Ministry for Primary Industries
Manatū Ahu Matua

Strategy to eliminate shark finning in New Zealand

Deepwater and middle-depth fisheries

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1 Introduction

1. This document represents the strategy to eliminate shark finning in New Zealand's deepwater and middle-depth fisheries. The strategy characterises New Zealand's deepwater fishing fleet and fisheries, with a focus on factors that may contribute to or provide incentives for the practice of shark finning under current management and conditions. The strategy outlines the regulatory framework proposed for the elimination of finning in New Zealand, the main challenges for implementation in deepwater fisheries, and the chosen approach for overcoming these challenges (i.e. the monitoring, education, liaison and research associated with eliminating shark finning in New Zealand's deepwater fisheries).

2. The context for this strategy is the National Plan of Action for the Conservation and Management of Sharks 2013 (NPOA-Sharks), which provides goals and objectives for the management of New Zealand sharks for the next five years, in line with the International Plan of Action for Sharks.

3. Notably, objective 2.4 of the NPOA-Sharks is to "Eliminate shark finning in New Zealand fisheries by 1 October 2015, with one exception."

4. The NPOA-Sharks defines finning as 'the removal of the fins from a shark (Class Chondricthyes – excluding Batoidea (rays and skates)) and the disposal of the remainder of the shark at sea. As such, removal of the fins from a shark where the trunk is also retained for processing is not defined as 'shark finning'.

1.1 MANAGEMENT FRAMEWORK

5. Shark finning will be banned through a regulation stating that fishers are not permitted to retain just the fins of any shark they catch (i.e. fishers will not be able to land fins as a primary state). The ban will be implemented in one of two ways:

   - by requiring sharks to be landed with **fins naturally attached** (with some minimal processing to allow sharks to be bled and gutted, and to allow fins to be folded against the trunk of the shark); or
   - through a **ratio approach** (i.e. landed shark fins to weigh no more than a specified percentage of the greenweight determined from the landed primary product).

1.1.1 Fins Naturally Attached (FNA) approach

6. The FNA approach requires that any fins a fisher wishes to land be naturally attached to the trunk of the shark. FNA has emerged as a preferred approach internationally for eliminating shark finning. Various reasons are given for this including ease of monitoring and enforcement, potential to improve species identification and catch reporting, reduction in overall catches, and the ability to ensure a 1:1 ratio between fins and trunks.

7. Some of the advantages cited for FNA may be less relevant in the context of New Zealand's quota management system (QMS) and catch limits. For example, the requirement to land the whole shark limits the number of sharks that can be taken in each

trip (due to space restrictions), and allows for the collection of information on the sharks being landed (where they are not discarded). Directed fisheries for shark fins are not present in New Zealand, and the primary limit on shark catches is catch limits under the QMS.

8. The FNA approach has operational ramifications for fishers. Shark blood contains urea, which is converted to ammonia after the animal dies. Ammonia can impart an off taste in shark meat, and is reported to taint other fish stored in close proximity. There are also practical concerns which require consideration when implementing an FNA regulation, including the safety of fishers when moving a whole shark into or out of the hold. These issues can, in part, be mitigated by allowing cuts to be made to fold the fins flat against the trunk for storage, and for the shark to be gutted and/or bled to prevent or slow the ammoniation of the meat in storage.

9. The FNA approach can potentially also restrict utilisation of some species where markets may be developed for additional processed states of the shark. However, fishers would not be precluded from undertaking further processing of sharks to be landed with FNA; if they wished to retain the fins, the processing would have to take place after landing. If the fins are not retained, the shark can be landed in any processed state desired. If over time new markets developed for species required to be landed FNA, this would likely be seen in landing data with an increase of landings in other primary states, enabling assessment of whether providing a fin ratio option was appropriate.

1.1.2 Ratio approach

10. The ratio approach requires that landed shark fins weigh no more than a specified percentage of the greenweight of the shark (determined from the landed primary product). This allows existing operational practice to continue in fisheries where fish is processed at sea to the most saleable landed states such as dressed trunks. In fisheries where at-sea processing commonly occurs, fins are frequently retained and landed as a secondary landed state alongside the primary state.

11. Enabling at-sea processing to continue is considered to be more efficient than requiring the fish to be landed whole and processed on land, and enables fishers to continue to maximise value from retained shark products. This is in line with the NPOA-Sharks goal of encouraging the full use of dead sharks, minimising unutilised incidental catches of sharks, and eliminating shark finning in New Zealand fisheries.

12. Under this approach, it is important that ratios are set appropriately. If ratios are set too high, a loophole may be created which allows fishers to harvest more fins than correspond to the carcasses on board. Ratio-based regulations may also provide an opportunity for high-grading, the practice of mixing carcasses and fins from different animals (i.e. different sized sharks) to maximise profit. Under current circumstances, both opportunities and incentives for this type of high-grading are believed to be limited. While in the past, shark fins have received a high price at market, there has been a recent and dramatic decline in shark fin exports, and licensed fish receivers are reportedly reluctant to accept fins at present. In addition, frequently sharks of only a limited number

of species are landed on any one trip, meaning limited opportunities to high-grade by retaining fins of one shark and trunks of another.

13. The Ministry for Primary Industries (MPI) currently uses comprehensive discrepancy analysis to monitor catches and landings in New Zealand fisheries. This existing approach can be readily applied to sharks to verify compliance with ratios (with some changes to the way in which fins as a secondary state are managed, as outlined further below).

14. It is likely that the ratio of fin to body weight will vary between species, between fishers (depending on the cuts made) and also depending on what the primary landed state is. Internationally a figure of 5% is often used, although this is variously used as the ratio of fin weight to processed carcass weight, rather than fins to greenweight.

15. The approach proposed for New Zealand is to base ratios on fin weight to shark carcass weight, converted by conversion factor to greenweight. For example, this would require a ratio of 3.3% of fin weight to shark greenweight be achieved (based on the standard generic conversion factor for wet fins of 30), but there would be scope to develop species-specific ratios as required over time. It is not proposed to place restrictions on the primary state in which sharks can be landed at present (aside from removing the option of fins as a primary state).

16. Other factors that will be considered when determining the ratio for a species is whether this is based on dry or wet fin weight, and whether just primary fins (the first dorsal fin, both pectorals and the lower lobe of the caudal fin) or also secondary fins (e.g. second dorsal fin, anal fin, pelvic fins, upper caudal lobe) are landed. This should be based on existing fishery practices (i.e. the types and state of fins currently landed). The fins to be counted, and wet/dry state used when calculating the fin: greenweight ratio will be clearly specified as part of the regulations.

1.1.3 Choice of approach

17. The central advantage of the fins naturally attached approach is ease of monitoring compliance with the 1:1 ratio of fins to shark bodies. The main benefit of the fin ratio approach is that it more readily enables utilisation of the shark, because it allows more processing at sea to occur. The relative weighting of these monitoring and utilisation considerations will vary depending on the species and the fisheries. It is proposed that any shark species for which fishers wish to retain the fins could be landed in an FNA state; for identified species, fishers would also have the option to land fins in a ratio to the greenweight of sharks retained.

18. It is generally agreed that the ratio approach is appropriate for sharks with existing high levels of utilisation. Environment groups have indicated they can appreciate the differences between fisheries with high levels of existing processing (where fins are retained as a secondary product), and those where fin-only landings are currently common. However, the FNA approach remains the preference for environment groups, for reasons including ease of monitoring and enforcement and potential to improve species identification and catch reporting.

19. Discussions with industry have emphasised the operational difficulties the FNA approach entails. In general, industry has argued that they are being asked to improve utilisation of dead sharks (in line with the NPOA-Sharks goal), and this would not be possible if an FNA rule were applied. It has been noted that a possible impact of applying an FNA rule on shark species for which the value of the meat is low is that the sharks will not be retained at all – potentially leading to some challenges with monitoring overall catches, as well as creation of misreporting offences under current regulatory settings.

20. However, the framework to be adopted will need to apply not just to the commonly-caught shark species that are typically managed under the QMS, but to all catches of sharks – i.e. to as many as 40 or 50 species of shark and chimaera that may be encountered in commercial fisheries from time to time. Fin ratios will not be provided for non-QMS species at present.

