

# **Conservation Services Programme Annual Report 2004/05**

**Bob Zuur  
Conservation Services Programme  
Marine Conservation Unit  
Department of Conservation**

**November 2005**

## Contents

<b>1. Introduction .....</b>	<b>1</b>
1.1. Purpose	1
1.2. Background	1
1.3. CSP Objectives	1
1.4. Development of the Annual Plan	1
1.5. Strategic and Research Plans	2
1.6. Administration and staffing	3
1.7. Auditor-General's investigation	3
1.8. Explanation of reporting structure	4
<b>2. Fishing interactions projects .....</b>	<b>4</b>
2.1. Purpose	4
2.2. Observer Project	4
2.3. Seabird Autopsy Project	10
2.4. Evaluating electronic monitoring in longline fisheries	11
2.5. Observer, Seabird and Marine Mammal Autopsy Project Data Review	11
<b>3. Population studies .....</b>	<b>12</b>
3.1. The effects of fisheries interactions on the Auckland Islands population of the New Zealand sea lion	12
3.2. An investigation into the demographic parameters of the Gibson's albatross ( <i>Diomedea gibsoni</i> )	14
3.3. An investigation into the demographic parameters of the Antipodean albatross ( <i>Diomedea antipodensis</i> )	15
3.4. Investigation of demographic parameters of the black petrel ( <i>Procellaria parkinsoni</i> )	16
<b>4. Mitigation .....</b>	<b>17</b>
4.1. Development and testing of discard management technologies	17
4.2. Global review of mitigation methods and research	17
4.3. Mitigating incidental capture of the New Zealand sea lion ( <i>Phocarctos hookeri</i> ) in the southern trawl fishery	19
<b>5. Projects from earlier Annual Plans .....</b>	<b>20</b>
5.1. Advisory services for the snapper longline fishery	20
5.2. Population management plans	20
5.3. Other projects	21
<b>6. Projects closed as part of the Agreement .....</b>	<b>21</b>
6.1. Design of a protected species observer programme	21
6.2. Other projects	22
<b>7. Other Activities .....</b>	<b>22</b>
7.1. Fish oil mitigation trials	22
7.2. Other activities	23
<b>8. Financial report .....</b>	<b>24</b>

# **1. Introduction**

## **1.1. Purpose**

This report outlines the research carried out through the 2004/05 Conservation Services Annual Plan, and provides updates on projects uncompleted from earlier annual plans.

## **1.2. Background**

The Conservation Services Programme originated in 1995 after an amendment to the Fisheries Act 1983 allowed for a Conservation Services Levy to be charged to the fishing industry, to recover the costs of research related to the impact of commercial fishing operations on marine protected species in New Zealand waters, and the development of ways to mitigate bycatch. The Minister of Conservation can also require the production of population management plans, which can include the setting of maximum-allowable levels of fishing-related mortality for threatened species.

## **1.3. CSP Objectives**

The overall aim of the Conservation Services Programme is to work in partnership with the New Zealand commercial fishing industry, Ministry of Fisheries, and other interested groups, to assess the impacts of fishing operations on protected marine species and to develop and investigate the effectiveness of mitigation measures which minimise the incidental take of protected marine species in interactions with the New Zealand commercial fishing industry.

Conservation Services Programme activities in 2004/05 were divided into three main areas:

1. Fisheries interactions projects
2. Population studies
3. Mitigation projects

## **1.4. Development of the Annual Plan**

Because much of the research carried out in the Conservation Services Programme is funded through a levy on the fishing industry, CSP has its own programme-setting process that is coordinated with the Ministry of Fisheries process to set fishery services levies. The funding year runs from July to June, although levies are set for the October to September fishing year. Before each year's research programme is set, a draft plan showing indicative projects and costs for the year ahead is released to the fishing industry and other interested parties, including Maori, recreational and environmental groups. Some CSP projects are multi-year, such as studies of the populations of particular species to determine how they are affected by bycatch levels.

The Annual Plan took account of feedback from stakeholders, and was approved, along with the final costs to be levied, by the Minister of Conservation. The Conservation Services Plan 2004/2005 was approved by the Minister of Conservation in May 2004. The Ministry of Fisheries then allocated the levy among the different fish stocks, at the same time as the fishery services levies are set. The Minister of Fisheries usually approves a new levy order

which, when signed by the Governor-General, comes into force at the start of the new fishing year on 1 October.

CSP followed a comprehensive formalised stakeholder consultation process which allowed interested parties, such as industry representatives or conservation groups, to provide input. Stakeholders were advised on 19 December 2003 of the timetable for the development of the 2004/05 Conservation Services Annual Plan as follows:

16 January 04	Interim Strategic Statement and outline of projects released to stakeholders
11 February 04	Workshop on Interim Strategic Statement and outline of projects
8 March 04	Draft 2004/2005 Conservation Services Annual Plan released to stakeholders.
9 April 04	Stakeholder submissions on Draft Annual Plan due
21 April 04	Meeting with stakeholders to discuss submissions and for the Department to seek clarification and respond to matters raised.
14 May 04	Final 2004/2005 Conservation Services Annual Plan forwarded to Minister of Conservation
31 May 04	Minister of Conservation advises Minister of Fisheries about details of the 2004/2005 Conservation Services Annual Plan for levy purposes.

Research projects were contracted to external specialists or were carried out by the Department's scientists and were generally let through tender, in accordance with government and CSP policy. Reports on projects funded by the Conservation Services Levy have been published through:

- External peer-reviewed journals;
- Peer-reviewed publications of the DOC Science Publishing Unit; or
- The CSP website ([www.csp.org.nz](http://www.csp.org.nz))

A Stocktake of CSP reports can be found at: <http://www.doc.govt.nz/Conservation/Marine-and-Coastal/Fishing/010~Conservation-services-programme/pdf/CSPStocktake.pdf><sup>1</sup>.

## **1.5. Strategic and Research Plans**

The Conservation Services Programme has been operating now for almost a decade and it is appropriate to define a strategic direction for the Programme. The Conservation Services Strategic Plan 2005-2010 is an enduring, high level document, identifying goals and objectives for the Programme, and establishing criteria and a framework for the determination of priority species and priority projects to be undertaken through the annual plans of work. The scope of the Strategic Plan is limited to activities:

- undertaken by the commercial fishing industry,
- within New Zealand's fisheries waters,
- that have an adverse effect on protected species.

---

<sup>1</sup> Accessible through [www.csp.org.nz](http://www.csp.org.nz)

The Strategic Plan<sup>2</sup> includes:

- current and potential sources of adverse effects of commercial fishing on protected species;
- a priority order of the protected species most at risk from these adverse effects;
- a priority order for the development of research
  - relating to those effects on protected species; and
  - on measures to mitigate the adverse effects;
- clear criteria for including other protected species in projects;
- the consultation process and timing of the process; and
- an outline of how the programme will be monitored and evaluated.

A draft Five-year Research Plan<sup>3</sup> was prepared to articulate how the Strategic Plan will be implemented and, as such, to provide quite specific guidance for the subsequent annual plans. Significant parts of the Research Plan have been overtaken through the preparation by the Ministry of Fisheries and the Department of Conservation of a Research Plan to implement the Seabird National Plan of Action.

