	-0.09	<i>Hyperoglyphe antarctica</i>
BNT			0.00		0.00			-0.01	<i>Benthodesmus tenuis</i>
BOA	-0.04	0.00	-0.03		0.00	0.00		-0.01	<i>Paristiopterus labiosus</i>
BOC		0.02	0.05			0.00		0.00	<i>Bolocera spp.</i>
BOE	0.00	0.00	0.00			-0.18	0.01	0.02	<i>Alloctytus niger</i>
BOO			0.00			0.02	0.00	0.00	<i>Keratoisis spp.</i>
BOT	0.00	0.02	0.00		0.00	0.00	0.00	0.00	Bothidae
BPE		0.00	-0.03		-0.09			-0.01	<i>Caesioperca lepidoptera</i>
BPF		0.00						0.00	<i>Notolabrus fucicola</i>
BPI		0.00	0.00			0.00	0.00	0.04	<i>Benthopecten pikei</i>
BRA		0.00			-0.12		0.00	0.02	<i>Dasyatis brevicaudata</i>
BRC	0.00	0.00	-0.12	0.04	0.00	-0.02	0.00	0.01	<i>Pseudophycis breviuscula</i>
BRE			0.00		0.00	0.00		0.00	<i>Bregmaceros macclellandi</i>
BRG			0.00			0.12	0.00	0.00	Brisingida
BRI	0.00	0.00	0.00					0.00	<i>Colistium guntheri</i>
BRN		0.00	0.00			0.00	0.00	0.00	Cirripedia (Class)
BRS	-0.01	0.00						-0.01	<i>Echinorhinus brucus</i>
BRZ		0.00	0.02		0.00			0.00	<i>Xenocephalus armatus</i>
BSH	-0.01	-0.06	-0.11	0.19	0.00	-0.06	0.02	0.02	<i>Dalatias licha</i>
BSK		0.22	0.00		-0.03	-0.01	0.00	-0.14	<i>Cetorhinus maximus</i>
BSL						-0.13	0.02	0.10	<i>Xenodermichthys spp.</i>
BSP	0.00	0.00	0.00	-0.02	0.00	0.00	0.00	-0.04	<i>Taractichthys longipinnis</i>
BSQ	-0.03	0.00	0.00			-0.04	0.00	-0.09	<i>Sepioteuthis australis</i>
BTA			0.01		0.00	0.00		0.00	<i>Brochiraja asperula</i>
BTD							0.00		<i>Bentbodytes sp.</i>
BTE						0.00	0.00	0.00	<i>Benthoctopus tegginmathae</i>

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
BTH	-0.05	0.02	0.12	0.02		0.07	0.02	0.11	<i>Notoraja</i> spp.
BTP						0.00	0.00		<i>Bathypathes</i> spp.
BTS			-0.09			0.00		0.00	<i>Brochiraja spinifera</i>
BTU		0.00			0.00	0.00		0.00	<i>Gasterochisma melampus</i>
BUT						0.00		0.00	<i>Odax pullus</i>
BWH		0.00	0.07		0.06	0.01			<i>Carcharhinus brachyurus</i>
BWS		0.04	0.00	-0.02	0.03	0.00	0.00	-0.06	<i>Prionace glauca</i>
BYD			0.00		0.00	0.00	0.00	0.04	<i>Beryx decadactylus</i>
BYS	0.00	0.01	0.00	0.03	0.00	0.13	0.00	0.26	<i>Beryx splendens</i>
BYX	0.00	0.02	-0.25	-0.05	-0.01	-0.31	0.00	-0.15	<i>Beryx splendens</i> & <i>B. decadactylus</i> <sup>3</sup>
CAL			0.03			0.00	0.00	0.00	<i>Caenopedina porphyrogigas</i>
CAM		0.00	0.08			0.00	0.00	0.00	<i>Camplyonotus rathbunae</i>
CAN						0.00	0.00		<i>Cataetyx niki</i>
CAR	0.00	0.29	0.17	0.34	-0.30	-0.02	0.00	0.14	<i>Cephaloscyllium isabellum</i>
CAS	0.00							-0.08	<i>Coelorinchus aspercephalus</i>
CAX						0.00	0.00		<i>Cataetyx</i> sp.
CAY		0.00	0.00			0.00	0.02	0.00	<i>Caryophyllia</i> spp.
CBA						0.00		0.00	<i>Coryphaenoides dossenus</i>
CBB		0.03	0.04			0.14	0.00		Coral rubble dead
CBD		0.09			0.00	0.02	0.03	0.00	Coral rubble
CBE		-0.03	-0.03		0.02	0.00		0.03	<i>Notopogon lilliei</i>
CBI						0.00	0.00	-0.02	<i>Coelorinchus biclinozonalis</i>
CBO	-0.06	-0.03	-0.03			0.01	0.00	-0.14	<i>Coelorinchus bollonsi</i>
CBR						0.00	0.00		Dendrophylliidae, Oculinidae, Caryophyllidae
CBX								0.00	<i>Cubiceps baxteri</i>
CCA		0.00						0.02	<i>Cubiceps caeruleus</i>
CCO			0.03			0.00	0.00	0.04	<i>Coelorinchus cookianus</i>
CCR		0.01	0.00			0.00			<i>Cetonus crassiceps</i>
CDL		0.00	0.00		-0.01	-0.17	0.01	0.00	Epigonidae <sup>4</sup>
CDO	0.00	0.13	0.02		0.10	0.00	0.00	0.20	<i>Capromimus abbreviatus</i>
CDX		0.00	0.16			0.00		0.00	<i>Coelorinchus maurofasciatus</i>
CDY		0.00	0.02			0.00		0.00	<i>Cosmasterias dyscrita</i>
CEN				0.00		-0.05		0.00	Squalidae
CEP					0.00	0.00		0.00	<i>Cepola haastii</i>
CER						0.00	0.00	0.00	<i>Ceratias</i> spp.
CFA						0.00		0.00	<i>Coelorinchus fasciatus</i>
CFU		0.00				0.00		0.00	<i>Corallistes fulvodesmus</i>
CHA						0.00	0.00	0.02	<i>Chauliodus sloani</i>
CHC		0.04				0.00		0.00	<i>Chaceon bicolor</i>
CHG				0.12		0.02	0.06	0.02	<i>Chimaera lignaria</i>
CHI	0.00	0.00	-0.03	0.08		0.11	0.00	-0.08	<i>Chimaera</i> spp.
CHM								0.00	Chiasmodontidae