21. When considering the generally low and intermittent catches of non-QMS species, MPI considers the relative weighting of utilisation and monitoring considerations shifts somewhat. Some processing at sea does occur, including for northern spiny dogfish, seal shark, thresher shark, broadnose sevengill shark, bronze whaler, and hammerhead shark (with processed catches ranging from 75 to 100 tonnes for northern spiny dogfish and seal shark respectively, to less than 20 tonnes for most of the remaining species in the 2012-13 fishing year). In general however, non-QMS species tend to be caught in lower quantities, and many are predominantly discarded, suggesting a relatively low market value at present.

22. Monitoring of fisheries occurs in a number of ways, including through the use of at-sea observers (and, to an extent, at-sea patrols); through checks of permit holders, fish receivers, and others in the supply chain; and through analysis of submitted data, for example discrepancy analysis. Many of these routine forms of monitoring are focussed on ensuring the integrity of the QMS, because of the need to ensure catches remain within the overall Total Allowable Commercial Catch (TACC), and that individuals and companies are meeting their obligations under the Act. This means that QMS and non-QMS species are subject to different baseline monitoring levels.

23. Given that catches of non-QMS species tend to be low, fishers may only be dealing with one or two specimens on any given trip. If a fisher wished to retain the fins of the shark, he could land the fish with fins attached. Alternatively, if wishing to use the rest of the shark, the fish could be processed at sea and the fins not retained. This would entail some foregone utilisation compared to current practices, and MPI acknowledges the industry preference to be as consistent as possible with the application of rules (including to non-QMS species). It should also be noted that the ability to monitor QMS and non-QMS fisheries is broadly equivalent, and the tools would be available to monitor a fin ratio approach for some species if additional resources were to be applied to monitoring. This means the option for a fin ratio approach could be provided for some non-QMS species over time if appropriate.

1.1.4 Associated regulatory changes

Commercial Fishing Regulations 2001

24. It is proposed to implement the finning ban through an amendment to the Fisheries (Commercial Fishing) Regulations 2001 (the Commercial Fishing Regulations), to include a general regulation prohibiting shark finning as defined in the NPOA-Sharks (i.e. prohibiting the retention of just the fins of a shark (Class Chondricthyes, excluding Batoidea)). This amendment will be made under Section 297 of the Fisheries Act 1996 (the Act).

25. As noted, compliance with the finning ban would be verified by either requiring sharks to be landed with fins naturally attached if the fins are to be retained, or by requiring retained fins to weigh no more than a specified percentage of the greenweight equivalent of the processed shark carcass.

26. Up to 70 shark species (potentially including 30-40 'true sharks' and chimaeras to which the finning provisions will apply) may be caught in commercial fisheries from time to time (the number of commonly-caught species is much less than this). On this basis, an inclusive approach is proposed (i.e., FNA would apply to all species not otherwise specified). Provision will be made for any species to be added to or removed from the list of species for which the ratio approach is available, preferably by Gazette notice.

Schedule 6 of the Fisheries Act 1996

27. In overseas administrations that have implemented shark finning bans, fishers are typically allowed to discard the whole shark if there is no financial incentive to retain it (e.g. where the costs of landing the shark whole with fins attached outweigh the benefit of doing so). In New Zealand, fishers are required to land every QMS shark species that they catch (at least in part) (unless Schedule 6 provisions apply or an MPI observer authorises the discard).

28. Schedule 6 lists QMS species and stocks which may be returned to the sea or other waters in accordance with the stated requirements. Several species of sharks are currently listed on Schedule 6, including blue shark, mako shark, porbeagle shark, rig, school shark, and spiny dogfish. For all of these species other than spiny dogfish, the stated conditions require that the animal be likely to survive on return to the sea and that the return takes place as soon as practicable after the animal is taken. Animals returned to the sea alive are not counted against a fisher's Annual Catch Entitlement (ACE) or the TACC for that species, but must be fully reported. Spiny dogfish may be returned to the sea either alive or dead, however all returns are counted against a fisher's ACE and the TACC.

29. Live releases under Schedule 6 are an important way of meeting the NPOA-Sharks goal of minimising unutilised incidental catches (coupled with work to avoid catches altogether where possible and to maximise survival of released sharks).

30. However, the proportion of sharks caught alive varies between species, and from fishery to fishery. In some cases, markets can be found for the shark meat but for many species

only a limited market is currently available (e.g. blue shark, carpet shark) and/or markets are specific to certain types of landed product (e.g. fresh rather than frozen product in the case of porbeagle and mako sharks). There are also specific circumstances in which individual specimens of otherwise saleable species may not be able to be sold. In particular, large sharks of many species are not accepted because of concerns about mercury levels in the meat. This has been raised as a particular concern for mako shark.

31. Where markets are not available, requiring the landing of the shark is not decreasing waste or increasing utilisation, as the product landed will likely be sent to a rendering plant or simply disposed of on land, at an additional cost to the fisher. MPI considers that this cost creates a substantial incentive to misreport shark catches, which may reduce the ability to accurately determine actual levels of shark mortality. To reduce this risk, it is proposed that the provisions of Schedule 6 are reviewed and amended for some species (blue, mako and porbeagle) to allow for the return of sharks to the water either alive or dead.

32. In some fisheries, additional incentives are considered necessary to encourage live releases of sharks that are caught alive to counter disincentives like the costs of lost hooks and/or snoods. Setting the provisions of Schedule 6 so that live releases will not count against ACE (while dead returns to the sea would) is considered to address this.

33. Any changes to allow for the return to the sea of dead sharks would need to be linked to industry commitments to minimise the use of these provisions and particularly, to apply them only to sharks that were dead on arrival at the vessel. To that end, observer data could be used to quantify existing status of sharks at the boat (i.e. alive, moribund, dead), and use of Schedule 6 release codes. Use of these codes would be closely monitored, and dead returns should not exceed expected levels. Overall reporting of shark catches should also be closely monitored, along with discrepancy analysis of observer and fisher reporting of catch rates and retained and discarded catches.

Changes to reporting requirements

34. To enable monitoring of landings of fins versus primary processed states, changes would be required to the way in which landings of the secondary processed state (i.e. fins) currently occur. In particular, these landings would need to be weighed on a species-specific basis, and would need to be landed in separate batches on a species by species basis. These changes will require amendment of the reporting regulations.

Conversion factors

35. To implement the finning ban, the primary landed states of Fins (FIN), Wet fins (FIW), and Dried fins (FID) and the associated conversion factors will be removed from the Fisheries (Reporting) Regulations 2000 (the reporting regulations). The ability to land fins as an additional landed state would remain. New conversion factors for landings that are made with fins naturally attached will also be required (this will not be a greenweight landing since some limited processing e.g. bleeding of the shark will still occur).

2 Deepwater Fisheries

2.1 FLEET CHARACTERISATION

36. New Zealand's deepwater fisheries principally target a range of white fish in large volume bottom and mid-water trawl fisheries and some smaller scale, bottom longline fisheries. The main target species by volume are hoki, arrow squid, jack mackerel, and ling.

37. For the purposes of this analysis, the core deepwater fleet is considered to be made up of all trawl and bottom longline vessels over 28 metres in length, and scampi fishing vessels, which tend to be under 28 metres in length. The majority of the vessels in the fleet are factory freezer vessels which process, pack and freeze catch at sea.

38. Factory freezer vessels undertake longer fishing trips of three weeks or more and land all product frozen. Freezers on board these vessels must maintain product at a temperature below -18°C and have been reported to maintain average temperatures of around -23°C. A proportion of the factory freezer vessels also have onboard fishmeal plants allowing fishers to fully process all catch to a saleable product.

39. There are also several trawlers larger than 28 metres in the fleet which do not freeze product, instead storing it on ice until the end of each trip. As a necessity, trips on these 'freshers' are generally shorter (10-12 days), and product is often landed to more specialised markets than the freezer trawlers.

