

Conservation Services Annual Plan 2007/2008

Conservation Services Programme
Marine Conservation Unit
Department of Conservation
PO Box 10 420
Wellington
May 2007

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.

I am pleased that in recent years, significant gains have been made towards the conservation of marine protected species that interact with commercial fishing operations. For example, the important role that offal and discards have in attracting seabirds to vessels has been recognised and the contribution that strategic discharge management can make to reducing seabird mortality in fisheries is widely understood. Mitigation devices are currently in use on larger trawlers. I expect that in combination, discharge management and effective mitigation measures will greatly reduce incidental injury and mortality of seabirds in trawl fishing operations. Recent gains have also been made in some sectors of New Zealand’s longline fisheries. There too, awareness of the incidental mortality of seabirds has never been higher. As in trawl fisheries, challenges remain, but mitigation strategies are in place in some longline fisheries and are under development in others.

Given the complexity and dynamism of fishing operations, we can expect challenging issues to take time to resolve and new issues to emerge periodically. I look forward to my Department and the industry resolving these issues to conserve our marine species and heritage, especially where those species interact with fishing operations.

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 2007/08.

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 to set a good example for other countries whose vessels and fleets interact with non-target species as part of their fishing operations.

The Department strongly supports the efforts of the fishing industry to reduce incidental mortalities of protected species. I recognise that protected species and fishing operations often co-occur in the same areas, and with co-occurrence comes interactions. I am encouraged by recent progress that has been made in reducing incidental mortalities of seabirds, for example, with effective mitigation measures. I look forward to seeing continued development and implementation of mitigation strategies, and the application of new knowledge to reduce the incidental catch of protected species.

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.

Al Morrison
Director-General of Conservation

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1. Overview of the 2007/2008 Conservation Services Annual Plan

1.1. Introduction

The 2007/2008 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. For a summary of the legal basis of the Plan, refer to the *Conservation Services Strategic Plan 2005-2010* (<http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/csp-approved-strategic-plan-2005-2010.pdf>).

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.

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. This Research Plan has some overlaps with the draft Conservation Services Programme Research Plan 2005/2010 (<http://www.doc.govt.nz/templates/MultiPageDocumentTOC.aspx?id=43082>), which outlines CSP's approach to researching protected species beyond seabirds.

The Department of Conservation's *Marine Mammal Action Plan* (MMAP¹) provides a guide for conservation actions for New Zealand's marine mammals.

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.
- Timelines are aligned as much as possible and appropriate (given the different development trajectories of the two agencies' bodies of work).

¹ Suisted, R and Neale, D. (2004). *Department of Conservation Marine Mammal Action Plan for 2005-2010*. Department of Conservation, Wellington.

1.3. Format

The format used to specify the conservation services is similar to that adopted in the last three Annual Plans. It includes an outline of the objectives and rationale for each project, and the outputs that are anticipated to be produced. The project specifications indicate cost recovery information, i.e. project costings (excluding administration costs) and identification of the relevant provisions within the Fisheries (Cost Recovery) Rules 2001 that are proposed to determine cost allocation. 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 (approved) Plan.

1.5 Consultation processes

The following processes and documents contributed to the development of the 2007/08 Annual Plan:

18 September 2006	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 2007/08
4 December 2006	CSP 'final draft' projects circulated for comment
15 January 2007	Draft 2007/2008 Conservation Services Annual Plan circulated to stakeholders for submissions
16 March 2007	Submissions received from stakeholders on Draft 2007/2008 Conservation Services Annual Plan
22 March 2007	Submissions made available to stakeholders
12 April 2007	Small meetings to discuss submissions held with different stakeholders who requested them (Deepwater Group Ltd, SeaFIC)
5 May 2007	Revised Draft 2007/2008 Conservation Services Annual Plan forwarded to SeaFIC for finalisation of allocation of project costs to fisheries
17 May 2007	Director General conveys Annual Plan to Minister of Conservation for his consideration and agreement

2. Fishing interactions projects

2.1. Fishing interactions

2.1.1. Purpose

The fishing interaction projects aim to understand the nature and extent of protected species interactions with commercial fishing activities so that management measures undertaken to avoid, remedy or mitigate adverse effects on protected species can be evaluated.

2.1.2. Background

Understanding the nature and extent of interactions between commercial fisheries and protected species is the foundation of the Conservation Services Programme. This information can identify where the most significant interactions are occurring and can inform development and application of methods to minimise adverse effects. Over the last few years protected species interactions with some fisheries have become well understood, although rarely quantified, while interactions with other fisheries are less well understood, especially inshore fisheries.

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.

2.1.3. Related policy

The policy context for projects on fisheries interactions with protected species conducted through CSP is outlined in the Conservation Services Programme Strategic Plan 2005-2010 (see Policy 12 for an overview):

<http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/csp-approved-strategic-plan-2005-2010.pdf>

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.

Other policy documents that relate to observer services provided through CSP include the National Plan of Action for Seabirds, and the Department's Marine Mammal Action Plan. An objective of the NPOA² 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.

² NPOA section 4.5.2: Information gathering.

2.2 Observing commercial fisheries

Project Code: INT 2007/01

Start Date: 1 July 2007

Completion Date: 30 June 2008

Overall Objective:

- Understanding the nature and extent of protected species interactions with New Zealand commercial fishing activities.

Specific Objectives:

1. To identify, monitor and, where possible, quantify³ protected species interactions with commercial fisheries;
2. To identify possible means for mitigating the incidental mortality of protected species, and;
3. To collect other biological information on the incidental mortality of protected species that will assist in assessing mitigation techniques.

Term of project:

Ongoing (reviewed annually)

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 be used to inform development of ways to mitigate those interactions and adverse effects. Such data contribute to assessments of whether protected species mortality is sustainable and whether mitigation strategies employed by fishing fleets are effective at reducing protected species captures.

Policy 12 of the CSP Strategic Plan states that the 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.

³ Work on the nature of the interactions is led by the Department of Conservation, whereas work on the extent of interactions is led by the Ministry of Fisheries.

In accordance with Rule 8 of the Fisheries (Cost Recovery) Rules 2001, industry will pay 100% of costs for observer coverage that supports conservation services.

The Conservation Services Programme will continue to purchase baseline services from Ministry of Fisheries Observer Services given the scale of the operation, which allows observers to be placed strategically across New Zealand fisheries. In addition, the sharing of observer costs with the Ministry of Fisheries can significantly reduce costs.

