

**INTRODUCTION OF NEW STOCKS INTO THE QUOTA
MANAGEMENT SYSTEM ON 1 OCTOBER 2007**

CONSULTATION DOCUMENT

22 December 2005

TABLE OF CONTENTS

INTRODUCTION.....	1
ALBACORE TUNA (ALB).....	15
CONGER EELS (CON).....	25
PRAWN KILLER (PRK).....	35
SEAL SHARK (BSH).....	45

INTRODUCTION

- 1 In accordance with sections 17B(3) and 19(7) of the Fisheries Act 1996 (the Act), the purpose of this document is to consult on behalf of the Minister of Fisheries on those species or stocks proposed for introduction into the Quota Management System (QMS) on 1 October 2007 (refer Tables 1 and 2). The Ministry of Fisheries (MFish) requests that you provide your comments on the introduction of these species or stocks into the QMS, their proposed Quota Management Areas (QMAs), fishing year, unit of measure and assessment of the legislative criteria, as outlined in this document.
- 2 MFish requests that you provide your written comments in response to this consultation document no later than **24 February 2006**. Your comments should be in response to the proposals for the species or stocks outlined in Tables 1-2 in relation to:
 - The assessment of the legislative criteria;
 - The QMAs, including alternative options, for each stock;
 - The fishing year for each stock; and
 - The unit of measure for the expression of TACCs and ACE (greenweight).

- 3 Please send your written comments on this document to:

Kristin Philbert, Ministry of Fisheries, P O Box 1020, Wellington, or email to kristin.philbert@fish.govt.nz.

Table 1: MFish proposed list of species/stocks to be introduced into the QMS on 1 October 2007

Species (code)	Scientific name
Prawn killer (PRK)	<i>Ibacus alticrenatus</i>
Conger eel (CON)	<i>Conger verreauxi</i> and <i>Conger wilsoni</i>
Albacore tuna (ALB)	<i>Thunnus alalunga</i>

Table 2: MFish proposed list of stocks not to be made subject to the QMS

Species (code)	Scientific name
Seal shark (BSK)	<i>Dalatias licha</i>

- 4 MFish proposes that the fishing year for all stocks and species is 1 October to 30 September, with the TACC and ACE expressed as greenweight. The proposed QMAs for each stock and an assessment of the legislative criteria relating to QMS introduction are outlined in each of the species-specific sections within this document.
- 5 MFish will provide final advice to the Minister later this year on whether or not those species outlined in Table 1 will be recommended for introduction into the QMS on 1 October 2007 once consultation has occurred and submissions have been considered.

- 6 If you have any questions regarding the consultation document, or wish MFish staff to attend a meeting/hui to discuss the information, you are encouraged to contact the person responsible for the relevant fisheries outlined in the list below, or contact your nearest MFish office:

Jodi Mantle, P O Box 19747, Auckland (09) 820 7687	(Northern Inshore)
Jim Cornelius, Private Bag 14, Nelson (03) 545 8782	(Deep water)
Rose Grindley, Private Bag 1926, Dunedin (03) 474 2689	(Southern Inshore)