40. The deepwater fleet also includes trawl vessels that target scampi. The vast majority of these vessels are less than 28 metres in length. Scampi vessels generally carry out limited processing at sea, and land frozen product at the end of each trip. These vessels undertake long fishing trips of up to six weeks. As the vessels are smaller than the 28 metres and take long trips, freezer space is an important consideration for the development of the deepwater strategy.

2.2 SHARK CATCHES IN DEEPWATER FISHERIES

41. Shark species most often caught in deepwater fisheries include spiny dogfish (58% of sharks caught by deepwater fleet), ghost sharks (23%), a mixed species group reported under a generic code ('other sharks and dogs' – OSD, 6%), school shark (3%), shovelnose dogfish (3%), seal shark (otherwise known as black shark, 2%), and long-nosed chimaera (1%). . Overall, shark catches from deepwater fishing activity make up around a third of all New Zealand shark catch.

2.2.1 Fins as primary processed state (fins-only landed)

42. Six species of sharks have been reported with fins as the primary landed state, including QMS species mako, blue, porbeagle sharks, spiny dogfish, and school shark, as well as thresher shark, a non-QMS species. Volumes of catch and processed states for these six species from the core deepwater fleet over the past five years are reported in Appendix I.

2.2.2 Other primary processed state (fins as secondary state or not retained)

43. Deepwater fisheries also catch and process several additional species of sharks, often landing the fins as a secondary by-product from at-sea processing. Species from which fins have been reported as a secondary landed state include those listed above as well as ghost sharks (dark and pale), shovelnose dogfish, seal shark, and leafscale gulper shark. Other shark species are also processed at sea and landed, including elephantfish, rig, broadnose sevengill shark, Baxter's lantern dogfish, longnosed chimaera, northern spiny dogfish, smooth slenderhound, and purple chimaera. Quantities of these species tend to be low, generally less than 30 tonnes in total in any particular year, and much lower for many of the species. A list of all sharks caught in deepwater fisheries and quantities are shown in Appendix II.

44. With the possible exception of Japanese vessels fishing in New Zealand in the early 1980s, sharks have never been targeted for their fins in deepwater fisheries. As a result, fins have only been taken from sharks that have been incidentally caught while targeting other species. Deepwater fishers generally return sharks to the water alive wherever possible, but sharks caught in trawl nets generally have high mortality rates during capture. In the past, fins were seen almost as a 'bonus', a way to add value to the incidental bycatch of sharks. As international attention on shark finning has escalated, globally recognised standards have also begun to include a ban on shark finning as a requirement for recognition of fisheries best practice. As a result, incentives for fishers in the deepwater fisheries not to fin sharks are increasing.

2.3 FACTORS CONTRIBUTING TO FINNING IN DEEPWATER FISHERIES

45. A number of factors may contribute to the current practice of finning of sharks in deepwater fisheries including:

- Market considerations
    - The value of the meat of some shark species may be low and make it uneconomical for the fisher to retain the meat
    - Some species have been identified as containing high concentrations of heavy metals in their meat, rendering them unsafe for consumption and limiting available markets
    - Markets have been identified in New Zealand for a small quantity of 'fresh' mako and porbeagle meat. However the majority of the deepwater fishing fleet land frozen product which is not accepted by these markets.
    - For some species, there are no markets where the meat may be sold, even at a loss to the fisher (i.e. blue shark)
- Quota Management System requirement to land QMS species
    - Fishers are required under section 72 of The Act to retain all QMS species caught, with the exception of those listed on the 6th Schedule which may generally be released if alive and likely to survive. Deepwater fisheries return sharks to the water alive wherever possible, but the majority of the sharks arrive at the vessel dead, negating the ability to release them to the sea. In this case, fishers aim to comply with the QMS by returning some part of the shark, but

don’t want to use valuable hold space or spend time processing a fish that may not have a market upon landing.

- Costs associated with catching sharks
    - All catches of QMS species are counted against the Total Allowable Catch (TAC) for the species. This means that fishers must balance their catches with their ACE. This requirement means that each shark a fisher catches, that cannot be released alive, incurs a cost on the fisher to acquire the necessary ACE. As a result, incentives are in place for fishers to maximise the return from each shark caught and to avoid sharks of no value. For species with no economically viable market for the meat, fishers will take the fins in order to recover some costs of having caught it.
- Storage and processing
    - Shark meat can ammoniate rapidly and fishers are not set up to process and store it appropriately to avoid contamination of both the shark meat and of target fishery catches (i.e. a hold full of hoki product ready for export).

46. This document outlines a strategy for addressing these incentives that may currently lead to the landing of only the fins from sharks. The focus is on the challenges specific to deepwater fisheries which are centred on the three highly migratory species (HMS) species (mako, porbeagle and blue sharks) that currently make up the majority of deepwater fin-only landings.

47. In deepwater fisheries, the QMS requirements to retain dead sharks caught, coupled with the lack of economic markets for frozen shark meat, have been identified as the main factors driving the continued finning of sharks in deepwater fisheries.

3 Application of regulatory framework

48. As most shark species caught in deepwater fisheries are caught in inshore and/or HMS fisheries as well, it is important that the regulatory approach proposed in this deepwater strategy is consistent with the approaches taken in other fisheries. However, there are particular challenges in deepwater fisheries that should be addressed alongside the broad approach taken across the fisheries.

49. Shark species taken in deepwater fisheries can be split into four broad categories:

    1. **Deepwater QMS species** – pale ghost shark and spiny dogfish
    2. **HMS QMS species** – mako, porbeagle, and blue sharks
    3. **Inshore QMS species** – school shark, elephantfish, rig, and dark ghost sharks
    4. **Non-QMS species** – may be caught in both inshore and deepwater fisheries (with some limited catches in HMS fisheries also)

50. Assessments of pale ghost shark and spiny dogfish against the criteria, and the approaches proposed for species covered in other strategies are detailed below.

51. **Deepwater QMS species** include pale ghost shark and spiny dogfish as the QMS shark species caught mainly in deepwater fisheries.

Pale ghost shark

52. For pale ghost shark, across all fisheries, between 2008-09 and 2012-13, 90% of pale ghost shark has been reported as landed 'dressed', often with fins landed as a secondary landed state. The remaining 10% is mostly processed as fishmeal, with a small proportion landed whole or headed and gutted. Monitoring of catches for pale ghost shark is regular, utilisation rates are high, information is available to set an accurate ratio, and there have been no indications of any incentives for fishers to land only the fins of pale ghost shark. These factors make the preferred approach for pale ghost shark to allow for at-sea processing, with a ratio approach proposed.

53. Ratios will be based on information collected by onboard fisheries observers compared with current conversion factors as gazetted. As proposed for the ratio approach in general, ratios set for pale ghost shark are likely to be the same as those for other similar species like dark ghost shark. The ratio will indicate a maximum proportion of the catch of pale ghost shark that is allowed to be fins in relation to the greenweight landed.

Spiny dogfish

54. Spiny dogfish are caught in both inshore and deepwater fisheries in large quantities; however they are included in the deepwater species because the majority of the catch is taken in deepwater fisheries. Across all fisheries, 61% of spiny dogfish catch is returned to the sea in accordance with Schedule 6 provisions in the Act and counted against the catch limit. 11% of the overall catch is landed with fins as the primary landed state, and the remainder of the catch is landed as fishmeal (19%), whole (7%), or landed in the dressed state (1%). Spiny dogfish is a large volume fishery, and the 11% landed as fins makes up 42% of all fin-only landings in New Zealand. Given the large quantity of fin-

only landings, the proportion landed whole, and the ability to return unwanted catches to the sea, a fins naturally attached requirement is proposed for spiny dogfish.

55. **HMS QMS species** caught in deepwater fisheries include mako, porbeagle, and blue sharks. The HMS strategy proposes an FNA approach for blue sharks and a trial ratio approach for porbeagle and mako sharks, along with an amendment to Schedule 6 to allow for the return to the sea of sharks caught dead (with such discards to be counted against ACE).

