Conservation Services Annual Plan 2006/2007

Conservation Services Programme
Marine Conservation Unit
Department of Conservation
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April 2006

Statement on Conservation Services

The Fisheries Act 1996, defines conservation services as "outputs produced in relation to the adverse effects of commercial fishing on protected species, as agreed between the Minister responsible for the administration of the Conservation Act 1987 and the Director-General of the Department of Conservation, including –

a) research relating to those effects on protected species
b) research on measures to mitigate the adverse effects of commercial fishing on protected species:
c) the development of population management plans under the Wildlife Act 1953 and the Marine Mammals Protection Act 1978."

I am satisfied that the projects identified in this Plan are "conservation services" as defined in the Fisheries Act 1996.

Part 14 of the Fisheries Act 1996 enables the Crown to recover its costs with respect to conservation and fisheries services. Cost recovery must be undertaken in accordance with principles outlined in s.262 of the Fisheries Act 1996. Section 263 of the Fisheries Act 1996 sets out procedures for promulgating cost recovery rules. On 10 September 2001 the Governor-General pursuant to section 263 made the Fisheries (Cost Recovery) Rules 2001, which provides for the apportionment of costs of conservation services as follows:

a) Research relating to protected species populations where risk to those populations by human intervention has been estimated - percentage of costs to be borne by industry is calculated using the formula: A over B, expressed as a percentage, where-
- A is the risk to the populations posed by commercial fishing in the EEZ of New Zealand
- B is the total risk of human interventions on the populations

b) Research relating to protected species populations where risk to those populations by human intervention has not been estimated - 50% of costs to be borne by industry.
c) Services (including research) provided to avoid, remedy, or mitigate that portion of the risk to, or adverse effect on, the aquatic environment or biological diversity of the aquatic environment caused by commercial fishing - 100% of costs to be borne by industry.
d) Observer coverage to support stock assessment process and conservation services - 100% of costs to be borne by industry.
e) Aquaculture services - 100% of costs to be borne by industry.

After consultation with 'interested parties', which includes representatives of commercial fisheries, non-government organisations and Maori, I hereby approve the attached Conservation Services Annual Plan 2006/07.

Hon Chris Carter
Minister of Conservation

Director-General's Introduction

Conservation services are outputs produced in relation to the adverse effects of commercial fishing on protected species, as agreed by the Minister of Conservation and the Director-General of the Department of Conservation.

Protected species issues relating to commercial fishing have been identified by the Conservation Services Programme, and research relating to addressing or mitigating such issues is included in this Annual Plan. The Conservation Services Programme and Department of Conservation look forward to working together with the Ministry of Fisheries and the New Zealand seafood industry, to make significant gains in reducing fishing impacts on marine protected species, and setting an example to those other countries whose vessels and people fish the Tasman Sea and the Southern and Pacific Oceans.

I am confident that the conservation services provided through this Annual Plan will contribute to enhancing the sustainability of commercial fishing in New Zealand waters and contribute to improved conservation of New Zealand's marine protected species.

Hugh Logan
Director-General of Conservation

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1. Overview of the 2006/2007 Conservation Services Annual Plan

1.1. Introduction

The 2006/2007 Conservation Services Annual Plan (Annual Plan) identifies the work that will be subject to cost recovery as a conservation service from the commercial fishing industry. As such, the Annual Plan forms the basis for levying the commercial fishing industry under the Fisheries Act 1996. A summary of the legal basis of the Plan "Legislation and Guidelines used for the Formulation of this Plan" is appended (Appendix Three)[1].

1.2. Context

The Ministers of Conservation and Fisheries have approved the *National Plan of Action to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries* (NPOA). It is clear that many of the objectives of the NPOA are aligned with those of the Conservation Services Programme. The NPOA provides specific mechanisms for the identification and delivery of research and other projects, i.e. the Officials and Technical Working Groups.

Two goals set the overall direction of the NPOA. They are:

1. To ensure that the long-term viability of protected seabird species is not threatened by their incidental catch in New Zealand fisheries waters or by New Zealand flagged vessels in high seas fisheries; and
2. To further reduce incidental catch of protected seabird species as far as possible, taking into account advances in technology, knowledge and financial implications.

The draft Seabird NPOA *Research Plan* provides guidance for the development of research programmes to facilitate the implementation of the NPOA. In particular, it provides a set of management objectives; reviews the available information under each of these objectives and identifies gaps in that information; and details the priorities for research.

The Department of Conservation's *Marine Mammal Action Plan* (MMAP[2]) provides a guide for conservation actions for New Zealand's marine mammals. Key objectives of the MMAP are:

- Mortality assessment: To monitor and assess the magnitude and significance of marine mammal fishing-related mortality in New Zealand waters;
- Mortality minimisation: To prevent, mitigate, and minimise marine mammal fishing-related mortality, taking a precautionary approach to conserving species where information is sparse or lacking.

Many fisheries have produced or will soon produce codes of practice under the NPOA. These codes will identify how industry performance will be monitored and it is hoped that these or other documents will identify industry proposals and commitments for research. This will enable better integration of government research with that by industry.

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[1] More detail is provided in the *Conservation Services Strategic Plan 2005-2010*.

[2] Suisted, R and Neale, D. (2004). *Department of Conservation Marine Mammal Action Plan for 2005-2010.* Department of Conservation, Wellington.

It is important that the work of the Conservation Services Programme is closely integrated with that of the Ministry of Fisheries. In particular, this means that:

- The projects are strategically aligned, so that there is a common direction. The NPOA provides a good framework for DoC's CSP seabird work and MFish and CSP have worked together in producing the NPOA Research Plan;
- Projects are integrated to avoid overlap, duplication and critical gaps. MFish and CSP have worked together to produce project summaries now being circulated.
- Timelines are aligned.

The development of the draft Annual Plan 2006/07 has been informed by:

- the *Conservation Services Strategic Plan 2005-2010*;
- the draft *Conservation Services Five-year Research plan 2005-2010*; and the
- *Seabird National Plan of Action Research Plan.*

An initial set of seabird projects were considered at a special meeting of the NPOA Technical Working Group. This set of projects was refined and combined with marine mammal projects to be considered by the MFish Research Coordinating Committee.

1.3. Format

The format used to specify the conservation services is similar to that adopted in the last two Annual Plans and is consistent with that adopted for similar projects by the Ministry of Fisheries. It includes an outline of the objectives and rationale for each project, and a summary of key policy provisions that have informed the selection of the project. The outputs that are anticipated to be produced by the 2006/2007 projects are also specified. Two previously consulted projects have been included for completeness.

The project specifications indicate cost recovery information including: project costings (excluding administration costs), identification of the relevant provisions within the Fisheries (Cost Recovery) Rules 2001 that have been used to determine cost allocation, and the identification of fish stocks from which cost will be recovered for each project. Costs are summarised in Appendix One. All financial amounts appearing in this document are exclusive of GST.

1.4 Conservation Services Levy

The details of the conservation services levy are provided in tables in Appendix One. These details will be used to derive the provisional levies. For clarification: the Minister of Conservation is responsible for approval of the Conservation Services Annual Plan; the Minister of Fisheries is responsible for the actual levying of the costs in accordance with this Plan, once approved.

1.5 Consultation processes

The following processes and documents contributed to the development of the present Annual Plan:

20 July 2005	Draft Seabird National Plan of Action (NPOA) Research Plan circulated to stakeholders.

26 July 2005	NPOA Technical Working Group meeting to receive feedback on the draft NPOA Seabirds Research Plan
2 September 2005	Revised draft of the seabird NPOA Research Plan circulated to stakeholders.
7 September 2005	Summaries of CSP and MFish Science projects proposed for 2006/07 circulated to stakeholders
19 September 2005	Combined Meeting of Conservation Services Programme Technical Working Group, MFish Aquatic Environment Research Planning Group, and National Plan of Action for Seabirds Technical Working Group to review the NPOA-Seabirds Research Plan and the MFish Aquatic Environment Medium Term Research Plan and to consider and prioritise proposed research projects for 2006/07.
7 October 2005	MFish Research Coordinating Committee meeting discussed relationship of CSP to MFish Science projects.
7 December 2005	Seabird NPOA Technical Working Group meeting to discuss NPOA Research Plan.
19 December 2005	Draft 2006/2007 Conservation Services Annual Plan released to stakeholders.
24 February 2006	Submissions received from stakeholders on Draft 2006/2007 Conservation Services Annual Plan
10 March 2006	Summary of submissions made available to stakeholders
22 March 2006	Meeting with representatives of the Seafood Industry Council (SeaFIC) to discuss the Council's submission on the Draft 2006/2007 Conservation Services Annual Plan. (Other stakeholders chose not to take up the opportunity to meet with CSP).
30 March 2006	Revised Draft 2006/2007 Conservation Services Annual Plan forwarded to SeaFIC for finalisation of allocation of project costs to fisheries.

2. Fishing interactions projects

2.1. Purpose

The purpose of the 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. Background

Understanding the nature and extent of interactions between commercial fisheries and seabirds is the foundation of the Conservation Services Programme. This information can identify where the most significant interactions are occurring and can propose ways to minimise adverse effects. It will also monitor the effectiveness of government and industry initiatives, such as the seabird National Plan of Action. Over the last few years the interactions with some fisheries have become well understood, although rarely quantified. Interactions with other, especially inshore, fisheries are less well understood.

Research into fishing interactions includes investigations of direct and indirect adverse effects. Direct impacts on individuals of species include mortality following interactions with fishing equipment such as trawl nets and warps, longlines or set nets. Commercial fishing may also have indirect effects on protected species. "Indirect effects" include adverse impacts on individuals or populations of protected species other than incidental mortality. Indirect effects may occur where fishing:

- Depletes the food of protected species;
- Modifies habitat important for all or part of the life cycle of the protected species; and
- Modifies the behaviour of protected species.

Direct impacts may represent a more tangible adverse impact for many protected species populations than indirect effects, in which case research into indirect effects will be a secondary priority. However, for some species indirect impacts may represent a significant impact on the population over time and therefore represent an equal or greater priority.

2.3. Policy guidance

An objective of the NPOA[3] is to ensure that there is sufficient reliable information available for the effective implementation and monitoring of management measures. In particular, information will be required on:

- The interaction of seabird species with fisheries, including the level of incidental catch, so that decisions can be made about appropriate management measures;
- Compliance with management measures, to enable corrective action to be taken where necessary; and
- The effectiveness of the management measures in achieving the goals and objectives of the NPOA.

