



Initial Position Paper on the proposed introduction of seal shark into the Quota Management System on 1 October 2014

MPI Discussion Paper No: 2014/03

ISBN No: 978-0-478-42342-6 (online)
ISSN No: 2253-3907 (online)

January 2014

Disclaimer

Every effort has been made to ensure the information in this document is accurate.

The Ministry for Primary Industries (MPI) does not accept any responsibility or liability whatsoever for any error of fact, omission, interpretation or opinion that may be present, however it may have occurred.

Requests for further copies should be directed to:

Publications Logistics Officer
Ministry for Primary Industries
PO Box 2526
WELLINGTON 6140

Email: brand@mpi.govt.nz
Telephone: 0800 00 83 33
Facsimile: 04-894 0300

This publication is also available on the Ministry for Primary Industries website at <http://www.mpi.govt.nz/news-resources/publications.aspx>

OFFICIAL INFORMATION ACT 1982

All submissions are subject to the Official Information Act 1982 (OIA) and can be released (along with the personal details of the submitter) under the OIA. If you have specific reasons for wanting to have (any part of) your submission or personal details withheld, please set out your reasons in the submission. MPI will consider those reasons when making any assessment under the OIA.

© Crown Copyright, January 2014 - Ministry for Primary Industries

Contents

Page

Executive Summary	1
Background	2
Statutory Considerations	3
QMS Introduction Guidelines	4
Fisheries Plan Objectives	4
2008 National Plan of Action for Sharks (NPOA-Sharks)	5
Problem Definition	6
Summary of options	6
Option 1 – <i>Status quo</i>	6
Option 2 – Introduce seal shark into QMS on 1 October 2014	6
Analysis of Management Options	7
Option 1	7
Option 2 – Introduce seal shark into QMS on 1 October 2014	9
Other Management Controls Concurrent with Entry to QMS	11
Other Management Issues	15
Appendix 1 – Biological and Fishery Information	16
Biological information	16
Social, Economic, Cultural Information	18

Executive Summary

1. The purpose of this Initial Position Paper (IPP) is to seek tangata whenua and stakeholder views on whether seal shark (*Dalatias licha*) should be introduced into the Quota Management System (QMS) on 1 October 2014 by way of a determination by the Minister for Primary Industries (the Minister) under section 17B of the Fisheries Act 1996 (the Act).
2. The Minister's key decision, whether to make a determination to make seal shark subject to the QMS, is made under section 17B(1) and (2) of the Act. If satisfied that the current management is a) not ensuring the sustainability of the stock or species or b) is not providing for the utilisation of seal shark, the Minister must determine to make seal shark subject to the QMS unless he determines that the purpose of the Act would be better met by setting one or more sustainability measures under section 11.
3. Seal shark is currently managed using an open access fishery. It is taken mainly as a bycatch in several fisheries targeting QMS species. Since 2004, both landings and discards of seal shark have steadily decreased. In the 2011/12 fishing year 150 tonnes of seal sharks were landed in addition to 119 tonnes that were discarded.
4. Seal shark has been identified through the Ministry for Primary Industries' (MPI's) annual fish planning cycle as a species for consideration under section 17B(1)(a) of the Act. That is, there are potential sustainability concerns due to the biology of the species, which makes it very highly vulnerable to overfishing, and due a continuous decline of seal shark catches since the early 2000s. Furthermore, seal shark catches have remained above 100 tonnes for the past 20 years, which is a threshold considered in the QMS introduction standard – a policy document guiding the Minister's consideration of his statutory requirements – above which a species is considered for a potential introduction into the QMS. Having seal shark under the QMS would allow for sustainable management of the stocks, but would also enable stakeholders to provide for their economic well-being. Although open access does provide for the utilisation of seal shark, MPI believes that utilisation of the species would be more sustainable under the QMS.
5. The Minister has an option to choose to impose measures under section 11 of the Act rather than introducing seal shark into the QMS; however, MPI does not feel that section

11 measures will sufficiently address the management issues that the seal shark fishery faces.

6. Should the Minister agree to introduce seal shark stocks into the QMS under section 17B, he must then define or state the matters set out in section 19(1). In terms of section 19(1)(b) and (c), MPI proposes that seal shark stocks be managed within the 1 October to 30 September fishing year and that the unit of measurement for seal shark be expressed in greenweight.
7. In terms of section 19(1)(a), MPI proposes two options regarding the quota management areas (QMAs) for seal shark:
 - four QMAs: BSH 1, BSH 3, BSH 4 and BSH 10; or
 - nine QMAs: BSH 1, BSH 2, BSH 3, BSH 4, BSH 5, BSH 6, BSH 7, BSH 8 and BSH 10.

Background

8. Seal shark is predominantly a bycatch species. However, in recent years reported catches, discards, and landings have all decreased. Appendix 1 provides further details on the biological characteristics of seal shark and the recent history of the fishery.
9. Seal shark has been identified through MPI's annual fish planning cycle as being a species for consideration under section 17B(1)(a) of the Act. That is, there are potential sustainability concerns due to the biology of the species which makes it very highly vulnerable to overfishing, and due to a continuous decline of the seal shark catches since the early 2000s. Furthermore, seal shark catches have remained above 100 tonnes for the past 20 years, which is a threshold considered in the QMS introduction standard – a policy document guiding the Minister's consideration of his statutory requirements – above which a species is considered for a potential introduction into the QMS.
10. The existing management framework is no longer appropriate if it is not meeting the purpose of the Act – to provide for the utilisation of fisheries resources while ensuring sustainability. In this case, the Minister may choose to implement measures under section 11 of the Act, or introduce seal shark into the QMS. MPI considers that the QMS framework generally provides the best means of meeting the purpose of the Act, but that other methods of active management may be appropriate.