56. A small market has been identified for the meat of mako and porbeagle sharks, with between 40-60% of the landings from surface longline vessels landed in the dressed state. One goal of the NPOA-Sharks is to increase utilisation of catches, which is best facilitated through the continued ability for fishers to process at sea where desired. As a result, it is proposed that a ratio be provided for mako and porbeagle sharks in the first instance to incentivise increasing utilisation of those species.

57. Blue sharks are more complex given the rapid ammoniation of the meat, the low quality of the product produced, and the extreme limitations of markets for the meat. Fin-only landings of blue sharks currently makes up around 45% of all fin-only landings in New Zealand, with a maximum of 9% landed in any fully utilised state. It is considered that there is little scope to further develop markets for blue sharks and therefore it is not proposed to provide a fin ratio for blue shark at this time.

58. Blue, mako, and porbeagle sharks are a particular challenge for deepwater fisheries, as available markets for the meat of these sharks have been noted to be predominantly for fresh (not frozen) product. As such, fishers landing the body of these species as a frozen product would be bringing home an unsaleable product, which would likely end up in a landfill or rendering plant.

59. Another concern for deepwater trawl vessels regarding blue, mako and porbeagle is the proportion of the sharks that arrive at the vessel dead. Under Schedule 6 provisions the shark must be alive and likely to survive on its return to the sea, which is unlikely to be true for the majority of these sharks caught in deepwater trawl fisheries.

60. These issues would provide significant incentives to misreport shark catch if vessels are required to bring back more than just the fins (either not reporting at all, or reporting them all going back alive), and would be creating a simple shift of waste from sea to land. Misreporting is a serious offense, but the continued sustainability and accurate quantification of mortality is more important in the long run. To avoid creating these incentives, it is proposed that the provisions of Schedule 6 be amended for blue, mako and porbeagle to allow for the return of these sharks to the sea dead and counted against a fisher's ACE. Live returns to the sea would not count against ACE, providing an incentive for fishers to return sharks to the sea alive wherever possible.

61. **Inshore species** are the focus of the Inshore fisheries strategy, although some of their species are also occasionally caught in deepwater fisheries, including school shark, dark ghost shark, elephantfish, and rig. These species have been identified as having high rates of current utilisation and well-established markets for the meat (both fresh and

frozen). The inshore strategy proposes that these species be managed with the ratio approach, and an associated requirement that fins be landed in batches by species to allow for better identification upon landing. No specific management issues have been identified that would suggest an alternative approach is required for any of these species.

62. **Non-QMS species** caught in deepwater fisheries are also caught in other fisheries. Among other species, non-QMS species caught in deepwater fisheries include thresher shark, carpet shark, seal shark, shovelnose dogfish, and leafscale gulper shark. Existing utilisation varies by species, with a very small proportion landed as fins. Processing levels of non-QMS species vary widely across fisheries, indicating practices may vary depending on established market-driven norms in the fishery sector.

63. As a starting position, it is proposed that non-QMS species be managed through an FNA approach, because of the more limited monitoring of these species. This does not preclude the ability to land any other parts of the shark as a primary processed state. It only requires that where a fisher wants to land the fins, they must be naturally attached to the body of the shark.

64. It has been suggested that the ratio approach would be appropriate for some non-QMS species that have high levels of utilisation. No non-QMS species caught mostly in deepwater fisheries are proposed for the ratio approach at this time.

3.1 IMPLEMENTATION IN DEEPWATER FISHERIES

3.1.1 Timing

65. Both the FNA approach and the fin ratio approach are associated with some operational and monitoring complexities (the former more on the part of fishers, and the latter more on the part of MPI, in assuring the ratio put in place is appropriate). When the NPOA-Sharks was adopted, it was thought that additional time might be required to develop a shark finning ban that would be practical and would not have unintended consequences. Blue sharks were specifically identified as a fishery in which implementation could be complex, meaning that more time was provided for this species. However, industry has now committed to swiftly implement measures to cease shark finning in the manner outlined in this strategy.

66. It is now proposed instead to put rules in place across the board by 1 October 2014, and then use the remaining two years identified in the NPOA-Sharks to fine-tune the system, including moving sharks from one approach to the other if either significant compliance or operational difficulties are identified.

3.1.2 Management actions

67. Management actions to address the factors and incentives that contribute to finning in deepwater fisheries will focus in the following areas:

    - Working with industry to maximise live release of sharks wherever possible and ensure handling and release of live sharks is done in accordance with international best practice (including for protected shark species).

- Working with industry to minimise catches of unwanted sharks.
- Amending Schedule 6 to allow for the return of some species (blue, mako and porbeagle) of sharks to the sea dead, while counting against a fisher's ACE.

3.1.3 Education/liaison

68. MPI will continue to work with the deepwater fishing industry in the implementation of the NPOA-Sharks, including the finning ban.

69. Priorities for education and work with the deepwater industry will focus on better identification of shark species, minimising catches of unwanted sharks, and ensuring that best practice is always used for the handling and release of live sharks. An information sheet will be produced prior to 1 October 2014 to clarify all changes to the regulatory regime, including new reporting requirements and codes to be used.

70. Industry has also developed a draft set of Operational Procedures for deepwater fisheries that detail reporting and catch requirements for sharks, best practice for the handling and release of sharks, the industry commitment to the eliminating of shark finning in New Zealand, and a guide for improved identification of some species.

3.1.4 Monitoring

71. New Zealand's fisheries management system has comprehensive monitoring systems in place that include rigorous reporting requirements for fishers, at-sea observers, inspections at-sea, in port, and of fish receiving businesses, as well as retrospective analyses of data collected.

72. Existing systems will be drawn upon to monitor new regulations; however additional work will be needed to target monitoring attention appropriately and effectively.

Work prior to 1 October 2014

73. Preparatory work will include tasking observers to focus on collection of data on shark catches, including life status at the vessel; handling; releases; and processing of retained sharks. In particular, information should be collected on fin and processed catch weights, and efforts should be made to determine an appropriate conversion factor for any landings in an FNA state (this would not be a greenweight landing because limited processing could still occur with fins remaining attached).

74. In addition, reporting protocols for both fishers and at-sea observers will be tested and any improvements that may improve the ability of MPI to monitor adherence with the finning ban and associated regulations will be made.

Work after 1 October 2014

75. Once the finning ban is in place, existing systems can be used to monitor compliance with the new regulations. However, an additional focus on monitoring of shark catches will be required as follows:

    - Landed states of shark catches, in particular fin/greenweight ratios. This information would be monitored both to assess accuracy of the ratio established, and to determine

any instances of non-compliance, meaning both trends across the fishery and from individual fishers would be important (i.e. are ratios consistent between fishers or do they vary, and if so what reasons can be established for the variance).

- Trends in retained and released catches and life status of release (including discrepancy analysis between observed and non-observed vessels, and comparison of release rates and life status before and after the finning ban was established).

76. Conversion factors will continue to be monitored by observers and reviewed to ensure ongoing accuracy and appropriateness. Ongoing monitoring will also provide information to allow for tweaks, amendments or improvements to the framework over time where required.

3.1.5 Enforcement

77. Compliance activities will be consistent with the current approach taken in New Zealand fisheries. This includes the use of the 'VADE' (Voluntary, Assisted, Directed Enforcement) model, which operates on a collaborative basis and sees enforcement working with fishing vessels to comply, but action taken where there is continued or gross non-compliance identified. Enforcement of compliance with the fin:greenweight ratio will be similar to that used for conversion factors in general, where there is expected to be some variation around the specified number. Statistical analyses will be used to identify potential systematic non-compliance.

78. The standard penalty regime included in the Fisheries Act 1996 applies to all regulations associated with the shark finning ban. Under this regime, the penalty for non-compliance with the over-arching regulation or any consequential regulations may include a community sentence or a fine up to $100,000. Gross non-compliance will also potentially be subject to penalties provided for in section 252 of the Act, which provides for fines up to $250,000 and/or imprisonment for a term up to 5 years.

Appendix I: Processing and landing information for sharks with fin-only landings in deepwater fisheries

Table 1: Primary processed state proportions and landing information for mako shark caught in the core deepwater fleet and New Zealand total.

