

Autopsy report for seabirds killed and returned from New Zealand fisheries, 1 October 1999 to 30 September 2000

Birds returned by Ministry of Fisheries observers to the
Department of Conservation

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C.J.R. Robertson and E. Bell

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C.J.R. Robertson¹ and E. Bell²

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ABSTRACT

Thirty-four separate fishing trips between 1 October 1999 and 30 September 2000 with on-board observers returned 233 bird specimens killed as bycatch to various forms of fishing practice. Birds were received from squid, scampi and fish trawlers (48% of returns), domestic bottom longliners (39.5%) and tuna longliners—mainly chartered (joint-venture) (12.5%). Nineteen taxa were represented with six comprising 86% of returns (grey petrel, white-capped albatross, white-chinned petrel, Salvin's albatross, Buller's albatross, sooty shearwater). During the four years of the autopsy programme since 1996, grey petrel (269), white-capped albatross (155) and sooty shearwater (132) were the most commonly killed and returned species. Mean subcutaneous fat scores were again low, suggesting a general food shortage. Some 72% of specimens had discernable stomach contents, with the majority containing bait, fisheries discards or offal, depending on the fishery. Between 1996 and 2000 a growing proportion of the birds returned from the trawl and domestic bottom longliner fleets had fisheries offal or discards forming a major part of their stomach contents. Also, between 1996 and 2000 the majority of the returned specimens (82%) was killed by the activities of a limited number of vessels (22), suggesting the need to focus mitigation measure investigations on the differences between vessels and fishing practices.

Keywords: seabirds, bycatch, albatross, shearwater, petrel, seabird diet.

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1. Introduction

There were 233 specimens returned from 34 separate fishing trips with on-board observers, between 1 October 1999 and 30 September 2000 (the 1999/2000 fishing year), where birds were killed as a bycatch to various forms of fishing practice. Most birds were returned from the trawler fleet (various fishing targets) (48% of those returned). Domestic bottom longliners (39.5%) and tuna longliners (mainly chartered [joint-venture]) with 12.5% of the returns made up the balance. This is a significant change in the proportions returned from the previous year when the trawler fleet produced the majority of the bycatch provided (Bartle 2000; Robertson 2000; Robertson & Bell 2002). The tuna fleet continues, for the second year, to have only some 11.2% of the bycatch returned. The autopsies were undertaken for the Department of Conservation as Conservation Services Levy (CSL) Contract 3051. All costs of labelling and packaging, importation under the Biosecurity Act, transportation from Port of Landing to Wellington by refrigerated truck, cold storage, and autopsy facilities were met by the levy.

In 1999/2000, birds were received from squid, scampi and fish trawlers, domestic tuna longliners, chartered (joint venture) tuna longliners, and domestic bottom longliners. The number of specimens returned for autopsy does not in any way indicate probable catch rates for differing classes of vessel or fishing method, as the observer coverage was not equally distributed throughout the fishing effort. Specific catch locations for the specimens returned are not provided here on the grounds of commercial sensitivity as required by the Ministry of Fisheries and some parts of the fishing industry. However, the maps (Appendices 1-5) provide the general location of catches and species returned for the period covered by this report. The distribution shown does not imply any relationship with fishing effort or method as indicated above.

2. Methods

To ensure compatibility with previous autopsy programmes, the methods and definitions described by Bartle (2000) have been followed. All the autopsies were undertaken by the authors. With one exception, all birds or parts of birds returned were identifiable to species and subspecies. Nomenclature for the albatrosses follows Nunn et al. (1996), Robertson & Nunn (1998) and Croxall & Gales (1998). All birds were sexed by dissection, except where the specimen was severely damaged by sea lice or machinery. Full morphometric measurements were made for most specimens.

At the time of writing no specimens from this period had been supplied to museums or (through the Department of Conservation) to various Maori groups

for traditional use of feathers. Severely damaged specimens unusable as scientific or cultural specimens were destroyed.

All specimens were allocated a unique autopsy number and the details of species and individual birds in the report are presented in Tables 1-4 and Appendix 6. The unique specimen autopsy number enables easy correlation of the data within Appendix 6. In some cases, where specimens were severely damaged, it was not possible to complete all parts of the report. In this case a 'blank' or '?' in Appendix 6 indicates a deficiency, while 'U' indicates unknown. Paul Scofield of Otago University undertook detailed work on stomach contents of sooty shearwaters only, as part of his studies into that species, and a summary of the information was provided for this report.

Some specimens showed no obvious signs of injury, even from vessel types where hook damage might have been expected. Specimens caught by trawlers mainly presented with broken parts or oil and grease on the plumage indicating a probable association with wires and winches during fishing operations.

3. Results and Discussion

A total of 19 taxa (species) were represented (Table 1). Six taxa comprised 86% of the returns [Individual numbers were: grey petrel, 60; white-capped albatross, 52; white-chinned petrel, 32; Salvin's albatross, 22; Buller's albatross, 18 and sooty shearwater, 17]. These taxa were the same as the top 6 being killed in the previous year (Robertson & Bell 2002). No banded birds were returned.

Table 2 summarises all birds returned for autopsy between 1996 and 2000 according to species and fishing type. These returns demonstrate a relationship between the killing of certain species and fishing type. Of particular concern is the growing proportion of those killed coming from the trawl fleets and a significant relationship between the birds returned and the presence of offal in their stomach contents. There seems to be a developing tendency for the domestic bottom longliner fleet to provide a majority of the grey and white-chinned petrels returned. Overall, grey petrel (269) has been the most returned species with white-capped albatross (155) and sooty shearwater (132) as significant contributors.

In this fishing year a domestic bottom longliner had a significant catch of birds on one voyage (#1293; November/December 1999 at location Solander Island to NW Stewart Island.) where the specimens were not returned for autopsy. An analysis of the photographs of most of the specimens taken by the observer revealed a take of at least 47 white-chinned petrels and 31 Salvin's albatross. Not only was there a significant loss of data relating to these species, but such photographic identification provides no data on sex, breeding and body condition, or food. As shown in Appendix 6 this fishing type had one other voyage where 65 specimens were returned.

Overall, the specimens returned had a high male bias (Table 1), similar to the 1998/99 reporting period (Robertson & Bell 2002), but this was primarily

caused by the heavy male representation among the grey and white-chinned petrels, white-capped albatross and sooty shearwaters returned. The sooty shearwaters continued to show a return of predominantly male specimens. Grey petrels had a particular set of returns which were severely damaged by sea lice where sexing was impossible.

Adult birds (93.6%) continued to form the majority of identifiable specimens returned (84.4% in 1998/99).

There was, again, a high proportion of specimens with significant stomach contents (72% compared with 70% in 1998/99 (Robertson & Bell 2002), 56% in 1998 (Robertson 2000) and only 11% in 1996/97 (Bartle 2000)). Some 50% (55% in 1998/99) of the chartered (joint-venture) tuna catches had empty stomachs and 38% (35%) with identifiable bait or bait pieces. For domestic bottom longliners, 15% (43%) of those with identifiable stomachs (some eaten by lice) were empty and 20% (52%) contained identifiable bait. Unlike the previous season where no offal or fish bycatch was recorded, in this year 41% had offal or bycatch fish bits present.

Among fish trawlers 22% (20%) of the bird bycatch had empty stomachs, while 60% (68%) contained offal in various forms as well as small fish probably associated with discarded fish bycatch. Squid trawlers had 33% (36%) of their bycatch birds with empty stomachs and 65% (53%) containing offal mainly associated with fish bycatch, but not a high proportion of squid. This may indicate that for part of the observed period the target species was fish and not squid. There is a strong relationship between the fishing practice and the stomach contents of the subsequently caught birds. This suggests that mitigation practices need to address the significant attracting of birds to offal discards about vessels processing their catch at sea. The appearance of offal in the stomach contents of birds associated with domestic bottom longliners is a notable change between years.

The stomach content data for this year suggests that pelagic seabirds generally, were still in a period of shorter food supply than normal (see Robertson 2000). Table 3 compares the subcutaneous fat scores of specimens with the 1996/97, 1998 and 1998/99 reporting periods for selected species caught in significant numbers throughout. For all species where there is reasonable comparable data, the fat scores from 1998 to 2000 remain significantly lower than for 1996/97, except for some improvement in both the white-capped albatross and white-chinned petrel. This result strongly supports the suggestion of continuing food shortages for some species.

The origin of specimens returned from observed vessels over the past 4 reporting years¹ demonstrates that a limited number of vessels have been catching a significant part of the birds returned. These data suggest that some vessels or their methods of operation provide significant risk of bird bycatch. Both the industry and the developers of mitigation measures need to investigate this further.

¹ Reporting years: 1 October 1996 - 31 December 1997; 1 January 1998 - 30 September 1998; 1 October 1998 - 30 September 1999; 1 October 1999 - 30 September 2000.

For the chartered (joint venture) tuna fleet², over the 4-year reporting period, 98% of the bycatch came from 5 vessels. Numbers of birds returned per vessel: 186 birds/3 reporting periods; 114/4; 95/3; 64/1; 15/4.

For domestic bottom longliners³, 5 vessels provided 98% of the returned bycatch where the numbers per vessel were : 81/3; 32/1; 15/2; 14/1. The fifth vessel had 33/1 and an additional kill of 78 birds not returned, but provisionally identified from photos (see above).

In the fish trawl fishery⁴, 6 vessels provided 63% of the returned specimens (41/3; 24/2; 23/2; 23/2; 19/1; 12/2).

Similarly the squid trawl fishery⁵, 6 vessels returned 62% of their returned specimens (21/2; 19/1; 14/1; 12/1; 12/1; 10/2).

