Conservation Services Annual Plan 2009/2010

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www.doc.govt.nz/mcs

Statement on Conservation Services

The Department of Conservation's interests and responsibilities in the marine environment include Conservation Services, which are defined in the Fisheries Act 1996, 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."

In accordance with this definition, the Conservation Services to be delivered by the Department in 2009/10 are described in the following pages. I am satisfied that they are "Conservation Services" as defined in the Fisheries Act 1996.

I am very pleased to be involved in working with the commercial fishing industry on Conservation Services. The industry is a vital component of New Zealand's economy, and highly dynamic. Continuing to make good progress on addressing any negative environmental impacts of commercial fishing is critical for New Zealand, both for the inherent value of biodiversity protection, and to allow us to take our place as an environmentally responsible nation. The ongoing collaboration and commitment of industry leaders and advocates is welcomed in this endeavour.

I look forward to following the progress of the industry in implementing commercial fisheries management measures that reduce human impacts on marine protected species.

Tim Groser
Minister of Conservation

Director-General's Introduction

The Management of the marine environment poses many challenges, amongst which is gaining information to enable managers and users to make wise decisions. The Department's delivery of Conservation Services is a key point of interaction with commercial fisheries, one of the major users of our marine environment and resources.

I am pleased that the strong relationships and robust problem-solving approach between the deepwater trawl fisheries and the government is continuing. I also welcome new initiatives that have been embarked upon in the last year, such as those by inshore trawl operators working with the government to more collaboratively manage, and reduce, protected species bycatch. This presents new challenges and there will be issues to overcome. This 2009/10 Plan will see increasing involvement in the inshore longline fishery.

The work described in this Conservation Services Annual Plan (2009/10) will directly contribute to the development of better fisheries management regimes.

Fisheries management is a challenging environment in which divergent goals are being reconciled. Through working with other government agencies and the commercial fishing industry, I look forward to seeing continued progress in reducing the impacts of fishing on marine protected species.

Al Morrison
Director-General of Conservation

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1. Overview of the 2009/2010 Conservation Services Annual Plan

1.1. Introduction

The 2009/2010 Conservation Services Annual Plan (Annual Plan) identifies the conservation services that will be subject to cost recovery 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 this draft Annual 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).

This Strategic Plan also describes the Programme's policy framework 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.

Note that research into effects can include:
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 relevant to the draft Conservation Services Annual Plan 2009/10 are described in the Conservation Services Strategic Plan 2005-2010 (see www link above).

1.2. Format

The format used to specify the conservation services in this draft Annual Plan 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. Projects consulted on in previous years, for multiple year terms, are included for completeness and clarification of costs.

1.3 Consultation processes

The following process and documents contributed to the development of the Conservation Services Programme Annual Plan 2009/10:

2 September 2008	Combined Meeting of Conservation Services Programme Technical Working Group/MFish Aquatic Environment Research Planning Group/National Plan of Action for Seabirds Technical Working Group to consider proposed research projects for 2009/10
5 December 2008	Draft 2009/2010 Conservation Services Annual Plan circulated to stakeholders
6 February 2009	Submissions close on draft 2009/2010 Conservation Services Annual Plan
13 February 2009	All submissions received made available to stakeholders
18 March 2009	Meeting with SeaFIC and Te Ohu Kai Moana to discuss submissions (No other stakeholders requested meetings)
17 April 2009	Revised Draft 2009/2010 Conservation Services Annual Plan forwarded to SeaFIC for finalisation of allocation of project costs to fisheries
By 15 May 2009	Director General conveys Annual Plan to Minister of Conservation for consideration and agreement

1.4 Administration costs

Administration costs are always a contentious matter relating to the work of the Conservation Services Annual Plan. Administration requirements of each project differ, as does the time required to address these. Currently, administration charges are distributed in a pro-rated fashion across projects, in accordance with the cost of the project. This approach is broadly appropriate, for example, in that the most costly project (INT2009/01 Observing commercial fisheries) incurs the majority of administration expenses. For this project, administration includes observer training programmes and training materials, the development and implementation of data collection protocols and forms, data management, briefing and debriefing, liaison at sea and with other agencies when necessary, and reporting. For other projects, the administration burden may be significantly less. For example, for INT2009/02, administration requires only desktop tasks, including photo data management, liaison with experts and compilation of seabird identifications, assigning fishing events to capture events, etc. Administration also includes charges for the use of Departmental facilities and services.

Always striving to maximise efficiencies, the Conservation Services Programme has reduced administration costs by $15,000 between 2008/09 and 2009/10. We also welcome stakeholder views on different ways to attribute administration costs across projects.

2. Fisheries Interactions Projects

2.1 Observing commercial fisheries

Project Code: INT 2009/01

Start Date: 1 July 2009

Completion Date: 30 June 2010

Overall Objective:

To understand the nature and extent of protected species interactions with New Zealand commercial fishing activities.

Specific Objectives:

1. To identify, describe and, where possible, quantify[1] protected species interactions with commercial fisheries;
2. To identify, describe and, where possible, quantify[1] measures for mitigating protected species interactions;
3. To collect other relevant information on protected species interactions that will assist in assessing, developing and improving mitigation measures.

Term of project:
Ongoing (reviewed annually)

Rationale

The management approach

Understanding the nature and extent of interactions between commercial fisheries and protected species can allow identification of where 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.

The Conservation Services Programme will continue to purchase baseline services from Ministry of Fisheries Observer Services given the scale of that operation, which allows observers to be placed strategically across New Zealand fisheries at a lower cost.

Research Approach

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;

[1] Observers collect data according to defined protocols. General observations are also reported for each trip.

- Fishing effort;
- 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, on at least a daily basis, the numbers and behaviour of marine mammal and seabird species seen around the fishing vessel; and
- Carrying out other tasks (e.g. making observations on discard and offal discharge) as required.

Information collected includes:

- Environmental conditions (e.g. sea state);
- Fishing methods (including a description of gear employed) and operations;
- Fish 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. Consequently, the data collected can be challenging to interpret and extrapolate to estimate 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 analysis and the extrapolation of interactions may also be biased by the opportunistic allocation of observers to vessels, as it is not always possible to place observers on vessels randomly. Nevertheless, the use of fisheries observers is currently considered to be the most reliable and flexible means of acquiring data on protected species interactions.

Regardless of whether a vessel is carrying an observer, all protected species interactions must be reported by the permit holder on a Protected Species / Non-fish Catch Return form.

Application of observer coverage by fishery in 2009/10:

When CSP and the Ministry of Fisheries observer days are shared, CSP time is typically costed at 15-20% of the total days, which reflects the time that observers are likely to spend on protected species tasks. In recent years CSP has paid for 100% of days in inshore fisheries (bottom longline, setnet and trawl). In 2008/09 the Ministry began contributing to a portion of days in these fisheries to gather catch effort information, as well as initiating the Hector's dolphin monitoring project in January and February 2009.

In offshore fisheries, observer coverage is planned to provide sufficient data for further analyses, including estimation of protected species interactions across total fishing effort in those fisheries (e.g. squid). In inshore fisheries, adequate levels of observer coverage are not currently achievable due to multiple constraints on observer placement. In 2009/10, the Ministry and the Department will be working on a joint initiative to better deliver observer days in fisheries where little is known about interactions with protected species (e.g. inshore trawl, setnet and inshore bottom longline).

In order to set observer days for the period 1 July 2009 – 30 June 2010, effort data from 1 July 2007 – 30 June 2008 is examined, as this is the most recent period for which data are available. Planned observer days by fishery are outlined in Table 1.

All time periods are based on 1 July - 30 June in line with the period that observer coverage runs (i.e. not the fishing year).

Protected species bycatch data is available online in the following reports:

Rowe 2008. Conservation Services Programme Observer Report for the period 1 July 2004 until 30 June 2007 (draft) http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/csp-observer-report-04-07.pdf

Rowe 2009. Conservation Services Programme Observer Report for the period 1 July 2007 until 30 June 2008 (draft) http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/twg/csp-16-mar-0708-draft-observer-report.pdf

Fisheries Management Areas are referred to as follows:

FMA 1 (AKE)	East North Island from North Cape to Bay of Plenty
FMA 2 (CEE)	East North Island from south of Bay of Plenty to Wellington
FMA 3 (SEC)	East Coast South Island from Pegasus Bay to Catlins
FMA 4 (SOE)	Chatham Rise
FMA 5 (SOU)	South Island from Foveaux Strait to Fiordland
FMA 6 (SUB)	Subantarctic including Bounty Island and Pukaki Rise
FMA 6A (SOI)	Southern offshore islands – Auckland and Campbell Islands
FMA 7 (CHA)	West Coast South Island to Fiordland including Kaikoura
FMA 8 (CEW)	West North Island from South Taranaki Bight to Wellington
FMA 9 (AKW)	West North Island from North Cape to North Taranaki Bight
FMA 10 (KER)	Kermadec

