Ministry for Primary Industries
Manatū Ahu Matua

Review of progress against actions identified in the New Zealand NPOA-Sharks 2008

MPI Technical Paper No: 2013/22

ISBN No: 978-0-478-42002-9 (online)
ISSN No: 2253-3923 (online)

July 2013

New Zealand Government

Growing and Protecting New Zealand

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INTRODUCTION

New Zealand drafted a National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks) in 2008 in response to the Food and Agriculture Organisation of the United Nations (FAO's) drafting of the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks). The overarching goal of the IPOA-Sharks is '*to ensure the conservation and management of sharks and their long-term sustainable use*'. New Zealand's NPOA-Sharks 2008 describes and compares New Zealand's fisheries management system, as it applies to the management of shark species, with the goals, principles and management objectives contained in the IPOA-Sharks. The comparison demonstrated several areas that could be improved upon in New Zealand, addressed through a range of actions reported in the NPOA-Sharks 2008.

As a part of the review of the NPOA, progress against these actions has been analysed and is reported below. Each action is presented with its original rationale, a report of progress to date on that action, and an indication of future intentions relating to the action. This includes closing any actions that have been completed, explaining if any actions are not going to be pursued, and any next steps or redirection of the efforts to progress an action.

The eleven actions are divided into five categories addressing different issues.

The NPOA-Sharks 2008 also compiled extensive appendices with statistics on catches of sharks in New Zealand. These tables have been updated and are presented here to provide some comparison pre- and post- adoption of the NPOA-Sharks 2008 (refer appendix one).

ACTIONS TO ELIMINATE LIVE SHARK FINNING

I. Ensure fishers are aware that live finning of sharks constitutes ill-treatment and is an offence under the Animal Welfare Act

Under current provisions of the Animal Welfare Act 1999, it is an offence to wilfully ill-treat an animal. It is considered that the practice of removing the fins from a shark and returning it to the sea while still alive fits within the definition of ill-treating an animal.

Instances of finning of live sharks have never been recorded in New Zealand on a wide scale, but occasional cases have been reported. The intention of this action was to ensure that the cruelty aspect of live finning is clearly conveyed to all fishers and information disseminated to stop even isolated cases of live finning of sharks.

Progress

Workshops were held with fishers to educate them on correct shark handling processes and alert them to the fact that it is considered ill-treatment of an animal to remove the fins from a live shark and return the animal to the sea. Doing so is an offence under the Animal Welfare Act.

New Zealand's tuna fisheries have implemented a Code of Practice that outlines the safe handling, processing and unloading of sharks. This Code of Practice states that all sharks to be retained should be killed humanely and describes best practice for this.

Future

This action has been implemented, and will not require additional focused attention in the future, only ongoing maintenance.

II. Establish reporting protocol to enforce the Animal Welfare Act

This action was intended to establish a structured reporting protocol to ensure that any observed instances of live finning would be reported to the Ministry of Agriculture and Forestry, the agency then responsible for enforcement of the Animal Welfare Act. Ministry of Fisheries observers reported to the Ministry of Fisheries and structured communication channels between the agencies were not established at that time.

Progress

No specific progress was initially made on this action, as there have not been any substantiated reports of live shark finning requiring follow up action. In 2011, the Ministry of Fisheries was merged into the Ministry of Agriculture and Forestry, creating a new ministry, the Ministry for Primary Industries (MPI). Both animal welfare and fisheries management functions are now within the same ministry, facilitating communication. Efforts have now been made to ensure observers are aware of legislative provisions relating to live finning. Questions about whether live shark finning occurred form part of the briefing and debriefing material for all observer trips, and any observed incidences of live shark finning would be followed up to ensure that appropriate action is taken.

Future

This action is considered completed. Observers will remain the primary tool for the reporting of any live shark finning in New Zealand waters (noting the limitations with observer coverage in some fisheries). Observer coverage is expected to increase in future which will give more capability to detect any live shark finning incidents.

ACTIONS TO ENSURE APPROPRIATE MANAGEMENT OF THREATENED AND ENDANGERED SPECIES

III. Protect Basking Shark

At the time of the NPOA-Sharks 2008, basking shark was listed on Appendix 1 of the Convention on Migratory Species (CMS), but not protected under New Zealand legislation. Two statutory tools can be used to give effect to the decision to protect basking shark:

a) The Wildlife Act 1953 can be used to prohibit use of marine species within New Zealand fisheries waters.
b) Regulations under the Fisheries Act 1996 could restrict the catch of basking shark by New Zealand flagged vessels fishing on the high seas.

Progress

In 2010, regulations were made under section 297 of the Fisheries Act 1996 restricting the taking of basking shark by New Zealand flagged vessels operating on the high seas. Basking shark was also added to Schedule 7A of the Wildlife Act 1953 which affords absolute protection to this species in New Zealand fisheries waters.[1] This provides the strongest and most comprehensive protection available within the current legislative framework. As with

[1] Take is defined in the Wildlife Act 1953 as 'taking, catching, or pursuing by any means or device, and also include the attempt to take'.

other protected species, any accidental take of basking sharks must be returned to the water in the best condition possible, and the catch must be recorded in an approved manner.

During the term of the NPOA-Sharks 2008, a further five species of Chondrichthyes were added by the Department of Conservation to Schedule 7A of the Wildlife Act, prohibiting the use of them within New Zealand fisheries waters. The four additional species are deepwater nurse shark (*Odontaspis ferox*), whale shark (*Rhincodon typus*), oceanic whitetip shark (*Carcharhinus langimanus*), manta ray (*Manta birostris*), and spinetail devil ray (*Mobula japonica*). These species are now considered protected species and are not allowed to be targeted or any part retained if caught accidentally.

Future

This action is considered completed although protection under the Wildlife Act and/or the Fisheries Act will always remain a potential management tool for Chondrichthyes in the future.

IV. Develop and implement a prohibited utilisation process standard

Where sustainability concerns dictate limited or no opportunity for extractive use, the taking of a marine species may be prohibited. The intent of this action was to develop a standard that would be used to identify marine species where no level of utilisation would be considered to be sustainable.

Progress

In general, New Zealand has moved away from defining standards as the way to manage issues and has developed risk-based approaches to key environmental issues. This action has, therefore, not been progressed, although additional species have been accorded protected species status during the span of the NPOA-Sharks 2008.

Future

The original intention of this action was to ensure that any species that could not sustain any level of utilisation were identified and managed as appropriate. Such species will be identified and managed in line with objectives in the NPOA-Sharks 2013 for the biodiversity and long-term viability of shark populations, including:

Objective 1.1 Develop and implement a risk assessment framework to identify the nature and extent of risks to shark populations.

Objective 1.2 Systematically review management categories and protection status to ensure they are appropriate to the status of individual shark species.

Objective 1.4 Mortality of all sharks is at or below a level that allows for the maintenance at, or recovery to, a favourable stock and/or conservation status giving priority to protected species and high risk species.

Species for which utilisation is not deemed appropriate are also identified through international processes, e.g. through CMS. New Zealand will continue to meet its obligations in relation to species for which use has been prohibited as part of relevant international agreements, as specified in objectives 5.1-5.5 of the NPOA-Sharks 2013.

ACTIONS TO REVIEW SHARK MANAGEMENT

V. Review Schedule 6 provisions in relation to spiny dogfish

Schedule 6 of the Fisheries Act 1996 lists species and stocks which may be returned to the sea in accordance with stated requirements. For fish species listed on this schedule, the requirements usually include that the individual be likely to survive on return to the sea, and that the return takes place as soon as practicable after the take.