Background

- 7 There are around 100 species of aquatic life commercially harvested in New Zealand that are presently managed outside the QMS. Since 30 September 1992 there has been a moratorium on the issuance of new non-QMS permits to commercially harvest these species, other than tuna. The permit moratorium was intended to (1) prevent expansion of non-QMS fisheries prior to QMS introduction, (2) avoid the creation of incentives to ‘race for catch history’, and (3) mitigate risks to stock sustainability. However, the prolonged presence of the permit moratorium has caused some management issues, such as (1) inhibiting the development of new and under-developed fisheries, and (2) preventing MFish from issuing permits to allow fishers to land non-QMS stocks.
- 8 With the passage by Parliament of amendments to the Fisheries Act 1996, as of 1 October 2004, a number of significant changes have been made. The relevant legal tests relating to the introduction of species into the QMS have changed and for the majority of species the moratorium on issuing new commercial fishing permit has been removed. The fisheries management framework that will be put into effect within the next few years involves the full implementation of the QMS and likely changes to the way any remaining non-QMS fisheries are managed.
- 9 The 2004 amendments to the Act also created schedules 4C and 4D. The moratorium on issuing new commercial fishing permits was maintained for stocks included on schedule 4C. In addition if these stocks are introduced into the QMS before 1 October 2009, quota must be allocated on the basis of provisional catch history. Any such allocation will be based on the catch reported for the fishing years commencing on 1 October 1990 and 1 October 1991. This provision expires on 1 October 2009. The same quota allocation mechanism applies to schedule 4D but the permit moratorium no longer applies to these stocks. Of the species under consideration here, only Seal Shark and Prawn Killer, which are included on schedule 4D, are affected by these provisions. If these species are not introduced to the QMS at this time, in the absence of new information it is unlikely that they will be reconsidered for QMS introduction prior to the extinguishment of the provisional catch history entitlement.
- 10 While MFish supports the introduction of commercially valuable species into the QMS, it should be remembered that introduction would not necessarily lead to expansion of commercial harvests. The QMS meets the Act’s purpose ‘to provide for the utilisation of fisheries resources while ensuring sustainability’, which includes mitigating the impact fishing activity may have on stocks already considered vulnerable. The requirement to ensure sustainability applies equally to species managed outside the QMS. However, MFish considers that the QMS framework

provides better means for ensuring sustainability, enhancing fisheries for all resource users.

- 11 The introduction of species or stocks into the QMS allows the Crown to meet its obligation to Māori under the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (the Settlement Act). The Settlement Act established that the Treaty of Waitangi Fisheries Commission would be allocated, on behalf of Māori, 20% of all quota for further stocks introduced into the QMS.
- 12 In addition, when management measures are considered, including Total Allowable Catches (TACs) and TACCs, for species or stocks to be introduced into the QMS, consideration will also be given to the Crown's settlements with individual iwi. These settlements contain provisions regarding species prohibited from commercial harvest and rights of first refusal over any residual Crown-held quota for particular shellfish species.

Next Steps

- 13 The next steps in the process of determining whether species or stocks listed in Table 1 above will be introduced into the QMS on 1 October 2007 are as follows:
 - a) Following the consultation time period, ending **24 February 2006**, MFish will submit final advice and recommendations to the Minister of Fisheries on each species or stock's QMAs, fishing year, unit of measure and the assessment of the legislative criteria.
 - b) If the Minister agrees that a species or stock should be introduced into the QMS, then a Declaration Notice will be published in the *Gazette* that will contain each species or stock's introduction date, QMAs, fishing year and unit of measure. Table 5 outlines the indicative combined timeframe involved in introducing species or stocks into the QMS on 1 October 2007.
 - c) For those stocks that are gazetted for introduction into the QMS, MFish will consult next year on the proposed management measures that will apply, including the total allowable catch and allowances.

Table 3: Indicative combined timeframe for 1 October 2007 QMS introductions

Task	Date
Consultation with stakeholders	Ends 24 February 2006
Final advice paper to the Minister	By 17 March 2006
Section 18 QMS declaration notified in the Gazette	11 May 2007
Notification of eligible catch (etc)	6 October 2006
Objection period	9 October 2006 – 22 January 2007
Objection assessment complete	2 March 2007
Notification of PCH (etc)	9 March 2007
Appeal Period	12 March 2007 – 7 June 2007
PCH transfer period	8 June 2007 – 5 July 2007
Notification of quota allocation	25 September 2007

