

# Autopsy report for seabirds killed and returned from New Zealand fisheries, 1 October 1998 to 30 September 1999

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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# Autopsy report for seabirds killed and returned from New Zealand fisheries, 1 October 1998 to 30 September 1999

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

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## ABSTRACT

Forty-three separate fishing trips between 1 October 1998 and 30 September 1999 with on-board observers returned 289 bird specimens killed as bycatch to various forms of fishing practice. Birds were received from squid, scampi and fish trawlers (63% of returns), domestic bottom longliners (25%) and tuna longliners—mainly chartered (joint venture) vessels (12%). The last-named was a significant reduction from the 78–81% returned in previous years. Seventeen taxa were represented with six constituting 90% of the returns (grey petrel, sooty shearwater, white-capped albatross, Buller's albatross, Salvin's albatross and white-chinned petrel). There was a high male bias to the specimens, while 84% of identifiable birds were adults. There was a strong relationship between fishing practice and bird stomach contents, with a high level of offal or fisheries discards found in the birds. There is a need to investigate control of this material, which acts as an attractant to seabirds. Sooty shearwaters were the most prolific ingesters of plastic and other extraneous material.

**Keywords:** seabirds, bycatch, albatross, shearwater, petrel, seabird diet, ingested plastic.

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Department of Conservation, Wellington. 41 p.

# 1. Introduction

Between 1 October 1998 and 30 September 1999 (the 1998/99 fishing year), 289 seabird specimens were returned from 43 separate fishing trips with on-board observers, where birds were killed as a bycatch to various forms of fishing practice. Most birds were returned from the trawler fleet (various targets) (63% of those returned). Domestic bottom longliners (25%) and tuna longliners (mainly chartered joint-venture vessels) with 12% of the returns made up the balance. This is a significant change in the proportions returned from previous years when tuna longlining produced the majority of the bycatch provided (Bartle 2000; Robertson 2000). The bird autopsies were undertaken for the Department of Conservation as a Conservation Services Levy (CSL) contract. 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 1998/99, 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 kill 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 kills and the 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 vessel machinery. Full morphometric measurements were made for most specimens.

Where there was a stated need for specimens of particular species, they were supplied following autopsy to Auckland Museum and the Museum of New Zealand Te Papa Tongarewa. Some albatross specimens were provided (through the Department of Conservation) to various Maori groups for traditional use of feathers. Some specimens of grey petrel were supplied to Massey University as material to be used in an oiled seabird workshop. Severely damaged specimens

unusable as scientific or cultural specimens were destroyed. Proventricular oil samples were provided to NIWA for calorific analysis.

All specimens were allocated a unique autopsy number and the details of species and individual birds in the report are presented in Tables 1-3 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 17 taxa (species) were represented. Six taxa constituted 90% of the returns [Individual numbers were: grey petrel, 70; sooty shearwater, 68; white-capped Albatross, 63; Buller's Albatross, 30; Salvin's Albatross, 15; and white-chinned petrel, 14]. No banded birds were returned.

The specimens overall had a high male bias (Table 1) in contrast to the 1998 reporting period (Robertson 2000), but this was primarily caused by the heavy male representation among the grey petrels and sooty shearwaters returned. The sooty shearwaters continued to show a return of predominantly male specimens. Grey petrels showed an almost complete reversal of the sex ratio from the previous report, which suggests a significant difference in feeding areas between sexes.

Adult birds (84.6%) continued to form the majority of identifiable specimens returned (93% in 1998).

There was, as in the previous year's results, a high proportion of specimens with significant stomach contents (70% compared with 56% in 1997/98 (Robertson 2000) and only 11% in 1996/97 (Bartle 2000)). Some 55% of the birds caught on chartered joint-venture tuna boats had empty stomachs and 35% had identifiable bait or bait pieces. For domestic bottom longliners, 43% of those birds with identifiable stomachs (some eaten by lice) were empty and 52% contained identifiable bait. Among fish trawlers 20% of the birds had empty stomachs, while 68% contained offal in various forms as well as small fish probably associated with fish bycatch. Birds caught on squid trawlers had 36% with empty stomachs and 53% containing offal, mainly associated with fish bycatch, but not a high proportion of squid. There is a strong relationship between the fishing practice of boats and the stomach contents of the subsequently caught birds. This suggests that mitigation practices need to

address the significant attractant to birds of offal and discards about vessels processing their catch at sea.

Comparison between this year's birds and the previous data on stomach contents suggests that pelagic seabirds generally were still in a period of shorter food supply than normal (see Robertson 2000). Table 2 compares the subcutaneous fat scores of specimens with those for the 1996/97 and 1998 reporting periods for selected species caught in significant numbers. For all species where there are reasonably comparable data, the fat scores in 1998 and 1998/99 remain significantly lower than for 1996/97. This result strongly supports the suggestion of continuing food shortages.

Extraneous non-food items, if present, were mainly found in the birds' gizzards. Buller's and Salvin's albatrosses showed one example of plastic and one of seaweed for each taxon. Northern giant petrels showed single examples of plastic, stones and seaweed, while two specimens contained bird feathers. Cape pigeon spp., and white-chinned petrels each had single examples of plastic and stones, while flesh-footed shearwaters contained two examples of these objects. Sooty shearwaters were the most prolific ingesters of extraneous material, with plastic (20 individuals), stones (6), wood (4), seaweed (2), tinfoil (1), rope (1) and green manuka beetle (1) showing a cosmopolitan selection. Some 22 pieces of plastic were found in one bird.

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 3 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 identification 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 3 indicates that such identifications of birds released at sea may need to be treated with caution.

## 4. Acknowledgements

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 and the staff of Wellington Cold Storage Ltd provided an efficient frozen transport and storage facility while the Ministry of Defence provided leasehold space for the autopsy laboratory facility. Reg Bleazard provided the essential administrative link with the observers and ensured that the specimens arrived from storage in

an identifiable state. Ian West provided support and patience while the autopsy system was incorporated into the workload of CJRR while still employed by the Department of Conservation until April 2000. Seabed Mapping New Zealand Ltd constructed the maps from the position data supplied from the autopsy database and the GEBCO 97 (1997) bathymetric database. C. Edkins draughted the maps published with this report. Ian West and Reg Blezard commented on a draft of this report.

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TABLE 1. SPECIES AND NUMBERS OF BIRDS KILLED IN VARIOUS FISHERIES BETWEEN 1 OCTOBER 1998 AND 30 SEPTEMBER 1999.

	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			2				2		2		1	1	
black-bellied storm petrel						1	1		1		1		
black-browed albatross			2			2	4	2	2		2	2	
Buller's albatross	1		11		4	14	30	15	14	1	29		1
Campbell albatross			4			2	6	2	4		4	2	
cape pigeon spp.						1	1		1			1	
flesh-footed shearwater		2		4			6	4	2		6		
Gibson's (wandering) albatross			1				1	1			1		
grey petrel	62		8				70	37	9	24	48		22
light-mantled sooty albatross			1				1	1			1		
northern giant petrel	2					2	4	1	2	1	1	3	
Salvin's albatross				1		14	15	7	7	1	11	4	
Snares cape pigeon	1						1			1			1
sooty shearwater				3	38	27	68	64	4		64	4	
southern royal albatross			1				1		1		1		
white-capped albatross			4	1	29	29	63	37	24	2	58	3	2
white-chinned petrel	5				4	5	14	10	4		14		
UNKNOWN						1	1			1			1
<b>TOTALS</b>	<b>71</b>	<b>2</b>	<b>34</b>	<b>9</b>	<b>75</b>	<b>98</b>	<b>289</b>	<b>181</b>	<b>77</b>	<b>31</b>	<b>242</b>	<b>20</b>	<b>27</b>

<b>PERCENTAGE 1998/99</b>	<b>24.6</b>	<b>0.7</b>	<b>11.8</b>	<b>3.1</b>	<b>26.0</b>	<b>33.9</b>	<b>289</b>	<b>62.6</b>	<b>26.6</b>	<b>10.7</b>	<b>84.4</b>	<b>6.2</b>	<b>9.3</b>
<b>PERCENTAGE 1997/98</b>	0.5	2.5	76	1.5	0.5	19	195	35	63	2	93	5	2
<b>PERCENT 1996/97AGE</b>	4.0	3.7	78	0.3	5	8	350	54	43	3	85	15	0

TABLE 2. COMPARATIVE FAT SCORES FOR SELECTED BIRD SPECIES FOR THE 1996/97, 1998 AND 1998/99 REPORTING PERIODS.

	Totals			Fat scores					
	1996/97	1998	1998/99	1	2	3	4	5	U
<b>Antipodean (wandering) albatross</b>	<b>52</b>				4	8	20	18	2
		<b>32</b>		17	8	3	1	1	2
			<b>2</b>	1		1			
<b>black-browed albatross</b>	<b>18</b>					2	5	11	
		<b>2</b>		1			1		
			<b>4</b>	2		2			
<b>Buller's albatross</b>	<b>11</b>					1	5	5	
		<b>10</b>		2	4	1	1		2
			<b>30</b>	9	10	3	2	5	1
<b>Campbell albatross</b>	<b>45</b>					4	21	16	4
		<b>12</b>		4	2	4	1	1	
			<b>6</b>	4	1	1			
<b>flesh-footed shearwater</b>	<b>7</b>					1	4		2
		<b>1</b>			1				
			<b>6</b>	3	1	2			
<b>Gibson's (wandering) albatross</b>	<b>10</b>				1		4	4	1
		<b>19</b>		10	4	4	1		
			<b>1</b>			3			
<b>grey petrel</b>	<b>70</b>					4	42	23	1
		<b>73</b>			24	45	4		
			<b>70</b>	5	13	13	10	3	26
<b>Salvin's albatross</b>	<b>14</b>					4	3	7	
		<b>1</b>		1					
			<b>15</b>	3	8	1	1	2	
<b>sooty shearwater</b>	<b>24</b>					2	10	12	
		<b>26</b>		6	13	5	1	1	
			<b>68</b>	9	23	21	11	4	
<b>white-capped albatross</b>	<b>33</b>					10	4	11	8
		<b>7</b>		3	1	3			
			<b>63</b>	14	17	13	7	5	7
<b>white-chinned petrel</b>	<b>21</b>				2	4	9	6	
		<b>5</b>		1	2	2			
			<b>14</b>	5	4	2		3	