Spiny dogfish have a unique status on Schedule 6, in that they are allowed to be returned to the sea either alive or dead as long as they are reported and counted against Annual Catch Entitlement. This allows operators to choose whether to land spiny dogfish or return them to the sea. At the time this provision was implemented there were limited markets for spiny dogfish and the management objective was to set catch limits and ensure that there was full reporting against those limits. The provision of choice to fishers aimed to mitigate costs associated with landing spiny dogfish and possibly needing to dispose of them on land. This approach was expected to result in better reporting of spiny dogfish catches by reducing the incentive to illegally dump and not report catches. Without accurate reporting, appropriate management settings for this fishery could not be established.

Progress

Commercial catch returns allow the level of utilisation of spiny dogfish to be monitored. In comparison to the period reported in NPOA 2008, catches of spiny dogfish have reduced, and percent landed has increased.

Table 1: Spiny dogfish discards, landings, and total catch (tonnes) for 2002/03 – 2010/11 fishing years

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Discards	7,100	6,386	4,099	3,600	3,272	3,595	3,163	2,667	2,825
Landings	3,604	2,778	3,394	4,609	4,226	2,763	2,987	3,742	3,288
Total catch	10,706	9,166	7,495	8,211	7,499	6,359	6,152	6,411	6,115
% Landed	33.6%	30.3%	45.3%	56.1%	56.3%	43.4%	48.5%	58.4%	53.8%

No detailed analysis has been done to investigate any changes in the accuracy of reporting, nor the continued appropriateness of the Schedule 6 listing.

Future

Assessing the current Schedule 6 provisions for spiny dogfish falls within the actions associated with objective 6.1 of the NPOA-Sharks 2013 (Ensure information collection systems and processes are sufficient to inform management of shark populations). In future, progress on this action should be reviewed more regularly, allowing for more active monitoring and management of spiny dogfish.

It was noted during this review that there is no differentiation between live and dead spiny dogfish when they are released under the 6th Schedule provisions. As part of this action being carried over into NPOA-Sharks 2013, reporting requirements including a code to differentiate between live and dead releases of spiny dogfish to better inform a review of the appropriateness of the provision should be considered.

VI. Review listing other shark species, or specific life stages of other shark species, on Schedule 6

As noted in Action V above, Schedule 6 is a provision of the Fisheries Act which allows listed QMS species and stocks to be returned to the sea subject to certain conditions. For all

shark species (except for spiny dogfish) currently listed on Schedule 6 the conditions include that the individual is likely to survive on its return to the water and that the return takes place as soon as practicable after capture. This provision allows fishers to return live sharks to the sea, particularly live pregnant females, pups or juveniles and very large sharks, with associated benefits to the status of the population.

This NPOA 2008 action reflected a desire by the Ministry to review the Schedule 6 provisions to determine if additional provision could be made for the live release of other species or of particular life stages of other species.

Progress

Since the NPOA 2008, rig (*Mustelus lenticulatus*) and school shark (*Galeorhinus galeus*) have been added to Schedule 6 (this will become effective from 1 October 2013 for all school shark stocks). Rig was added in 2010 in response to over-catching of the TACC (attributed to incidental catches of rig in other fisheries), the potential for live animals to be returned to the sea to avoid paying deemed values, reduction in possible incentives for misreporting, and potential benefit to the sustainability of the fisheries taking rig. School shark was added to Schedule 6 in 2013 for the same reasons as rig.

A separate code has been established for 6th Schedule reporting where there is no requirement for released catch to be counted against ACE. This enables the number of sharks returned to the sea alive in accordance with Schedule 6 to be monitored. This information assists in providing more accurate reporting on shark stocks, which in turn assists in the management of the fisheries. However, use of this code is known to be limited in at least some fisheries, suggesting the need for further education on correct reporting.

Future

Schedule 6 remains a viable management tool that has clearly been considered during sustainability reviews of certain species. To ensure full benefits are met for the species now listed on Schedule 6, guidelines are required on the best way to safely release a live shark back into the sea. This need is recognised in objective 2.2 of the NPOA 2013 ('Minimise waste by promoting the live release of by-caught shark species and develop and implement best practice guidelines for handling and release of live sharks').

VII. Review and revision of NPOA

The IPOA-sharks states that all countries' NPOAs should be assessed every four years to ensure they remain effective. The review of the NPOA 2008 (this document) includes an analysis of progress against all actions in the NPOA 2008 with suggestions for future work. Appendix one also presents updated descriptions of shark management settings such as catch limits, along with catch statistics.

Progress

This document presents an analysis of progress against all actions specified in the NPOA 2008. Updates on management settings and general progress on the management of sharks and related issues can be found in the NPOA 2013.

Future

Although progress has been made against the actions in the NPOA 2008, this review has indicated that progress has been slower than anticipated in some areas. It is therefore suggested that progress against some actions be reported annually. Under the national fisheries planning process, actions from the NPOA sharks should be clearly identified in Annual Operational Plans and Annual Review Reports for the various fisheries. Reviews of progress against the NPOA actions should be compiled each year aiding not only in keeping

track of progress, but also facilitating the overall review scheduled for 2018 as specified in the Implementation section of the NPOA 2013.

An MPI-led monitoring group should be created and meet annually to review progress against the actions in the NPOA 2013 and identify areas that require further attention.

ACTIONS TO IMPROVE INFORMATION

VIII. Strengthen existing research and monitoring programme

Research and monitoring measures are an integral component of fisheries management and ensure that timely and appropriate action is taken when sustainability concerns arise. This action intends to strengthen measures through additional research projects, a desktop review to compile all information regarding sharks in New Zealand and to identify information gaps. This action was included in the NPOA 2008 with activities divided into four categories:

- Sustainability
- Utilisation
- Environmental considerations
- Additional considerations

Progress

Details of all research projects in these four categories are listed below. More detail on all of these projects can be found in summary of the scientific review of research and monitoring outputs attached, or in the review itself.[2]

Sustainability

Projects include the collection and analysis of data from various sources:

Trends in abundance as estimated from research surveys, observer data, commercial catch and effort, recreational fishing data (including gamefish tagging programmes) and other sources (e.g. tag-recapture data):

- Four series of research trawl surveys to estimate trends in relative abundance have been conducted around South Island, the Chatham Rise, and the Subantarctic. These surveys produced acceptable biomass estimates for some species, but not for others. Biomass estimates of species such as pale and dark ghost shark, spiny dogfish, shovelnose dogfish, longnose velvet dogfish and leafscale gulper sharks were considered reasonable in one of more survey regions. Species that were usually not effectively surveyed include those with patchy distributions, low abundance, low or variable catchability, and low selectivity.
- Acoustic surveys have not yet been used to monitor chondrichthyan biomass. Although sharks lack swim bladders, their liver oil is a different density to that of seawater and so deepwater sharks produce weak echoes. However, the low density of deepwater sharks means they are difficult to monitor acoustically.
- Observer data have been used to produce unstandardised catch rates for blue, porbeagle, and mako sharks in tuna longline fisheries. However these are not believed to index abundance because the New Zealand fishery exploits only a small part of the range of these highly migratory species, and because observer coverage in the domestic fishery is too low to be representative of the catch.
- Commercial catch and effort data have been modelled to generate standardised annual CPUE indices. These indices are thought to index abundance for some stocks and species,

[2] http://www.mpi.govt.nz/Default.aspx?TabId=126&id=1535

and have been produced for all school shark stocks, most rig stocks, the two main elephantfish stocks, and spiny dogfish in SPD 3 and SPD 5.
- Recreational fishing data have not been used to monitor abundance in chondrichthyans and are probably not suitable for that purpose given the relatively small recreational catches and their likely non-representative nature.
- Tagging data have not been used to monitor abundance in chondricthyans.