Research Approach

Currently, the most accurate and reliable means to obtain protected species incidental catch data is through the use of human observers. To date, the bulk of publicly available information on at-sea interactions between fishing vessels and protected species in New Zealand waters has been collected by Government (Department of Conservation / Ministry of Fisheries) observers.

The allocation of observer coverage across fisheries will be made in relation to:

- Historic mortality of protected species;
- Past observer coverage;
- The status of particular threatened protected species; and
- Current level of information.

The duties of an observer in respect of the Conservation Services Programme can be summarised as:

- Monitoring and recording the interactions of protected species with fishing operations
- Reporting on the efforts made to mitigate the adverse effects of commercial fishing on protected species
- Recording, photographing, tagging all protected species bycatch
- Recovering and retaining the bodies of dead protected species for autopsy
- Recording at least on a daily basis the numbers, and the behaviour of, marine mammal and seabird species seen around the fishing vessel
- Carrying out other tasks (eg making observations on discard and offal discharge) as required.

Information collected includes:

- Type and position of vessel;
- Environmental conditions (e.g. sea state);
- Fish species being targeted;
- Fishing methods (including a description of gear employed) and operations;
- Processing waste management practices
- Abundance and behaviour of protected species in vicinity of vessel;
- Mitigation practices adopted;
- Knowledge and approach of crew; and
- Interactions between protected species and fishing gear

It is important to note that observer programmes typically have high spatial and temporal variation, as well as multiple priorities for information collection, which can make the data challenging to interpret and extrapolate to get actual bycatch rates by fishery, location, or

other desired variables. Data accuracy and relevance can be affected by inter-observer variability, weather conditions and access to vessels, while precision is affected by the observer sampling design. Data quality may also be biased by the opportunistic allocation of observers to vessels, as it is not always possible to place observers on vessels randomly. Some operators will resist the placement of observers, or it may be biased due to either budget or logistical constraints of an observer programme. Nevertheless, the use of fisheries observers is currently considered to be the most reliable means of acquiring data on protected species interactions.

Application of observer coverage by fishery:

Hoki trawl fishery

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	20	115	115
2005/06	15	20	214	201
2006/07	25	15	177	147*
2007/08	25	15	149	-

(* coverage achieved as at 31 March 2007)

Historically, CSP observer coverage in the hoki fishery has been in Fishery Management Areas 2 (Central East), 3 (South-East Coast), 4 (South East – Chatham Rise), 5 (Southland), 6 (Subantarctic) and 7 (Challenger / Central) in order to monitor interactions with pinnipeds and seabirds. High interactions with fur seals have been recorded in this fishery, particularly in FMA 7, and seabird interactions have been high in FMA 3. New Zealand sea lions have occasionally been caught in the hoki fishery and coral is occasionally landed. Observer coverage runs from February to September and in 2007/08 will be focussed in FMAs 2, 3, 6 and 7.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage planned for 2007/08 will be maintained to monitor this fishery in which interactions are thought to be generally understood. Observer time will be focussed on monitoring and recording interactions with fur seals, sea lions and seabirds including captures and behaviour of protected species around the vessel.

Observers record information on which mitigation techniques are employed in this fishery. Mitigation techniques employed include offal and discard management and the use of bird scaring devices, which have been required by Gazette Notice for larger vessels.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day. The decreased number of charged days is a reflection of changes in fishing effort.

Southern Blue Whiting

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	20	70	62
2005/06	30	20	16	16
2006/07	30	15	9	9*
2007/08	30	15	13	-

(* coverage achieved as at 31 March 2007)

CSP observer coverage in the southern blue whiting trawl fishery monitors interactions with pinnipeds and seabirds in FMA 6 (Subantarctic), with some coverage in FMA 6A (Southern Offshore Islands). High interactions with fur seals have been recorded in this fishery as well as occasional interactions with New Zealand sea lions. Seabird interactions tend to be low compared to other trawl fisheries. Coral has been landed in this fishery. Observer coverage is undertaken in August and September.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage planned for 2007/08 will be maintained to monitor this fishery in which interactions are thought to be generally understood. Observer time will be focussed on monitoring and recording interactions with fur seals and sea lions. Data is also collected on seabird interactions and behaviour due to the location of this fishery and its close vicinity to many seabird breeding islands.

Historically, a few vessels operating in this fishery have contributed to the majority of capture events, particularly for fur seals. Observers are tasked with recording information on which mitigation techniques are employed on vessels to better understand individual vessel characteristics that may lead to captures of protected species. Mitigation techniques employed in this fishery include offal and discard management and the use of bird scaring devices.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day. Observer coverage may be increased in future years if further NZ sea lion captures are recorded in 2007/08.

Hake

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	0	0	0
2005/06	15	20/100	86	86
2006/07	15	15/100	76	26*
2007/08	15	15	17	-

(* coverage achieved as at 31 March 2007)

CSP observer coverage in the hake fishery has been mostly in FMAs 6 (Subantarctic) and 7 (Challenger / Central) in order to monitor interactions with pinnipeds and seabirds. Coral has also been landed in this fishery. Coverage of the hake fishery is from May to July.

Observer coverage planned for 2007/08 will be maintained in order to provide a baseline level of observations in this fishery. Coverage in this fishery is also maintained to monitor potential interactions with NZ sea lions. Observer time will be focussed on monitoring and recording interactions with fur seals, sea lions and seabirds including captures and behaviour of protected species around the vessel.

Observers record information on which mitigation techniques are employed in this fishery. As many of the vessels fishing for hake also target hoki, they adhere to similar mitigation practices including offal and discard management and the use of bird scaring devices.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day. The decreased number of charged days is a reflection of changes in fishing effort. Observer coverage may be increased in future years if interactions with NZ sea lions are recorded.

Orange Roughy and Oreo

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	0	0	0	0
2005/06	25 ^{ORH}	10	32	53
	30 ^{OEO}	10	22	13
2006/07	30	15	193	93*
2007/08	40	15	119	-

(* coverage achieved as at 31 March 2007)

Historically, CSP observer coverage in the orange roughy and oreo fisheries has been mostly in FMAs 4 (South East / Chatham Rise) and 6 (Subantarctic) with some coverage in FMAs 1 (Auckland East), 3 (South-East Coast) and 5 (Southland). A particular focus of observer coverage in this fishery is to monitor impacts of deepwater trawling on protected corals. Seabird interactions and behaviour around vessels are also monitored. Observer coverage is mostly between June and November, but can be spread throughout the year.