Outline of the Consultation Document

- 14 This document was compiled in accordance with s 10 of the Act, which requires decisions to be based on the best available information and decision makers to consider any uncertainty in the information available and to be cautious when information is uncertain, unreliable, or inadequate. Section 10 states that the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act. Uncertainty or inadequacies of information are noted throughout this document when they arise.
- 15 The next section of this document, titled ‘Quota Management Areas’, outlines the statutory obligations and policy principles used by MFish to determine proposed QMAs.
- 16 A further section titled “Assessment of Legislative Criteria” explains the factors to be taken into account by the Minister when making a determination on whether or not to introduce a species into the QMS. The process for introducing species into the QMS has changed significantly as a result of changes made to the Fisheries Act 1996 that came into effect on 1 October 2004. New legislative provisions have replaced the previous requirement for the Minister to have regard to the costs and benefits of introducing a species into the QMS. An explanation of the new legislative requirements is set out in the section on “Assessment of Legislative Criteria”.
- 17 The remainder of this document consists of a section on each species or stock proposed for QMS introduction on 1 October 2007, and includes the following:
- **Summary of Proposals** – summarises MFish’s proposals and alternative options for each stock;
 - **Assessment of Legislative Criteria** – outlines the results of MFish’s assessments of the legislative criteria, which consider the best available information, including various reports produced by the National Institute of Water and Atmospheric Research (NIWA) on contract to MFish;

- **Stocks and Areas** – describes each stock and issues considered when proposing QMAs;
- **Proposed Quota Management Areas** – outlines MFish’s proposed QMAs for each stock;
- **Fishing Year** – outlines MFish’s proposed fishing year for each stock; and
- **Unit of Measure** – outlines MFish’s proposed unit of measure for each stock.

Quota Management Areas

18 In proposing QMA boundaries for species or stocks to be introduced into the QMS, MFish considered the two statutory obligations set out in the Act:

- As far as practicable, the same QMAs should be maintained for different species (s 19(2)); and
- A separate QMA may be set for the waters surrounding the Chatham Islands if the stock can be managed effectively as a unit (s 19(3)).

19 In addition, MFish has developed a set of principles to assist in defining practicable QMAs, as outlined in Table 6. MFish used the statutory obligations and those principles relevant to each stock to propose QMAs it considers being sensible and effective as long-term stock management boundaries.

Table 4: Principles in setting proposed QMAs

	PRINCIPLES	FISHERIES MANAGEMENT OUTCOMES
1.	Management areas should be based principally on the biological characteristics of the stock.	<ul style="list-style-type: none"> • Sustainability requirements of the Act (based around “stock”) are met.
2.	The stock boundaries should take into account the existing characteristics of the fishery (known fisheries, relevant fisheries management issues).	<ul style="list-style-type: none"> • Sensible stock boundaries. • Simplified allocation of quota. • Reduced business compliance costs.
3.	Where practicable, QMAs for species that are taken together in the same fisheries should be aligned.	<ul style="list-style-type: none"> • Integrated management of interrelated-stocks. • Reduced complexity and business compliance costs.
4.	QMAs with new boundaries may be appropriate for species with populations whose distributions do not align with existing QMA boundaries.	<ul style="list-style-type: none"> • Sensible stock boundaries. • Sustainability requirements of the Act are met. • Improved control of harvest and reduced risk to the aquatic environment.
5.	Subject to the principles noted above QMAs should be as large as possible.	<ul style="list-style-type: none"> • Reduced complexity and business compliance costs. • Flexibility for exercise of customary rights.

20 It is acknowledged that there may be compelling reasons to set QMAs that are different from the boundaries of the biological stock, and, of course biological stock boundaries may not be easy to identify and may vary over time. In some instances it will be appropriate to set a QMA that encompasses more than one biological stock, and move to smaller units of management using the measures in the Act as more becomes known about the boundaries of a biological stock. Smaller units of management can be implemented using fisheries plans, the QMA subdivision provisions and catch splitting arrangements contained within the Act. Smaller units of management may be particularly applicable for some ‘sedentary’ species. MFish took these issues into consideration when proposing QMAs for each stock.

Assessment of Legislative Criteria

- 21 The Minister of Fisheries must make a determination in order to introduce a stock or species into the QMS. In making a determination the Minister is required to consider the criteria specified in s 17B of the Act. MFish has developed a decision path that sets out the criteria the Minister must consider. A description of the decision path and the relevant considerations is set out below.