[3] NPOA section 4.5.2: Information gathering.

Section 1.4.2 of the draft NPOA Research Plan (Characterise fishery-seabird interactions) includes the following research objectives:

Estimate capture rates and total captures of seabirds for New Zealand fisheries

- Estimate capture rates per unit effort in selected fisheries and total captures of seabirds for selected fisheries by method, area, and target fishery and where possible by species.
- Collect data describing fishing events and the incidental capture of protected species during fishing events to allow the estimation of protected species catch in New Zealand fisheries.
- Undertake warp-strike observations in trawl fisheries.

Determine which seabird species are captured in the fishery and mode of capture

- Identify species caught in fishing operations and detail the age, sex, maturity, body condition and stomach contents in relation to fisheries waste.
- Detail the injuries and mode of capture of seabirds recovered from fisheries by taxon and by fishing method and area.
- Collect biological specimens of incidentally caught protected species in New Zealand fisheries.

Relevant actions identified in the MMAP[4] include:

- Develop procedures for the thorough documentation of reported fishing-related deaths, to contribute to an understanding of when and why the incident occurred;
- Produce annual status and summary reports of the known interactions between marine mammals and fisheries;
- Establish or improve monitoring of set net trawl fisheries to enable statistically robust estimates of fishing-related mortality.

The Conservation Services Strategic Plan provides that the Observer Project will seek to:

- Provide a baseline level of observation of fisheries where interactions are thought to be generally identified;
- Enhance observations in fisheries where observations have not been undertaken historically or, where understanding of interactions has not yet been obtained;
- Gather data that will facilitate understanding of the nature of fisheries interactions and lead to the development of mitigation techniques; and
- Support the development and testing of mitigation techniques, and assist in the evaluation of the effectiveness of mitigation methods[5].

[4] Section 3.1.

[5] Policy 12 (d).

2.4. Observing commercial fisheries

Project Code: INT 2006/01

Start Date: 1 July 2006

Completion Date: 30 June 2007[6]

Overall Objective:

- To collect information on the nature and extent of protected species interactions and captures in New Zealand fisheries[7].

Specific Objectives:

The specific objectives of the Observing Commercial Fisheries Project are to:

1. Collect information on the behaviour of protected species around fishing vessels and of fishing practices to allow the identification of factors affecting protected species capture and mitigation options for avoiding captures;
2. Collect information on the effectiveness of mitigation techniques;
3. Collect biological specimens and incidentally caught protected species;
4. Describe fishing events and the incidental capture of protected species during fishing events, to allow the estimation of protected species catch in New Zealand fisheries[8];
5. Collect information on the adoption of mandatory and other reporting of the incidental mortality of protected species and the performance of selected fisheries against indicators set by fishing fleets in their Codes of Practice under the National Plan of Action for Seabirds[8].

Rationale

The management approach

Understanding the nature and extent of interactions between commercial fisheries and protected species can identify where the most significant interactions are occurring and can propose ways to minimise adverse effects, e.g. recent moves for better offal/discard control. This allows an assessment to be made of whether protected species mortality is sustainable and whether mitigation strategies employed by fishing fleets are effective at reducing protected species captures. The project will also monitor the effectiveness of government and industry initiatives, such as the seabird National Plan of Action. Over the last few years the interactions with some fisheries have become well understood, although rarely quantified. Interactions with other, especially inshore, fisheries are less well understood.

[6] Note that this project is funded on a financial year basis and briefing reporting occurs in CSP Thirdly and Annual Reports. Full reporting is on the basis of the October-September fishing.

[7] Work on the nature of the nature of the interactions is led by the Department of Conservation, whereas work on the extent of the interactions is led by the Ministry of Fisheries.

[8] Reporting on quantified estimates of protected species mortality is led by the Ministry of Fisheries (project PRO2006/D&E).

Research approach

Overall, the most accurate and reliable means to get protected species bycatch data is through the use of human observers. Observer programmes typically have high spatial and temporal variation, making the data difficult to interpret and extrapolate to get actual bycatch rates by fishery, location, or other desired variables. To date, the bulk of publicly available information of at-sea interactions between fishing vessels and protected species in New Zealand waters has been collected by government (Ministry of Fisheries) observers.

Key changes from previous years are:

- Better allocation of observers to provide quantitative data for MFish bycatch estimation projects;
- Increased focus on understanding factors affecting species interactions with a view to identifying mitigation methods.

There are three key elements of this project[9]:

1. Monitoring information-rich[10] fisheries with recognised bycatch problems;
2. Monitoring information-poor fisheries; and
3. Monitoring fleet-specific interactions.

It is anticipated that in the future, the fishing industry will collect an increasing portion of this information, especially through codes of practice mandated by the seabird NPOA. This may be a more cost-effective way to collect information and will generate information in areas that have historically been information-poor. The accuracy of this information will need to be assessed through government and/or third party auditing.

Information-rich fisheries

Data collection has been focused on few fisheries, namely hoki and squid trawl fisheries, and charter tuna and ling autoline fisheries. These four groups could be considered relatively information-rich for the fishery areas and seasons where estimates of seabird capture have been reported.

The focus for further work will be on collecting information for:

- Assessing performance in reducing seabird bycatch rates and avoiding captures of high-risk species by estimating seabird catch rates and total captures and identifying species catch composition;
- Characterising the mode of capture of seabirds and relating this to fishing practice used and biological characteristics of the species concerned;
- Assessing the efficacy of alternative mitigation strategies used in the fishery.
- Assessing performance against Key Performance Indicators and compliance with codes of practice.

[9] These priorities are derived from section 1.4.2 (Characterise fishery-seabird interactions) of the draft NPOA Research Plan.

[10] Information-rich and information-poor fisheries are described in table 2 of the seabird NPOA Research Plan.

Information-poor fisheries

Considerably less information is available for other fisheries, especially those involving small-vessel and/or inshore fleets. For these fisheries, the focus will be on collecting information for:

- Assessing the relative risk of seabird capture by the fishing method (for the area / season) by estimating capture rates, total captures and identifying species catch composition;
- Characterising the mode of capture of seabirds and relating this to the fishing practice used and biological characteristics of the species concerned;
- Identifying mitigation options for the fishery; and
- Defining Key Performance Indicators for the fishery

To obtain maximum coverage of New Zealand fisheries and to identify seabird bycatch problems in information-poor fisheries as rapidly as possible, sampling should be done rotationally through all candidate fisheries. A minimum of two seasons of data collection, distributed representatively by area and season for the fishery is recommended. In order to facilitate the placement of observers on inshore vessels, CSP will work closely with MFish Observer Services and fishing companies.

Fleet specific interactions

As noted in the seabird NPOA Research Plan, gathering behavioural data on the interactions between protected species and fisheries is a specialised operation. Not all observers currently have the skills or training required to carry out detailed behavioural observations of these animals, where identifying the species concerned and classifying their behaviours during fishing operations requires accurate data to be gathered. The best means of achieving these detailed observational data and sampling plans may include the need for specialist training for some observers or alternative means of data collection (e.g. electronic monitoring).

Data collection considerations

In terms of estimating the number of protected species caught, the most vital aspect is ensuring that the data are collected in an appropriate manner. The key requirements are to:

- Use blocking or stratification of the sampling units to control for sources of variation where possible, or measure the factors that cannot be controlled for in this manner;
- Use a probabilistic sampling scheme to select which vessels are to be observed;
- More clearly specify and quantify data collected by observers, e.g. through the warp-strike monitoring protocol.

Objectives 1 and 2:

Observations will be undertaken in selected fisheries (see Table 1)to address the following research questions:

- What behaviours of different specific groups of protected species increase their vulnerability to capture in fisheries?
- What mitigation options are available that can be used to counter-act this vulnerability to capture?
- The effectiveness of mitigation techniques.

Research will be targeted at attaining high-quality observational outcomes. These will follow study designs and sampling protocols developed with the Ministry of Fisheries. Some

observations to record specific behaviours and fishing practices related to bycatch reduction require specialist training, and not all observers may be suitable to undertake this work.

Objectives 3 and 4:

Accurate reporting of protected species taken incidental to fishing operations is vital to estimating the effects of fishing on species populations. Linking capture-probability to fishing practices and use of mitigation is a key feature to advancing the uptake of best practice in New Zealand fisheries. Revisions to reporting forms for observers, undertaken as part of the Observer Programme Strategic Review will assist with this research.

Categorisation of seabird, marine mammals and marine reptile species individuals is necessary, following prescribed protocols into the following groups:

- Dead
- Injured (detailing injuries where possible)
- Non-injured.

For spotted black groper, observers should record if this species is present among the fish landed. Specimens should be weighed and measured and retained if they are dead. Live specimens should be measured and returned to the water. For red and black corals, data is to be collected on the species and quantities landed. Whether a specimen is retained or discarded needs to be noted. It is also necessary to record the nature of any capture event and fishing practice associated with this. Gear failures and particular fishing practices that appear to contribute to the probability of capture events need to be recorded.

Objective 5:

The seabird NPOA encourages self-reporting of bycatch by fishers, which is required by law. It also promotes the setting of measures through which the performance of fisheries can be assessed. The Observing Commercial Fisheries project will collect information through which industry reporting of incidental mortality of protected species may be assessed. It will also contribute to the assessment of the performance of selected fisheries against indicators set by fishing fleets in their codes of practice.

