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Department of Conservation

Nature and Extent of Conservation Services for the 1996/97 Financial Year

Conservation Services

Introduction

The Fisheries Act 1983, in section 107EA(1), allows the Crown to recover its costs in respect of the provision of conservation services being:-

i) Research relating to the effects on any species protected by any enactment specified in the First Schedule to the Conservation Act 1987 of by-catch resulting from commercial fishing:

ii) The management measures necessary to avoid, remedy or mitigate the adverse effects of commercial fishing on any species referred to paragraph (i) of this paragraph:

iii) Any other research or management measures necessary to enable the Minister of Conservation to perform his or her functions and duties under any enactment, where the research or management arises because of the existence of commercial fishing.

These services are known in the Act as 'Conservation Services'.

The Minister of Fisheries is obliged to consult with the Minister of Conservation if any levy is proposed in respect of the conservation services. Such a levy is proposed for the 1996/97 Fishing Year.

For the 1995/96 Fishing Year, the Department of Conservation initiated programmes through Conservation Services Levies (CSL) in the following major areas:

1. Increased observer coverage for selected fisheries;
2. Improved analysis of bycatch data for protected species;
3. Research and development of mitigation measures;
4. Carcass retrieval programme;
5. Monitoring of certain populations of protected species taken as bycatch.

The Department gratefully acknowledges the support and assistance that has been provided in the development of these programmes by the Ministry of Fisheries and the fishing industry, and notes that a large number of bids were received from potential contractors for the programmes, most of which were of a high quality. Although the projects funded under CSL for 1995/96 are still in their early stages, the Department is confident that much valuable information will be generated which will contribute to better management of the interactions between commercial fisheries and protected species, especially in the area of mitigation measures.

There have been some unforeseen problems - for example the proposed observer programme for the gillnet fishery in the Canterbury Bight/Pegasus Bay area, where the season was all but finished by the time CSL monies became available. The Department will negotiate with industry representatives to decide on the best way to proceed with this programme when the season recommences.

The Department intends to report the progress and results from all projects funded through CSL to the Non-Fish Interactions Working Group, which will also be a forum for discussing future programmes funded through the Levies. At a recent consultation with stakeholders, the Department also agreed to convene a number of technical working groups to provide advice on various CSL programmes.

For the 1996/97 Fishing Year, the Department proposes to continue with a similar programme, although the requirement to produce draft proposals before results are available from this year's levy projects has presented some difficulties in prioritising, especially for the research and implementation of mitigation measures.

Conservation Services

The Minister of Conservation has indicated his intention to purchase the following Conservation Services during the 1996/97 fishing year.

Observer programmes

Fisheries Observer programme - additional observer seadays

Programme: The collection of statistically robust data by fisheries observers on the incidental take of protected marine species.

Project Code: CSL 1A
Project Cost: $274,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To obtain statistically reliable information on the number of protected species incidentally taken in a number of commercial fisheries;

To verify the accuracy of reporting by commercial fishers of protected species bycatch;

To identify possible means for mitigating the incidental take of protected species;

To collect other biological information on protected species bycatch.

Objectives for 1996/97:
To meet the project objectives, above, in a number of commercial fisheries where the bycatch of protected marine species occurs viz:

> Trawl fisheries for: hoki, southern blue whiting, jack mackerel, hake and squid; Pelagic longline fisheries for tuna and billfish; demersal longline for ling and, commercial inshore gill net fisheries (Canterbury region).

To initially implement a level of observer coverage in each fishery to provide a coefficient of variation of 20% in the reliability of the data provided.

Fishery	HOK	SBW	JMA	HAK	NF BY-CATCH	TUNA LL	OTHER	Total
	Hoki	Southern Blue Whiting	Jack Mackerel	Hake	Non Fish By-catch squid trawl	Tuna Longlining	Demersal ling long lining	
Additional CSL funding of Observer Programme (sea days)	200	97	66	30	213	195	30	831

Observers will be required to treat the collection, packaging and storage of protected species by-catch animals and associated data as a primary task. Inclusion of an observer programme within the Conservation Services Levy (CSL) will allow for increased observer coverage to provide a more statistically reliable assessment of the numbers of protected species incidentally taken.

Cost Estimate:

Observer Costs (including salary, travel, overheads @ $305/day)	253,455
DOC Administrative Costs (@ 8% of total)	20,545
TOTAL	**$274,000**

Background:

The Minister of Conservation intends to purchase adequate observer coverage during fishing year 1996/97 in those fisheries known to incur a significant incidental take of protected marine species to meet his statutory requirements outlined in section 107EA(1) of the Fisheries Amendment Act 1994.