## **1.6. Staffing**

The Conservation Services Programme is managed within the Marine Conservation Unit of the Department of Conservation, situated adjacent to the Department's Head Office in Wellington. Staff were:

- Bob Zuur, Manager<sup>4</sup>
- Johanna Pierre, Scientific Officer
- Wendy Norden, Scientific Officer
- Denis Fairfax, Briefing Officer
- Grant Johnston, Advisory Officer (to March 2005)
- Sandra Derwin, Administrator (part time)

## **1.7. Auditor-General's investigation**

In December 2002, the Office of the Auditor-General (OAG) reported on an inquiry into the way the Department of Conservation (DOC) managed the Conservation Services Programme. Some recommendations related to the administration of the Ministry of Fisheries Observer Programme. The Auditor-General published a follow-up audit in February, 2005. The overall tone of the follow-up audit was positive, including sixteen positive findings noting where the earlier recommendations have been implemented or where progress had been made.

---

<sup>2</sup> The Strategic Plan is available through [www.csp.org.nz](http://www.csp.org.nz) under "Plans".

<sup>3</sup> The draft Research Plan is available through [www.csp.org.nz](http://www.csp.org.nz) under "Plans".

<sup>4</sup> Simon Childerhouse was Assistant Manager when the Manager was seconded to DOC's Strategy and Policy Group.

The OAG concluded that:

*Overall, DOC and the Ministry of Fisheries have implemented the majority of our recommendations, with much progress occurring since late-2003. Some work remains to be carried out before all our recommendations are implemented in full.*

The Primary Production Committee requested a briefing from officials from the Department of Conservation and the Ministry of Fisheries on 19 May 2005.

## **1.8. Explanation of reporting structure**

This Annual Report first describes projects identified in the Conservation Services Annual Plan 2004/05 and then describes older projects. It identifies income and expenditure, being a summary of the detail found in the financial statement in Section 8. This report then describes key results from the projects, based on presentations by contractors to a CSP Technical Working Group meeting in August 2005. Many of those reports were placed on the CSP website<sup>5</sup>, but should not be cited – formal papers will be published soon and will be advised on the CSP website.

## **2. Fishing interactions projects**

### **2.1. Purpose**

The purpose of fishing interactions projects is to:

- Undertake research into the nature and extent of commercial fishing interactions on individuals of protected species in New Zealand waters.

### **2.2. Observer Project**

#### **2.2.1. Objectives**

1. To identify, monitor and, where possible, quantify protected species interactions with commercial fisheries;
2. To identify possible means for mitigating the incidental mortality of protected species;
3. To collect biological information on the incidental mortality of protected species that will assist assessing mitigation techniques; and
4. To assess the adoption of mandatory and other reporting of the incidental mortality of protected species.

#### **2.2.2. Financial summary**

Reference: INT 2004/1: Services provided through Ministry of Fisheries Observer Services and Fisheries Audit Services, plus CSP staff time

Income: \$616,750<sup>6</sup>, expenditure: \$413,000, balance: \$203,750 (100% industry funded)

---

<sup>5</sup> [www.csp.org.nz](http://www.csp.org.nz)

<sup>6</sup> In relation to at-sea costs.

### 2.2.3. Results

#### *Observer placement*

Fisheries observers are trained in protected species identification and are given a comprehensive manual and reference books for use at sea. Observers retrieve and return seabirds for autopsy by experienced specialists. Observers are debriefed on return, and some masters and skippers are also interviewed, in order to build a picture of the way fishing vessels interact with protected species. A summary of the number of observer days in the 2004/05 Annual Plan and those delivered is provided in Table 1. More detail will be provided on the results of the Observer Project for the 2004/05 fishing year<sup>7</sup> to be released in December 2005.

Interactions with marine protected species were observed for 3342 fishing days during the 2004/2005 financial year. The percentage of fishing effort observed will be described in the 2004/05 Fishing Year Report. Most of the observer effort was in squid (29%) and hoki (26%).

**Table 1: Observer coverage for 2004/2005**

Fishery	No. of days in Annual Plan	Effective days in Annual Plan	Rate/day	At sea cost	Received days	Invoiced days	Total invoice	Balance
Snapper	150	150	\$500	\$75,000	134	149	\$74,500	\$500
Inshore ling	200	200	\$500	\$100,000	8	13	\$6,500	\$93,500
Deep sea ling	150	15	\$500	\$7,500	153	160	\$80,000	\$6,250
		175	\$500	\$78,750				
Domestic Tuna	600	150	\$500	\$75,000	195	67	\$33,500	\$41,500
Charter tuna	200	20	\$500	\$10,000	207	14	\$7,000	\$3,000
Hoki	600	115	\$500	\$57,500	879	115	\$57,500	\$0
Squid trawl	600	120	\$500	\$60,000	962	120	\$60,000	\$0
Jack mackerel	150	30	\$500	\$15,000	136	34	\$17,000	-\$2,000
Sthn blue whiting	350	70	\$500	\$35,000	263	62	\$31,000	\$4,000
Scampi	100	100	\$500	\$50,000	73	87	\$43,500	\$6,500
Purse seine tuna	30	6	\$500	\$3,000	30	5	\$2,500	\$500
Inshore set net	100	100	\$500	\$50,000	0	0	\$0	\$50,000
Orange roughy	0	0	\$500	\$0	391	0	\$0	\$0
	3,405	1,234		\$616,750	3431	826	\$413,000	\$203,750

Notes:

- “No. of days in Annual Plan” indicates the number of observer seadays required. Often observer time can be shared with other clients of MFish Observer Services. This was estimated in terms of “Effective days” in the Annual Plan.
- The “Received days” are the numbers of observer seadays debriefed by CSP. Note that in some cases, two observers may be needed where vessels fish around the clock. For example in southern blue whiting three of the eight observed trips involved two observers, meaning that 174 fishing days equated to 263 observer sea days.
- The “Invoiced days” reflect invoices received from MFish Observer Services.

<sup>7</sup> 1 October 2004 to 30 September 2005.

The number of observer sea days debriefed is slightly more than the days requested, but excluding the days received which were in excess of those planned, only 71% of the requested days were received. The following fisheries, in particular, received fewer days than planned:

- Inshore setnet: 0%. It is particularly difficult to place observers in inshore fisheries, owing to the small size of the vessels and the flexible fishing regime. This was particularly so in the setnet fishery. However, success in the snapper longline fishery<sup>8</sup>, thanks to cooperation from the industry and the efforts of the Observer Services team, shows that this is possible.
- Inshore ling 8%, deepsea (autoline) ling: 47%. The decline in the demand for ling in key overseas markets has reduced ling fishing effort. On advice from industry that inshore ling effort was likely to be low, the target number of days The nature and activity of the inshore fishery (for which there was limited prior history of coverage), will be better investigated before the 2005/06 season commences to ensure better placement of observers.
- Domestic tuna: 33%. It was difficult to place observers in this fleet, owing to the small size of the vessels and the flexible fishing regime. However, there was an added effect from the move of some tuna species into the quota management system. There was a rationalisation of the fishing fleet and the fishers who remained in the fishery changed the pattern of their activity. The early 2004 fishing year was still competitive for southern bluefin tuna and was largely over by July, starting again in June 2005. This made it hard to locate vessels through the largest part of the 2004/05 financial year.

Initial project planning and design for the inshore setnet survey was undertaken by a contractor. As no observed days were delivered, costs were covered by the Crown contribution to this project<sup>9</sup>.