Table 1. Summary of observer days planned for 2009/10

Method / Fishery	Target	Fisheries Management Area	% coverage planned	2009/10 charged observer days
Inshore fisheries	Setnet	FMA 9 (AKW), FMA 3 (SEC), FMA 5 (SOU)	n/a	**200**
	Inshore trawl	FMA 1 (AKE), FMA 9 (AKW), FMA 7 (CHA), FMA 3 (SEC)	n/a	**300**
	Inshore bottom longline	FMA 1 (AKE), FMA 3 (SEC), FMA 4 (SOE),	n/a	**250**
Longline fisheries	Surface longline - domestic	FMA 1 (AKE), FMA 2 (CEE), FMA 7 (CHA), FMA 10 (KER)	25%	**44**
	Surface longline - charter	FMA 2 (CEE), FMA 7 (CHA), FMA 10 (KER), FMA 5 (SOU)	100%	**37**
	Bottom longline - deep sea ling	FMA 4 (SOE), FMA 5 (SOU)	40%	**17**
Pelagic trawl	JMA, EMA, BAR	FMA 9 (AKW), FMA 7 (CHA), FMA 8 (CEW), FMA 3 (SEC)	25%	**111**
Middle depth trawl	HAK, HOK, LIN, SWA	FMA 2 (CEE), FMA 7 (CHA), FMA 3 (SEC), FMA 4 (SOE), FMA 5 (SOU), FMA 6 (SUB)	20%	**219**
	SCI	FMA 1 (AKE), FMA 4 (SOE), FMA 6 (SUB)	15%	**48**
	SBW	FMA 6A (SOI)	40%	**16**
	SQU	FMA 3 (SEC), FMA 6 (SUB), FMA 5 (SOU)	40%	**135**
Deep water trawl	ORH, OEO	FMA 4 (SOE), FMA 6 (SUB)	50%	**83**
	ORH, OEO	FMA 1 (AKE), FMA 9 (AKW), FMA 2 (CEE), FMA 3 (SEC), FMA 5 (SOU)	30%	**32**
				1492

MIDDLE DEPTH TRAWL FISHERIES

Hoki, hake, ling, silver warehou middle depth trawl

Historically, observer coverage of middle depth trawl fisheries has been split between hoki and hake (see Tables 2 & 3), even though vessels operating in these fisheries often change target species within a trip, including pelagic stocks such as baraccouta. For protected species interactions, the method, location and timing of fishing are all of high importance, with the mix of target species being of lesser importance. As such, observer coverage in 2009/10 will be focussed on middle depth trawl fisheries targeting hoki, hake, ling or silver warehou. While additional stocks are also targeted hoki, hake, ling or silver warehou have the greatest targeted effort and higher numbers of protected species interactions relative to other target species.

Coverage in these middle depth trawl fisheries can be split into the 'hoki season' and 'out of season' hoki periods, which operate during different months and fisheries areas. The 'hoki season' is focused on the west coast of the South Island (FMA 7 (CHA)) and the Cook Strait (FMA 2 (CEE), FMA 7 (CHA)), where both hoki and hake are predominantly targeted from June to September. During the 'out of season' hoki period from September until June, hoki, hake and silver warehou are targeted, mostly in FMA 4 (SOE) and FMA 6 (SUB), with some coverage in FMA 3 (SEC) and FMA 5 (SOU).

In line with Policy 12 (a) of the CSP strategic plan, observer coverage will be maintained in order to provide a baseline level of observations in this fishery where interactions are thought to be generally understood. Although, increased coverage in the Cook Strait hoki fishery is desirable. 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. Protected coral landings will be recorded and sub-samples taken for identification.

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 (legally required for larger vessels).

Table 2. Observer coverage in hoki trawl fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	115	115
2005/06	15	214	201
2006/07	25	177	149
2007/08	25	149	151
2008/09	Coverage combined with hake and silver warehou*		

Table 3. Observer coverage in hake trawl fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	0	0
2005/06	15	86	86
2006/07	15	76	34
2007/08	15	17	17
2008/09	Coverage combined with hoki and silver warehou*		

*Observer coverage in 2008/09 was planned across middle depth trawl fisheries targeting predominantly hake, hoki and silver warehou. For those stocks, 216 observer days were planned, representing around 20 – 25 % of fishing effort to be observed.

Observer coverage for 2009/10

Between 15% and 25% observer coverage has been planned historically for the hake and hoki fisheries, respectively. As observer coverage is now planned across a number of middle depth finfish stocks, coverage levels are maintained at 20% to provide consistent coverage levels . Observer coverage from July to September will be focused in FMA 2 (CEE), FMA 3 (SEC) and FMA 7 (CHA) (Table 4). Observer coverage for the period October to May will be spread across FMA 3 (SEC), FMA 4 (SOE), FMA 5 (SOU) and FMA 6 (SUB).

Table 4: Observer coverage planned for middle depth trawl (HAK, HOK, LIN, SWA) in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 2 (CEE), FMA 7 (CHA), FMA 3 (SEC)	20%	**219**

Observed protected species interactions

Protected species interactions for the 2007/08 observer year are shown in Table 5 (from Rowe 2009). Fewer fur seals were reported captured in middle depth trawl fisheries (HAK, HOK, LIN, SWA) during the 2007/08 observer year compared to the last three observer years (Rowe 2008). A greater number of seabirds were reported killed compared to the previous observer year, but numbers were lower than reported in the 2004/05 and 2005/06 observer years.

Table 5: Protected species captures in middle depth trawl fisheries (HAK, HOK, LIN, SWA) during the 2007/08 observer year

Species	Dead	Alive	Total
Black-browed albatross (unidentified)	1		1
Buller's albatross	8	2	10
Cape petrel	1	4	5
Fairy prion	1		1
Fur seals	42	11	53
Giant petrel (unidentified)	3		3
Grey petrel	1		1
Petrel (unidentified)	1	2	3
Prion (unidentified)		3	3
Salvin's albatross		1	1
Seabird small		1	1
Shy albatross	3		3
Sooty shearwater	7	1	8
Storm petrel		1	1
White-capped albatross	1	3	4
White-chinned petrel	12	1	13
Total	81	30	111

Southern Blue Whiting

The southern blue whiting fishery operates in FMA 6 (SUB) (mostly within FMA 6A (SOI)) during August, September and October. Over the past three observer years, observer coverage has been planned to cover 30% of fishing effort (see Table 6).

Fur seals and sea lions have been recorded incidentally caught in this fishery. Seabird interactions tend to be lower than other trawl fisheries. Coral has been landed in this fishery. Observer coverage is undertaken in August and September in FMA 6 (SUB), predominantly in FMA 6A (SOI), to monitor interactions with pinnipeds and seabirds.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage levels are maintained to monitor interactions in this fishery, which are thought to be generally understood. Observer time will be focussed on monitoring and recording interactions with pinnipeds and seabirds. 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. The landing of protected coral will also be recorded and sub-samples will be taken for identification.

Observers are tasked with recording information on which mitigation techniques are employed on vessels to better understand interactions between fishing gear and captures of protected species. Mitigation techniques employed in this fishery include offal and discard management and the use of bird scaring devices.

Table 6. Observer coverage in the southern blue whiting fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	70	62
2005/06	30	16	16
2006/07	30	9	9
2007/08	30	13	13
2008/09	30	13	underway

Observer coverage for 2009/10

Observer coverage for 2009/10 will be focused in FMA 6 (SUB) (FMA 6A (SOI)) and will aim to cover 40% of fishing effort (Table 7). The target coverage level has been increased to monitor NZ sea lion interactions.

Table 7: Observer coverage planned for the southern blue whiting fishery in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 6 (SUB)	40%	**16**

Observed protected species interactions

Most observed protected species captures in this fishery were pinnipeds (Table 8). The number of NZ sea lions caught was higher than in previous years, while the number of fur seals caught was reduced. The number of seabirds caught has changed little over the last four years, with two captures in 2004/05, three in 2005/06, four in 2006/07 (see Rowe 2008) and four in the 2007/08 observer year.

Table 8: Protected species captures in the southern blue whiting fishery during the 2007/08 observer year

Species	Dead	Alive	Total
Black-browed albatross (unidentified)	1		1
Fur seal	17		17
Grey petrel	2		2
NZ sea lion	6		6
Seabird large		1	1
Total	26	1	27

Scampi

CSP observer coverage in the scampi fishery has mostly been in FMA 4 (SOE) from July to December and FMA 6A (SOI) from January to April, with lesser coverage in FMA 1 (AKE) and FMA 2 (CEE). Observations are undertaken to monitor interactions with seabirds and NZ sea lions. 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.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage levels are maintained to monitor interactions in this fishery (Table 9), which are thought to be generally understood. The priority for observers will be to monitor interactions with New Zealand sea lions. The landing of protected coral will also be recorded and sub-samples will be taken for identification.

Data is also collected on seabird interactions and behaviour around vessels. Observers record information on which mitigation techniques are employed in this fishery, including discard retention and the use of bird scaring devices.

Table 9. Observer coverage in the scampi fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	100*	87
2005/06	10	147*	141
2006/07	15	150*	136
2007/08	10	30	32
2008/09	15	30	underway

* 100% of observer days were paid for by DOC

Observer coverage for 2009/10

Observer coverage in 2009/10 (see Table 10) will be focused in FMA 1 (AKE) and FMA 6A (SOI) with additional coverage in FMA 4 (SOE) if possible. Coverage will mostly be from November to December and March to June. The target coverage level is similar to previous years.

