

Autopsy report for seabirds killed  
and returned from New Zealand  
fisheries 1 January 1998 to  
30 September 1998  
Birds returned by Ministry of Fisheries  
observers to the Museum of New  
Zealand Te Papa Tongarewa

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Published by  
Department of Conservation  
Head Office, PO Box 10-420  
Wellington, New Zealand

This report was commissioned by Science & Research Unit (Conservation Services Levy).

ISSN 1171-9834

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Reference to material in this report should be cited thus:

Robertson, C.J.R., 2000.

Autopsy report for seabirds killed and returned from New Zealand fisheries 1 January 1998 to 30 September 1998. *Conservation Advisory Science Notes No. 294*, Department of Conservation, Wellington.

Keywords: seabird bycatch, autopsies, tuna longline fishery, trawlers, New Zealand fisheries.

# 1. Introduction

There were 195 specimens returned from 19 separate fishing trips with on-board observers, between 1 January and 30 September 1998, where birds were killed as a bycatch to various forms of fishing practice. Four of these trips contributed 82% of the birds returned. These autopsies were undertaken for the Department of Conservation as CSL Contract 98/3091. 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 Conservation Services Levy.

In 1998 these birds were received from trawlers, domestic tuna longliners, joint venture tuna longliners, and domestic bottom longliners (Tables 1-4). 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 (Figures 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. Autopsies were undertaken by the author for all birds other than grey petrels which were undertaken by E. Bell. All birds returned were able to be identified 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 all specimens.

Where there was a stated need for specimens of particular species, they were supplied following autopsy to Auckland, Canterbury and Otago Museums and the Museum of New Zealand Te Papa Tongarewa. Some albatross specimens were provided through the Department of Conservation for traditional use of feathers by various Maori groups.

All specimens were allocated a unique autopsy number and the details of species and individual birds in the report are presented as Tables 1-4. The unique specimen autopsy number enables easy correlation of the data within Table 3. 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 a '?' in Table 3 indicates a deficiency. For sooty shearwaters only a preliminary and

general analysis of stomach and gizzard was undertaken at the original autopsy to avoid disturbing the contents unduly. Further detailed work on their stomach contents was undertaken by Paul Scofield at Otago University as part of his studies into that species, and a summary 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 which suggested a probable association with wires and winches during fishing operations.

### 3. Results

A total of 18 taxa (species) were represented. Six species constituted 88% of the returns [Individual numbers were - Grey petrel, 73; Antipodean (wandering) albatross, 32; Sooty shearwater, 26; Gibson's (wandering) albatross, 19; Campbell albatross, 12; Buller's albatross, 10]. Only one banded bird was returned - R-53808, banded as an adult Antipodean (wandering) albatross at Antipodes Island on 4 February 1998 (Autopsy # 980111).

The specimens overall had a high female bias in contrast to the 1996-97 period (Bartle 2000), but this was primarily caused by the almost total female representation among grey petrels returned. The sex ratio of Gibson's and Antipodean albatrosses was almost equal compared with 62% male in 1996-97. Sooty shearwaters continued to show a return of predominantly male specimens.

Adult birds (92%) continued to form the majority of specimens returned (85% in 1996-97).

There was a high proportion of specimens with significant stomach contents (56% compared with only 11% in 1996-97 [Bartle 2000]) among birds caught by the various, but primarily tuna longlining methods. The majority of these were grey petrels where 97% of the specimens had significant food and 89% of those had identifiable 'bait' fish or squid. Of the grey petrels, 80% of the specimens arrived with tuna hooks attached, with 83% of these having swallowed the hook. The balance were foul hooked in some other part of the body. An interesting feature of the stomach contents in sooty shearwaters (Table 3) was the high level of identified remains classed as bait fish or bait pieces, for a species which was predominantly caught by trawlers. As distinct from offal remains these were often small squares of fish flesh and skin. Some fish classed as bait could have been fish bycatch from the trawl net. Most sooty shearwaters were recovered drowned within the trawl when it was hauled on deck.

The previous data on stomach contents for this year suggests that pelagic seabirds generally were in a period of shorter food supply than normal. Table 2 compares the subcutaneous fat scores of specimens between the 1996-97

and 1998 reporting periods. For all species where a reasonable number of specimens are considered, the fat scores in 1998 are significantly lower than for 1996-97. To ensure that similar scoring was undertaken with the changed autopsy staff, Noel Hyde (Bartle 2000) supervised the early identifications and scoring undertaken for this report. This result strongly supports the suggestion of food shortages. When the grey petrel contents are compared between 1996-97 and 1998 the earlier period had high fat scores and insignificant levels of 'bait'. These differences will be addressed in a separate publication.