In summary, the 22 vessels referred to above contributed 82% of all birds provided to the autopsy programme during the 4 reporting years¹. While not all of these vessels feature in all years of the programme (i.e. some vessels only feature in single years and may not have had observer coverage at other times), the above figures suggest a need to focus observations on the reasons for such differential bycatch.

The fisheries observers have a difficult task in recovering specimens and providing the necessary location and identification information for each specimen before it is packed. This is especially so when there are large numbers of birds caught at one time. The nature of exact identification for some species may be more easily ascertained with experience and improved published descriptions. Table 4 analyses the identifications provided (or not provided) by observers on the labels returned with the specimens. This information is presented for the record only and should not be construed as a criticism of the observers. The results are important, however, when assessing the validity of other specimens, not returned for autopsy, but released after capture. Such records of released birds may then be used within other assessments of the total bycatch. The analysis shown in Table 4 continue to indicate that such identifications of birds released at sea may need to be treated with caution.

To put the comments in context, CSL management has provided and required the presentation of the following background data not available to the autopsy contractor:

- ² Observer coverage joint venture tuna fleet, 1 October 1996 – 30 September 2000: 1362 observed sets, 8 different vessels observed.
- ³ Observer coverage domestic bottom longliners, 1 October 1996 – 30 September 2000: 697 observed fishing days, 10 different vessels observed.
- ⁴ Observer coverage trawl fishery (excluding squid and scampi), 1 October 1996 – 30 September 2000: 7317 observed fishing days, 99 different vessels observed.
- ⁵ Observer coverage squid trawl fishery, 1 October 1996 – 30 September 2000: 1574 observed fishing days, 38 different vessels observed.

4. Acknowledgments

The scientific observers employed by the Ministry of Fisheries provide dedicated work in often trying conditions to record on-the-spot data and in retaining the birds provided for autopsy. We acknowledge their role in providing the primary material basis for this report. P. Scofield identified stomach and gizzard contents of sooty shearwaters; Tranz Rail Limited provided an efficient frozen transport and storage facility while the Ministry of Defence provided leasehold space for the autopsy laboratory facility. M.J. Imber provided assistance with the identification of some general stomach contents. Reg Blezard provided the essential liaison and administrative link with the observers. Ian West provided organisational support during a major illness to CJRR during the year. Seabed Mapping New Zealand Ltd constructed the maps from the position data supplied from the autopsy database and the GEBCO 97 Bathymetric database. C. Edkins draughted the maps published with this report.

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TABLE 1. SPECIES AND NUMBERS OF BIRDS KILLED IN VARIOUS FISHERIES BETWEEN 1 OCTOBER 1999 AND 30 SEPTEMBER 2000.

	Domestic bottom longliner	Domestic tuna longliner	Joint venture tuna longliner	Scampi trawler	Squid trawler	Trawler	TOTALS	Male sex	Female sex	Unknown sex	Adult	Non-adult	Unknown age
Antipodean (wandering) albatross			3		1		4	2	2		4		
black petrel		1					1	1			1		
black-browed albatross			1			2	3	2	1		2	1	
Buller's albatross			4			14	18	4	12	2	15	1	2
Campbell albatross		1				2	3		3		3		
common diving petrel					1		1		1			1	
fairy prion						2	2	2			2		
flesh-footed shearwater		1		1			2		2		2		
Gibson's (wandering) albatross			4				4	1	3		4		
grey petrel	56		1			3	60	38	4	18	59		1
northern giant petrel						2	2	2			1	1	
Salvin's albatross	13			1	1	7	22	3	18	1	22		
sooty shearwater					7	10	17	14	3		17		
southern cape pigeon	1					1	2	1	1		2		
southern giant petrel	4						4	3	1			4	
southern royal albatross			1			1	2	2			2		
welcome swallow						1	1			1	1		
white-capped albatross			5	1	28	18	52	34	18		50		2
white-chinned petrel	18		7		7		32	23	9		31	1	
UNKNOWN					1		1			1			1
TOTALS	92	3	26	3	46	63	233	132	78	23	218	9	6

PERCENTAGE 1999/2000	39.5	1.3	11.2	1.3	19.7	27.0	233	56.7	33.5	9.9	93.6	3.9	2.6
PERCENTAGE 1998/99	24.6	0.7	11.8	3.1	26.0	33.9	289	62.6	26.6	10.7	84.4	6.2	9.3
PERCENTAGE 1998	0.5	2.5	76	1.5	0.5	19	195	35	63	2	93	5	2
PERCENTAGE 1996/97	4	3.7	78	0.3	5	8	350	54	43	3	85	15	0

Table 2 *continued*.

northern giant petrel			2						5	1											2	2	12		
northern royal albatross									2														2		
Pacific albatross												1											1		
Salvin's albatross	5			13					9	1				1	1				1			14	7	52	
Snares cape pigeon			1																				1		
Snowy (wandering) albatross									2														2		
sooty shearwater		1											3	3			1	38	7	21	21	27	10	132	
southern cape pigeon				1																	1		1	3	
southern giant petrel				4																				4	
southern royal albatross									1	1	1	1							1				1	6	
welcome swallow																							1	1	
white-capped albatross									12		4	5			1	1	15		29	28	6	7	29	18	155
white-chinned petrel	2		5	18		1			16	1		7				3		4	7		3	5		72	
UNKNOWN																			1			1		2	
TOTALS	15	1	71	92	13	5	2	3	274	148	34	26	1	3	9	3	19	1	75	46	28	37	98	63	1067

TABLE 3. COMPARATIVE FAT SCORES FOR SELECTED BIRD SPECIES FOR THE 1996/97, 1998, 1998/99 AND 1999/2000 REPORTING PERIODS.

	Totals				Fat scores						
	1996/97	1998	1998/99	1999/00	1	2	3	4	5	U	MEAN
Buller's albatross	11						1	5	5		4.4
		10			2	4	1	1		2	2.1
			30		9	10	3	2	5	1	2.4
				18	7	3	4		2	2	2.2
grey petrel	70						4	42	23	1	4.3
		73				24	45	4			2.7
			70		5	13	13	10	3	26	2.8
				60	11	20	7	2		20	2.0
Salvin's albatross	14						4	3	7		4.2
		1			1						1.0
			15		3	8	1	1	2		2.4
				22	8	9	1	3	1		2.1
sooty shearwater	24						2	10	12		4.4
		26			6	13	5	1	1		2.2
			68		9	23	21	11	4		2.7
				17	1	8	4	3	1		2.7
white-capped albatross	33						10	4	11	8	4.0
		7			3	1	3				2.0
			63		14	17	13	7	5	7	2.5
				52	11	10	9	7	12	3	3.0
white-chinned petrel	21					2	4	9	6		3.9
		5			1	2	2				2.2
			14		5	4	2		3		2.4
				32	2	7	9	8	5	1	3.2

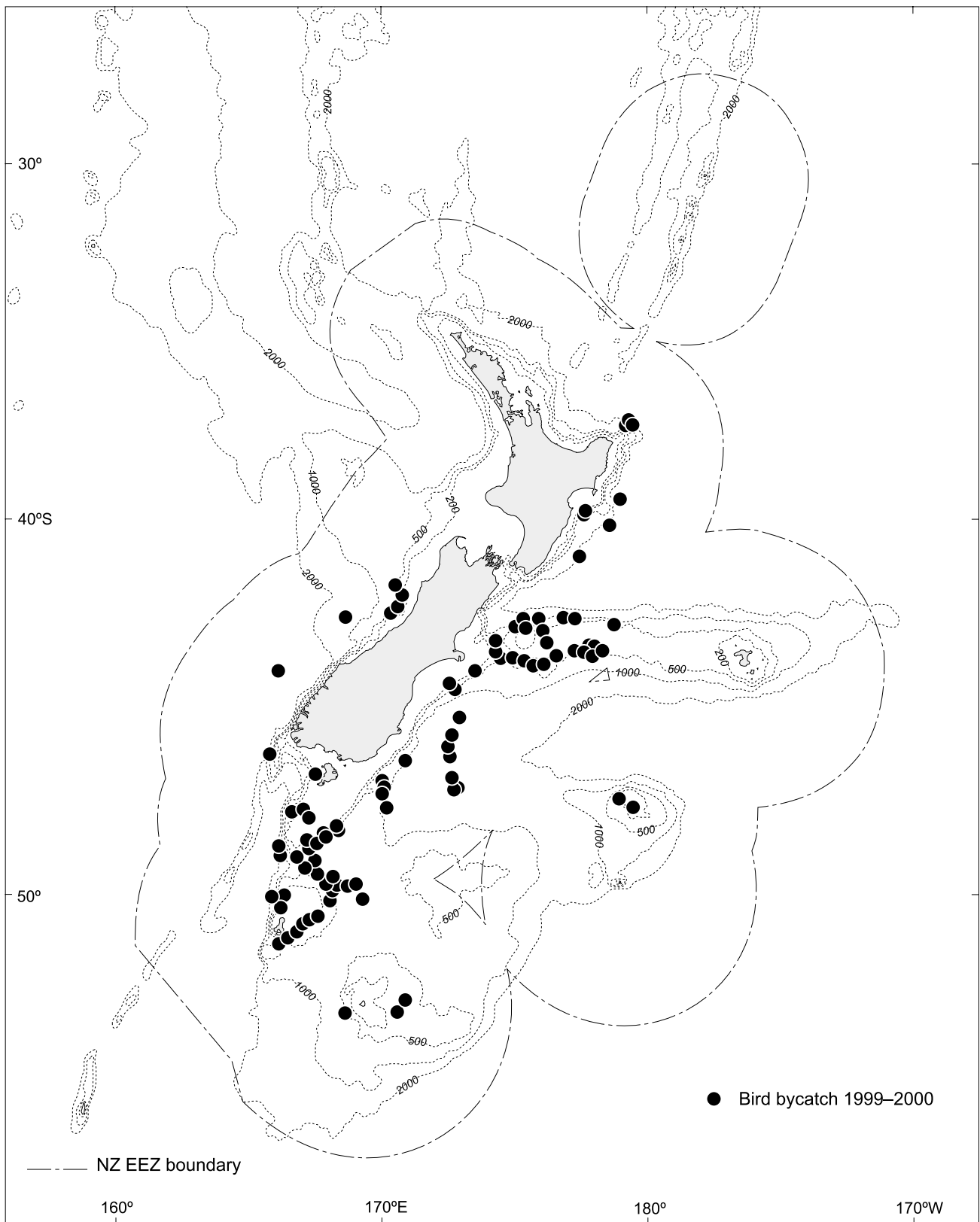
U = unknown.