<sup>3</sup> Includes the MPI code BYC

<sup>4</sup> Includes the MPI code EPT



Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
CHP				0.00		0.04	0.09	0.02	<i>Chimaera</i> sp.
CHQ						0.00	0.00	0.03	Cranchiidae
CHR		0.00				0.00	0.05		<i>Chrysogorgia</i> spp.
CHX		0.00	-0.05			0.00	0.00	0.02	<i>Chaunax pictus</i>
CIC		0.00	0.00			0.00	0.00	0.00	<i>Crella incrustans</i>
CIN						0.00			<i>Coelorinchus innotabilis</i>
CJA	0.00	0.00	0.03			0.00	0.00	0.10	<i>Crossaster multispinus</i>
CJX						0.00		0.00	<i>Coelorinchus mycterismus</i>
CKA						0.00	0.00	0.00	<i>Coelorinchus kaiyomaru</i>
CKX						0.00	0.00		<i>Coelorinchus trachycarus</i> & <i>C. acanthiger</i>
CLL						0.00	0.00		<i>Corallium</i> spp.
CMA						0.00			<i>Coelorinchus matamua</i>
CMR			0.00					0.00	<i>Coluzea mariae</i>
CMT		0.00	0.00			0.00		0.00	Comatulida
CMU						0.00	0.02	-0.02	<i>Coryphaenoides murrayi</i>
COB		0.00	0.00		0.00	0.02	0.00	0.00	Antipatharia (Order)
COC		0.00	0.00					0.00	<i>Austrovenus stutchburyi</i>
COD		0.00	0.00			0.03	0.00	-0.02	Cod
COE						0.00	0.00	0.00	Coelenterata
COF		0.03	0.00			0.00	0.00	0.03	<i>Flabellum</i> spp.
COL			0.05			-0.02		0.02	<i>Coelorinchus oliverianus</i>
CON	-0.02	0.08	0.02	-0.09	-0.06	-0.04	0.00	0.12	<i>Conger</i> spp.
COR		0.00	-0.01	0.00		0.02	0.00	0.00	Stylasteridae (Family)
COT		0.00				0.00	0.00	0.00	<i>Cottunculus nudus</i>
COU		-0.01	0.05	0.01		0.06	0.03	-0.01	Corals (all)
COV			0.00					0.00	<i>Comitas onokeana vivens</i>
CPA		0.00	0.03	0.04		0.00	0.00	0.10	<i>Ceramaster patagonicus</i>
CPD						0.00		-0.03	Centrolophidae
CRA		-0.01	0.00		0.00	0.00	0.00	-0.02	<i>Jasus edwardsii</i>
CRB	0.00	-0.07	-0.09	0.02	0.00	-0.01	0.00	0.04	Crab
CRD						0.00		0.00	<i>Coryphaenoides rudis</i>
CRE						0.00	0.00	0.00	<i>Calyptopora reticulata</i>
CRI		0.00	0.00			0.00	0.00	0.00	Crinoidea
CRM		0.12	0.00		0.00	0.00	0.00	0.00	<i>Callyspongia cf ramosa</i>
CRN		0.04				0.00	0.00	0.00	Sea lily, stalked crinoid
CRS		0.00				-0.01		0.00	<i>Callyspongia ramosa</i>
CRU		-0.04	-0.05		0.00	0.00	0.00	-0.01	Crustacea
CSE						0.00			<i>Coryphaenoides serrulatus</i>
CSH	0.00	0.08	0.05	0.03	-0.08	-0.04	-0.01	0.16	Catshark
CSP		-0.01						0.00	<i>Coelorinchus spathulatus</i>
CSQ	-0.03	-0.05	0.01	0.35		0.09	0.03	0.06	<i>Centrophorus squamosus</i>
CST						0.00	0.00	-0.01	<i>Caristius</i> sp.
CSU						0.04		0.00	<i>Coryphaenoides subserrulatus</i>
CTN		0.00	0.00						<i>Calliostoma turnerarum</i>
CTU		0.00	0.00					-0.01	<i>Cookia sulcata</i>
CUB	0.00	0.00	0.00			0.00	0.00	-0.03	<i>Cubiceps</i> spp.

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
CUC	0.00	-0.02	-0.12		-0.02	0.00	0.00	0.00	<i>Paraulopus nigripinnis</i>
CUP						0.00	0.00	0.00	Flabellidae, Fungiacyathidae, Caryophyllidae (Families)
CVI			0.04					0.00	<i>Pycnoplax victoriensis</i>
CYL		0.00	0.00			0.10	0.00	0.19	<i>Centroscymnus coelolepis</i>
CYO	0.00	0.00		-0.03		0.15	0.00	0.09	<i>Centroscymnus owstoni</i>
CYP	0.00	0.00	0.02	0.04		0.23	0.13	0.10	<i>Centroscymnus crepidater</i>
DAP		0.00	0.12			0.00		0.00	<i>Daganaudus petterdi</i>
DAS		0.00	0.02		0.00	0.00			<i>Pteroplatytrygon violacea</i>
DCO			0.00				0.00	0.00	<i>Notophycis marginata</i>
DCS	0.00	0.00	-0.11	0.14	0.00	-0.02		-0.05	<i>Bythaelurus dawsoni</i>
DDI			0.00			0.04	0.02	0.00	<i>Desmophyllum dianthus</i>
DEA	0.00	0.00	0.00		0.00	0.00	0.00	-0.12	<i>Trachipterus trachipterus</i>
DEQ						-0.02		-0.02	<i>Deania quadrispinosum</i>
DGT		0.00	0.00		0.00				Callionymidae
DHO		0.00	0.03			0.00	0.00	0.02	<i>Dermechinus horridus</i>
DIR		0.00	0.13		0.00	0.00	0.00	0.00	<i>Diacanthurus rubricatus</i>
DIS		0.00			0.00	0.00	0.00	0.00	<i>Diretmus argenteus</i>
DMG		0.00	0.08	0.00		0.00	0.00	0.08	<i>Dipsacaster magnificus</i>
DPO						0.00		-0.02	<i>Desmodema polystictum</i>
DPP		0.00	0.00			0.00	0.00	0.00	<i>Diplopteraster</i> sp.
DPX						0.00	0.00		<i>Diplacanthopoma</i> sp.
DSE		0.00				0.00	0.00	0.00	<i>Derichthys serpentinus</i>
DSK	0.00	0.02	-0.18	0.03		0.05	-0.05	0.11	<i>Amblyraja hyperborea</i>
DSP	-0.02	0.06	0.00			0.00		0.00	<i>Congiopodus coriaceus</i>
DSS					0.00	0.00	0.00	-0.01	<i>Bathylagus</i> spp.
DWE	0.00	0.00	-0.07	0.00	0.00	-0.03	0.00	0.20	Deepwater eel
DWO	0.00	0.00	0.01		0.00	0.00	0.00	0.16	<i>Graneledone</i> spp.
ECH		0.00	-0.05	-0.01		-0.01	0.00	-0.02	Echinodermata (Phylum)
ECN		0.00	0.13	-0.01		0.01	0.00	-0.02	Echinoid <sup>5</sup>
EEL	0.00	0.00	-0.15	-0.01	0.00	0.02	0.00	-0.04	Eel
EEX		0.06				0.00		0.00	<i>Enypniastes eximia</i>
EGA		0.00	0.03		0.00	0.00		0.00	<i>Euciroa galatheae</i>
EGR					0.11			0.00	<i>Myliobatis tenuicaudatus</i>
ELE		0.00	0.00		0.05	0.00	0.00	0.00	<i>Callorhinchus milii</i>
ELP		0.00	0.00		0.00	0.00	0.00	0.00	<i>Elthusa propinqua</i>
ELT				0.03		0.00	0.00	0.00	<i>Electrona</i> spp.
EMA	0.01	0.00	0.00		0.02			-0.20	<i>Scomber australasicus</i>
EMO		0.00	-0.02			0.00		0.01	<i>Etmopterus mollerii</i>
ENE		0.00	0.00			0.00	0.00		<i>Elthusa neocytt</i>
EPD			0.00					0.03	<i>Epigonus denticulatus</i>
EPL		0.00	0.03		0.00	-0.12	-0.03	0.20	<i>Epigonus lenimen</i>
EPO			-0.02			0.00	0.00	0.00	<i>Melanostigma gelatinosum</i>
EPR		0.00	0.05			0.07	0.00	0.16	<i>Epigonus robustus</i>