Table 10: Observer coverage planned for the scampi fishery in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 1 (AKE), FMA 4 (SOE), FMA 6A (SOI)	15%	**48**

Observed protected species interactions

Protected species interactions aboard observed vessels targeting scampi during the 2007/08 observer year are shown in Table 11. Eighteen of the 24 observed seabird interactions were not related to interactions with the fishing gear. Thirteen sooty shearwaters were disorientated by deck lights and flew into the vessel. In FMA 1 (AKE), further three sooty shearwaters were recovered from a trawl net entangled in fishing line, so had already been caught and discarded by another vessel, possibly recreational. As such, only six seabird fatalities were the

result of fishing, being two net captures and four warp captures. The one fur seal caught was released alive.

Table 11: Protected species captures in the scampi trawl fisheries during the 2007/08 observer year.

Species	Dead	Alive	Total
Buller's albatross		1	1
Common diving petrel		1	1
Fur seal		1	1
Salvin's albatross	4		4
Sooty shearwater	5	13	18
Total	9	16	25

Squid

Protected species monitoring in the squid fishery has been managed by the Ministry of Fisheries from 2005/06 until 2007/08 (see Table 12). From 2008/09, CSP has contributed to a portion of days planned for the squid fishery to monitor interactions with protected species and measures to reduce those interactions. Current areas of CSP interest in this fishery include the efficacy of mitigation measures, targeted research on offal and discard management, and captures of seabirds in trawl nets. In addition, sub-samples of any protected corals landed will be retained for identification.

Table 12. Observer coverage in the squid fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	120	120
2005/06 - 2007/08	Delivered by Ministry of Fisheries		
2008/09	30	135	underway

Observer coverage for 2009/10

Observer placement in 2009/10 (see Table 13) will be focussed in the Squid 1T and 6T fisheries to monitor interactions with NZ sea lions and seabirds from December to May. Coverage will also be sought on the Stewart-Snares shelf and in FMA 3 (SEC) off Banks Peninsula. Additional protected species observer days will be delivered for the Ministry of Fisheries. Despite recent reductions in albatross interactions in recent years, observer coverage is maintained at a similar level to previous year to collect data on net captures, which are poorly understood, and offal management practices.

Table 13: Observer coverage planned for the squid fishery in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 3 (SEC), FMA 6A (SOI), FMA 5 (SOU)	35%	**135**

Observed protected species interactions

Protected species interactions aboard observed vessels targeting squid during the 2007/08 observer year are shown in Table 14.

Over 100 protected species were incidentally killed on observed squid vessels during the 2007/08 observer year (Table 14). The observed number of seabirds caught was higher than during the previous observer year, with lower numbers of white-capped albatrosses caught but higher numbers of sooty shearwaters and white-chinned petrels caught. Observed marine mammal captures were lower than in previous years. The first white point shark capture since the species became protected under the Wildlife Act 1953 was reported in this fishery during the 2007/08 observer year. Nine animals were recovered from squid trawls in a state of decomposition.

Table 14: Protected species interactions in the squid trawl fisheries during the 2007/08 observer year.

Species	Dead	Alive	Decomposing	Total
Albatross (unidentified)	4	5		9
Buller's albatross	3			3
Fairy prion		1		1
Fur seal	6	1	1	8
Grey-back storm petrel		1		1
NZ sea lion	5			5
Petrel (unidentified)	27	8		35
Salvin's albatross	1			1
Small seabird		1		1
Sooty shearwater	48	12		60
Southern royal albatross	1			1
Storm petrels		1		1
Wandering albatross	1			1
White pointer shark	1			1
White-capped albatross	29	6	5	40
White-chinned petrel	20	9	3	32
Total	146	45	9	200

PELAGIC TRAWL FISHERIES

Jack Mackerel, Barracouta and Blue (English) Mackerel

Historically, CSP observer coverage in the Jack Mackerel fishery (see Table 15) has been in FMA 3 (SEC), FMA 7 (CHA), FMA 8 (CEW) and FMA 9 (AKW), with the majority of coverage in FMA 7 (CHA) and FMA 8 (CEW) to monitor interactions with common dolphins. In order to better reflect the suite of target species caught by the method of pelagic trawl, coverage will include barracouta and other mackerel species.

High numbers of common dolphins have been recorded caught in the Jack Mackerel fishery including the capture of 17 dolphins by three vessels off west Auckland in November 2004 and 22 dolphins were reported caught across four vessels (three observed) in December 2007. Dusky dolphins, fur seals and seabirds have also been recorded caught in pelagic trawl fisheries. The majority of observer coverage is from October to December with some coverage from April to July. 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, not shooting nets when dolphins are sighted, and avoiding targeting small mackerel, which appear to be the dolphins' target prey.

Table 15. Observer coverage in the pelagic trawl fisheries (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	30	34
2005/06	50	138	138
2006/07	50	57	55
2007/08	50	57	60
2008/09	25	82	underway*

*Coverage in 2008/09 is focussed on multiple pelagic trawl stocks including jack mackerel, barracouta and other mackerel species.

Observer coverage for 2009/10

During the 2009/10 observer year, 111 observer days are planned for pelagic trawl fisheries (Table 16), mostly from October to December and April to June. Target coverage is maintained at a level consistent with previous years.

Table 16: Observer coverage planned for pelagic trawl fisheries in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 9 (AKW), FMA 7 (CHA), FMA 8 (CEW), FMA 3 (SEC)	25%	**111**

Observed protected species interactions

Fewer protected species interactions were reported compared to previous years (see Rowe 2008). A total of 20 common dolphins were observed caught in the jack mackerel fishery in 2007/08 and two additional captures were reported from unobserved vessels (Table 17). All

mammal captures were observed when targeting jack mackerel and seabird captures were reported when targeting both jack mackerel and barracouta.

Table 17: Protected species interactions in pelagic trawl fisheries during the 2007/08 observer year

Species	Dead	Alive	Total
Common dolphin	20		20
Fur seal	2		2
Buller's albatross	1		1
Common diving petrel		2	2
Petrel (unidentified)	3		3
Prion (unidentified)		2	2
Shy albatross	1		1
White-chinned petrel	1		1
White-faced storm petrel		3	3
Total	28	7	35

DEEP WATER TRAWL FISHERIES

Orange Roughy and Oreo

The majority of CSP coverage (see Table 18) has been in FMA 4 (SOE) (December to June) and FMA 6 (SUB) (October to December and February to May) with lesser coverage in FMA 1 (AKE), FMA 3 (SEC), FMA 5 (SOU) and FMA 9 (AKW) from May to July. Seabird and marine mammal interactions and behaviour around vessels are monitored in this fishery. An additional focus of observer coverage in this fishery is to monitor impacts of deepwater trawling on protected corals, particularly in FMA 4 (SOE).

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 monitoring and recording interactions and behaviours of seabirds as well as assessing the extent of protected coral landed on vessels. Sub-samples of corals will be taken for identification. 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.

Table 18. Observer coverage in orange roughy and oreo fisheries (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	0	0	0
2005/06	25 ORH	32	53
	30 OEO	22	13
2006/07	30	193	157
2007/08	40	119	107
2008/09	30-50	112	underway

Observer coverage for 2009/10

Higher levels of observer coverage are planned for FMA 4 (SOE) and FMA 6 (SUB) (Table 19) compared to other Fisheries Management Areas. In total, 115 observer days are planned for deepwater trawl fisheries.

Table 19: Observer coverage planned for deepwater trawl fisheries in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 4 (SOE), FMA 6 (SUB)	50%	**83**
FMA 1 (AKE), FMA 9 (AKW), FMA 2 (CEE), FMA 3 (SEC), FMA 5 (SOU)	30%	**32**

Observed protected species interactions
Relatively low interactions with protected species were reported in deep water trawl fisheries (Table 20) given 30% observer coverage achieved. A spotted black grouper was landed in SOE in July 2007.

Table 20. Protected species captures in deep water bottom fisheries during the 2007/08 observer year

Species	Dead	Alive	Decomposing	Total
Albatross (unidentified)		1		1
Fur seal	4			4
Giant petrel (unidentified)	1	1		2
Grey petrel		1		1
Petrel (unidentified)		1		1
Salvin's albatross	1	3		4
Spotted black grouper	1			1
Storm petrel		2		2
Wandering albatross	1			1
Whale (Unidentified)			1	1
Total	8	9	1	18

INSHORE FISHERIES

The Department and the Ministry of Fisheries are currently developing a programme for delivering greater inshore coverage. Ministry of Fisheries Aquatic Environment days will be delivered concurrently with CSP days to maximise observer coverage in inshore fisheries. For further information on Ministry of Fisheries observer days in inshore fisheries see "OBS2008/01 Research Observer Services to estimate the nature and extent of incidental captures of protected species in New Zealand fisheries".

Inshore trawl

The extent to which inshore trawl vessels interact with protected species is extremely poorly known 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 (Table 21) began in the 2006/07 fishing year with coverage undertaken in FMA 1 (AKE) to monitor seabird interactions, FMA 7 (CHA) to monitor Hector's dolphin and seabird interactions and in FMA 8 (CEW) and FMA 9 (AKW) to monitor Maui's dolphin interactions. A total of nine vessels were observed during the 2006/07 observer year, during which 106 observer days were achieved. Captures included the incidental mortality of six white-capped albatrosses, one unidentified albatross, one black petrel and one flesh-footed shearwater.