Statutory Considerations

11. The Minister's key decision, whether to make a determination to make seal shark stocks subject to the QMS, is made under section 17B(1) and (2) of the Act. If satisfied that current management is a) not ensuring sustainability or b) is not providing for the utilisation of seal shark, the Minister must determine to make seal shark subject to the QMS unless he determines that the purpose of the Act would be better met by setting one or more sustainability measures under section 11.
12. Generically, MPI considers the QMS is the best framework available within the Act to provide for the utilisation of fisheries resources while ensuring sustainability (purpose of the Act) regardless of the section 11 measure chosen. However, specific assessment of ability to ensure sustainability and provide for utilisation of seal shark is outlined later in this paper.
13. Section 17B(3) requires that before any determination under section 17B is made the Minister must consult with those persons or organisations whom he considers to be representative of the classes of persons who have an interest in the relevant determination.
14. If the Minister determines under section 17B to make a stock subject to the QMS. Section 18 requires the Minister by notice in the *Gazette* to declare the stock to be subject to the QMS on and from the first day of the fishing year stated in the notice.
15. Should the Minister determine to introduce seal shark into the QMS section 19 requires the Minister must publish in the *Gazette* the following matters:
 - Define the QMAs. Section 19(2) requires that the Minister shall, as far as practicable, maintain the same QMAs for different species. MPI considers that the QMA options proposed in this paper are consistent with this obligation. MPI also considers that seal shark in the waters around the Chatham Islands can be managed effectively as a unit and that, therefore, a separate QMA would be established around the Chatham Islands (section 19(3) of the Act).
 - State the fishing year in respect of the stock. MPI is proposing that the fishing year for the proposed seal shark stocks should be 1 October to 30 September.
 - State whether the total allowable commercial catch (TACC) and the annual catch entitlements (ACE) are to be expressed in meatweight or greenweight. MPI is proposing that the unit of measurement for seal shark be expressed in greenweight.

- Make provision for such other matters as may be contemplated by the Act.
16. Additionally, section 19(7) of the Act requires that before the Minister makes a declaration that a stock is subject to the QMS, he must consult with those persons or organisations whom he considers are representative of those classes of persons having an interest in the following matters as set out in section 19(1) – set out above in paragraph 15.
 17. This IPP seeks submissions on both the proposed introduction of seal shark into the QMS and on the matters referred to in paragraph 15 of this IPP.

QMS Introduction Guidelines

18. MPI is committed to ensuring that there are appropriate development opportunities for non-QMS species. The statutory considerations as to whether a stock or species may be introduced to the QMS are addressed throughout this IPP.
19. Stocks or species are assessed based on evidence of a significant change in reported catch over time. This change may be positive, denoting fishery development as either a target or bycatch species, or negative, indicating a possible sustainability concern.
20. Changes in commercial catch are assessed over the three years preceding each annual review. The analysis is undertaken on catches for all non-QMS stocks or species, totalled for each 6 month period within this timeframe.
21. Two values are used to define a significant change for a given stock:
 - catch exceeding 20 tonnes for any of the 6 month periods and the difference in catch between the minimum and maximum 6 monthly totals exceeding fifty percent of the minimum 6 monthly total; and
 - catch exceeding 100 tonnes for any of the 6 month periods.

Fisheries Plan Objectives

22. The New Zealand Government's long term goal for fisheries is "New Zealanders maximising benefits from the use of fisheries within environmental limits". To support this goal MPI has developed a draft National Fisheries Plan for Inshore Finfish (the Finfish Plan), which is a policy document setting out management objectives for all inshore finfish fisheries. The Finfish Plan is being trialled for two years before it is

refined and improved. Once this has been done, formal approval of the Finfish Plan will be sought from the Minister. However, because of the sheer number of fish stocks it is not practical to set out stock-specific management objectives (or harvest strategies) for every stock. Therefore, stocks in the Finfish Plan have been grouped to facilitate multi-stock objective setting and service delivery.

23. Stocks in the Plan have been grouped according to their biological vulnerability and their desirability to fishers (potential fishing pressure). Non-QMS stocks were assigned into their own category (Group 7) – this currently includes seal shark – reflecting the current low desirability and hence lower risk in general associated with these stocks.
24. Group 7 species are generally taken from open access fisheries, which MPI considers will enable utilisation in most cases. However, if the non-QMS framework is not adequately providing for utilisation whilst ensuring sustainability, MPI will take appropriate action. The management approach minimises constraints so that opportunities for developing these fisheries can be realised where appropriate and sustainable. It also minimises management costs.
25. The stock sustainability objective for Group 7 stocks is to ensure catch is at a level that is sustainable. Catches are monitored to ensure catch is stable or fluctuates without trend.