Table 1: Indicative observer sea days allocated to monitoring protected species interactions with fisheries

Target	Target coverage level	CSP observed days	Percent observer day [3]	Comment on coverage	Charged days [4]	Per day cost	At-sea cost	Staff cost [5]	Admin	Total
Hoki [1]	25	1180	15	Marine mammal interactions	177	$500	$88,500	$20,767	$7,959	$117,226
Southern blue whiting [2]	30	62	15	Marine mammal interactions	9	$500	$4,680	$1,098	$421	$6,199
Hake [2]	15	100	15 / 100	Seabird and mammal interactions	76	$500	$38,000	$8,917	$3,417	$50,334
Squid trawl [1]	0	0	0	See MFish Plan	0	$500	$0	$0	$0	$0
Charter Tuna [1]	100	185	15	Foreign fleet coverage	28	$500	$13,875	$3,256	$1,248	$18,379
Domestic Tuna [1, 2]	20	488	15	Seabird interactions	73	$500	$36,630	$8,595	$3,294	$48,519
Deep Sea Ling [1]	30	152	15	Seabird interactions	23	$500	$11,430	$2,682	$1,028	$15,140
Inshore Ling [1, 2] /BNS/HPB	15	151	100	Seabird interactions	151	$500	$75,500	$17,717	$6,790	$100,007
Inshore Trawl 1, 7, 8, 9 (paired and single) [2]	10	250	100	Marine mammal interactions	250	$500	$125,000	$29,332	$11,241	$165,573
Orange roughy and oreo [2]	30	750	15 / 100	Coral and seabirdbycatch	193	$500	$96,500	$22,644	$8,678	$127,822
Scampi [1, 2]	15	150	100	Seabird and mammal interactions	150	$500	$75,000	$17,599	$6,745	$99,344
Jack mackeral [2]	50	379	15	Marine mammal interactions	57	$500	$28,388	$6,661	$2,553	$37,602
Setnet FMA's 3, 5, 2, 1 [2]	3	165	100	Seabird and mammals interactions	165	$500	$82,725	$19,412	$7,439	$109,576
Total		4013			1,352		$676,228	$158,680	$60,812	$895,720

Notes:

[1] Fishery defined in the NPOA as a "Fishery with known seabird interactions".

[2] Information poor fisheries (as specified in section 1.4.2 of the draft NPOA Research Plan.

[3] Where CSP days are less than or equal to the number of days proposed by MFish, CSP covers 15% of the costs. Where CSP days are in excess of MFish days, CSP pays 100% of costs.

[4] The number of days to be levied, based on CSP observed days multiplied by "Percent observed day".

[5] "Staff costs" are the costs of the scientific and briefing officers working on the "Observing commercial fisheries" project plus $18,000 operational costs. "Administration costs" are the proportion of the Conservation Services Programme administration costs charged to this Project.

2.5. Identification of seabirds captured in New Zealand fisheries

Project Code: INT 2006/02

Start Date: 1 October 2006

Completion Date: 30 June 2008.

Sea birds recovered during the 2006/07 fishing year (1 October 2006 to 30 September 2007) are to be autopsied, with the final report to be produced by June 2008.

Overall Objective

- To determine which seabird[11] species are captured in the fishery and the mode of their capture.

Specific Objectives

1. To determine, through examination of returned seabird carcasses, the taxon, sex, and where possible age-class and provenance of seabirds captured in New Zealand fisheries.
2. To detail the injuries and stomach contents (in relation to fishery waste), and where possible the cause of mortality of seabirds, along with their body condition and breeding status and any associated demographic characteristics.
3. To detail a protocol for the necropsy of seabirds, to provide a standardised procedure for necropsy to determine species, age, sex and associated demographic characteristics for fishery-killed specimens.

Rationale

The management approach

Large numbers of seabirds frequent New Zealand commercial fishing waters. Birds with significant differences in conservation status can appear morphologically similar. In order to monitor the effectiveness of different mitigation strategies at avoiding seabird captures, and to ensure that captures of particular species of high to medium risk are avoided, identification of the species caught in fisheries is required. This information is also useful in assessing the relative effect of fisheries on seabird populations, as it allows an assessment of the relative importance of different species in the catch composition of total seabirds. Further, the mode of capture and associated information about condition of the birds will enable a robust analysis to be made of the factors contributing to seabird capture events.

This project informs the management of protected species-fishery interactions. It also allows the correct identification of species, informing the level of risk that species populations exposed to as a result of fisheries interactions. Species level identification of protected species captured incidentally in New Zealand fisheries is necessary to enable the quantification of risk posed by fisheries mortalities to population viability, and the adoption of best practice to mitigate protected species mortalities.

The accurate determination of the taxon of seabirds captured in New Zealand fisheries is vital for examining the potential threat to population viability posed by incidental fisheries

[11] Note that a similar project "Identification of marine mammals captured in New Zealand fisheries" is led by the Ministry of Fisheries under project PRO2006/G.

captures. Ministry of Fisheries observers on commercial vessels are not always able to identify seabirds at sea with high precision. To a large extent, determination of species identification is a specialist task, while assessment of the age-class, sex and provenance of captured individuals requires necropsy in the majority of cases. This information will inform ongoing research, modelling the effects of fisheries removals for selected populations of high-risk seabirds, and links to MFish project PRO2006/B.

Examining the causes of mortality and types of injuries suffered by individual seabirds, returned from fisheries is necessary to help reduce future seabird captures in New Zealand fisheries by identifying the areas of risk in fishing activities. Linking this information to the species, age- and sex-class helps identify if different groups of seabird are vulnerable to different risks in fishing interactions. Information about body condition and breeding status is necessary to examine extraneous factors, such as environmental variability in food availability that can influence the probability of fisheries mortalities for seabirds. This information will be reported separately as part of project INT2006/03.

To enable standardization of methodologies through time, by different researchers, it is necessary to document the methods used to identify seabirds.

Research approach

Birds returned by official observers will be delivered, suitably packaged and labelled, to the contractor. Observers make note of the circumstances of capture and provide a tentative identification.

Seabirds returned from the Ministry of Fisheries Observer Programme and voluntarily submitted by fishers will be examined to determine the following:

- Species identification and classification[12];
- Sex and age;
- Subcutaneous fat score as an index of body condition;
- Stomach and gizzard contents;
- Moult and brood patch development as a partial indicator of breeding status;
- General body condition including any signs of injury and cause of death (where possible); and
- Provenance (origin) (where possible)

These statistics will be reported by species, fishery stratum (method, area and where possible target species). The same primary strata should be reported as are used in project PRO2006/D. Analyses of the factors contributing to capture probability will be made in project INT2006/03.

The information will be used in reporting project PRO2006/D. Dietary samples will be made available to other Ministry of Fisheries research programmes examining seabird trophic interactions with fisheries and with other components of key ecosystems for fisheries (e.g. ENV2005-14, PRO2006/J).

[12] Cross-compatibility with the Ministry of Fisheries data codes for species will be maintained

The methodologies used in examining the specimens and categorising the carcasses into different groups shall be fully described. Differences in research protocols compared to previous research on New Zealand seabirds returned from fisheries shall be discussed.

Outputs

- A report describing the characteristics of the seabirds returned by observers, identifying potential interactions between seabirds and fishing gear, and identifying factors that may have contributed to seabird mortality. Data will be presented by fishery according to target species and gear type.
- Analyses of the factors contributing to capture probability will be made in project INT2006/03
- Data will be used by Ministry of Fisheries as part of project PRO2006/D and PRO2006/J.

Cost Recovery

- Fish stocks: Costs allocated to those fisheries that have generated most of the seabirds recovered from observers and to fisheries with suspected impacts on seabirds but where observer coverage has been low. Fisheries levied are: HOK1, SBW6A, 6B, 6I, 6R, HAK1,4,7, ORH1,2,3, OEO1,3A,4,6; SCI2,3,4,6; JMA7; STN1, BIG1, YFN1; LIN 4,5,6A,6B; JMA1, EMA1, SKJ1, KAH1,2; LIN 1,2,3,7; SNA1; SCH3,5,7; SQU1T, 6T; SPO3,7; SPD3,5,7.
- F(CR) Rules Item 4 (100% industry)
- Project Costing[13]: $90,000

Note: The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated

[13] Excluding administration costs.

3. Population studies

3.1 Purpose

The purpose of population studies is:

- To understand the key indicators of the performance of populations of marine protected species to contribute to the management of commercial fishing impacts on those species.

3.2 Background

Variations in an organism's life history characteristics lead to varying sensitivity to fisheries-related impacts on populations. Population studies can provide information to:

- Determine the maximum human-induced mortality that the populations can sustain;
- Help assess the effects of commercial fishing on populations of protected species, including the cumulative loss of individuals through incidental mortality as a result of direct commercial fishing interactions, and determine indirect impacts such as food competition, behaviour modification, and habitat modification; and
- Identify the range or distribution of protected species populations and the potential overlap with commercial fishing activities.

This research should contribute to the development of solutions to address adverse effects. While understanding the impact of the interactions on the total population is not a prerequisite for developing mitigation techniques, this information may be useful in informing priorities or providing the impetus for the development of mitigation measures. An understanding of the severity of the impact will guide the policy response.

While population studies are important for the management of threatened populations, in isolation these studies cannot confirm conclusively whether, or the extent to which, commercial fishing is having impacts, which can be isolated from other impacts, including natural events. Population studies do, however, provide important baseline information upon which management decisions are based and may lead to direct regulatory controls, such as limiting the numbers of protected species that can be potentially harmed through fishing.

3.3 Policy guidance

The seabird NPOA notes that research which monitors seabird populations will contribute to the implementation and enforcement of bycatch limits. It will also be used to assess the effectiveness of management measures and the overall effectiveness of the NPOA.

Section 1.4.1 of the NPOA Research Plan (Assess risk to protected seabird populations from their incidental catch) includes the following research objectives:

- Assess population status
  - Estimate the population breeding size and trend
- Assess the effect of New Zealand fisheries mortalities on population growth, compared to other sources of perturbation to population dynamics.
  - Assess the risk posed to selected species from New Zealand fishing mortalities
  - Provide data to estimate the population size and trend
  - Gather demographic data to allow estimation of vital rates (especially survival parameters)

- Model the effects of fisheries mortalities on population viability compared with other sources of mortality or trophic effects of fishing

- Assess which fishing methods and area pose a risk to seabird population viability
  - Provide data on distribution of species at sea during different life stages and for different sexes
  - Gather data on foraging activity of species to determine feeding times, diving capacity and behaviour-based vulnerability to capture in fisheries
  - Examine the overlap of fishing activity with species distribution at sea for different stages of the breeding and life-cycle and for different sexes

Relevant actions identified in the *Marine Mammal Action Plan*[14] include:

- Complete population management plans for Hector's/Maui's dolphins and NZ sea lion; and
- Continue to investigate options for addressing and mitigating fishing-related mortality in fisheries, including maximum allowable levels of fishing related mortality.

The Conservation Services Strategic Plan specifies that population studies will be undertaken on priority marine protected species where results, either:

- Assist in the development of population management plans; or
- Assist in implementation of the seabird National Plan of Action; or
- Assist in assessing the extent to which commercial fishing interactions causing an adverse effect on the protected species populations, or
- Assist in managing the effects of commercial fishing on protected species populations[15].