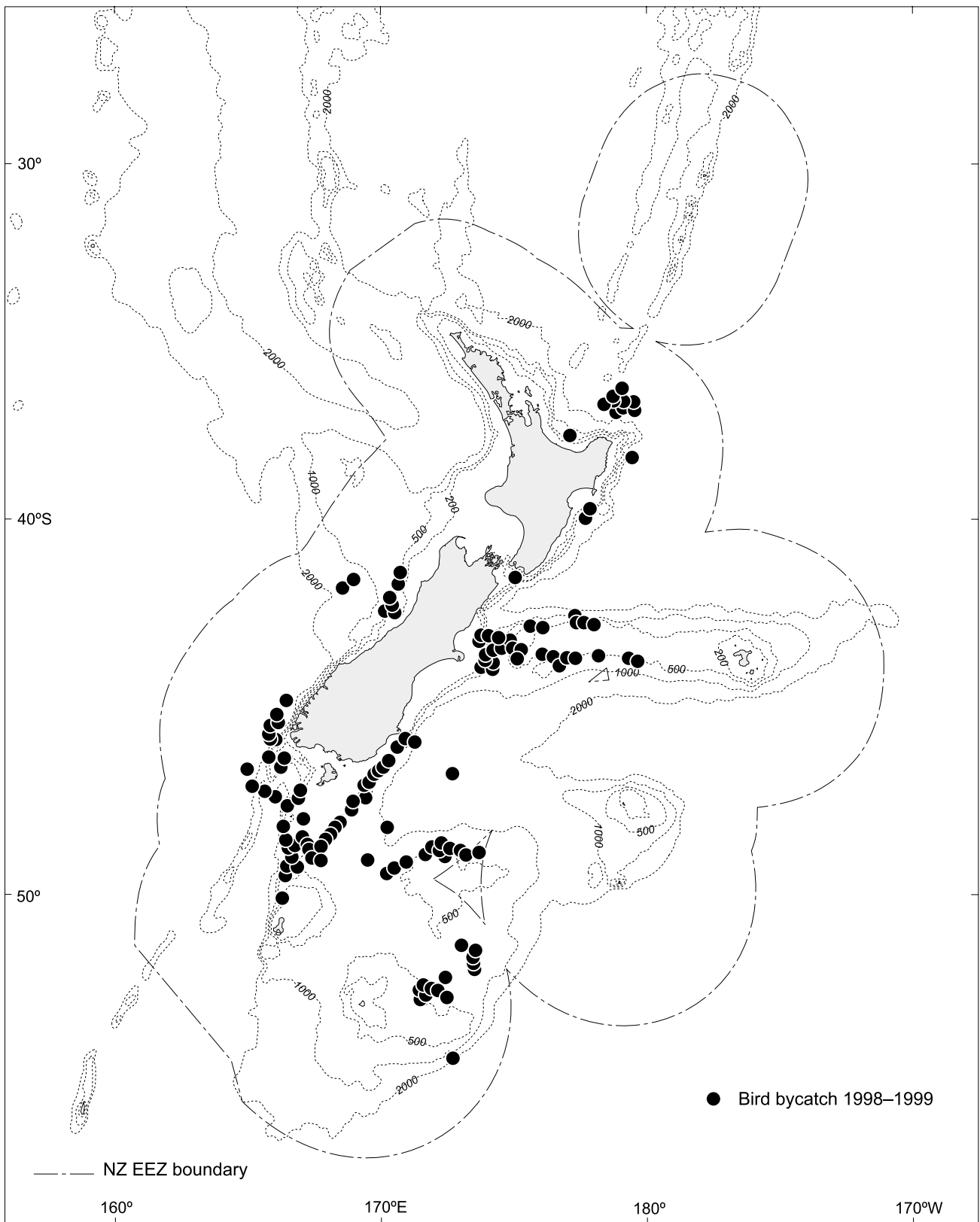
U = unknown.

TABLE 3. ANALYSIS OF IDENTIFICATIONS MADE BY ON-BOARD OBSERVERS AT SEA WHEN COMPARED WITH AUTOPSY IDENTIFICATION FOR BIRDS KILLED BETWEEN 1 OCTOBER 1998 AND 30 SEPTEMBER 1999.

	Correct ID	Wrong ID	ID as correct 'spp' group	ID not on label	Seabird large or albatross	Seabird small	Petrel	Seabird
Antipodean (wandering) albatross		2	(2)					
black-bellied storm petrel							1	
black-browed albatross		2	(2)	1	1			
Buller's albatross	27	1		2				
Campbell albatross	3	3	(2)					
cape pigeon spp.	1							
flesh-footed shearwater	6							
Gibson's (wandering) albatross		1	(1)					
grey petrel	69	1						
light-mantled sooty albatross	1							
northern giant petrel		3		1				
Salvin's albatross	11	1		2	1			
Snares cape pigeon		1						
sooty shearwater	48			2		16	2	
southern royal albatross		1						
white-capped albatross	39	14		4	6			
white-chinned petrel	6	5				1	1	1
UNKNOWN				1				
<b>TOTALS</b>	<b>211</b>	<b>35</b>	<b>(7)</b>	<b>13</b>	<b>8</b>	<b>17</b>	<b>4</b>	<b>1</b>

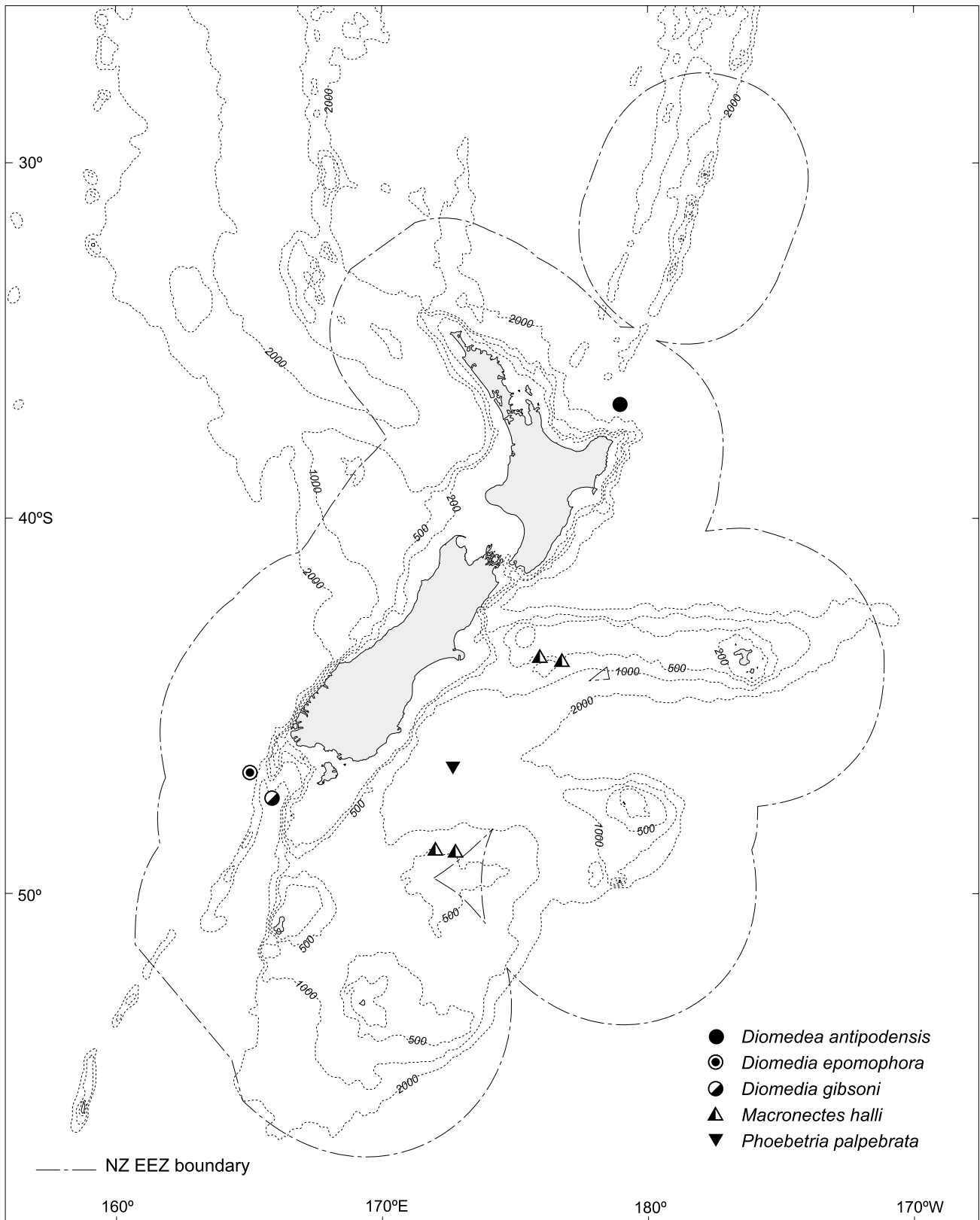
APPENDIX 1

**Kill locations of seabirds killed during period 1 October 1998 to 30 September 1999, and returned for autopsy from New Zealand fisheries.**