The underdelivery of observer sea days by MFish Observer Services and Fisheries Audit Services coupled with savings through sharing costs with different clients led to a substantial over-recovery to be returned to the industry<sup>10</sup>.

### *Reporting*

Every observer is debriefed on their return from a trip and an extensive range of data is recorded in CSP and MFish<sup>11</sup> databases. Additional information is collected on non-fish bycatch forms returned to MFish.

This information is reported through:

- *Report on protected species from observed fisheries 2004/05*, which summarises marine protected species interactions with commercial fisheries during the fishing year ending 30 September 2005. This is to be completed in December 2005;

---

<sup>8</sup> The number of invoiced days is larger than that of the seadays, owing to time spent by observers on land prior to placement on vessels.

<sup>9</sup> This was originally intended to address recreational setnetting, which is beyond the scope of CSP.

<sup>10</sup> Processes managed by the Ministry of Fisheries return funds to industry through reductions in future levies. Hence, "returned to industry" means "Declared and actioned under the agreed protocols for under/over recovery between the Crown and Industry".

<sup>11</sup> Most relevant MFish databases are operated by NIWA.



- *CSP Occurrence Reports* that respond quickly to significant event during the course of the fishing season.
  - The deaths of common dolphins in the jack mackerel trawl fishery were reported in an *Occurrence Report* in December 2004. The circumstances associated with these fatal captures is being analysed further by the industry and CSP. It appears that dolphins are more likely to be caught at night than in daylight tows and that moonless nights may be significant. Location may also be an important factor as captures were only reported off the west coast of the North Island and in Cook Strait, while none were reported from observed jack mackerel tows off the south, west and east coasts of the South Island.
 

In the meantime the companies agreed to

    - + Work with DOC to research the factors that increase the risk of dolphin captures.
    - + Not fish between 2am and 4am, during which time dolphins are more likely to be caught, for a trial period of three months.
    - + If after three months, a more appropriate time period is signalled, appropriate changes would be made.
    - + Avoid targeting small mackerel, which appear to be dolphins' target prey.
  - A draft occurrence report was prepared following the mortality of significant numbers of seabird captures in the subantarctic squid (SQU6T) fishery. This was overtaken by a decision by the Minister of Fisheries that vessels in that fishery 28 metres and over were to use tori lines as a seabird deterrent as from November 2005;
- Reports quantifying bycatch in particular fisheries produced through the Ministry of Fisheries, such as recent reports prepared by Suze Baird of NIWA. The bycatch data are analysed to provide a robust statistical basis for determining trends in capture rates of protected species in different fisheries;
- A synthetic review of observer data – this is discussed later in this Annual Report.

*Summary of marine protected species bycatch*

The numbers of marine mammals and seabirds recorded by observers are summarised in Tables 2 and 3 respectively. Please note that the identification of these animals, especially seabirds, is tentative until confirmed by experts.

**Table 2: Marine Mammals and Marine Reptiles captured by observed vessels July 2004 – June 2005**

	Fishery								Total
	Hoki	Sthn Blue Whiting	Squid	Ch Tuna	Dom Tuna	Ling	Jack Mackerel	Orange Roughy + Oreo	
NZ sea lion		2	13						15
NZ fur seal	65	17	11	4	11	1	6	4	119
Common dolphin							22		22
Pilot whale							6		6
Unknown whale				1					1

L'back turtle					1				1
Green turtle					1				1
<b>Total</b>	<b>65</b>	<b>19</b>	<b>24</b>	<b>5</b>	<b>13</b>	<b>1</b>	<b>34</b>	<b>4</b>	<b>165</b>

Some 30 more mammals and reptiles were caught in 2004/05 compared to the equivalent period in 2003/04, an increase which probably reflects the larger number of observer days in 2004/05. There were 15 more fur seals in the hoki fishery, but fewer in the squid fishery. The latter fishery also recorded five fewer sea lion captures. The numbers of fur seals caught in the southern blue whiting fishery contrasts with none for 2003/04. Common dolphins caught in the jack mackerel fishery increased by seven. Marine reptile captures in the tuna fishery remained low.

Comparing Table 3, which lists captured seabirds, with the total of returned and autopsied seabirds for 2003/04 indicates that the pattern of seabird captures has changed. The squid fishery shows a much greater number of captures and the hoki fishery a marked increase while the ling and snapper fisheries combined show a noticeable decrease in numbers captured. Further analysis is being carried out to determine the factors that have contributed to these apparent changes.

**Table 3: Seabirds captured by observed vessels July 2004 –June 2005<sup>12</sup>**

	Fishery										Total
	Hoki	Sthn blue whiting	Squid	Chart ered Tuna	Dome st. tuna	Ling	Jack Mack erel	Scamp i	Snap per	Orange Roughy + Oreo	
Albatross (unid.)	9	1	14	2	1					2	29
Black petrel									1	4	5
Black-browed mollymawk	4		4	4		1					13
Buller's mollymawk	5		7	20	3	2		2			39
Buller's shearwater					2						2
Cape pigeon	11					1	1			15	28
Diving petrel			2		1	13				1	17
Fairy prion			1					1			2
Flesh-footed shearwater	1				1			2	8		12
Fluttering shearwater								1		1	2
Gannet									1		1
Giant petrel			1	2						1	4
Grey petrel	1				2	1				2	6
Petrel (unid.)	4		29				2	2			37
Prion (unid.)			1				3				4
Salvin's mollymawk	6		10		1			5		3	25
Seagull								1	2		3

<sup>12</sup> Note that these are species identifications made by MFish Observers. For the definitive identifications of returned specimens see the DOC publication *Autopsy report for seabirds killed and returned from New Zealand fisheries* which appears annually after the completion of each fishing year.

<b>Shy mollymawk</b>	10		194	2		1	1	1		1	210
<b>Sooty shearwater</b>			72			3	1				76
<b>Southern royal albatross</b>			11							1	13
<b>Storm petrel</b>	1		3			1	2	1		1	9
<b>Wandering albatross</b>					1	1	1				3
<b>Westland petrel</b>	3										3
<b>White-chinned petrel</b>	1		44	3	1	10					59
<b>Total</b>	<b>56</b>	<b>1</b>	<b>393</b>	<b>33</b>	<b>13</b>	<b>34</b>	<b>11</b>	<b>16</b>	<b>12</b>	<b>3</b>	<b>602</b>

## 2.3. Seabird Autopsy Project

### 2.3.1. Objectives

1. To collect protected seabirds incidentally taken in observed fishing operations for the determination of: species, age (where possible), sex, reproductive status, stomach contents and general condition.
2. To establish a profile of those species caught incidentally in commercial fishing operations to identify potential types and causes of interactions and to detect trends.

### 2.3.2. Financial summary

Reference: INT 2004/2<sup>13</sup>: Services provided by Christopher Robertson – Wild Press  
Income: \$90,000, expenditure: \$77,429<sup>14</sup>, balance: \$12,571. (100% industry funded)

Reference: INT 2001/4<sup>13</sup>: Services provided by Christopher Robertson – Wild Press  
Income: \$23,452, expenditure: \$33,300, balance: -\$9,848. (100% industry funded)

### 2.3.3. Results<sup>15</sup>

On-board observers on 164 separate fishing trips between 1 October 2003 and 30 September 2004 returned 351 birds killed as bycatch to various forms of fishing practice. Twenty taxa were represented, with nine comprising 95.3% of returns.