Priority species for population studies are specified in the Conservation Services Strategic Plan and the draft Seabird NPOA Research Plan[16].

[14] Section 3.1.

[15] Policy 14.

[16] See Table in section 1.4.1.3.

3.4 The effects of fisheries interactions on the New Zealand sea lion

Project Code: POP2006/01

Start Date: 1 July 2006

Completion Date: 30 June 2007

Overall Objective:

- To characterise demographic parameters of the New Zealand sea lion population on the Auckland Islands.
- To model demographics of New Zealand sea lion in relation to fishing

Specific Objectives:

1. To collect field data that will allow quantification and estimation of:
   - pup production,
   - survival of previously marked New Zealand sea lions,
   - reproduction by known-age female New Zealand sea lions;
2. To maintain and update the New Zealand sea lion database;
3. To conduct analyses to estimate demographic parameters; and,
4. To model sea lion population dynamics using population datasets collected by DoC to date.

Rationale:

Management approach

Significant numbers of sea lions are killed each year in squid trawls around the Auckland Islands and more may die subsequent to their passage through sea lion exclusion devices. Reports from the 2005/06 project indicate that recruitment of breeding females into the population is declining and this may have a significant impact on the population (L. Chilvers, pers.comm.).

The Minister of Conservation has requested a draft population management plan (PMP) proposing a MALFiRM to take effect in the 2006/07 fishing year and has also requested other management advice under the Marine Mammals Protection Act 1978. The PMP will not direct research (including monitoring) activities. However, the future need for, and the objectives of, research relating to the New Zealand sea lion within the fisheries context will be strongly affected by the requirements of any PMP.

Research approach

Objectives and outputs for this project have been developed using the criteria in section 3.3, with the following assumptions in mind:

1. The draft PMP has yet to be notified;
2. The most likely way of assessing the extent to which commercial fishing interactions are causing an adverse effect on protected species populations is through modelling approaches incorporating data sets in an integrated way;
3. It is appropriate that ongoing sea lion modelling approaches should be based on the best available information including the most up-to-date data and methods;

This project will require field-based research and appropriate analysis. Modelling will take an integrated approach. The design for data collection protocols deployed in this project will draw on maximally robust methodologies and the data collected will also be subjected to robust analyses. Design of field methodologies is expected to be achieved with reference to the robust design approach[17].

Output

- A technical report or reports describing demographic parameters of the New Zealand sea lion population on the Auckland Islands. This report would guide fisheries management and determine the extent to which fisheries are impacting on the Auckland Islands New Zealand sea lion population. Technical information would be suitable for incorporation in population models or management plans.

Cost Recovery:

Fish stock: The Auckland Islands squid fishery catches the vast majority of sea lions. Fishery to be levied is SQU6T.

F(CR) Rules: Item 2 (90% industry, reflecting a preliminary risk assessment)

Project Costing: $340,000. Possibility for cost-sharing with other work on Auckland Islands.

Notes:

- The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated;
- Data on sea lions that relates to the specific objectives, and has been collected by DOC and CSP in the past, will be made available to successful tenderers;
- Field gear from previous CSP-funded work on sea lions will be available for successful tenderers to use, if desired.

[17] Pollock (1982)

3.5 A population and distributional study of white-capped albatross (Auckland Islands)

Project Code: POP2005/02

Start Date: 1 July 2006[18]

Completion Date: 30 June 2009

Note: this project was approved in the 2005/06 Annual Plan for a five period commencing in 2005/06. Further work will be reviewed following the completion of the first year project.

This project is included here for completeness.

Overall Objective:

- To determine the effects of fisheries mortality on the population viability of white-capped albatross.

Specific Objectives:

1. Collect data describing the distribution of the New Zealand white-capped albatross;
2. Collect field data to allow estimation of population parameters relevant to population effects of fisheries related mortality;
3. Analyse data to estimate population parameters and distribution of the New Zealand white-capped albatross with reference to spatial and temporal fishing effort.

Rationale:

The management approach

The incidence of New Zealand white-capped albatross bycatch is significant, and the species was reported as being taken in five fisheries between 1997/98-2001/02[19]. Despite the limitations on estimations imposed by the vagaries of fisheries observer coverage, incidental mortality of this species has been consistently high, particularly in trawl fisheries[20]. The current paucity of knowledge on this species precludes an understanding of fisheries effects on the population.

Beyond population estimates[21] and genetic structure[22], little is known of the endemic white-capped albatross, formerly considered a subspecies of the shy albatross (*Diomedea cauta*). Knowledge gaps include all aspects of population dynamics and breeding biology, distribution at sea including foraging range, and diet[23].

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[18] This project is a continuation of a project that commenced in 2005/06, subject to the selection of a satisfactory contractor.

[19] Robertson et al. (2003b).

[20] Baird (2004), Robertson et al. (2003b, 2004)

[21] Taylor (2000)

[22] Abbott and Double (2003a, b)

[23] Taylor (2000a); Robertson et al. (2003a)

Research approach

Field-based research and appropriate analysis[24]. Field work will include mark-resight analyses and the use of loggers to examine at-sea distribution. The research design will employ maximally robust methodologies for field data collection and the data collected will also be subjected to robust analyses. Design of field methodologies is expected to be achieved with reference to the robust design approach[25]. This approach recommends structuring the sampling of populations at prescribed times within and between (breeding) seasons.

An understanding of the distribution of this species at sea and where it forages in relation to fisheries effort will help identify potential overlap with commercial fisheries. Either satellite or GPS tracking will be deployed to determine distribution at sea.

Outputs

- An understanding of population parameters that can be applied to guide fisheries management and determine whether fisheries are impacting protected species populations. This information would be documented in a report, which would include the methodologies used to meet objectives.

Cost Recovery:

Fish stock: Fisheries to be levied are: BAR1,4,5,7; HOK1; JMA3,7; ORH3A,3B; SCI6A,6B,12; SQU1T,6T; SWA3,4; WAR3; LIN3,5,6,7; STN1,BIG1,YFN1

F(CR) Rules: Item 3 (50% : 50% Industry)

Project Costing: $175,000 per year for three years. Possibility for cost-sharing with other work on Auckland Islands

Note: The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated.

[24] More specific methodological guidance for population studies and foraging studies is provided in section 1.4.1.2 (Science Information and Gaps) of the draft seabird NPOA Research Plan.

[25] Pollock (1982)

4. Mitigation

4.1 Purpose

The Purpose of mitigation projects is to:

- Research and develop effective measures to mitigate the adverse effects of commercial fishing on protected species.

4.2 Rationale

Understanding the effects of commercial fishing on protected species is critical but, on its own, such an understanding will not contribute to a reduction of those impacts unless fishing companies adopt practices that reduce the interactions of their vessels with protected species. Developing ways to mitigate the adverse effects of commercial fishing through utilising best practice, including alternative ways of fishing or refining existing methods, can allow fishing to continue.

Industry has a significant role to play, through identifying mitigation options, trialing such methods, and adopting effective practices and technology. When non-target species interact with fishing operations on the water, it is clearly fishers who are most closely involved and therefore most easily able to react. Probably for those reasons, mechanisms for reducing interactions with non-target species have traditionally been developed and deployed by fishers. In some cases, motivation for this development is clearly related to economics - a bait consumed by a bird will not be available to catch a fish. Increased environmental awareness and the conservation ethic can also motivate the development of methods to reduce interactions.

Measures to address interactions between fisheries and protected species include[26]:

- Spatial and temporal modification of fishing operations;
- Reducing the attractiveness of fishing operations and gear to protected species;
- Deploying barriers to separate protected species from hazards;
- Employing deterrents to dissuade protected species from approaching hazards; and
- Increasing the awareness of the availability of mitigation techniques and the most effective ways to use them.

4.3 Policy guidance

Seabird National Plan of Action

The seabird NPOA notes that research into mitigation measures for reducing incidental catch will be used to inform the voluntary input controls adopted by fisheries through codes of practice. This research will also be used to develop mandatory input controls, should these be required, and play a key role in promoting education and awareness about the need to reduce incidental catch and ways of achieving a reduction.

Section 1.5.2 of the draft NPOA Research Plan (Determine the effectiveness of mitigation measures in New Zealand fisheries) suggests that future work should focus on:

- Incorporating offal management into fisheries practices;

[26] More details are found in the draft Conservation Services Five-year Research Plan.

- Promoting the advantages of paired versus single tori-lines for trawl and longline fisheries;
- Developing standards for line weighting/sink rates, tori-lines and other scaring devices;
- Examining promising new areas of mitigation, such as underwater setting devices, side-setting and fish oil;
- Research into methods for reducing seabird interaction with trawl nets;
- Methods to mitigate captures of species that are proficient divers;
- Investigating combinations of methods to be used together;
- Facilitating trials by providing statistical support and observer time to assist with mitigation research trials;
- Providing assistance to industry to apply results to their fisheries and to work with fishers to facilitate trials.

Section 1.5.3 of the draft NPOA Research Plan (Encourage the adoption by fishers of effective mitigation techniques) includes the following research objectives:

- Deploy advisory officers in selected fleets to undertake advocacy and education work on mitigation techniques
- Provide general educational support material directly to fishers.
- Undertake port-side workshops to provide feedback and information to fishers about mitigation practices and their experiences of using them

Marine Mammal Action Plan

Relevant actions identified in the MMAP[27] include:

- Seek and support guidelines and promote best practices for fisheries with regard to the protection and management of marine mammals; and
- Continue to investigate options for addressing and mitigating fishing-related mortality in fisheries, including alternative fishing practices and mitigation devices such as pingers.

Conservation Services Strategic Plan

The Conservation Services Strategic Plan gives a high priority to projects that contribute to the research, development and communication of effective mitigation methods/approaches[28]. It suggests that research focus on fisheries and fishing methods that bycatch greater numbers of protected species, especially "high" or "high-medium" priority species[29]. Priority mitigation methods for research will be determined by:

a) identifying those mitigation methods that may address impacts on multiple species (having regard to results of prioritisation undertaken in accordance with Policy 9 (a) (b)); or applicable to multiple fishing methods; or

b) researching emerging mitigation approaches that have been recently proposed/developed but are untested or have not been sufficiently trailed; or

c) investigating mitigation approaches currently employed in New Zealand but where the usefulness or effectiveness of the mitigation technique is unclear[30].

[27] Section 3.1.