TABLE 4. ANALYSIS OF IDENTIFICATIONS MADE BY ON-BOARD OBSERVERS AT SEA WHEN COMPARED WITH AUTOPSY IDENTIFICATION FOR BIRDS KILLED BETWEEN 1 OCTOBER 1999 AND 30 SEPTEMBER 2000.

	Correct ID	wrong ID	ID as correct 'spp.' group	ID not on label	Seabird large or albatross	Species code did not exist	TOTAL
Antipodean (wandering) albatross		4	(4)				4
black petrel	1						1
black-browed albatross	1	1			1		3
Buller's albatross	9	2		2	1	4	18
Campbell albatross	1	2	(2)				3
common diving petrel	1						1
fairy prion		2	(2)				2
flesh-footed shearwater	2						2
Gibson's (wandering) albatross		4	(4)				4
grey petrel	60						60
northern giant petrel	1	1	(1)				2
Salvin's albatross	12	9				1	22
sooty shearwater	17						17
southern cape pigeon	2						2
southern giant petrel	4						4
southern royal albatross	2						2
welcome swallow				1			1
white-capped albatross	37	14			1		52
white-chinned petrel	28	4					32
UNKNOWN				1			1
TOTALS	178	43	(13)	4	3	5	233

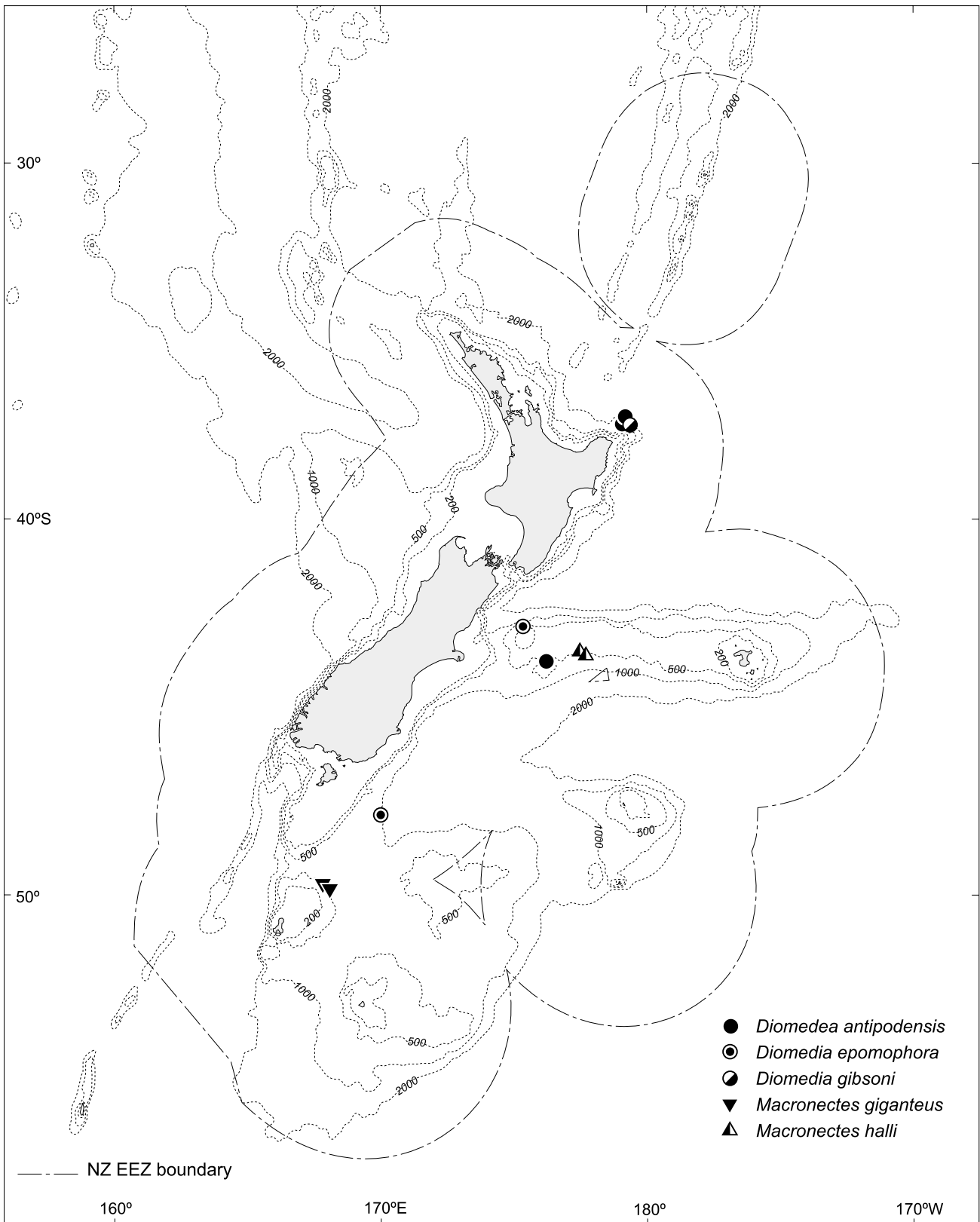
APPENDIX 1

Catch locations of seabirds killed during period 1 October 1999 to 30 September 2000, and returned for autopsy from New Zealand fisheries.



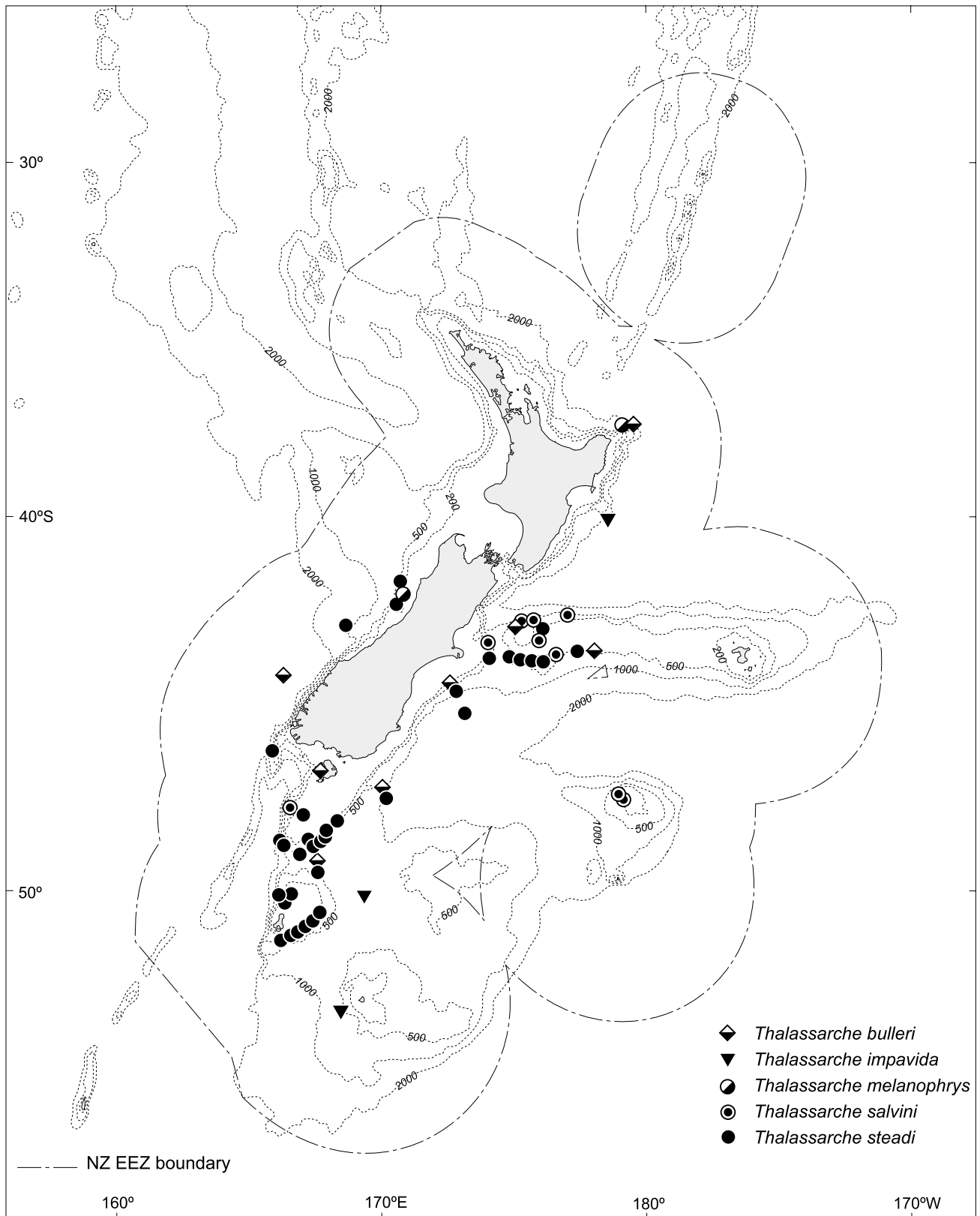
APPENDIX 2

Catch locations during period 1 October 1999 to 30 September 2000, of *Diomedea* and *Macronectes* returned for autopsy.