The proposed additional number of observer days to be purchased from the Observer Programme through CSL funding for 1996/97 and their allocation between specific fisheries are shown in the table above.

Final deployment of observer coverage in individual fisheries will be determined following approval by the Minister of Fisheries of the funding level for this project and discussion with the Observer Programme and industry to maximise observer coverage where possible by pairing with industry observers.

Increased observer coverage for the Auckland Islands squid fishery is seen as the main priority for 1996/97, and in order to provide for improved coverage in this fishery for 1997, the department proposes to double the number of observer days originally proposed in the White Paper.

For the inshore gillnet fishery, priority will be afforded to gillnet fisheries in the Canterbury region, where implementation of the programme proposed for 1995/96 has been delayed. No further observer programmes involving inshore gillnet fisheries are now proposed for 1996/97, and the number of observer days proposed in the White Paper have been transferred to the Auckland Islands squid fishery.

The department will advocate for the deployment of observers in the fisheries described to provide an acceptable level of confidence that the observed level of incidental take of protected species is representative of the incidental take rate of the whole fleet.

This programme will be incorporated into the existing Ministry of Fisheries Scientific Observer Programme for all fisheries except the inshore gillnet and the department will co-operate with both the Ministry and the industry to maximise the number of vessel-days with observer coverage through pairing of Ministry and industry observers wherever possible. The department will also take into account such other recommendations as may be put forward by the technical working group that is to be convened to examine ways in which observer coverage can be most efficiently spread.

Processing and analysis of fisheries observer programme data

Programme: Processing and analyses of fisheries observer data on bycatch of protected marine species.

Project Code: CSL 1B
Project Cost: $30,000
Start Date: 1 February 1997
Completion Date: 30 September 1997

Project Objectives:
To assess the degree of observer coverage over each fishery and assess the statistical power of the data to estimate actual take of marine wildlife.
To develop statistically reliable estimates of the bycatch of protected species from observer data, and to identify factors which may influence this bycatch and its mitigation.

Analysis of the data generated by the Observer Programme will provide information on protected marine species bycatch rates and the factors affecting the incidental take of these species which include: operational and environmental factors; area and vessel effects; and the effectiveness of mitigation measures.

Objectives for 1996/97:
To process and analyse the data on protected marine species bycatch for the fishing year 1996/97, as well as further analysing existing data where necessary, to establish:

Estimates of protected marine species bycatch by species on a fisheries basis;
and where possible:

Estimates of protected marine species bycatch by fishing area on a fisheries basis;

Analyses of the factors which influence the bycatch of protected marine species;

Analyses of the effectiveness of mitigation measures on a species/fisheries basis.

Cost Estimate:

Contract	27,500
DOC administration costs (@ 8% of total)	2,500
TOTAL	**$ 30,000**

Background:
A number of commercial fisheries in New Zealand have been identified by the Non-Fish Interactions Working Group as incurring an incidental take of protected species of marine mammals and seabirds in CSL 1A.

Adequate levels of observer coverage of these fisheries will be necessary to enable the Ministers of Conservation and Fisheries to fulfil their statutory obligations. Inadequate observer coverage may result in decisions being taken to impose management controls on fisheries before maximum-allowable levels of fishing-related mortality of protected species are achieved (Type I errors), or conversely, may result in fishing operations continuing after maximum-allowable levels of fishing-related mortality have in fact been exceeded (Type II errors).

This programme will provide the funding for a qualified statistician to analyse the data generated through programme CSL 1A, to provide estimates, with confidence intervals, of the incidental take of protected species of marine mammals and seabirds in the fisheries listed (see table CSL 1A) during fishing year 1996/97. Where possible, analyses will investigate determining factors influencing bycatch rate and the effectiveness of mitigation measures.

This programme will be contestable.

Marine mammal carcass recovery programme

Programme: The collection of biological data on protected marine mammal species incidentally caught in commercial fisheries.

Project Code: CSL 1C
Project Cost: $75,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To collect specimens of marine mammal incidentally taken in fishing operations for the analyses of:

species;
age;
sex;
reproductive status;
stomach contents; and,
general condition.

To analyse the above data to establish a population profile of those species caught incidentally as bycatch.

Objectives for 1996/97
To collect, and return to port for autopsy by qualified personnel, up to 200 marine mammal bycatch specimens.

Autopsy to examine species, age, sex, reproductive status, stomach contents and general condition of the specimens to establish a population profile for those species caught as bycatch.