During the 2007/08 observer year 250 days were planned across the following areas: FMA 1 (AKE) to monitor interactions with seabirds, FMA 3 (SEC) to monitor interactions with Hector's dolphins and seabirds, FMA 5 (SOU) to monitor interactions with penguins, shearwaters, shags and Hector's dolphins, FMA 7 (CHA) to monitor interactions with Hector's dolphins and FMA 1 (AKE) to monitor potential interactions with Maui's dolphins. Only 81 days were achieved across ten vessels: two vessels operating in FMA 9 (AKW), two operating in FMA 7 (CHA), one operating in FMA 7 (CHA) and FMA 8 (CEW) and five operating in FMA 3 (SEC). Three Salvin's albatross, one white-capped albatross and one unidentified albatross were incidentally killed in FMA 3 (SEC) and one Westland petrel deck strike was also reported from that area. One white capped albatross and one cape petrel were incidentally killed in FMA 7 (CHA) and deck strikes of eight Westland petrels and seven sooty shearwaters were also reported. The vessel operating in FMA 7 (CHA) and FMA 8 (CEW) incidentally killed one cape petrel and five sooty shearwaters were reported as deck strikes. No captures were reported from FMA 9 (AKW).

In the 2008/09 observer year, 250 observer days are planned for FMA 1 (AKE), FMA 3 (SEC), FMA 5 (SOU), FMA 7 (CHA) and FMA 9 (AKW) to monitor seabird and dolphin interactions.

Observer coverage is aimed at describing the fishing methods employed and identifying whether any protected species interactions are occurring and, if so, how those interactions might be mitigated. In recent years, the seabird captures reported from inshore trawl fisheries have been the result of both warp strikes and net captures. Monitoring priorities include collecting data on protected species interactions and behaviours and the mitigation and offal management techniques employed aboard inshore trawl vessels. CSP will also be investigating the feasibility of introducing electronic monitoring as an alternative to human observers.

Table 21. Observer coverage in inshore trawl fisheries (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	0	0
2005/06	0	0	0
2006/07	10	250	106
2007/08	10	258	81
2008/09	n/a	250	underway*

*subject to overlap with Hector's dolphin Threat Management Plan monitoring requirements.

Observer coverage for 2009/10

Coverage levels for 2009/10 are set at 300 days (Table 22). Additional days will be delivered for the Ministry of Fisheries (see "OBS2008/01 Research Observer Services to estimate the nature and extent of incidental captures of protected species in New Zealand fisheries"). The delivery of CSP and MFish days will be concurrent to enhance delivery of observer days in inshore trawl fisheries. While 300 inshore trawl days will not provide sufficient data for estimating total incidental catch of protected species nationwide by this method, greater knowledge will be gained about how these fisheries interact with protected species.

Table 22: Observer coverage planned for inshore trawl fisheries in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 1 (AKE), FMA 9 (AKW), FMA 7 (CHA), FMA 3 (SEC)	n/a	**300**

Over 18,000 fishing days are undertaken in the FMAs of interest with the highest effort reported in FMA 7 (CHA) and FMA 3 (SEC) (Table 23). Additional days will be delivered for the Ministry of Fisheries (see "OBS2008/01 Research Observer Services to estimate the nature and extent of incidental captures of protected species in New Zealand fisheries"). The delivery of CSP and MFish days will be concurrent to enhance delivery of observer days in inshore bottom longline fisheries. Coverage will be focussed in FMA 1 (AKE) to monitor for petrel interactions and in FMA 7 (CHA) and FMA 3 (SEC) to monitor for albatross warp strikes.

Table 23: Number of inshore trawl fishing days in selected Fisheries Management Areas throughout the 2007-2008 observer year.

Date	FMA 1 (AKE)	FMA 9 (AKW)	FMA 7 (CHA)	FMA 3 (SEC)	Total
Jul-07	265	107	603	337	1312
Aug-07	385	82	399	254	1120
Sep-07	401	94	455	316	1266
Oct-07	347	112	388	369	1216
Nov-07	400	158	876	600	2034
Dec-07	337	108	531	375	1351
Jan-08	395	208	422	597	1622
Feb-08	444	163	296	572	1475
Mar-08	421	188	513	644	1766
Apr-08	382	126	512	674	1694
May-08	377	195	718	626	1916
Jun-08	368	177	450	501	1496
Total	4522	1718	6163	5865	18268

The number of vessels operating in each FMA from 1 July 2007 to 30 June 2008 is shown in Table 24, along with the average number of fishing days per vessel undertaken during the 2007/08 observer year.

Table 24. The number of inshore trawl fishing vessels operating in four FMAs and the average number of fishing days undertaken per vessel during the 2007/08 observer year.

FMA	No. Vessels	Mean no. of fishing days
FMA 1 (AKE)	44	210
FMA 9 (AKW)	21	172
FMA 7 (CHA)	73	171
FMA 3 (SEC)	86	138

Observed protected species interactions

Protected species interactions observed on inshore trawl vessels during the 2007/08 observer year are detailed in Table 25. All mortalities were warp strikes and all live interactions were non-fishing interactions.

Table 25. Protected species interactions in inshore trawl fisheries during the 2007/08 observer year

Species	Dead	Alive	Total
Albatross (unidentified)	1		1
Cape petrel	1	1	2
Salvin's albatross	4		4
Sooty shearwater		12	12
White-capped albatross	2		2
Westland petrel		1	1
Total	8	14	24

Inshore bottom longline (ling, blue nose, hapuku & bass, snapper)

Historically, CSP observer coverage in the inshore LIN, BNS, HPB fisheries (Table 26) has been focussed in FMA 1 (AKE), FMA 2 (CEE), FMA 4 (SOE) and FMA 5 (SOU). Observations in the snapper fishery (Table 27) were undertaken in FMA 1 (AKE) to monitor interactions with seabirds, particularly black petrels. From the 2008/09 observer year, inshore longline observations encompass multiple stocks in order to enhance coverage levels through enabling greater flexibility in observer placement.

In line with Policy 12 (b) of the CSP strategic plan, observer coverage of inshore longline fisheries will be maintained as interactions are not well understood. Observer time has been focussed on monitoring and recording interactions with seabirds including captures and behaviour around the vessel. Of particular interest will be increased observer effort in FMA 1 (AKE) and FMA 4 (SOE) to monitor interactions with seabirds, particularly following the large seabird bycatch event in FMA 4 (SOE) in September 2007.

Monitoring priorities for 2009/10 will include collecting data on protected species interactions and behaviours and the mitigation and offal management techniques employed.

Table 26. Observer coverage in inshore bottom longline fisheries targeting ling, blue nose, hapuku or bass (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	200	13
2005/06	Not stated	50	33
2006/07	15	151	68
2007/08	20	251	184
2008/09	Combined with snapper BLL*		

Table 27. Observer coverage in inshore bottom longline fisheries targeting snapper (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	150	149
2005/06	Not stated	100	58
2006/07	0	0	-
2007/08	0	0	-
2008/09	Combined with ling, bluenose, hapuku and bass BLL		

* In 2008/09, 250 inshore bottom longline days were planned for inshore bottom longline vessels less than 46 m in length targeting multiple stocks including snapper, ling, blue nose, hapuku and bass.

Observer coverage for 2009/10

Coverage levels for 2009/10 are set at 250 days (Table 28). Additional days will be delivered for the Ministry of Fisheries (see "OBS2008/01 Research Observer Services to estimate the nature and extent of incidental captures of protected species in New Zealand fisheries"). The delivery of CSP and MFish days will be concurrent to enhance delivery of observer days in inshore bottom longline fisheries.

Inshore bottom longline coverage in 2009/10 will be focussed mostly in FMA 1 (AKE) and FMA 4 (SOE) with additional coverage in FMA 3 (SEC) where possible.

Table 28: Observer coverage planned for inshore bottom longline fisheries in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 1 (AKE), FMA 3 (SEC), FMA 4 (SOE)	n/a	**250**

During 2007/08, over 3000 fishing days were undertaken on inshore bottom longline vessels targeting stocks (excluding snapper) in the three FMAs where observer coverage will be undertaken in 2009/10 (Table 29). Over 95% of fishing days aboard bottom longline vessels targeting snapper were in FMA 1 (AKE), where coverage will be in 2009/10 (Table 30).

Table 29: Number of inshore bottom longline fishing days (excluding snapper target) in selected Fisheries Management Areas throughout the 2007-2008 observer year.

Date	FMA 1 (AKE)	FMA 3 (SEC)	FMA 4 (SOE)	Total
Jul-07	112	72	66	250
Aug-07	141	65	106	312
Sep-07	190	47	97	334
Oct-07	113	21	79	213
Nov-07	143	38	134	315
Dec-07	99	32	82	213
Jan-08	139	23	94	256
Feb-08	155	11	41	207
Mar-08	135	36	50	221
Apr-08	98	39	89	226
May-08	119	56	108	283
Jun-08	82	60	70	212
Total	1526	500	1016	3042

Table 30: Number of inshore bottom longline fishing days (targeting snapper) in the FMA 1 (AKE) Fisheries Management Area throughout the 2007-2008 observer year.