<sup>5</sup> Includes the MPI code URO

Species	Fishery									Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL		
EPZ						0.00	0.00	0.00		<i>Epizoanthus</i> spp.
ERA	0.00	0.01	0.00		-0.01	0.00	0.00	0.03		<i>Torpedo fairchildi</i>
ERE						0.00	0.00	0.00		<i>Euplectella regalis</i>
ERO		0.00				0.07	0.00			<i>Enallopsammia rostrata</i>
ERR		0.00				0.00	0.00			<i>Errina</i> spp.
ESO		0.00	0.00			0.00				<i>Peltorhamphus novaezeelandiae</i>
ETB	-0.03	0.06	0.04	0.22	0.00	0.10	0.29	0.21		<i>Etmopterus baxteri</i>
ETL	0.00	0.08	0.08	0.06	0.00	-0.13	0.08	0.06		<i>Etmopterus lucifer</i>
ETM	0.00	-0.03	-0.03	0.00		0.00	0.11	-0.27		<i>Etmopterus</i> sp.
ETP				0.04		-0.04	-0.01	-0.01		<i>Etmopterus pusillus</i>
EUC		0.00	0.03			-0.02	0.00	0.13		<i>Euclichthys polynemus</i>
EZE		0.03	0.05			0.00	0.00	0.00		<i>Enteroctopus zealandicus</i>
FAN						0.00		0.00		<i>Pterycombus petersii</i>
FAR		0.00				0.00	0.00	0.00		<i>Farrea</i> spp.
FHD	0.00	0.07	0.04	0.00	0.00	0.00	0.00	0.10		<i>Hoplichthys haswelli</i>
FLA	0.00	0.20	-0.02		0.00	0.00		0.02		Flatfish
FLO		0.02	0.00			0.00	0.00	-0.01		Flounder
FLY		0.00	0.00			0.00				Exocoetidae
FMA	0.00	0.02	0.13	0.00		0.00	0.00	0.19		<i>Fusitriton magellanicus</i>
FOR					0.01		0.00	0.00		<i>Forsterygion</i> spp.
FOX		0.00			0.00					<i>Bodianus flavipinnis</i>
FRO	0.01	0.13	-0.06		0.04	-0.04	0.00	-0.10		<i>Lepidopus caudatus</i>
FRS		0.00				-0.05	0.00	-0.02		<i>Chlamydoselachus anguineus</i>
FRX			0.00					-0.01		Trichiuridae
FTU	0.00	0.02			0.00			0.00		<i>Auxis thazard</i>
GAO						0.00	0.00	0.00		<i>Gadomus aoteanus</i>
GAR		0.00	0.00					0.00		<i>Hyporhamphus ihi</i>
GAS		0.00	0.20	0.02	0.00	0.00	0.00	0.06		Gastropoda
GAT			0.03			0.00	0.00	0.00		<i>Gastroptychus</i> spp.
GBI		0.00								Gobiidae (Family)
GDU		0.00	0.06			0.20	0.17	0.00		<i>Goniocorella dumosa</i>
GFL		0.13	0.00							<i>Rhombosolea tapirina</i>
GGL						0.00	0.00			<i>Guttigadus globosus</i>
GIZ		0.00	-0.01							<i>Kathetostoma giganteum</i>
GLO						0.00				<i>Glyphocrangon lowryi</i>
GLS	0.02	0.00	0.00		0.00	0.05	0.00	0.11		Hexactinellida (Class)
GMC	0.00	0.03	0.20					0.00		<i>Leptomithrax garricki</i>
GMU		0.00			0.00			0.00		<i>Mugil cephalus</i>
GOB		0.00				0.00	-0.01	0.00		<i>Mitsukurina owstoni</i>
GOC		0.00			0.00	0.00	0.00	0.00		Gorgonacea (Order)
GON		0.30	0.00		0.00	0.00		0.05		<i>Gonorynchus forsteri</i> & <i>G. greyi</i>
GOR		0.00	0.00			0.00	0.00	0.06		<i>Gorgonocephalus</i> spp.
GOU		0.00				0.00		0.00		<i>Goniocidaris umbraculum</i>
GPA		0.00	0.00			0.00	0.00	0.00		<i>Goniocidaris parasol</i>
GPF		0.00								<i>Notolabrus cinctus</i>
GRC		0.00				0.02	0.09	-0.01		<i>Tripterophycis gilchristi</i>

Species	Fishery									Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL		
GRM		0.00	0.00			0.00	0.03	0.07		<i>Gracilechinus multidentatus</i>
GSA			0.00					-0.01		<i>Hoplostethus gigas</i>
GSC	0.00	0.41	0.08	0.03		0.00	0.00	0.05		<i>Jacquiniotia edwardsii</i>
GSH	-0.13	0.13	0.02	0.00	-0.33	-0.18	-0.20	-0.11		<i>Hydrolagus novaezealandiae</i>
GSP	0.12	0.19	0.16	0.41	0.00	0.15	0.22	0.19		<i>Hydrolagus bemisi</i>
GSQ	-0.02	0.02				0.02	0.00	0.02		<i>Architeuthis</i> spp.
GST	0.00	0.00				0.00	0.00	0.00		Gonostomatidae
GUL						0.00	0.00	0.00		<i>Eurypharynx pelecanoides</i>
GUR	0.00	0.01	0.00		-0.03	0.00		0.03		<i>Chelidonichthys kumu</i>
GVE		0.00					0.00	0.00		<i>Geodia vestigifera</i>
GVO		0.00	0.10			0.00	0.00	0.02		<i>Provocator mirabilis</i>
GYS						0.00		0.00		<i>Gyrophyllum sibogae</i>
HAG	0.00	0.00	-0.03	0.30	0.00	0.00	0.00	0.24		<i>Eptatretus cirrhatus</i>
HAK	-0.05	0.03	-0.03	0.16	-0.04	0.01	0.04			<i>Merluccius australis</i>
HAL						0.00		0.03		<i>Halosauropsis macrochir</i>
HAP	0.00	0.13	-0.08	0.13	0.04	0.00		-0.02		<i>Polyprion oxygeneios</i>
HAT		0.00	0.00		-0.02	0.00	0.00	0.00		Sternoptychidae
HCO	-0.03	0.03	0.02	0.48		-0.01	0.00	-0.03		<i>Bassanago hirsutus</i>
HDF		0.00			0.00	0.00	0.00	0.00		Leptomeduseae, Anthoathecatae (Orders)
HDR		0.00			0.00	0.00	0.00	0.00		Hydrozoa (Class)
HEC			0.00			0.00	0.00	0.00		<i>Henricia compacta</i>
HEP		0.00	-0.02	0.06	-0.03	0.00	0.00	0.01		<i>Heptranchias perlo</i>
HEX		0.07	-0.06	0.16	0.00			0.12		<i>Hexanchus griseus</i>
HGB						0.02	0.00	0.00		<i>Hydrolagus</i> sp. d
HIA	0.00					0.00	0.00	0.00		<i>Himantolophus appeli</i>
HIS			0.03			0.00				<i>Histocidaris</i> spp.
HJO	0.00	0.00	0.01			0.09	0.10	0.02		<i>Halargyreus johnsonii</i>
HMT	0.00	0.00	0.14	0.03	0.00	0.00	0.00	0.08		Hormathiidae
HOK	-0.18	0.04	-0.06	0.17	-0.12	-0.03	0.14			<i>Macruronus novaezealandiae</i>
HOL	0.00					0.00	0.00	0.01		<i>Holtbyrnia</i> sp.
HOR		0.00						0.01		<i>Atrina zelandica</i>
HOW								0.00		<i>Howella brodiei</i>
HPB	0.00	-0.12	-0.21	-0.12	-0.22	0.00		-0.22		<i>Polyprion oxygeneios</i> & <i>P americanus</i>
HPE						0.00		0.00		<i>Halosaurus pectoralis</i>
HSI		0.00	0.24			0.00	0.00	0.00		<i>Haliporoides sibogae</i>
HTH	0.00	-0.03	0.09	0.00	0.00	0.14	0.03	0.11		Holothurian unidentified <sup>6</sup>
HTR	0.00	0.00	0.03			0.00	0.00	0.11		<i>Hippasteria phrygiana</i>
HYA	0.00	0.06	0.04		0.00	0.04	0.00	0.27		<i>Hyalascus</i> sp.
HYB				0.02		0.00		0.00		<i>Hydrolagus homonycteris</i>
HYD				0.01	0.00	0.01	0.02	0.04		<i>Hydrolagus</i> sp.
HYM			0.07							<i>Hymenocephalus</i> spp.
HYP	0.00					0.01	0.00	0.00		<i>Hydrolagus trolli</i>
IBR						0.09	0.03	0.00		<i>Isistius brasiliensis</i>