Cost Estimate:

Packaging and labelling @ $10/bag	2,000
Transport from wharf @ $250/pallet/tonne	15,000
Storage @$40/pallet/month	2,400
Autopsy contract	50,000
DOC administrative costs (@ 8% of total)	5,600
TOTAL	**$ 75,000**

Background:
At present, the bodies of most of the marine mammals incidentally taken in commercial fishing operations are dumped at sea, thus losing the opportunity to collect a considerable amount of valuable biological data related to species, age, sex, reproductive status and other physiological parameters. This project will continue the work begun during the 1995/96 Fishing Year and will provide for the return to port, storage, transport and autopsy of up to 200 marine mammals incidentally taken during the 1996/97 fishing year by vessels carrying Ministry of Fisheries and/or industry observers. The data collected will provide a profile of the population taken as bycatch, and will generate essential information on the impact of commercial fishing on marine mammals. This programme will be reviewed by February 1997, to determine an appropriate level of future sampling for the 1997/98 Fishing Year and will be contestable.

Seabird carcass recovery programme

Programme: The collection of biological data on protected seabird species incidentally caught in commercial fisheries.

Project Code: CSL 1D
Project Cost: $6,000
Start Date: 1 October 1996
Completion Date: Ongoing -subject to annual review

Project Objectives:
To collect specimens of protected seabirds incidentally taken in fishing operations for the analyses of:

species;
age;
sex;
reproductive status;
stomach contents; and,
general condition.

To analyse the above data to establish a population profile of those species caught incidentally as bycatch.

Objectives for 1996/97:
To collect, and return to port for autopsy by qualified personnel, up to 300 seabird bycatch specimens.

Autopsy to examine species, age, sex, reproductive status, stomach contents and general condition of the specimens to establish a population profile for those species incidentally taken as bycatch.

Cost Estimate:

Packaging and labelling @$2/bag	600
Autopsy contract	5,000
DOC administration costs (@ 8% of total)	400
TOTAL	**$ 6,000**

Background:
At present, the bodies of many of the seabirds incidentally taken in commercial fishing operations are dumped at sea, thus losing the opportunity to collect a considerable amount of valuable biological data related to species, age, sex, reproductive status and other physiological parameters. This project will provide for the return to port, storage, transport and autopsy of up to 300 seabirds incidentally taken during the 1996/97 fishing year by vessels carrying Ministry of Fisheries and/or industry observers. The data collected will provide a profile of the population taken as bycatch, and will generate essential information on the impact of commercial fishing on seabirds.

This programme will be contestable.

Mitigation devices to minimise Bycatch

Seabirds

Programme: The research, design and development of mitigation measures to minimise the incidental take of seabirds protected under the First Schedule of the Conservation Act 1987, and the Wildlife Act 1953.

Project Code: CSL 2A
Project Code: $100,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To continue research, development and evaluation of operational methods and devices to avoid, remedy or mitigate the incidental take in commercial longline fishing operations of protected seabirds.

Objectives for 1996/97:
To continue research on the development of underwater setting methods and other mitigation measures, and evaluation of their effectiveness in reducing seabird bycatch associated with longline fishing.

Cost Estimate:

Contracts	92,000
DOC administration costs (@ 8% of total)	8,000
TOTAL	**$100,000**

Background:
Attempts to mitigate the incidental take of seabirds in commercial fishing have been made both through changes in operational procedures (e.g. code of practice, setting pelagic longlines at night) and through the development of mitigation devices (e.g. tori lines).

During the 1995/6 fishing year work is being undertaken on the initial development of underwater setting devices for surface longliners, construction of tori lines for deployment on surface longliners, and liaison with fishing masters on ways to reduce seabird bycatch. The type of work required during the 1996/7 fishing year will depend upon progress made during the 1995/6 fishing year, but is likely to include further development of underwater setting devices and other mitigation measures, and evaluation of their effectiveness in reducing seabird bycatch.

It is proposed that a technical working group, including representatives from industry, (and pelagic longline tuna fishers in particular), will be convened by the department, to review progress to date on the 1995/96 seabird bycatch mitigation projects, and to recommend priorities for the 1996/97 Fishing Year.

This programme will be contestable.

Marine mammals

Programme: Mitigation of the incidental take of marine mammals in commercial fishing operations

Project Code: CSL 2B
Project Cost: $40,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To develop and evaluate operational methods and devices to mitigate the incidental take of marine mammals in commercial fishing operation

Objectives for 1996/97:

1. Further development of prototype(s) for a Marine Mammal Escape Device (MMED), should objectives of this programme for the 1995/96 Fishing Year have been successfully achieved;

2. Investigation of the effectiveness of acoustic warning devices (pingers) on gillnets - preliminary investigations of the possible application of acoustic devices as deterrents to seals approaching trawlers.