Date	No. Fishing days
Jul-07	311
Aug-07	362
Sep-07	358
Oct-07	417
Nov-07	505
Dec-07	379
Jan-08	448
Feb-08	386
Mar-08	426
Apr-08	411
May-08	420
Jun-08	323
Total	4746

While 250 inshore bottom longline days will provide only a low level of observer coverage in the FMAs where observer coverage will be undertaken, additional days will be delivered by MFish Science so that collectively over 5% of coverage will be achieved. While this is still low for undertaking estimation analyses, the cost and feasibility of placing observers in this fishery must be considered.

Observed protected species interactions

Protected species interactions aboard observed vessels in inshore bottom longline fisheries during the 2007/08 observer year are shown in Table 31. All fishing interactions were with seabirds, with over half of the captures reported from one trip.

Table 31: Protected species captures in inshore bottom longline fisheries targeting ling, blue nose, hapuku and bass during the 2007/08 observer year

Species	Dead	Alive	Total
Albatross (unidentified)	1		1
Black-browed albatross (unidentified)	3		3
Black petrel	3		3
Buller's albatross	4		4
Chatham albatross	12		12
Cape petrel	1	3	4
Grey-faced petrel	6		6
Indian yellow-nosed albatross	1		1
Salvin's albatross	22		22
Seabird (unidentified)	1		1
Sooty shearwater	1		1
Wandering albatross (unidentified)		1	1
White-chinned petrel	4		4
Total	59	4	63

Setnet

The extent to which commercial setnet 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, as with other inshore fisheries, 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 setnet fishery (Statistical Areas 020 and 022) was observed during the 1997-1998 fishing year, during which time eight Hector's dolphins were observed caught in setnets, of which two were 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 setnet vessels in the 2005/06 fishing year (see Table 32) were undertaken in Southland (FMA 5 (SOU)) and the Nelson / Marlborough region (FMA 7 (CHA)) 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. Setnet fisheries were also observed in the 2006/07 fishing year in Kaikoura (FMA 3 (SEC)), Southland (FMA 5 (SOU)) and in Nelson (FMA 7 (CHA)). Protected species mortalities during 2006/07 included one dusky dolphin, one Hector's dolphin, one fluttering shearwater and two yellow-eyed penguins, all as separate incidents.

Observations of commercial setnet fishing in 2007/08 were planned for FMA 3 (SEC) (Statistical Areas 018, 022 and 024), FMA 5 (SOU) (025 and 030), FMA 7 (CHA) (034, 035 and 038), FMA 2 (CEE) and FMA 8 (CEW). During the 2007/08 observer year, one Hector's dolphin, a fur seal, one yellow-eyed penguin and one sooty shearwater were incidentally killed. One pilot whale, three Westland petrels and one cape petrel were caught and released alive.

In the 2008/09 observer year, 250 observer days are planned in setnet fisheries in FMA 3 (SEC), FMA 5 (SOU), FMA 8 (CEW) and FMA 9 (AKW) to monitor dolphin and seabird interactions.

Monitoring priorities for 2009/10 will include collecting data on protected species interactions and behaviours and the mitigation and offal management techniques employed by individual vessels.

Table 32. Observer coverage in setnet fisheries (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	100	0
2005/06	Not stated	100	83
2006/07	n/a	165	116
2007/08	n/a	233	161
2008/09	n/a	250	underway*

*subject to overlap with Hector's dolphin Threat Management Plan monitoring requirements.

Observer coverage for 2009/10

Coverage levels for 2009/10 are set at 200 days (Table 33). Additional days will be delivered for the Ministry of Fisheries (see "OBS2008/01 Research Observer Services to estimate the nature and extent of incidental captures of protected species in New Zealand fisheries"). The delivery of CSP and MFish days will be concurrent to enhance delivery of observer days in setnet fisheries.

While 200 inshore setnet days will not provide sufficient data for estimating total incidental catch of protected species nationwide, greater knowledge will be gained about how these fisheries interact with protected species.

Table 33: Observer coverage planned for inshore trawl fisheries in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 9 (AKW), FMA 3 (SEC), FMA 5 (SOU)	n/a	**200**

Over 10,000 setnet fishing days were undertaken in the three FMAs where observer coverage is planned for 2009/10 (Table 34). The focus for inshore setnet coverage in 2009/10 will be outside the days planned by MFish to monitor Hector's dolphin interactions and will, instead, focus on all protected species interactions with a particular emphasis on seabird interactions. Coverage will be focussed in FMA 9 (AKW) during the November and December period to monitor for Maui dolphin interactions, in FMA 3 (SEC) to monitor for seabird and Hector's dolphin interactions and FMA 5 (SOU) to monitor for yellow-eyed penguin and other seabird interactions.

Table 34: Number of inshore setnet fishing days in selected Fisheries Management Areas throughout the 2007-2008 observer year.

	FMA			
Date	FMA 9 (AKW)	FMA 3 (SEC)	FMA 5 (SOU)	Total
Jul-07	697	205	64	966
Aug-07	604	127	35	766
Sep-07	781	133	78	992
Oct-07	658	114	26	798
Nov-07	725	380	68	1173
Dec-07	547	302	52	901
Jan-08	527	372	74	973
Feb-08	511	328	44	883
Mar-08	595	218	45	858
Apr-08	539	257	34	830
May-08	638	215	25	878
Jun-08	444	230	33	707
Total	7266	2881	578	10725

The number of vessels operating in each FMA from 1 July 2007 to 30 June 2008 is shown in Table 35, along with the average number of fishing days undertaken during the 2007/08 observer year.

Table 35. The number of inshore setnet fishing vessels operating in selected FMAs and the average number of fishing days undertaken per vessel during the 2007/08 observer year.

FMA	No. Vessels	Mean no. fishing days
FMA 9 (AKW)	21	172
FMA 3 (SEC)	86	138
FMA 5 (SOU)	35	90

Observed protected species interactions

Protected species interactions aboard observed vessels in setnet fisheries during the 2007/08 observer year are shown in Table 36.

Interactions with nine protected species were reported (Table 36). The Hector's dolphin interaction was seen by the observer to be floating away from the stern of the vessel during hauling. The animal was not seen in the net and was not recovered. The observer noted that blood was coming from the dolphin's head and bite marks consistent with those from dogfish around the head. The incident was reported when 2.9 nm from shore in water 17 m deep.

Table 36. Protected species captures in setnet fisheries during the 2007/08 observer year

Species	Dead	Alive	Total	FMA	Month
Cape petrel		1	1	SEC	Nov-07
Westland petrel		3	3	SEC	Nov-07
Sooty shearwater	1		1	SEC	Nov-07
Fur seal	1		1	SEC	Nov-07
Pilot whale		1	1	AKW	Jan-08
Yellow-eyed penguin	1		1	SOU	Dec-07
Hector's dolphin	1		1	SEC	Feb-08
Total	4	5	9		

SURFACE LONGLINE FISHERIES

Charter surface longline

CSP observer coverage of charter tuna vessels (Table 37) has mostly been in FMA 5 (SOU) and FMA 7 (CHA) from March until July, with some coverage in FMA 2 (CEE) and FMA 10 (KER). This fishery has historically had high captures of seabirds (including a variety of albatrosses and petrels), and while captures were lower during the 2004/05 and 2005/06 observer years, high seabird captures were again recorded during 2006/07. Fur seals and sea turtles are occasionally caught on hooks or entangled in lines, but are usually released alive after being cut free.

In line with Policy 12 (a) of the CSP strategic plan, observer coverage will be maintained in order to provide a baseline level of observations in this fishery where interactions are thought to be generally identified. 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.

Table 37. Observer coverage in the charter surface longline fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	20	14
2005/06	50	37	30
2006/07	100	28	28
2007/08	100	26	17
2008/09	-	52	underway

Observer coverage for 2009/10

Observer coverage in 2009/10 (see Table 38) will be dependent on where charter tuna vessels focus fishing effort. As there were 248 fishing days in 2007/08, CSP will aim to cover 15% of fishing days. Coverage is expected to be during the months March to July.

Table 38: Observer coverage planned for the charter surface longline fishery in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 2 (CEE), FMA 7 (CHA), FMA 10 (KER), FMA 5 (SOU)	15% of total effort in 07/08	**37**

Observed protected species interactions

Almost 50 protected species interactions were observed during the 2007/08 observer year. Of the ten fur seals captured only one was incidentally killed (Table 39). Twenty nine seabirds were incidentally killed and nine were released alive. Seabird captures were reported in almost all months when observer coverage was undertaken.

Table 39. Protected species captures in charter surface longline fisheries during the 2007/08 observer year

Species	Dead	Alive	Decomposing	Total
Antipodean albatross	1			1
Buller's albatross	8	9		17
Campbell albatross	1			1
Fur seal	1	9	1	11
Gibson's albatross	1			1
Grey petrel	10			10
Salvin's albatross	1			1
White-capped albatross	3			3
White-chinned petrel	4			4
Total	30	18	1	49

Domestic surface longline

Historically, there has been difficulty placing observers on smaller domestic tuna vessels (see Table 40 for observer days achieved) and, therefore, further data is required to assess protected species interactions. Further, the recent introduction of swordfish into the quota management system provides additional impetus to continue monitoring this fishery, particularly following the large bycatch event of 58 albatrosses and petrels during one trip in November 200FMA 6 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. This should facilitate observer placement in this fishery. For these reasons, observer coverage will be maintained at a similar level to previous years.