<sup>6</sup> Includes the MPI code SCC

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
ICQ	0.00					0.00			<i>Idioteuthis cordiformis</i>
IDI						0.00	0.00		<i>Idiacanthus</i> spp.
ISI						0.00	0.02	0.00	Isididae
JAV	0.08	0.25	-0.01	0.06	0.05	0.08	0.16	0.07	<i>Lepidorhynchus denticulatus</i>
JDO		0.01			-0.06			-0.02	<i>Zeus faber</i>
JFI	0.00	-0.09	-0.06		0.05	0.05	0.02	0.05	Jellyfish
JGU		-0.01	-0.07		-0.10			0.01	<i>Pterygotrigla picta</i>
JMA	0.00	-0.16	-0.15		-0.01	0.00	0.00	-0.27	<i>Trachurus declivis, T. murphyi, T. novaezelandiae</i>
JMD	0.01	-0.09	0.02		0.24	0.01		-0.07	<i>Trachurus declivis</i>
JMM	0.00	-0.20	-0.02		-0.05	-0.04		-0.32	<i>Trachurus murphyi</i>
JMN		-0.03	0.00		0.55	0.00		-0.06	<i>Trachurus novaezelandiae</i>
KAH		0.00			0.02			0.00	<i>Arripis trutta, A. xylabion</i>
KIC	0.00	0.00	-0.02	0.00		0.08	-0.02	0.10	<i>Lithodes murrayi, Neolithodes brodiei</i>
KIN	0.00	0.00	0.00		0.20	0.00	0.00	0.01	<i>Seriola lalandi</i>
KWH		0.00	0.03		0.00	0.00		0.02	<i>Austrofucus glans</i>
LAE			0.01			-0.03	-0.01	0.00	<i>Laemonema</i> spp.
LAG			0.07			0.00		0.00	<i>Laetmogone</i> spp.
LAM		0.00	0.00		0.00			0.00	<i>Geotria australis</i>
LAN	0.00	0.20	0.01		0.04	0.02	0.02	0.10	Myctophidae
LAT					0.00	0.00	0.00	0.00	<i>Alepisaurus ferox</i>
LCA						0.00		0.00	<i>Lophotus capellei</i>
LCH	-0.04	0.00	0.00	0.00	0.00	0.07	0.05	0.03	<i>Harriotta raleighana</i>
LCO		0.00				0.00			<i>Liocarcinus corrugatus</i>
LDO	-0.01	0.08	-0.03		0.11	-0.06	0.01	0.00	<i>Cyttus traversi</i>
LEA		0.00			-0.15				<i>Meuschenia scaber</i>
LEG						-0.05	0.00	0.01	<i>Lepidion schmidti &amp; Lepidion inosimae</i>
LEP						0.00	0.00		<i>Lepidocybium flavobrunneum</i>
LFB					0.00				<i>Zanclistius elevatus</i>
LHC		0.00	0.00			0.00		0.00	<i>Leptomithrax longimanus</i>
LHE							0.00	-0.03	<i>Lampanyctodes hectoris</i>
LHO			0.07			0.00	0.00	0.05	<i>Lipkius holthuisi</i>
LIN	-0.06	0.09	-0.12		-0.15	-0.08	-0.06		<i>Genypterus blacodes</i>
LIP		0.00	0.00			0.00			<i>Liponema</i> spp.
LIZ		0.00	0.00		0.00	0.00			<i>Synodus</i> spp.
LLC		0.06	0.00					0.00	<i>Leptomithrax longipes</i>
LLE						0.00	0.00	0.00	<i>Lepidisis</i> spp.
LMI		0.00	0.00						<i>Leptomithrax</i> spp.
LMU		0.00				0.02	0.00	0.06	<i>Lithodes murrayi</i> <sup>7</sup>
LNV			0.00			0.00	0.00	0.09	<i>Lithosoma novaezelandiae</i>
LPD								0.00	<i>Lampadena</i> spp.
LPI						0.01			<i>Lepidion inosimae</i>
LPS						0.00	-0.01	0.00	<i>Lepidion schmidti</i>
LPT		0.00				0.00	0.00		<i>Lepidothea</i> spp.