Cost Estimate:

Consultancy (development of MMED)	20,000
Operating costs (development of MMED)	7,000
Consultants sea time (development of MMED)	3,000
Operating costs (pinger experiments)	7,000
DOC Administration costs (@ 8% of total)	3,000
TOTAL	**$ 40,000**

Background:
Attempts to mitigate the incidental take of marine mammals in commercial fishing have been made through both changes in operational procedures (eg. the fishing industry's Code of Practice) and overseas, through the development of mitigation devices (eg. acoustic pingers on gillnets).

During the 1996/97 Fishing Year, this project provided for the evaluation and development of both changes in established fishing operational procedures (Code of Practice in the jack mackerel trawl fishery in the Taranaki Bight), the preliminary development and trialling of a Marine Mammal Escape Device (MMED) and a preliminary evaluation of acoustic warning devices (pingers) on gillnets.

Trials with the MMED scheduled for the 1995/96 Fishing Year will include testing of the MMED in a flume tank and an operational fishing situation to assess whether or not it has any impact on efficiency or fish quality. Further development, should these trials prove successful, will include tests to assess the likely effectiveness of the MMED in allowing the escape of captured marine mammals while still alive. This will probably require further flume tank tests and the use of underwater videos in an operational situation.

This element of the programme involving the MMED will be contestable.

Liaison with overseas experts on the effectiveness of acoustic warning devices on gillnets was initiated during the Fishing Year 1995/96, and preliminary trials on the responses of Hector's dolphins to 'pingers' were undertaken in Akaroa Harbour. It is proposed that further trials be undertaken in 1996/97 by scientists who have been involved in the successful trials in the Gulf of Maine to further investigate the possible application of this mitigation measure in New Zealand. The sum proposed for these trials will be to provide logistic support for overseas scientists during a field season in New Zealand.

Bycatch species research programmes

Introduction

During the recent consultation with stakeholders, the department noted the concerns expressed by industry about the high costs of transport to subantarctic breeding areas for scientists monitoring seabird populations. It was agreed that careful consideration should be given to the possibility of some of the transport costs being reduced through charter of fishing vessels to deliver and pick up research teams. The budgets for transport costs in the following projects should therefore be seen as maximum costs, since they are based on known charter costs by established operators, and are included without prejudicing the possibility that satisfactory arrangements may be entered into through negotiations between the department and the fishing industry to reduce these costs.

Monitoring of protected seabird bycatch

Auckland Island wandering albatross

Programme: Evaluation of the impact of fisheries bycatch on the Auckland Island wandering albatross.

Project Code: CSL 3A (i)
Project Cost: $109,000
Start Date: October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To determine the present size and population trends of the Auckland Island wandering albatross (*Diomedea exulans gibsoni*) through annual census of nesting pairs on Adams Island.

To determine annual adult survival and recruitment.

To determine which areas of ocean are important Auckland Island wandering albatross foraging areas and to assess whether conflict between long-line fisheries and albatross can be reduced through zoning.

To collect further population data.

Objectives for 1996/97:
To census the wandering albatross breeding population on Adams Island in 1997.

To band as many fledglings as possible in the study population on Adams Island, and to determine survival of adults banded in 1991.

To band as many other wandering albatrosses as possible.

To start mapping the foraging zones of the Auckland Island wandering albatross by satellite tracking individual birds.

Cost Estimate:

Boat charter (2 return trips)	56,000
Airfares	2,000
Salary	20,000
Equipment (tracking transmitters and satellite time)	23,000
DOC administration costs (@ 8% total)	8,000
TOTAL	**$ 109,000**

Background:
MAF observer data between 1987 and 1992 in New Zealand's EEZ found wandering albatrosses were a frequent bycatch in longline tuna fisheries. Studies of wandering albatrosses elsewhere have implicated bycatch as a factor in the decline of the species. Because wandering albatross are such a long lived and slow reproducing species a fisheries induced reduction of adult survival by 1%, led to a 50% decline in the population on the Crozet Islands over a 20 year period (Weimerskirch, H. Jouventin, P. 1987: Population dynamics of the wandering albatross, *Diomedea exulans*, of the Crozet Islands: causes and consequences of the population decline. *Oikos 49*: 315-322.).

No reliable population data exists for the NZ subspecies of wandering albatross. Before a maximum level of fishing related mortality can be set (also known as an ABR - allowable biological removal), survival, recruitment and population size must be known. To allow reduction of conflict between albatross and the longline fisheries, the most important albatross foraging grounds need to be identified.