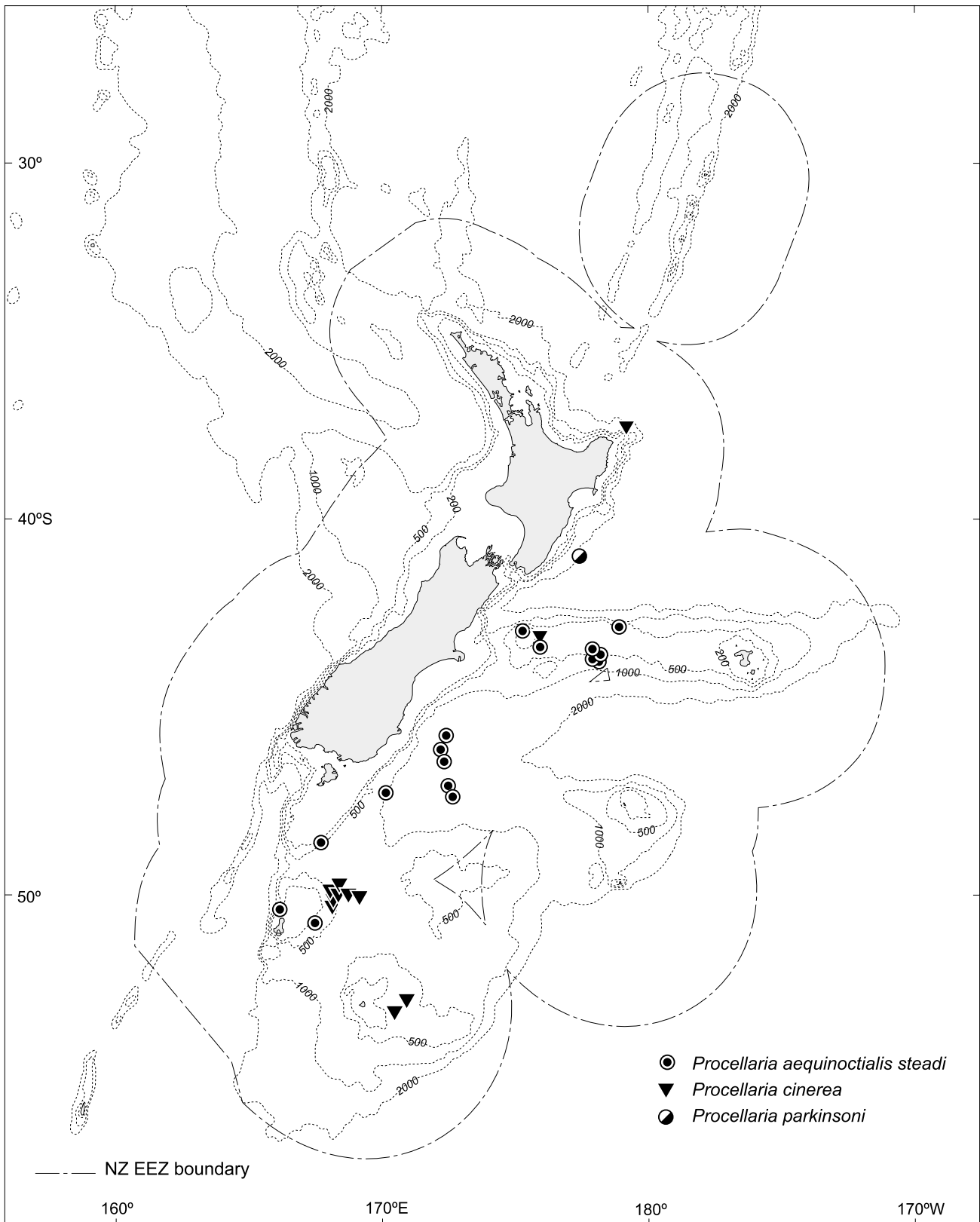
APPENDIX 3

Catch locations during period 1 October 1999 to 30 September 2000, of *Thalassarche* returned for autopsy.



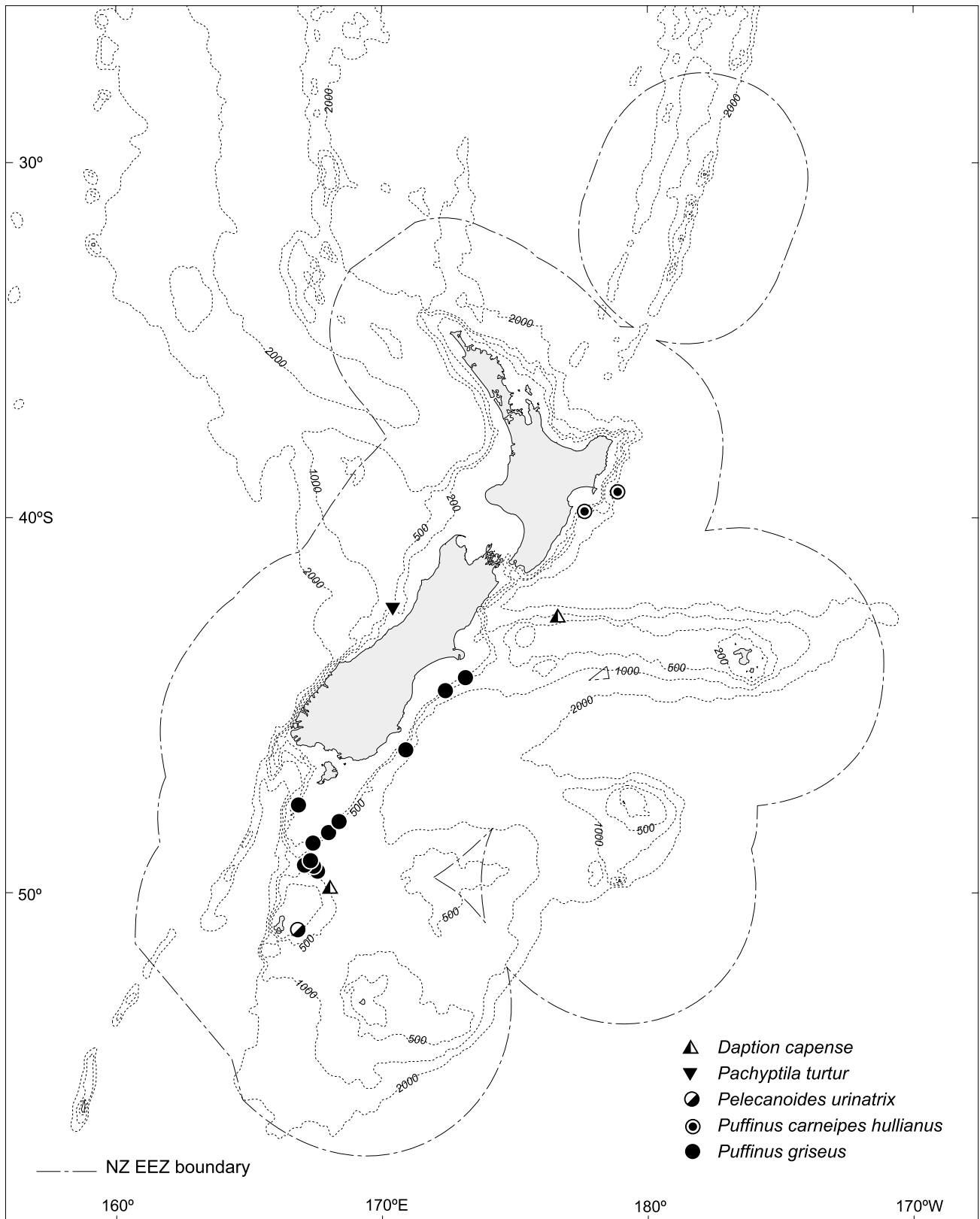
APPENDIX 4

Catch locations during period 1 October 1999 to 30 September 2000, of *Procellaria* returned for autopsy.



APPENDIX 5

Catch locations during period 1 October 1999 to 30 September 2000, of *Daption*, *Pachyptila*, *Pelecanoides* and *Puffinus* returned for autopsy.



APPENDIX 6.