During eight years of the autopsy programme (1996–2004), white-chinned petrel (n = 894), white-capped albatross (n = 707), sooty shearwater (n = 655), grey petrel (n = 528), Salvin's albatross (n = 222) and Buller's albatross (n = 160) were the most commonly returned of 40 taxa totalling 3695 specimens. These birds were returned during observations made on 1023 trips for 240 individual vessels covering over 27,000 observed days at sea. Only 119 of the vessels returned birds.

There is evidence of a differential return rate between different types and nationalities of vessels within the fisheries. Each fishing type had a small number of vessels that caught 80% of the birds returned from each fishery. Each fishing practice has a small number of bird taxa providing a regular risk of significant bycatch. In the trawl fisheries albatrosses are more likely to sustain injury from interaction with trawl warps than small petrels, which are recovered from capture in the net. From 1996–2004 significant proportions of the birds returned from the combined trawl and domestic bottom longliner fleets had fisheries offal or discards (baits) forming a prominent part of their stomach contents. Observed vessels not processing their catch at sea caught significantly fewer birds. The results continue to demonstrate a need to focus mitigation and avoidance investigations on offal discharge, differences between vessels (including nationality) and their operational practices, as a means of reducing seabird attraction into areas of risk, with the trawl fisheries being a priority.

---

<sup>13</sup> The seabird autopsy projects collect birds recovered each fishing year, and hence report in the year following the Annual Plan.

<sup>14</sup> Including expense transfer of \$20,471.

<sup>15</sup> From Robertson, C.J.R., Bell, E., Blezard, R.H. and Scofield, P. (2005) Autopsy report for seabirds killed and returned from New Zealand fisheries, 1 October 2003 to 30 September 2004. Unpublished report presented to CSP Technical Working Group.

## **2.4. Evaluating electronic monitoring in longline fisheries**

### **2.4.1. Objective**

1. To identify issues that hinder the adoption of electronic monitoring and suggest methods by which these issues can be addressed;
2. To assess the effectiveness of electronic monitoring in monitoring the incidental mortality of protected species in longline fisheries.

### **2.4.2. Financial summary**

Reference: INT 2004/3. Fish stocks were not levied.

### **2.4.3. Results**

This project did not proceed as this area is now being led by the Ministry of Fisheries.

## **2.5. Observer, Seabird and Marine Mammal Autopsy Project Data Review**

### **2.5.1. Objectives**

1. To conduct a synthetic review of data held by the Conservation Services Programme that has been collected through the Observer Project.
2. To produce recommendations relating to best practice and methods (e.g. mitigation techniques) that may assist in reducing incidental catch and mortality of protected species.

### **2.5.2. Financial summary**

Reference: INT 2004/4: Services provided by Anna Grant (contractor)  
Income: \$30,000, expenditure: \$30,000<sup>16</sup>, balance: \$0. (100% industry funded)

### **2.5.3. Results**<sup>17</sup>

The squid and jack mackerel trawl fisheries and ling bottom longline fishery were chosen for analysis, looking at by-catch of birds, sea lions & birds, and dolphins respectively. CSP observer records from 73 squid, 25 jack mackerel, and 22 ling trips in fishing years from 2001-2002 to 2004-2005 were collated, to produce per trip or per tow data on protected species incidental capture or mortality rates and on vessel and operational factors considered to potentially influence these by-catch rates. Data were analysed using non-parametric statistical tests.

Seabird incidental mortality in the squid fishery was highest on Polish vessels, highest on trips where aggressive feeding by birds was observed, positively correlated with the number

---

<sup>16</sup> Including expense transfer of \$11,135 to 2005/06 to allow the project to be completed by December 2005.

<sup>17</sup> From Grant, A. Observer Project Data Review: INT 2004/4. Unpublished report presented to CSP Technical Working Group.

of types of fishing waste discharged from the vessel, and lowest on vessels with noisy winches. Sea lion incidental mortality in the squid fishery was lowest on trips where sea lions were not seen around the boat, and on vessels with hydraulic winches. In the jack mackerel fishery, captures of dolphins were observed off the west coast of the North Island and in Cook Strait, while none were reported from observed jack mackerel tows off the south, west and east coasts of the South Island, and dolphins were most likely to be caught during night-time trawls with capture risk possibly increasing further on moonless nights. Bird incidental mortality rate in the ling fishery shows a downward trend from late 2001 to late 2004, was lower in night-time than day-time sets, and was relatively high on trips where the mainline was reported to rise to near the surface.

Recommendations for best practice from this review include minimising discharge of offal and non-quota bycatch in the squid fishery, and reducing night-time trawls in the jack mackerel fishery. In the ling fishery, it is recommended to reduce day-time setting and to refine methods for making tori lines as effective as possible and for reducing likelihood of mainlines rising to the surface. Recommendations are also made on refinement of future data collection.

### **3. Population studies**

#### **3.1. The effects of fisheries interactions on the Auckland Islands population of the New Zealand sea lion**

##### **3.1.1. Objectives**

1. To characterise demographic parameters of the New Zealand sea lion population on the Auckland Islands.
  2. To investigate potential indirect effects of fisheries interactions on New Zealand sea lions on the Auckland Islands.
- Objectives for 2004/05:
    - (a) To measure pup production.
    - (b) To determine survival of previously marked New Zealand sea lions.
    - (c) To quantify reproduction by known-age female New Zealand sea lions.
    - (d) To tag pups produced during the 2004/05 breeding season.
    - (e) To retain the ability to identify known-age New Zealand sea lions.

##### **3.1.2. Financial summary**

Reference: POP 2004/1: Services provided by Dr Ian West, Marine and Freshwater Science Manager, Science and Research Division, Department of Conservation  
Income: \$250,000, expenditure: \$223,988, balance: \$26,012. (90% industry funded)

Reference: MAM 2003/1: Services provided by Dr Ian West, Marine and Freshwater Science Manager, Science and Research Division, Department of Conservation  
Income: \$85,236<sup>18</sup>, expenditure: \$0, balance: \$85,236. (100% industry funded)

---

<sup>18</sup> Funds carried forward from 2003/04.

Owing to the resignation of a key staff member in 2003, project MAM 2003/1 was significantly underspent. These funds were carried forward. However, it was possible to deliver the outstanding outputs from 2003/04 and those from 2004/05 within budget and transfer savings back to industry.