Although this fishery has been observed for some time, observer coverage for protected species is being enhanced in line with Policy 12 (b) of the CSP Strategic Plan which states that the Observer Programme will enhance observations in unobserved fisheries or where interactions are not understood. The extent to which this fishery interacts with protected coral species is not well understood, and targeted CSP coverage to investigate seabird interactions has also been sparse in the past. Observer time will be focussed on assessing the extent of protected coral landed on vessels as well as monitoring and recording interactions and behaviours of seabirds. The duties of observers and the level of coverage in this fishery may be revised following the completion of coral identification work undertaken during the 2005/06 and 2006/07 fishing years.

Observers will, on average, spend 15% of their day on CSP duties as not all vessels catch protected corals or interact with seabirds.

Mitigation techniques employed in this fishery include offal and discard management, the use of bird scaring devices and trawling known tracks to avoid catching deep sea invertebrates.

Jack Mackerel

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	20	30	34
2005/06	50	20	138	138
2006/07	50	15	57	33*
2007/08	50	15	57	-

(* coverage achieved as at 31 March 2007)

Historically, CSP observer coverage in the Jack Mackerel fishery has been in FMAs 3 (South-East Coast), 7 (Challenger / Central) and 8 (Central) in order to monitor interactions with dolphins. High numbers of common dolphins have been recorded caught in this fishery including the capture of 17 dolphins by three vessels off west Auckland in November 2004. Dusky dolphins, fur seals and seabirds have also been recorded caught in this fishery. The majority of observer coverage is from October to December with some coverage from April to July.

Although fewer dolphins were caught in the 2005/06 fishing year, coverage days will be maintained at a similar level to previous years in order to monitor common dolphin interactions. (Information on the 2006/07 fishing year will be collated by late 2007). Observer time will be focussed on recording protected species interactions and the behaviour of cetaceans, pinnipeds and seabirds around the vessel.

Observers will also record information on which mitigation and avoidance techniques are employed in this fishery. Vessels can employ several techniques aimed at reducing the likelihood of interacting with dolphins, including not fishing during hours of the day when dolphin interactions are more likely and avoiding targeting small mackerel, which appear to be the dolphins target prey.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day.

Scampi

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	100	100	87
2005/06	10	100	147	141
2006/07	15	100	150	85*
2007/08	10	15	30	-

(* coverage achieved as at 31 March 2007)

CSP observer coverage in the scampi fishery has mostly been in FMA 1 (Auckland East) and FMA 6A (Southern Offshore Islands) in order to monitor interactions with seabirds and NZ sea lions. Moderate interactions with seabirds have been recorded in this fishery as well as occasional interactions with sea lions in the southern scampi fishery. Coral has occasionally

been landed in this fishery. Coverage is throughout the year, but most protected species interactions have been recorded in May and October. Observer time will be focussed on monitoring and recording interactions with seabirds and sea lions. Observers record information on which mitigation techniques are employed in this fishery, including offal and discard retention and the use of bird scaring devices.

Observer coverage levels in this fishery have been reduced from those presented in the draft Annual Plan 2007/08. This is because observer services cannot be delivered by MFish at the level formerly proposed. Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day.

Squid

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	20	120	120
2005/06	0	0	0	0
2006/07	0	0	0	0
2007/08	0	0	0	-

(* coverage achieved as at 31 March 2007)

Observer coverage in the squid fishery is currently managed by the Ministry of Fisheries.

Inshore trawl

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	0	0	0
2005/06	0	0	0	0
2006/07	10	100	250	80*
2007/08	10	100	258	-

(* coverage achieved as at 31 March 2007)

The extent to which inshore trawl vessels interact with protected species is unknown due to minimal historic observer coverage. Observer coverage of the inshore trawl fishery in the Pegasus Bay – Canterbury Bight area in 1997-1998 reported the capture of one Hector's dolphin. Prior to observing this fishery, five dolphins were known to have been caught by trawlers off the east coast of the South Island. Hector's dolphins have also been recorded caught on unobserved inshore trawl vessels operating on the west coast of the South Island in the late 1980s. Since 1997-1998, four dolphin mortalities have been caused by inshore trawlers including three animals caught in one trawling event in April 2006. This fishery is therefore being monitored in line with Policy 12 (b) of the CSP Strategic Plan which states that the Observer Programme will enhance observations in unobserved fisheries or where interactions are not understood.

Observations aboard inshore trawl vessels began in the 2006/07 fishing year with coverage undertaken in FMA 1 (Auckland East) to monitor seabird interactions, FMA 7 (Challenger /

Central) to monitor Hector's dolphin and seabird interactions and in FMAs 8 (Central Egmont) and 9 (Auckland West) to monitor Maui's dolphin interactions. Observer coverage began in January 2007 and will continue until the end of June 2007.

Observations of inshore trawl vessels will be year round as Hector's dolphins and many seabird species have an inshore distribution. Observer coverage in 2007/08 will be spread throughout the following FMAs:

- FMA 1 to monitor interactions with seabirds, particularly in Statistical Areas 003, 008 and 009.
- FMA 3 to monitor interactions with Hector's dolphins and seabirds, particularly in Statistical Areas 018, 022, 024 and 026.
- FMA 5 to monitor interactions with penguins, shearwaters, shags and Hector's dolphins, particularly in Statistical Areas 025 and 030.
- FMA 7 to monitor interactions with Hector's dolphins, particularly in Statistical Areas 034, 035 and 038.
- FMA 9 to monitor potential interactions with Maui's dolphins, with coverage throughout the year, particularly during winter months when Maui's dolphins are likely to move further offshore.

Observer duties will include monitoring protected species interactions and behaviours around trawl vessels as well as documenting mitigation techniques employed aboard inshore trawl vessels.

As this fishery is not observed by the Ministry of Fisheries, 100% of the observers' day will be allocated to CSP duties.