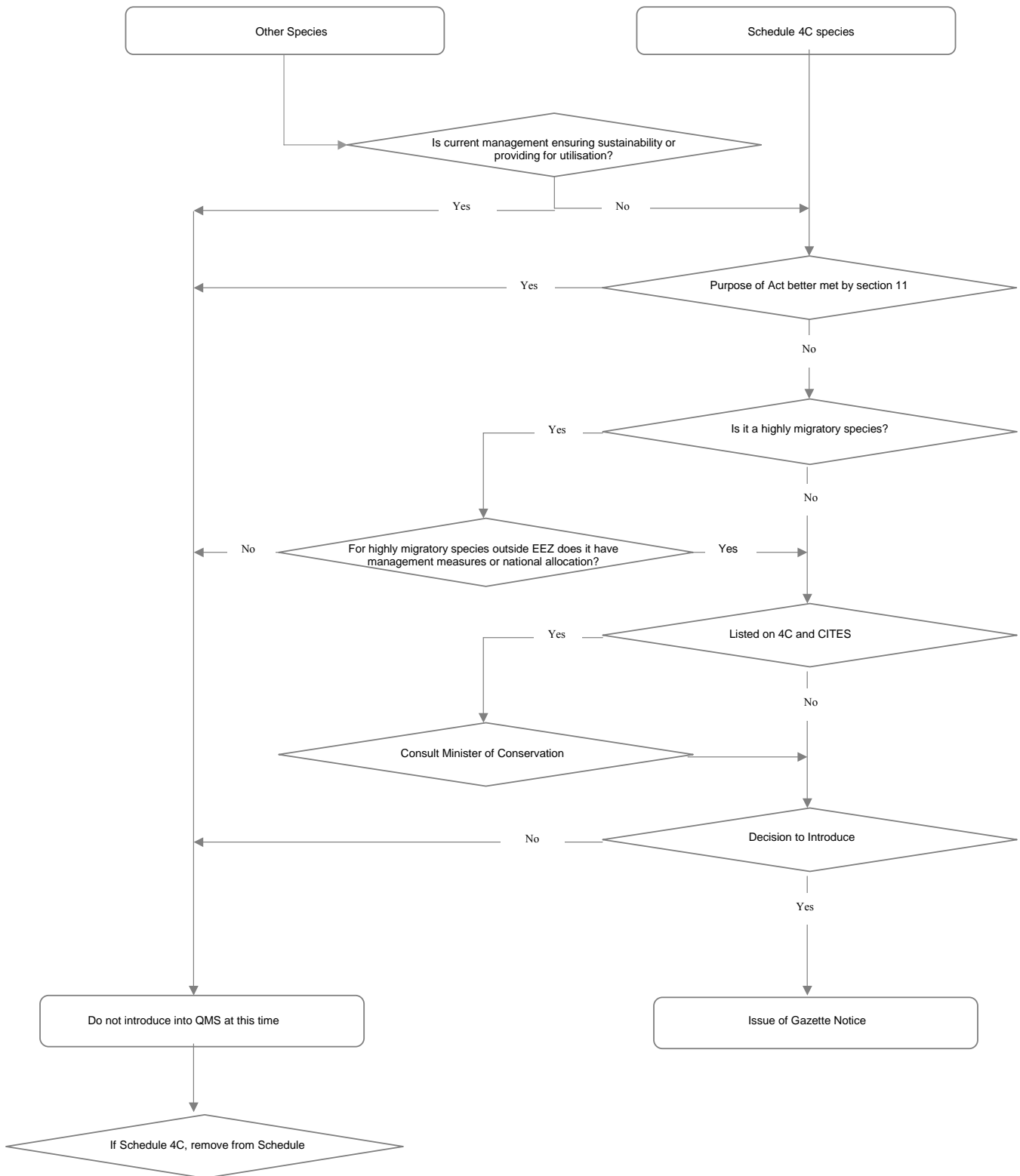
The decision path

- 22 The Act specifies separate starting points for those species listed on Schedule 4C of the Act (s 17B(5)) and those species not listed on that Schedule (s 17B(1)). A specific determination under s 17B(1) is required in respect of those species not listed on the Schedule. There are also a number of additional considerations for both Schedule 4C (stocks and species subject to s 93 permit moratorium) and non-Schedule 4C species about the use of measures in s 11 (s 17B(2)) and about management of highly migratory species outside New Zealand fisheries waters (s 17B(6)).