The planned research programme focuses on banding and recovery of both juvenile birds and adult breeding pairs during annual visits to the Auckland Islands, plus annual census of the breeding population. Satellite telemetry will be used to determine which parts of the ocean are most used by Auckland Island Wandering Albatrosses, particularly during vulnerable periods of the birds life cycle.

Antipodes Island wandering albatross

Programme: Evaluation of the impact of fisheries bycatch on the Antipodes Island wandering albatross
Project Code: CSL 3A (ii)
Project Cost: $117,500
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To determine the present size and population trends of the Antipodes Island wandering albatross (*Diomedea exulans antipodensis*) through annual census of nesting pairs on Antipodes Island.

To determine annual adult survival and recruitment.

To determine which areas of ocean are important Antipodes Island wandering albatross foraging areas, and to assess whether conflict between long-line fisheries and albatross can be reduced through zoning.

To collect further population data.

Objectives for 1996/97:
To census the wandering albatross breeding population on Antipodes Island in 1997.

To band as many fledglings as possible in the study population on Antipodes Island, and to determine survival of adults banded in 1994.

To band as many other wandering albatrosses as possible.

To continue tracking, using satellite telemetry, the foraging flights of a sample of breeding birds nesting on Antipodes Island.

Cost Estimate:

Boat charter (2 return trips)	56,000
Airfares	1,500
Salary	25,000
Equipment	26,500
DOC administration costs (@ 8% of total)	8,500
TOTAL	**$ 117,500**

Background:
MAF observer data between 1987 and 1992 in New Zealand's EEZ found wandering albatrosses were a frequent bycatch in longline tuna fisheries. Studies of wandering albatrosses elsewhere have implicated bycatch as a factor in the decline of the species. Because wandering albatross are such a long lived and slow reproducing species, a fisheries induced reduction of adult survival by 1% led to a 50% decline in the population on the Crozet Islands over a 20 year period (Weimerskirch, H. Jouventin, P. 1987: Population dynamics of the wandering albatross, *Diomedea exulans*, of the Crozet Islands: causes and consequences of the population decline: *Oikos 49*: 315-322.).

No reliable population data exists for the NZ subspecies of wandering albatross. Before a maximum level of fishing related mortality can be set (also known as an ABR - allowable biological removal), survival, recruitment and population size must be known. To allow reduction of conflict between albatross and the longline fisheries, the most important albatross foraging grounds need to be identified.

The planned research programme focuses on banding and recovery of both juvenile birds and adult breeding pairs during annual visits to Antipodes Island, plus annual census of the breeding population. Satellite telemetry will be used to determine which parts of the ocean are most used by Antipodes Island Wandering Albatross, particularly during vulnerable periods of the bird's life cycle.

Black petrel - Great Barrier Island

Programme: Evaluation of the impact of fisheries bycatch on the black petrel of Great Barrier Island

Project Code: CSL 3A (iii)
Project Cost: $15,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To undertake a census of black petrel (*Procellaria parkinsoni*) on Great Barrier Island via burrow monitoring and the banding of adults and fledglings, initially over four consecutive breeding seasons to establish adult mortality, breeding success and recruitment.

Objectives for 1996/97:
To monitor a sample of black petrel breeding burrows (minimum 50, maximum 100) on Great Barrier Island.

To band all adults in the study area.

To band all fledglings in the study area during the 1996/97 breeding season.

To band as many other black petrel as possible.

Cost Estimate:

Salary	11,000
Operating (transport, camp accommodation, incidentals, food)	3,000
DOC administration costs (@ 8% total)	1,000
TOTAL	**$ 15,000**

Background:
The total population of black petrels (*Procellaria parkinsoni*) numbers about 5000 birds. This species is endemic to New Zealand and confined to Great and Little Barrier Islands. Great Barrier is the stronghold. Scavenging from fishing vessels is common, and this makes the black petrel vulnerable to bycatch. A domestic longline vessel, fishing within New Zealand's EEZ, reported catching six black petrel on a single set during 1993, and others have been reported caught since. No reliable population data exists for the black petrel. Before a maximum level of fishing related mortality can be set (also known as an ABR - allowable biological removal), survival, recruitment and population size must be known. This study will investigate adult mortality, breeding success and recruitment in relation to fisheries interactions.

Albatrosses on Campbell Island

Programme: Southern Royal, Black-Browed, and Grey-Headed Albatross on Campbell Island
Project Code: CSL 3A (iv)
Project Cost: $47,500
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To investigate the diet, foraging ecology and population trends of three bycatch species of albatross on Campbell Island.

To model, compare and contrast, the population dynamics of the three albatross species on Campbell Island.