2013 Draft National Plan of Action for Sharks (NPOA-Sharks)

26. The NPOA-Sharks is a policy document and is a public statement about how the New Zealand Government intends to deliver on both the conservation of shark populations and sustainable shark fisheries. The purpose of the NPOA-Sharks is to ensure the conservation of sharks, the appropriate management of fisheries that catch sharks and the long term sustainable use of sharks.
27. Sharks share a number of biological characteristics that make them vulnerable to fishing. The impacts of fishing are likely to constitute the greatest threats to the sustainability of shark populations.
28. The draft 2013 NPOA-Sharks suggests that the primary tool to manage extractive use and sustainability of sharks is the QMS. When catches are indicated to be steadily increasing

for a species of shark currently managed outside the QMS, such as carpet shark, the preferred response is to introduce the species into the QMS.

Problem Definition

29. Seal shark within New Zealand's Exclusive Economic Zone (EEZ) is currently fished under an open access regime. The issue is whether or not this regime is ensuring the sustainability or providing for the utilisation of the species.
30. Based on available information, declining catches are indicating a potential concern over seal shark sustainability. The non-QMS reporting regime does not require all catches to be reported. This means it is difficult to assess current catch with any certainty. When this is combined with the susceptibility of this species to overfishing, there is a risk that the current regime is not adequately ensuring sustainability.
31. Although reporting of all non-QMS discards is required, the high level of discards in this fishery means it is difficult to assess current catch with any certainty. When this is combined with the susceptibility of this species to overfishing, there is a risk that the current regime is not adequately ensuring sustainability. Seal shark catches exceed the values for QMS introduction as covered in paragraph 21.

Summary of Options

OPTION 1 – *STATUS QUO*

32. Under the *status quo* seal shark would remain as an open access species outside the QMS, but the use of sustainability measures under section 11 will be considered.

OPTION 2 – INTRODUCE SEAL SHARK INTO QMS ON 1 OCTOBER 2014

33. Option 2 is to propose seal shark be introduced into the QMS on 1 October 2014 and within that option:
 - define the quota management areas for seal shark (either following QMA Option A or QMA Option B);
 - state the fishing year for seal shark to be 1 October to 30 September; and
 - state the unit of measure for seal shark to be kilograms greenweight.
34. Should the Minister agree to introduce seal shark into the QMS, MPI will commence a separate process for recommending the setting of a total allowable catch (TAC), TACC

and allowances. Tangata whenua and stakeholders will again be consulted during that process. If the Minister agrees to introduce seal shark into the QMS, 20% of seal shark quota will be allocated to Maori (via Te Ohu Kai Moana Trustee Limited) and 80% to the Crown. The Crown-held quota will be tendered at the earliest opportunity.

Analysis of Management Options

OPTION 1

35. Under Option 1 seal shark would remain an open access species outside the QMS, but the use of sustainability measures under section 11 will be considered.
36. Continuing to manage seal shark outside the QMS is an option available for the Minister's consideration. In assessing the appropriateness of this option the Minister must look at sustainability and utilisation considerations and whether they are best provided for by retaining seal shark outside the QMS.
37. As long as seal shark remains open access it will be subject to the annual assessment process undertaken by MPI to determine whether non-QMS stocks or species should be considered for introduction into the QMS.

Sustainability

38. Like other shark species, seal sharks are unlikely to be able to withstand high exploitation rates due to its very high vulnerability to overfishing. This species has also been given a moderate conservation threat status by IUCN (Globally Near Threatened). A relative biomass index has fluctuated without trend between 1992 and 2010 on the Chatham Rise Fishery Management Area 4 (FMA 4).
39. MPI does not consider that section 11 measures on their own can effectively manage the sustainability issues identified for the seal shark fishery, should a target fishery develop again in the future. There is a risk that sustainability concerns, such as overfishing and localised depletion, would increase under an open access regime.
40. Under an open access regime, input controls to limit harvest levels could be set under s 11 to address sustainability concerns (for example, competitive catch limits, area, method, and seasonal controls). However, these tools alone may not be sufficient to prevent localised depletion of seal shark. For example, under s 11, the Minister can set a catch limit for stocks outside the QMS, when there are sustainability concerns for a stock.

But in the absence of a property right it is possible fishers will ‘race to catch’ seal shark until the catch limit is reached. Also, seasonal controls are likely to focus intensive effort during short periods of time on seal shark populations without necessarily ensuring the long-term sustainability of the populations.

Utilisation

41. While no target fishing for seal sharks has been reported over the last five fishing years, there have been important target fisheries in the past and there is no impediment to such fisheries developing again in the future. There is a reasonable level of utilisation of seal shark, particularly from the inshore fishery, which lands most of the seal shark catch. The deepwater fishery has decreased its level of discards over the last few years. Of the catch utilised, a large percentage is landed as either dressed shark meat or fish meal.
42. Seal shark are currently taken as a bycatch of the inshore ling and ribaldo target fisheries and of the hoki, orange roughy and ling deepwater target fisheries. The open access regime does not prevent a target fishery developing if it is economically viable to do so. However the lack of defined rights in the non-QMS environment means that fishers would have no entitlement to future share of the resource should the species be introduced into the QMS in the future. This uncertainty around future access does create poor incentives for long term market development because market share cannot be guaranteed.