MAK	Schedule 6 live releases (t)	Total core deepwater fleet landings (t)	Observer-authorised discards/lost/ abandoned	Eaten	Dressed	Gutted	Fins	Fishmeal	Total landings (t)	% of overall catch from DW
08-09	0.88	7.06	0.01	0.07	0.04	0.02	0.81	0.05	77	10%
09-10	0.32	6.68	0.01	0.23	0.04		0.50	0.19	68	10%
10-11	0.11	9.78	0.00	0.09	0.00	0.00	0.52	0.39	90	11%
11-12	1.00	15.54	0.01	0.02	0.07	0.00	0.76	0.15	102	15%
12-13	1.87	13.30	0.02	0.00	0.03	0.00	0.70	0.25	82	16%

Table 2: Primary processed state proportions and landing information (greenweight) for blue shark caught in the core deepwater fleet and New Zealand total

BWS	Schedule 6 live releases (t)	Total core deepwater fleet landings (t)	Observer-authorised discards/lost/ abandoned	Eaten	Dressed	Fins	Fishmeal	Total landings (t)	% of overall catch from DW
08-09	0.01	3.59	0.32	0.01	0.00	0.67	0.00	779	2%
09-10	1.50	3.05	0.02	0.02	0.00	0.94	0.03	683	0.5%
10-11	0.83	4.10	0.00	0.01	0.00	0.77	0.21	758	0.5%
11-12	0.92	4.91	0.02	0.00	0.00	0.88	0.10	998	0.5%
12-13	1.22	10.31	0.09	0.00	0.01	0.61	0.29	716	1%

Table 3: Primary processed state proportions and landing information (greenweight) for porbeagle shark caught in the core deepwater fleet and New Zealand total

POS	Schedule 6 live releases (t)	Total core deepwater fleet landings (t)	Observer-authorised discards/lost/ abandoned	Eaten	Greenweight	Dressed	Fins	Fishmeal	Total landings (t)	% of overall catch from DW
08-09	2.99	24.91	0.03	0.04	0.00	0.05	0.83	0.05	59	43%
09-10	2.05	19.59	0.04	0.17	0.08	0.02	0.62	0.08	63	31%
10-11	2.98	27.47	0.01	0.15	0.00	0.06	0.66	0.13	70	39%
11-12	1.41	18.48	0.01	0.10	0.00	0.04	0.71	0.14	54	34%
12-13	8.64	40.29	0.05	0.06	0.00	0.03	0.80	0.07	82	49%

Table 4: Primary processed state proportions and landing information (greenweight) for spiny dogfish caught in the core deepwater fleet and New Zealand total

SPD	Total core deepwater fleet landings	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Greenweight	Dressed	Fins	Fishmeal	Total landings (t) (w/ returns)	% of overall catch from DW (w/ returns)
08-09	3594.29	0.00	0.60	0.15	0.01	0.01	0.24	6,157	58%
09-10	3,742.44	0.01	0.46	0.29	0.00	0.01	0.23	6,409	58%
10-11	3,661.10	0.00	0.46	0.23	0.01	0.00	0.30	6,107	60%
11-12	3,368.97	0.00	0.48	0.14	0.01	0.00	0.38	5,585	60%
12-13	3,149.41	0.00	0.65	0.04	0.00	0.00	0.30	5,017	63%

Table 5: Primary processed state proportions and landing information (greenweight) for school shark caught in the core deepwater fleet and New Zealand total

SCH	Sch. 6 live releases (t)	Total core deepwater fleet landings (t)	Observer-authorised discards/lost/ abandoned	Eaten	Greenweight	Dressed	Gutted	Fillet	Fins	Fishmeal	Total landings (t)	% of overall catch from DW
08-09		152.26	0.01	0.01	0.00	0.76	0.00	0.19	0.01	0.01	3,499	5%
09-10		127.77	0.02	0.02	0.00	0.72		0.22	0.01	0.02	3,284	4%
10-11		112.15	0.01	0.02	0.07	0.81	0.00	0.07	0.00	0.02	3,486	3%
11-12		99.09	0.00	0.01	0.07	0.81	0.01	0.02	0.00	0.07	3,178	3%
12-13	0.21	155.34	0.02	0.02	0.04	0.82	0.00	0.03	0.01	0.06	3,149	5%

Table 6: Primary processed state proportions and landing information (greenweight) for thresher shark caught in the core deepwater fleet and New Zealand total

THR	Total core deepwater fleet landings (t)	Observer-authorised discards/lost/ abandoned	Discarded	Eaten	Fins	Fishmeal	Total landings (t)	% of overall catch from DW
08-09	8.62	0.00	0.95	0.00	0.04	0.01	27	2%
09-10	8.99	0.00	0.96	0.00	0.03	0.01	18	2%
10-11	15.17	0.02	0.92	0.01	0.00	0.05	22	4%
11-12	13.59	0.00	0.95	0.01	0.00	0.05	24	3%
12-13	16.94	0.00	0.86	0.00	0.00	0.14	19	13%

Appendix II: All landings of sharks in the core deepwater fleet for the period 2008-09 to 2012-13 (tonnes) (including discards)

Species	2008-09	2009-10	2010-11	2011-12	2012-13	Total
Spiny dogfish	3603.9	3742.4	3661.1	3369.0	3149.4	17525.8
Pale ghost shark	807.5	751.2	590.8	641.3	682.1	3473.0
Dark ghost shark	623.8	569.5	656.0	732.4	603.5	3185.1
Other sharks and dogfish	593.7	568.4	579.0	643.0	545.6	2929.7
Seal shark (black shark)	295.7	242.1	142.2	144.9	197.9	1022.7
Shovelnose dogfish	264.4	148.1	126.5	96.2	134.6	769.8
Deepwater dogfish	220.3	231.1	97.6	78.1	34.7	661.8
School shark	159.0	127.8	112.1	99.1	155.3	653.4
Long-nose chimaera	103.1	130.4	95.3	98.3	113.0	540.1
Carpet shark	27.4	27.1	68.2	43.0	31.9	197.5
Baxter's lantern dogfish	34.5	43.9	42.9	23.9	40.5	185.7
Porbeagle shark	25.2	19.6	27.5	18.5	40.3	131.0
Lucifer dogfish	17.6	25.7	17.4	24.5	32.2	117.4
Leafscale gulper shark	21.2	17.0	13.0	8.7	29.9	89.8
Northern spiny dogfish	8.6	16.8	22.0	9.8	19.8	76.9
Thresher shark	8.6	9.0	15.2	13.6	16.9	63.3
Smooth slenderhound	5.3	5.0	8.8	7.0	27.5	53.6
Mako shark	7.5	6.7	9.8	15.5	13.3	52.8
Blue shark	17.0	3.1	4.1	4.9	10.3	39.4
Basking shark	9.8	19.2	7.0			36.0
Purple chimaera	13.5	1.1	6.4	0.7	13.2	34.8
Prickly dogfish	9.3	5.6	7.2	4.0	4.1	30.2
Elephantfish	2.2	0.9	2.5	13.7	2.7	22.0
Chimaera spp.	2.0	2.0	10.6	0.6	2.1	17.4
Rig	0.6	2.1	11.2	2.0	1.5	17.3
Longnose velvet dogfish	1.3	2.2	0.5	0.2	8.2	12.4
Cat shark	8.0	1.4	0.2	0.6	1.1	11.4
Sixgill shark	1.2	1.4	2.2	1.9	4.0	10.7
Plunket's shark		1.3	5.1	0.2	3.2	9.8
Hydrolagus spp.	7.7	0.0		0.0		7.8
Pointynose blue ghost shark		0.1	0.2	6.4	0.1	6.8
Roughskin dogfish	0.6	1.8	1.6	0.1	0.0	4.3
Smooth skin dogfish	0.2	0.2	1.4	0.7	1.5	4.0
Sharpnose sevengill shark	0.1	0.3	0.5	1.8	1.0	3.7
Broadnose sevengill shark	0.2	0.5	0.5	0.7	1.7	3.6
Cat shark	0.3	0.6	0.4	0.2		1.5
Bronze whaler	0.1	0.2	0.7	0.4		1.4
Chimaera, purple	0.2	0.1	0.4	0.1	0.6	1.4
Portuguese dogfish	0.3		0.6		0.0	0.9
White pointer shark	0.7					0.7
Dawson's cat shark		0.1				0.1
Total	6903.5	6726.2	6348.6	6105.8	5923.8	32008.0

Appendix III: Processing and landing information for sharks caught in deepwater fisheries 2008-09 to 2012-13

The tables below show a breakdown of processing information for sharks caught in core deepwater fleet for the most recent 5 years. Information is provided showing total landings included in the analysis and includes information on fish 'lost' at sea (reported under the 'A' code), spiny dogfish returned to the sea under Schedule 6 provisions (either alive or dead), non-QMS species returned to the sea (reported under the 'D' code) where applicable, fish eaten on board the vessel (reported under the 'E' code), and then landed fish by processing type. 'Greenweight' in this case refers to fish that are landed whole. The column entitled 'Sch. 6 live releases' indicates the quantity (in tonnes) of sharks released alive under the provisions of Schedule 6. These live releases are not included in the subsequent landings and processing information.