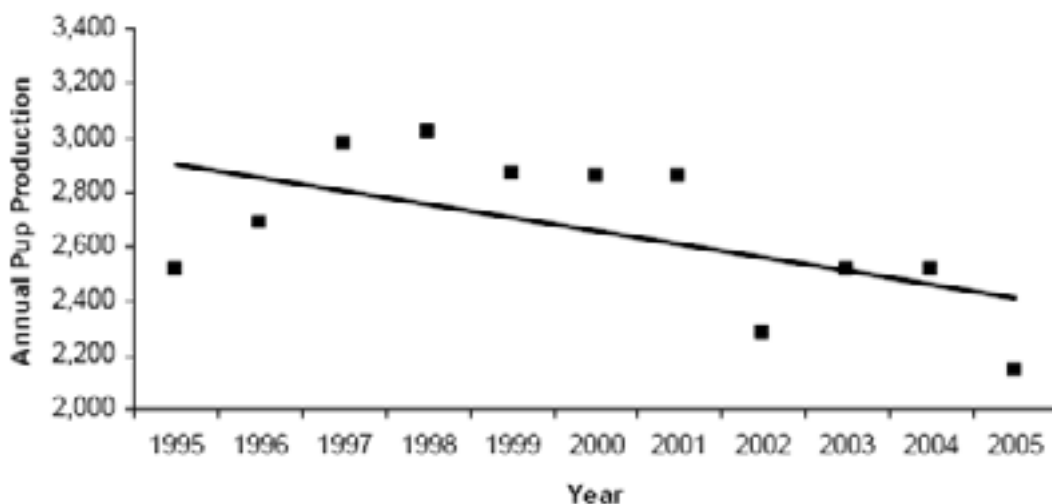
### 3.1.3. Results

#### *Pup production*<sup>19</sup>

Surveys of the Auckland Island breeding sites of the NZ sea lion were conducted principally to obtain accurate estimates of pup production for use as an index of population size.

In the 2004 / 05 season the Auckland Island pup production estimate was approximately 15% less than the previous two years with an estimate of 2148 pups born. The 2004/05 Auckland Island pup production estimate is the lowest estimate recorded since systematic estimates started. It represents almost 1000 pups less than the 1998 estimate and a decline of approximately 30% since then (Fig. 1). The decrease in pup production is linked with a corresponding low count of females present in the breeding areas. This strongly indicates a drop in breeding age females within the population and therefore an overall decreasing population. The number of females recorded present this year was significantly lower than has been recorded in the last eight years.

This significant decrease in pup production leads to a species estimate of New Zealand sea lions as 11995 (95% CI 10391 - 13791, this includes the 2003 pup production estimate of 385 from Campbell Island). This is the second mean species estimate below 12000 animals in the last 4 years (Table 3) and the second lowest estimate in the last 10 yrs. From this season's female counts, fecundity data and knowledge of population trends and mortality events it is predicted that this species estimate will not increase and is likely to continue to fall in the next 5 – 10 years.



**Figure 1: Pup production estimates for the Auckland Islands 1994 – 2005.**  
(Line fitted by linear regression).

<sup>19</sup> From: Chilvers, B.L. (2005). New Zealand sea lions, *Phocarctos hookeri*, Auckland Island pup production 2004/05. Unpublished report presented to CSP Technical Working Group.

## *Adult female survival and reproductive rates*<sup>20</sup>

Survival, recruitment and pupping data are critical inputs to management models, decision making and policy setting for this threatened species. The pupping rate and adult female breeding data presented here supports the pup production findings for the 2004/05 season that this is the lowest pup production estimate for the Auckland Islands since systematic estimates started. This drop in pup production is linked to the corresponding lower numbers of breeding females present in the breeding areas, indicating a drop in the number of breeding females in the NZ sea lion population and an overall decreasing population.

### **3.2. An investigation into the demographic parameters of the Gibson's albatross (*Diomedea gibsoni*)**

#### **3.2.1. Objective**

To characterise demographic parameters of the Gibson's albatross (*Diomedea gibsoni*).

Specific objectives for 2004/05:

1. To measure the age at which juvenile Gibson's albatrosses first return to the breeding colony.
2. To determine the survival rates of adult and juvenile Gibson's albatrosses.
3. To document, if possible, the first incidences of albatrosses banded as juveniles recruiting into the breeding population.
4. To examine population trends by conducting albatross counts and analysing count data from study blocks on Adams Island.
5. To conduct a full count of Gibson's albatrosses on Adam's Island (if appropriate in the context of the NPOA).

#### **3.2.2. Financial summary**

Reference: POP 2004/2: Services delivered by Albatross Research Ltd.

Income: \$122,000, expenditure: \$126,524, balance: -\$4,524. (50% industry funded)

This contract was varied to change the statistical analysis, resulting in an increase in costs.

Reference: BRD 2001/1: Services delivered by Albatross Research Ltd.

Income: \$21,200, expenditure: \$21,200<sup>21</sup>, balance: \$0.

#### **3.2.3. Results**<sup>22</sup>

A previously banded population of *D. gibsoni* on Adams Island was studied in early 2005 to measure survival, recruitment, productivity and population trends.

---

<sup>20</sup> Chilvers, B.L (2005) Estimates of survival and reproductive rates of adult female New Zealand sea lions, *Phocarcotos hookeri*, 2005. Unpublished report presented to CSP Technical Working Group.

<sup>21</sup> Expense transfer into 2005/06. Note that there have been delays in the final payment pending delivery of final reports and that a final payment of \$13,850 is expected to be made in December 2005. The balance will be returned to industry.

<sup>22</sup> From Walker, K. and Elliott, G. (2005). Demographic parameters of Gibson's albatross (*Diomedea gibsoni*). Unpublished report presented to CSP Technical Working Group.



Productivity in 2004 was low (53.8%), 52% fewer birds attempted to breed in 2005 than in 2004, and a third of the 2005 nesting attempts failed before April. Up to 80% fewer courting birds than normal visited Adams Island in 2005.

Although there is substantial inter-annual fluctuation in numbers attending the breeding grounds, the population is either static or increasing slowly. Despite extensive searches over Adams Island in both 2004 and 2005, most birds banded as fledglings in the study area were recovered within 1.5 km of the study area, and almost all of those which had begun to breed nested within 400m of their natal area. No birds younger than 3 years-old returned to the island.

The youngest age of first breeding is 8 years, compared to 7 years for *D. antipodensis* and *D. exulans*. Mean age of first breeding cannot yet be calculated as only 25% of the survivors of the first two cohorts of birds banded as fledglings have begun to breed. Annual juvenile survival to age 8 averaged 91.7% for the 1994-97 cohorts, and estimated annual survival to age 5 was 90%. Accurate estimates of age of first breeding, recruitment and juvenile survival depend on collection of several more years of data.

### **3.3. An investigation into the demographic parameters of the Antipodean albatross (*Diomedea antipodensis*)**

#### **3.3.1. Objective**

To characterise demographic parameters of the Antipodean albatross (*Diomedea antipodensis*).

Specific objectives for 2004/05:

1. To measure the age at which juvenile Antipodean albatrosses first return to the breeding colony.
2. To determine the survival rates of adult and juvenile Antipodean albatrosses.
3. To document, if possible, the first incidences of albatrosses banded as juveniles recruiting into the breeding population.
4. To examine population trends by conducting albatross counts and analysing count data from study blocks on Antipodes Island.
5. To conduct a full count of Antipodean albatrosses on Antipodes Island (if appropriate in the context of the NPOA).

#### **3.3.2. Financial summary**

Reference: POP 2004/3: Services delivered by Albatross Research Ltd.

Income: \$128,000, expenditure: \$139,024, balance: -\$11,024. (50% industry funded)

This contract was varied to change the statistical analysis, resulting in an increase in costs.

Reference: BRD 2001/2: Services delivered by Albatross Research Ltd.

Income: \$9,500, expenditure: \$9,500<sup>23</sup>, balance: \$0.

---

<sup>23</sup> Expense transfer into 2005/06. Note that there have been delays in the final payment pending delivery of final reports and that a final payment of \$10,000 is expected to be made in December 2005.