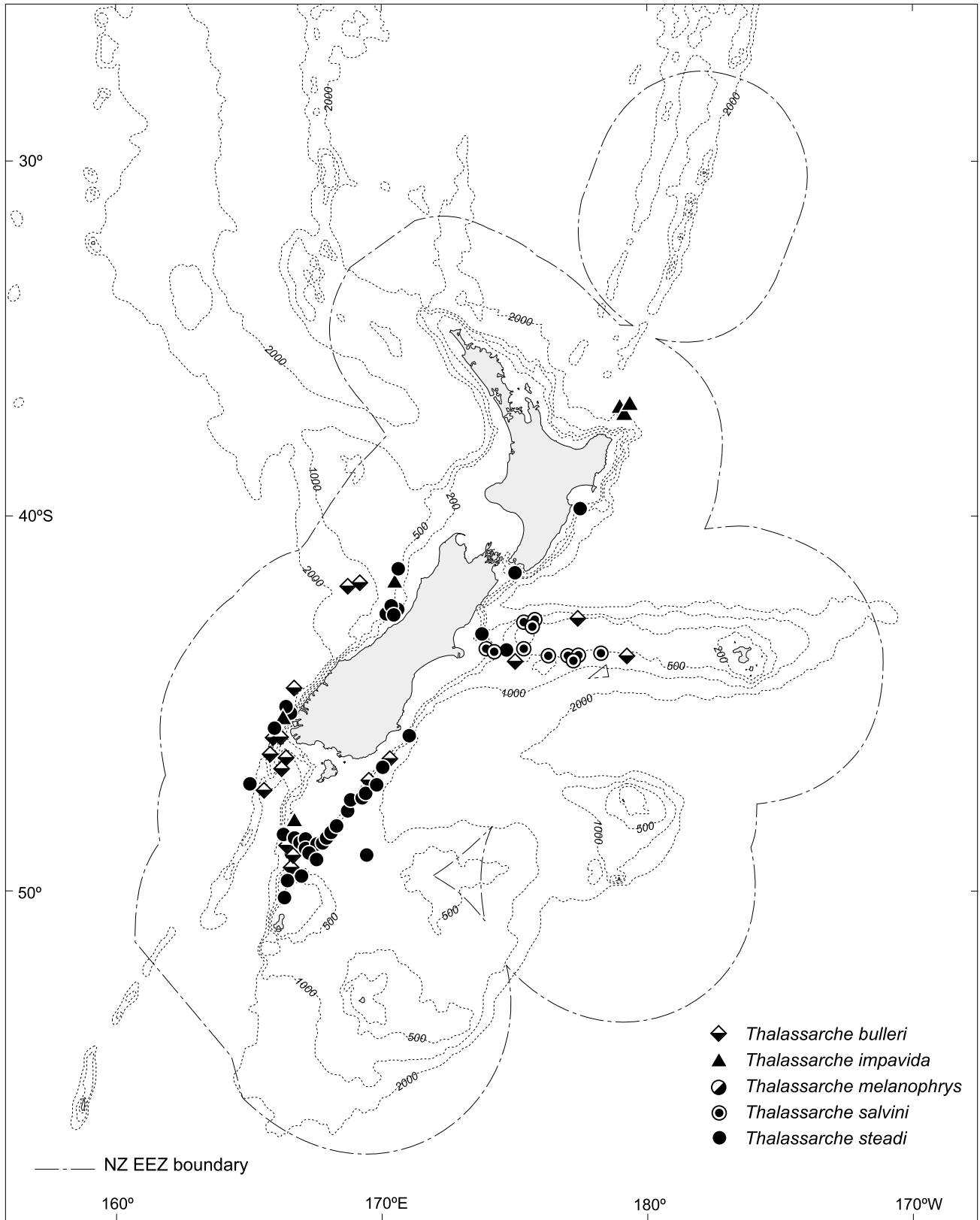
## APPENDIX 2

**Kill locations during period 1 October 1998 to 30 September 1999, of *Diomedea*, *Macronectes* and *Phoebetria* returned for autopsy.**



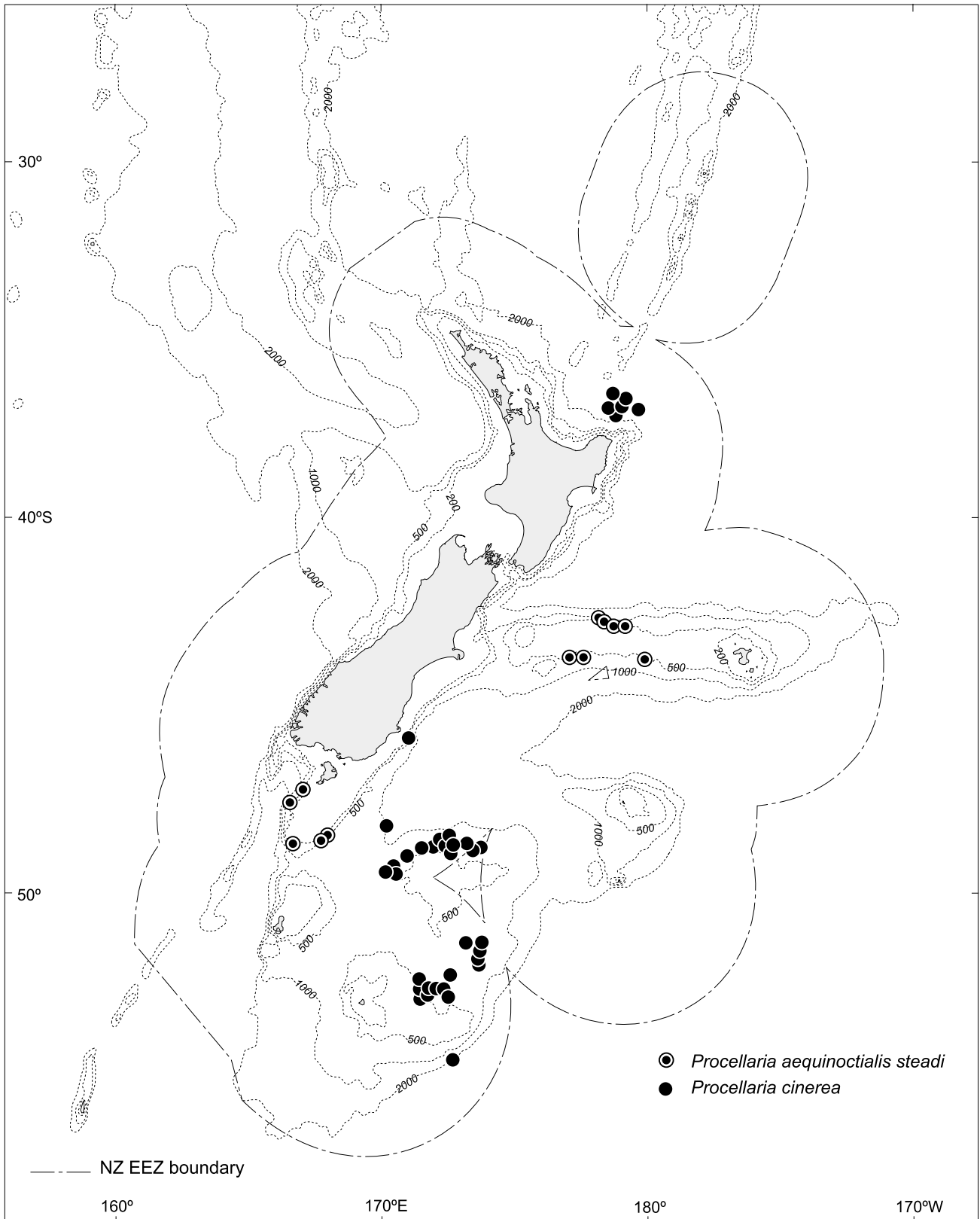
APPENDIX 3

Kill locations during period 1 October 1998 to 30 September 1999, of *Thalassarche* returned for autopsy.



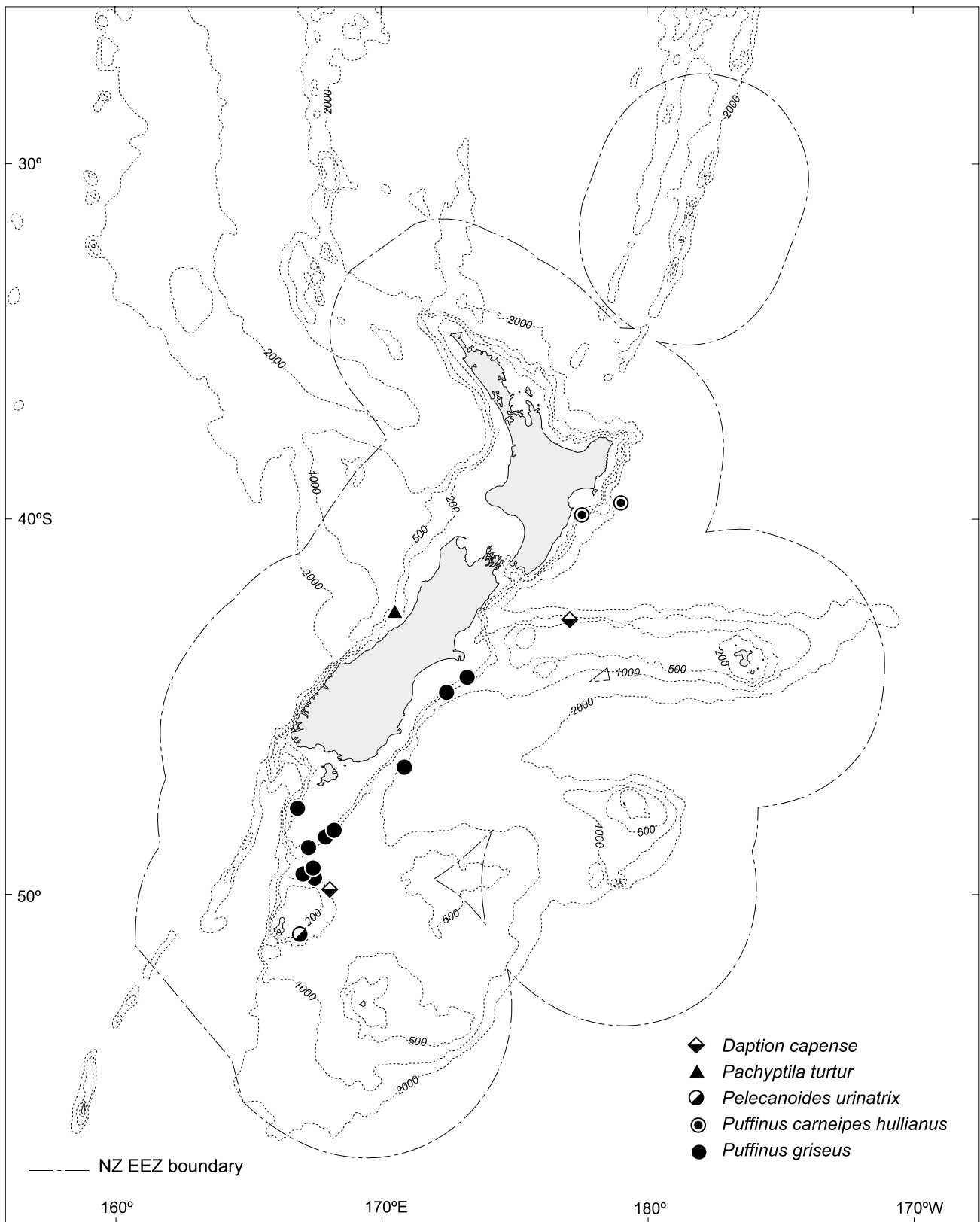
APPENDIX 4

Kill locations during period 1 October 1998 to 30 September 1999, of *Procellaria* returned for autopsy.



## APPENDIX 5

Kill locations during period 1 October 1998 to 30 September 1999, of *Daption*, *Fregetta*, and *Puffinus* returned for autopsy.