Table 1: Shark catches and processed states for the core deepwater fleet 2012-13 (tonnes)

	Code	Sch. 6 live releases	Total core deepwater fleet landings 2012-13	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discards	Eaten	Greenweight	Dressed	Gutted	Headed and gutted	Fillet	Fins	Livers	Fishmeal
Spiny dogfish	SPD		3,149.41	0	0.65	0	0	0.04	0	0	0	0	0	0	0.30
Pale ghost shark	GSP		682.14	0		0	0	0	0.91	0	0	0	0	0	0.08
Dark ghost shark	GSH		603.45	0.06		0	0	0.03	0.87	0	0	0	0	0	0.03
Other sharks and dogfish	OSD		545.64	0		0.39	0	0	0	0	0	0	0	0.22	0.39
Seal shark	BSH		197.89	0		0.37	0	0	0.02	0	0	0	0	0.16	0.45
School shark	SCH	0.21	155.34	0.02		0	0.02	0.04	0.82	0	0	0.03	0.01	0	0.06
Shovelnose dogfish	SND		134.64	0		0.45	0	0.01	0.03	0	0	0	0	0.33	0.18
Longnose chimaera	LCH		113.01	0		0.15	0	0	0	0	0	0	0	0	0.85
Baxter's lantern dogfish	ETB		40.53	0		0.13	0	0.02	0	0	0	0	0	0.11	0.73
Porbeagle shark	POS	8.64	40.29	0.05		0	0.06	0	0.03	0	0	0	0.80	0	0.07
Deepwater dogfish	DWD		34.67	0		0.40	0	0	0	0	0	0	0	0	0.60
Lucifer's dogfish	ETL		32.20	0		0.48	0	0	0	0	0	0	0	0	0.52
Carpet shark	CAR		31.88	0		0.97	0	0	0	0	0	0	0	0	0.03
Leafscale gulper shark	CSQ		29.93	0		0.76	0	0	0	0	0	0	0	0.23	0.01
Slender smooth-hound	SSH		27.50	0		0.99	0	0	0	0	0	0	0	0	0.01
Northern spiny dogfish	NSD		19.76	0		0.73	0	0.05	0	0	0	0	0	0	0.22
Thresher shark	THR		16.94	0		0.86	0	0	0	0	0	0	0	0	0.14
Mako shark	MAK	1.87	13.30	0.02		0	0	0	0.03	0	0	0	0.70	0	0.25
Purple chimaera	CHG		13.29	0		0.90	0	0	0	0	0	0	0	0	0.10
Blue shark	BWS	1.22	10.31	0.09		0	0	0	0.01	0	0	0	0.61	0	0.29
Longnose velvet dogfish	CYP		8.20	0		0.08	0	0.01	0	0	0	0	0	0	0.92
Prickly dogfish	PDG		4.20	0		0.94	0	0	0	0	0	0	0	0	0.06
Sixgill shark	HEX		4.04	0		0.99	0	0	0	0	0	0	0	0	0.01
Plunket's shark	PLS		3.20	0		0.99	0	0	0	0	0	0	0	0	0.01
Elephantfish	ELE		2.71	0.04		0	0.11	0	0.52	0	0	0	0	0	0.33

	Code	Sch. 6 live releases	Total core deepwater fleet landings 2012-13	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discards	Eaten	Greenweight	Dressed	Gutted	Headed and gutted	Fillet	Fins	Livers	Fishmeal
Chimaeras spp.	CHI		2.17	0		1.00	0	0	0	0	0	0	0	0	0
Broadnose sevengill shark	SEV		1.75	0		0.82	0	0	0.09	0	0	0	0	0	0.08
Rig	SPO	0.07	1.51	0.21		0	0.24	0.27	0.15	0.01	0.01	0	0	0	0.12
Smooth skin dogfish (Owston's)	CYO		1.48	0		0.37	0	0.06	0	0	0	0	0	0	0.57
Cat shark	APR		1.16	0		0.03	0	0.11	0	0	0	0	0	0	0.86
Sharpnose sevengill shark	HEP		0.97	0		0.98	0	0.02	0	0	0	0	0	0	0
Purple chimaera	CHP		0.63	0		0.06	0	0	0	0	0	0	0	0	0.94
Cat shark	CSH		0.29	0		1.00	0	0	0	0	0	0	0	0	0
Dawson's cat shark	DCS		0.16	0		1.00	0	0	0	0	0	0	0	0	0
Bronze whaler	BWH		0.08	0		1.00	0	0	0	0	0	0	0	0	0
Pointynose blue ghost shark	HYP		0.07	0		0.14	0	0	0	0	0	0	0	0	0.86
Portuguese dogfish	CYL		0.06	0		0.66	0	0.34	0	0	0	0	0	0	0
Roughskin dogfish	SCM		0.03	0		0	0	1.00	0	0	0	0	0	0	0
Windenosed chimaera	RCH		0.02	0		1.00	0	0	0	0	0	0	0	0	0
Big eyed thresher shark	BET		0.01	0		1.00	0	0	0	0	0	0	0	0	0
McMillan's cat shark	PCS		0	0		1.00	0	0	0	0	0	0	0	0	0

Table 2: Shark catches and processed states for the core deepwater fleet 2011-12 (tonnes)