[28] Policy 15.

[29] Policy 9.

[30] Policy 10.

4.4 Development and testing of discard and offal management technologies

Project Code: MIT 2004/01

Start Date: 1 July 2005[31]

Completion Date: 30 June 2007

Note: this project was approved in the 2004/05 Annual Plan for a two period commencing in 2005/06 and was deferred until 2005/06. This project is included here for completeness.

Overall 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 2006/07:

- To develop outputs from the Fisheries Interactions Taskforce meeting in October 2005.

Rationale:

The management approach

Seabirds and marine mammals often congregate around fishing boats and are well known to follow boats foraging for food, including discards and offal[32]. However, exploiting the food resources that fisheries can deliver often puts seabirds and marine mammals at risk of harmful interactions with fishing gear[33]. One solution to the problem of interactions between gear and seabirds foraging for discards is to avoid the discharge when gear is out.

Depending on fishing and processing methods, discharged material includes discards (whole fish), offal (used baits, and heads, guts, and other fish parts deliberately discharged as part of onboard fish processing), and whole and pieces of fish attached to fishing gear. Discards and offal produced in the course of fisheries operations can be highly attractive to, and represent a food source for, seabirds38. When seabirds gather around fishing vessels and forage on this material, they are at risk of injury and/or death as a result of interacting with fishing gear.

Autopsies conducted on seabirds returned from fishing operations between 1998 and 2001 demonstrated that at least 40 % these birds fed on discharged material. When broken down by fishery type, 2-15 % of the seabirds returned from longliners contained offal, compared to 50-65 % of birds from squid and finfish trawlers[34]. From these figures, it appears that in the course of, or after consuming discards and offal, birds attending trawlers discharging this material may be at greater risk of death via interaction with fishing gear than those attending longliners.

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[31] Included as project MIT 2004/1 in the 2004/05 Conservation Services Annual Plan, no satisfactory tender received in 2004/05, refocused in

[32] Cherel et al. 1995; Baird and Bradford 2000a; Weimerskirch et al. 2000; Votier et al. 2004

[33] Baird and Bradford 2000a; Robertson et al. 2003.

[34] Robertson, C. J. R., Bell, E. and Scofield, P. 2003. Autopsy report for seabirds killed and returned from New Zealand fisheries, 1 October 2000 to 30 September 2001. Department of Conservation Science Internal Series 96. Department of Conservation, Wellington.

Observer data from trawlers suggests a trend - the more types of discharge there are, the more likely seabirds are to be caught. Discharge types attractive to seabirds include not only fish or squid offal (heads, guts and frames), but also discarded whole non-quota species. For trawl warp strikes, the relationship is even stronger. Observer data shows birds in the water collide with warps most often when both offal and discards are being discharged. Discharging either offal or discards, results in fewer warp strikes than discharging both. But, even fewer warp strikes occur when just meal slurry or deckwash are discharged. The same patterns emerge for flying birds hitting the warps. The most strikes occur with the discharge of offal and discards, followed by the discharge of offal or discards, with the fewest strikes occurring during meal slurry discharge or with deckwash only.

A variety of practices for addressing the interactions between seabirds and offal and discards are in use and under investigation. These practices either address the possibility of avoiding the discharge (e.g. through use of meal plants or the retention of offal onboard), or aim to restrict bird access to danger zones in which offal or discards may be present (e.g. through use of a Brady bird baffler). Some of these factors are being investigated in an experiment convened through the Seafood Industry Council. Although mitigation devices blocking bird access to danger zones around vessels may be effective in reducing incidental deaths, such devices do not address what is attracting birds to those areas in the first place. The onboard retention of fish waste, including the conversion of this material to fish meal, requires the incorporation of holding tanks (such that the waste can be discharged when birds are not at risk) or meal plants, and may have implications for the optimal operation of vessels and processing plants. The reality is that even vessels with meal plants may discharge fish waste at inappropriate times for seabirds.

Therefore, recognising the need for complementarity with industry initiatives, this project seeks to investigate vessel management and/or structural solutions to reduce the discharge of offal and discards, and/or the appeal of discharged material to seabirds.

Research approach

People working in industry may have the answers to this issue and are also most aware of the constraints. DOC started a trawler-focussed project to identify industry and seabird-friendly improvements to offal/discard management back in early 2004. This project commenced in 2005/06 with the objective to conduct the 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.

A Fisheries Interactions Taskforce (FIT) workshop was held in October 2005 in Lyttelton to discuss trawler waste management. At the end of the two day event, possible solutions to managing offal/non-quota discard waste on trawlers and constraints to offal/discard management solutions (e.g. vessel design, processing requirements, etc.) were identified. The next stage of this project is to trial possible solutions on trawlers, and find effective techniques that are industry-friendly and also work for seabirds.

Outputs

- Report detailing trials undertaken, prototypes developed or technology deployed, with commentary describing efficacy of methods in managing offal/discard discharge and effects on seabird interactions.

Cost recovery information

- Fish stock:

  Deep Water – OEO 1, 3A, 4, 6, ORH 1, 2A, 2B, 3A, 3B, 7A, 7B,

  Middle Depths – BAR 1, 4, 5, 7, CDL 1, 2, HAK 1, 4, 7, HOK 1, LIN 1, 2, 3, 4, 5, 6, 7, RBY 1, 2, SBW 6A, 6B, 6I, 6R, SKI 1, 2, SQU 1T, 6T, SWA 1, 3, 4, WAR 1, 2, 3, 7, 8, WWA 1, 2, 3, 4, 5, 6, 7, 8, SCI 1, 2

  Inshore – BNS 1, 2, 3, 7, 8, BYX 1, 2, 3, 7, 8, ELE 1, 2, 3, 5, 7, FLA 1, 2, 3, 7 , GMU 1, GUR 1, 2, 3, 7, 8, HPB 1, 2, 3, 4, 5, 7, 8, JDO 1, 2, MOK 1, 3, RCO 1, 2, 3, 7, RIB 1, 2, 3, 4, 5, 6, 7, SCH 1, 2, 3, 4, 5, 7, 8, SNA 1, 2, 7, 8, SPO 1, 2, 3, 7, 8, STA 1, 2, 3, 4, 5, 7, 8, TAR 1, 2, 3, 4, 5, 7, 8, TRE 1, 2, 7, SPD
- F(CR) Rules: Item 4 (100% industry)
- Project Costing: $75,000

4.5 Mitigating seabird interactions with trawl nets

Project Code: MIT 2006/02

Start Date: 1 July 2006

Completion Date: 30 June 2007

Overall Objective:

- To reduce the bycatch of seabirds in trawl nets

Specific Objectives:

1. To characterise the nature and extent of interactions between seabirds attracted to trawl vessels and trawl nets;
2. To identify ways in which these interactions can be avoided or reduced;
3. To trial methods that show the potential to reduce these interactions.

Rationale:

The management approach

Significant numbers of seabirds are killed annually in trawl fisheries, especially squid and hoki. Recent research has shown that birds are attracted to vessels by the discharge of offal and discards and may be killed following contact with trawl warps. Seabirds are also ensnared in trawl nets. Hooper et al. (2003) identified four types of seabird entanglement that may occur with trawl nets: (1) plunge diving through the large meshes; (2) pecking at enmeshed fish during which procedure the neck is squeezed as the meshes close; (3) feet becoming jammed by meshes closing as birds 'ride' the net; (4) wings becoming caught at the 'wrist' as meshes close. Current data suggest that trawl net interactions may occur more in petrels than albatrosses, however this has not been verified by at-sea data collection[35]. Current mitigation methods do not address net entrapments.

Research approach

Objective 1:

Conduct at-sea data collection to characterise the nature and extent of interactions between seabirds and trawl nets.

Objective 2:

Through analysis of at-sea data collected in Objective 1 and other currently available information (e.g. literature), identify ways in which these interactions can be avoided or reduced.

Objective 3:

Trial methods identified in Objective 2 to determine their efficacy and operational performance.

[35] Robertson et al., unpubl.

Outputs

- Report detailing methods used, data collected, analyses applied and results found, to address Objectives 1 and 2 above.
- Report on trials carried out under Objective 3 above, in terms of methods used, data collected, efficacy of methods and recommendations based on trial results.

Cost recovery information

- Fish stock: Deep Water – OEO 1, 3A, 4, 6, ORH 1, 2A, 2B, 3A, 3B, 7A, 7B,

  Middle Depths – BAR 1, 4, 5, 7, CDL 1, 2, HAK 1, 4, 7, HOK 1, LIN 1, 2, 3, 4, 5, 6, 7, RBY 1, 2, SBW 6A, 6B, 6I, 6R, SKI 1, 2, SQU 1T, 6T, SWA 1, 3, 4, WAR 1, 2, 3, 7, 8, WWA 1, 2, 3, 4, 5, 6, 7, 8, SCI 1, 2

  Inshore – BNS 1, 2, 3, 7, 8, BYX 1, 2, 3, 7, 8, ELE 1, 2, 3, 5, 7, FLA 1, 2, 3, 7 , GMU 1, GUR 1, 2, 3, 7, 8, HPB 1, 2, 3, 4, 5, 7, 8, JDO 1, 2, MOK 1, 3, RCO 1, 2, 3, 7, RIB 1, 2, 3, 4, 5, 6, 7, SCH 1, 2, 3, 4, 5, 7, 8, SNA 1, 2, 7, 8, SPO 1, 2, 3, 7, 8, STA 1, 2, 3, 4, 5, 7, 8, TAR 1, 2, 3, 4, 5, 7, 8, TRE 1, 2, 7, SPD
- F(CR) Rules: Item 4 (100% industry)
- Project Costing: $75,000

Note: The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated.

4.6 Developing mitigation ideas.

Project Code: MIT2006/07

Start Date: 1 July 2006

Completion Date: 30 June 2007

Overall Objective:

- Trial emerging mitigation method(s)

Specific Objective:

1. Trial emerging mitigation method(s), such as those arising from the 2005/06 Annual Plan project 'New mitigation ideas' MIT2005/04.