Costs

43. Management outside the QMS is likely to discourage investment in either catching seal shark or developing markets for this species. It also means MPI is less able to ensure that catches can be constrained to a sustainable level. In fact, leaving seal shark in an open access regime would not allow MPI to properly assess the level of catch nor control it to make sure that catch is sustainable. In fact, there is some uncertainty regarding the level of reporting of species outside the QMS. Setting catch limits under s11 would only constrain the target fishery of seal shark but not the bycatch.

Benefits

44. As with other non-QMS species there are currently no administrative barriers to entry to the seal shark fishery. This means that anyone can fish for seal shark provided they have a fishing permit and will be able to take as much of this species as they want. They also

have the option of discarding any unwanted seal shark catch, which would be illegal if seal shark entered the QMS.

OPTION 2 – INTRODUCE SEAL SHARK INTO QMS ON 1 OCTOBER 2014

Sustainability

45. MPI believes that open access does not provide a suitable framework to sustainably manage seal shark stocks. Like other shark species, seal sharks are unlikely to withstand high exploitation rates due to their very high vulnerability to overfishing. Furthermore, seal shark catches have remained above 100 tonnes for the past 20 years – catch exceeding 100 tonnes for any of the 6 month periods being one of the triggers for considering QMS introduction. For these two reasons, coupled with the biology of the species and a continuous decline of seal shark catches since the early 2000s, there are potential sustainability concerns for seal shark. On this basis there is high risk to seal shark sustainability under an open access regime. MPI believes that the 17B(1)(a) test may therefore be met.
46. As well as setting a TAC, management under the QMS could also include use of s11 measures, such as the retention of any method restrictions, to further support sustainability.

Utilisation

47. The QMS provides a framework that enables people to invest in, and develop, a fishery when they choose to do so. MPI believes that management of seal shark under the QMS framework is likely to lead to incentives promoting more optimal utilisation. The rights of quota owners under the QMS should lead to improved levels of utilisation and the development of new markets for seal shark.
48. In addition, the QMS provides the most effective means of providing for the utilisation interests of all sectors, through the setting of a TAC, allocating the resource between sectors, and application of measures that effectively constrain commercial catches. It is acknowledged that management under the QMS could also include use of s 11 measures, such as the retention of method restrictions.
49. Section 11 measures (such as catch limits) cannot effectively address the management issues identified above. Specifically, MPI considers that the QMS provides greater incentives to commercial fishers to develop and manage the fishery sustainably through

the provision of secure property rights. The introduction into the QMS will provide better opportunity to manage environmental effects and enable utilisation through the allocation of rights than the use of measures under section 11 on their own. The allocation of rights will provide better incentives than exist currently for rights holders to collectively manage the seal shark fishery. The allocation of transferable rights also provides the best opportunity to enable social, cultural and economic wellbeing to be derived from the fishery.

50. Accordingly, MPI does not consider that the purpose would be better met by setting one or more sustainability measures under section 11, when compared to the benefits of introduction into the QMS

Costs

51. There are additional costs to fishers associated with a species being entered into the QMS. This includes the cost of acquiring ACE or paying deemed values and the requirement to pay cost recovery levies (quota owners only). Cost recovery levies cover research, observer coverage, compliance services and registry costs.
52. Under the QMS, it would be illegal for fishers to dump unwanted seal shark catch and it is possible that restrictive TACCs for the seal shark QMAs could constrain other target fisheries. This could provide incentives for discarding or misreporting of seal shark. However, the best available information suggests that levels of seal shark bycatch are small relative to catches of target species. Regardless, this could provide incentives for dumping or misreporting of seal shark and MPI proposes to consider including seal shark on Schedule 6 of the Act, should they be introduced.

Benefits

53. The primary benefit of QMS introduction is that stocks will be sustainably managed. The QMS provides greater incentives for commercial fishers to develop and manage the fishery sustainably through the provision of secure property rights. The existence of quota will allow those parties who purchase quota to have appropriate incentives to invest in the fishery and take a long-run view of the resource. This approach is likely to provide the best opportunity for the sustainable utilisation of the fishery as the security provided by quota ownership will allow owners to invest in utilising and developing better markets for this species.

54. The establishment of a defined stock also provides greater opportunity for better planning and organisation around management of the stock by all stakeholders, including non-commercial fishers.
55. Better quality information on seal shark catches may arise as MPI considers that the current level of knowledge regarding catch and the biology of seal shark is rather limited.
56. Should seal shark enter the QMS fishers would be required to land all catch (unless seal shark is included on Schedule 6 of the Act) and to balance their catch with ACE. If they were unable to balance catch they would be required to pay deemed values. MPI believes these measures are now necessary to ensure the sustainability of the seal shark fishery.
57. The relatively high level of discards of this species runs counter to the drive of the policy framework of the NPOA-Sharks; however, under the QMS, the requirement to retain catches will provide some incentive to use more of the catch, supporting the increased utilisation policy as laid out in the NPOA-Sharks.
58. Measures to address the effects of fishing of a stock on the aquatic environment can be set under s11 for both open access and QMS management regimes. However, the QMS has inherent incentives to mitigate the potential effects of fishing on the aquatic environment and on other fisheries sectors.