APPENDIX 6

Autopsy identification and details. Listed by vessel type, of birds killed and returned from observed vessels, for period 1 October 1998 to 30 September 1999.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990278	domestic bottom longliner	1182	9	3	5/1/99	Hikurangi Trench	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990263	domestic bottom longliner	1226	62	1	14/5/99	Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990264	domestic bottom longliner	1226	70	2	16/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990265	domestic bottom longliner	1226	72	3	17/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990268	domestic bottom longliner	1226	73	4	17/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990270	domestic bottom longliner	1226	80	5	19/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990258	domestic bottom longliner	1226	80	6	19/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990262	domestic bottom longliner	1226	80	7	19/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990251	domestic bottom longliner	1226	83	8	20/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990269	domestic bottom longliner	1226	94	9	22/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990267	domestic bottom longliner	1226	95	10	22/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990261	domestic bottom longliner	1226	107	11	25/5/99	off East Coast (Balclutha)	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990249	domestic bottom longliner	1226	125	13	29/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990243	domestic bottom longliner	1226	125	14	29/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990252	domestic bottom longliner	1226	125	15	29/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990260	domestic bottom longliner	1226	125	16	29/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990242	domestic bottom longliner	1226	125	17	29/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990244	domestic bottom longliner	1226	129	18	30/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990250	domestic bottom longliner	1226	129	19	30/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990266	domestic bottom longliner	1226	129	20	30/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990271	domestic bottom longliner	1226	129	21	30/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990240	domestic bottom longliner	1226	130	22	30/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990241	domestic bottom longliner	1226	130	23	30/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990248	domestic bottom longliner	1226	131	24	31/5/99	near Pukaki Rise	<b>grey petrel</b>	<i>Procellaria cinerea</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990278	adult breeder	male	1	bait fish (3)	empty	bare brood patch
990263	adult breeder	male	1	salp skin and fish piece	squid beaks	mainly bare brood patch
990264	adult breeder	male	3	bait fish (1)	otoliths and squid beaks	mainly bare brood patch
990265	adult breeder	male	3	bait fish (1) and fish bones	otoliths and squid beaks	part downy brood patch
990268	adult breeder	male	3	empty	squid beaks	bare (except for centre line) brood patch
990270	adult breeder	male	5	fish sludge	otoliths and squid beaks	part downy brood patch
990258	adult breeder	female	3	empty	otoliths and squid beaks	part downy brood patch
990262	adult	female	3	bait fish (1) and fish bones	otoliths and squid beaks	mainly bare brood patch
990251	adult breeder	male	2	bait fish (1) and eyeballs	fish bones and squid beaks	part downy brood patch
990269	adult breeder	male	4	empty	otoliths and squid beaks	part downy brood patch
990267	adult breeder	male	3	bait fish (3)	eyeballs and squid beaks	mainly bare brood patch
990261	unknown	unknown	U	?	?	?
990249	adult breeder	male	2	bait fish (3)	otoliths and squid beaks	part downy brood patch
990243	adult breeder	male	3	proventricular oil	fish bones and squid beaks	part bare brood patch
990252	adult breeder	male	2	bait fish (2) and fish bones	fish bones and squid beaks	part downy brood patch
990260	adult breeder	male	4	empty	squid beaks	mainly bare brood patch
990242	adult breeder	male	1	bait fish (3)	squid beaks	bare brood patch
990244	adult breeder	male	4	small piece of squid mantle	otoliths and squid beaks	part bare brood patch
990250	adult breeder	male	5	empty	squid beaks	part downy brood patch
990266	adult breeder	male	4	bait fish (1) and eyeballs	squid beaks	part downy brood patch
990271	adult breeder	female	1	empty	squid beaks	downy brood patch
990240	adult breeder	male	3	bait fish (1)	squid beaks	bare brood patch
990241	adult breeder	male	4	bait fish (1), fish bones	squid beaks	part downy brood patch
990248	unknown	unknown	U	?	?	?

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990256	domestic bottom longliner	1226	132	25	31/5/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990247	domestic bottom longliner	1226	152	26	5/6/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990257	domestic bottom longliner	1226	164	28	8/6/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990255	domestic bottom longliner	1226	167	29	9/6/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990259	domestic bottom longliner	1226	174	30	10/6/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990246	domestic bottom longliner	1226	184	32	13/6/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990253	domestic bottom longliner	1226	184	33	13/6/99	near Pukaki Rise	grey petrel	<i>Procellaria cinerea</i>
990328	domestic bottom longliner	1227	19	1	4/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990334	domestic bottom longliner	1227	27	1	6/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990327	domestic bottom longliner	1227	32	1	7/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990332	domestic bottom longliner	1227	35	1	8/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990326	domestic bottom longliner	1227	36	1	9/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990337	domestic bottom longliner	1227	36	2	9/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990320	domestic bottom longliner	1227	37	1	8/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990335	domestic bottom longliner	1227	56	1	16/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990343	domestic bottom longliner	1227	56	2	16/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990345	domestic bottom longliner	1227	70	1	20/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990333	domestic bottom longliner	1227	74	1	22/5/99	Campbell Plateau	grey petrel	<i>Procellaria cinerea</i>
990350	domestic bottom longliner	1227	74	2	22/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990323	domestic bottom longliner	1227	77	1	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990321	domestic bottom longliner	1227	77	2	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990351	domestic bottom longliner	1227	77	3	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990324	domestic bottom longliner	1227	77	4	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990319	domestic bottom longliner	1227	77	5	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990329	domestic bottom longliner	1227	78	1	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990256	adult breeder	male	4	bait fish (2)	otoliths and squid beaks	part downy brood patch
990247	adult breeder	male	2	fish baits (3) and fish bones	squid beaks	part bare brood patch
990257	adult breeder	male	2	bait fish (3)	squid beaks	part downy brood patch
990255	unknown	unknown	U	?	?	?
990259	unknown	unknown	U	?	?	part downy brood patch
990246	unknown	unknown	U	?	?	?
990253	unknown	unknown	U	?	?	?
990328	unknown	unknown (male?)	U	gone	gone	?
990334	adult	male	5	sludge, squid bits (bait?), fish offal	fish bones and squid beaks	downy central stripe
990327	unknown	unknown (male?)	U	gone	otoliths and squid beaks	?
990332	adult	male	4	squid pieces (bait?)	fish bones and squid beaks	downy central stripe
990326	unknown	unknown (male?)	U	gone	gone	?
990337	unknown	unknown	U	gone	gone	?
990320	adult breeder	male	4	empty	squid beaks	downy central stripe
990335	adult	male	1	empty	squid beaks	downy central stripe
990343	adult breeder	male	2	empty	otoliths, small fishbones and squid beaks	part bare , downy central stripe on brood patch
990345	unknown	unknown (male?)	U	gone	gone	?
990333	adult	male	1	empty	plastic bits and squid beaks	downy central stripe
990350	unknown	unknown	U	gone	gone	?
990323	adult breeder	unknown (male?)	U	gone	gone	part bare brood patch
990321	adult breeder	male	2	squid bait	squid beaks	downy central stripe
990351	adult breeder	male	U	gone	fish bones and squid beaks	bare brood patch
990324	adult	unknown (male?)	U	gone	gone	part downy brood patch
990319	adult breeder	male	4	squid bait and fishbones	otoliths and squid beaks	bare brood patch
990329	unknown	unknown	U	gone	gone	?

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990349	domestic bottom longliner	1227	78	2	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990331A	domestic bottom longliner	1227	80	1	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990331C	domestic bottom longliner	1227	80	1	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990331B	domestic bottom longliner	1227	80	1	23/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990325	domestic bottom longliner	1227	86	3	25/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990347	domestic bottom longliner	1227	88	1	26/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990344	domestic bottom longliner	1227	88	2	26/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990336	domestic bottom longliner	1227	88	3	26/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990346	domestic bottom longliner	1227	89	2	20/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990353	domestic bottom longliner	1227	89	3	26/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990348	domestic bottom longliner	1227	96	1	28/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990352	domestic bottom longliner	1227	99	2	29/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990330	domestic bottom longliner	1227	105	1	30/5/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990322	domestic bottom longliner	1227	133	1	7/6/99	Campbell Island Rise	grey petrel	<i>Procellaria cinerea</i>
990234	domestic bottom longliner	1226	156	27	6/6/99	near Pukaki Rise	northern giant petrel	<i>Macronectes halli</i>
990254	domestic bottom longliner	1226	176	31	11/6/99	near Pukaki Rise	northern giant petrel	<i>Macronectes halli</i>
990245	domestic bottom longliner	1226	124	12	29/5/99	near Pukaki Rise	Snares cape pigeon	<i>Daption australe</i>
990289	domestic bottom longliner	1182	2	1	4/1/99	Hikurangi Trench	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
990288	domestic bottom longliner	1182	5	2	4/1/99	Hikurangi Trench	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
990286	domestic bottom longliner	1182	18	4	7/1/99	Hikurangi Trench	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
990290	domestic bottom longliner	1182	23	5	8/1/99	Hikurangi Trench	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
990284	domestic bottom longliner	1182	23	6	8/1/99	Hikurangi Trench	white-chinned petrel	<i>Procellaria aequinoctialis steadi</i>
990299	domestic tuna longliner	1188	16	103	5/2/99	off East Cape	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
990298	domestic tuna longliner	1188	16	106	5/2/99	off East Cape	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
990494	joint venture tuna longliner	1256	6	9	28/7/99	North of East Cape	Antipodean (wandering) albatross	<i>Diomedea antipodensis</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990349	unknown	unknown	U	gone	gone	?
990331A	adult	male	2	empty	worms and squid beaks	downy central stripe
990331C	adult	male	2	empty	otoliths and squid beaks	downy central stripe
990331B	adult	male	3	bait fish (1) and squid pieces (bait ?)	squid beaks	bare brood patch
990325	unknown	unknown	U	gone	gone	?
990347	unknown	unknown	U	gone	gone	?
990344	adult breeder	male	2	empty	fish bones and squid beaks	bare brood patch
990336	unknown	unknown	U	gone	gone	?
990346	unknown	unknown	U	gone	gone	?
990353	unknown	unknown	U	gone	gone	tail moulting
990348	unknown	unknown	U	gone	gone	?
990352	unknown	unknown	U	gone	gone	?
990330	unknown	unknown	U	gone	gone	?
990322	adult breeder	male	4	fish bits and bones (ex bait?)	fish bones and squid beaks	bare brood patch
990234	immature	male	5	five pieces bait fish	feathers and otoliths	downy brood patch
990254	adult	unknown	U	?	?	?
990245	unknown	unknown	U	?	?	?
990289	adult	male	2	empty	otoliths and squid beaks	part downy brood patch
990288	adult breeder	male	1	empty	squid beaks	part downy brood patch
990286	adult	male	5	fish bones, otoliths and squid beaks	squid beaks	pin down showing on brood patch, some new pin feathers on chest
990290	adult	male	5	empty	squid beaks	pin down showing on brood patch, some new pin feathers on chest
990284	adult breeder	male	3	empty	squid beaks	bare brood patch
990299	adult breeder	male	3	empty	plastic (assorted)	pin feathers, mainly bare brood patch
990298	adult breeder	male	3	empty	plastic (3) and stones	pin feathers, mainly bare brood patch
990494	adult breeder	female	1	empty	squid beaks	downy brood patch, outer two primaries half grown