In recent years, observer coverage was in FMA 2 (CEE) from February to July, FMA 10 (KER) from September to December and March, April and in FMA 1 (AKE) from November to March and June, July. Additional coverage has been achieved in FMA 7 (CHA), FMA 8 (CEW) and FMA 9 (AKW).

Monitoring priorities for 2009/10 will include collecting information on protected species interactions, mitigation techniques and discharge management practices employed in the fishery.

Table 40. Observer coverage in the domestic surface longline fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	150	67
2005/06	Not stated	100	38
2006/07	20	73	30
2007/08	20	75	65
2008/09	20	69	underway

Observer coverage for 2009/10

Observer coverage in 2009/10 (see Table 41) will be in FMA 1 (AKE), FMA 2 (CEE), FMA 9 (AKW), FMA 10 (KER) to monitor interactions with seabirds and turtles. Coverage will be throughout the year.

Table 41: Observer coverage planned for the domestic surface longline fishery in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 1 (AKE), FMA 2 (CEE), FMA 7 (CHA), FMA 10 (KER)	25%	**44**

Observed protected species interactions

Twenty six protected species interactions were reported (Table 42) including the capture and release of a leatherback turtle in FMA 10 (KER) in May 2008. Seabird captures were reported throughout the period of observer coverage in FMA 1 (AKE) and FMA 2 (CEE).

Table 42: Protected species captures in domestic surface longline fisheries during the 2007/08 observer year

Species	Dead	Alive	Total
Albatrosses (unidentified)	2		2
Black-browed albatross (unidentified)	2	1	3
Buller's albatross	2		2
Campbell albatross	1		1
Cape petrel		1	1
Flesh-footed shearwater		2	2
Fur seal		3	3
Grey petrel	6		6
Leatherback turtle		1	1
Petrel (unidentified)		1	1
Salvin's albatross	1	1	2
Wandering albatross (unidentified)	4	1	5
Total	18	11	29

BOTTOM LONGLINE FISHERIES

Deep-sea ling

Previous data collected through the observer programme has shown that deep sea ling longliners have killed high numbers of seabirds, including white-chinned petrels and Salvin's albatrosses. In line with Policy 12 (a) of the CSP strategic plan, observer coverage 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.

In recent years, the majority of observer coverage (see Table 43) was in FMA 5 (SOU) from August to October with some coverage in FMA 2 (CEE) and FMA 3 (SEC). In previous years, there has been more even coverage, in terms of days, spread between FMA 2 (CEE), FMA 4 (SOE), FMA 5 (SOU) and FMA 6 (SUB). Observer coverage is from May to June and August to October.

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

Table 43. Observer coverage in the deep-sea ling bottom longline fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	15	160
2005/06	30	37	35
2006/07	30	23	21
2007/08	30	15	14
2008/09	30	16	underway

Observer coverage for 2009/10

Observer coverage in 2009/10 (Table 44) will be focussed on FMA 4 (SOE) and FMA 5 (SOU) to monitor seabird interactions during September, October, May and June.

Table 44: Observer coverage planned for the deep-sea ling bottom longline fishery in 2009/10

Fishery Management Areas	Target coverage	**No. observer days**
FMA 2 (CEE), FMA 3 (SEC), FMA 4 (SOE), FMA 5 (SOU)	40%	**17**

Observed protected species interactions

Protected species interactions aboard observed vessels in the deep-sea ling longline fishery during the 2007/08 observer year are shown in Table 45. All protected species captures were either sooty shearwaters or white-chinned petrels, all of which were hooked. Seabird captures were reported in FMA 5 (SOU) and FMA 6 (SUB).

Table 45. Protected species captures in deep water bottom longline fisheries during the 2007/08 observer year

Species	Alive	Dead
Sooty shearwater		5
White chinned petrel		6
Total		11

Purse Seine

The purse seine fisheries have not been observed by CSP in recent years (Table 46) due to the low number of protected species interactions. Observers have noted black petrels attending vessels on several trips in the past.

Table 46. Observer coverage in the tuna purse seine fishery (2004/05 – 2008/09)

Year	CSP Percent Coverage Level	Charged Day	Achieved
2004/05	Not stated	6	5
2005/06	Not stated	14	15
2006/07	0	0	0
2007/08	0	0	0
2008/09	0	0	0

Outputs

- A descriptive report of observer data will be provided to stakeholders
- 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).
- All protected corals (or corals that can not be correctly identified) are returned for identification (see project INT 2009/02: Identification of protected corals).
- Data will be available for other DOC and Ministry projects including offal management, seabird net captures, bycatch estimation, risk management and other modelling projects.

Project costing

Research cost: $1,073,911
Cost Recovery: F(CR) Item 8: 100% Industry
See Appendix 1

Note 1: The following project, INT 2007/02, is included here for completeness. This project was consulted on in 2007/08.

Note 2: The baseline number of birds to be autopsied is reviewed annually and the cost of the project is adjusted accordingly. For example, the baseline number of birds to be autopsied during the 2008/09 fishing year was adjusted to 350 birds, based on the number of birds returned during the 2007/08 fishing year.

2.2. Identification and autopsy of seabirds incidentally killed 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 Objectives[2]

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.

[2] Specific objectives will be reviewed annually through a Working Group process.

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.

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;
- 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 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.

Project costing
Research cost: **$**72,000
Cost Recovery: F(CR) Item 4 (100% Industry)
Fish stocks: BAR 1, 7, BIG 1, BNS1, 3, 7, BUT5, 7, BWS 1, ELE3, 5, 7, EMA 1, 3, 7, FLA1, 3, 7, GMU1, HOK 1, HAK 1, 4, 7, JMA 1, 3, 7, MAK 1, MOK1, 3, 5, MOO 1, SCH1, 3, 5, SPD3, 5, 8, SPO1, 3, GSH 1, 3, 4, 7, 8, 9, GSP 1, 7, GUR 1, 3, 7, 8, HPB 1, 3, 4, 7, 8, JDO 1, 3, 7, KIN 1, 7, 8, LEA 1, 3, LIN 1, 3, 4, 5, 6, 7, MOK 1, 3, ORH 1, 2A, 2B, 3A, 3B, OEO 1, 3A, 4, 6, PAR 1, 9, POR 1, POS 1, RBM 1, RSN 1, SPO 1, 3, 7, 8, RCO 1, 3, 7, RSK 1, 3, 7, 8, SBW 6A, 6R, 6I, 6B, SCI 1, 4A, 6A, 6B, SKI 1, 3, 7, SNA 1, 3. 7, 8, SPD 1, 3, 4, 7, 8, SPE 1, 3, 4, 7, SQU1T, 6T, SSK 1, 3, 7, 8, STA 1, 3, 4, 7, STN 1, SWA 1, 3, 4, SWO 1, TAR 1, 3, 4, 7, 8, TOR 1, TRE 1, 7, TRU 3, 4, WAR 2, 3, 7, 8, WWA 2, 3, 4, 5B, 7, YEM 1, 8, 9, YFN 1

2.3 Photo-identification of live seabirds captured in New Zealand fisheries

Project Code: INT 2009/02

Start Date: 1 October 2009

Completion Date: 30 June 2011

Overall Objective

- Using photographs taken by observers, to accurately identify seabirds captured and released alive following interactions with New Zealand fishing vessels during the period 1 October 2004 to 30 September 2010.

Specific Objectives

1. To identify, from photographs taken by observers, the seabirds captured and released alive during the 2004/05 to 2009/10 fishing years;
2. Update the observer database as necessary with correct identifications.

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. While the correct species identifications of seabirds killed during the course of fishing are determined at autopsy, the identification reported for seabirds released alive are often general (e.g. unidentified petrel) and are not currently confirmed by an expert. However, observers take photographs of birds interacting with vessels (caught or impacting against vessel) whether alive or dead, enabling correct identification to be determined at a later date.

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 also links to MFish projects and databases.

Research approach

Due to the large volume of photographs to be processed, photographs of seabirds caught and released alive from observed New Zealand fishing vessels during the 2004/05 to 2009/10 fishing years will be collated and organised by CSP staff to link photographs to Non-Fish Bycatch records. Birds will then be identified to species level by an expert or experts. The observer database will be updated with correct identifications where necessary. These data will be reported by species, fishery stratum (method, area and where possible target species).

Outputs

1. Summary tables detailing observer identifications and expert-identifications of seabirds, presented according to fishing method, area and possible target species;
2. Update the observer database once correct identifications of seabirds are known.