Charter tuna

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	10	20	14
2005/06	50	20	37	30
2006/07	100	15	28	8*
2007/08	100	15	26	-

(* coverage achieved as at 31 March 2007)

CSP observer coverage of charter tuna vessels has mostly been in FMAs 5 and 7, with some coverage in FMAs 2 and 10. This fishery has historically had high captures of seabirds (including a variety of albatrosses and petrels), but the introduction of mitigation practices has reduced incidental mortality in recent years. Fur seals and sea turtles are occasionally caught on hooks or entangled in lines, but are usually released alive after being cut free. Observer coverage is between March and July.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage planned for 2007/08 will be maintained at a similar level to previous years in order to provide a baseline level of observations in this fishery where interactions are thought to be generally identified. Observer coverage will continue in FMAs 5 and 7, and coverage will be increased in FMAs 1, 2 and 10, if possible, in order to monitor interactions with black petrels and sea turtles. Observer time will be focussed on monitoring and recording interactions with seabirds and sea turtles, including captures and behaviour of protected species around the vessel.

Observers record information on which mitigation techniques are employed in this fishery which can include the use of tori lines, night setting, weighted lines and offal and discard management.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day.

Domestic tuna and swordfish

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	25	150	67
2005/06	Not stated	100	100	38
2006/07	20	15	73	22*
2007/08	20	15	75	-

(* coverage achieved as at 31 March 2007)

Observations of vessels targeting southern bluefin and bigeye tuna have mostly been focussed in FMAs 2 and 7. High interactions with seabirds have been recorded in the past. Fur seals and sea turtles are occasionally caught in this fishery and are usually released alive. Observer coverage is spread throughout the year but protected species interactions in domestic tuna fisheries have mostly been recorded from April to July.

Historically, there has been difficulty placing observers on smaller domestic tuna vessels and, therefore, further data is required to assess protected species interactions. In addition, the recent introduction of swordfish into the quota management system provides further impetus to continue monitoring this fishery, particularly following the large bycatch event of 58 birds during one trip in November 2006. Subsequent regulations introduced by the Ministry of Fisheries in January 2007 require all fishers using surface longlines to provide notice of departure to the Ministry of Fisheries observer programme at least five days prior to sailing. This regulation should facilitate observer placement in this fishery. For these reasons, observer coverage in 2007/08 will be maintained at a similar level to previous years. Coverage will be focussed in FMAs 5 and 7 with additional coverage in FMAs 1, 2 and 10, if possible, in order to monitor interactions in the swordfish fishery.

Observers will record information on which mitigation techniques are employed in this fishery including night setting, tori lines, line weighting and processing waste and discard management.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day.

Deep sea ling

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	10	15	160
2005/06	30	20	37	35
2006/07	30	15	23	16*
2007/08	30	15	15	-

(* coverage achieved as at 31 March 2007)

The deep sea ling fishery has mostly been observed in FMAs 2 and 5 in order to monitor interactions with seabirds. Previous data collected through the observer project has shown that deep sea ling longliners have killed high numbers of seabirds, including white-chinned petrels and Salvin's albatrosses. Observer coverage is from May to June and September to October.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage planned for 2007/08 will be maintained to monitor this fishery in which interactions are thought to be generally understood. Observer time will be focussed on monitoring and recording interactions with seabirds including captures and behaviour around the vessel.

Observers record information on which mitigation techniques are employed in this fishery, including the use of tori lines.

Observer days will be shared with the Ministry of Fisheries so that CSP observations will account for 15% of the day. The decreased number of charged days is a reflection of changes in fishing effort.

Inshore ling / blue nose / hapuku and bass

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	100	200	13
2005/06	Not stated	100	50	33
2006/07	15	100	151	14*
2007/08	20	100	251	-

(* coverage achieved as at 31 March 2007)

CSP observer coverage in this fishery has been throughout FMAs 1, 2, 3 and 7, with interactions mostly recorded in FMA 3 in January. Moderate interactions with seabirds have been recorded in this fishery. Observer coverage in 2007/08 will be spread throughout the year in FMAs 1, 2, 7 and 9. Of particular interest will be increased observer effort in FMAs 1 and 9 to monitor interactions with black petrels.

In line with Policy 12 (b) of the CSP strategic plan, observer coverage planned for 2007/08 has been increased in order to enhance observations in this fishery where interactions are not well understood. Observer time will be focussed on monitoring and recording interactions with seabirds including captures and behaviour around the vessel.

Observers will record information on which mitigation techniques are employed in this fishery, including the use of tori lines and discard and processing waste retention.

As this fishery is not observed by the Ministry of Fisheries, 100% of the observers' day will be allocated to CSP duties.

Snapper longline

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	100	150	149
2005/06	Not stated	100	100	58
2006/07	0	0	0	0
2007/08	0	0	0	-

(* coverage achieved as at 31 March 2007)

This fishery will not be observed in 2007/08, but may be observed for another two year period from 2008/09 in order to monitor interactions with black petrels and flesh-footed shearwaters.

Set net

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	100	100	0
2005/06	Not stated	100	100	83
2006/07	3	100	165	116*
2007/08	4	100	233	-

(* coverage achieved as at 31 March 2007)

The extent to which commercial set net fishing activities interact with protected species is largely unknown due to very low historic achievement of observer coverage. Despite historic intent to collect observer data, this fishery has been difficult to observe because it encompasses smaller vessels carrying out short trips, less predictable operations and there are practical difficulties notwithstanding the legal requirement to take government fisheries observers. The Pegasus Bay-Canterbury Bight set net fishery (Statistical Areas 020 and 022) was observed during the 1997-1998 fishing year, during which time seven Hector's dolphins were observed caught in set nets, of which one was released alive. This fishery is therefore being monitored in line with Policy 12 (b) of the CSP Strategic Plan which states that the Observer Programme will enhance observations in unobserved fisheries or where interactions are not understood.

Observations aboard commercial set net vessels in the 2005/06 fishing year were undertaken in Southland (FMA 5, Southland) and the Nelson / Marlborough region (FMA 7, Challenger / Central) to monitor interactions with Hector's dolphins and seabirds. During the 2005/06 fishing year, a small number of fur seals and shags were recorded caught. Set net fisheries are currently being observed in the 2006/07 fishing year in Kaikoura (FMA 3, South East Coast), the west coast of the South Island (FMA 7, Challenger / Central) and in Southland (FMA 5,

Southland). As at 31st March, several protected species mortalities had been recorded including one dusky dolphin, one Hector's dolphin and two yellow-eyed penguins, all as separate incidents.