Rationale:

The management approach

Fishers regularly observe the interactions between their fishing gear and seabirds. It is therefore not surprising that most suggestions for ways to mitigate these interactions have come from fishermen. Examples include Keith Brady's bird baffler, Dave Kellian's underwater bait setting capsule, and Alex Aitken's fish oil deterrent. Many fishermen have an intuitive sense about what techniques might work, and some of them have carried out initial experiments. However, few have the skills or the resources to conduct robust scientific experiments to determine the effectiveness of their proposals. It is for this reason that international "competitions", such as the United States "Smart Gear" and the BirdLife International competition, to solicit mitigation ideas have proven popular. A local "competition" or mechanism to attract these ideas from local fishermen would be better targeted to local needs and would have a lower threshold for participation.

There is a particular challenge in developing mitigation projects through the Conservation Services Programme. The planning timeframe is such that it takes from nine to eighteen months from the time the need for a project is identified to the time the project can be levied and implemented. This limits the ability of CSP to respond to a dynamic policy and technological environment.

This project will use Crown funds and so specific projects do not need to go through the normal planning process – it is important, though, that processes provide for sufficient stakeholder input into identifying priorities and methods. The project will seek matching funding from industry and other groups.

Research approach

The project will focus on investigating and further developing promising methods emerging from the project in the CSP 2005/04 Annual Plan ('New mitigation ideas' MIT2005/04 – also Crown-funded). An example is work undertaken in 2005/06 by CSP to investigate the effectiveness of the shark-liver oil bird deterrent developed by Alex Aitken and to identify the components of the oil and the mechanisms that contributed to its effectiveness. That project was funded through Crown and overseas sources.

The actual methods to be adopted will depend on the mitigation technique or technology being investigated.

Outputs

- Reports on trials carried out, in terms of methods used, data collected, efficacy of methods and recommendations based on trial results.

Cost recovery information

- Crown-funded, but seeking financial contributions from other sources
- Project Costing: $63,161

4.7 Providing mitigation advice to the fishing industry

Project Code: MIT 2006/08

Start Date: 1 July 2006

Completion Date: 30 June 2007

Overall Objective:

- To provide advice to fishers and the fishing industry about methods to cost-effectively reduce the bycatch of marine protected species.

Specific Objectives:

1. To appoint advisory officer(s) to work with fishermen to reduce the bycatch of marine protected species;
2. To provide educational material to fishers and fishing companies;
3. To work with fishing companies in investigating and trialling mitigation methods;

Rationale:

The management approach

If fishers are to change fishing practices or adopt methods to reduce protected species bycatch, they need to be aware of the problem and of cost-effective ways to address it. Sometimes they will need assistance or encouragement. Awareness of the potential impacts of fishing on protected species has developed and continued to increase since the 1980s. It is crucial that increases in awareness and understanding continue in the fishing industry as well as other sectors, because the industry is in the position of being able to improve practice, and improvement will be a cooperative exercise among diverse agencies. To help increase awareness of protected species issues in fisheries, CSP recently embarked on advisory officer programmes[36]. These programmes contracted advisory officers to work with fishers, giving advice on best practice and mitigation techniques, and working with fishers to implement mitigation methods.

Research approach

Objective 1:

Advisory officers will be appointed on six-month contracts to work with inshore and mid-depth trawl, and setnet fisheries. Specific duties will include:

- Assisting with the creation of educational materials (see below)).
- Educating fishers on protected species (including protected species ecology, species identification, mitigation methods), through:
  - providing CSP reports and educational materials
  - accompanying fishers on fishing trips, where appropriate
  - visiting key fishing ports
  - making presentations at industry meetings.
- Assisting with the trialling of mitigation techniques on small vessels.

[36] CSP Annual Plan 2002/03.

Objective 2:

While most fishers seek to avoid catching protected species, increasing awareness of effective methods and differences between threatened seabirds and similar, non-threatened species is desirable. Increasing reliance is being placed on the information derived from fishers about seabird capture rates and their identifications of seabirds, some of which are released or discarded at sea. In spite of this, there is little information targeted at the fisher or the non-specialist needs that would help in the accurate identification of species caught in New Zealand fisheries. Hence, there would be significant benefits in providing educational material to fishers and fishing companies, such as:

- Descriptions of protected species, their ecology, and their identification. The scope of the work should comprise the most common 40 species encountered in fishing operations throughout the NZEEZ, with information at a more generic level about less-common species;
- Ways to avoid or reduce bycatch.

This information can be made available through:

- Laminated sheets for use on vessels;
- Guide books;
- Videos and DVDs;
- Face-to-face discussions with fishers at sea, at port workshops, and at Federation and other meetings.

In some cases it would be necessary to translate Codes of Practice and educational materials into different languages, such as Korean, Japanese, Russian, Indonesian, and possibly others.

Objective 3:

Fishers and fishing companies often come up with ideas to reduce protected species bycatch. However, these methods should be trialled objectively before their widespread adoption can be encouraged. In some cases, it will be appropriate for the Conservation Services Programme or other agencies to manage these trials, but for others it may be appropriate for fishers and fishing companies to conduct these trials. This part of the project would provide technical and scientific assistance to fishing companies investigating and trialling mitigation methods.

Cost recovery information

- Project Costing: $65,000
- Fish stock: The costs of this project will be shared across all fish stocks with significant protected species bycatch and the actual expenditure reallocated through the "unders and overs" mechanism.
- F(CR) Rules: Item 4 (100% industry)

NOTE: This project will be carefully designed to prevent overlap with industry initiatives.

4.8 Mitigating fur seal bycatch in trawl fisheries

Project Code: MIT 2006/09

Start Date: 1 July 2006

Completion Date: 30 June 2007

Overall Objective:

- To reduce the bycatch of fur seals in trawl nets

Specific Objectives:

1. To develop one or more methods that aim to reduce the extent of fur seal captures in trawl nets.
2. To test methods or equipment development in (1) above and determine likely effectiveness.

Rationale:

Management approach

The New Zealand fur seal is not regarded as a threatened species, and significant numbers occur in the Australian region. Nevertheless, it is recovering from historic harvest by the early sealing industry (estimates suggest from about 1-2 million animals to about 50,000 to 100,000 today).

In the 15 years since 1991, the estimated numbers of pups on rookeries within the likely foraging distance (250km) of the hoki fishery area have declined by about 30%. The largest source of annual variability in pup numbers has been associated with periodic La Nina oceanic warming events. The ongoing bycatch of fur seals in the hoki fishery may have a crucial effect on the sustainability of the West Coast rookeries (H. Best, unpublished).

The probability of New Zealand fur seal capture occurring during a tow differs significantly with the Fisheries Management Area (FMA), the target fish species, the fishing year, the season, the nationality of the vessel, the average green weight of fish caught per tow and the duration of fishing (Manly *et al*. 2002). Recent and current research investigates whether the hazards that trawl gear represents to marine mammals may be effectively mitigated through exclusion devices (e.g. Gibson and Isakssen 1998). In New Zealand, although some promising results have been achieved with a device that allows the escape of sea lions from trawl nets, the viability of these animals on exiting exclusion devices remains an issue, and the successful exclusion of animals has been difficult to demonstrate on an ongoing basis (CSP and MFish unpublished fisheries observer data).

During the 1980s, many types of seal scarers and acoustic harassment devices (AHDs) were trialled overseas to determine their efficacy in scaring pinniped species away from coastal fish farms. AHDs, which emit loud, pain-inducing sounds, were moderately successful, but some degree of habituation has almost always been found (Reeves *et al*., 2001; Jefferson & Curry, 1996). In the early 1990s, AHDs were trialled in the west coast hoki (*Macruronus novaezealandiae*) fishery in New Zealand. The results indicated that the device would not effectively deter New Zealand fur seals from fishing vessels (Stewardson & Cawthorn, 2004). There is also concern that the use of these devices may affect the animals' sensory capabilities and behaviour and may displace marine mammals from critical habitat. There is also a lack of knowledge regarding the effect these devices have on target fish species (Reeves *et al*., 2001; Stewardson & Cawthorn, 2004). Generally, AHDs are not recommended to mitigate pinniped

capture in trawl fisheries (Jefferson & Curry, 1996; Reeves *et al*., 2001; Stewardson & Cawthorn, 2004).

In a pilot study conducted in the Australian South East Fishery for blue grenadier (*Macruronus novaezelandiae*), Tilzey (2000) found that the use of seal excluder devices (SEDs) resulted in a significant increase in the number of Australian fur seals (*Arctocephalus pusillus doriferus*) escaping the net once inside. Seventy eight percent of caught seals died in nets without SEDs, whereas 34% died in nets using SEDs. However, fish loss via the SED escape hatch was significant. Hooper *et al*. (2005) observed various mitigation methods aimed at reducing or eliminating Antarctic fur seal (*Arctocephalus gazella*) incidental catch in the krill (*Euphausia superba*) fishery around South Georgia. The range of mitigation measures included: (i) physical barriers (panels of netting) excluding seals from entering the net; (ii) physical barriers (panels of netting) positioned within the net accompanied by escape channels or openings; (iii) manufactured seal exclusion devices in front of the codend that are comprised of a separator grill that deflects seals to an escape opening; (iv) fishing gear configured with panels of a mesh size adequate to allow seals to escape. In all cases the incidence of seal entanglements during the 2004 season were either eliminated or greatly reduced.

To reduce the incidental mortality of fur seals in New Zealand trawl fisheries, CSP had proposed work investigating methods for the mitigation of fur seal deaths in trawl fisheries for the 2004/05 fishing year. This research was postponed, to avoid potential duplication with Hoki Fishery Management Company work addressing Corrective Action Requests that were part of the Marine Stewardship Council certification audit. Indications from the Hoki Fishery Management Company suggested that addressing the fur seal interaction issue may be attempted through a Code of Practice (see minutes of 22 July 2004 HFMC Environmental Steering Group meeting). However, DoC observer data from the 2005 hoki fishing season indicate that the seal bycatch problem remains significant. Therefore, CSP proposes to progress work to reduce seal/trawl interactions in the 2006/07 year.

Research approach:

Research should focus on the development and testing of effective mitigation measures aimed at reducing the incidental mortality of fur seals in trawl fisheries, particularly the hoki fishery. Designing an exclusion device suitable for fur seals and determining its efficacy is within the scope of this project, as is research investigating and applying novel methodologies. The exclusion device design should take into consideration the state of development of the current sea lion exclusion devices.

Outputs

- Report detailing methods used, data collected, analyses applied and results found, to address Objectives 1 and 2 above.
- Report on trials carried out under Objective 3 above, in terms of methods used, data collected, efficacy of methods and recommendations based on trial results.