### 3.3.3. Results<sup>24</sup>

A previously banded population of *D. antipodensis* on Antipodes Island was studied during January-April 2005 to measure survival, recruitment, productivity and population trends.

While fewer birds visited Antipodes Island than in 2004, the population is growing at about 3.5% per annum. Despite extensive searches over Antipodes Island, all birds banded as fledglings in the study area were recovered within 832 m of the study area, and almost all of those which had begun to breed nested within 200m of their natal area. No birds younger than 3 years-old returned to the island, and no birds younger than 7 years old have begun breeding. As about half of the survivors of the first cohort of birds banded as fledglings in 1995 have begun breeding, mean age of breeding is approximately 10 years. Greater precision on mean breeding age cannot be achieved until all the survivors of the 1995 cohort have started breeding.

Annual juvenile survival to age 8 averaged 91% for the 1995-97 cohorts, and estimated annual survival to age 5 was 87%. Accurate estimates of age of first breeding, recruitment and juvenile survival depend on collection of several more years of data.

## 3.4. **Investigation of demographic parameters of the black petrel (*Procellaria parkinsoni*)**

### 3.4.1. Objectives

1. To assess the survival of juvenile (pre-breeder) black petrels.
2. To determine the age at which black petrels first return to their natal colony.
3. To determine the age at which black petrels first attempt to, and successfully, breed.
4. To quantify adult (breeder) survival<sup>25</sup>.
5. To estimate population size and trends.

### 3.4.2. Financial summary

Reference: POP 2004/4: Delivered by Wildlife Management International

Income: \$50,000, expenditure: \$50,649, balance: \$-22,899. (100% Crown funded)

This contract was varied to change the survey design and statistical analysis, resulting in an increase in scope and costs.

### 3.4.3. Results<sup>26</sup>

This report is part of an ongoing long-term study of the black petrel, *Procellaria parkinsoni*, on Great Barrier Island that was begun in the 1995/96 breeding season. During the 2004/05 breeding season, 362 study burrows were checked and intensively monitored over the

---

<sup>24</sup> From Walker, K. and Elliott, G. (2005). Demographic parameters of the Antipodean albatross (*Diomedea antipodensis*). Unpublished report presented to CSP Technical Working Group.

<sup>25</sup> With particular reference to recommendations made in Hunter, C., Fletcher, D. and Scofield, P. 2001. Preliminary modelling of black petrels (*Procellaria parkinsoni*) to assess population status. Department of Conservation Science Internal Series 2

<sup>26</sup> Bell, E.A., Sim, J.L. and Scofield, P. (2005) Investigation of demographic parameters of the black petrel (*Procellaria parkinsoni*). Unpublished report presented to CSP Technical Working Group.

summer. Of these, 226 were used by breeding pairs, 84 by non-breeding adults and the remaining 52 burrows were empty. By 29 April 2005, 175 chicks were still present in the study burrows and 6 others were presumed to have already fledged, corresponding to a breeding success of 80%. Nine census grids were monitored within the study area and accounted for 147 of the inspected burrows, with 82 burrows being used for breeding. Twelve extra burrows were found in the grids. Twenty-four chicks from earlier breeding seasons were recaptured within the Mount Hobson colony area this season. Twenty-six random transects were also established within the 35 ha study site and petrel (high and low burrow density areas) and non-petrel habitat was identified. Based on these habitat types, the study site was stratified and the Mount Hobson black petrel population is estimated to be in the range of 2146-2732 birds.

## **4. Mitigation**

### **4.1. Development and testing of discard management technologies**

#### **4.1.1. Objective**

To develop one or more effective and practical techniques to minimise the volume of discards discharged in a form attractive to seabirds in the course of New Zealand trawl fishing operations.

Specific objective for 2004/05:

- Conduct background work necessary to develop appropriate discard management methodologies, including drafting any prototype designs that would be tested at sea in the second year of the project.

#### **4.1.2. Financial summary**

Reference: MIT 2004/1: Contact tendered but no satisfactory tender received.  
Income: \$50,000, expenditure: \$50,220<sup>27</sup>, balance: -\$220. (100% industry funded)

#### **4.1.3. Results**

As no satisfactory tender was received, funds were transferred into 2005/06, where work has subsequently commenced.

### **4.2. Global review of mitigation methods and research**

#### **4.2.1. Objectives**

1. To conduct a global review of methodologies aimed at avoiding and/or mitigating incidental catch of seabirds, marine mammals and marine reptiles, as well as damage to corals, in fisheries that share characteristics with New Zealand fisheries.
2. To generate a list of contacts in the field of incidental catch avoidance and mitigation, as identified through the process of conducting the review.

---

<sup>27</sup> Including expense transfer of \$50,000 in 2005/06.

3. To recommend appropriate avenues of future research into the avoidance and mitigation of seabird and marine mammal incidental catch in New Zealand fisheries.

#### 4.2.2. Financial summary

Reference: MIT 2004/4: Services delivered by Dr Leigh Bull and Stephanie Rowe, contractors.

Income: \$20,490, expenditure: \$20,490<sup>28</sup>, balance: \$0. (Industry funded, plus DOC staff time contribution).

A related report on the mitigation of the bycatch of marine mammals and other marine protected species will be completed in the first half of 2005/06.

#### 4.2.3. Results<sup>29</sup>

Mitigation research needs to be done through controlled studies. Studies in longlining mitigation are increasingly incorporating the criteria required to make studies more robust, and it is important that the same should occur in the emerging field of trawling research.

The retention of offal and discards during setting and hauling (at the very least) has been shown to reduce seabird bycatch in both longline and trawling fisheries. For New Zealand demersal and pelagic longline fisheries, retaining offal and discards, using bird scaring lines (BSLs) and line weighting are current measures that are recommended as ways of reducing seabird bycatch.

For New Zealand trawl fisheries, retaining offal and discards during fishing operations, at least during and hauling, and using paired BSLs are current measures that are recommended as ways of reducing seabird bycatch. Much of the limited work that has investigated mitigation methods for trawl fisheries have concentrated on methods to reduce interactions with the warp cable, there is also an urgent need for research into methods for reducing seabird interaction with the net.

The effectiveness of underwater setting devices (such as the capsule, chute and funnel) at reducing Southern Hemisphere seabird bycatch is questionable. In terms of future advances in effective underwater systems, they should be considered in the vessel design (i.e. hull integrated underwater setting system) rather than an afterthought.

Methods such as acoustic deterrents are expected to be limited in their long-term use as seabird deterrents due to the likelihood of habituation. Further work is required to determine if seabirds will habituate to blue-dyed bait and fish oil. The mechanism responsible for the effectiveness of fish oil at deterring seabirds, and the potential impacts on the environment and seabirds, require further research.

Ministry of Fisheries observer data is relatively comprehensive for only four New Zealand fisheries (charter tuna, ling autoline, hoki trawl and squid trawl). The level of seabird bycatch in other New Zealand fisheries requires quantification in order to better direct resources for mitigation research and techniques that may be required in those fisheries.

---

<sup>28</sup> Including expense transfer of \$14,000 to 2005/06.

<sup>29</sup> From Bull, L. (2005). A review of methodologies aimed at avoiding and/or mitigating incidental catch of protected seabirds. Unpublished report presented to CSP Technical Working Group.