Observations of commercial set net fishing activities will continue in 2007/08 in order to monitor interactions with Hector's dolphins and seabirds between October and April.

Observer coverage in 2007/08 will be spread throughout the following FMAs:

- FMA 3 to monitor interactions with Hector's dolphins and seabirds, particularly in Statistical Areas 018, 022 and 024.
- FMA 5 to monitor interactions with penguins, shearwaters, shags and Hector's dolphins, particularly in Statistical Areas 025 and 030.
- FMA 7 to monitor interactions with Hector's dolphins, particularly in Statistical Areas 034, 035 and 038.
- FMA 2 and FMA 8 to monitor interactions with seabirds in the North Island.

Observer duties will include monitoring protected species interactions and behaviours around set nets as well as documenting mitigation techniques employed while set netting.

As this fishery is not observed by the Ministry of Fisheries, 100% of the observers' days will be allocated to CSP duties.

Purse Seine

Year	CSP Percent Coverage Level	Percent Observer Day	Charged Day	Achieved
2004/05	Not stated	20	6	5
2005/06	Not stated	20	14	15
2006/07	0	0	0	0
2007/08	0	0	0	-

(* coverage achieved as at 31 March 2007)

The tuna purse seine fishery will not be observed in 2007/08.

Outputs

- A summary of observer data will be provided to stakeholders on a 6 monthly basis.
- Specific information can be requested from CSP at any time and will be delivered within a reasonable timeframe (usually within 21 working days).
- All seabirds are returned for identification and autopsy (see project INT 2007/02: Identification of seabirds captured in NZ fisheries).
- Situation Alerts will be circulated to companies with vessels in the vicinity of incidents involving significant mortalities of protected species, including advice regarding mitigation measures. These will be followed up with written Occurrence Reports.

Cost Recovery:

Fish stock: See Table 1.

Project Costing: \$866,600 (Rule 8; see Appendix 1b)

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

Target	Commercial Fishing Days 05/06 ³	CSP Percent Coverage Level	Percent Observer Day ⁴	Charged Day ⁵	Stocks ⁶
Hoki ¹	3986	25	15	149	HOK1
Southern blue whiting ²	281	30	15	13	SBW6A, SBW6R, SBW6I, SBW6B
Hake ²	740	15	15	17	HAK1, HAK7, HAK4
Charter tuna ¹	170	100	15	26	STN1, BIG1, YFN1, SWO1
Domestic tuna and swordfish ^{1,2}	2510	20	15	75	STN1, BIG1, YFN1, SWO1
Deep sea ling ¹	323	30	15	15	LIN2, LIN3, LIN 4, LIN5, LIN6, LIN7
Inshore ling/BNS/HPB ^{1,2}	1257	20	100	251	LIN1, LIN2, LIN7, LIN3, LIN5, LIN7, HPB1, HPB2, HPB3, HPB5, HPB7, HPB8, BNS1, BNS2, BNS3, BNS 7, BNS8
Inshore trawl ²	2578	10	100	258	BAR1, BAR5, BAR7, RSK1, RIB1, PAR1, PAR9, POR1, RCO1, SCH1, SNA1, SNA8, TAR1, JDO1, GUR1, GUR 8, TRE 1, GSP1, BNS1, FLA1, FRO1, FRO2, GUR2, JDO2, LEA1, LEA2, RCO2, SNA2, KIN1, KIN2, KIN8, FRO9, LEA2, LEA3, GSH3, ELE3, FLA3, RSK3, RIB2, RIB3, SCH 3, GUR3, SPE3, RCO2, SPE2, TAR2, TRE2, RCO3, FLA3, TAR3, SPO3, ELE5, SCH5, RIB5, TAR5, GSP5, FRO7, FRO8, FLA7, GSH2, GSH7 GSP7 GUR7, JDO 7, RIB7, RCO7, RSK7, TAR7, SCH7, SCH8, STA7, SPE7, SNA 8

Orange roughy and Oreo ²	2067	40	15	119	ORH1,2A,2B,3A,3B,7B; OEO1,3A,4,6
Scampi ^{1,2}	1872	10	15	30	SCI1, SCI2, SCI3, SCI4A, SCI 6B,SCI 6A
Jack Mackerel ²	890	50	15	57	JMA1, JMA3, JMA7
Setnet ²	5826	4	100	233	BUT2, ELE3, ELE5, ELE7, SCH3, SPD3, SPO2, SPO3, MOK3, SPD5, ELE5, SCH5, BUT7, SCH7, SPO7, MOK1, SCH8, SPO8, SPD7
Total				1243	

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 Commercial Fishing Days for the 2005/06 fishing year to be confirmed.

⁴ 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.

⁵ The number of days to be levied, based on CSP day allocation multiplied by “Percent observer day”

⁶ Stocks days to be attributed to, from consultation with SeaFIC

2.5 Identification of seabirds captured in New Zealand fisheries

Project Code: INT 2007/02

Start Date: 1 October 2007

Completion Date: 30 June 2011

Seabirds recovered during the 2007/08, 2008/09 and 2009/10 fishing years are to be autopsied, with final reports produced annually in June of the following calendar year (e.g. for the fishing year 1 October 2007 to 30 September 2008 the final report will be due in June 2009).

Note: This project is funded in annual terms. Continuation to 30 June 2011 is subject to annual review and Ministerial approval.

Overall Objective

- To determine which seabird species are captured in fisheries and the mode of their capture.

Specific Objectives⁴

1. To determine, through examination of returned seabird specimens, the taxon, sex, and where possible age-class and provenance of seabirds captured in New Zealand fisheries.
2. To detail the injuries, body condition and stomach contents of returned seabirds and, where possible, the likely cause of mortality.
3. To report any changes in the protocol used for the necropsy of seabirds.

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. 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 captures. Government observers on commercial vessels are not always able to identify seabirds at sea with high precision. Further, the assessment of the age-class, sex and provenance of captured individuals requires autopsy in the majority of cases.

Information gained through this project will inform ongoing research and modelling of the effects of fisheries removals for selected populations of high risk seabirds, and links to MFish projects and databases. Further, the mode of capture and associated information about condition of the birds will enable robust analyses to be made of the factors contributing to seabird capture events.

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 areas of risk. Linking this information to the species, age- and sex-class helps identify if different groups of seabirds are vulnerable to different risks in fishing interactions. Information about body condition and breeding status is necessary to examine other factors that can influence the probability of fisheries mortalities for seabirds.