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990495	joint venture tuna longliner	1256	10	18	1/8/99	North of East Cape	<b>Antipodean (wandering) albatross</b>	<i>Diomedea antipodensis</i>
990503	joint venture tuna longliner	1256	9	13	31/7/99	North of East Cape	<b>black-browed albatross</b>	<i>Thalassarche melanophrys</i>
990502	joint venture tuna longliner	1256	12	7	29/7/99	North of East Cape	<b>black-browed albatross</b>	<i>Thalassarche melanophrys</i>
990273	joint venture tuna longliner	1212	49	638	5/6/99	off Fiordland	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990277	joint venture tuna longliner	1212	69	1013	28/6/99	off Cape Foulwind	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990452	joint venture tuna longliner	1222	13	2	2/5/99	near Puysegur Trench	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990450	joint venture tuna longliner	1222	15	3	4/5/99	off Puysegur Point	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990453	joint venture tuna longliner	1222	41	5	1/6/99	off Fiordland	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990449	joint venture tuna longliner	1222	43	6	3/6/99	off Fiordland	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990451	joint venture tuna longliner	1222	43	7	3/6/99	off Puysegur Point	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990457	joint venture tuna longliner	1222	60	8	27/6/99	off Cape Foulwind	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990498	joint venture tuna longliner	1224	34	1474	3/6/99	off Fiordland	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990499	joint venture tuna longliner	1224	34	1478	3/6/99	off Puysegur Point	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990500	joint venture tuna longliner	1256	6	7	28/7/99	North of East Cape	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990272	joint venture tuna longliner	1212	41	436	28/5/99	off Fiordland	<b>Campbell albatross</b>	<i>Thalassarche impavida</i>
990505	joint venture tuna longliner	1256	3	1	25/7/99	North of East Cape	<b>Campbell albatross</b>	<i>Thalassarche impavida</i>
990504	joint venture tuna longliner	1256	6	6	28/7/99	North of East Cape	<b>Campbell albatross</b>	<i>Thalassarche impavida</i>
990501	joint venture tuna longliner	1256	10	15	1/8/99	North of East Cape	<b>Campbell albatross</b>	<i>Thalassarche impavida</i>
990462	joint venture tuna longliner	1222	11	1	30/4/99	near Puysegur Trench	<b>Gibson's (wandering) albatross</b>	<i>Diomedea gibsoni</i>
990516	joint venture tuna longliner	1256	5	3	27/7/99	North of East Cape	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990521	joint venture tuna longliner	1256	5	4	27/7/99	North of East Cape	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990518	joint venture tuna longliner	1256	5	5	27/7/99	North of East Cape	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990522	joint venture tuna longliner	1256	6	8	28/7/99	North of East Cape	<b>grey petrel</b>	<i>Procellaria cinerea</i>
990517	joint venture tuna longliner	1256	7	10	29/7/99	North of East Cape	<b>grey petrel</b>	<i>Procellaria cinerea</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990495	immature	female	3	mantle (poss.) and squid beaks	parts of squid	downy brood patch
990503	sub-adult	female	1	[one bait fish] squid	empty	downy brood patch, some body moult
990502	immature	male	3	empty	empty	downy brood patch
990273	adult	female	1	empty	worms	part bare brood patch
990277	adult	female	1	bait fish (1), eyeballs, otoliths, fish bones	eyeballs and fish bones	part downy brood patch
990452	adult breeder	male	5	empty	fish eyeball (1)	new quills, mainly bare brood patch
990450	adult breeder	female	5	empty	empty	some quills, mainly bare brood patch
990453	adult	female	2	empty	fish eyeball (1) and vertebrate	downy brood patch
990449	adult	male	5	empty	empty	downy brood patch
990451	adult breeder	male	2	empty	otolith, worms, and seaweed	mainly bare brood patch
990457	adult	male	1	fish offal and bones	empty	downy brood patch
990498	adult breeder	male	1	empty	empty	bare (some quill appearing) brood patch
990499	adult	male	1	empty	empty	downy brood patch, some body moult
990500	adult	female	2	one bait fish	squid beaks	downy brood patch
990272	adult	female	1	empty	fish eyeballs	downy brood patch, some pin feathers on shoulder, R and L outer primaries 1/2 grown on wings, 2 pin feathers on tail (L side)
990505	adult	male	1	empty	empty	downy brood patch, some body moult
990504	adult	female	1	squid flesh, squid beaks	eyeballs, squid beaks	downy brood patch, some body moult
990501	juvenile	male	1	empty	empty	downy brood patch
990462	adult breeder	male	3	empty	fish bones, squid beaks	some quills, part bare brood patch
990516	adult	female	2	proventricular oil, bait fish	18 squid beaks	part bare brood patch, some quills
990521	adult	female	3	bait fish	eyeball, 6 squid beaks	partly bare brood patch
990518	adult	female	U	squid flesh, bait fish	squid beaks	downy brood patch
990522	adult	male	3	bait fish	12 squid beaks	partly bare brood patch
990517	adult	female	2	squid flesh, bait fish	squid beaks	partly bare brood patch



Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990519	joint venture tuna longliner	1256	7	11	29/7/99	North of East Cape	grey petrel	<i>Procellaria cinerea</i>
990523	joint venture tuna longliner	1256	9	14	31/7/99	North of East Cape	grey petrel	<i>Procellaria cinerea</i>
990520	joint venture tuna longliner	1256	10	17	1/8/99	North of East Cape	grey petrel	<i>Procellaria cinerea</i>
990369	joint venture tuna longliner	1216	2	1	6/4/99	near Bounty Trough	light-mantled sooty albatross	<i>Phoebastria palpebrata</i>
990493	joint venture tuna longliner	1224	5	235	2/5/99	near Puysegur Trench	southern royal albatross	<i>Diomedea epomophora</i>
990461	joint venture tuna longliner	1222	35	4	25/5/99	off Fiordland	white-capped albatross	<i>Thalassarche steadi</i>
990496	joint venture tuna longliner	1224	5	201	2/5/99	Puysegur Trench	white-capped albatross	<i>Thalassarche steadi</i>
990497	joint venture tuna longliner	1224	34	1476	3/6/99	off Fiordland	white-capped albatross	<i>Thalassarche steadi</i>
990391	joint venture tuna longliner	1230	12	99	26/5/99	off Fiordland	white-capped albatross	<i>Thalassarche steadi</i>
990297	scampi trawler	1197	23	1	14/2/99	Bay of Plenty	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
990295	scampi trawler	1197	23	2	14/2/99	Bay of Plenty	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
990296	scampi trawler	1197	23	3	14/2/99	Bay of Plenty	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
990302	scampi trawler	1201	42	1	1/3/99	off Cape Kidnappers	flesh-footed shearwater	<i>Puffinus carneipes hullianus</i>
980093	scampi trawler	1161	10	1	3/10/98	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
980195	scampi trawler	1162	13	1	4/10/98	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
990310	scampi trawler	1201	44	1	1/3/99	off Cape Kidnappers	sooty shearwater	<i>Puffinus griseus</i>
990309	scampi trawler	1201	44	2	1/3/99	off Cape Kidnappers	sooty shearwater	<i>Puffinus griseus</i>
980092	scampi trawler	1161	62	1	23/10/98	off Cape Kidnappers	white-capped albatross	<i>Thalassarche steadi</i>
990276	squid trawler	1190	17	2	1/2/99	south of The Snares	Buller's albatross	<i>Thalassarche bulleri</i>
990275	squid trawler	1190	55	3	15/2/99	south of The Snares	Buller's albatross	<i>Thalassarche bulleri</i>
990400	squid trawler	1215	46	11	21/4/99	off East Coast (Balcultha)	Buller's albatross	<i>Thalassarche bulleri</i>
990399	squid trawler	1215	61	17	27/4/99	off Stewart Island	Buller's albatross	<i>Thalassarche bulleri</i>
990300	squid trawler	1190	55	1	15/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990301	squid trawler	1191	53	1	13/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990339	squid trawler	1193	75	1	19/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990519	adult	male	3	fish bits, bait fish	12 squid beaks	partly bare brood patch
990523	adult	female	2	squid flesh, squid beaks	20 squid beaks	downy brood patch, some body moult
990520	adult	female	3	bait fish	worms, squid beaks	partly bare brood patch
990369	adult breeder	male	2	bait fish (1, yellow-eyed mullet), squid pieces (bait?)	empty	some pin feathers, part downy brood patch
990493	adult	female	4	worms (heavy infestation, otherwise empty)	Fish eyeballs, squid beaks	fully downy brood patch
990461	adult	female	2	empty	very few fishbones	downy brood patch
990496	adult	male	U	empty	fish bones, eyeballs, squid beaks	downy brood patch
990497	adult	female	2	empty	empty	downy brood patch
990391	immature	female	2	empty	squid beaks	downy brood patch, some moult in tail
990297	adult breeder	female	1	fish sludge and bones, one otolith	otoliths and stones	pin feathers, mainly bare brood patch
990295	adult breeder	female	1	small crustaceans and sludge	eyeballs (squid)	pin down growing on brood patch
990296	adult	male	2	fish bones and sludge	squid beaks	downy brood patch
990302	adult	male	1	fish bits and fish bones, "shrimp"	otoliths, fishbones and squid beaks	part downy brood patch
980093	sub-adult	unknown	3	empty	empty	-
980195	adult	male	1	fish paste	otoliths, squid beaks, eyeballs, down feathers, manuka beetle	downy brood patch
990310	adult	male	3	2x rat-tails + pieces, 1x squid, otoliths, fish eyeballs	otoliths, fish eyeballs, squid beak, filamentous algae	part downy brood patch
990309	adult breeder	male	1	1x rat-tail, otoliths, fish eyeballs, squid beak, scampi, antarctic krill	otoliths, squid beak, 2x pces plastic cable	pin feathers, part downy brood patch
980092	adult	unknown	U	fish remains	empty	downy brood patch, some new feathers on shoulder
990276	adult	male	3	empty	eyeballs, otoliths, fish bones and squid beaks	part downy brood patch
990275	adult	male	1	empty	squid beaks	very downy brood patch
990400	adult breeder	female	5	full arrow squid	empty	bare brood patch
990399	adult breeder	female	4	fish frames and offal	fish bones, eyeballs and otoliths	bare brood patch
990300	adult	male	1	squid beaks	squid beaks	downy brood patch
990301	adult breeder	male	2	offal, squid beak	otoliths, squid beak	some pin down, part downy brood patch
990339	adult	male	1	amphipods, fish eyeballs	fish eyeballs, squid beak	downy brood patch