Trends in catches, e.g. are catch limits being regularly exceeded or substantially undercaught:
- Trends in catches and comparisons between catches and Total Allowable Commercial Catches have been published annually for QMS species in the MFish/MPI Fishery Assessment Plenary reports. Trends have not generally been published for non-QMS species, with the exception of species in the Kermadec FMA. Discard quantities and rates of deepwater chondrichthyans from a range of fisheries in various parts of the EEZ (mainly south of Cook Strait) have been estimated in a series of bycatch reports. There is also a compilation of non-QMS catch histories in some Marine Stewardship Council certification documentation (not reviewed in this report).

Trends in the sizes and maturity stages of sharks taken based on observer data:
- Trends in the size composition of blue, porbeagle and mako sharks in tuna longline fisheries based on observer data have been published regularly. Maturity data are currently being collected for the same species but trends have not yet been analysed.
- Trends in the size composition of spiny dogfish in management area five (SPD 5) have been analysed, as have trends in pale ghost shark stocks.
- Trends in the size composition of Antarctic skates in the Ross Sea have been analysed.

Characterisation of the nature of shark catches in various fisheries, e.g. target versus bycatch, to assess risks to shark populations:
- Commercial fishery characterisations have been carried out for the main stocks of some target species (rig, school shark) and some bycatch species (spiny dogfish, blue shark, porbeagle shark, mako shark, Antarctic starry skate, Antarctic allometric skate, pale ghost shark).

Stock assessments will be undertaken for those species for which sufficient data exist:
- One quantitative chondrichthyan stock assessment (for rig in management area seven – SPO 7) has been produced.
- IUCN threat categories for 13 pelagic sharks and rays occurring in New Zealand waters have been reviewed.

Biological studies to obtain or refine estimates of the productivity of shark populations:
- Biological parameters and demographic information have been summarised for 13 pelagic sharks and rays occurring in New Zealand waters.
- Biological parameters have been updated and summarised for Antarctic starry skate, Antarctic allometric skate, pale ghost shark, and five deepwater shark species (leafscale gulper shark, shovelnose dogfish, Baxter's dogfish, longnose velvet dogfish, Plunket's shark). The productivity of the five deepwater sharks was also estimated.
- Age, growth, longevity and maturity have been estimated for shovelnose dogfish and leafscale gulper shark.
- Incubation periods and hatching dates have been estimated for elephantfish.

Utilisation

Analysis of observer and fisher collected data on the fate of sharks (e.g. retained versus discarded):

- Analyses of discarded catch have been conducted for blue, porbeagle, mako and school sharks in tuna longline fisheries; and for spiny dogfish, deepwater sharks, skates and chimaeras in middle depth and deepwater trawl fisheries and middle depth longline fisheries.

Analysis of the effectiveness of 6th Schedule provisions for shark species:

- Data have been collected by observers aboard surface longline vessels on the life status of discarded blue, porbeagle and mako sharks. This data has been reviewed in a research publication currently being finalised.[3]
- Data have been collected on the life status of discarded spiny dogfish using destination codes X (alive) and M (dead), but no reports analysing the data during the review period were produced.

Review of conversion factors used to convert processed weight to greenweight:

- A wet fin conversion factor was calculated for blue shark from observer data. Data are currently being collected from blue, porbeagle and mako sharks for future calculation and refinement of conversion factors.
- Conversion factor data were collected for school shark and ghost shark and presented to the Conversion Factors Working Group, but have not been written up and are not currently available in report form.

Monitor the use of processed states over time to determine trends in utilisation:

- Processed states have been summarised for tuna longline, purse seine and some small trawl fisheries but no reports analysing the data during the review period were found.

Environmental considerations

Analysis of diet data:

- Diet studies have been carried out on a suite of 18 middle depth to deepwater sharks, skates and chimaeras on the Chatham Rise, Wairarapa Coast and Puysegur region. The diet of juvenile rig in estuaries was also described.

Identification of areas of habitat of particular significance to shark species (e.g. spawning, pupping and nursery grounds):

- Estuaries and harbours were surveyed throughout New Zealand and juvenile rig nursery grounds were identified.
- The Poor Knights Islands Marine Reserve (NE of the North Island) was identified as a mating and nursery area for short-tailed stingrays.
- The distribution, abundance and size composition of hammerhead sharks in New Zealand waters was assessed.

Effects of fishing research programmes:

- Although no specific 'effects of fishing' studies have been directed at chondrichthyans, many studies listed elsewhere have contributed to our knowledge in this area. These include studies on diet, bycatch quantities and handling, and discard rates. Studies on

[3] 'Review of shark meat markets, discard mortality and pelagic shark data availability, and a proposal for a shark indicator analysis.' Shelley C. Clarke, Malcolm P. Francis and Lynda H. Griggs (draft report currently being finalised).

biological productivity of chondrichthyans also contribute to our knowledge of the vulnerability of these species to fishing.
- Studies were conducted on the factors affecting the bycatch of basking sharks in trawl fisheries, and the mitigation of spinetail devilray bycatch in purse seine fisheries.

Additional considerations

This research area includes efficacy of reporting measures (measured through the use of 'generic' shark codes and the comparison of fisher and observer reports).

No specific analyses were done on the efficacy of reporting measures, although statistics on the use of generic codes are presented in the updated catch statistics in Appendix One. Fisher and observer reports have not been compared as part of any research projects during the period of the NPOA 2008.

Other research

Increased information in protected shark species:
Under Conservation Services Levy finding the following research has been conducted:

- A review describing the nature and extent of interactions, both current and historic, between each of the protected shark species (excluding the oceanic whitetip shark) and commercial fisheries. These reports also described population information relevant to assessing risk to protected shark species.[4]
- A specific review was undertaken to identify the factors related to trends of basking shark bycatch.[5]
- Research characterising the nature and extent of protected ray interactions with purse seine fisheries. This work also investigated methods for successful live release of animals and conducted satellite tagging in order to assess post-release survival.[6]
- Future research includes work on mitigating capture and improving live release techniques for basking sharks and adding an oceanic whitetip shark chapter to the protected shark review detailed above.[7]

Future

Future research needs have been identified in the science review reported separately.

IX. Reduce use of generic shark reporting codes

Commercial catches of sharks are sometimes reported only to one of a number of generic 'shark' codes and not to a specific species code. These generic codes compromise the ability of the reporting framework to accurately reflect the take of individual shark species. The intent of this action was to reduce the use of generic codes from 4-5% to below 1% of the total shark catch.

The use of generic reporting codes can have detrimental effects on several aspects of the management of sharks. Overall, they make it difficult to determine the actual removals of shark species which leads to difficulties in analysing risks to and potential effects on shark populations from commercial fishing.