⁴ Specific objectives will be reviewed annually through a Working Group process.

Research approach

Birds returned by government 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 government observers and voluntarily submitted by fishers will be examined to determine the following:

- Species identification and classification;
- Sex and age;
- Subcutaneous fat score as an index of body condition;
- Stomach and gizzard contents;
- Moults 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 data will be reported by species, fishery stratum (method, area and where possible target species). The methodologies used in examining the specimens and categorising them into different groups shall be fully described. Differences in research protocols compared to previous necropsy research on New Zealand seabirds returned from fisheries shall be discussed.

Relevant CSP Strategic Plan policies include: 2, 24.

Outputs

- A summary of seabird autopsy data will be provided to stakeholders on a 6 monthly basis.
- Specific information can be requested from CSP at any time and will be delivered within a reasonable timeframe (usually 21 working days).
- Annual reports and a final 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.

Cost Recovery

Fish stocks: HOK1; SBW6A, SBW6R, SBW6I, SBW6B; HAK1, HAK7, HAK4; JMA1, JMA3, JMA7; SCI1, SCI2, SCI3, SCI4A, SCI 6B, SCI 6A, 12; BAR1, BAR4, BAR5, BAR7, RSK1, RIB1, PAR1, PAR9, POR1, RCO1, SCH1, SNA1, SNA8, TAR1, JDO1, GUR1, GUR 8, TRE 1, GSP1, BNS1, FLA1, FRO1, FRO2, GUR2, JDO2, LEA1, LEA2, RCO2, SNA2, KIN1, KIN2, KIN8, FRO9, LEA2, LEA3, GSH3, ELE3, FLA3, RSK3, RIB2, RIB3, SCH 3, GUR3, SPE3, RCO2, SPE2, TAR2, TRE2, RCO3, FLA3, TAR3, SPO3, ELE5, SCH5, RIB5, TAR5, GSP5, FRO7, FRO8, FLA7, GSH2, GSH7 GSP7 GUR7, JDO 7, RIB7, RCO7, RSK7, TAR7, SCH7, SCH8, STA7, SPE7, SNA 8; STN1, BIG1, YFN1, SWO1; LIN2, LIN3, LIN 4, LIN5, LIN6, LIN7; ORH1, 2A, 2B, 3A, 3B, 7B; OEO1, 3A, 4, 6; SQU1T,6T; SWA3,4; WAR3

- F(CR) Rules: Rule 4 (100% industry)
- Project Costing: \$90,000

Note: At present, costing is based on 500 birds autopsied, with a per bird cost for each additional bird returned. The baseline number of 500 birds will be reviewed annually based on the number of birds returned in the previous year and the cost of the project will be adjusted accordingly.

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

2.6 Identification of protected corals

Project Code: INT 2007/03

Start Date: 1 July 2007

Completion Date: 30 June 2008

Overall Objective

- To identify samples of corals returned through the CSP observer programme.

Specific Objectives

1. Samples of corals⁵ returned by observers to be identified to lower taxa (families, genera, species);
2. Update the observer database as necessary with correct species identifications;
3. Develop concise educational materials to complement *A Guide to Common Deepsea Invertebrates in New Zealand Waters*⁶ for observers on the identification of protected corals known to be caught during trawling.

Rationale

Management approach

Bottom trawling can result in a reduction of benthic habitat complexity, including reductions in biodiversity, the numbers of protected corals and potential food and habitat sources for protected species. Trawling or dredging the benthos can also lead to alterations in marine food web dynamics. The full extent of long-term structural and functional biodiversity damage caused directly by bottom trawls is unknown.

The Conservation Services Programme observer project seeks to identify, monitor and quantify protected species interactions with commercial fisheries. As such, CSP has requested that observers collect specimens of corals as an initial step to monitor and quantify the level of interaction between trawl fisheries and protected corals. Fisheries of particular interest include orange roughy, oreo, hoki, squid and southern blue whiting. At present, we have minimal information on which species are being incidentally caught during trawling. The Observer Programme provides an opportunity to collect and identify deep sea invertebrates, and specifically protected corals, affected by trawling operations.

This preliminary investigation to determine the extent to which protected coral species are caught during trawling provides a foundation for future work on benthic protected species. Costing and future management objectives will be developed in parallel with the completion of this project.

Policy 7 of the CSP Strategic Plan states that black coral (all species in the Order Antipatharia) and red coral (all species) will be considered priority species for research.

This project will also provide the opportunity to develop concise educational materials detailing how to identify protected corals known to be caught during trawling. While *A Guide to Common Deepsea Invertebrates in New Zealand Waters* provides a comprehensive guide to

⁵ The definition of 'red coral' in the Wildlife Act will be clarified in 2007 following the outcomes of the Wildlife Protection Review

⁶ Tracey, D. M.; Anderson, O. F.; Clark, M. R.; Oliver, M.D. (Comps.) A guide to common deepsea invertebrates in New Zealand waters. *New Zealand Aquatic Environment and Biodiversity Report No. 1*. 160 p.

deep sea invertebrates, this project aims to develop several laminated identification sheets to be supplied to observers.

Background information

Observers are requested to complete the following tasks in relation to coral bycatch:

1. Assess each haul for the presence of corals and distinguish live from dead coral.
2. Estimate the volume and weight of coral.
3. Collect specimen(s) of each type of coral brought up in the trawl.
4. Photograph all specimens both collected and discarded.
5. Label and package all specimens.
6. Maintain a log in the prescribed format for the specimens collected.

Observers are requested to return only one sample of coral per species, to avoid unnecessary duplication of work. After one collection is made, the observer continues to record the estimated weight and volume for all other specimens landed.

At present, samples returned from observers are sent to the Museum of New Zealand/Te Papa Tongarewa for species identification and storage. This was an exploratory project set up with Te Papa for a short-term trial period, to explore the feasibility of identifying corals. INT 2007/04 aims to continue this work (covered by Specific Objective 1, above) and expand it to include Specific Objectives 2-3.

Outputs

1. A report describing the invertebrates returned by observers, presented according to target species and gear type.
2. Update the observer database once correct identification of corals is known;
3. Develop concise educational materials to enable observers to better identify protected corals.

Cost Recovery

Project Costing: \$40,000 per year

Note: This project will be undertaken in 2007/08 with Crown funding. The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated.