### **4.3. Mitigating incidental capture of the New Zealand sea lion (*Phocarctos hookeri*) in the southern trawl fishery**

#### **4.3.1. Objectives**

1. To review research on devices aiming to mitigate interactions between the New Zealand sea lion and the southern squid trawl fishery.
2. EITHER: To extend previous research on exclusion devices to demonstrate their efficacy in excluding viable sea lions from nets used in the southern squid trawl fishery, AND/OR: To develop and test novel methods that will significantly reduce the incidental mortality of sea lions in the southern squid trawl fishery.

#### **4.3.2. Financial summary**

Reference: MIT 2004/5

Income: \$62,500, expenditure: \$62,480<sup>30</sup>, balance: \$20. (100% industry funded)

#### **4.3.3. Results<sup>31</sup>**

The Minister of Fisheries has requested that the Squid Fishery Management Company, government agencies and other stakeholders in the squid fishery work collaboratively to develop a plan of action to determine sea lion exclusion device (SLED) efficacy. In response, the Squid Fishery Management Company has established an independently chaired working group to develop an action plan that will determine the efficacy of SLEDs used in the squid fishery, with a particular focus on the survivability of sea lions that have escaped via a SLED.

The Terms of Reference for the review are to:

- Review existing SLED efficacy data and their analyses and recommend research directions and procedures to further investigate SLED efficacy;
- Identify possible modifications to the SLED that will reduce or eliminate potentially life-threatening injuries that may be sustained by some sea lions when encountering the SLED;
- Recommend a research protocol/plan/design for determining SLED efficacy in reducing or eliminating sea lion bycatch mortality; and
- Identify other potential means of reducing sea lion bycatch.

As this industry work largely overlaps with the objectives of CSP project MIT 2004/5, funds were carried forward into 2005/06, with CSP participating in the working group. Should the industry process deliver the outputs specified for this project, operational funds will be returned to industry.

---

<sup>30</sup> Including expense transfer of \$61,000.

<sup>31</sup> From an unpublished Squid Fishery Management Company paper.

## **5. Projects from earlier Annual Plans**

### **5.1. Advisory services for the snapper longline fishery**

#### **5.1.1. Objective**

To employ an advisory officer to liaise with fishers in the snapper longline fishery and to work with them to reduce seabird bycatch at sea.

#### **5.1.2. Financial summary**

Reference: MIT 2002/2: Services delivered by Grant Johnson

Income: \$59,036, expenditure: \$33,354, balance: \$25,682 (100% industry funded)

#### **5.1.3. Results**<sup>32</sup>

The position of Advisory Officer (Protected Species) Snapper Longline Fishery was established in April 2003<sup>33</sup> to provide advice on best practice and mitigation techniques to fishermen in the Snapper 1 longline fishery (SNA1) and continued until 31 March 2005.

The Advisory Officer met with fishers at their local ports, visited their boats and went to sea with them to share knowledge about ways in which the incidental capture of protected species could be avoided. Seabird identification books and a videotape were distributed, and tori lines to reduce seabird mortality were given to individual skippers at no cost.

During the year, the advisory officer continued his visits to skippers in ports right through his area and attended meetings of local fisher groups. Overall some 60 skippers were contacted. He also took part in Southern Seabird Solutions workshops at a number of ports and assisted CSP scientific officers carrying out trials of a fish oil seabird deterrent developed by a Leigh fisherman.

About 50 vessels from four companies operated during the 2004/2005 season in the northern snapper fishery (SNA1). From October to March, seabirds come around the boats with the most commonly observed species being flesh-footed shearwaters, black petrels, sooty shearwaters, and grey-faced petrels. Longlining is carried out in deeper waters in winter and during this season low numbers of albatrosses are occasionally seen.

### **5.2. Population management plans**

#### **5.2.1. Financial summaries**

New Zealand sea lion PMP: CSL 4A (1995/96);

Income: \$6300, expenditure: 3,475, balance: \$2,825 (100% industry funded)

Wandering albatross PMP: CSL 4A (1995/96)

Income: \$10,135, Expenditure: \$0, Balance: \$10,135.

---

<sup>32</sup> Johnson, G. (2005) *Northern Snapper Longline Fishery Advisory Officer report, 1 April 2003 to 31 March 2005*. Unpublished report on CSP website ([www.csp.org.nz](http://www.csp.org.nz)).

<sup>33</sup> Due to the delay in contracting the Advisory Officer, funds for this project were carried over into 2004/05.

Hectors dolphin PMP: CSL 4A (1998/99)  
Income: \$4800, expenditure: \$0, balance: \$4800

### 5.2.2. Results

DOC is proceeding with a population management plan (PMP) for NZ sea lions for the 2005/06 fishing year. Approximately \$3,500 was spent to offset time spent by CSP staff member (Dr. Johanna Pierre) assisting with the preparation of this PMP. Remaining costs in preparing the PMP were met by the Crown.

Although DoC and MFish have commenced work on a Threat Management Plan for Hector's dolphins, this work is sufficiently different to a PMP and hence all the PMP funds will be returned to industry.

Remaining funds for the wandering albatross PMPs will be returned to industry.

## 5.3. **Other projects**

### 5.3.1. Testing the effectiveness of blue dye in reducing incidental seabird mortality

The sum of \$5,000 was carried forward for project MIT 2002/3 for the final payment for this contract (New Zealand Seafood Industry Council). This payment has been made.

## 6. **Projects closed as part of the Agreement**<sup>34</sup>

### 6.1. **Design of a protected species observer programme**

#### 6.1.1. Objectives

To design a protected species observer programme for New Zealand fisheries that will provide sufficient coverage to enable the collection of statistically robust data on the incidental take of protected marine species.

#### 6.1.2. Financial summary

OBS 2000/2: Proteus Wildlife Research  
Income: \$94,637; expenditure: \$53,634; balance: \$\$41,003 (Crown funded)

#### 6.1.3. Results<sup>35</sup>

At the start of this project a number of Excel spreadsheets were available containing data on:

- total New Zealand commercial fishing effort
- observer sampling times effort and observed bycatch for trawl fishing

---

<sup>34</sup> Some projects were settled as part of the Agreement with industry, with funds remaining in CSP.

<sup>35</sup> From Fletcher, D. and Manly, B. (2005) Guidelines for Design of a Protected Species Observer Programme. Unpublished report presented to CSP Technical Working Group.

- observer sampling times and observed bycatch for bottom longline fishing
- observer sampling times and observed bycatch for surface longline fishing
- reports by the captains of fishing vessels on bycatch that took place during fishing

In all cases records were available for the period from January 1997 to December 2003. Some information was available on the fishing conditions (the method, target species, and fishing location).

There were initial difficulties in using and interpreting the data. For example,

- a) the method codes used in the files provided for observed vessels are not the same as those used in the files provided for the total New Zealand fishing effort,
- b) results were available for observed vessels separately for the squid fishing area 6t, but not for the total New Zealand fishing effort,
- c) there appeared to be many errors in the data, particularly for the earlier years, and (d) there were many missing values.

As a result of these difficulties the preliminary assessment and summary of data took longer than expected. Most, but not all of these difficulties have now been overcome.

The report begins with a description of the available data, and how the files were reorganized for the purposes of the project. The methods used, or proposed to be used to measure fishing effort, summarize the factors effecting bycatch rates, estimate total bycatch, and summarize crew reports of marine mammal and bird bycatch are then described. Results are then presented for the total New Zealand fishing effort in 2002 and 2003, estimated daily bycatch rates for fisheries described by the fishing area, the fishing method, the target species and the year. Log-linear modelling is used to study the effect of the fishing area, fishing method, target species and year on bycatch rates.