[4] 'Protected fish- review of fishery interactions and population information' Malcolm P. Francis and Warrick S. Lyon available at http://www.doc.govt.nz/conservation/marine-and-coastal/conservation-services-programme/csp-reports/protected-fish-review-of-fishery-interactions-population-information/
[5] 'Basking shark bycatch review' Malcolm Francis and Philip Sutton available at http://www.doc.govt.nz/conservation/marine-and-coastal/conservation-services-programme/csp-reports/basking-shark-bycatch-review/
[6] 'Protected rays - occurrence and development of mitigation methods in the New Zealand tuna purse seine fishery' Emma Jones and Malcolm P. Francis available at http://www.doc.govt.nz/conservation/marine-and-coastal/conservation-services-programme/csp-reports/protected-rays-occurence-and-development-of-mitigation-methods-in-the-new-zealand-tuna-purse-seine-fishery/
[7] Project descriptions available in the CSP annual plan 2013/14 available at: http://www.doc.govt.nz/conservation/marine-and-coastal/conservation-services-programme/csp-plans/csp-annual-plan-2013-14/

Progress

The use of generic reporting codes has been around 3-4% in the period since the NPOA 2008. It was intended that the production of an ID guide would assist in reducing the use of generic codes. However, the ID guides were only published in 2011 meaning that they are unlikely to have had any measurable impact at this point in time.

Future

Work is underway on a targeted ID guide for five species of deepwater sharks that are often processed for livers, but not necessarily identified to a species level. These species are currently frequently reported under the generic code 'deepwater dog' or possibly 'other sharks and dogs' which are the two most common generic codes in use (refer table 3 in appendix one). This ID guide is intended to improve the identification of those species, as there is economic benefit for the fishers in better identification making them likely to take the time to correctly identify the shark.

Observer coverage in New Zealand fisheries is scheduled to increase markedly over the next five years, which may lead to better identification of shark species captured and in providing estimates of catch by species. Observer identifications could be focused on those species that fishers report with generic codes in order to determine what species require further work for identification.

Work connected to generic reporting codes is identified as a component of work to achieve objective 6.1 of the NPOA-Sharks 2013 ('Ensure information collection systems and processes are sufficient to inform management of shark populations'). Species covered by generic codes are likely to vary by fishery, and breaking information down by fishery would better inform any activities undertaken to further progress this action.

X. Produce a field identification guide

This NPOA 2008 action was aimed at producing a clear, simple ID guide that could be used to identify sharks to the species level.

Progress

Four field ID guides have been produced that describe and illustrate 73 shark species (61% of the known chondrichthyan fauna in New Zealand). The guides cover all of the common and many of the rare species which are encountered in fishing operations. The three main ID guides were only published in 2011 which is too recent for there to be any measurable impact on species identification.

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) has also produced a handbook that provides information on shark species commonly found in tuna fisheries. This guide was distributed to all tuna fishers to assist them in identification of commonly caught sharks.

A small ID guide is also being produced for use in the deepwater fisheries. This guide will detail how to identify a limited number of species of deepwater dogfish that are commonly processed for their livers. Identifying these sharks to a species level has an economic benefit to the fishers and it is hoped that in future, these particular species will be increasingly reported by species code rather than under generic reporting codes. All are very similar in appearance, and are likely to be a large proportion of those often reported under the generic 'deepwater dogfish' code.

Future

This action should be carried over to the NPOA 2013, and more specific directions given to reduce generic reporting codes (refer objective 6.1 of the NOPA-Sharks 2013). It would be beneficial to have additional information regarding which fisheries use the generic reporting codes most often and potentially target observer effort on those areas. This would aid in clarification of which species and what fisheries need focussed attention to lessen generic reporting. Targeted identification guides and educational material can then be made available.

As observer coverage is increased throughout New Zealand, more detailed information on shark captures should become available.

ACTIONS TO MEET INTERNATIONAL OBLIGATIONS

XI. Participate in relevant Regional Fisheries Management Organisations and other relevant international fora

This action addresses the need to participate in international fora, as many species of shark that are found in New Zealand are highly migratory in nature, and New Zealand vessels are involved in fisheries outside of New Zealand in which sharks are sometimes encountered as bycatch. New Zealand aimed to be a leader in international fora, seeking improved reporting of shark catches and collaborative research amongst members towards full stock assessments for key shark species.

Progress

New Zealand has continued its participation in all relevant fora including regional fisheries management organisations (the South Pacific Regional Fisheries Management Organisation (SPRFMO), the Western and Central Pacific Fisheries Commission (WCPFC), the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)); conservation bodies (the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Migratory Species (CMS), International Union for the Conservation of Nature (IUCN)) , and the International Council for the Exploration of the Sea (ICES).

Additional detail is provided below on selected bodies for which specific decisions have been made since the NPOA-Sharks 2008.

<u>WCPFC</u>

New Zealand has been an active participant in the WCPFC scientific process. A shark research plan has been adopted by WCPFC and it is now a requirement for members to report catches of key shark species. New Zealand is one of the few countries which has routinely reported shark catches to the species level. Stock assessments are now programmed for these key species. Assessments have been conducted for oceanic whitetip and silky sharks. Blue sharks are to be assessed in 2013, although data for a full stock assessment was lacking so an evaluation of indicators will be carried out instead.

<u>CCSBT</u>

New Zealand has been an active advocate of the need for CCSBT to actively assess the impact of fishing for southern bluefin tuna on ecologically related species both at the Commission and within its subsidiary body the Working Group on Ecologically Related Species (ERS). CCSBT has agreed that members should adopt the ERS measures that apply within geographically based tuna RFMOs. Relevant organisations are WCPFC and the Indian Ocean Tuna Commission (IOTC). CCSBT has agreed on the exchange of data on ERS (including sharks) which will provide for scientific assessment of fishing impacts either

within the CCSBT science process or in conjunction with other tuna RFMOs. New Zealand and other members have undertaken to prepare a stock assessment for porbeagle sharks.

SPRFMO

SPRFMO, the most recently formed RFMO, has limited data on bycatch species (including sharks) provided by its Participants.

CMS

New Zealand has participated in the development of a non-binding Memorandum of Understanding (MoU) on the conservation and management of shark species listed on appendices to the CMS as warranting cooperation between nations. New Zealand has yet to become a signatory to this MoU. Further investigation into becoming a signatory is covered in objective 5.2 of the NPOA 2013.

CITES

While generally preferring to see fisheries management action achieved through regional fisheries management organisations, New Zealand has supported the listing of certain shark species on Appendices to CITES to either restrict or prohibit trade.

FUTURE DIRECTIONS
Summary of NPOA-Sharks 2008 actions, outcomes, and future directions

NPOA-Sharks 2008 action	Outcome	Future directions: NPOA-Sharks 2013 reference
I. Ensure fishers are aware that live finning of sharks constitutes ill-treatment and is an offence under the Animal Welfare Act	No new actions but maintain existing efforts.	-
II. Establish reporting protocol to enforce the Animal Welfare Act	No new actions but maintain existing efforts.	-
II. Protect Basking Shark	Basking shark has been protected; no action to be carried over.	Goal 1: Maintain the biodiversity and long-term viability of New Zealand shark populations based on a risk assessment framework with assessment of stock status, measures to ensure any mortality is at appropriate levels, and protection of critical habitat.
V. Develop and implement a prohibited utilisation process standard	Following the new risk-based approach favoured by the Ministry, a PSA (or similar analysis) should be completed for all sharks caught in each type of fishery (Deepwater, HMS, Inshore) to both guide information collection and support future risk assessments.	Goal 1 (see above)
V. Review Schedule 6 provisions in relation to spiny dogfish	Carry-over action to review Schedule 6 provisions for spiny dogfish with additional time-bound milestones to ensure timely implementation	Objective 6.1: Ensure information collection systems and processes are sufficient to inform management of shark populations
VI. Review listing other shark species, or specific life stages of other shark species, on Schedule 6	Schedule 6 will remain a viable management tool for all species. Ministry to ensure that 'best practice' guides for the safe handling and release of sharks are produced and distributed in all fisheries that catch sharks.	Objective 2.2 Minimise waste by promoting the live release of by-caught shark species and develop and implement best practice guidelines for handling and release of live sharks.
Review and revision of NPOA	Establishment of an MPI-led group (*NPOA – Sharks Monitoring Group*) that will monitor progress against NPOA Actions annually and drive implementation.	Governance section of NPOA-Sharks 2013
II. Strengthen existing research and monitoring	Further actions relating to research and monitoring	Goal 6: Continuously improve the information available from