3. Population studies

3.1 Demographic parameters and at-sea distribution of New Zealand sea lions breeding on the Auckland Islands

Project Code: POP2007/01

Start Date: 1 July 2007

Completion Date: 30 June 2010

Note: This project is funded in annual terms. Continuation beyond June 30 2008 is subject to Ministerial approval

Overall Objective:

- ◆ To inform management of the adverse effects of commercial fishing on the New Zealand sea lion by characterising demographic parameters and at-sea distribution of the population of this sea lion, on the Auckland Islands.

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;
4. To make available 2007/08 field data for relevant modelling work;
5. To characterise at-sea distribution of poorly known age and sex classes of New Zealand sea lions; and,
6. To analyse data collected in (5) in a fisheries context.

Rationale:

Sea lions are incidentally killed each year in commercial trawl fishing operations targeting species including squid, scampi and southern blue whiting. Population data on the New Zealand sea lion have been collected on the Auckland Islands since the mid-1990s, and have included pup counts and resights of marked animals. Such data have been used to generate estimates of fecundity, survival and other components of population dynamics. These data have been used extensively in the management of fisheries interacting with sea lions, including to develop models investigating fisheries management regimes as they relate to sea lion population trajectories (for example, various iterations of the 'Breen and Kim' model, which is to undergo revision starting in 2007). Maintaining up to date and informed fisheries management regimes requires the continued collection of data describing sea lion populations. At-sea distribution of sea lions has also been investigated, although information on juvenile and male distributions at sea is lacking. Such spatial and temporal data on at-sea distributions are key to developing robust fisheries management regimes.

Previous CSP projects on sea lions include: POP2006/01, POP2005/01, POP2004/01, MAM2002/1, MAM2001/1, MAM2000/1. Outputs of these projects include DOC reports, published papers, and unpublished CSP Technical Working Group reports. Note that an extensive list of publications including, but not limited to, the CSP-funded sea lion demographic research can be found at:

<http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/cspstocktake.pdf>

Relevant CSP Strategic Plan¹ Policies include: 1, 2, 5, 14, 19

Outputs:

1. A database containing information collected through this project (i.e. data added to a database containing data collected previously through sea lion population work carried out through the Conservation Services Programme).
2. A technical report (or reports) describing methods used to address objectives, demographic parameters and at-sea distribution of the New Zealand sea lion population on the Auckland Islands. Reports are intended to guide fisheries management (e.g. inform any Population Management Plan and/or the SQU6T Operational Plan) and examine the extent to which fisheries are impacting on the New Zealand sea lion breeding on the Auckland Islands. Technical information will be suitable for incorporation in population models or management plans.

Cost Recovery:

Fish stock: SQU6T

F(CR) Rules: Item 2 (90% industry, 10% Crown)

Project Costing: \$300,000 per year

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.

¹ <http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/csp-approved-strategic-plan-2005-2010.pdf>

3.2 At-sea distribution and population dynamics of black petrels (Procellaria parkinsoni)

Project Code: POP2007/02

Start Date: 1 July 2007

Completion Date: 30 June 2008

Overall Objective:

- To investigate at-sea distribution of black petrels; and,
- To monitor population performance of black petrels on Great Barrier Island.

Specific Objectives:

1. To collect data on at-sea distribution and activities of black petrels;
2. To analyse data collected in (1), in relation to spatial and temporal fishing effort; and,
3. To identify areas where the black petrels are at highest risk of interactions with fishing gear; and,
4. To collect field data to allow estimation of population parameters relevant to population viability; and,
5. To analyse data collected in (4) to determine the population trajectory of black petrels on Great Barrier Island.

Background:

Knowledge of the at-sea range of black petrels is poor, including in areas where overlap with fishing is likely to occur. However, preliminary work on at-sea range was completed in 2005/06, and involved deploying light and GPS loggers on breeding black petrels⁷. Results from this work showed that deploying these devices was feasible for black petrels, and despite the relatively small number of loggers deployed, a significant body of data was obtained⁸. This project will expand tracking efforts to cover a greater proportion of the year and age/sex classes of petrels, with the goal of developing a representative coverage of age/sex classes through the black petrel population. In addition to location loggers, activity loggers may be deployed. Data collected will be linked to spatial and temporal fisheries effort and fisheries management regimes. Because black petrels are thought to occur in ocean areas with historically low observer coverage, remote tracking provides an indirect method by which at-sea distribution information can be obtained for consideration in management.

To maximise the efficiencies of this project with respect to opportunities for data collection, population data will be obtained when field sites are accessed for tracking studies. To ensure representativeness, individuals of known age and stage will be required for tracking studies. Consequently, for minimal extra effort, population data can be attained from previously

⁷ Bell 2006. <http://www.doc.govt.nz/Conservation/Marine-and-Coastal/Fishing/010~Conservation-services-programme/pdf/Black-Petrel-Information-CSP-TWG.pdf>

⁸ Bell et al. 2006. Quantifying the population parameters and distribution of the black petrel (*Procellaria parkinsoni*). Draft CSP report.

established study burrows. Population data will be generated from resights of previously marked individuals, with population parameters analysed and the population trajectory determined by incorporating 2007/08 data into databases built up from the inception of Great Barrier Island studies of black petrels.

Note that previous work on black petrels on Great Barrier Island has been completed under CSP projects including: POP2005/04, POP2004/4, BRD2003/1, BRD2002/5, BRD2001/3. CSP did not undertake work on black petrels in 2006/07.

Outputs

- An understanding of high risk areas for black petrel interactions with fishing gear, which can be applied to fisheries management, and analysis of the black petrel population trajectory on Great Barrier Island. This information would be documented in a report or reports, which will include descriptions of the methodologies used to meet objectives. Data from this project will be linked with appropriate national and international initiatives, e.g BirdLife International's global seabird tracking database.

Costing:

Project Costing: \$60,000 per year

Note: This project will be funded by the Crown in 2007/08. The specific objectives of this project may be tendered for individually, or in any combination, as tender documents will detail when circulated.

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

Project Code: POP2005/02

Start Date: 1 July 2006⁹

Completion Date: 30 June 2010

Overall Objective:

- To provide population and distribution data relevant to managing the effects of commercial fishing on white-capped albatrosses of the Auckland Islands¹⁰.