Cost recovery information:

- Project Costing: $90,000
- Fish stock: All hoki trawl fisheries..
- F(CR) Rules: Item 4 (100% industry)

Notes:

- If the Hoki Fishery Management Company (or any other body) has already addressed the objective stated above, CSP will not continue with this project.
- The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated.

References

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Tilzey, R. (2000). "Seal bycatch mitigation in the blue grenadier fishery off west Tasmania in winter 2000." Report to the AFMA and Environment Australia, 24p.

4.9 Workshops at commercial fishers conferences

Objectives:

1. To provide feedback on protected species bycatch results;
2. To provide feedback to fishers on developments in mitigation methods and devices; and
3. To receive feedback on what fishers are doing with respect to mitigation.

Rationale

There has been insufficient reporting of the results of Conservation Services Programme-funded work to fishers throughout New Zealand. This will increase trust and respect between the fishers and Conservation Services Programme in order to make progress towards a significant reduction in protected species bycatch.

Method

- Workshops and/or presentations at two national commercial fishers conferences (e.g. Seafood and Federation conferences)

Term of project: July 2005 – June 2006.

Output

- Workshops and/or presentations at two National Commercial Fishers conferences (e.g. Seafood and Federation conferences)

Cost Recovery

Fish stock:	None.
F(CR) Rules:	100% Crown funded.
Project Costing:	$2,000 for participation at two conferences.

Appendix One: Research Costs and Cost Allocation

A: CSP Proposed 2006/07 Projects

Number	Project	Research	Admin	Total	Rule	Industry %	Industry	Crown	Fisheries to be levied
At-sea interactions									
INT2006/01	Observing commercial fisheries	$834,908	$60,812	$895,720	8	100	$895,720	$0	See respective project briefs
INT2006/02	Seabird autopsy project	$90,000	$17,159	$107,159	4	100	$107,159	$0	
Population studies									
POP2006/01	Sea lion popn study	$340,000	$64,600	$404,600	2	90	$364,140	$40,460	
POP2005/02	White-capped albatross popn study	$175,000	$33,365	$208,365	2	50	$104,183	$104,183	
Mitigation studies									
MIT2004/01	Testing of discard management methods	$75,000	$17,776	$92,776	4	100	$92,776	$0	
MIT2006/02	Seabird interactions with trawl nets	$75,000	$11,850	$86,850	4	100	$86,850	$0	
MIT2006/07	Developing mitigation ideas	$63,161	$14,815	$77,976	4	0	$0	$77,976	
MIT2006/08	Mitigation advice	$65,000	$12,393	$77,393	4	100	$77,393	$0	
MIT2006/09	Fur seals in trawl fisheries	$90,000	$17,159	$107,159	4	100	$107,159	$0	
MIT2006/10	Conference workshops	$2,000	$381	$2,381	4	0	$0	$2,381	
Departmental overheads								$25,000	
Estimated totals		$1,871,802	$250,310	$2,060,379			$1,835,380	$250,000	

B: CSP 2006/07 Observer Allocation

Target species	Target Percent Coverage Level	CSP Day Allocation for 2006/07	Percent Observer Day	Comment on Coverage	Charged Days	Per day cost	At-sea cost	Staff cost	Admin	Total
Hoki	25	1180	15	Marine mammal interactions	177	$500	$88,500	$20,767	$7,959	$117,226
SBW	30	62	15	Marine mammal interactions	9	$500	$4,680	$1,098	$421	$6,199
Hake	15	100	15 / 100	Seabird & mammal interactions	76	$500	$38,000	$8,917	$3,417	$50,334
SQU	0	0	0	See MFish Plan	0	$500	$0	$0	$0	$0
Charter Tuna	100	185	15	Foreign fleet coverage	28	$500	$13,875	$3,256	$1,248	$18,379
Domestic Tuna	20	488	15	Seabird interactions	73	$500	$36,630	$8,595	$3,294	$48,519
Deep Sea Ling	30	152	15	Seabird interactions	23	$500	$11,430	$2,682	$1,028	$15,140
Inshore Ling/BNS/HPB	15	151	100	Seabird interactions	151	$500	$75,500	$17,717	$6,790	$100,007
Inshore Trawl 1, 7, 8, 9	10	250	100	Marine mammal interactions	250	$500	$125,000	$29,332	$11,241	$165,573
ORH and OEO	30	750	15 / 100	Coral & seabirdbycatch	193	$500	$96,500	$22,644	$8,678	$127,822
SCI	15	150	100	Seabird & mammal interactions	150	$500	$75,000	$17,599	$6,745	$99,344
JMA	50	379	15	Marine mammal interactions	57	$500	$28,388	$6,661	$2,553	$37,602
Setnet FMA's 3, 5, 2, 1	3	165.45	100	Seabird & mammal interactions	165	$500	$82,725	$19,412	$7,439	$109,576
Total	**0**	**4113**	**0**	**0**	**1,452**		**$726,228**	**$170,413**	**$65,308**	**$961,949**

* target species for coverage include: SNA, HPB, BNS, LIN
** commercial fishing days is for entire EEZ; target sp include: ELE, SCH, SPO, BUT, MOK, TAR, SPD; observer coverage to also include SNA

Appendix Two: Summary of policies from the CSP Strategic Plan[37]

This Strategic Plan provides guidance for the Department of Conservation's administration of the Conservation Services Programme for the five-year period 2005/06 – 2009/10. The Programme's objectives are:

1. To understand the nature and extent of adverse effects from commercial fishing activities on protected species in NZ fisheries waters.
2. To develop effective solutions to mitigate adverse effects of commercial fishing on protected species in NZ fisheries waters.

Research into effects includes:

i. Research into fishing interactions (direct and indirect impacts) on protected species; and

ii. Research into the adverse effects of commercial fishing on protected species populations.

Research and development of measures to mitigate the adverse effects of commercial fishing on protected species includes:

i. Research into, and development of, mitigation methods;

ii. Development of population management plans.

Key policies are listed below:

Mandate and focus

Policy 1: The scope of the Conservation Services Programme includes adverse effects on protected species arising from direct or indirect effects of commercial fishing and arising from activities associated with commercial fishing including:
i. any past or present adverse effect; and/or
ii. any past or present cumulative effect;
unconstrained by scale, intensity, duration, or frequency of the adverse effect.

Policy 2: The Conservation Services Programme will consider recovering costs for outputs that are "conservation services", for those protected species that have either:
- been recorded as bycatch, or
- have behavioural or biological characteristics that indicate the species is exposed to risk of adverse effects of direct fishing interactions.

i. excluding those effects or risks posed by any operation in support of or in preparation for any activities associated with commercial fishing;
ii. excluding past adverse effects or cumulative adverse effects.

Policy 3: For the purpose of this Strategic Plan, research on measures to mitigate the adverse effect of commercial fishing on protected species will include research on measures to avoid, remedy or mitigate the adverse effects of commercial fishing on protected species.

Policy 4: New Zealand's obligations with respect to international conventions may only be implemented by the Conservation Services Programme to the extent to which activities are consistent with domestic legislation.

[37] See www.csp.org.nz under "Plans".

Priorities

Policy 5: Priorities for conservation services work on protected species as defined by the Wildlife Act 1953 (excluding corals and spotted black grouper) and Marine Mammals Protection Act 1978 will be determined through the evaluation of:
(a) threat status; and
(b) level of fisheries interaction in New Zealand fisheries waters;
in accordance with method specified in Appendix 1.

Policy 6: Following the initial identification of priority species using method specified in policy 5, consideration will be given to elevating the priority for particular species where:
(a) knowledge of the level of fishing interaction is limited, and species behaviour and commercial fishing activity indicates that interaction is likely or plausible; or
(b) there are data deficiencies in species population parameters used to derive threat status; or
(c) statutory or government priorities indicate a higher level of prioritisation is required.

Policy 7: Black coral (all species in the Order Antipatharia), and red coral (all species) will be considered priority species for research.

Policy 8: Following the initial identification of priority species using method specified in policy 5, where research effort is being determined for species:
a) within the same category (high, high-medium, medium or low); and
b) the category contains species that have a breeding population in New Zealand, and species that are considered migratory;
preference will be given to those species that have breeding populations in New Zealand.

Policy 9: Priority fisheries/fishing methods will be determined to be those fisheries/methods that:
a) cumulatively bycatch greater numbers of protected species across all species where all mortalities are considered equal; or
b) cumulatively bycatch a greater proportion of "high" or "high-medium" priority species; or
c) lack, or have limited, data on protected species - fisheries interactions.

Policy 10: Priority mitigation methods for research will be determined by:
a) identifying those mitigation methods that may address impacts on multiple species (having regard to results of prioritisation undertaken in accordance with Policy 9 (a) (b)); or applicable to multiple fishing methods; or
b) researching emerging mitigation approaches that have been recently proposed/developed but are untested or have not been sufficiently trialled; or
c) investigating mitigation approaches currently employed in New Zealand but where the usefulness or effectiveness of the mitigation technique is unclear.

Policy 11: Priority will generally be given to research and project proposals that:
(a) most cost-effectively achieve the research goal, such as by utilising opportunities for multi-species/multi-project initiatives to enhance the application and cost-efficiency of research, and to provide for integrated management; or
(b) address information gaps for the species where this knowledge will significantly enhance the value or application of existing knowledge to address adverse effects of commercial fishing on protected species (leverage).

Policy 12: The Conservation Services Observer Project will:
(a) provide a baseline level of observation of fisheries where interactions are thought to be generally identified;
(b) enhance observations in unobserved fisheries or, where interactions are not understood;

(c) gather information that will facilitate understanding of the nature of fisheries interactions and lead to the development of mitigation techniques;
(d) support the development and testing of mitigation techniques, and assist in the evaluation of the effectiveness of mitigation methods; and
(e) encourage and audit the self-reporting by fisheries of their interactions with protected species.

Policy 13: Research into the indirect effects of commercial fishing on a protected species will be considered where:
a) indirect effects may be affecting one or more species populations that are interacting with fisheries in a similar way, or through alteration of habitat/food availability; and
b) the population/s is exhibiting signs of chronic adverse effects; and
c) research does not duplicate that undertaken by the Ministry of Fisheries.

Policy 14: Population studies will be undertaken only where results, either:
(a) assist in the development of population management plans; or
(b) assist in implementation of the seabird National Plan of Action[38]; or
(c) assist in assessing the extent to which commercial fishing interactions causing an adverse effect on the protected species populations, or
(d) assist in managing the effects of commercial fishing on protected species populations.