	Core	Sch. 6 live releases	Total core deepwater fleet landings 2011-12	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Gutted	Headed and gutted	Fillet	Fins	Livers	Fishmeal
Spiny dogfish	SPD		3,368.97	0	0.48	0	0	0.14	0.01	0	0		0	0	0.38
Dark ghost shark	GSH		732.36	0.02		0	0	0.03	0.91	0	0		0	0	0.03
Other sharks and dogfish	OSD		643.02	0		0.42	0	0	0	0	0		0	0.15	0.42
Pale ghost shark	GSP		641.31	0		0	0	0	0.90	0	0		0	0	0.09
Seal shark	BSH		144.87	0		0.68	0	0	0	0	0		0	0.03	0.28
School shark	SCH		99.09	0		0	0.01	0.07	0.81	0	0.01	0.02	0	0	0.07
Longnose chimaera	LCH		98.30	0		0.11	0	0	0	0	0		0	0	0.89
Shovelnose dogfish	SND		96.21	0		0.38	0	0	0	0	0		0	0.13	0.48
Deepwater dogfish	DWD		78.14	0		0.21	0	0	0	0	0		0	0.04	0.75
Carpet shark	CAR		43.00	0		0.99	0	0	0	0	0		0	0	0.01
Lucifer's dogfish	ETL		24.53	0		0.27	0	0	0	0	0		0	0	0.73
Baxter's lantern dogfish	ETB		23.87	0		0.08	0	0.01	0	0	0		0	0.42	0.49
Porbeagle shark	POS	1.41	18.48	0.01		0	0.10	0	0.04	0	0		0.71	0	0.14
Mako shark	MAK	1.00	15.54	0.01		0	0.02	0	0.07	0	0		0.76	0	0.15
Elephantfish	ELE		13.72	0		0	0.02	0	0.95	0	0		0	0	0.02
Thresher shark	THR		13.59	0		0.95	0.01	0	0	0	0		0	0	0.05
Northern spiny dogfish	NSD		9.76	0		0.46	0	0.11	0	0	0		0	0	0.43
Leafscale gulper shark	CSQ		8.74	0		0.34	0	0.01	0	0	0		0	0.65	0
Slender smooth-hound	SSH		6.99	0		0.94	0	0	0	0	0		0	0	0.06
Pointnose blue ghost shark	HYP		6.35	0		0	0	0	0	0	0		0	0	1.00
Blue shark	BWS	0.92	4.91	0.02		0	0	0	0	0	0		0.88	0	0.10
Prickly dogfish	PDG		4.03	0		0.90	0	0	0	0	0		0	0	0.10
Rig	SPO		1.97	0.11		0	0.21	0.30	0.37	0	0		0	0	0.01
Sixgill shark	HEX		1.92	0		0.99	0	0	0	0	0		0	0	0
Sharpnose sevengill shark	HEP		1.76	0		0.97	0	0.02	0	0	0		0	0	0.01
Purple chimaera	CHG		0.69	0		0.16	0	0.01	0	0	0		0	0	0.83
Broadnose sevengill shark	SEV		0.66	0		0.75	0	0.07	0	0	0		0	0	0.18
Smooth skin dogfish	CYO		0.65	0		0.60	0	0.40	0	0	0		0	0	0
Chimaeras spp.	CHI		0.60	0		0.91	0	0	0	0	0		0	0	0.09
Cat shark	APR		0.57	0		0.20	0	0.03	0	0	0		0	0	0.77
Bronze whaler	BWH		0.43	0		1.00	0	0	0	0	0		0	0	0
Longnose velvet dogfish	CYP		0.21	0		0.26	0	0.74	0	0	0		0	0	0
Cat shark	CSH		0.17	0		0.98	0	0.02	0	0	0		0	0	0
Plunket shark	PLS		0.17	0		1.00	0	0	0	0	0		0	0	0

	Core	Sch. 6 live releases	Total core deepwater fleet landings 2011-12	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Gutted	Headed and gutted	Fillet	Fins	Livers	Fishmeal
Roughskin dogfish	SCM		0.15	0		0	0	1.00	0	0	0		0	0	0
Chimaera, purple	CHP		0.10	0		0.48	0	0	0	0	0		0	0	0.52
Hydrolagus spp.	HYD		0.01	0		0	0	0	0	0	0		0	0	1.00
Frill shark	FRS		0	0		1.00	0	0	0	0	0		0	0	0

Table 3: Shark catches and processed states for the core deepwater fleet 2010-11 (tonnes)

	Core	Sch. 6 live releases	Total core deepwater fleet landings 2010-11	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Headed and gutted	Fillet	Fins	Livers	Fishmeal
Spiny dogfish	SPD		3,661.10	0	0.46	0	0	0.23	0.01	0		0	0	0.30
Dark ghost shark	GSH		656.03	0.09		0	0	0.09	0.80	0		0	0	0.02
Pale ghost shark	GSP		590.77	0		0	0	0.01	0.91	0		0	0	0.07
Other sharks and dogfish	OSD		579.00	0		0.48	0	0	0	0		0	0.15	0.37
Seal shark	BSH		142.20	0		0.54	0	0.01	0.12	0		0	0.01	0.32
Shovelnose dogfish	SND		126.48	0		0.25	0	0.02	0.09	0		0	0.16	0.47
School shark	SCH		112.15	0.01		0	0.02	0.07	0.81	0	0.07	0	0	0.02
Deepwater dogfish	DWD		97.60	0		0.41	0	0.05	0	0		0	0	0.54
Longnose chimaera	LCH		95.28	0		0.19	0	0.01	0	0		0	0	0.81
Carpet shark	CAR		68.17	0		0.99	0	0	0	0		0	0	0.01
Baxter's lantern dogfish	ETB		42.92	0		0.09	0	0.10	0	0		0	0.35	0.45
Porbeagle shark	POS	2.98	27.47	0.01		0	0.15	0	0.06	0		0.66	0	0.13
Northern spiny dogfish	NSD		21.96	0		0.37	0	0.02	0	0		0	0	0.61
Lucifer's dogfish	ETL		17.39	0		0.61	0	0	0	0		0	0	0.39
Thresher shark	THR		15.17	0.02		0.92	0.01	0	0	0		0	0	0.05
Leafscale gulper shark	CSQ		13.00	0		0.04	0	0.04	0	0		0	0.89	0.03
Rig	SPO		11.20	0.01		0	0.01	0.02	0.69	0		0	0	0.29
Chimaera spp.	CHI		10.62	0.94		0.06	0	0	0	0		0	0	0
Mako shark	MAK	0.11	9.78	0		0	0.09	0	0	0		0.52	0	0.39
Slender smooth-hound	SSH		8.79	0		0.92	0	0	0	0		0	0	0.08
Prickly dogfish	PDG		7.25	0		0.98	0	0	0	0		0	0	0.02
Basking shark	BSK		7.00	0		1.00	0	0	0	0		0	0	0
Purple chimaera	CHG		6.36	0		0.41	0	0.01	0	0		0	0	0.58
Plunket's shark	PLS		5.07	0		1.00	0	0	0	0		0	0	0
Blue shark	BWS	0.83	4.10	0		0	0.01	0	0	0		0.77	0	0.21
Elephantfish	ELE		2.51	0		0	0.06	0	0.89	0		0	0	0.05
Sixgill shark	HEX		2.16	0		1.00	0	0	0	0		0	0	0
Roughskin dogfish	SCM		1.64	0		0.24	0	0.76	0	0		0	0	0
Smooth skin dogfish	CYO		1.42	0		0.14	0	0.86	0	0		0	0	0
Bronze whaler	BWH		0.66	0		0.95	0	0.05	0	0		0	0	0
Portuguese dogfish	CYL		0.55	0		0.35	0	0.03	0	0		0	0	0.62
Longnose velvet dogfish	CYP		0.53	0		0.35	0	0.65	0	0		0	0	0
Broadnose sevengill shark	SEV		0.49	0		1.00	0	0	0	0		0	0	0
Sharpnose sevengill shark	HEP		0.48	0		0.90	0	0	0.10	0		0	0	0

	Core	Sch. 6 live releases	Total core deepwater fleet landings 2010-11	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Headed and gutted	Fillet	Fins	Livers	Fishmeal
Cat shark	CSH		0.45	0		1.00	0	0	0	0		0	0	0
Purple chimaera	CHP		0.37	0		0.31	0	0	0.06	0		0	0	0.63
Cat shark	APR		0.24	0		0.81	0	0.19	0	0		0	0	0
Pointynose blue ghost shark	HYP		0.23	0		0	0	0	0	0		0	0	1.00
Prickly shark	ECO		0.02	0		0	0	0	0	0		0	0	1.00
Widnose chimaera	RCH		0.02	0		0	0	0	0	0		0	0	1.00
Etmopterus spp.	ETM		0.02	0		1.00	0	0	0	0		0	0	0

Table 4: Shark catches and processed states for the core deepwater fleet 2009-10 (tonnes)