OTHER MANAGEMENT CONTROLS CONCURRENT WITH ENTRY TO QMS

59. Should the Minister agree to introduce seal shark stocks into the QMS, section 18 of the Act requires his decision to be accompanied by a notice in the *Gazette*. Section 19 specifies the matters to be covered in such a notice include QMAs, the fishing year, the unit of measure, and any such matters as maybe contemplated by the Act. Accordingly, these matters are described in more detail below.

Quota Management Areas

60. The Act sets out two statutory obligations that must be considered when defining QMAs for stocks introduced into the QMS:
 - As far as practicable, the same QMAs should be maintained for different species (s19(2));
 - A separate QMA may be set for the waters surrounding the Chatham Islands if the species can be managed effectively as a unit (s19(3)).

61. In addition, MPI has developed a set of principles to assist in defining practicable QMAs. In considering these statutory obligations and principles MPI considers the following are key issues in defining QMAs for seal shark, should it be introduced:

- There is no biological information available to indicate if there are one or several seal shark stocks in New Zealand. There is a lack of biological information informing the stock structure of seal shark. The species is very widely distributed within and beyond New Zealand waters, but its productivity is believed to be low, which makes it vulnerable to overfishing. Furthermore, seal shark is believed to be a mobile species, possibly undergoing seasonal or long-term migrations, which also makes seal shark vulnerable to overfishing.
- The QMAs of the fisheries catching seal shark as a bycatch differ between target species. It is largely impractical to maintain the same QMAs as the associated target species.
- FMAs should be amalgamated where commercial catch and development potential is low. This is the case in FMAs 8 and 9 where the combined catch represent less than 1% of the overall seal shark catch each year since 1989/90.
- Seal shark is present around the Chatham Islands with annual catches greater than 100 tonnes since 1997/98, except for the past three years, with an increasing proportion of landings (as opposed to discards), which shows some economic interest. As a consequence, it is proposed to implement a separate QMA around the Chatham Islands.
- Taking into account the principles and key management issues noted above, two options are proposed to manage seal shark.

QMA Proposals

Option A: BSH 1 (FMAs 1, 2, 8 and 9), BSH 3 (FMAs 3, 5, 6 and 7), BSH 4 (FMA 4) and BSH 10 (FMA 10)

62. As shown on Figure 1, this option proposes four QMAs: BSH 1 (FMAs 1, 2, 8 and 9), BSH 3 (FMAs 3, 5, 6 and 7), BSH 4 (FMA 4) and BSH 10 (FMA 10).

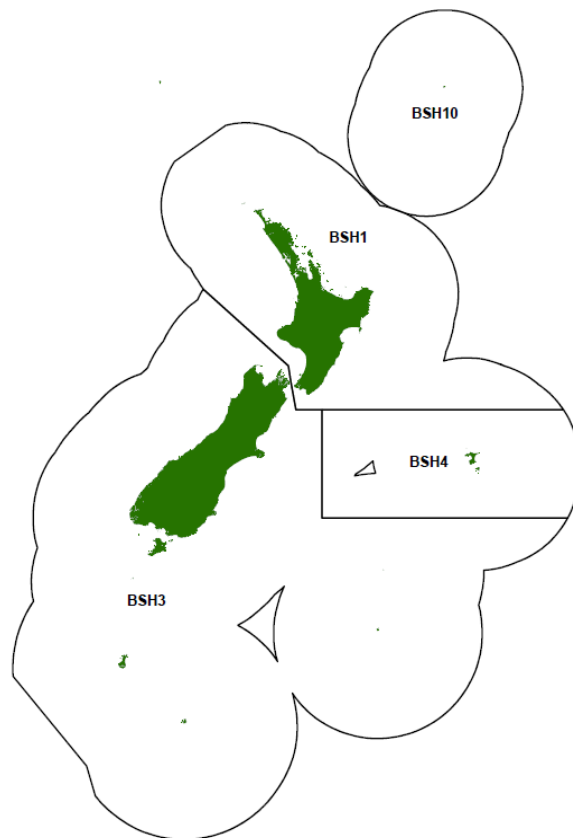


Figure 1: Option A – proposed Quota Management Areas for seal shark

63. Option A reflects the current distribution of catches and potential for development. This option focuses on combining FMAs to keep costs to commercial fishers low. FMAs 1 and 2 account for modest seal shark landings, but reported landings in FMAs 8, and 9 are low (less than 1% of the overall catch). Most of the inshore catch occurs in FMA 3 and most of the deepwater catches are spread between FMAs 3, 4, 5, 6 and 7. A large proportion of the seal shark catch (more than 55%) is caught within the proposed BSH 3 QMA with the largest catches occurring in FMAs 3 and 6 (*i.e.*, Puysegur Bank and Chatham Rise) as a bycatch in the hoki, ling and orange roughy fisheries.
64. The proposed BSH 4 QMA incorporates FMA 4. Seal shark is present around the Chatham Islands and more than 100 tonnes have been caught each year by the deepwater fleets since 1997/98, except for the past three years. Catch used to be discarded but since the mid 2000s, approximately 50% of the catch is landed as fish meal which demonstrates some economic interest in the Chatham Islands for seal shark.
65. The proposed BSH 10 QMA incorporates FMA 10. There is no data on commercial catch of seal shark in FMA 10 and there is unlikely to be any development of a fishery in this area. Given the important characteristics of this FMA (which includes the Kermadec Islands) it is appropriate to maintain a separate QMA for seal shark.