Autopsy identification and details. List by vessel type, of birds killed and returned from observed vessels, for period 1 October 1999 to 30 September 2000.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000748	domestic bottom longliner	1380	2	1	02/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000753	domestic bottom longliner	1380	6	2	04/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000751	domestic bottom longliner	1380	6	3	04/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000752	domestic bottom longliner	1380	6	4	04/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000747	domestic bottom longliner	1380	10	5	04/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000750	domestic bottom longliner	1380	13	6	05/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000755	domestic bottom longliner	1380	31	7	11/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000754	domestic bottom longliner	1380	31	8	11/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000757	domestic bottom longliner	1380	35	9	12/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000758	domestic bottom longliner	1380	35	10	12/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000746	domestic bottom longliner	1380	46	11	17/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000739	domestic bottom longliner	1380	51	12	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000740	domestic bottom longliner	1380	51	13	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000741	domestic bottom longliner	1380	51	14	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000743	domestic bottom longliner	1380	51	15	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000742	domestic bottom longliner	1380	51	16	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000745	domestic bottom longliner	1380	54	17	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000744	domestic bottom longliner	1380	54	18	18/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000756	domestic bottom longliner	1380	57	19	19/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000749	domestic bottom longliner	1380	61	20	20/08/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000767	domestic bottom longliner	1380	82	24	01/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000782	domestic bottom longliner	1380	82	25	01/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000772	domestic bottom longliner	1380	83	21	01/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000771	domestic bottom longliner	1380	83	22	01/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000748	adult	male	1	fish offal	fish bones, otoliths, squid beaks	downy brood patch
000753	adult	U	U	gone	gone	U
000751	adult	U	U	gone	gone	U
000752	adult	U	U	gone	gone	U
000747	adult	U	U	gone	gone	U
000750	adult	U	U	gone	gone	part bare brood patch
000755	adult	U	U	gone	gone	U
000754	adult	U	U	gone	gone	U
000757	adult	U	U	gone	gone	U
000758	adult	U	U	gone	gone	U
000746	adult	U	U	gone	gone	some tail moult, brood patch missing
000739	adult	male	4	fish bait (x1), sludge	otoliths, squid beaks	some body moult, downy brood patch
000740	adult	male	3	sludge	fish bones, otoliths, squid beaks	downy brood patch
000741	adult	U	U	gone	gone	missing most of brood patch, remaining portion downy
000743	adult	U	U	gone	gone	U
000742	U	U	U	gone	gone	U
000745	adult	U	U	gone	gone	U
000744	adult	male	U	open, contents gone	squid eyeball (x1), squid beak fragments	heavy body moult, some tail moult, brood patch part bare (some pinning)
000756	adult	U	U	gone	gone	U
000749	adult	U	U	gone	gone	downy brood patch
000767	adult	male	2	full, proventricular oil	fish eyeball, otoliths, squid beaks	some body moult, downy brood patch
000782	adult	male	1	offal, proventricular oil, bait fish x1	worms, squid beaks	light body moult, downy brood patch
000772	adult	male	2	oil, large squid beak (x1)	fish bones, otoliths, squid beaks	some body moult, downy brood patch
000771	adult	male	3	oil	squid beaks	downy brood patch

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000776	domestic bottom longliner	1380	83	23	01/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000796	domestic bottom longliner	1380	85	26	02/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000797	domestic bottom longliner	1380	85	27	02/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000765	domestic bottom longliner	1380	85	28	02/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000775	domestic bottom longliner	1380	89	31	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000770	domestic bottom longliner	1380	89	32	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000773	domestic bottom longliner	1380	89	33	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000774	domestic bottom longliner	1380	89	34	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000787	domestic bottom longliner	1380	90	29	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000777	domestic bottom longliner	1380	90	30	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000799	domestic bottom longliner	1380	91	35	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000783	domestic bottom longliner	1380	91	36	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000769	domestic bottom longliner	1380	91	37	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000786	domestic bottom longliner	1380	91	38	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000791	domestic bottom longliner	1380	91	40	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000781	domestic bottom longliner	1380	91	41	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000780	domestic bottom longliner	1380	91	42	03/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000793	domestic bottom longliner	1380	96	43	04/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000792	domestic bottom longliner	1380	96	44	04/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000798	domestic bottom longliner	1380	97	46	05/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000784	domestic bottom longliner	1380	98	45	05/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000764	domestic bottom longliner	1380	99	47	05/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000795	domestic bottom longliner	1380	99	48	05/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000766	domestic bottom longliner	1380	102	49	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000779	domestic bottom longliner	1380	102	50	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000776	adult	male	2	oil	squid beaks	some body moult, downy brood patch
000796	adult	male	2	offal, squid beak, proventricular oil	fish bones, squid beaks	downy brood patch
000797	adult	male	2	small amount of offal, proventricular oil	otoliths, fish bones, squid beaks	downy brood patch
000765	adult	U	U	gone	gone	some body moult, some tail moult, part bare brood patch
000775	adult	male	2	offal, proventricular oil, fish bait x1	otoliths, squid beaks	heavy body moult, some tail moult, downy brood patch
000770	adult	male	2	offal, some proventricular oil	empty	downy brood patch
000773	adult	male	2	oil, offal, large squid beaks (x2), bait fish x3	squid beaks	some body moult, downy brood patch
000774	adult	male	2	offal, some proventricular oil	squid eyeballs, squid beaks	downy brood patch
000787	adult	male	1	bait fish x2	full	part bare brood patch
000777	adult	male	2	oil, offal, bait fish x 2	worms, squid beaks	some body moult, part bare brood patch
000799	adult	male	1	offal	otoliths, squid beaks	heavy tail moult, mostly downy brood patch
000783	adult	male	2	offal	worms, otoliths, fish eyeballs, squid beaks	some body moult, downy brood patch
000769	adult	male	2	oil	otoliths, squid beaks	downy brood patch
000786	adult	female	2	offal	otoliths, squid beaks	some body moult, downy brood patch
000791	adult	male	2	oil, bait fish x1	squid beaks	downy brood patch
000781	adult	male	1	offal, fish sludge	squid beaks	downy brood patch
000780	adult	male	3	offal	squid beaks	heavy body moult, downy brood patch
000793	adult	male	1	bait fish x4	otoliths, squid beaks	heavy body moult, some tail moult, downy brood patch
000792	adult	male	2	offal	otoliths, squid beaks	downy brood patch
000798	adult	male	3	offal	worms, otoliths, fish bones, squid beaks	some tail moult, downy brood patch
000784	adult	male	1	offal	otoliths, squid beaks	trace body moult, downy brood patch
000764	adult	male	U	offal	worms, otoliths	heavy body moult, some tail moult, downy brood patch
000795	adult	male	1	empty	worms, otoliths, squid beaks	heavy body and tail moult, mostly downy brood patch (some pinning)
000766	adult	male	3	oil, fish sludge	skin, squid beaks	part bare brood patch
000779	adult	male	2	oil	worms, squid beaks	heavy body moult, some tail moult, downy brood patch

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000794	domestic bottom longliner	1380	102	51	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000778	domestic bottom longliner	1380	102	52	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000790	domestic bottom longliner	1380	102	53	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000789	domestic bottom longliner	1380	102	54	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000788	domestic bottom longliner	1380	102	55	06/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000768	domestic bottom longliner	1380	124	60	11/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000785	domestic bottom longliner	1380	127	63	12/09/2000	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
000684	domestic bottom longliner	1296	8	3	25/11/1999	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000668	domestic bottom longliner	1305	11	1	08/01/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000663	domestic bottom longliner	1305	54	3	18/01/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000660	domestic bottom longliner	1305	92	5	29/01/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000670	domestic bottom longliner	1305	144	6	11/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000661	domestic bottom longliner	1305	150	8	12/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000662	domestic bottom longliner	1305	151	9	12/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000664	domestic bottom longliner	1305	151	10	12/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000669	domestic bottom longliner	1305	151	11	12/01/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000667	domestic bottom longliner	1305	154	13	13/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000658	domestic bottom longliner	1305	154	14	13/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000665	domestic bottom longliner	1305	154	15	13/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000659	domestic bottom longliner	1305	162	16	15/02/2000	off Bounty Islands	Salvin's albatross	<i>Thalassarche salvini</i>
000763	domestic bottom longliner	1380	91	31	03/09/2000	Campbell Plateau	southern cape pigeon	<i>Daption capense</i>
000802	domestic bottom longliner	1380	122	58	11/09/2000	Campbell Plateau	southern giant petrel	<i>Macronectes giganteus</i>
000800	domestic bottom longliner	1380	124	59	11/09/2000	Campbell Plateau	southern giant petrel	<i>Macronectes giganteus</i>
000803	domestic bottom longliner	1380	125	61	11/09/2000	Campbell Plateau	southern giant petrel	<i>Macronectes giganteus</i>
000801	domestic bottom longliner	1380	161	65	19/09/2000	Campbell Plateau	southern giant petrel	<i>Macronectes giganteus</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000794	adult	female	1	offal	squid eyeballs, squid beaks, otoliths	some tail moult, downy brood patch
000778	adult	male	2	offal, some proventricular oil	worms, squid beaks	some body moult, downy brood patch
000790	adult	male	1	offal	fish bones, worms, squid beaks	light body moult, mostly downy brood patch (some pinning)
000789	adult	male	3	small amount of proventricular oil	squid beaks	downy brood patch
000788	adult	male	1	offal	squid eyeballs, squid beaks	downy brood patch
000768	adult	U	U	gone	gone	some body and tail moult, downy brood patch
000785	adult	male	2	offal, some proventricular oil	squid beaks	downy brood patch
000684	adult	U	2	large fish bits	gone	bare brood patch
000668	adult non-breeder	female	2	empty	empty	slightly bare brood patch, heavy body moult
000663	adult non-breeder	female	1	empty	empty	full downy brood patch, slight body moult
000660	adult non-breeder	female	4	empty	empty	full downy brood patch, moderate body moult
000670	adult non-breeder	female	2	empty	fish bones	part bare brood patch
000661	adult non-breeder	female	2	empty	empty	full downy brood patch, heavy body moult
000662	adult non-breeder	female	1	two pieces of bait (fish)	empty	partly bare brood patch, extensive body moult
000664	adult non-breeder	female	2	empty	empty	full downy brood patch, heavy body moult
000669	adult	female	1	empty	few fish bones	full downy brood patch, trace body moult
000667	adult non-breeder	female	1	empty	empty	partly bare brood patch, slight body moult
000658	adult	male	2	empty	empty	full downy brood patch, heavy body moult
000665	adult non-breeder	female	2	empty	worms, seaweed and squid beaks	part bare brood patch
000659	adult breeder	female	1	empty	empty	mainly bare brood patch
000763	adult	female	4	empty	stones, skin	some body moult, mostly downy brood patch (some pinning)
000802	juvenile	male	2	offal	feathers	some body and tail moult, downy brood patch
000800	sub-adult	male	1	offal, fish bait x2, squid beak	seaweed, squid beaks	some body moult, downy brood patch
000803	juvenile	male	5	offal, feathers	feathers	some body moult, downy brood patch (with brown centre down)
000801	sub-adult	female	3	offal, bait fish x5, feathers	squid eyeballs, squid beaks, feathers	downy brood patch