<sup>7</sup> Includes the MPI code LLT

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
LSE						0.00	0.00		<i>Leiopathes secunda</i>
LSK	0.00	0.02	0.08		0.00	-0.03	0.00	0.13	<i>Arhynchobatis asperrimus</i>
LSO	0.00	-0.02	0.00		0.00			-0.02	<i>Pelotretis flavilatus</i>
LUC	0.00	0.00	-0.05			-0.02	0.00	-0.02	<i>Luciosudus</i> sp.
LYC						0.00	0.00	0.00	<i>Lyconus</i> sp.
MAK	0.02	0.08	0.00	0.07	0.12	-0.06		-0.05	<i>Isurus oxyrinchus</i>
MAL						0.00	0.00	0.00	Malacosteidae
MAN	-0.05	-0.02	0.00		0.00	0.03	0.00	-0.11	<i>Neoachirosetta milfordi</i>
MCA						0.20	0.35	-0.01	<i>Macrourus carinatus</i>
MCH	0.00		0.00				0.00	0.00	<i>Notothenia angustata</i>
MCN						0.00	0.00	0.00	<i>Malacosteus niger</i>
MDO	0.00	0.06	0.08		0.00	-0.03	0.00	-0.01	<i>Zenopsis nebulosa</i>
MEJ						0.00	0.00	0.00	<i>Melanocetus johnsonii</i>
MEN						0.00	0.00	0.00	<i>Melanostomias</i> spp.
MGA			0.00						<i>Munida gracilis</i>
MIC	-0.03	0.00				0.00		0.00	<i>Microstoma microstoma</i>
MIN		0.00				0.00			<i>Minuisis</i> spp.
MIQ	-0.06	0.00	-0.11			-0.09	0.02	0.03	<i>Onykia ingens</i>
MMU		0.00							<i>Maurolicus australis</i>
MNI		0.00	0.07			0.00	0.00	0.00	<i>Munida</i> spp.
MOC		0.00				0.11	0.04		<i>Madrepora oculata</i>
MOD	0.00	0.00	-0.03	0.04	0.00	0.27	0.20	0.20	Moridae
MOK		-0.02	0.00		0.00	-0.02		-0.10	<i>Latridopsis ciliaris</i>
MOL		0.00	0.08	0.00		0.00	0.00	0.00	Mollusc
MOO	-0.17	0.02			-0.05	0.00	0.00	-0.15	<i>Lampris guttatus</i>
MOR			0.00	0.00		0.00	0.00	-0.01	Muraenidae (Family)
MPH						0.00	0.00		Melamphaidae
MRL							0.00	0.01	Muraenolepididae
MRQ						0.00	0.00	0.00	<i>Onykia robsoni</i>
MSL		0.00	0.09	0.00		0.00	0.00	0.00	<i>Mediaster sladeni</i>
MST						0.05	0.00	0.03	Melanostomiidae
MUR						-0.02	0.00		<i>Muraenolepis marmoratus</i>
MUU		0.00	0.00					0.00	Mullet
MYC								0.00	<i>Mycale</i> spp.
NAT	0.00	0.00	0.00		0.00	0.00	0.00	0.00	Natant decapod
NBI			0.00						<i>Neomyxine biniplicata</i>
NCA		0.12	0.00		0.00	0.00	0.00	0.00	<i>Nectocarcinus antarcticus</i>
NCB		0.52	0.00		0.00			0.02	<i>Nectocarcinus bennetti</i>
NEB	0.00	0.00	0.00			0.12	0.00	0.02	<i>Neolithodes brodiei</i>
NEC			0.00			0.00	0.00	0.00	<i>Nematocarcinus</i> spp.
NET			0.00			0.00		0.00	<i>Nettastoma parviceps</i>
NEX				0.01		0.00	0.00	0.01	Nemichthyidae
NMA			0.00						<i>Notopandalus magnoculus</i>
NOC			0.00			0.00	0.00	0.03	<i>Notacanthus chemnitzii</i>
NOG	0.00	-0.08	-0.04		-0.04	0.00		-0.03	<i>Nototodarus gouldi</i>
NOR						0.00	0.02	0.00	<i>Normichthys yahganorum</i>

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
NOS	0.00	0.10	-0.07		-0.04	0.00		0.03	<i>Nototodarus sloanii</i>
NOT	0.00	-0.09	-0.03	-0.31		0.01		0.00	Nototheniidae
NSD	0.00	0.02	-0.02	0.16	-0.15	0.00		0.23	<i>Squalus griffini</i>
NTO		0.02	0.00			0.00		0.00	<i>Notomithrax</i> spp.
NTU					0.00			0.00	<i>Thunnus thynnus</i>
NUD		0.00	0.10			0.00		0.00	Nudibranchia (Order)
OAP						0.00			<i>Ocosia apia</i>
OAR	0.00	0.00				0.00		-0.12	<i>Regalecus glesne</i>
OCP		0.00	0.02		0.00	0.00	0.00	0.00	Octopod
OCT	0.01	0.05	0.00	0.01	-0.02	0.00	0.00	-0.08	<i>Pinnoctopus cordiformis</i>
ODO	0.00	0.01	0.03	0.02	-0.04	0.00		-0.01	<i>Odontaspis ferox</i>
ODT		0.00	0.00			0.00	0.00	0.00	<i>Odontaster</i> spp.
OEO						-0.18		-0.11	<i>P. maculatus, A. niger, &amp; N. rhomboidalis</i>
OFH		0.00	-0.05	0.03	0.00	-0.02	0.00	-0.01	<i>Ruvettus pretiosus</i>
OMM	0.00	0.00				0.00		0.00	<i>Ommastrephes</i> spp.
OMU						0.00			<i>Odontomacrus murrayi</i>
ONG	-0.03	0.22	0.04	0.01	0.00	0.10	0.00	0.12	Porifera (Phylum)
OPA	-0.02	0.13	0.03		0.00			0.00	<i>Hemerocoetes</i> spp.
OPE		0.13	-0.08		-0.02	-0.01		-0.02	<i>Lepidoperca aurantia</i>
OPH	0.00	0.00	0.00			-0.01	0.00	0.00	Ophiuroid
OPI	0.00	0.00	0.08			0.00	0.00	0.23	<i>Opisthoteuthis</i> spp.
OPL		0.02	0.00		0.00				Opheliidae
ORH		0.00	-0.02		0.00		0.03	-0.05	<i>Hoplostethus atlanticus</i>
OSE						0.00	0.00	0.00	<i>Ophisurus serpens</i>
OSI			0.00			0.00	0.00	0.00	<i>Ophiocreas sibogae</i>
OSK	0.00	0.00	0.11		0.00	0.07	0.00	0.16	Rajidae (Family)
OSP	0.00	0.00	0.00			0.00	0.01	0.00	<i>Crassostrea gigas</i>
OSQ			0.00					0.00	Octopoteuthidae
OXO						0.00		0.00	<i>Oreosoma atlanticum</i>
PAB	0.00					0.06	0.14	0.00	<i>Paragorgia arborea</i>
PAD		-0.35	0.00		0.00			0.00	<i>Ovalipes catharus</i>
PAG		0.00	0.00			0.00		0.00	Paguroidea
PAH	0.25	0.00			0.00			0.01	<i>Lampris immaculatus</i>
PAL	0.00	0.00				0.00	0.00	0.01	Paralepididae
PAM		0.00	0.03			0.00	0.00	0.00	<i>Pannychia moseleyi</i>
PAO		0.00				0.00	0.00	0.02	<i>Pillsburiaster aoteanus</i>
PBA						0.00	0.00	0.00	<i>Pasiphaea barnardi</i>
PCH		0.00	0.03				0.00	0.00	<i>Penion chathamensis</i>
PCO			-0.06						<i>Auchenoceros punctatus</i>
PDG	0.00	0.06	0.01			-0.06	0.00	0.05	<i>Oxynotus bruniensis</i>
PDO			0.00			0.00		0.00	<i>Paphies donacina</i>
PDS	0.00		0.00			0.00	0.00	0.07	<i>Paradiplospinus gracilis</i>
PED			-0.04			0.00	0.00	0.00	<i>Aristaeopsis edwardsiana</i>
PFL			0.00					0.00	<i>Pseudechinus flemingi</i>
PHB		0.00				0.00	0.00	0.00	<i>Phorbas</i> spp.
PHO	0.00	0.07	0.00		0.00	-0.02	0.00	0.06	<i>Phosichthys argenteus</i>



Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
PHW	0.00	0.03	0.00		0.00		0.00	0.00	<i>Psammocinia cf hawere</i>
PIG	-0.09	0.26	0.09		0.00	0.00		0.08	<i>Congiopodus leucopaecilus</i>
PIL		0.00	0.00		0.23				<i>Sardinops sagax</i>
PIN						0.00	0.00	0.02	<i>Idiolorhynchus andriashevi</i>
PIP					0.00			0.00	Syngnathidae
PKI			0.00						<i>Polyipnus kiwiensis</i>
PKN				0.04		0.00	0.00	0.07	<i>Plutonaster knoxi</i>
PLM			0.00					0.00	<i>Plesionika martia</i>
PLS	0.00	0.03	0.01	0.17		0.01	0.02	-0.02	<i>Proscymnodon plunketi</i>
PLT			0.02			0.00	0.00	0.05	<i>Plutonaster spp.</i>
PLY			0.00			0.00	0.00	0.00	<i>Polycheles spp.</i>
PLZ			-0.07			0.00			<i>Pleuroscopus pseudodorsalis</i>
PMN						0.00	0.00		<i>Primnoa spp.</i>
PMO	0.00	0.00	0.00			0.00	0.00	0.03	<i>Pseudostichopus mollis</i>
PMU			0.07			0.00		0.00	<i>Paramaretia peloria</i>
PNE	0.00	0.00	0.04	0.03		0.00	0.00	0.00	<i>Proserpinaster neozelanicus</i>
PNN			0.03		0.00	0.00	0.00	0.00	<i>Pennatula spp.</i>
POL		0.00	0.00		0.00	0.00		0.00	Polychaeta
POM	0.02	0.00			0.00	0.00		0.00	Bramidae
POP		0.00			0.00			0.00	<i>Allomycterus jaculiferus</i>
POR	-0.03	-0.03			-0.01	0.00		-0.26	<i>Nemadactylus douglasii</i>
POS	0.03	0.06	0.00	0.05	-0.05	0.00	0.00	-0.08	<i>Lamna nasus</i>
POT		0.00			0.00				Parrotfish
PPA		0.00				0.00		0.00	<i>Projasus parkeri</i>
PRA	0.00	0.00	0.10			0.00	0.00	0.00	Prawn
PRK		0.00	0.18		0.00	0.00		0.00	<i>Ibacus alticrenatus</i>
PRO					0.01			0.00	<i>Protomyctophum spp.</i>
PRU		0.00	0.04			0.00	0.00	0.02	<i>Pseudechinaster rubens</i>
PSE			0.01			0.00	-0.01		<i>Pseudechinus spp.</i>
PSI	0.00	0.00	0.18	0.03	0.00	0.00	0.00	0.14	<i>Psilaster acuminatus</i>
PSK		0.02	0.06	0.02	0.00	0.13	0.00	0.18	<i>Bathyraja shuntovi</i>
PSL						-0.02	0.02		<i>Paralomis dosleini</i>
PSO							0.00	-0.03	<i>Psolus spp.</i>
PSP		0.00				0.00		0.04	<i>Psenes pellucidus</i>
PSQ	0.00	0.00	0.00			0.03	0.00	0.09	<i>Pholidoteuthis boschmai</i>
PSY	0.00	0.00	-0.05		0.00	0.04	0.02	-0.03	<i>Psychrolutes microporos</i>
PTA						0.00	0.00	0.00	<i>Pasiphaea aff. tarda</i>
PTM			0.00			0.00		0.00	<i>Platymaia maoria</i>
PTO		0.00	0.00	0.07			0.01	0.00	<i>Dissostichus eleginoides</i>
PTU			0.00		0.00	0.00	0.00	0.00	Pennatulacea (Order)
PUF					0.00	0.00		0.00	<i>Sphoeroides pachygaster</i>
PVE		0.00				0.00	0.00	0.00	<i>Pyramodon ventralis</i>
PZE	0.00		0.00				0.00	0.02	<i>Paralomis zealandica</i>
QSC		0.14		0.00	0.00			0.00	<i>Zygochlamys delicatula</i>
RAG	0.00	0.00	0.00		0.00	0.06	0.03	-0.11	<i>Pseudoicichthys australis</i>
RAT	-0.08	0.10	-0.02	0.26	-0.10	0.04	0.14	0.03	Macrouridae



Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
RAY		0.00	-0.07		-0.04	0.00	-0.02	0.02	Torpedinidae, Dasyatidae, Myliobatidae, Mobulidae
RBM	0.16	-0.13	0.00	-0.11	0.04	-0.01	0.00	-0.05	<i>Brama brama</i>
RBP		0.00			0.00			0.00	<i>Hypoplectrodes huntii</i>
RBT	0.01	0.04	0.04		0.06	0.00		0.06	<i>Emmelichthys nitidus</i>
RBV		0.03	-0.13		0.03	0.00		-0.19	<i>Plagiogeneion rubiginosum</i>
RCH	0.00					0.04	0.00	0.04	<i>Rhinochimaera pacifica</i>
RCK			0.02			0.00			Acanthoclinidae
RCO	0.02	0.05	-0.09	0.06	-0.30	0.00	0.00	-0.09	<i>Pseudophycis bachus</i>
RDO		0.23	0.00		0.06			0.20	<i>Cyttopsis roseus</i>
REM					0.00			0.00	Echeneididae
RGR		0.00	0.00			0.00	0.00	0.00	<i>Radiaster gracilis</i>
RHY		0.00	0.21		0.03	0.03	0.00	0.19	<i>Paratrachichthys tralli</i>
RIB	0.00	0.08	-0.17	0.05	0.00	-0.06	0.01	0.00	<i>Mora moro</i>
RIS		0.00				0.00	0.00	0.08	<i>Bathyraja richardsoni</i>
RMU	0.00							-0.02	<i>Upeneichthys lineatus</i>
ROC		0.02	-0.02	0.02		0.05	0.04	0.00	<i>Lotella rhacinus</i>
RPE		0.00	-0.04		0.00			0.00	Red perch
RPI		0.00			-0.02				<i>Bodianus vulpinus</i>
RRC						0.00			<i>Scorpaena cardinalis</i> & <i>S. papillosus</i>
RSC		0.00				0.02			<i>Scorpaena papillosa</i>
RSK	0.04	0.24	0.15	0.48	-0.10	0.02	0.00	0.12	<i>Zearaja nasuta</i>
RSN		0.00	0.00		-0.09			-0.02	<i>Centroberyx affinis</i>
RSQ	0.00	0.03	0.00			-0.08	0.00	0.08	<i>Ommastrephes bartrami</i>
RUD	0.00	0.00	-0.10		0.00	-0.03	-0.04	-0.02	<i>Centrolophus niger</i>
SAB						0.00	0.00	0.00	<i>Evermannella indica</i>
SAF		0.00	0.00			0.01		0.00	<i>Synaphobranchus affinis</i>
SAI					0.00			0.02	<i>Istiophorus platypterus</i>
SAR						0.01			<i>Squilla armata</i>
SAU			0.00			0.00		0.00	<i>Scomberesox saurus</i>
SAW					0.00	0.00	0.00	-0.01	<i>Serrivomer</i> spp.
SBI	0.04		0.00			-0.16	-0.02	-0.03	<i>Alepocephalus australis</i>
SBK		0.00	-0.03		0.00	-0.04	0.00	0.06	<i>Notacanthus sexspinis</i>
SBN			0.00			0.00	0.00	0.00	Scalpellidae (Family)
SBO	-0.05	0.00	0.01	0.02	0.00	0.02	0.00	0.05	<i>Pseudopentaceros richardsoni</i>
SBR	0.00	0.00	-0.05	0.03	0.00	-0.03	0.02	0.02	<i>Pseudophycis barbata</i>
SBW		0.08	0.00		0.00	0.00	0.04	0.23	<i>Micromesistius australis</i>
SCA		0.03	0.00						<i>Pecten novaezelandiae</i>
SCD	0.00	0.10						0.03	<i>Notothenia microlepidota</i>
SCG		0.00	-0.09		0.12		0.00	0.02	<i>Lepidotrigla brachyoptera</i>
SCH		0.12	-0.04	0.13	-0.16	0.00		0.03	<i>Galeorhinus galeus</i>
SCI	0.00	0.00			0.00	0.00	0.00	0.12	<i>Metanephrops challengerii</i>
SCM		0.02	0.00	-0.04	0.00	0.11	-0.01	0.19	<i>Centroscymnus macracanthus</i>
SCO	0.00	0.00	-0.04	-0.01	0.00	0.02	0.00	0.08	<i>Bassanago bulbiceps</i>
SDE		0.00				0.00	0.00	-0.02	<i>Cryptopsaras couesii</i>
SDF	0.00		0.00					0.00	<i>Azygopus pinnifasciatus</i>
SDL			0.00			0.02			<i>Scorpaena cardinalis</i>