Option B: BSH 1 (FMA 1), BSH 2 (FMA 2), BSH 3 (FMA 3), BSH 4 (FMA 4), BSH 5 (FMA 5), BSH 6 (FMA 6), BSH 7 (FMA 7), BSH 8 (FMAs 8 and 9) and BSH 10 (FMA 10)

66. As shown in Figure 2, Option B proposes nine QMAs: BSH 1 (FMA 1), BSH 2 (FMA 2), BSH 3 (FMA 3), BSH 4 (FMA 4), BSH 5 (FMA 5), BSH 6 (FMA 6), BSH 7 (FMA 7), BSH 8 (FMAs 8 and 9) and BSH 10 (FMA 10).

67. Option B reflects the species low productivity and its mobility that make it very vulnerable to overfishing. In order to have a better control on the impact of the fishery on the species, Option B would more appropriately manage the species at a small scale.

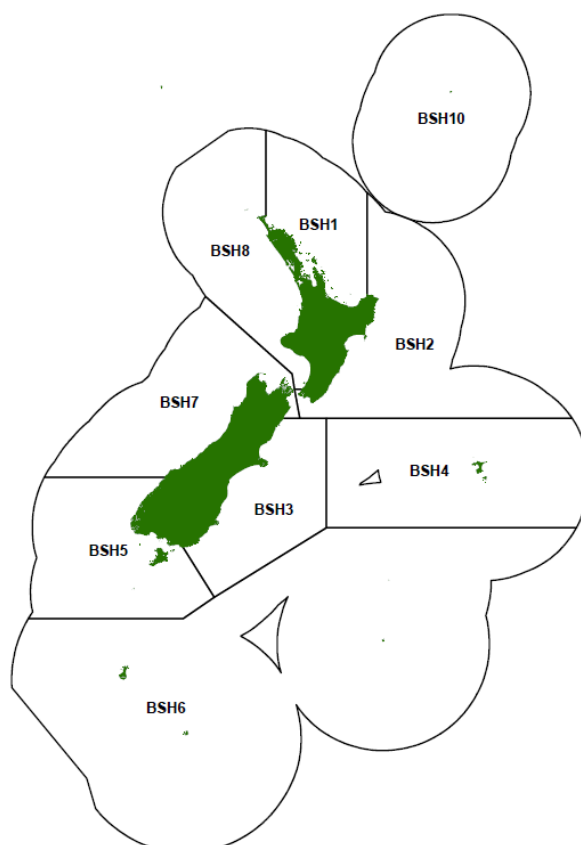


Figure 2: Option B – proposed Quota Management Areas for seal shark

Option A and B contrasted

68. The combined QMAs proposed under option A representing the coastal areas of the North and South Islands would only require most fishers to source ACE for the BSH 1 or BSH 3 QMAs, or BSH 4 if they intend fishing the Chatham Rise (Chatham Island) area. It is very unlikely a fisher would require ACE for seal shark in the proposed BSH 10 QMA.

69. Conversely, the smaller QMAs proposed under option B could impose greater costs on those fishing in multiple areas. However, with limited biological information available

for seal shark, such as stock structure, estimated growth rates, fecundity and seasonality of spawning, these smaller proposed QMAs are likely to better mitigate any potential overfishing of the species.

Fishing Year

70. Should seal shark be introduced into the QMS, MPI proposes that the fishing year be from 1 October to 30 September of the following year. This is consistent with the fishing year that applies to the associated hoki, ling and orange roughy fisheries.

Meatweight or greenweight

71. The proposed unit of measurement is greenweight. Greenweight has been used historically for management purposes in the seal shark fishery. This unit of measure also applies to all the associated fisheries. There does not appear to be any rationale for changing this unit of measure should seal shark be introduced into the QMS.

Other matters

72. A decision will need to be made as to what group seal shark will be in for the purposes of the Finfish Plan. The grouping of stocks with similar characteristics in the Finfish Plan allows management objectives to be applied at the group level. Shark species are generally placed in group 5.

Other Management Issues

73. Should the Minister agree to introduce seal shark stocks into the QMS on 1 October 2014 MPI will consult on additional management measures such as TACs/TACCs and allowances, deemed values, possible inclusion on Schedule 6 of the Act and consequential regulatory amendments.
74. Under Schedule 6 stocks may be returned to the sea or other waters in accordance with stated requirements.
75. The stated requirements for seal shark would likely be the same as for other shark species on Schedule 6: A commercial fisher may return any seal shark to the waters from which it was taken if – (a) that seal shark is likely to survive on return; and (b) the return takes place as soon as practicable after the seal shark is taken.

Appendix 1 – Biological and Fishery Information

BIOLOGICAL INFORMATION

Morphology, growth, reproduction and recruitment

76. Of the published data on the biology of sharks in New Zealand waters, little has focused on seal shark (*Dalatias licha*). Seal sharks are large sharks (maximum recorded length 182cm), with males becoming sexually mature at 100cm and females at 120cm. Like other shark species productivity is believed to be low. These are ovoviviparous sharks (internal hatching with live births) with an average litter size of 12 pups ranging from 30-42cm at birth.