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990300	squid trawler	1190	55	1	15/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990301	squid trawler	1191	53	1	13/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990339	squid trawler	1193	75	1	19/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990311	squid trawler	1195	12	1	4/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990303	squid trawler	1195	27	2	9/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990308	squid trawler	1195	28	3	9/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990305	squid trawler	1195	35	4	12/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990306	squid trawler	1195	36	5	12/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990304	squid trawler	1195	42	6	14/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990307	squid trawler	1195	48	7	17/2/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990342	squid trawler	1208	27	1	12/3/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990358	squid trawler	1213	13	2	27/3/99	off East Coast (Balcultha)	sooty shearwater	<i>Puffinus griseus</i>
990312	squid trawler	1213	25	4	31/3/99	off East Coast (Balcultha)	sooty shearwater	<i>Puffinus griseus</i>
990361	squid trawler	1213	34	6	3/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990355	squid trawler	1213	46	7	7/4/99	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
990364	squid trawler	1213	50	8	8/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990367	squid trawler	1213	51	8	9/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990359	squid trawler	1213	51	9	9/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990341	squid trawler	1213	52	11	9/4/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990354	squid trawler	1213	52	12	9/4/99	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
990357	squid trawler	1213	52	13	9/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990356	squid trawler	1213	52	14	9/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990365	squid trawler	1213	57	15	11/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990360	squid trawler	1213	60	16	13/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990363	squid trawler	1213	60	17	13/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990362	squid trawler	1213	61	18	13/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990368	squid trawler	1213	66	19	15/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990300	adult	male	1	squid beaks	squid beaks	downy brood patch
990301	adult breeder	male	2	offal, squid beak	otoliths, squid beak	some pin down, part downy brood patch
990339	adult	male	1	amphipods, fish eyeballs	fish eyeballs, squid beak	downy brood patch
990311	adult	male	2	squid beak, worm	squid beaks & eyeballs, salps	pin feathers, part bare brood patch
990303	adult	male	2	offal, fish eyeball, 2x squid	squid beaks, 7x pces plastic	some pin feathers, part downy brood patch
990308	adult breeder	male	4	empty	squid beaks, fish bone, 1x pce wood	pin feathers, part downy brood patch
990305	adult	male	2	squid beak, fish sludge	squid beaks, 4x pces plastic	downy brood patch
990306	adult	male	3	empty	squid beaks	pin feathers, part downy brood patch
990304	adult	male	1	fish offal sludge, otoliths	squid beaks	part downy brood patch
990307	adult	male	2	squid flesh, fish sludge	salps, squid beaks, fish eyeballs	pin feathers, downy brood patch
990342	adult	female	1	offal, otolith, fish eyeball	squid beak, small stone	downy brood patch
990358	adult	male	2	squid beaks	fish eyeballs, otoliths, squid beaks, 2x pces plastic	part bare brood patch
990312	adult	male	4	offal, fish sludge, otolith, krill	fish eyeballs, otoliths, squid beaks	part bare brood patch
990361	sub-adult	male	2	some fish sludge	squid beaks	downy brood patch
990355	adult	male	2	part squid	fish eyeballs, otoliths, squid beaks, salps	downy brood patch
990364	adult breeder	male	3	empty. (nematode cyst in wall and worms)	otoliths	part bare brood patch
990367	adult	male	2	empty	squid beaks, 1x pce plastic	downy brood patch
990359	adult	male	3	worms	squid beaks	part bare brood patch
990341	adult	male	3	squid beak	squid beaks, otolith, fish bones	downy brood patch
990354	adult	male	2	fish sludge, bones, otolith	otoliths	downy brood patch
990357	adult	male	2	squid beak	squid beaks	downy brood patch
990356	adult	male	3	squid beak (nematode cyst in wall)	squid beaks, otoliths, salp, worms	part bare brood patch
990365	adult breeder	male	2	fish bones & sludge, otoliths, squid pieces, squid beak, worms	squid beaks, otoliths	part bare brood patch
990360	adult	male	2	empty	otoliths, squid beaks	downy brood patch
990363	adult breeder	male	3	salps	squid beaks, otoliths, salp, 1x pce plastic	part bare brood patch
990362	adult breeder	male	1	empty (nematode cyst in wall)	squid beaks, salps, fish eyeball	some pin feathers, part downy brood patch
990368	adult breeder	male	3	some squid flesh, proventricular oil	squid beaks, salps, worms	part bare brood patch

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990366	squid trawler	1213	68	20	15/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990340	squid trawler	1213	69	21	16/4/99	off Banks Peninsula (Hikurangi Trench)	sooty shearwater	<i>Puffinus griseus</i>
990231	squid trawler	1215	23	3	11/4/99	south-east of Steward Island	sooty shearwater	<i>Puffinus griseus</i>
990232	squid trawler	1215	23	4	11/4/99	south-east of Steward Island	sooty shearwater	<i>Puffinus griseus</i>
990230	squid trawler	1215	24	5	11/4/99	south of Stewart Island	sooty shearwater	<i>Puffinus griseus</i>
990226	squid trawler	1215	36	8	17/4/99	off East Coast (Balclutha)	sooty shearwater	<i>Puffinus griseus</i>
990227	squid trawler	1215	36	9	17/4/99	off East Coast (Balclutha)	sooty shearwater	<i>Puffinus griseus</i>
990228	squid trawler	1215	36	10	17/4/99	off East Coast (Balclutha)	sooty shearwater	<i>Puffinus griseus</i>
990224	squid trawler	1215	49	12	22/4/99	east of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990225	squid trawler	1215	49	13	22/4/99	east of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990229	squid trawler	1215	57	14	25/4/99	south-east of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990279	squid trawler	1190	17	1	1/2/99	south-east of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990274	squid trawler	1190	55	4	15/2/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990383	squid trawler	1192	34	2	13/2/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990381	squid trawler	1192	36	3	14/2/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990282	squid trawler	1194	67	1	20/2/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990384	squid trawler	1205	25	1	16/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990385	squid trawler	1205	38	2	10/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990436	squid trawler	1206	4	1	3/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990433	squid trawler	1206	4	2	3/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990435	squid trawler	1206	4	3	3/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990443	squid trawler	1206	4	4	3/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990442	squid trawler	1206	4	5	3/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990438	squid trawler	1206	4	6	3/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990437	squid trawler	1206	37	2	17/3/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990366	adult	male	2	squid beak	otoliths, squid beaks	downy brood patch
990340	adult	male	3	empty	squid beaks	downy brood patch
990231	adult	male	4	1x pce plastic, fish offal	squid beaks, 2x pces plastic	downy brood patch
990232	adult	male	2	1 x rat-tail	empty	downy brood patch
990230	adult	male	2	empty	squid beaks, 1x pce plastic	downy brood patch
990226	adult	male	2	fish paste, myctophid otoliths	squid beaks, 1x pce plastic, otolith	downy brood patch
990227	adult	male	2	fish paste	squid beaks, fish eyeball	downy brood patch
990228	juvenile	male	3	empty	squid beaks, otoliths	downy brood patch
990224	adult	male	2	part rat-tail, myctophid backbone offal?	fish paste, squid beaks	downy brood patch
990225	adult	male	3	2cm stick wood, amphipods	fish paste, squid beaks	downy brood patch
990229	juvenile	male	3	myctophid eyeballs, squid beaks, otoliths, amphipods	amphipods, otoliths	downy brood patch
990279	adult	male	1	squid beaks, eyeballs and amphipod	squid beaks	part downy brood patch
990274	adult breeder	female	1	empty	empty	bare brood patch
990383	adult breeder	female	1	empty	empty	mainly bare brood patch
990381	adult	female	5	fish sludge and squid head	empty	mainly bare brood patch
990282	adult breeder	male	4	empty	empty	part downy brood patch
990384	adult breeder	male	U	proventricular oil, few fish bones	fish bones and eyeballs	quills, mainly bare brood patch
990385	adult breeder	male	2	head and tail of fish (offal?)	empty	quills, mainly bare brood patch
990436	adult	male	2	fish offal	fish bones	some quills, bare brood patch
990433	adult	male	2	empty	fish bones and squid beaks	some quills and part bare brood patch
990435	adult	male	1	half shark	fish eyeball	some quills, part downy brood patch
990443	adult	male	3	fish offal [some offal in mouth]	empty	some quills, part bare brood patch
990442	adult	male	4	tentacles and squid beaks	fibres (Squid)	downy brood patch, some body moult
990438	adult	male	4	offal and skin	empty	part downy brood patch
990437	adult	male	3	offal (fish tail)	empty	some quills, part bare brood patch