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 better 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. It is important, however, when assessing the validity of other specimens which may have not been returned for autopsy, but released after capture. Such records may then be used within other assessments of the total bycatch. The analysis shown in Figure 4 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 recording on the spot data and retaining the birds provided for autopsy. I should like to acknowledge their role in providing the primary material basis for this report. During the autopsies I have been ably assisted by E. Bell with autopsies of grey petrels, recording and database entry; D. Bell, R. Blezard, and R. Cossee assisted with recording data during the autopsies; N. Hyde provided the essential transfer of methods to ensure compatibility with previous data; P Scofield identified stomach and gizzard contents of sooty shearwaters; Tranzrail 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 Blezard 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 my workload. Seabed Mapping New Zealand Ltd constructed the maps from the position data supplied from the autopsy database.

## 5. References

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**TABLE 1.**  
**Species and numbers of seabirds killed in various fisheries between 1 January and 30 September 1998**

	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
<b>Antarctic Prion</b>	-	-	-	-	-	1	<b>1</b>	1	-	-	-	1	-
<b>Antipodean (Wandering) Albatross</b>	-	2	30	-	-	-	<b>32</b>	14	17	1	30	1	1
<b>Black Petrel</b>	-	1	-	-	-	-	<b>1</b>	1	-	-	1	-	-
<b>Black-browed Albatross</b>	-	-	2	-	-	-	<b>2</b>	-	2	-	2	-	-
<b>Buller's Albatross</b>	-	-	9	-	-	1	<b>10</b>	3	5	2	8	-	2
<b>Campbell Albatross</b>	-	-	11	-	-	1	<b>12</b>	6	6	-	8	4	-
<b>Flesh-footed Shearwater</b>	-	1	-	-	-	-	<b>1</b>	-	1	-	1	-	-
<b>Gibson's (Wandering) Albatross</b>	-	-	19	-	-	-	<b>19</b>	10	9	-	18	1	-
<b>Grey Petrel</b>	-	-	72	-	-	1	<b>73</b>	3	70	-	73	-	-
<b>Grey-faced Petrel</b>	-	-	-	-	-	1	<b>1</b>	-	1	-	1	-	-
<b>Light-mantled Sooty Albatross</b>	-	-	1	-	-	-	<b>1</b>	1	-	-	1	-	-
<b>Northern Giant Petrel</b>	-	-	1	-	-	-	<b>1</b>	-	1	-	-	1	-
<b>Salvin's Albatross</b>	-	-	1	-	-	-	<b>1</b>	-	1	-	1	-	-
<b>Sooty Shearwater</b>	1	-	-	3	1	21	<b>26</b>	22	4	-	24	2	-
<b>Southern Cape Pigeon</b>	-	-	-	-	-	1	<b>1</b>	1	-	-	-	-	1
<b>Southern Royal Albatross</b>	-	-	1	-	-	-	<b>1</b>	1	-	-	1	-	-
<b>White-capped Albatross</b>	-	-	-	-	-	7	<b>7</b>	4	3	-	7	-	-
<b>White-chinned Petrel</b>	-	1	1	-	-	3	<b>5</b>	2	3	-	5	-	-
<b>TOTALS</b>	<b>1</b>	<b>5</b>	<b>148</b>	<b>3</b>	<b>1</b>	<b>37</b>	<b>195</b>	<b>69</b>	<b>123</b>	<b>3</b>	<b>181</b>	<b>10</b>	<b>4</b>