Which environmental and anthropogenic factors most influence the foraging ecology of Campbell Island albatross?

To compare the foraging ecologies, diet and life history strategies of Grey-Headed and Black-Browed albatross on Campbell Island with those on other subantarctic islands.

Objectives for 1996/97:
Foraging strategies - how do they vary across species, sexes and between seasons.

Diet studies - determination of principle food sources and seasonal variation.

Population dynamics - examine historical data, model populations of the three albatross species on Campbell Island.

Environmental and anthropogenic factors - examine oceanographic data and bycatch information.

Comparison across sites - for Black-Brows and Grey-Heads across a number of subantarctic islands.

Cost Estimate

NIWA contract (Sue Waugh)	26,000
Vessel charter and field operations (this is costed at 50% of known costs)	19,000
DOC administration costs (@ 8% total)	2,500
TOTAL	**$ 47,500**

Background:
Although DOC has carried out some monitoring of these three species, more in-depth work is in progress to determine the present numbers and trends in these populations. Is the NZ albatross biodiversity threatened by the same factors identified as causing albatross population decreases at other southern ocean sites (e.g. Weimerskirch and Jouventin, 1987; Croxall et al., 1990)? Moore and Moffat (1990) recorded a marked decrease (38-57%) in the combined populations of Black-Browed and Grey-Headed albatross on Campbell Island since surveys began in the 1940's. The southern royal albatross population has not been surveyed since 1983. Factors implicated with these declines include sea-surface temperature change, food resource exploitation, and fisheries bycatch mortality. Of the three species, Black-Browed albatross have sustained the greatest bycatch mortality in NZ waters. Only wandering albatross and southern buller's have been recorded caught in greater numbers.

This work forms part of a large cooperative study, primarily between CNRS (France), NIWA (NZ) and the Department of Conservation. Sue Waugh is completing some of the work for a doctoral thesis, and is partially funded through NIWA, by a three year contract with DOC. Peter Moore, a DOC scientist, is working on a census of southern royal albatross, and assisting Sue with her work on the other two albatross species. The costs of this scientist's time, and 50% of the operational costs will continue to be funded by DOC, as a proportion of the work relates to the global ecology of the species, ecological strategies and behavioural mechanisms. Work primarily linked to CSL is analysis of bycatch and oceanographic data in relation to diet and foraging zones, and work on population dynamics.

Monitoring of protected marine mammal bycatch

New Zealand sea lion

Programme: Evaluation of the impact of fisheries bycatch on the New Zealand sea lion

Project Code: CSL 3B
Project Cost: $92,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
To measure annual pup production as an index of population status for the New Zealand sea lion (*Phocarctos hookeri*) on the Auckland Islands and investigate the foraging ecology of the sea lion in so far as it directly relates to the Auckland shelf squid trawl fishery for a period of at least 5 years.

Objectives for 1996/97:
To measure pup production on the Auckland Islands.

To investigate the foraging ecology as it relates to the Auckland shelf squid trawl fishery.

Cost Estimate

Salary (technician @ 1 FTE)	35,000
Vessel charter and field operations (this is costed at 50% of known costs)	25,000
Foraging ecology equipment (this is costed at 50% of known costs)	25,000
DOC administration costs (@ 8% of total)	7,000
TOTAL	**$ 92,000**

Background:
The New Zealand sea lion is a species endemic to an area between Cook Strait, Campbell Island, Macquarie Island, and the southwest of the South Island. The range for this species is centred on the Auckland Islands, with the main breeding colonies on Dundas, Enderby and the Figure of Eight Islands. Population estimates for the sea lion are calculated from pup population counts. Fishery interaction occurs as a result of the overlap of the southern squid trawl fishery and the sea lion's foraging areas around the Auckland shelf. This programme will determine an index of population status for the sea lion and investigate foraging ecology.

The research into the foraging ecology of the New Zealand sea lion will be managed by a senior DOC scientist. The costs of this scientists time on this work will continue to be covered by existing DOC funding. Furthermore, significant costs of capital equipment such as anaesthetic machines and other capture and handling equipment would not be proposed for CSL funding. As a significant proportion of this work is necessary as a direct consequence of the squid fishery, funds from CSL are required to fund the acquisition of 50% of the remote tracking devices and data loggers associated with this work as well as 1 FTE technician. Technical support will cover all aspects of the work directly related to the bycatch of sea lions.

Population Management Plans

Programme: The development of Population Management Plans and the calculation of maximum fishing-related mortality (ABR).