Project costing
Research cost: up to $10,000
Cost Recovery: F(CR) Item 4 (100% Industry)
Fish stocks: BWS 1, BIG 1, CDL 1, 2, 3, 4, 5, 7, MAK 1, MOO 1, POS 1, RBM 1, YFN 1, STN 1, SWO 1, TOR 1, BAR 1, 4, 5, 7, BNS 1, 2, 3, 7, 8, BUT 1, 2, 3, 4, 5, 6, 7
ELE 2, 3, 5, 7, FLA 1, 2, 3, 7, FRO 1, 2, 3,4, 5, 7, 8, 9, GMU 1, GSH 1, 2, 3, 4, 5, 6, 7, 8, 9, GSP 1, 5, 7, GUR 1, 2, 3, 7, 8, HPB 1, 2, 3, 4, 5, 7, 8, JDO 1, 2, 3, 7,
KIN 1, 2, 7, 8, LEA 1, 2, 3, LIN 1, 2, 3, 4, 5, 6, 7, MOK 1, 3, 5, PAR 1, 9, POR 1, 2, RSN 1, 2, SPO 1, 2, 3, 7, 8, RCO 1, 2, 3, 7, RSK 1, 3, 7, 8, SNA 1, 2, 7, 8,
SPD 1, 3, 4, 5, 7, 8, SPE 1, 2, 3, 4, 5, 7, SSK 1, 3, 7, 8, STA 1, 2, 3, 4, 5, 7, TAR 1, 2, 3, 4, 5, 7, 8, TRE 1, 2, 7, TRU 3, 4, YEM 1, 8, 9, SPO 1, 2, 3, 7, 8, SCH 1, 2, 3, 4, 5, 7, 8, BYX 1, 2, 3, 7, EMA 1, 3, 7, JMA 1, 3, 7, KAH 1, 2, 3, 8, PIL 1,
RBY 1, 2, 4, 7, HOK 1, HAK 1, 4, 7, SWA 1, 3, 4, WAR 2, 3, 7, 8, WWA 2, 3, 4, 5B, 7, SCI 1, SCI 4A, SCI 6B, SCI 6A, SBW 6A, SBW 6R, SBW 6I, SBW 6B, SQU 1T, SQU 1J, SQU 6T, OEO 1, 3A, ORH 1, 2A, 2B, 3A, ORH 3B, OEO 4, 6

2.4 Identification of protected corals

Project Code: INT 2009/03

Start Date: 1 October 2009

Completion Date: 31 March 2011

Overall Objective

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

Specific Objectives

1. Sub-samples of corals returned by observers during the 2009/10 fishing year (1 October 2009 to 30 September 2010) to be identified to lower taxa (families, genera, species);
2. Update the observer database as necessary with correct identifications.

Rationale

Management approach

The Conservation Services Programme Observer Programme seeks to identify, monitor and, where possible, 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 fisheries and protected corals. Fisheries of particular interest include orange roughy, oreo, hoki, scampi, squid and southern blue whiting. Historically, we have minimal information on which species are being incidentally caught during trawling.

The sub-samples of corals returned by observers represent a valuable data source that could be better used to elucidate the relationships between invertebrates and commercial fishing activity. It will enable researchers and managers to help identify where corals and their associated fauna are at the highest risk of interactions with fishing gear.

The CSP Observer Programme provides an opportunity to collect and identify deep sea invertebrates, and specifically protected corals, impacted by trawling operations.
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.

The group of organisms collectively known as 'black corals', (Cnidaria, Antipitharia) are currently protected under the Wildlife Act 1953. 'Red corals' are also listed as protected under the Wildlife Act 1953. At present only *Errina* species are being interpreted as protected species by the Ministry of Fisheries and Department of Conservation. However, the definition of 'red corals' is currently being clarified through the revision of Schedule 7A of the Wildlife Act.

"Red coral" has previously been used as a generic term by observers. Records of "red corals" may include any coral with pink to red or red to orange colouration and could include *Errina* spp., as well as gorgonian and Scleractinian stony corals. The Ministry of Fisheries species code used to record "red corals" (COR) may have also mistakenly been used as a generic code to record any corals. As *Errina* spp can easily be confused with other 'red' corals, observers are requested to return a sub-sample of all 'red' corals per station.

Research approach
Observers are requested to assess each haul for the presence of corals and to record presence and weight on the Benthic Materials Form. Coral specimens are photographed and one sample of each coral per species is returned for identification. Protected corals (or corals that cannot be identified) are returned by government observers and delivered to the contractor for identification to lower taxa.

These data will be reported by species and 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.

Outputs
1. A report describing the invertebrates returned by observers, presented according to species and fishery stratum (method, area and where possible target species);
2. Updates to the observer database once correct identification of corals are known.

Project costing

Research cost: $40,000
This project will be Crown-funded in 2009/2010

2.5 Protected species interactions with fisheries in FMA Central (East), Area 2

Project Code: INT 2009/04

Start Date: 1 July 2009

Completion Date: 30 October 2010

Overall Objective

- To assess the nature and extent of protected species interactions with fisheries in Central (East) and identify measures to reduce interactions.

Specific Objectives

1. To identify and monitor interactions between protected species and inshore fishing vessels in Central (East);
2. To describe gear types and discharge patterns of inshore fishing vessels in Central (East);
3. To describe and assess current use of mitigation strategies deployed by inshore fishing vessels in Central (East).
4. To facilitate the development and implementation of strategies to mitigate interactions identified in Specific Objective 1;
5. To recommend how future approaches to monitoring and mitigating protected species interactions in Central (East) may be consolidated;
6. To assess the feasibility of using such approaches for monitoring protected species interactions with fishing vessels in other FMAs, particularly inshore fisheries.

Rationale

Interactions between protected species and smaller fishing vessels have long been difficult to assess, monitor, and quantify for a variety of reasons. This project will assess the nature and extent of protected species interactions with fisheries in the Central (East) Fisheries Management Area, where such interactions are poorly understood. Areas of focus will be identifying interactions with particular gears, assessing discharge patterns (with an emphasis on trawler discharge) and investigating the use of mitigation measures currently employed. By allowing for a broader approach this project is also expected to encompass the development of other mitigation strategies where needed, as well as the development and implementation of robust and cost-effective approaches to monitoring.

Project approach

Data collected to fulfil specific objectives 1, 2 and 3 represents the baseline fisheries-protected species interaction information in Central (East). This will be collected for other areas by project INT2009/01 (see that project description for further information). Information may be collected in Central (East) by a number of methods, including:

- using observer services purchased from Ministry of Fisheries Observer Services, or
- using other, novel approaches.

In 2008/09 work is being conducted to develop such an alternative, broader approach, to collecting data on and managing protected species interactions with commercial fishing in this area (CSP project INT2008/03[3]). Dependent on results from 2008/09, this project may build on the findings and methods developed as an alternative to fixing observer days.

Outputs

- A report or reports describing work undertaken under each specific objective, describing methods employed, and results found.
- A set of recommendations for future monitoring and mitigation of protected species interactions in Central (East).
- A set of recommendations for other areas, to the extent that these can be drawn from the above work, with a focus on inshore fisheries.

Project costing
Research cost: $50,000
Cost Recovery: F(CR) Item 4: 100% Industry
Fish stocks: BNS2; BUT2; GUR2; HPB2; JDO2; KAH2; KIN2; RCO2; SCH2; SKI2; SNA2; SPD1; SPO2; TAR2; TRE2; WAR2

[3] See CSP Annual Plan 2008/09 for further details.

3. Population Studies

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

Project Code: POP2009/01

Start Date: 1 July 2009

Completion Date: 30 June 2010

Overall Objectives:

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

Background:
Black petrels are categorised as range restricted, and breed only on Great Barrier Island (Aotea Island) and Hauturu/Little Barrier Island. Until very recently little was known of the at-sea distribution of black petrels, but they were thought to occur in ocean areas with historically low fisheries observer coverage. Remote tracking provides an alternative method by which at-sea distribution information can be obtained for use in fisheries management.

To investigate the range of black petrels at sea, preliminary work using light and GPS loggers was completed in 2005/06. Results from that work showed that deployment of these devices is feasible for black petrels, and a substantial amount of data per bird was collected[4]. Tracking of black petrels was extended in 2007/08 and 2008/09, and this project will continue to expand tracking efforts to cover a greater proportion of the year and age/sex classes of petrels, with the goal of developing 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.

Survey and monitoring of black petrels on Great Barrier Island began in 1995/96, and has provided a baseline data set on which fishing related and other impacts on the black petrel population can be measure, as well as gathering data on population parameters. This data set

[4] Bell et al. 2006. Quantifying the population parameters and distribution of the black petrel (*Procellaria parkinsoni*). Draft CSP report. Available at http://www.doc.govt.nz/templates/MultiPageDocumentTOC.aspx?id=43099

is essential to ensure a representative sample of birds of known age and life stage are selected for the tracking study. Continuation of population monitoring and collection of population parameter data can be conducted with little extra effort given that the breeding site has to be accessed over several field trips during breeding in order to conduct tracking studies. This project will continue to monitor the population by surveying mapped burrows, and collect data on population parameters by continuing to collect resight data of marked individuals.

Note that previous work on black petrels on Great Barrier Island has been completed under CSP projects including: POP2008/01, POP2007/02, POP2005/04, POP2004/4, BRD2003/1, BRD2002/5, BRD2001/3. CSP did not undertake work on black petrels in 2006/07.

Outputs

1. A report or reports that include a full description of the methodologies used and provide:
    1.1. An understanding of the foraging areas of black petrels, including identification of areas where there are high risks of interactions with fishing gear, which can be applied to fisheries management.
    1.2. An estimation of the black petrel population trajectory on Great Barrier Island, and quantification of population parameters relevant to population viability.
2. Data from this project linked with appropriate national and international initiatives, e.g BirdLife International's global seabird tracking database.

Project costing

Research cost: $60,000
This project will be Crown-funded in 2009/2010

Note: The following project, POP2007/01 was consulted on in 2007/08.