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
SDM		0.00	0.03			0.00	0.00	0.03	<i>Sympagurus dimorphus</i>
SDO	0.00	0.47	0.00		0.21	0.00	0.00	0.15	<i>Cyttus novaezealandiae</i>
SDR					0.00	-0.01		0.02	<i>Solegnathus spinosissimus</i>
SEE	0.00	0.00	-0.03	0.18	0.00	0.00	0.00	0.11	<i>Gnathophis habenatus</i>
SEN						0.00	0.00		<i>Actinia</i> spp.
SEP		0.00						0.00	<i>Sergia potens</i>
SEQ		0.00							Sepiolidae
SER		0.00	0.00					0.00	<i>Sergestes</i> spp.
SEV		0.05	0.04	0.00	0.03	0.00		0.08	<i>Notorynchus cepedianus</i>
SFL		0.12	0.00					0.00	<i>Rhombosolea plebeia</i>
SFN						0.00	0.00	0.00	<i>Diretmichthys parini</i>
SHA	-0.02	0.10	-0.05	0.22	-0.06	-0.09	-0.10	-0.02	Unspecified sharks and dogfish <sup>8</sup>
SHE	0.00		0.00			0.00		-0.04	<i>Scymnodalatias sherwoodi</i>
SHL			-0.02		0.00				<i>Scyllarus</i> sp.
SHO					0.00				<i>Hippocampus abdominalis</i>
SIA		0.00	0.00			0.19	0.03	0.00	Scleractinia
SID			0.00			0.00	0.00	0.00	Platyroctidae
SKA	-0.07	-0.08	-0.39	-0.35	-0.20	-0.06	-0.02	-0.33	Rajidae Arhynchobatidae (Families)
SKI		-0.13	-0.05	0.03	-0.12	0.00	0.00	-0.03	<i>Rexea</i> spp.
SKJ		0.02	0.00		0.00			0.00	<i>Katsuwonus pelamis</i>
SLB						0.00	0.00	0.05	<i>Scymnodalatias albicauda</i>
SLC						-0.02			<i>Slosarczykovia circumantarctica</i>
SLG		0.00	-0.03		0.00	0.00	0.00	0.00	<i>Scutus breviculus</i>
SLK			0.00			0.08	0.20	0.21	Alepocephalidae
SLL			0.00		0.00	0.00	0.00	0.00	Scyllaridae
SLO			0.00		0.00			0.00	<i>Arctides antipodarum</i>
SLR			-0.04			0.00		0.00	<i>Optivus elongatus</i>
SLS		0.00						0.00	<i>Peltorhamphus tenuis</i>
SMA		0.02			0.01			0.00	<i>Stigmatophora macropterygia</i>
SMC			0.04			-0.08	0.00	-0.05	<i>Lepidion microcephalus</i>
SMI	0.00	0.04				0.01	0.00		<i>Somniosus microcephalus</i>
SMK		0.00	0.30			0.00		0.00	<i>Teratomaia richardsoni</i>
SMO		0.06	0.00		0.00	0.00	0.00	0.00	<i>Sclerasterias mollis</i>
SMT			0.04					0.00	<i>Spatangus mathesoni</i>
SNA		-0.03	-0.02		0.16	-0.04		-0.06	<i>Pagrus auratus</i>
SND	0.00	0.06	-0.03	0.32	-0.01	0.08	0.08	0.00	<i>Deania calcea</i>
SNE			0.00			0.00	0.00	0.05	<i>Simenchelys parasitica</i>
SNI	0.00	-0.01	0.01		-0.02	0.00		0.00	<i>Macroramphosus scolopax</i>
SNO			0.00			0.02		0.03	<i>Sio nordenskjoldii</i>
SNR				0.02		0.01	0.05	0.01	<i>Deania histricosa</i>
SOC						0.00	0.00	0.00	Alcyonacea (Order)
SOL	0.00	0.00	0.01		0.00	0.00	0.00	0.00	Sole
SOM	0.00					0.03	0.00	0.00	<i>Somniosus rostratus</i>

<sup>8</sup> Includes the MPI codes OSD and DWD

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
SOP	0.04	0.00				0.05	0.00	-0.01	<i>Somniosus pacificus</i>
SOR		0.00	0.00			-0.12	0.04	-0.01	<i>Neocyttus rhomboidalis</i>
SOT		0.00	0.00	0.02		0.00	0.00	0.05	<i>Solaster torulatus</i>
SPA								0.00	<i>Sprattus antipodum</i>
SPD	-0.02	0.05	0.15	0.10	-0.13	-0.21	-0.03	-0.01	<i>Squalus acanthias</i>
SPE	0.00	0.06	-0.01	0.06	-0.30	-0.05	0.00	0.01	<i>Helicolenus</i> spp.
SPF		0.00			0.00			-0.01	<i>Pseudolabrus miles</i>
SPI	0.02	-0.03	-0.12	0.00	0.00	-0.02	0.00	-0.05	Spider crab
SPK			0.00		0.00	0.00		0.00	<i>Macrorhamphosodes uradoi</i>
SPL		0.00					0.00	0.00	<i>Scopelosaurus</i> sp.
SPN		0.00			0.00	0.00		0.00	Sea pen
SPO		0.00	-0.12	-0.04	-0.27	0.00		-0.03	<i>Mustelus lenticulatus</i>
SPP		0.00	0.00		0.02			0.00	<i>Callanthias</i> spp.
SPR					0.00	0.00		0.00	<i>Sprattus antipodum S. muelleri</i>
SPT		0.00	0.19		-0.01	0.00	0.00	0.02	<i>Spatangus multispinus</i>
SPZ	0.00	0.00	0.02		0.00	0.00		-0.05	<i>Genyagnus monopterygius</i>
SQA		0.00	0.00	0.04		0.04	0.06	0.07	<i>Squalus</i> spp.
SQI		-0.02			0.00		0.00	0.00	<i>Pristilepis oligolepis</i>
SQU	-0.02		0.02		-0.07	-0.10	-0.02	0.00	<i>Nototodarus sloanii</i> & <i>N. gouldi</i>
SQX	0.03	0.00	-0.07		0.03	0.04	-0.04	0.15	Squid
SRH			0.01		0.00	-0.01	0.00	0.11	<i>Hoplostethus mediterraneus</i>
SRI	0.00					0.02	0.00	0.08	<i>Scymnodon ringens</i>
SSC		-0.16	-0.06				0.00	0.02	<i>Leptomithrax australis</i>
SSH	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.16	<i>Gollum attenuatus</i>
SSI	0.02	0.25	0.03		-0.05	0.02	-0.03	0.06	<i>Argentina elongata</i>
SSK	-0.03	0.02	0.02	0.15	-0.21	0.00	0.04	0.03	<i>Dipturus innominatus</i>
SSM						-0.06		-0.01	<i>Alepocephalus antipodianus</i>
SSO	0.00	0.00				-0.14	0.03	-0.03	<i>Pseudocyttus maculatus</i>
SSP		0.00	0.00					0.00	<i>Pecten novaezelandiae</i>
STA	-0.03	0.08	-0.09	0.03	-0.26	-0.03	0.00	0.00	<i>Kathetostoma</i> spp.
STG		0.00	0.06		-0.01	0.00	0.00	-0.14	Stargazer
STN	0.00	0.09	-0.02		0.01			0.05	<i>Thunnus maccoyii</i>
STO						0.00	0.00	0.03	<i>Stomias</i> spp.
STP						0.00	0.00	0.00	<i>Stephanocyathus platypus</i>
STR		0.03	-0.01		0.03	0.00		-0.01	Stingray
STU	-0.03	-0.07			0.03			-0.14	<i>Allothunnus fallai</i>
SUA		0.00						0.00	<i>Suberites affinis</i>
SUH					0.00	0.00		-0.01	<i>Schedophilus huttoni</i>
SUM	0.00					0.00	0.00	0.00	<i>Schedophilus maculatus</i>
SUN	0.00	-0.07	0.03		0.11	0.02		-0.05	<i>Mola mola</i>
SUR		0.00	-0.08			0.00	0.00	-0.02	<i>Evechinus chloroticus</i>
SUS						0.00	0.00	0.00	<i>Schedophilus</i> sp.
SVA						0.09	0.14	0.00	<i>Solenosmilia variabilis</i>
SWA	-0.02	0.08	-0.15		-0.03	-0.04	0.00	-0.04	<i>Seriolella punctata</i>
SWO		0.00			0.08	-0.05		-0.02	<i>Xiphias gladius</i>
SWR		0.00				-0.01	0.00	0.00	<i>Coris sandageri</i>