Project Code: CSL 4A
Project Cost: $40,000
Start Date: 1 October 1996
Completion Date: Ongoing - subject to annual review

Project Objectives:
The development of Population Management Plans (PMP's) for protected species of marine wildlife containing all or any of the following:

An assessment of the biology and status of threatened species or other marine wildlife;

An assessment of any known fisheries interaction with marine wildlife;

The degree of risk caused by fishing related mortality and other human induced sources of mortality to threatened and other marine wildlife whether within the territorial waters of New Zealand or New Zealand Fisheries waters or elsewhere within the range of the species;

An estimate of the range of human induced mortality for threatened and other species of marine wildlife within which the criteria specified below will be met;

An estimate of the range of fishing related mortality for threatened species and other marine wildlife within which the criteria specified below will be met;

The maximum allowable level of fishing related mortality for threatened species and other marine wildlife within which the criteria specified below will be met;

Recommendations to the Minister of Fisheries on measures to mitigate the fishing related mortality of threatened species and other marine wildlife;

Recommendations to the Minister of Fisheries on the level of information to be collected on fishing related mortality.

The criterion to be met in determining a maximum level of fishing related mortality is:

In the case of threatened species, the level of fishing related mortality should not prevent the species achieving a non-threatened status as soon as reasonably practicable, and in any event within a period not exceeding 20 years.

In the case of any other marine wildlife, the level of fishing related mortality should neither cause a nett reduction in the size of the population nor seriously threaten the reproductive capacity of the species.

Objectives for 1996/97:
To complete the PMP for Hooker's sealion.

To complete the PMP for wandering albatross.

Cost Estimate:

Salary/operating	36,800
DOC administration costs (@ 8% of total)	3,200
TOTAL	**$ 40,000**

Background:
Population Management Plans (PMP's) will be prepared in consultation with the fishing industry, environmental organisations, Conservation Boards affected by the plan, and any other persons that the Director General of Conservation (DG) considers represent environmental, commercial, iwi and recreational interests. Notice of any draft plan shall be published at least once in each of the daily newspapers published in Auckland, Wellington and Dunedin. Every notice shall state that the draft plan is available for inspection and that any persons interested in lodging a submission on the draft may do so by a specified date.

Submitters who wish to be heard in support of a submission must advise the DG of their intent. The DG may hear submissions from any person or organisation consulted in the draft plan. The DG will prepare a summary of the submissions received on the draft and public opinion made known on the draft. After considering submissions, the DG may revise the draft. The DG shall send the draft PMP to the Minister of Fisheries and the New Zealand Conservation Authority (NZCA) along with the summary of submissions. The NZCA may comment on the draft PMP.

After the DG receives the NZCA comments on the draft PMP, the DG may amend the draft. A summary of the NZCA comments and a copy of the revised draft PMP will then be forwarded to the Minister of Conservation. After having regard to the provisions in the Wildlife and Marine Mammals Protection Act, the submissions, and any other matters the Minister considers relevant, the Minister may approve the PMP subject to the concurrence of the Minister of Fisheries.

The Minister of Fisheries may concur with the PMP after having regard to the impacts of implementing the maximum allowable level of fishing related mortality on the fishing industry and such other matters as the Minister considers relevant.

The approved plan will be available for public inspection. Any approved plan may be amended as necessary subject to further consultation and the process outlined above.

Department of Conservation, Fisheries Act 1983 - Conservation Services Levy 1996/97 Fishing Year.

Project Summary Table - GST exclusive (July 1996)

Code	Project	Justification		Inputs	Outputs	Standards and specifications
	OBSERVER PROGRAMMES Total cost $385,000	Statutory	Other			
CSL 1A	Fisheries Observer Programme - additional observer seadays	Fisheries Act 1983, Sec 107EA (1) (d) (i) (ii) (iii), Conservation Act 1987, 1st Schedule	Objective 1	$274,000 [plus $51,805 under-recovery from 95/6]	Collection of statistically reliable data by fisheries observers on the incidental take of protected marine species	See Mfish standards FS8 Information Collection and Management Services
CSL 1B	Processing and analysis of fisheries observer programme data	Fisheries Act 1983, Sec 107EA. (1) (d) (i) (ii) (iii), Conservation Act 1987, 1st Schedule	Objective 1	$30,000	Statistical analysis of observer data for the 1996/7 fishing year	To be specified in contract documentation
CSL 1C	Marine mammal carcass recovery programme	Fisheries Act 1983, Sec 107EA. (1) (d) (i) (ii) (iii), Conservation Act 1987, 1st Schedule	Objectives 1, 4	$75,000	Biological data on marine mammal bycatch specimens recorded by fisheries observers and vessel operators	To be specified in contract documentation, also see Mfish standards FS8 Information Collection and Management Services
CSL 1D	Seabird carcass recovery programme	Fisheries Act 1983, Sec 107EA. (1) (d) (i) (ii) (iii), Conservation Act 1987, 1st Schedule	Objective 1	$6,000	Biological data on seabird bycatch specimens recorded by fisheries observers and vessel operators	To be specified in contract documentation, also see Mfish standards FS8 Information Collection and Management Services
	MITIGATION MEASURES Total Cost $140,000					
CSL 2A	Mitigation measures to minimise bycatch of seabirds	Fisheries Act 1983, Sec 107EA. (1) (d) (ii), Conservation Act 1987, 1st Schedule	Objective 2	$100,000	Research, design and development of measures and devices to mitigate seabird bycatch	To be specified in contract documentation
CSL 2B	Mitigation measures to minimise bycatch of marine mammals	Fisheries Act 1983, Sec 107EA. (1) (d) (ii), Conservation Act 1987, 1st Schedule	Objective 2	$40,000	Research, design and development of measures and devices to mitigate marine mammal bycatch	To be specified in contract documentation
	RESEARCH PROGRAMMES Total cost $381,000					