programme	programmes are included in the science review section.	New Zealand vessels and fishers to conserve sharks and manage fisheries that impact on sharks, with prioritisation guided by the risk assessment framework.
X. Reduce use of generic shark reporting codes	Set up a workstream to determine what fishery types are the biggest users of generic reporting codes, the best way to address the issue in those fisheries (observers vs. targeted identification of a few species), and to implement a way forward to successfully reduce the use of generic reporting codes. Direct more of a focus for observers to identify sharks to a species level.	Objective 6.1: Ensure information collection systems and processes are sufficient to inform management of shark populations
X. Produce a field identification guide	No action to be carried over	-
XI. Participate in relevant Regional Fisheries Management Organisations and other relevant international fora	Continue to participate in relevant RFMOs and other relevant fora.	Goal 5: New Zealand actively engages internationally to promote the conservation of sharks, the management of fisheries that impact upon them, and the long-term sustainable utilisation of sharks.

APPENDIX I

Table 1: Dates from which shark species were protected and the number of reported captures and mortality status from non-fish/protected species catch return reports

Common name	Species code	Protected from		2008/09	2009/10	2010/11	2011/12
White pointer shark	WPS	2008	Alive/Dead	3/2	5/2	3/1	0/1
Basking shark	BSK	2010		Alive/Dead		1/7	0/2
Deepwater nurse shark	ODO	2010		Alive/Dead		0/0	0/0
Manta ray	RMB	2010		Alive/Dead		38/0	8/0
Spine-tailed devil ray	MJA	2010		Alive/Dead		17/1	7/0
Whale shark	WSH	2010		Alive/Dead		0/0	0/0
Oceanic whitetip shark	OWS	2013		Alive/Dead		0/0	

Table 2: Commercial catch (landings, discards, and releases) in tonnes greenweight between 2002/03 and 2011/12. Species are grouped by management category.

Management categories - **1:** Protected **2**: Subject to fishing permit moratorium **3**: QMS-TAC set under s14 of the Act **4**: QMS-TAC set under s13 of the Act **5**: Open access

Mgmt category	Common name	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
1	Basking shark	181.3	195.9	93.6	25.6	29.3	37.4	11.2	21.5	7.1	0.0
1	Deepwater nurse shark	0.4	0.2	0.5	1.3	0.7		0	0	0	0.0
1	Spine-tailed devil ray	0	0	1.0		4.5	2.4	6.2	1.0	0	0.0
1	White pointer shark		3.8		2.5	0.8	0.4	0.7	0	0	0.0
1	All other protected sharks	0	0	0	0	0	0	0	0	0	0.0
2	Hammerhead shark	12.3	11.1	7.1	8.3	6.1	10.8	13.1	5.8	13.0	12.0
2	Sharpnose sevengill shark	0.1	0.3	0.1	1.4	0.6	0	0.1	0.3	0.5	1.8
3	Blue shark	717.6	545.3	497.8	453.9	809.2	711.8	1,012.9	1,018.9	926.2	1,513.2
3	Mako shark	200.8	73.8	159.4	83.1	82.8	75.5	120.4	136.4	154.1	179.8
3	Porbeagle shark	132.9	66.7	50.4	49.3	54.1	41.3	68.4	83.6	59.0	82.2

Mgmt category	Common name	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
4	Elephant fish	1,122.9	1,126.4	1,180.4	1,259.3	1,252.5	1,433.2	1,386.6	1,376.6	1,398.8	1,367.8
4	Ghost shark	2,554.6	3,932.9	2,109.0	1,718.0	1,973.7	1,859.1	2,015.5	4,074.1	2,275.0	2,075.1
4	Pale ghost shark	1,943.6	1,573.7	942.7	689.7	770.3	830.3	812.5	1,511.9	600.3	649.8
4	Rig	1,525.1	1,472.3	1,409.6	1,309.6	1,404.6	1,422.9	1,201.8	1,274.4	1,270.0	1,281.0
4	Rough skate	1,147.1	3,743.0	2,135.0	1,743.0	1,798.0	1,584.6	1,965.0	1,914.4	1,903.2	1,524.1
4	School shark	3,209.2	3,104.7	3,385.7	3,046.9	3,178.5	3,247.1	3,500.6	3,285.2	3,474.2	3,177.2
4	Smooth skate	914.6	523.0	643.7	705.1	686.0	656.5	574.2	542.1	608.8	563.9
4	Spiny dogfish	10,703.5	9,164.8	7,498.2	8,209.2	7,500.8	6,358.8	6,167.9	6,409.5	6,113.7	5,582.6
5	Amblyraja georgiana	0	0	0	0.9	1.1	0	0	0	0	0.1
5	Baxter's lantern dogfish	19.4	24.6	12.8	21.8	46.1	51.2	34.5	45.8	42.9	23.9
5	Bigeye thresher	0	0.2	0	0.3	0.6	0	0.3	0	0	0.0
5	Black ghost shark	0	0	0	0	0	0	7.7		0	0.0
5	Blackbelly lantern shark	0	0	0	0	0.1	0		0	0	0.0
5	Broadnose sevengill shark	5.2	0	3.8	4.0	8.8	14.6	17.8	16.5	16.7	18.7
5	Bronze whaler shark	27.5	28.9	16.1	14.4	20.6	23.9	13.8	13.7	15.3	14.1
5	Carpet shark	73.6	102.6	127.3	177.7	245.1	277.2	285.0	288.6	346.5	331.8
5	Cat shark (APR)	0.2	0.1			0.1	0.4	8.0	1.5	0.2	0.6
5	Cat shark (CSH)	8.1	3.7	0.3		0.3	0.1	1.2	0.6	0.4	0.2
5	Chimaera, purple	8.8	2.1	2.6	1.4	6.2	7.5	13.5	1.1	6.4	18.5
5	Chimaera, purple	0.2	0.4	0.2	0.9	0.6	0.1	0.3	0.4	0.5	0.1
5	Dawson's cat shark			0	0	0	0	0.3	0.1	0	0.0
5	Deepwater spiny skate	0.5	6.0	4.8	2.9	5.5	13.3	17.4	10.6	12.7	7.6
5	Eagle ray	19.8	44.8	48.4	47.3	67.2	75.7	81.5	68.2	85.7	92.3
5	Eaton's skate	0.1	0.1	0.2	0.1		0	0	0	0.1	0.1
5	Electric ray	2.5	0.3	2.2	0		0.1	4.6	1.4	2.8	1.8
5	Electric ray	20.5	32.3	22.7	26.9	32.2	47.7	39.7	29.8	36.9	37.7
5	Frill shark			0	0		0	0	0		0.0
5	Leafscale gulper shark	1.6	0	0.2	2.9	0	29.6	21.2	17.0	0	8.9
5	Little sleeper shark	0		0	0	0	0	0	0	0	0.0