3.2 Demographic parameters and at-sea distribution of NZ 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[5] 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

[5] Note that subsequent to 2007/08, data collected in all subsequent years of the project term will be made available to relevant modelling, and management-related, work. For example, all data was made available for the recently undertaken revision of the Breen and Kim model in 2008.

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 Plan[1] 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.

Project costing

Research cost: $300,000
Cost Recovery: F(CR) Item 2: 90% Industry, 10% Crown
Fish stock: SQU6T

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

Note: The following project, POP2005/02, was consulted on in 2006/07.

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

Project Code: POP2005/02

Start Date: 1 July 2006[6]

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 Islands[7].

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) [8].

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 diet[9]. 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

[6] This project is a continuation of a project that commenced in 2005/06.
[7] 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
[8] Note that since the commencement of this project, the number of white-capped albatrosses returned dead from the SQU trawl fishery has decreased (http://www.doc.govt.nz/upload/documents/conservation/marine-and-coastal/fishing/twg/csp-twg-12-sept-08-seabird-autopsy-summary-thompson.pdf).
[9] Taylor (2000). Action Plan for Seabird Conservation in New Zealand Part A: Threatened Species,

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 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)[10].

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 Plan[1] 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[11], e.g. BirdLife International's global seabird tracking database.

Project costing

Research cost: $175,000
Cost Recovery: F(CR) Item 3: 50% Industry, 50% Crown
Fish stocks: BAR1,4,5,7; HOK1; JMA3,7; ORH3A,3B; SCI6A,6B,12; SQU1T,6T; SWA3,4; WAR3; LIN3,5,6,7; STN1,BIG1,YFN1

[10] Note that more recent project reports are available at: www.csp.org.nz.
[11] E.g. MFish seabird modelling work

4. Mitigation Projects

4.1 Development of mitigation strategies: Inshore fisheries

Project Code: MIT2009/01

Start Date: 1 July 2009

Completion Date: 30 June 2010

Overall Objective:

- To work in inshore fisheries to increase awareness of, and identify and implement measures to reduce, interactions with protected species, especially for the trawl and demersal longline methods.

Specific Objectives:

1. To work with inshore fishers to improve awareness and understanding of protected species interactions with inshore fisheries;
2. To identify characteristics of inshore fisheries that may influence the likelihood of protected species interactions.
3. To assess current use of mitigation measures, and work with fishers to develop, test, and implement measures for mitigating protected species interactions.

Rationale:

Inshore fisheries are becoming the focus of increased attention due to recorded and potential interactions with protected species. The nature and extent of these interactions, and measures that may be implemented to reduce them, are generally poorly known. However, even with poor knowledge, interactions leading to protected species bycatch are known to occur. Also, in the inshore environment, materials describing protected species interactions and the implications of these are generally not as widely available, or as widely distributed, as in deepwater fisheries.

Informed by recent government workshops undertaken with inshore fishers, this project involves making contact with fishers, gathering anecdotal information on protected species interactions, and distributing materials to increase awareness and understanding of the interactions and impacts of inshore fisheries on protected species. The work will also include identifying, developing, and testing potential mitigation strategies to reduce these interactions. The role will be strongly guided by the operational climate of the inshore fishing environment, including relevant industry initiatives and government policies.

Relevant CSP Strategic Plan[1] Policies include: 1, 2, 3, 6, 15

Outputs:

A technical report (or reports) describing methods used to address objectives and presentations of findings at appropriate fishers' meetings or conferences.

Project costing

Research cost: $90,000
Cost Recovery: F(CR) Item 4: 100% Industry
Fish stocks: BAR 1, 4, 5, 7, BNS 1, 2, 3, 7, 8, ELE 2, 3, 5, 7, FLA 1, 2, 3, 7, GMU 1, GSH 1, 2, 3, 4, 5, 6, 7, 8, 9, GSP 1, 5, 7, GUR 1, 2, 3, 7, 8, HPB 1, 2, 3, 4, 5, 7, 8, JDO 1, 2, 3, 7, KIN 1, 2, 7, 8, LEA 1, 2, 3, LIN 1, 2, 3, 4, 5, 6, 7, MOK 1, 3, 5, PAR 1, 9, POR 1, 2, RSN 1, 2, SPO 1, 2, 3, 7, 8, RCO 1, 2, 3, 7, RSK 1, 3, 7, 8, SCH 1, 3, 5, 7, 8, SNA 1, 2, 7, 8, SPD 1, 3, 4, 5, 7, 8, SPE 1, 2, 3, 4, 5, 7, SSK 1, 3, 7, 8, STA 1, 2, 3, 4, 5, 7, TAR 1, 2, 3, 4, 5, 7, 8, TRE 1, 2, 7, TRU 3, 4, YEM 1, 8, 9

Appendix One: Research Costs and Cost Allocation

A: CSP Proposed 2009/2010 Projects

Number	Project	Research	Admin	Total	Industry %	Industry	Crown
INT2009/01	Observing commercial fisheries	$1,073,911.70	$143,501.12	$1,217,412.82	100	$1,217,412.82	0
INT2007/02	Identification of seabirds captured in New Zealand fisheries	$72,000	$9,620.98	$81,620.98	100	$81,620.98	0
INT2009/02	Identification of live seabirds captured in New Zealand fisheries	$10,000	$1,336.25	$11,336.25	100	$11,336.25	0
INT2009/03	Identification of protected corals	$40,000	$5,344.99	$45,344.99	0	0	$45,344.99
INT 2009/04	Area 2 Protected Species Interactions	$50,000	$6,681.23	$56,681.23	100	$56,681.23	0
POP2009/01	Black petrels – at sea dist	$60,000	$8,017.48	$68,017.48	0	0	$68,017.48
POP2007/01	Sea lion – Auckland Is	$300,000	$40,087.41	$340,087.41	90	$306,078.67	$34,008.74
POP2006/02	White-capped albatrosses	$175,000	$23,384.32	$198,384.32	50	$99,192.16	$99,192.16
MIT2009/01	Mitigation strategies: Inshore fisheries	$90,000	$12,026.22	$102,026.22	100	$102,026.22	0
Totals		$1,870,912	$250,000	$2,120,911.70		$1,874,348.33	$246,563.37

B: CSP 20092010 Observer Allocation

Method / Fishery	Target	Proportion CSP day	% coverage planned	2009/10 observer days	Per day cost	At-sea cost	Stocks
Inshore fisheries	Setnet	1.0	**n/a**	**200**	$850.00*	$170,000	BUT5, 7, ELE3, 5, FLA1, 3, GMU1, MOK1, 3, 5, SCH1, 3, 5, SPD3, 5, 8, SPO1, 3
	Inshore trawl	1.0	**n/a**	**300**	$850.00*	$255, 000	ELE 3, 7, FLA 1, 3, 7, GSH 1, 3, 4, 7, 8, 9, GSP 1, 7, GMU 1, GUR 1, 3, 7, 8, HPB 1, 3, 4, 7, 8, JDO 1, 3, 7, KIN 1, 7, 8, LEA 1, 3, LIN 1, 3, 4, 7, MOK 1, 3, PAR 1, 9, POR 1, RSN 1, SPO 1, 3, 7, 8, RCO 1, 3, 7, RSK 1, 3, 7, 8, SKI 1, 3, 7, SNA 1, 7, 8, SPD 1, 3, 4, 7, 8, SPE 1, 3, 4, 7, SSK 1, 3, 7, 8, STA 1, 3, 4, 7, TAR 1, 3, 4, 7, 8, TRE 1, 7, TRU 3, 4, YEM 1, 8, 9
	Inshore bottom longline	0.45	**n/a**	**250**	$850.00*	$212,500	LIN1, 3, 4, HPB1, 3, 4, BNS1, 3, 7, SNA 1, 3
Longline fisheries	Surface longline - domestic	0.15	25%	**44**	$850.00*	$37,400	BWS 1, BIG 1, MAK 1, MOO 1, POS 1, RBM 1, YFN 1, STN 1, SWO 1, TOR 1
	Surface longline - charter	0.15	100%	**37**	$571.65	$21,151	BWS 1, BIG 1, MAK 1, MOO 1, POS 1, RBM 1, YFN 1, STN 1, SWO 1, TOR 1
	Bottom longline - deep sea ling	0.15	40%	**17**	$571.65	$9,718	LIN 4, LIN 5, LIN 6
Pelagic trawl	JMA, EMA, BAR	0.15	25%	**111**	$571.65	$63,453	BAR 1, 7, EMA 1, 3, 7, JMA 1, 3, 7
Middle depth trawl	HAK, HOK, LIN, SWA	0.15	20%	**219**	$571.65	$125,191	HOK 1, HAK 1, 4, 7, SWA 1, 3, 4, WAR 2, 3, 7, 8, WWA 2, 3, 4, 5B, 7
	SCI	0.15	15%	**48**	$571.65	$27,439	SCI 1, 4A, 6B, 6A
	SBW	0.15	40%	**16**	$571.65	$9,147	SBW 6A, 6R, 6I, 6B

	SQU	0.18	35%	**135**	$571.65	$77,173	SQU1T, 6T
Deep water trawl	ORH, OEO	0.15	30-50%	**115**	$571.65	$65,740	ORH 1, 2A, 2B, 3A, 3B, OEO 1, 3A, 4, 6
				1492		$1,073,911.70	

* Subject to change