Distribution and key areas (feeding, spawning, migration)

77. Seal sharks, also known as kitefin sharks, have a global distribution. Seal shark are widely distributed over the New Zealand continental shelf. They commonly occur on the middle and lower New Zealand continental shelf, mainly in depths between 600 and 1200m (Figure 3). It is reported in catches from the north, east, and west of the North Island, from the Kaikoura coast and from the north and east Chatham Rise, but is less common on the south Chatham Rise and Snares shelf. It also occurs on Puysegur Bank and the South Island west coast, and on the Challenger Plateau. The majority of catches are taken from the Chatham Rise and Puysegur Bank associated with hoki, ling, oreo and orange roughy fisheries.

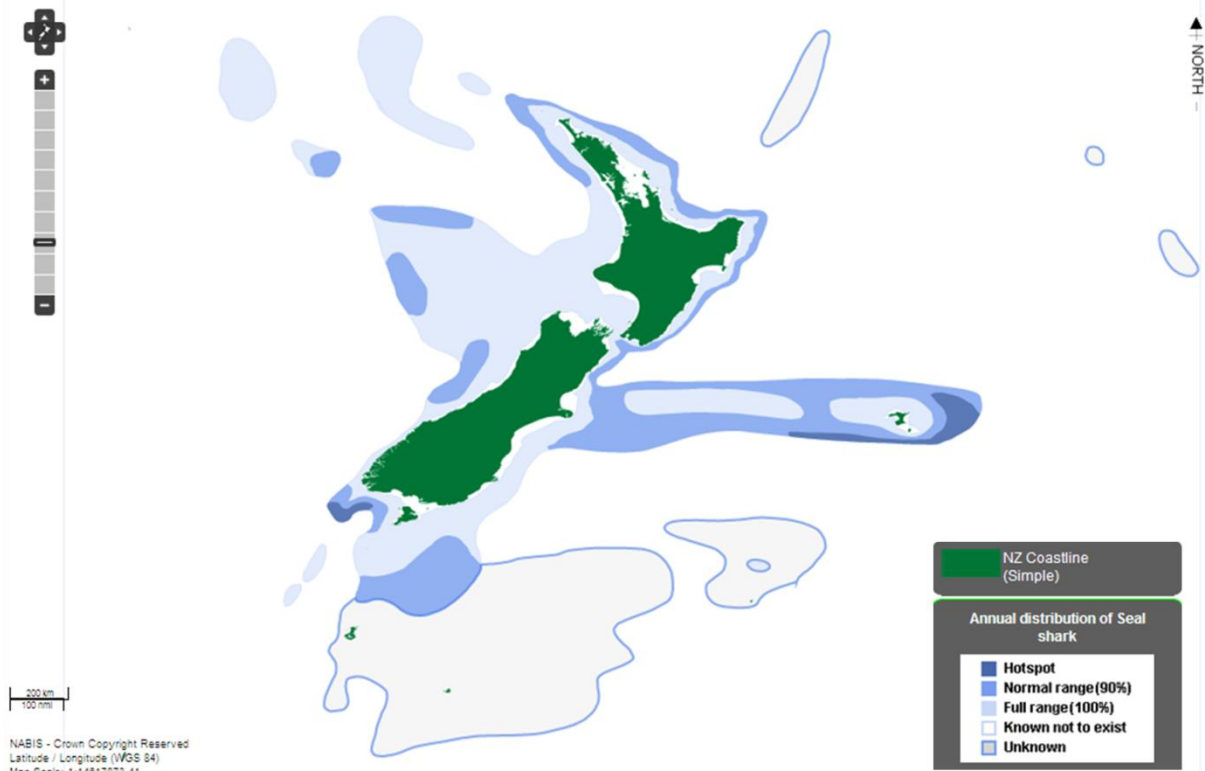


Figure 3: Seal shark distribution within New Zealand EEZ.

78. Seal shark is believed to be a mobile species, possibly undergoing seasonal or long-term migrations.
79. Seal shark feeds primarily on bony fish (94% of their diet) and also on elasmobranchs and cephalopods.

Protected species interactions

80. None known.

Stock Status

81. There are no EEZ-wide estimates of current or reference biomass, or sustainable yield, but relative biomass estimates for the Chatham Rise are available. However, like other shark species it is unlikely to be able to withstand high exploitation rates due to low productivity and fecundity. FishBase (www.fishbase.org) indicates that this species has very high vulnerability to overfishing and IUCN record this species as globally Near Threatened.

82. In a review of the Chatham Rise trawl survey time series¹, relative biomass estimates for seal shark were derived for 1992 to 2010. This review showed seal shark biomass over the period fluctuating without trend but surveys have not covered the whole depth distribution of the species.

SOCIAL, ECONOMIC, CULTURAL INFORMATION

Commercial fishery characteristics²

83. Due to its widespread geographic distribution, seal shark is caught in both inshore and deepwater fisheries. For the fishing years 1989/90 – 2011/12 total reported catch of seal shark was 11,223 tonnes (4,848 tonnes for the inshore fishery and 6,375 tonnes for the deepwater fishery). These figures and those in the following figures only relate to catch or landings reported against the BSH code and as such will be an underestimate of total catches because some catch is likely to have been reported to generic reporting codes such as OSD or DWD (‘other sharks and dogfish’ and ‘deepwater dogfish’ respectively). The total reported discarded or landed catch for each fishing year and each type of fishery is shown in Figure 4.