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000694	domestic bottom longliner	1296	4	1	24/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000693	domestic bottom longliner	1296	7	2	25/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000692	domestic bottom longliner	1296	8	4	26/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000690	domestic bottom longliner	1296	15	5	28/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000689	domestic bottom longliner	1296	15	6	28/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000688	domestic bottom longliner	1296	18	7	29/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000680	domestic bottom longliner	1296	18	8	29/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000682	domestic bottom longliner	1296	21	6	30/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000681	domestic bottom longliner	1296	21	10	30/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000686	domestic bottom longliner	1296	22	11	30/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000691	domestic bottom longliner	1296	22	12	30/11/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000687	domestic bottom longliner	1296	24	14	01/12/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000685	domestic bottom longliner	1296	25	13	01/12/1999	Chatham Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000679	domestic bottom longliner	1305	144	7	11/02/2000	off Bounty Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000759	domestic bottom longliner	1380	105	56	06/09/2000	Campbell Plateau	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000760	domestic bottom longliner	1380	118	57	10/09/2000	Campbell Plateau	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000761	domestic bottom longliner	1380	127	62	12/09/2000	Campbell Plateau	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000762	domestic bottom longliner	1380	136	64	13/09/2000	Campbell Plateau	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000566	domestic tuna longliner	1312	3	13	24/01/2000	Hikurangi Trench	black petrel	<i>Procellaria parkinsoni</i>
000585	domestic tuna longliner	1366	3	21	11/06/2000	off Hikurangi Trench	Campbell albatross	<i>Thalassarche impavida</i>
000565	domestic tuna longliner	1336	2	22	20/03/2000	off Mahia Peninsula	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
000728	joint venture tuna longliner	1341	59	903	15/06/2000	East Cape	Antipodean (wandering) albatross	<i>Diomedea antipodensis</i>
000726	joint venture tuna longliner	1341	62	968	18/06/2000	East Cape	Antipodean (wandering) albatross	<i>Diomedea antipodensis</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000694	adult breeder	male	U	1xbait fish	(full) squid beaks	mainly bare brood patch with downy central stripe
000693	adult breeder	male	4	fish bones , 2xbait fish	squid beaks	mainly bare brood patch with downy central stripe
000692	adult breeder	male	5	bait	(full) otoliths, squid beaks	mainly bare brood patch
000690	adult breeder	male	4	1xbait fish	(full) squid beaks	bare brood patch
000689	adult breeder	male	5	2xbait fish, proventricular oil	(full) squid beaks	bare brood patch, strong body moult, 1st primary shorter than 2nd
000688	adult	male	3	empty	(full) squid beaks	partly bare brood patch with downy central stripe
000680	adult breeder	male	5	offal (fish bits) and proventricular oil	otoliths and squid beaks	mostly bare brood patch
000682	adult	female	3	offal (fish)	squid beaks	part bare brood patch
000681	adult breeder	?male	4	gone	seaweed and squid beaks	mainly bare brood patch
000686	adult breeder	female	3	4x pieces of bait, proventricular oil and sludge	(full) squid beaks	bare brood patch
000691	adult breeder	male	5	bait and proventricular oil	(full) squid beaks	bare brood patch
000687	adult non-breeder	male	4	mainly salp tests, piece of fish bait, proventricular oil	(full) salp, squid beaks	partly bare brood patch, trace body moult
000685	adult breeder	female	4	fish sludge, bones and proventricular oil	(full) squid beaks	bare brood patch
000679	adult	male	2	offal (bits of fish x 2)	squid beaks	partly bare brood patch, some body moult
000759	adult	female	4	traces of proventricular oil	full, plastic, seaweed, squid beaks	heavy body moult, some tail moult, downy brood patch
000760	adult	male	3	oil, fish sludge	full, squid beaks	some body moult, recent wing moult, downy brood patch
000761	adult	male	2	full, offal	worms, fish bones, squid beaks, skin, otoliths	some body moult, downy brood patch
000762	adult	female	5	fish sludge, otolith	full, fish bones, otoliths, squid beaks	some body moult, downy brood patch
000566	adult non-breeder	male	1	empty	squid beaks	bare brood patch with central stripe
000585	adult	female	1	empty	empty	downy brood patch, some body moult
000565	adult breeder	female	2	fish bones and sludge	squid beaks	partly downy brood patch
000728	adult	female	2	empty	empty	some tail and body moult, downy brood patch
000726	adult	female	2	bait fish head, fish bones, squid beaks	plastic	heavy body moult, some tail moult, outer two primaries, primary coverts and secondary coverts moulting in both wings, downy brood patch

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000725	joint venture tuna longliner	1341	62	973	18/06/2000	East Cape	Antipodean (wandering) albatross	<i>Diomedea antipodensis</i>
000721	joint venture tuna longliner	1341	59	904	15/06/2000	East Cape	black-browed albatross	<i>Thalassarche melanophrys</i>
000587	joint venture tuna longliner	1341	15	236	20/04/2000	off Stewart Island	Buller's albatross	<i>Thalassarche bulleri</i>
000586	joint venture tuna longliner	1341	38	614	19/05/2000	off Jackson Bay	Buller's albatross	<i>Thalassarche bulleri</i>
000722	joint venture tuna longliner	1341	59	892	15/06/2000	East Cape	Buller's albatross	<i>Thalassarche bulleri</i>
000723	joint venture tuna longliner	1341	59	899	15/06/2000	East Cape	Buller's albatross	<i>Thalassarche bulleri</i>
000724	joint venture tuna longliner	1341	59	893	15/06/2000	East Cape	Gibson's (wandering) albatross	<i>Diomedea gibsoni</i>
000729	joint venture tuna longliner	1341	59	896	15/06/2000	East Cape	Gibson's (wandering) albatross	<i>Diomedea gibsoni</i>
000730	joint venture tuna longliner	1341	59	897	15/06/2000	East Cape	Gibson's (wandering) albatross	<i>Diomedea gibsoni</i>
000727	joint venture tuna longliner	1341	62	969	18/06/2000	East Cape	Gibson's (wandering) albatross	<i>Diomedea gibsoni</i>
000704	joint venture tuna longliner	1341	62	970	18/06/2000	East Cape	grey petrel	<i>Procellaria cinerea</i>
000588	joint venture tuna longliner	1341	14	217	19/04/2000	off Stewart Island	southern royal albatross	<i>Diomedea epomophora</i>
000579	joint venture tuna longliner	1341	9	157	14/04/2000	off Timaru	white-capped albatross	<i>Thalassarche steadi</i>
000576	joint venture tuna longliner	1341	14	224	19/04/2000	east off Stewart Island	white-capped albatross	<i>Thalassarche steadi</i>
000718	joint venture tuna longliner	1344	9	120	21/04/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000719	joint venture tuna longliner	1344	11	188	23/04/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000720	joint venture tuna longliner	1344	55	944	13/06/2000	south of Cape Foulwind	white-capped albatross	<i>Thalassarche steadi</i>
000573	joint venture tuna longliner	1341	11	183	16/04/2000	off Otago	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000570	joint venture tuna longliner	1341	11	190	16/04/2000	off Otago	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000568	joint venture tuna longliner	1341	12	192	17/04/2000	north of Pukaki Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000567	joint venture tuna longliner	1341	12	193	17/04/2000	north of Pukaki Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000572	joint venture tuna longliner	1341	12	195	17/04/2000	north of Pukaki Rise	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000569	joint venture tuna longliner	1341	12	196	17/04/2000	off Otago	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000725	adult breeder	male	1	one otolith	fish eyeball	third primary, primary coverts and secondary coverts moulting in both wings, downy brood patch
000721	adult	female	1	one whole squid (bait)	empty	light body moult, 4-6 primaries moulting on both wings, downy brood patch
000587	adult breeder	male	5+	empty	empty	bare brood patch
000586	adult breeder	female	2	squid bait	empty	mainly bare brood patch
000722	adult non-breeder	female	1	one whole squid (bait)	empty	full downy brood patch
000723	adult	male	1	one whole squid (bait)	gone	light body moult, downy brood patch
000724	adult	female	5	empty	squid beaks	heavy body moult, some tail moult, outer primaries, primary coverts and secondary coverts moulting in both wings, mostly downy brood patch
000729	adult	female	1	empty	squid beaks	heavy body moult, some tail moult, outer two primaries and coverts moulting in both wings, downy brood patch
000730	adult	male	U	empty	gone	some body moult
000727	adult	female	1	empty	squid beaks	heavy body moult, some tail moult, outer two primaries and secondary coverts moulting in both wings, downy brood patch
000704	adult	female	4	empty	squid beaks	part downy brood patch
000588	adult	male	2	fish sludge	eyeballs, otoliths and squid beaks	full downy brood patch
000579	adult	male	1	empty	empty	partly downy brood patch
000576	adult	female	2	empty	empty	downy brood patch, some body moult
000718	adult non-breeder	female	3	empty	empty	some body moult, full downy brood patch
000719	adult	female	4	empty	empty	light body moult, part bare brood patch (may be due to abrasion)
000720	adult	female	3	empty	fish bones, squid eyeballs, squid beak, otoliths	very light body moult, partly bare brood patch
000573	adult	female	3	proventricular oil, bait fish and hook	squid beaks	full downy brood patch, some body moult
000570	adult breeder	male	3	proventricular oil	worms and squid beaks	partly downy brood patch
000568	adult	male	3	empty	worms and squid beaks	downy brood patch, some body moult
000567	sub-adult	female	3	empty	squid beaks	3/4 downy brood patch, some body moult
000572	adult	male	4	proventricular oil, bait fish and hook	squid beaks	full downy brood patch, some body moult
000569	adult	male	2	full, 2xbait fish and sludge	squid beaks	downy brood patch, some body moult