CSL 3A	Monitoring of populations of protected seabird bycatch species	Fisheries Act 1983, Sec 107EA. (1) (d) (i) (iii), Conservation Act 1987, 1st Schedule	Objectives 3, 4	$289,000	Population status; breeding success; recruitment and mortality rates; and foraging zones of high priority seabird bycatch species	To standards set by DOC Science and Research Division
CSL 3B	Monitoring of populations of protected marine mammal bycatch species	Fisheries Act 1983, Sec 107EA. (1) (d) (i) (iii), Conservation Act 1987, 1st Schedule	Objectives 3, 4	$92,000	Measurement of New Zealand sea lion 1996/7 pup production at the Auckland Islands; statistically model fisheries impacts; and contribute to ongoing work on foraging ecology as it relates to fisheries	To standards set by DOC Science and Research Division
	POPULATION MANAGEMENT PLANS Total cost $40,000					
CSL 4A	Development of Population Management Plans (PMP's)	Fisheries Bill 1995	Objective 5	$40,000	Completion of PMP's for Hooker's sealion and wandering albatross	Non-fish and Fisheries Interactions Working Group
	OVERALL COST $946,000 + $51,850 = Total $997,850					

Main objective: To work in partnership with the New Zealand commercial fishing industry, Ministry of Fisheries, and other interested groups, to assess the impacts of fishing operations on protected marine species and to develop and investigate the effectiveness of mitigation measures which minimise the incidental take of protected marine species in interactions with the New Zealand commercial fishing industry. "Objectives" referenced in table above:

1. To ensure that during the 1996/7 Fishing Year, adequate bycatch data is collected, verified and analysed to give a sufficiently reliable estimate of the numbers and characteristics of the incidental take of protected marine species in New Zealand commercial fisheries interactions to enable the Minister of Conservation to carry out his/her statutory duties; (Projects CSL 1A(i), CSL 1A(ii), 1B, 1C, 1D)

2. In partnership with the Minister of Fisheries and sector groups, to develop and test mitigation measures designed to minimise the incidental take of protected marine species; (Projects CSL 2A, 2B)

3. To research the status and population demography of protected marine species so as to enable the Minister of Conservation to make informed decisions about the relative threat of New Zealand commercial fisheries interactions on individual species, and to carry out his/her statutory duties; (Projects CSL 3A, 3B)

4. On a species specific basis to assess fisheries related mortality and the spatial and temporal aspects of commercial fisheries interactions, to provide information on the impact of New Zealand commercial fishing interactions on protected marine species (as opposed to fisheries outside the EEZ, and the variety of other causes of mortality), to enable the Minister of Conservation to carry out his/her statutory duties; (Projects CSL 3A, 3B)

5. Develop, and in consultation with the Minister of Fisheries and the fishing industry, two PMP's. (Project CSL 4A)

Standards

Conservation Services Levy Standards

Fisheries Observer Programme - Projects CSL 1A (i), 1C and 1D

Standards Documents	Reference
Information Collection and Management Services	Ministry of Fisheries - FS 8
Biological Data Collection by Scientific Observers	Ministry of Fisheries - RES 15

Other Projects

Documents	Reference
Department of Conservation, Science and Research Division, Science Planning Handbook for 1996/97	Department of Conservation, S&R Internal Report, No. 149
Department of Conservation, CSL Contestable Tendering Process	Department of Conservation
Department of Conservation, Science and Research Division, contract for service	Department of Conservation