	Code	Sch. 6 live releases	Total core deepwater fleet landings 2009-10	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Fillet	Fins	Livers	Fishmeal
Spiny dogfish	SPD		3,742.44	0.01	0.46	0	0	0.29	0		0.01	0	0.23
Pale ghost shark	GSP		751.24	0		0	0	0	0.91		0	0	0.08
Dark ghost shark	GSH		569.47	0.05		0	0	0.03	0.88		0	0	0.04
Other sharks and dogfish	OSD		568.40	0		0.47	0	0	0		0	0.20	0.33
Seal shark	BSH		242.07	0		0.46	0	0.02	0.05		0	0.02	0.45
Deepwater dogfish	DWD		231.11	0		0.19	0	0	0		0	0	0.81
Shovelnose dogfish	SND		148.14	0		0.35	0	0	0.03		0	0.08	0.54
Longnose chimaera	LCH		130.40	0		0.18	0	0.01	0		0	0	0.81
School shark	SCH		127.77	0.02		0	0.02	0	0.72	0.22	0.01	0	0.02
Baxter's lantern dogfish	ETB		43.91	0		0.18	0	0.02	0		0	0.30	0.51
Carpet shark	CAR		27.09	0		1.00	0	0	0		0	0	0
Lucifer's dogfish	ETL		25.68	0		0.42	0	0	0		0	0	0.58
Porbeagle shark	POS	2.05	19.59	0.04		0	0.17	0.08	0.02		0.62	0	0.08
Basking shark	BSK		19.20	0		1.00	0	0	0		0	0	0
Leafscale gulper shark	CSQ		17.02	0		0.07	0	0	0.10		0	0.83	0.01
Northern spiny dogfish	NSD		16.79	0		0.64	0	0.01	0		0	0	0.35
Thresher shark	THR		8.99	0		0.96	0	0	0		0.03	0	0.01
Mako shark	MAK	0.32	6.68	0.01		0	0.23	0.02	0.04		0.50	0	0.19
Prickly dogfish	PDG		5.61	0		0.94	0	0	0		0	0	0.06
Slender smooth-hound	SSH		5.02	0		1.00	0	0	0		0	0	0
Blue shark	BWS	1.50	3.05	0.02		0	0.02	0	0		0.94	0	0.03
Longnose velvet dogfish	CYP		2.22	0		0	0	0.01	0		0	0	0.98
Rig	SPO		2.08	0.01		0	0.03	0.09	0.07		0	0	0.73
Chimaeras spp.	CHI		2.03	0		1.00	0	0	0		0	0	0
Roughskin dogfish	SCM		1.81	0		0	0	1.00	0		0	0	0
Cat shark	APR		1.45	0		0.18	0	0	0		0	0	0.82
Sixgill shark	HEX		1.40	0		1.00	0	0	0		0	0	0
Plunket's shark	PLS		1.32	0		1.00	0	0	0		0	0	0
Chimaera, purple	CHG		1.13	0		0.11	0	0	0		0	0	0.89
Elephantfish	ELE		0.88	0.11		0	0.19	0	0.32		0	0	0.39
Cat shark	CSH		0.62	0		0.97	0	0.03	0		0	0	0
Broadnose sevengill shark	SEV		0.47	0		0.88	0	0	0		0	0	0.12
Sharpnose sevengill shark	HEP		0.32	0		0.63	0	0	0.37		0	0	0
Bronze whaler	BWH		0.25	0		1.00	0	0	0		0	0	0

	Code	Sch. 6 live releases	Total core deepwater fleet landings 2009-10	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Fillet	Fins	Livers	Fishmeal
Smooth skin dogfish	CYO		0.21	0		0.19	0	0.81	0		0	0	0
Pointynose blue ghost shark	HYP		0.15	0		0	0	0	0		0	0	1.00
Purple chimaera	CHP		0.10	0		0.28	0	0	0.02		0	0	0.70
Dawson's cat shark	DCS		0.06	0		1.00	0	0	0		0	0	0
Frill shark	FRS		0.02	0		0	0	0.25	0		0	0	0.75
Prickly shark	ECO		0.02	0		0	0	0	0		0	0	1.00
Hydrolagus spp.	HYD		0.01	0		1.00	0	0	0		0	0	0

Table 5: Shark catches and processed states for the core deepwater fleet 2008-09 (tonnes)

	Code	Schedule 6 live releases	Total core deepwater fleet landings 2008-09	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Gutted	Fillet	Fins	Livers	Fishmeal
Spiny dogfish	SPD		3594.29	0	0.60	0	0	0.15	0.01	0	0	0.01	0	0.24
Pale ghost shark	GSP		807.55	0.01		0	0	0	0.93	0	0	0	0	0.06
Dark ghost shark	GSH		623.79	0.01		0	0	0.11	0.79	0	0	0	0	0.10
Other sharks and dogfish	OSD		593.67	0		0.41	0	0	0	0	0	0	0.19	0.41
Seal shark	BSH		295.71	0		0.48	0	0	0.10	0	0	0	0.02	0.40
Shovelnose dogfish	SND		264.41	0		0.41	0	0	0.17	0	0	0	0.05	0.37
Deepwater dogfish	DWD		220.29	0		0.17	0	0	0	0	0	0	0	0.83
School shark	SCH		152.26	0.01		0	0.01	0	0.76	0	0.19	0.01	0	0.01
Longnose chimaera	LCH		103.14	0		0.28	0	0.01	0	0	0	0	0	0.71
Baxter's lantern dogfish	ETB		34.46	0		0.20	0	0.10	0	0	0	0	0.37	0.33
Carpet shark	CAR		27.36	0		0.98	0	0	0.01	0	0	0	0	0.01
Porbeagle shark	POS	2.99	24.91	0.03		0	0.04	0	0.05	0	0	0.83	0	0.05
Leafscale gulper shark	CSQ		21.18	0		0.10	0	0	0.51	0	0	0	0.39	0
Lucifer's dogfish	ETL		17.63	0		0.57	0	0	0	0	0	0	0	0.43
Purple chimaera	CHG		13.45	0		0.15	0	0	0.83	0	0.01	0	0	0.02
Basking shark	BSK		9.80	0		1.00	0	0	0	0	0	0	0	0
Prickly dogfish	PDG		9.25	0		0.95	0.03	0	0	0	0	0	0	0.02
Northern spiny dogfish	NSD		8.63	0		0.98	0	0.02	0	0	0	0	0	0
Thresher shark	THR		8.62	0		0.95	0	0	0	0	0	0.04	0	0.01
Cat shark	APR		8.03	0		0.99	0	0	0	0	0	0	0	0.01
Hydrolagus spp.	HYD		7.73	0		0.04	0	0	0	0	0.92	0	0	0.04
Mako shark	MAK	0.88	7.06	0.01		0	0.07	0	0.04	0.02	0	0.81	0	0.05
Slender smooth-hound	SSH		5.28	0		1.00	0	0	0	0	0	0	0	0
Blue shark	BWS	0.01	3.59	0.32		0	0.01	0	0	0	0	0.67	0	0
Elephantfish	ELE		2.17	0		0	0.06	0	0.89	0	0	0	0	0.05
Chimaera spp.	CHI		2.01	0		1.00	0	0	0	0	0	0	0	0
Longnose velvet dogfish	CYP		1.26	0		0	0	1.00	0	0	0	0	0	0
Sixgill shark	HEX		1.24	0		0.94	0	0	0	0	0	0	0	0.06
Pacific sleeper shark	SOP		1.00	0		1.00	0	0	0	0	0	0	0	0
White pointer shark	WPS		0.65	0		0	0	0	0	0	0	0	0	1.00
Roughskin dogfish	SCM		0.64	0		0	0	1.00	0	0	0	0	0	0
Rig	SPO		0.55	0		0	0.21	0.01	0.60	0	0	0	0	0.17
Portuguese dogfish	CYL		0.30	0		0	0	1.00	0	0	0	0	0	0
Cat shark	CSH		0.30	0		0.90	0	0.10	0	0	0	0	0	0

	Code	Schedule 6 live releases	Total core deepwater fleet landings 2008-09	Observer-authorised discards/lost/ abandoned	Returned under Sch. 6 (SPD)	Discarded	Eaten	Greenweight	Dressed	Gutted	Fillet	Fins	Livers	Fishmeal
Broadnose sevengill shark	SEV		0.24	0.55		0.45	0	0	0	0	0	0	0	0
Chimaera, purple	CHP		0.22	0		0.60	0	0.07	0	0	0	0	0	0.34
Smooth skin dogfish	CYO		0.18	0		0	0	1.00	0	0	0	0	0	0
Sharpnose sevengill shark	HEP		0.09	0		0	0	0	1.00	0	0	0	0	0
Bronze whaler	BWH		0.06	0		1.00	0	0	0	0	0	0	0	0
Prickly shark	ECO		0.05	0		1.00	0	0	0	0	0	0	0	0
Deepsea sharks	CEN		0.03	0		0	0	0	1.00	0	0	0	0	0