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000571	joint venture tuna longliner	1341	14	223	19/04/2000	east off Stewart Island	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000677	scampi trawler	1282	50	1	12/11/1999	off Hawkes Bay	Flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
000648	scampi trawler	1282	58	2	15/11/1999	off Hawkes Bay	Salvin's albatross	<i>Thalassarche salvini</i>
000580	scampi trawler	1332	34	1	28/03/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000601	squid trawler	1353	47	1	31/05/2000	Chatham Rise	Antipodean (wandering) albatross	<i>Diomedea antipodensis</i>
000671	squid trawler	1314	20	3	03/02/2000	off Auckland Islands	common diving petrel	<i>Pelecanoides urinatrix</i>
000589	squid trawler	1326	52	1	10/03/2000	north of The Snares	Salvin's albatross	<i>Thalassarche salvini</i>
000575	squid trawler	1310	101	1	10/03/2000	south off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
000675	squid trawler	1315	139	1	14/03/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000630	squid trawler	1322	8	1	18/02/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000631	squid trawler	1322	8	2	18/02/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000632	squid trawler	1322	8	3	18/02/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000673	squid trawler	1322	26	B002	26/02/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000676	squid trawler	1326	104	2	27/03/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000666	squid trawler	1314	26	5	06/02/2000	off Auckland Islands	Unknown	<i>Unknown</i>
000582	squid trawler	1310	72	1	23/02/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000594	squid trawler	1310	72	2	23/02/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000577	squid trawler	1310	72	3	23/02/2000	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000593	squid trawler	1310	72	4	23/02/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000578	squid trawler	1310	72	5	23/02/2000	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000643	squid trawler	1313	71	1	13/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000642	squid trawler	1313	71	2	13/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000652	squid trawler	1313	107	1	23/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000617	squid trawler	1314	14	1	02/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000650	squid trawler	1314	19	2	03/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000629	squid trawler	1314	21	4	04/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000618	squid trawler	1314	41	6	11/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000571	adult	male	4	bait fish	otoliths, squid beaks	full downy brood patch, some body moult
000677	adult	female	1	empty	oil, plastic, eyeballs, otoliths	downy brood patch
000648	adult breeder	female	1	offal, discards (3x small fish) and horse barnacle	horse barnacle	bare brood patch
000580	adult	male	3	large quantities of offal	fish bones, eyeballs, otoliths	full downy brood patch, some body moult
000601	adult	male	1	offal (fish heads) and sludge	fish bones, eyeballs, otoliths	downy brood patch, extensive body moult
000671	juvenile	female	4	empty	empty	downy brood patch
000589	adult	female	2	full, offal	empty	downy brood patch, some body moult
000575	adult	male	2	suspected proventricular oil	otoliths, squid beaks	partly downy brood patch with central stripe
000675	adult	female	1	partly full	full	partly bare brood patch with downy centre and upper area
000630	adult	female	2	partly full	?empty	slightly bare brood patch
000631	adult	male	2	partly full	full	slightly bare brood patch
000632	adult	male	3	full	full	part downy brood patch
000673	adult	male	2	partly full	full	part bare brood patch
000676	adult	male	3	empty	full	partly bare brood patch with downy central stripe
000666	U	U	U	?	?	?
000582	adult	male	2	offal (fish headx4)	empty	full downy brood patch
000594	adult	male	1	empty	fish bones and eyeballs	partly downy brood patch
000577	adult	male	4	offal (fish head)	fish eyeballs, bones and small squid beaks	mainly bare brood patch, some body moult
000593	adult breeder	male	2	offal (fish heads and tail)	squid beaks	bare brood patch
000578	adult breeder	female	2	fish bones, otoliths, squid beaks	empty	mainly bare brood patch
000643	adult breeder	female	3	empty	empty	partly bare brood patch, slight body moult
000642	adult breeder	female	4	small amount of fish sludge	fish bones	mainly bare brood patch, some tail covert moult
000652	adult breeder	male	2	empty	empty	part downy brood patch
000617	adult non-breeder	female	3	squid heads (x2)	eyeball (squid)	downy brood patch
000650	adult	male	5	small amount of fish sludge	eyeballs, fish bones and otoliths	mainly bare brood patch
000629	U	?female	U	?	?	?
000618	adult	male	3	squid heads (x2)	squid beaks	part bare brood patch

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000623	squid trawler	1314	43	7	11/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000614	squid trawler	1314	65	8	17/02/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000651	squid trawler	1314	70	9	18/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000646	squid trawler	1314	71	10	18/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000683	squid trawler	1314	105	11	02/03/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000624	squid trawler	1314	118	13	06/03/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000592	squid trawler	1315	71	1	24/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000590	squid trawler	1315	88	1	01/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000615	squid trawler	1315	129	1	13/03/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000581	squid trawler	1320	34	1	23/02/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000598	squid trawler	1322	37	B003	01/03/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000599	squid trawler	1322	45	B004	05/03/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000597	squid trawler	1328	15	2	03/03/2000	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000591	squid trawler	1328	98	4	26/03/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000600	squid trawler	1328	134	5	06/04/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000596	squid trawler	1353	47	2	31/05/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000654	squid trawler	1313	81	1	15/02/2000	off Auckland Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000655	squid trawler	1313	81	2	15/02/2000	off Auckland Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000656	squid trawler	1313	81	3	15/02/2000	off Auckland Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000657	squid trawler	1313	81	4	15/02/2000	off Auckland Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000653	squid trawler	1313	107	1a	23/02/2000	off Auckland Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000641	squid trawler	1314	106	12	02/03/2000	off Auckland Islands	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000678	squid trawler	1315	117	1	09/03/2000	off The Snares	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
000605	trawler	1352	95	1	30/05/2000	Chatham Rise	black-browed albatross	<i>Thalassarche melanophrys</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000623	adult breeder	male	5	squid tentacles and heads	empty	part downy brood patch
000614	adult breeder	female	5	empty	eyeballs and squid beaks	mainly bare brood patch
000651	adult	male	1	squid bits, crab and squid beaks	squid beaks	part bare brood patch
000646	adult breeder	male	4	squid bits	empty	bare brood patch
000683	adult	male	2	few fish bits	empty	partly bare brood patch, moderate body moult
000624	U	?male	U	?	?	U
000592	adult	male	2	empty	empty	downy brood patch
000590	adult	male	5	small amount of fish offal	empty	partly downy brood patch, some body moult
000615	adult	male	2	empty	empty	part downy brood patch, some body moult
000581	adult breeder	female	5	empty	eyeballs and squid beaks	mainly bare brood patch
000598	adult breeder	male	1	fish sludge	fish vertebrate	bare brood patch
000599	adult breeder	female	2	empty	empty	mainly downy brood patch
000597	adult	male	1	whole squid, squid head	eyeballs and squid beaks	partly downy brood patch
000591	adult	male	5	empty	empty	downy brood patch
000600	adult	male	3	full - sludge, whole squid	fish bones	downy brood patch, traces body moult
000596	adult	male	5	fish bones and squid head	empty	downy brood patch, heavy body moult
000654	adult	female	2	orange proventricular oil, squid bits	squid beaks	partly bare brood patch, slight body moult
000655	adult	male	2	squid bits and eyeballs	empty	partly bare brood patch, slight body moult
000656	adult	male	2	squid bit and proventricular oil	eyeballs, proventricular oil, worms and squid beaks	part bare brood patch
000657	adult	male	3	proventricular oil	worms and squid beaks	partly bare brood patch, slight body moult
000653	adult	male	1	proventricular oil	worms and proventricular oil	downy brood patch
000641	adult	male	2	little amount of proventricular oil and fish eyeball	?	part bare brood patch
000678	adult	female	1	squid x 2	eyeballs and squid beaks	partly bare brood patch, some body moult
000605	adult	male	2	full - offal bits	empty	downy brood patch, trace body moult, some secondaries and secondary culverts, extensive tail moult