Mgmt category	Common name	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
5	Longnose velvet dogfish	5.1	1.0	0.1	0.3	0.3	0.4	1.3	2.5	0.5	0.2
5	Long-nosed chimaera	195.1	197.1	166.7	133.2	115.2	106.1	105.5	132.5	97.6	100.1
5	Longnosed deepsea skate	0.1	1.0	0	0.8	9.8	14.4	6.9	6.5	1.8	0.6
5	Long-tailed skate	0.9	0.8	0.4	4.5	3.1	0.1	0.2	1.6	1.0	0.6
5	Lucifer dogfish	7.1	9.7	3.2	3.2	10.4	11.5	17.7	25.7	17.4	24.5
5	Northern spiny dogfish	101.7	86.1	45.4	113.9	123.9	101.7	88.6	87.6	115.3	98.6
5	Pacific sleeper shark	0	0	0	1.5	0	3.5	1.0	4.1		0.0
5	Plunket's shark	0.1	0.1		0.2	1.0	0		1.5	5.1	0.2
5	Pointynose blue ghost shark	0	1.5	0.3	0	0		0	0.1	0.2	6.4
5	Potuguese dogfish	2.4	0	0.4	0.9	0.8	0.3	0.3	0	0	0.1
5	Prickly dogfish	3.2	5.2	2.2	1.9	11.8	11.2	9.3	0	7.2	4.0
5	Prickly shark	0.1			1.0			0.1			0.0
5	Rough shovelnose dogfish		0.4	0.6							0.0
5	Roughskin dogfish	1.8	2.3	0.4	1.0	1.8	3.3	0.6	1.8	1.6	0.4
5	Seal shark	804.5	729.1	716.4	632.8	510.3	543.8	411.7	378.5	326.4	268.9
5	Sherwood's dogfish	0	0	0	0	0	0	0	0	0.1	0.2
5	Short-tailed black ray	0	22.0	17.0	11.0	12.5	15.0	0	0	15.6	12.8
5	Shovelnose dogfish	260.4	0	0	333.0	251.2	301.2	303.5	191.8	0	142.9
5	Sixgill shark	0.9	0.1	0.1	0.5	0.3	0.7	1.3	1.4	2.2	2.0
5	Slender smooth-hound	5.6			10.8	5.2	1.1	5.6	5.1	0	9.7
5	Smooth skin dogfish	2.2	3.5	1.1	2.9	2.5	1.6	1.8	1.3	2.5	2.7
5	Thresher shark	86.6		39.2	30.6	44.3	44.9	36.3	28.3	36.7	38.1
5	Tiger shark	0.4	0		0	0	0.2	0	0	0.2	0.3
5	Whiptail ray	2.5	0	16.5	15.0	0	18.4	13.2	0	0	11.7
5	Widenosed chimaera	0.2	0.4	3.5	0.7	1.4	0	0.2		0	0.0
	Total	26,035.4	26,843.9	21,366.3	20,906.5	21,991.5	19,993.0	20,409.1	23,021.6	20,002.4	19,292.0

Table 3: Commercial catch (landed, discarded, and released) in tonnes greenweight of shark species reported by a generic code

Generic name	Species code	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Chimaera generic	CEN	0	0	0	0	0	0		0	0	0
Chimaera spp.	CHI	0.8	0.5	0.2	0.3	0.3	1.2	2.0	2.1	10.6	0.6
Deepsea skates	BTH	0	0			0.3	0		0	0	0
Deepwater dogfish	DWD	252.6	267.8	246.4	204.2	127.2	158.2	221.6	231.2	97.7	78.1
Other sharks &dogfish	OSD	1,106.3	711.8	541.1	702.1	797.4	760.3	642.7	602.3	607.1	683.4
Rays	RAY	31.8		0.8	1.0	1.3	3.9	4.5	4.1		3.3
Skate, Other	OSK		0.1	0.1	2.7	3.3	1.5	1.5	2.2	0.9	1.7
Skates	SKA	1,261.5	16.8								0
Stingray (Unspecified)	STR	19.0	2.4	5.2	11.9	17.5	13.4	8.6	7.9	20.3	8.7
Total		2,672.0	999.4	793.8	922.2	947.3	938.5	881.0	849.8	736.7	775.9

Table 4: TACs, TACCs, and allowances for recreational customary non-commercial fishing, and other fishing related mortality in tonnes greenweight as at October 2012 for shark stocks in the QMS

Species code	TAC	TACC	Recreational fishing	Customary non-commercial	Other fishing related mortality
Blue shark	2,080	1,860	20	10	190
Elephant fish	1,377.5	1,300.5	10	10	57
Ghost shark	3,046	3,035	1	0	10
Mako shark	512	406	50	-	46
Pale ghost shark	1,208	1,150	0	0	81
Porbeagle shark	249	215	10	-	22
Rig	2,263	1,941	124	60	57
Rough skate	2,015	1,986	4	4	21
School shark	3,576	3,436	202	236	148
Smooth skate	867	849	4	4	10
Spiny dogfish	13,280	12,660	245	245	130

Table 5: Percentage by weight of the fate of sharks for periods before and after the NPOA-Sharks 2008 (2002-07 and 2007-12)

Where:

The following destination codes were used

Landed: B, E, L, U, W.

Discarded: A, D, H, M and landed state 'GRE'.

Released: X – those QMS species subject to Schedule 6 of the Act other than spiny dogfish

* Species listed on Schedule 6[8]

† Releases estimated from Tuna longlining catch effort return (Section 6) or Catch landing return (destination code x) which ever is greater.

		2002-07			2008-12		
Common name	Species code	Landed	Discarded	Released	Landed	Discarded	Released
Basking shark	BSK	31.0	69.1	0.0	10.8	89.2	0.0
Deepwater nurse shark	ODO	0.0	0.0	0.0	100.0	0.0	0.0
Manta ray	RMB	0.2	99.8	0.0	0.0	0.0	0.0
Spine-tailed devil ray	MJA	0.0	0.0	0.0	0.0	100.0	0.0
White pointer shark	WPS	64.5	35.5	0.0	61.3	38.7	0.0
Hammerhead shark	HHS	95.0	5.0	0.0	97.6	2.4	0.0
Sharpnose sevengill shark	HEP	23.1	77.0	0.0	12.8	87.2	0.0
Blue shark*	BWS	93.6	5.5	0.9	71.5	0.7	27.7†
Mako shark*	MAK	95.3	4.5	0.2	60.4	0.7	38.9†
Porbeagle shark*	POS	80.7	18.5	0.8	75.2	1.0	23.8†
Elephant fish	ELE	100.0	0.0	0.0	100.0	0.0	0.0
Ghost shark	GSH	99.6	0.4	0.0	98.9	1.1	0.0
Pale ghost shark	GSP	99.8	0.2	0.0	99.5	0.5	0.0
Rig*	SPO	99.4	0.7	0.0	99.8	0.2	0.0
Rough skate*	RSK	97.4	2.5	0.1	98.6	0.4	1.0
School shark[9]	SCH	99.9	0.1	0.0	100.0	0.0	0.0
Smooth skate*	SSK	97.8	2.2	0.0	94.7	1.7	3.6
Spiny dogfish*	SPD	43.2	56.8	0.0	51.3	48.7	0.0

[8] Under New Zealand law it is illegal to discard QMS species. An exception is for species listed on Schedule 6 of the Act. Species on Schedule 6 may be released only in accordance with stated requirements. Species other than spiny dogfish may be released only if likely to survive. Spiny dogfish may be discarded alive or dead. All catch subject to schedule 6 must be reported.

[9] Listed on Schedule 6 in January 2013.