Policy 15: High priority will be given to projects that contribute to the research, development and communication of effective mitigation methods/approaches.

Policy 16: When prioritising research investment across the range of mitigation methods/approaches, regard will be had to the cost-effectiveness of developing and implementing such methods.

Policy 17: A population management plan for New Zealand sea lion will be developed to be approved in time to inform the 2005/06 fishing season.

Policy 18: Population management plans will also be developed in the following circumstances:
a) for seabird species, where the National Plan of Action process determines that mandatory bycatch limits are appropriate, and population management plans are determined by the Minister of Conservation to be the most effective mechanism to implement bycatch limits;
b) for marine mammals that are a high or high-medium priority species as determined by species prioritisation method (policies 5-7), where the Minister of Conservation deems development of a population management plan appropriate;
c) where new species placed in the Wildlife Act schedules are a high or high-medium priority species as determined by species prioritisation method (policies 5-7), and the Minister of Conservation deems development of a population management plan appropriate.

Cost recovery and administration

Policy 19: Risk assessment undertaken in accordance with Item 2 of the schedule of the Fisheries (Cost Recovery) Rules 2001 will be guided by the following:
a) The phrase "human intervention" means any human activity that has adverse effects on protected species, including both direct (active) and indirect (passive) interventions;
b) The phrase "b is the total risk of human interventions on the populations" will be interpreted such that 'total' means 'global' and is not restricted to the range of effects on

[38] National Plan of Action to Reduce the Incidental Catch of Seabirds in New Zealand Fisheries

the population within the EEZ of New Zealand, i.e. "b" includes risk of human interventions on the populations both within and beyond New Zealand's EEZ.

Policy 20: When undertaking risk assessment in accordance with item 2 of the schedule of the Fisheries (Cost Recovery) Rules 2001, uncertainty will be recognised through sensitivity analysis by applying a range around uncertain parameters.

Policy 21: Item 2 of the schedule of the Fisheries (Cost Recovery) Rules 2001 will be used to determine the percentage of costs to be borne by industry for projects where:

a) sufficient data exist to estimate risk in accordance with policy 19; or
b) data for estimating risk is deficient in some way but this can be managed in accordance with policy 20.

Policy 22: Item 3 of the schedule of the Fisheries (Cost Recovery) Rules 2001 will be used to determine the percentage of costs to be borne by industry for projects where risks to those populations by human intervention have not been estimated due to:

a) insufficient data and/or
b) uncertainty associated with existing data of a magnitude that is unable to be managed in accordance with policy 20

Policy 23: Items 2 and 3 of the schedule of the Fisheries (Cost Recovery) Rules 2001 will be used to determine the percentage of costs to be borne by industry for projects such as:

a) population studies of protected species where risk to those populations by human intervention has been estimated (in the case of item 2) or where such risk has not been estimated (in the case of item 3); or
b) development of population models to support development of population management plans.

Policy 24: Item 4 of the schedule of the Fisheries (Cost Recovery) Rules 2001 will be used to determine the percentage of costs to be borne by industry for projects including:

a) advisory services including initiatives that communicate research results to commercial fishing sector;
b) mitigation projects;
c) services required for development, monitoring and review of population management plans not covered by items 2 or 3 of the schedule of the Fisheries (Cost Recovery) Rules 2001; and
d) services provided as an extension to observation services but which are not cost allocated under Item 8, such as autopsy of bycatch specimens.

Policy 25: Management of under and over cost recovery will be undertaken in accordance with agreed principles and processes for management between the Crown and the commercial fishing industry.

Policy 26: A project will be considered to be closed where:

(a) objectives of the project have been achieved; or
(b) objectives of the project are unable to be achieved:

(i) due to failure to secure a contractor for the project through a tendering process; or

(ii) as a result of failure of a contractor to deliver agreed work; or

(iii) where more than two years have elapsed since the project should have been completed and the project has not demonstrated significant progress toward achievement of objectives.

Policy 27: All research projects shall have clear end points defined, either in:
a) The Five-year Research Plan; or
b) The Annual Plan; or
c) Any multi-year contract developed from a project specified in the annual plan.

Policy 28: Costs to be recovered for the development of population management plans will include all procedures and associated costs as described by s.3H Wildlife Act 1953 and s.14I Marine Mammal Protection Act 1978 and costs for the monitoring of PMPs.

Policy 29: Tendering for Conservation Services Programme projects will be undertaken:
a) in accordance with Department of Conservation tendering policy which provides that for services between $5000 - $15000 requirements to tender are discretionary; and
b) generally, in a manner where for services of $15 000 and over, an open tender process will be followed.

Processes and relationships

Policy 30: The Conservation Services Programme will consult with Te Ohu Kaimoana when developing its annual plan and when determining the allocation of costs to quota holders.

Policy 31: The Conservation Services Programme will clarify the roles and responsibilities between it and the Ministry of Fisheries through:
a) Establishing principles for assigning research responsibilities based on the implementation of the seabird National Plan of Action; and
b) Establishing a memorandum of understanding between the Department of Conservation and Ministry of Fisheries to clarify research roles and responsibilities.

Policy 32: The Conservation Services Programme will deliver an annual plan of research based on the research priorities derived from the Strategic Plan and Five-year Research Plan, excluding:
a) research projects that have been previously delivered to satisfactory standards by stakeholders or other agencies;
b) research projects that have been identified by stakeholders as a priority for delivery to satisfactory standards within the timeframe of the relevant annual plan.

Policy 33: The Conservation Services Programme will continue to provide advice and support into stakeholder initiated processes and projects related to addressing adverse effects of commercial fishing on protected species, as a priority, non cost recovered service.

Policy 34: The Conservation Services programme will monitor the proportion of effort (and associated cost) in providing services described in policy 33 and secure alternative funding sources in the event that subsidisation is shown to occur.

Policy 35: The Conservation Services Programme will ensure that the outputs of funded projects are communicated effectively to the appropriate audience in a timely manner, either as part of the project or through collective reporting mechanisms.

Appendix Three: Legislation and Guidelines used for the Formulation of this Plan

The following is a summary of legislative provisions that guide the development and delivery of the 2005/2006 Conservation Services Plan.

Conservation services have been defined in the Fisheries Act 1996 as follows:

conservation services means outputs produced in relation to the adverse effects of commercial fishing on protected species, as agreed between the Minister responsible for the administration of the Conservation Act 1987 and the Director-General of the Department of Conservation, including—
(a) Research relating to those effects on protected species:
(b) Research on measures to mitigate the adverse effects of commercial fishing on protected species:
(c) The development of population management plans under the Wildlife Act 1953 and the Marine Mammals Protection Act 1978

For the purposes of the Fisheries Act, **protected species** have been defined as meaning:

(a) Any marine wildlife as defined in section 2 of the Wildlife Act 1953 that is absolutely protected under section 3 of that Act:

(b) Any marine mammal as defined in section 2(1) of the Marine Mammals Protection Act 1978.

The Crown is enabled to recover the costs of conservation and fisheries services in accordance with Part 14 of the Fisheries Act 1996. The **principles** under which costs may be recovered are specified in S262 as follows:

Cost recovery principles

The cost recovery principles under this Part are as follows:

(a) If a conservation service or fisheries service is provided at the request of an identifiable person, that person must pay a fee for the service:

(b) Costs of conservation services or fisheries services provided in the general public interest, rather than in the interest of an identifiable person or class of person, may not be recovered:

(c) Costs of conservation services or fisheries services provided to manage or administer the harvesting or farming of fisheries resources must, so far as practicable, be attributed to the persons who benefit from harvesting or farming the resources:

(d) Costs of conservation services or fisheries services provided to avoid, remedy, or mitigate a risk to, or an adverse effect on, the aquatic environment or the biological diversity of the aquatic environment must, so far as practicable, be attributed to the persons who caused the risk or adverse effect:

(e) The Crown may not recover under this Part the costs of services provided by an approved service delivery organisation under Part 15A.]

Section 263 of the Act sets out procedures for promulgating cost recovery rules:

(1) The Governor-General may from time to time, by Order in Council made on the recommendation of the Minister, make rules relating to the imposition of levies under this Part.

(2) The rules may—
(a) Prescribe the proportion of costs of conservation services and fisheries services to be recovered as levies:
(b) Prescribe who must pay levies:
(c) Prescribe how the costs are to be apportioned between the persons who must pay the levies.

(3) Without limiting anything in subsections (1) and (2), different rules may apply in respect of different classes of persons, stocks, quota management areas, fishery management areas, conservation services, fisheries services, or any combination of them.

(4) Before making a recommendation under subsection (1), the Minister must—
(a) Be satisfied that the rules to which the recommendation relates comply with the cost recovery principles in section 262; and
(b) Have regard to the extent to which conservation services or fisheries services are wholly or partly purchased or provided by persons other than the Crown.

(5) Without limiting the Acts Interpretation Act 1924, no order made under this section is invalid because it leaves any matter to the discretion of any person.

On 10 September 2001 the Governor-General made the Fisheries (Cost Recovery) Rules 2001 ("the Cost Recovery Rules"). Rule 4 deals with the status of rules. Rule 5 provides:

The proportion of costs to be recovered from the Commercial Fishing Industry for the fisheries or conservation services specified in the first column of the Schedule is the proportion set out in the second column of that Schedule."

Rule 6 provides who must pay the levies and the basis for the levy. The Schedule to the Cost Recovery Rules (extract below) provides for the apportionment of costs of fisheries and conservation services. Relevant parts of the Schedule are as follows:

Services	Percentage of Costs to be Borne by Industry	Allocation Between Stocks
2. Research relating to protected species populations where risk to those populations by human intervention has been estimated	A over B, expressed as a percentage, where- A is the risk to the populations posed by commercial fishing in the EEZ of New Zealand B is the total risk of human interventions on the populations	As in Rule 7(2) or (3)
3. Research relating to protected species populations where risk to those populations by human intervention has not been estimated	50%	As in Rule 7(2) or (3)
4. Services (including research) provided to avoid, remedy, or mitigate that portion of the risk to, or adverse effect on, the aquatic environment or biological diversity of the aquatic environment caused by commercial fishing	100%	As in Rule 7(2) or (3)
8. Observer coverage to support stock assessment process and conservation services	100%	As in rule 8
11. Aquaculture services	100%	As in rule 10