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990432	squid trawler	1206	37	3	17/3/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990440	squid trawler	1206	37	4	17/3/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990434	squid trawler	1206	37	4	17/3/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990441	squid trawler	1206	37	5	17/3/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990439	squid trawler	1206	37	4A	17/3/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990379	squid trawler	1208	93	2	1/4/99	near Auckland Islands	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990390	squid trawler	1211	6	1	23/3/99	off East Coast (Balcultha)	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990382	squid trawler	1211	19	1	29/3/99	off Stewart Island	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990389	squid trawler	1211	20	1	29/3/99	off Stewart Island	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990380	squid trawler	1211	23	1	31/3/99	off East Coast (Balcultha)	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990388	squid trawler	1213	22	3	30/3/99	off Stewart Island	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990392	squid trawler	1215	6	1	4/4/99	off Stewart Island	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990404	squid trawler	1215	6	2	4/4/99	east of Stewart Island	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990405	squid trawler	1215	52	14	23/4/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990402	squid trawler	1215	60	16	26/4/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990285	squid trawler	1190	55	2	15/2/99	south of The Snares	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990283	squid trawler	1190	62	1	18/2/99	south of The Snares	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990338	squid trawler	1192	31	1	12/2/99	south of The Snares	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990287	squid trawler	1194	48	1	14/2/99	south of The Snares	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990456	trawler	1217	81	1	19/4/99	south of The Snares	<b>black-bellied storm petrel</b>	<i>Fregetta tropica</i>
990424	trawler	1231	22	B001	25/5/99	Chatham Rise	<b>black-browed albatross</b>	<i>Thalassarche melanophrys</i>
990425	trawler	1241	78	1	3/7/99	off Cape Foulwind	<b>black-browed albatross</b>	<i>Thalassarche melanophrys</i>
990430	trawler	1231	26	B002	27/5/99	Chatham Rise	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990422	trawler	1231	27	B003	28/5/99	Chatham Rise	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990432	adult	male	1	worms, squid piece and sludge	seaweed and fish eyeballs	some quills, part bare brood patch, some body moult
990440	adult	male	3	empty	fish bones and eyeballs	part downy brood patch
990434	adult	male	3	offal [mouth full of offal]	fish bones and eyeballs	downy brood patch, some body moult and tail covert moult
990441	adult	male	1	empty	empty	downy brood patch, some body moult
990439	unknown	unknown	U	?	?	?
990379	adult	female	3	few worms and fishbones	empty	downy brood patch
990390	adult breeder	female	2	squid tentacles and beak	eyeballs	quills, bare brood patch
990382	adult	male	2	fish head (?rats tail) and flesh	18 small fish eyeballs	part bare brood patch
990389	adult breeder	female	1	small piece of fish and fish bones	fish bones and otoliths	part bare brood patch
990380	adult	male	5	5 rats tails, 1 complete sloani squid	empty	downy brood patch
990388	adult	male	2	some fish sludge and bones	fish eyeballs (2), squid eyeballs (2) and squid beak (1)	downy brood patch, few pin feathers on shoulders
990392	adult	female	2	head (barracouta) - offal?	empty	downy brood patch
990404	adult	male	2	empty	eyeballs and small otolith	downy brood patch, some moult on chest
990405	adult	male	4	fish sludge, eyeballs and otoliths	otoliths	some body moult on chest, part bare brood patch
990402	adult	male	3	arrow squid mantle	eyeballs	downy brood patch
990285	adult	male	1	empty	squid beaks	pin down showing on brood patch, some new pin feathers on chest
990283	adult	female	1	small squid (2)	squid beaks	downy brood patch
990338	adult	female	2	offal and sludge	squid beaks	downy brood patch, some pin feathers on chest
990287	adult	male	1	empty	squid beaks	pin down showing on brood patch, some new pin feathers on chest
990456	adult	female	4	proventricular oil	krill remains	bare brood patch
990424	adult	male	3	proventricular oil and sludge	empty	downy brood patch, lots of moult on shoulders, tail moult, both wings coverts moulting
990425	adult	female	1	fish bits and squid beaks and proventricular oil	fish bones, eyeballs and squid beaks	downy brood patch, moult on chest, tail moult, both wings secondaries moulting
990430	adult	male	5	empty	fish bones, small piece of plastic	part bare brood patch
990422	adult	female	2	fish sludge, proventricular oil and otoliths [fish offal in mouth]	fish bones and eyeballs	part downy brood patch



Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990423	trawler	1231	27	B004	28/5/99	Chatham Rise	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990428	trawler	1231	27	B005	28/5/99	Chatham Rise	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990458	trawler	1231	30	B006	28/5/99	Hikurangi Trench	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990427	trawler	1231	32	B007	29/5/99	Chatham Rise	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990459	trawler	1231	61	B009	6/6/99	Hikurangi Trench	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990454	trawler	1231	81	B012	14/6/99	Auckland Slope	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990455	trawler	1231	81	B012 A	14/6/99	Auckland Slope	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990429	trawler	1231	96	B013	20/6/99	off Fiordland	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990431	trawler	1231	98	B014	20/6/99	off Fiordland	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990421	trawler	1231	105	B016	22/6/99	south of The Snares	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990420	trawler	1231	106	B017	22/6/99	south of The Snares	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990419	trawler	1231	122	B018	26/6/99	south of The Snares	<b>Buller's albatross</b>	<i>Thalassarche bulleri</i>
990507	trawler	1229	31	1	23/7/99	off Cape Foulwind	<b>Campbell albatross</b>	<i>Thalassarche impavida</i>
990506	trawler	1268	42	2	3/10/99	Solander Trough	<b>Campbell albatross</b>	<i>Thalassarche impavida</i>
990444	trawler	1241	77	1	3/7/99	off Cape Foulwind	<b>cape pigeon spp</b>	<i>Daption spp</i>
990371	trawler	1167	153	14	20/11/98	Chatham Rise	<b>northern giant petrel</b>	<i>Macronectes halli</i>
990370	trawler	1167	169	17	23/11/98	Chatham Rise	<b>northern giant petrel</b>	<i>Macronectes halli</i>
980028	trawler	1150	59	1	10/10/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
980027	trawler	1150	59	2	10/10/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
980094	trawler	1163	11	1	4/10/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
990375	trawler	1167	48	1	?12/11/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
990377	trawler	1167	148	11	19/11/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
990373	trawler	1167	148	112	19/11/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
990376	trawler	1167	151	13	20/11/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
990372	trawler	1167	168	15	23/11/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>
990374	trawler	1167	170	18	23/11/98	Chatham Rise	<b>Salvin's albatross</b>	<i>Thalassarche salvini</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990423	adult	female	2	[fish sludge in mouth] empty	fish bones and squid beaks	downy brood patch
990428	adult	male	3	offal and fish bones	empty	part bare brood patch
990458	adult breeder	female	3	fish offal	empty	part bare brood patch
990427	adult	female	2	(offal in mouth) proventricular oil and small amount of offal	empty	some body moult, part downy and quills on brood patch
990459	adult	female	4	fish sludge (offal?)	fish skin, squid beak	part downy brood patch
990454	adult	male	2	fish offal	fine fish bones, fish eyeballs (2), otolith	downy brood patch
990455	unknown	unknown	U	?	?	?
990429	adult	female	1	offal back bones	one fish eyeball	part downy brood patch
990431	adult	male	2	fish offal, skin and bones	fine fish bones	?downy brood patch
990421	adult	male	2	small pieces of offal fish	small pieces of horse barnacle	some body moult and part bare brood patch
990420	adult	female	2	empty	eyeballs, seaweed and squid beaks	downy brood patch
990419	adult	male	2	large piece of offal and small pieces of squid	empty	downy brood patch
990507	adult	female	2	offal	offal	downy brood patch, some body moult
990506	immature	female	3	full - fish offal	skin	downy brood patch
990444	immature	female	5	empty	plastic bits and squid beaks	part downy brood patch
990371	sub-adult	female	4	fish sludge	plastic pieces (3), eyeballs, pebbles, kelp bits, feathers, squid beaks	downy brood patch, some moult on chest and tail, inner primaries moulting
990370	sub-adult	female	1	fish bones and skin (offal?)	full, small bird feathers (not penguin) and squid beaks	downy brood patch
980028	adult, breeder	male	2	empty	empty	bare brood patch, few pin feathers on chest
980027	adult, breeder	female	4	offal fish sludge	empty	bare brood patch
980094	adult, breeder	male	2	fish sludge, bones, eyeballs, otoliths, squid bits	otoliths, fish bones, squid beaks	partly downy brood patch
990375	adult breeder	female	5	empty	otoliths, eyeballs and squid beaks	bare brood patch
990377	adult	male	1	empty	bits, squid beaks	part bare brood patch
990373	sub-adult	male	2	empty	eyeballs and fishbones	downy brood patch
990376	adult	female	2	fish sludge and worms	eyeballs, otoliths and fishbones	bare central stripe, downy brood patch
990372	adult breeder	female	5	fish bits	fish bones	mainly bare brood patch
990374	adult breeder	female	2	full, fish sludge and bones, skin (offal?)	fish bones, sea weed and squid beaks	part bare brood patch

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990292	trawler	1173	37	1	7/12/98	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
990293	trawler	1173	68	2	14/12/98	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
990294	trawler	1173	91	3	19/12/98	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
990291	trawler	1173	123	4	27/12/98	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
990512	trawler	1273	35	B001	13/10/99	Chatham Rise	Salvin's albatross	<i>Thalassarche salvini</i>
980026	trawler	1150	55	1	9/10/98	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
980025	trawler	1150	68	1	13/10/98	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
990409	trawler	1167	124	3	14/11/98	Hikurangi Trench	sooty shearwater	<i>Puffinus griseus</i>
990408	trawler	1167	124	4	14/11/98	Hikurangi Trench	sooty shearwater	<i>Puffinus griseus</i>
990407	trawler	1167	124	5	14/11/98	Hikurangi Trench	sooty shearwater	<i>Puffinus griseus</i>
990410	trawler	1167	124	6	14/11/98	Hikurangi Trench	sooty shearwater	<i>Puffinus griseus</i>
990446	trawler	1167	125	7	14/11/98	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
990445	trawler	1167	129	8	15/11/98	Chatham Rise	sooty shearwater	<i>Puffinus griseus</i>
990411	trawler	1167	129	9	15/11/98	Hikurangi Trench	sooty shearwater	<i>Puffinus griseus</i>
990413	trawler	1167	131	10	15/11/98	Hikurangi Trench	sooty shearwater	<i>Puffinus griseus</i>
990317	trawler	1200	75	1	4/3/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990318	trawler	1200	75	2	4/3/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990313	trawler	1200	75	3	4/3/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990316	trawler	1200	75	4	4/3/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990314	trawler	1200	75	5	4/3/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990315	trawler	1200	75	6	4/3/99	off Banks Peninsula	sooty shearwater	<i>Puffinus griseus</i>
990412	trawler	1217	59	1	14/4/99	south-east of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990415	trawler	1217	62	2	15/4/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990416	trawler	1217	62	3	15/4/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990414	trawler	1217	62	4	15/4/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990233	trawler	1225	15	2	28/4/99	halfway between the Snares and Auckland Islands	Sooty shearwater	<i>Puffinus griseus</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990292	adult	female	1	empty	empty	downy brood patch
990293	sub-adult	male	2	rats-tail, various pieces of offal fish	empty	downy brood patch
990294	adult	male	2	fish offal and eyeballs	otoliths, fishbones and eyeballs	part downy brood patch
990291	sub-adult	female	2	rats-tail, squid piece, fish bits and bones	fish bones and otoliths	some pin down, part bare brood patch
990512	adult breeder	male	1	fish sludge and bones	plastic, otolith	bare brood patch
980026	adult	male	4	?	?	downy brood patch
980025	adult	male	4	?	?	downy brood patch
990409	adult	male	3	offal, squid beak, seaweed, krill	squid beaks, fish eyeball, 3x pces plastic, 1 pce wood	downy brood patch
990408	adult	male	2	offal, otoliths, amphipods	amphipod remains, otoliths, 2x pces plastic	downy brood patch
990407	adult	male	1	1x rat-tail, fish eyeballs	squid beaks. Fish eyeballs, 1x pce plastic	downy brood patch
990410	adult	male	3	empty	squid beaks, otoliths, worm	part bare brood patch
990446	adult breeder	male	4	fish bones	squid beaks, otoliths, fish eyeballs, fish bones	part bare brood patch
990445	adult breeder	male	3	1x lge pce gemfish	squid beak, 3 x pces plastic, 1x pce pumice, 3 pce stone, 2 pces tinfoil	downy brood patch
990411	adult	male	3	large piece of offal	salps, 1x rock, squid beaks, fish eyeballs	downy brood patch
990413	adult	male	3	offal, squid flesh, salps	salps, otoliths, 6x pces. plastic, 2 stones	part bare brood patch
990317	adult	male	4	offal, much proventricular oil, 1x pce wood	squid beaks, otoliths, fish bones, fish eyeballs	pin feathers, downy brood patch
990318	adult breeder	male	2	offal, fish bones, otoliths, part scampi	otoliths, fish eyeballs	pin feathers, part downy brood patch
990313	adult	male	3	fish bones, squid beaks, proventricular oil	squid beaks, fish eyeballs, otoliths	part bare brood patch
990316	adult	male	3	part squid, fish sludge, munida, proventricular oil	squid beaks, fish eyeballs, otoliths, 3x pces plastic	downy brood patch
990314	adult	male	4	offal, proventricular oil	squid beaks, otoliths, proventricular oil	pin feathers, part bare brood patch
990315	adult	male	2	offal	squid beaks, krill, 2x pces plastic	downy brood patch
990412	adult	male	3	large piece of offal	squid beaks, otoliths	part bare brood patch
990415	adult	male	4	empty	squid beaks	downy brood patch
990416	adult	male	5	empty	squid beaks	downy brood patch
990414	adult	male	3	offal, squid flesh, krill, proventricular oil (?)	otoliths, fish eyeballs, worm, 1x pce ships rope 5cm	downy brood patch
990233	adult	male	4	part gem fish offal	squid beaks, otoliths, fish bones	downy brood patch