Common name	Species code	2002-07			2008-12		
		Landed	Discarded	Released	Landed	Discarded	Released
Baxter's lantern dogfish	ETB	47.4	52.7	0.0	73.3	26.7	0.0
Bigeye thresher	BET	77.2	22.8	0.0	100.0	0.0	0.0
Black ghost shark	HYD	0.0	100.0	0.0	95.8	4.2	0.0
Blackbelly lantern shark	BMO	1.2	98.8	0.0	0.0	0.0	0.0
Blackbelly lantern shark	EMO	0.0	0.0	0.0	100.0	0.0	0.0
Bramble shark	BRS	0.0	100.0	0.0	0.0	0.0	0.0
Broadnose sevengill shark	SEV	84.4	15.3	0.2	70.6	29.4	0.0
Bronze whaler shark	BWH	91.0	9.0	0.0	81.8	18.2	0.0
Carpet shark	CAR	27.8	72.2	0.0	21.5	78.5	0.0
Cat shark	APR	2.7	97.3	0.0	16.3	83.7	0.0
Cat shark	CSH	0.0	0.0	0.0	39.4	60.6	0.0
Chimaera, purple	CHG	55.0	45.1	0.0	100.0	0.0	0.0
Chimaera, purple	CHP	59.5	40.5	0.0	57.5	42.5	0.0
Dawson's cat shark	DCS	0.0	100.0	0.0	0.0	0.0	0.0
Deepwater spiny skate	DSK	14.4	85.7	0.0	3.6	96.4	0.0
Eagle ray	EGR	54.2	45.8	0.0	62.0	38.0	0.0
Eaton's skate	BEA	98.2	1.8	0.0	100.0	0.0	0.0
Electric ray	BER	12.2	87.8	0.0	39.3	60.7	0.0
Electric ray	ERA	54.2	45.8	0.0	6.1	93.9	0.0
Etmopterus pusillus	ETP	0.0	100.0	0.0	0.0	0.0	0.0
Etmopterus spp.	ETM	0.0	100.0	0.0	0.0	0.0	0.0
Frill shark	FRS	100.0	0.0	0.0	63.2	36.8	0.0
Giant black ghost shark	HGB	0.0	100.0	0.0	0.0	0.0	0.0
Leafscale gulper shark	CSQ	69.3	30.7	0.0	91.0	9.0	0.0
Little sleeper shark	SOM	100.0	0.0	0.0	0.0	0.0	0.0
Longnose velvet dogfish	CYP	80.9	19.1	0.0	88.2	11.8	0.0
Long-nosed chimaera	LCH	86.2	13.8	0.0	80.8	19.2	0.0
Longnosed deepsea skate	PSK	13.2	86.8	0.0	28.9	71.1	0.0
Long-tailed skate	LSK	0.4	99.6	0.0	6.6	93.4	0.0

Common name	Species code	2002-07 Landed	2002-07 Discarded	2002-07 Released	2008-12 Landed	2008-12 Discarded	2008-12 Released
Lucifer dogfish	ETL	4.8	95.2	0.0	48.9	51.1	0.0
Northern spiny dogfish	NSD	68.0	32.0	0.0	58.4	41.6	0.0
Notoraja spinifera	BTS	100.0	0.0	0.0	0.0	0.0	0.0
Oval electric ray	TTA	0.0	100.0	0.0	0.0	0.0	0.0
Pacific sleeper shark	SOP	0.7	99.3	0.0	23.6	76.4	0.0
Plunket's shark	PLS	8.8	91.2	0.0	0.0	100.0	0.0
Pointynose blue ghost shark	HYP	0.0	100.0	0.0	100.0	0.0	0.0
Potuguese dogfish	CYL	87.9	12.1	0.0	99.9	0.1	0.0
Prickly dogfish	PDG	0.8	99.2	0.0	3.2	96.8	0.0
Prickly shark	ECO	91.1	9.0	0.0	56.2	43.8	0.0
Rough shovelnose dogfish	SNR	3.8	96.2	0.0	100.0	0.0	0.0
Roughskin dogfish	SCM	93.5	6.5	0.0	94.9	5.1	0.0
Sandbar shark	CAP	34.6	65.4	0.0	0.0	0.0	0.0
Seal shark	BSH	64.9	35.2	0.0	63.1	36.9	0.0
Sherwood's dogfish	SHE	0.0	0.0	0.0	100.0	0.0	0.0
Short-tailed black ray	BRA	6.9	93.1	0.0	17.1	82.9	0.0
Shovelnose dogfish	SND	35.3	64.7	0.0	58.6	41.4	0.0
Sixgill shark	HEX	11.0	89.0	0.0	7.6	92.4	0.0
Slender smooth-hound	SSH	32.8	67.2	0.0	17.3	82.7	0.0
Smooth skin dogfish	CYO	43.7	56.3	0.0	22.4	77.6	0.0
Somniosus microcephalus	SMI	0.0	100.0	0.0	0.0	0.0	0.0
Stingray (Unspecified)	STR	23.2	76.9	0.0	24.3	75.7	0.0
Thresher shark	THR	71.5	28.5	0.0	68.0	32.0	0.0
Tiger shark	TIS	100.0	0.0	0.0	70.9	29.1	0.0
Velvet dogfish	ZAS	0.0	100.0	0.0	0.0	0.0	0.0
Whiptail ray	WRA	14.3	85.7	0.0	11.5	88.5	0.0
Widenosed chimaera	RCH	0.0	100.0	0.0	88.4	11.6	0.0
Chimaera generic	CEN	0.0	0.0	0.0	0.1	99.9	0.0
Chimaera spp.	CHI	38.5	61.5	0.0	3.7	96.3	0.0

Common name	Species code	2002-07 Landed	2002-07 Discarded	2002-07 Released	2008-12 Landed	2008-12 Discarded	2008-12 Released
Deepsea skates	BTH	0.0	0.0	0.0	100.0	0.0	0.0
Deepwater dogfish	DWD	5.6	94.4	0.0	77.1	22.9	0.0
Other sharks & dogfish	OSD	32.0	68.0	0.0	51.7	48.3	0.0
Pelagic stingray	DAS	0.0	0.0	0.0	0.0	100.0	0.0
Pelagic stingray	PES	3.5	96.5	0.0	0.0	0.0	0.0
Rays	RAY	56.0	44.0	0.0	13.1	86.9	0.0
Shark (Unspecified)	SHA	96.5	3.5	0.0	0.0	0.0	0.0
Skate, Other	OSK	4.7	95.4	0.0	8.7	91.3	0.0
Skates	SKA	76.2	23.9	0.0	0.0	0.0	0.0
Average		72.3	27.6	0.0	78.9	19.2	1.9

Table 6: Conversion factors used to calculate greenweight from shark primary processed states

	Primary processed state											
Common name	Dried fin	Wet fin	Fin	Fish meal	Liver	Fillets: skin-off	Skate or ray wing	Fillets: skin-on	Dressed	Headed and gutted	Gilled and gutted tail on	Gutted
Ghost shark	-	-	-	-	-	4.20	-	3.40	3.40	2.30	-	-
Northern spiny dogfish	-	-	-	-	-	5.00		4.05	2.45	2.45	-	-
Pale ghost shark	-	-	-	-	-	4.20		3.40	3.40	2.30	-	-
Rig	-	-	-	-	-	2.30		2.10	1.55	1.55	-	-
School shark	-	-	-	-	-	2.70		2.15	1.95	1.85	-	-
Spiny dogfish	-	-	-	-	-	5.00		4.10	2.70	2.70	-	-
Blue shark	115	48.0	-	-	-	-	-	-	3.10		-	-
Mako shark	142	59.0	-	-	-	-	-	-	-	-	-	-
Porbeagle shark	108	45.0	-	-	-	-	-	-	-	-	-	-
Unspecified	-	-	30.0	5.60	3.85	3.35	2.65	2.27	2.00	2.00	1.15	1.10