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
SYD			0.00					0.02	<i>Systellaspis debilis</i>
SYN		0.02			0.00	-0.02	0.00	0.03	<i>Synaphobranchidae</i>
TAL						0.00		0.00	<i>Talimania longifilis</i>
TAM		0.00	0.08			0.08	0.15	0.20	<i>Echinothuriidae &amp; Phormosomatidae</i> <sup>9</sup>
TAR	0.00	0.16	-0.13	0.02	-0.16	0.00	0.00	-0.07	<i>Nemadactylus macropterus</i> & N. sp. (king tarakihi)
TAS	0.00					0.00		0.00	<i>Taractes asper</i>
TAY		0.00	0.20		0.00	0.00		0.07	<i>Typhlonarke aysoni</i>
TET		0.00	0.00			0.00		0.00	<i>Tetragonurus cuvieri</i>
TEW		0.00	0.00					0.00	<i>Tewara cranwellae</i>
TFA			0.18					0.00	<i>Trichopeltarion fantasticum</i>
THO		0.00	0.00			0.00	0.00	0.00	<i>Thouarella</i> spp.
THR		-0.08		0.03	-0.02			-0.17	<i>Alopias vulpinus</i>
TLD		0.00	0.00			0.00	0.00	0.00	<i>Tetilla leptoderma</i>
TLO			0.02			0.00	0.00	0.00	<i>Telesto</i> spp.
TOA	0.00	0.18	-0.02	0.09	-0.01	0.13	0.01	0.12	<i>Neophrynichthys</i> sp.
TOD	0.00	0.11	0.03	0.00	0.00	0.00		0.08	<i>Neophrynichthys latus</i>
TOP	-0.04	0.00	-0.02	0.04	0.00	0.02	0.00	0.09	<i>Amblophthalmos angustus</i>
TOR		0.08			0.00			0.21	<i>Thunnus orientalis</i>
TRA		0.00			-0.01	0.00		-0.01	Trachichthyidae (Family)
TRE		0.00			0.03			0.00	<i>Pseudocaranx georgianus</i>
TRS						-0.02		0.00	<i>Trachyscorpia eschmeyerii</i>
TRU		0.01	0.00	0.01	0.00			-0.02	<i>Latris lineata</i>
TSQ	0.00	0.00	0.00			0.05	0.00	0.05	<i>Todarodes filippovae</i>
TTA		0.00	0.06					0.00	<i>Typhlonarke tarakea</i>
TUB			0.00		0.00	0.00	0.00	0.00	<i>Tubbia tasmanica</i>
TUR		0.04			0.00			0.00	<i>Colistium nudipinnis</i>
TVI						0.00		0.04	<i>Trachonurus villosus</i>
UNI				0.12					Unidentified
URP		0.03	0.00			0.00	0.00	0.00	<i>Uroptychus</i> spp.
VCO		0.00				0.11	0.14	-0.02	<i>Antimora rostrata</i>
VIT						0.00	0.00	0.00	<i>Vitjazmaia latidactyla</i>
VKI		0.00						0.00	<i>Veprichlamys kiwaensis</i>
VNI			0.00					0.00	<i>Lucigadus nigromaculatus</i>
VOL		0.00	0.05	0.00		0.00	0.00	0.02	Volutidae (Family)
VSQ	0.00	0.00	0.00		0.00	0.06	0.00	0.21	<i>Histioteuthis</i> spp.
WAR	0.00	-0.01	0.00		-0.09	0.00	0.00	-0.15	<i>Seriolella brama</i>
WHE		0.00	-0.04	0.00		0.00	0.00	0.02	Whelk
WHR			0.00			-0.01	0.00	-0.06	<i>Trachyrincus longirostris</i>
WHX			0.02			0.06	0.00	0.17	<i>Trachyrincus aphyodes</i>
WIN								0.00	<i>Pteraclis velifera</i>
WIT	0.00	0.15	0.05	0.00	0.00	0.07	0.00	0.16	<i>Arnoglossus scapha</i>
WOE					0.00	0.00	-0.01	0.00	<i>Alloctytus verrucosus</i>
WPS		0.11			0.02	0.02		0.02	<i>Carcharodon carcharias</i>

<sup>9</sup> Includes the MPI codes PHM and ECT

Species	Fishery								Scientific name
	SBW	SQU	SCI	LLL	JMA	ORH	OEO	HHL	
WRA		0.00	0.00		0.00		0.00	0.03	<i>Dasyatis thetidis</i>
WSE		0.00			-0.01	0.00		0.00	Labridae (Family)
WSH		0.00						0.00	<i>Rhincodon typus</i>
WSQ	-0.01	0.12	0.08		0.00	0.12	0.20	-0.03	<i>Onykia</i> spp.
WWA	-0.03	0.05	0.01	-0.05	0.00	0.01	0.06	0.08	<i>Seriolella caerulea</i>
YBF		0.00	0.00		0.00			0.03	<i>Rhombosolea leporina</i>
YBO	0.00	0.00	0.15		0.00	0.00		0.10	<i>Pentaceros decacanthus</i>
YBP		0.00							<i>Acanthistius cinctus</i>
YCO	0.00	0.12	0.00		0.00	0.00		0.00	<i>Parapercis gilliesi</i>
YEM		-0.02			0.00				<i>Aldrichetta forsteri</i>
YFN		-0.01			0.00			0.00	<i>Thunnus albacares</i>
YSG		0.00	0.01		0.00			0.00	<i>Pterygotrigla pauli</i>
YSP			0.00			0.00			<i>Yaldwynopsis spinimana</i>
ZAS						0.00	0.00	0.00	<i>Zameus squamulosus</i>
ZDO			0.00					0.00	<i>Zenion leptolepis</i>
ZEL			0.00			0.00		0.00	<i>Zu elongatus</i>
ZOR		0.00	0.06			0.00	0.00	0.13	<i>Zoroaster</i> spp.