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000847	trawler	1395	26	1	12/09/2000	off Cape Foulwind	black-browed albatross	<i>Thalassarche melanophrys</i>
000595	trawler	1347	126	1	07/05/2000	between The Snares and Auckland Islands	Buller's albatross	<i>Thalassarche bulleri</i>
000628	trawler	1348	28	1	20/04/2000	off The Snares	Buller's albatross	<i>Thalassarche bulleri</i>
000627	trawler	1348	119	2	14/05/2000	off Timaru	Buller's albatross	<i>Thalassarche bulleri</i>
000606	trawler	1352	103	1	01/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000602	trawler	1352	119	1	04/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000603	trawler	1352	119	3	04/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000609	trawler	1352	126	1	06/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000735	trawler	1363	7	1	08/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000731	trawler	1363	13	2	11/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000734	trawler	1363	13	3	11/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000732	trawler	1363	13	4	11/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000809	trawler	1363	17	1	14/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000733	trawler	1363	23	1	16/06/2000	Chatham Rise	Buller's albatross	<i>Thalassarche bulleri</i>
000848	trawler	1395	26	1	12/06/2000	off Cape Foulwind	Buller's albatross	<i>Thalassarche bulleri</i>
000583	trawler	1324	126	1	14/03/2000	Campbell Plateau	Campbell albatross	<i>Thalassarche impavida</i>
000584	trawler	1324	151	1	20/03/2000	Campbell Island Rise	Campbell albatross	<i>Thalassarche impavida</i>
000702	trawler	1363	81	1	05/07/2000	south of Cape Foulwind	fairy prion	<i>Pachyptila turtur</i>
000701	trawler	1363	87	1	06/07/2000	south of Cape Foulwind	fairy prion	<i>Pachyptila turtur</i>
000703	trawler	1363	14	1	12/06/2000	Chatham Rise	grey petrel	<i>Procellaria cinerea</i>
000862	trawler	1395	45	3	29/09/2000	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
000871	trawler	1396	29	1	24/09/2000	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
000616	trawler	1352	114	1	03/06/2000	Chatham Rise	northern giant petrel	<i>Macronectes halli</i>
000613	trawler	1352	120	1	04/06/2000	Chatham Rise	northern giant petrel	<i>Macronectes halli</i>
000619	trawler	1288	172	1	07/12/1999	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000644	trawler	1297	30	1	29/11/1999	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000836	trawler	1398	50	1	24/09/2000	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000837	trawler	1398	63	4	27/09/2000	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000847	sub-adult	male	5	fish sludge	empty	some body and tail moult, downy brood patch
000595	adult	female	1	small amount of fish offal	fish eyeball	partly downy brood patch, some body moult
000628	U	U	U	?	?	U
000627	U	U	U	?	?	U
000606	adult	female	1	offal (fish bits and skin)	empty	downy brood patch, trace body moult, slight tail moult
000602	adult	male	3	empty	empty	downy brood patch, some body moult
000603	adult	female	2	fish skin and sludge	empty	downy brood patch
000609	adult	male	3	empty	otoliths	downy brood patch, extensive body moult
000735	adult	female	3	fish sludge	fish bones	heavy body moult, downy brood patch
000731	adult	female	1	full, offal	fish bones, fish eyeballs	downy central stripe, pinning elsewhere
000734	adult breeder	female	1	empty	krill	bare brood patch, light body moult
000732	adult breeder	female	5	full, fish sludge	fish bones and sludge	bare brood patch
000809	adult breeder	female	2	small piece fish offal	fish eyeball, fish bones	some body moult, partly bare brood patch (some pinning)
000733	adult	female	1	full, fish sludge, offal, fish guts and skin	fish bones, fish eyeballs, otoliths	mostly downy brood patch, some pinning, light body moult
000848	sub-adult	female	3	fish offal and sludge	otoliths x2, small squid beaks x 2	heavy body moult, downy brood patch
000583	adult	female	4	offal	empty	fully downy brood patch, trace body moult
000584	adult	female	3	fish skin and offal	eyeballs and squid beaks	full downy brood patch, some body moult
000702	adult	male	3	empty	empty	downy brood patch
000701	adult	male	3	oil	squid beaks	downy brood patch
000703	adult	female	2	full, fish sludge and bits	otoliths and squid beaks	central stripe downy, pinning down elsewhere, some body moult
000862	adult	male	3	offal, fish bones, fish skin	fish bones, 4x small squid beaks	some body moult, downy brood patch
000871	adult	male	2	offal, some proventricular oil	otoliths, worms, squid beaks	some body moult, downy brood patch
000616	adult	male	2	empty	empty	downy brood patch, some body moult
000613	immature	male	3	?proventricular oil	feathers	brown downy brood patch, heavy body moult
000619	adult breeder	female	1	fish bones, squid beaks, seaweed	horse barnacle	bare brood patch
000644	adult	female	1	empty	salp, otolith and squid beaks	part bare brood patch
000836	adult	male	3	large fish head (offal)	sludge	part downy brood patch
000837	adult non-breeder	female	4	empty	otoliths	part bare brood patch

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000839	trawler	1398	64	5	27/09/2000	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000842	trawler	1398	64	6	27/09/2000	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000840	trawler	1398	64	7	27/09/2000	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
000574	trawler	1291	8	1	10/11/1999	off Otago	sooty shearwater	<i>Puffinus griseus</i>
000636	trawler	1347	12	1	16/04/2000	off Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000640	trawler	1347	13	2	16/04/2000	off Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000639	trawler	1347	13	3	16/04/2000	off Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000638	trawler	1347	13	4	16/04/2000	off Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000637	trawler	1347	13	5	16/04/2000	off Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000674	trawler	1347	46	1	22/04/2000	off The Snares	sooty shearwater	<i>Puffinus griseus</i>
000635	trawler	1347	61	1	25/04/2000	off Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000633	trawler	1348	23	1	19/04/2000	between The Snares and Auckland Islands	sooty shearwater	<i>Puffinus griseus</i>
000634	trawler	1348	119	1	14/05/2000	off Timaru	sooty shearwater	<i>Puffinus griseus</i>
000833	trawler	1398	59	2	26/09/2000	Chatham Rise	southern cape pigeon	<i>Daption capense</i>
000844	trawler	1398	63	3	27/09/2000	Chatham Rise	southern royal albatross	<i>Diomedea e. epomophora</i>
000672	trawler	1352	9	2	12/05/2000	Chatham Rise	welcome swallow	<i>Hirundo tahitica</i>
000649	trawler	1283	79	1	23/10/1999	off Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000645	trawler	1298	20	1	21/11/1999	between The Snares and Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000647	trawler	1298	23	1	22/11/1999	off Puyseger Point	white-capped albatross	<i>Thalassarche steadi</i>
000621	trawler	1348	169	4	28/05/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000626	trawler	1348	169	5	28/05/2000	off The Snares	white-capped albatross	<i>Thalassarche steadi</i>
000622	trawler	1348	201	1	06/06/2000	between The Snares and Auckland Islands	white-capped albatross	<i>Thalassarche steadi</i>
000607	trawler	1352	5	1	10/05/2000	off Timaru	white-capped albatross	<i>Thalassarche steadi</i>
000611	trawler	1352	41	1	19/05/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000620	trawler	1352	44	1	20/05/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000604	trawler	1352	119	2	04/06/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000839	adult breeder	female	4	fish guts and scraps (offal)	fish eyeballs, horse barnacles, otoliths, wood bark	mostly bare brood patch
000842	adult	female	2	offal	fish eyeball	bare brood patch
000840	adult breeder	male	5	fish offal	fish bones, fish eyeballs, otoliths	bare brood patch
000574	adult breeder	male	2	empty	otoliths, squid beaks	downy brood patch
000636	adult	male	4	empty	full	part downy brood patch
000640	adult	female	2	empty	part full	part bare brood patch
000639	adult	male	5	empty	full	part bare brood patch
000638	adult	male	4	mainly empty	full	part bare brood patch
000637	adult	male	2	partly full	full	part bare brood patch
000674	adult breeder	male	3	partly full	full	mainly bare brood patch with downy central stripe
000635	adult	male	3	empty	?empty	downy brood patch
000633	adult	male	4	full	full	part bare brood patch
000634	adult	male	2	empty	full	mainly bare brood patch
000833	adult	male	1	empty	small squid beak, squid eyeball, worms	downy brood patch
000844	adult breeder	male	2	worms, eel head, squid beaks	squid eyeballs, squid beaks	downy brood patch
000672	adult	U	U	?	?	U
000649	adult	male	5	empty	empty	fully downy brood patch
000645	adult breeder	female	1	offal and fish sludge	empty	bare brood patch
000647	adult breeder	male	4	fish sludge and skin	eyeballs and otoliths	bare brood patch
000621	adult	female	1	krill and some fish bones	krill and fish bones	fully downy brood patch
000626	U	?male	U	?	?	u
000622	adult	male	1	offal (1 whole rat tail)	fishbones	downy brood patch, slight body moult
000607	adult	female	1	full (fish tails x 5)	fish eyeballs	downy brood patch, some body moult
000611	sub-adult	male	4	full (fish offal and skin)	fish bones, eyeballs and otoliths	downy brood patch
000620	adult	male	5	fish sludge	fish eyeballs, bones and otoliths	downy brood patch, heavy body moult, outer two primaries on both wings, some tail moult
000604	adult	female	1	offal (fish skin and backbone)	fish bones, eyeballs, worms, otoliths and squid beaks	downy brood patch, some body moult, tail moult starting

Appendix 6. Autopsy identification and details *continued*.

AUTOPSY #	Vessel type	Trip no.	Haul no.	Sample no.	Date	General position	Species English name	Species scientific name
000625	trawler	1352	126	2	06/06/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000612	trawler	1352	126	3	06/06/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000608	trawler	1352	127	1	06/06/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000610	trawler	1352	127	2	06/06/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000845	trawler	1362	16	1	28/06/2000	off Cape Foulwind	white-capped albatross	<i>Thalassarche steadi</i>
000737	trawler	1363	13	1	11/06/2000	Chatham Rise	white-capped albatross	<i>Thalassarche steadi</i>
000736	trawler	1369	19	1	08/07/2000	Challenger Plateau	white-capped albatross	<i>Thalassarche steadi</i>
000738	trawler	1369	19	2	08/07/2000	Challenger Plateau	white-capped albatross	<i>Thalassarche steadi</i>

AUTOPSY #	Age	Sex	Fat score	Stomach contents	Gizzard contents	Moult
000625	adult	male	5	fish bones and otoliths	fish bones and otoliths	downy brood patch, extensive body moult
000612	sub-adult	male	4	full (offal)	fish bones, eyeballs and otoliths	downy brood patch, extensive body moult, fresh primaries, some tail moult
000608	sub-adult	male	5	full - fish offal and skin	fish bones, eyeballs and otoliths	downy brood patch
000610	adult	female	2	full (fish sludge)	fish bones and otoliths	partly bare brood patch, slight body moult
000845	adult	male	3	fish sludge	fish eyeballs, fish bones, otoliths	heavy body and tail moult, heavy wing moult (inner and outer primaries), downy brood patch
000737	adult	male	1	full, fish sludge, offal	fish eyeballs, fish bones	some body moult, heavy tail moult, 2 outer primaries and some covert moult on both wings, downy brood patch
000736	adult	male	5	offal	fish bones, fish eyeballs	heavy body and tail moult, primaries and covert moult on both wings, mostly downy brood patch (bare central stripe, some pinning)
000738	adult	female	3	fish sludge, offal	fish eyeballs, fish bones	downy brood patch

U = unknown.