Table 7: The percentage of the commercial catch (landed, discarded, and released) of all sharks by primary processed state for the period 2007-2012

† Includes releases estimated from Tuna longlining catch effort return (Section 6)

Species code	Dried fin	Wet fin	Fin	Fish meal	Liver	Fillets: skin-off	Skate or ray wing	Fillets: skin-on	Dressed	Headed and gutted	Gilled and gutted tail off	Gutted	Green (or whole)	Other
BSK	0	0	7	0	0	0	1	1	2	0	0	0	89	0
MJA	0	0	0	0	0	0	0	0	0	0	0	0	100	0
ODO	0	0	0	0	0	0	0	0	100	0	0	0	0	0
WPS	0	0	0	61	0	0	0	0	0	0	0	0	39	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEP	0	0	0	1	0	0	0	0	10	0	0	0	88	0
HHS	0	0	0	0	0	0	0	0	69	19	0	3	9	0
BWS	0	67	0	0	0	0	0	0	8	0	0	0	29	0
MAK	0	38	0	2	0	0	0	2	19	1	0	0	40	0
POS	0	61	0	3	0	0	0	0	17	0	0	0	27	0
ELE	0	0	0	0	0	0	0	0	10	1	89	0	1	0
GSH	0	0	0	1	0	0	0	0	87	3	1	1	6	0
GSP	0	0	0	7	0	0	0	0	91	0	0	0	1	0
RSK	0	0	0	1	0	0	86	0	2	0	0	0	11	0
SCH	0	0	0	0	0	0	0	0	92	5	0	1	1	0
SPD	0	0	9	15	0	0	0	0	1	0	0	0	75	0
SPO	0	0	1	1	0	0	0	0	89	5	0	1	3	0
SSK	0	0	0	5	0	0	74	0	1	0	0	0	19	0
APR	0	11	0	5	0	0	0	0	0	3	0	0	82	0
BEA	0	0	0	100	0	0	0	0	0	0	0	0	0	0
BER	0	0	0	39	0	0	0	0	0	0	0	0	61	0
BET	0	0	0	0	0	0	0	100	0	0	0	0	0	0
BRA	0	0	0	0	0	0	0	0	0	0	0	1	98	0
BSH	0	0	0	25	15	0	0	0	22	1	0	0	38	0

Species code	Dried fin	Wet fin	Fin	Fish meal	Liver	Fillets: skin-off	Skate or ray wing	Fillets: skin-on	Dressed	Headed and gutted	Gilled and gutted tail off	Gutted	Green (or whole)	Other
BWH	0	9	6	0	0	0	0	0	55	6	0	1	23	0
CAR	0	0	20	0	0	0	0	0	0	0	0	0	79	0
CHG	0	0	0	14	0	0	0	0	34	0	0	0	51	0
CHP	0	0	0	30	0	0	0	0	2	0	0	0	69	0
CSH	0	0	0	0	0	0	0	0	36	0	0	0	64	0
CSQ	0	0	2	0	57	0	0	0	31	0	0	0	10	0
CYL	0	0	0	0	0	0	0	0	0	0	0	0	100	0
CYO	0	0	0	0	0	0	0	0	0	0	0	0	100	0
CYP	0	0	0	44	0	0	0	0	0	0	0	0	56	0
DCS	0	0	0	0	0	0	0	0	0	0	0	0	100	0
DSK	0	0	0	4	0	0	0	0	0	0	0	0	96	0
ECO	0	0	0	31	0	0	0	0	0	18	0	0	51	0
EGR	0	0	0	2	0	0	41	0	2	0	0	0	54	0
EMO	0	0	0	0	0	0	0	0	0	0	0	0	100	0
ERA	0	0	0	4	0	0	1	0	0	0	0	0	95	0
ETB	0	0	0	33	35	0	0	0	0	0	0	0	33	0
ETL	0	0	0	49	0	0	0	0	0	0	0	0	51	0
FRS	0	0	0	47	0	0	0	0	0	0	0	0	53	0
HEX	0	0	4	2	0	0	0	0	0	1	0	0	93	0
HYD	0	0	0	4	0	92	0	0	0	0	0	0	4	0
HYP	0	0	0	100	0	0	0	0	0	0	0	0	0	0
LCH	0	0	0	78	0	0	0	0	1	0	0	0	21	0
LSK	0	0	0	4	0	0	0	0	0	0	0	0	96	0
NSD	0	2	9	5	0	0	0	0	36	5	0	1	43	0
PDG	0	0	0	2	0	0	0	0	0	0	0	0	98	0
PLS	0	0	0	0	0	0	0	0	0	0	0	0	100	0

Species code	Dried fin	Wet fin	Fin	Fish meal	Liver	Fillets: skin-off	Skate or ray wing	Fillets: skin-on	Dressed	Headed and gutted	Gilled and gutted tail off	Gutted	Green (or whole)	Other
PSK	0	0	0	29	0	0	0	0	0	0	0	0	71	0
RCH	0	0	0	7	0	0	0	0	0	0	0	0	106	0
SCM	0	0	0	0	0	0	0	0	0	3	0	0	97	0
SEV	0	0	6	0	0	0	0	0	62	1	0	0	30	0
SHE	0	0	0	0	0	0	0	0	0	0	0	0	100	0
SND	0	0	0	29	12	0	0	0	16	0	0	0	42	0
SNR	0	0	0	100	0	0	0	0	0	0	0	0	0	0
SOP	0	0	0	23	0	0	0	0	0	0	0	0	76	0
SRR	0	0	0	100	0	0	0	0	0	0	0	0	0	0
SSH	0	0	0	2	0	0	1	0	2	12	0	0	83	0
STR	0	0	0	5	0	0	0	0	0	0	0	0	77	18
THR	0	1	2	1	0	0	0	5	50	2	0	0	39	0
TIS	0	25	17	0	0	0	0	0	29	0	0	0	29	0
WRA	0	0	0	7	0	0	1	0	0	0	0	0	92	0
BTH	0	0	0	100	0	0	0	0	0	0	0	0	0	0
CEN	0	0	0	0	0	0	0	0	100	0	0	0	0	0
CHI	0	0	0	1	0	0	0	0	0	0	0	0	99	0
DAS	0	0	0	0	0	0	0	0	0	0	0	0	100	0
DWD	0	0	0	76	0	0	0	0	0	0	0	0	24	0
OSD	0	0	1	31	18	0	0	0	1	0	0	0	49	0
OSK	0	0	0	1	0	0	8	0	0	0	0	0	91	0
RAY	0	0	0	13	0	0	0	0	0	0	0	0	87	0

Table 8: Export value by reported species (NZ$000/calendar)

	Calendar year						
	2006	2007	2008	2009	2010	2011	2012
School shark	6,319	6,166	6,143	7,714	9,692	7,991	6,250
Spiny dogfish	4,013	3,767	2,381	2,514	3,258	1,877	1,827
Rig	3,795	4,050	3,577	3,807	4,195	3,384	4,974
Ghost shark	3,608	2,761	2,722	2,893	3,378	2,790	5,727
Dogfish and shark	2,279	3,841	5,262	5,810	6,220	5,691	6,273
Elephant fish	1,125	1,410	1,154	1,014	1,027	874	671
Rays and skates	1,026	1,626	1,607	1,470	2,305	1,271	2,595
Total	22,165	23,621	22,844	25,221	30,075	23,877	27,081