TABLE 2.  
Comparative fat scores from autopsied birds for 1996/97 and 1998

	TOTALS		Fat scores					
	1996/97	1998	1	2	3	4	5	unk
<b>Antarctic Prion</b>	<b>0</b>							
		<b>1</b>				<b>1</b>		
<b>Antipodean (Wandering) Albatross</b>	<b>52</b>			<b>4</b>	<b>8</b>	<b>20</b>	<b>18</b>	<b>2</b>
		<b>32</b>	<b>17</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>Black Petrel</b>	<b>2</b>					<b>1</b>		
		<b>1</b>		<b>1</b>				
<b>Black-browed Albatross</b>	<b>18</b>				<b>2</b>	<b>5</b>	<b>11</b>	
		<b>2</b>	<b>1</b>			<b>1</b>		
<b>Buller's Albatross</b>	<b>11</b>				<b>1</b>	<b>5</b>	<b>5</b>	
		<b>10</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>1</b>		<b>2</b>
<b>Campbell Albatross</b>	<b>45</b>				<b>4</b>	<b>21</b>	<b>16</b>	<b>4</b>
		<b>12</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>1</b>	
<b>Chatham Albatross</b>	<b>5</b>					<b>4</b>	<b>1</b>	
		<b>0</b>						
<b>Flesh-footed Shearwater</b>	<b>7</b>				<b>1</b>	<b>4</b>		<b>2</b>
		<b>1</b>		<b>1</b>				
<b>Gibson's (Wandering) Albatross</b>	<b>10</b>			<b>1</b>		<b>4</b>	<b>4</b>	<b>1</b>
		<b>19</b>	<b>10</b>	<b>4</b>	<b>4</b>	<b>1</b>		
<b>Grey Petrel</b>	<b>70</b>				<b>4</b>	<b>42</b>	<b>23</b>	<b>1</b>
		<b>73</b>		<b>24</b>	<b>45</b>	<b>4</b>		
<b>Grey-faced Petrel</b>	<b>0</b>							
		<b>1</b>		<b>1</b>				
<b>Light-mantled Sooty Albatross</b>	<b>36</b>		<b>1</b>	<b>1</b>	<b>11</b>	<b>8</b>	<b>14</b>	<b>1</b>
		<b>1</b>			<b>1</b>			
<b>Northern Royal Albatross</b>	<b>2</b>						<b>2</b>	
		<b>0</b>						
<b>Northern Giant Petrel</b>	<b>5</b>				<b>1</b>	<b>2</b>	<b>2</b>	
		<b>1</b>	<b>1</b>					
<b>Pacific Albatross</b>	<b>1</b>							<b>1</b>
		<b>0</b>						
<b>Salvin's Albatross</b>	<b>14</b>				<b>4</b>	<b>3</b>	<b>7</b>	
		<b>1</b>	<b>1</b>					
<b>Snowy (Wandering) Albatross</b>	<b>2</b>						<b>2</b>	
		<b>0</b>						
<b>Sooty Shearwater</b>	<b>24</b>				<b>2</b>	<b>10</b>	<b>12</b>	
		<b>26</b>	<b>6</b>	<b>13</b>	<b>5</b>	<b>1</b>	<b>1</b>	
<b>Southern Cape Pigeon</b>	<b>0</b>							
		<b>1</b>				<b>1</b>		
<b>Southern Royal Albatross</b>	<b>2</b>						<b>1</b>	<b>1</b>
		<b>1</b>					<b>1</b>	
<b>White-capped Albatross</b>	<b>33</b>				<b>10</b>	<b>4</b>	<b>11</b>	<b>8</b>
		<b>7</b>	<b>3</b>	<b>1</b>	<b>3</b>			
<b>White-chinned Petrel</b>	<b>21</b>			<b>2</b>	<b>4</b>	<b>9</b>	<b>6</b>	
		<b>5</b>	<b>1</b>	<b>2</b>	<b>2</b>			

**TABLE 3**  
**AUTOPSY IDENTIFICATIONS AND DETAILS**  
 List by vessel type, of birds returned from observed vessels, for period 1 January 1998 to 30 September 1998.

<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>
980133	domestic bottom longliner	1095	156	1	26/4/98	E. of Stewart Is.	<b>Sooty Shearwater</b>	<i>Puffinus griseus</i>
980125	domestic tuna longliner	1088	11	208	14/4/98	Tolaga Bay (East Cape)	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980126	domestic tuna longliner	1088	11	206	14/4/98	Tolaga Bay (East Cape)	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980169	domestic tuna longliner	1096	5	43	25/3/98	W. of Great Barrier Is.	<b>Black Petrel</b>	<i>Procellaria parkinsoni</i>
980170	domestic tuna longliner	1076	3	50	7/2/98	Mahia Peninsula	<b>Flesh-footed Shearwater</b>	<i>Puffinus carneipes hullianus</i>
980165	domestic tuna longliner	1088	3	34	6/3/98	East Cape	<b>White-chinned Petrel</b>	<i>Procellaria aequinoctialis steadi</i>
980148	joint venture tuna longliner	1105	54	635	5/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980153	joint venture tuna longliner	1105	54	655	5/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980192	joint venture tuna longliner	1108	51	1627	5/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980122	joint venture tuna longliner	1106	62	422	8/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980110	joint venture tuna longliner	1105	58	740	9/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980131	joint venture tuna longliner	1106	63	428	9/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980152	joint venture tuna longliner	1105	58	742	9/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980129	joint venture tuna longliner	1106	64	429	10/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980150	joint venture tuna longliner	1105	59	747	10/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980105	joint venture tuna longliner	1105	60	779	11/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980128	joint venture tuna longliner	1106	65	433	11/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>
980130	joint venture tuna longliner	1106	65	434	11/7/98	East Cape	<b>Antipodean (Wandering) Albatross</b>	<i>Diomedea antipodensis</i>