There is good evidence that bycatch rates vary with all of these factors at times. The bycatch of marine mammals reported by the captains of fishing vessels is summarized as this may also be of use in planning future observer coverage.

## **6.2. Other projects**

The following settled projects are now closed:

- Campbell albatross CSL 3A(iv) (1997); balance: \$5860
- Development of an age-structured model for New Zealand sea lion, MAM 2001/3: balance: \$20,340
- Development of a stochastic model for Hector's dolphin, MAM 2000/5: balance: \$54,000  
These funds are to be transferred to 2005/06 to contribute to the development of a Threat Management Plan for Hector's dolphins.

## **7. Other Activities**

### **7.1. Fish oil mitigation trials**

CSP staff experimentally tested one possible solution to seabird – fisheries interactions that was proposed by a New Zealand longline fisherman, and involved dripping school shark (*Galeorhinus galeus*) liver oil on the ocean surface behind fishing vessels. We tested the



efficacy of shark liver oil in reducing the numbers of seabirds attending fishing vessels and the number of dives seabirds executed in pursuit of pilchard (*Sardinops neopilchardus*) baits. Shark liver oil was effective in reducing both seabird numbers and dives on baits, compared to canola oil and seawater control treatments. Further work should include testing the oil with additional seabird species and investigating habituation of seabirds to the oil in order to assess wider opportunities for long-term use of shark liver oil to reduce seabird bycatch.

## **7.2. Other activities**

### **7.2.1. Working groups**

CSP staff have participated in the meetings of the Hoki Fishery Management Company Environmental Steering Group concerned with improving seabird and marine mammal deterrent techniques.

The Manager has participated regularly in the seabird National Plan of Action Officials Group and Technical Working Group to assist the implementation of the NPOA.

### **7.2.2. International Fisheries Observer Conference**

Wendy Norden attended the International Observer Conference was held in Sydney from 8-11 November 2004. It was attended by approximately 200 delegates from more than 20 countries. The conference program addressed current developments and key issues concerning observer programmes around the world. For the complete conference proceedings see: <http://www.ozacom.com.au/fob04/4FOC%20Proceedings.pdf> . In addition to conference attendance, Wendy participated in a pre-conference workshop to develop best practices for the collection of longline data to facilitate research and analysis to reduce bycatch.

### **7.2.3. Albatross and Petrel Conference**

Johanna Pierre attended the International Albatross and Petrel Conference in Montevideo from 23-27 August, 2004<sup>36</sup>. The IAPC was attended by approx 150 delegates. Among other topics discussed, there was a full day session on incidental mortality, mitigation of fisheries-related mortality, detecting and monitoring incidental capture, and analysing incidental capture data. Population studies and ways to integrate these with environmental and fisheries data were canvassed. From a management perspective, National Plans of Action and other initiatives aimed at identifying the extent of incidental mortality and reducing bycatch were the focus. Difficulties managing for seabird conservation in these areas were well canvassed, and it was (in some ways) encouraging to realise that the same management problems in this area occur globally, by and large.

---

<sup>36</sup> This trip was funded by the Marine Conservation Unit.

## 8. Financial report

Work breakdown structure	Industry levy	Crown contribution	Expense transfers from 03/04	Total income	Planned project cost	Expenditure	Expense transfers to 05/06	Balance	Balance for industry	Balance for Crown
Operating & Administration		\$7,735	\$16,400	\$24,135	\$390,841	\$471,914		-\$81,073		\$81,073
INT 2004/1 Observer project	\$837,554			\$837,554	\$616,750	\$413,000		\$203,750	\$203,750	
INT 2004/2 Seabird autopsy	\$109,469			\$109,469	\$90,000	\$56,958	\$20,471	\$12,571	\$12,571	
OBS 2001/4 Seabird autopsy CF			\$23,452	\$23,452	\$23,452	\$33,300		-\$9,848	-\$9,848	
OBS 2001/3 MM autopsy CF			\$15,262	\$15,262	\$15,262	\$39,615	\$2,000	-\$26,353	-\$26,353	
INT 2004/3 Electronic Monitoring		\$45,004		\$45,004	\$37,000	\$0		\$37,000		\$37,000
INT 2004/4 CSP observer & MM autopsy data review	\$36,490			\$36,490	\$30,000	\$18,865	\$11,135	\$0	\$9,135	
OBS 2000/2 Design Prot Spp Prog CF		\$94,637		\$94,637	\$94,637	\$53,634		\$41,003		\$41,003
MIT 2002/2 Snapper Advisory CF			\$59,036	\$59,036	\$59,036	\$33,354		\$25,682	\$25,682	
MIT 2002/3 Blue bait trial CF			\$5,000	\$5,000	\$5,000	\$5,000		\$0	\$0	
MIT 2004/1 Discard management	\$60,816			\$60,816	\$50,000	\$220	\$50,000	-\$220	-\$220	
MIT 2004/4 Global review	\$20,490	*\$16,000		\$20,490	\$20,490	\$6,490	\$14,000	\$0	\$0	
MIT 2004/5 Sea lion mitigation	\$75,374			\$75,374	\$62,500	\$1,480	\$61,000	\$20	\$20	
POP 2004/1 NZ sea lion population study	\$273,674	\$30,408		\$304,082	\$250,000	\$223,988		\$26,012	\$23,411	\$2,601
MAM 2003/1 New Zealand sealion CF			\$85,236	\$85,236	\$85,236			\$85,236	\$85,236	
POP2004/2 Auckland Island wandering alb	\$73,196	\$73,196		\$146,392	\$122,000	\$126,524		-\$4,524	-\$2,262	-\$2,262
BRD 2001/1 Akld Is wandering alb CF			\$21,200	\$21,200	\$21,200	\$0	\$21,213	-\$13	-\$13	
POP 2004/3 Antipodes Is wandering alb	\$77,845	\$77,845		\$155,690	\$128,000	\$139,024		-\$11,024	-\$5,512	-\$5,512
BRD 2001/2 Antip Is wandering alb CF			\$9,500	\$9,500	\$9,500		\$9,500	\$0	\$0	
POP 2004/4 Black Petrel		\$60,816	\$417	\$61,233	\$50,000	\$50,649	\$22,250	-\$22,899		\$22,899
PMP Sealion CF			\$6,300	\$6,300	\$6,300	\$3,475		\$2,825	\$2,825	
PMP Wandering albatross CF			\$10,100	\$10,100	\$10,100	\$0		\$10,100	\$10,100	
PMP Hector's Dolphin CF			\$4,800	\$4,800	\$4,800	\$0		\$4,800	\$4,800	
Sea Lion Age Structured Model CF		\$20,300		\$20,300	\$20,300	\$0		\$20,300		\$20,300
Hectors Dolphin Stochastic Model CF		\$54,000		\$54,000	\$54,000	\$0	\$54,000	\$0		\$0
Campbell Island Albatross		\$5,900		\$5,900	\$5,900			\$5,900		\$5,900
Total:	\$1,564,908	\$469,841	\$256,703	\$2,291,452	\$2,262,304	\$1,677,490	\$265,569	\$319,245	\$333,322	-\$4,942