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990528	trawler	1268	41	1	2/10/99	Solander Trough (north of The Snares)	sooty shearwater	<i>Puffinus griseus</i>
990529	trawler	1268	65	3	12/10/99	Solander Trough (north of The Snares)	sooty shearwater	<i>Puffinus griseus</i>
990531	trawler	1268	65	4	12/10/99	Solander Trough (north of The Snares)	sooty shearwater	<i>Puffinus griseus</i>
990526	trawler	1268	65	5	12/10/99	Solander Trough (north of The Snares)	sooty shearwater	<i>Puffinus griseus</i>
990530	trawler	1268	70	7	15/10/99	south of The Snares	sooty shearwater	<i>Puffinus griseus</i>
990527	trawler	1268	73	8	16/10/99	Solander Trough (north of The Snares)	sooty shearwater	<i>Puffinus griseus</i>
990378	trawler	1167	148	11A	19/11/98	Chatham Rise	Unknown	Unknown
990281	trawler	1176	45	1	27/12/98	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990280	trawler	1176	72	1	5/1/99	south-east of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990386	trawler	1200	39	1	23/2/99	off East Coast (Balcultha)	white-capped albatross	<i>Thalassarche steadi</i>
990387	trawler	1200	39	2	23/2/99	off East Coast (Balcultha)	white-capped albatross	<i>Thalassarche steadi</i>
990463	trawler	1217	74	1	18/4/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990395	trawler	1217	171	1	11/5/99	off Stewart Island	white-capped albatross	<i>Thalassarche steadi</i>
990394	trawler	1217	176	1	12/5/99	off Stewart Island	white-capped albatross	<i>Thalassarche steadi</i>
990397	trawler	1217	180	1	13/5/99	off Stewart Island	white-capped albatross	<i>Thalassarche steadi</i>
990393	trawler	1217	196	1	17/5/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990396	trawler	1217	196	2	17/5/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990403	trawler	1217	204	1	19/5/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990398	trawler	1217	204	2	19/5/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990401	trawler	1217	204	3	19/5/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990235	trawler	1225	14	1	27/4/99	south-east of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990239	trawler	1225	22	1	29/4/99	south of The Snares	white-capped albatross	<i>Thalassarche steadi</i>
990238	trawler	1225	25	1	30/4/99	near Pukaki Rise	white-capped albatross	<i>Thalassarche steadi</i>
990236	trawler	1225	147	1	2/6/99	Hikurangi Trench	white-capped albatross	<i>Thalassarche steadi</i>

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990528	adult	female	5	some krill paste, squid beaks	squid beaks, 2 pces granite stone, fish scales	downy brood patch
990529	adult	female	1	offal fillets, part bird oesophagus	10x pces plastic, squid beaks, otoliths	downy brood patch
990531	juvenile	male	5	fish paste, otolith	mytophid eyeballs?	downy brood patch
990526	adult	male	4	fish vertebrae & jaw offal, squid beaks & eyeballs	squid beaks, fish intestine, fish eyeballs, 7x pces plastic	downy brood patch
990530	adult	female	2	fish paste	22x pces plastic, squid beaks, octopoda beak	downy brood patch
990527	adult	male	5	pces gemfish offal, squid beaks	squid beaks, 18x pces plastic, 1x plastic top, stone	downy brood patch
990378	?	?	?	?	?	?
990281	adult breeder	male	2	full, squid and fish offal	fishbones, eyeballs and squid beaks	bare brood patch
990280	adult	female	U	small squid	eyeballs	bare brood patch
990386	adult breeder	male	1	very full, fish bones, sludge and fish frames	empty	quills, bare brood patch
990387	adult breeder	female	1	fish skin and offal, fish paste	empty	bare brood patch
990463	unknown	?female	U	?	?	?
990395	adult	male	1	fish bones and skin (offal?)	squid beaks	some body moult
990394	adult	male	2	empty	empty	downy brood patch
990397	adult	male	2	fish sludge and skin	fish bones and eyeballs	downy brood patch
990393	adult	female	1	full, fish offal pieces (skin and bones)	fish bones	downy brood patch
990396	adult	male	1	offal	fish bones	downy brood patch
990403	adult	male	4	empty	fish eyeballs	downy brood patch
990398	adult	female	4	fish bones and eyeballs	fish bones, eyeballs and squid beaks	part downy brood patch
990401	adult	female	3	fish sludge, offal and eyeballs	empty	downy brood patch
990235	adult breeder	female	3	empty	empty	part bare brood patch, pin feathers on shoulder
990239	adult	male	2	few fish bones	fish bones and eyeballs	downy brood patch
990238	adult	female	3	proventricular oil, fish bones and eyeballs	fish bones and otoliths	downy brood patch
990236	sub-adult	male	3	otoliths (2) and few fish bones	eyeballs and otoliths	downy brood patch, some pin feathers on shoulder, inner primaries on R wing, primaries on L wing, new outer 4 feather on each side of tail

Appendix 6. Autopsy identification and details *continued*.

<b>AUTOPSY #</b>	<b>Vessel type</b>	<b>Trip no.</b>	<b>Haul no.</b>	<b>Sample no.</b>	<b>Date</b>	<b>General Position</b>	<b>Species English name</b>	<b>Species scientific name</b>
990237	trawler	1228	58	1	18/5/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990510	trawler	1229	27	1	22/7/99	off Cape Foulwind	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990511	trawler	1229	27	2	22/7/99	off Cape Foulwind	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990426	trawler	1231	32	B008	29/5/99	Chatham Rise	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990460	trawler	1231	80	B010	13/6/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990417	trawler	1231	81	B011	14/6/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990418	trawler	1231	104	B015	22/6/99	south of The Snares	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990509	trawler	1234	79	1	20/7/99	south of Cape Foulwind	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990508	trawler	1270	27	1	16/9/99	Cook Strait	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990515	trawler	1272	11	1	11/9/99	off Cape Foulwind	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990514	trawler	1272	17	1	14/9/99	off Cape Foulwind	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990513	trawler	1272	17	2	14/9/99	off Cape Foulwind	<b>white-capped albatross</b>	<i>Thalassarche steadi</i>
990447	trawler	1167	96	2	8/11/98	Chatham Rise	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990406	trawler	1167	148	10	19/11/98	Chatham Rise	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990448	trawler	1167	168	16	23/11/98	Chatham Rise	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990524	trawler	1268	68	6	14/10/99	Solander Trough (north of The Snares)	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>
990525	trawler	1268	75	1	17/10/99	Solander Trough (north of The Snares)	<b>white-chinned petrel</b>	<i>Procellaria aequinoctialis steadi</i>

U = unknown.

<b>AUTOPSY #</b>	<b>Age</b>	<b>Sex</b>	<b>Fat score</b>	<b>Stomach contents</b>	<b>Gizzard contents</b>	<b>Moult</b>
990237	adult	female	1	fish bones and otoliths	fish eyeballs	downy brood patch, few pin feathers on shoulder
990510	adult	male	3	sludge and offal	2 otoliths and fish bones	bare central stripe, some body moult
990511	sub-adult	female	3	offal	fish bones	downy brood patch, some body moult, outer primaries moulting
990426	adult	female	5	(offal in mouth) empty	fish bones, eyeballs and otoliths	downy brood patch, tail moult and outer wing primaries moulting
990460	adult	female	2	[fish offal in mouth] worms, fish offal	fish bones, fish eyeballs, otoliths	downy brood patch, some body moult, tail moulting
990417	adult	female	2	fish pieces and sludge, otoliths and proventricular oil	eyeball	downy brood patch, some body moult and tail moult
990418	adult	male	1	empty	empty	downy brood patch
990509	adult	female	4	fish sludge and bones	fish sludge and bones	downy brood patch, extensive body moult, small feathers on wing moulting, extensive tail moulting
990508	adult	male	5	offal	empty	downy brood patch, heavy body moult, secondaries moulting, tail moulting
990515	adult	male	U	fish frames and offal	eyeballs	thinly downy brood patch, some body moult
990514	adult	male	5	full - fish frames and offal	empty	bare central stripe, some body moult
990513	adult	male	3	empty	empty	downy brood patch, some body moult, some secondary moulting, tail moulting
990447	adult breeder	male	3	fish pieces (bait) and large squid beak	squid beaks	part downy brood patch
990406	adult	male	1	fish sludge and bones	squid beaks	downy brood patch
990448	adult breeder	male	2	offal (fish skin)	fish bones and squid beaks	part bare brood patch
990524	adult	female	5	sludge, fish bones, squid beaks	worms, squid beaks	downy brood patch
990525	adult	female	2	empty	stones, plastic, squid beaks	downy brood patch, some body moult