Specific Objectives:

1. Collect data describing the at-sea distribution of the New Zealand white-capped albatross;
2. Collect field data to allow estimation of white-capped albatross population size, and population parameters relevant to population viability;
3. Analyse data collected in 1 and 2, including estimating population size, population parameters, and distribution of the New Zealand white-capped albatross with reference to spatial and temporal fishing effort.

Background:

The white-capped albatross is categorised as range restricted in New Zealand, with breeding occurring only on the Auckland Islands. The population was estimated at 70,000-80,000 pairs between 1972 - 1994. Despite the limitations on bycatch estimation imposed by the vagaries of fisheries observer coverage, reported incidental mortality of the white-capped albatross has been high in recent years. Autopsy reports confirm that white-capped albatrosses have been caught in fisheries since 1996 (876 returned for necropsy 1996/97-2004/05), with particularly high numbers returned from trawl fisheries (821 birds, 1996/97 – 2004/05, 167 birds in 2004/05).

The current paucity of knowledge of this species precludes an understanding of how to effectively manage its interactions with fisheries. Knowledge gaps include all aspects of population dynamics and breeding biology, distribution at sea including foraging range, and diet¹¹. In 2005/06, CSP commissioned a one year feasibility study of white-capped albatrosses, which included objectives relating to identifying study sites and data collection methods appropriate to this species (see the CSP 2005/06 Annual Plan). This work was undertaken by NIWA. The NIWA team worked at South West Cape on main Auckland Island, because DOC did not support intensive ground-based studies of white-capped albatrosses being conducted on Disappointment Island. Disappointment Island is a very sensitive site which accommodates 96% of the breeding population of white-capped albatrosses. The team confirmed that the white-capped albatross was a species that could be very sensitive to human disturbance, and the location of successful nests on main Auckland Island was influenced by overlap with feral pigs. In this first exploratory field season, the

⁹ This project is a continuation of a project that commenced in 2005/06.

¹⁰ See Conservation Services Programme Strategic Plan 2005-2010, <http://www.doc.govt.nz/Conservation/Marine-and-Coastal/Fishing/010~Conservation-services-programme/pdf/CSP-Approved-Strategic-Plan-2005-2010.pdf>

¹¹ Taylor (2000). Action Plan for Seabird Conservation in New Zealand Part A: Threatened Species,

NIWA team successfully tracked at-sea movements of white-capped albatrosses, banded adults and marked nests, in addition to refining their approach to field work as required due to the sensitivity of the species and its breeding locales. (See the CSP website for preliminary reports presented to the CSP TWG: <http://www.doc.govt.nz/Conservation/Marine-and-Coastal/Fishing/010~Conservation-services-programme/pdf/POP2005-02-draft-annual-report.pdf>).

The NIWA team's experiences during the feasibility study led to recommendations on how to improve the project specification, and subsequent reconsultation on revised objectives. The proposed revised objectives were amended based on submissions received from stakeholders. The objectives now refocus field data collection efforts away from a 'robust design' approach, towards population estimates (e.g. using aerial and ground based counts, including photo counts) and distributional work, with mark-recapture work conducted to the extent possible given the species' sensitivity to disturbances. While detailed methods will be developed in consultation with DOC's Southland Conservancy, Southern Islands office, field work for this study need not be limited to South West Cape.

Relevant CSP Strategic Plan¹ Policies include: 1, 2, 5, 6, 14, 22,

Outputs

- An understanding of white-capped albatrosses population status, trend and distribution that can be applied to guide management of this species in a fisheries context. This information would be documented in annual reports and a final report, which will include descriptions of the methodologies used to meet objectives. Data from this project will be linked with appropriate national and international initiatives, e.g. BirdLife International's global seabird tracking database.

Cost Recovery:

Fish stock: 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% Crown: 50% Industry)

Project Costing: \$175,000 per year for four years.

4. Mitigation

No mitigation projects are included in the Annual Plan for 2007/08. CSP strongly supports the work done by the fishing industry in this area in the past year, in particular recent efforts to investigate options for improving the management of offal and discards in trawl fisheries.

Appendix One: Research Costs and Cost Allocation

A: CSP Proposed 2007/08 Projects

Number	Project	Research	Admin	Total	Industry %	Industry	Crown	Fish stocks to be levied
INT2007/01	Observing commercial fisheries	\$866,600	\$147,322	\$1,013,922	100	\$1,013,922	\$0	Please see individual project descriptions
INT2007/02	Seabird autopsy project	\$90,000	\$15,300	\$105,300	100	\$105,300	\$0	
INT2007/03	Identification of corals	\$40,000	\$6,800	\$46,800	0	\$0	\$46,800	
POP2007/01	Sea lion – Auckland Is	\$300,000	\$51,000	\$351,000	90	\$315,900	\$35,100	
POP2007/02	Black petrels – at sea dist	\$60,000	\$10,200	\$70,200	0	\$0	\$70,200	
POP2005/02	White-capped albatrosses	\$175,000	\$29,750	\$204,750	50	\$102,375	\$102,375	
TOTALS		\$1,531,600	\$260,372	\$1,791,972		\$1,537,497	\$254,475	

Note that Administration includes: salaries for CSP staff, computing, office supplies, services

B: CSP 2007/08 Observer Allocation

Target species	Target Percent Coverage Level	Percent Observer Day	Charged Days	Per day cost	At-sea cost	Fish stocks to be levied
Hoki	25	15	149	\$500	\$74,500	See Table 1.
SBW	30	15	13	\$500	\$6,500	
Hake	15	15	17	\$500	\$8,500	
Charter Tuna	100	15	26	\$500	\$13,000	
Domestic Tuna	20	15	75	\$800	\$60,000	
Deep Sea Ling	30	15	15	\$500	\$7,500	
Inshore Ling/BNS/HPB	20	100	251	\$800	\$200,800	
Inshore Trawl	10	100	258	\$800	\$206,400	
ORH and OEO	40	15	119	\$500	\$59,500	
SCI	10	15	30	\$500	\$15,000	
JMA	50	15	57	\$500	\$28,500	
Setnet	4	100	233	\$800	\$186,400	
Total			1243		\$866,600	

Appendix Two: Summary of policies from the CSP Strategic Plan 2005 – 2010¹

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.

¹ <http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/csp-approved-strategic-plan-2005-2010.pdf>

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.

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 Action₁; 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 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