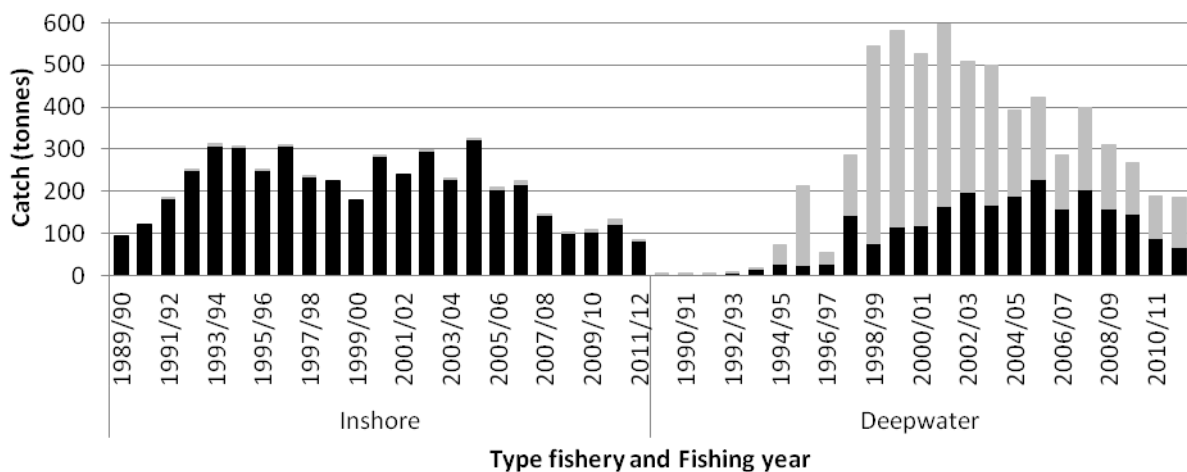


Figure 4: Landed and discarded seal shark catch (tonnes) by type of fishery (inshore, deepwater), in all FMAs combined. Black: landings, grey: discards.

84. The target fishery of seal shark has declined to be negligible after peaking in 2004/05 (17% of the inshore estimated seal shark catch) and in 1994/95 in the deepwater fishery (less than 1.5% of the deepwater estimated seal shark catch). Seal shark is mainly a

¹ O’Driscoll, R.L., MacGibbon, D., Fu, D., Lyon, W. and Stevens, D.W. (2011) A review of hoki and middle-depth trawl surveys of the Chatham Rise, January 2009 to 2010. New Zealand Fisheries Assessment Report 2011/47. 740pp.

² Tables showing figures as percentages may not sum to 100% as percentages are rounded to the nearest 0.1%.

bycatch in the inshore ling and ribaldo target fisheries and in the hoki, orange roughy and ling deepwater target fisheries.

85. Total inshore reported landings have decreased since peaking in the early 2000s. Most catch is landed and the proportion discarded in the inshore fishery is negligible.
86. In the deepwater fishery, total landings have also decreased since the early 2000s despite a reduction of the proportion of discards. This could be due, in part at least, to reductions in deepwater fishing effort over this period, especially hoki, oreo and orange roughy.
87. Fish from the inshore fishery were landed as headed and gutted shark meat until the mid 1990s. Since then, fish are mainly landed as dressed shark meat (more than 80% on average since the late 1990s). In the deepwater fishery, there has been a shift from landing livers only to converting seal shark to fish meal since 2003.
88. Seal shark is taken by several fishing methods. The percentage of estimated catch of seal shark taken by the various methods is shown in Table 1 and Table 2. The majority is taken by set net and bottom longline for the inshore fishery (Table 1) and by bottom trawl, bottom longline and mid-water trawl for the deepwater fishery (Table 2).

Table 1: Percentage of reported catch of seal shark by fishing method for the inshore fishery between 2002/03 and 2011/12.

Method	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Set net	82.9%	85.6%	86.0%	81.8%	75.5%	52.5%	42.9%	29.4%	21.4%	15.4%
Bottom longline	13.4%	13.1%	13.3%	16.1%	23.8%	45.6%	56.0%	68.8%	77.1%	83.1%
Others	3.7%	1.2%	0.6%	2.1%	0.7%	1.9%	1.1%	1.8%	1.5%	1.5%

Table 2: Percentage of reported catch of seal shark by fishing method for the deepwater fishery between 2002/03 and 2011/12.

Method	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Bottom trawl	98.9%	91.6%	91.4%	83.9%	85.5%	94.7%	94.5%	86.3%	75.5%	77.4%
Bottom longline	0.8%	6.4%	6.1%	14.4%	10.7%	3.8%	2.9%	11.2%	16.8%	15.5%
Midwater trawl	0.4%	2.0%	2.5%	1.7%	3.5%	1.3%	2.6%	2.5%	7.5%	6.3%
Others	0%	0%	0%	0%	0.4%	0.1%	0%	0%	0.2%	0.9%

Recreational fishery characteristics

89. MPI has no information on recreational catch of seal shark. Due to the offshore location and depth distribution of this species, recreational catch is likely to be negligible.

Customary fishery characteristics

90. MPI has no information on customary catch of seal shark. Due to the depth distribution of this species, customary catch is likely to be negligible.