Sustainability and utilisation determination

- 23 The Act specifies that for species not listed on Schedule 4C, the first step in the process is for the Minister to determine whether or not the current management framework is ensuring sustainability or providing for utilisation. For the Minister to proceed with introduction of a species or species he must be satisfied that current management is not ensuring the sustainability or not providing for the utilisation of the stock or species (see s 17B(1)). If satisfied that one or other of the criteria in s 17B(1) is met, the Minister must also then consider additional factors as identified in the decision path, which are discussed below.
- 24 In order to test whether the management framework is meeting one or other of the two legislative criteria in s 17B(1), MFish will consider the factors outlined below in the context of the stock or species being considered for introduction. MFish will have regard to the effectiveness of current management measures in terms of both the current known status of the stock or species and also the reasonably foreseeable future status of the stock under that management.

Figure 1 The Decision Path for QMS Introduction



Ensuring sustainability

- 25 The Fisheries Act defines ensuring sustainability as –
- a) Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and
 - b) Avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment:
- 26 Accordingly, MFish consider that two factors can be considered to determine whether the current management framework is ensuring sustainability.
- a) Whether the current management framework is maintaining (or is likely to maintain) the potential of the stock to meet the reasonably foreseeable needs of future generations. The key indicator is whether the stock is overfished or fished unsustainably to the point where it will not or is likely to not meet the reasonably foreseeable needs of future generations. The analysis will determine the reasonably foreseeable needs of future generations on a case-by-case basis having regard to the characteristics of the stock or species.
 - b) The second factor is whether fishing for the non-QMS stock under the current management framework is having an adverse effect on the aquatic environment. The analysis will consider effects on related species, habitats of significance for fisheries management, and on biodiversity. This factor is likely to be relevant only for a target stock or species. Determination of whether an impact of fishing is adverse will be based in part on any outcome standards in place for the stock or species (ie a Population Management Plan or National Plan of Action) and an assessment of the individual circumstances of the fishery on a case-by-case basis.

Providing for utilisation

- 27 The Fisheries Act 1996 defines utilisation as enabling people to provide for their cultural, social and economic well-being. MFish considers that two factors can be considered to determine whether the current management framework is adequately providing for utilisation.
- a) The first factor is whether the current management framework is not providing for well-being by inhibiting and or preventing access. Enabling people to provide for their well-being must entail (at the least) the provision of the opportunity for utilisation, within the bounds of ensuring sustainability and subject to any additional statutory obligations, including treaty settlement legislation. To unnecessarily deny access is to disable the ability of a class of people to provide for their well-being, which is contrary to the utilisation obligation in the purpose of the Act. MFish considers that providing open, or unrestrained, access to stocks is consistent with this utilisation obligation. There are few constraints on access for recreational and customary uses, other than for sustainability concerns and allocations between sectors. This intent, in relation to commercial fishing, is reflected in s 91 of the Act, which states “the chief executive must issue to every person who applies for a fishing permit under this Act an appropriate fishing permit ...”. A critical test is therefore whether this current management framework is providing for access.

- b) The second assessment is whether the current management framework enables people to provide for their social, economic and cultural well-being. The first step in “enabling”, as required under the Act, is to provide the opportunity for utilisation via access to the resource, within the bounds of ensuring sustainability (as stated above). The second step is to create a framework that provides the opportunity for stakeholders through their access to provide for their social, economic and cultural well-being. Accordingly, an assessment needs to be made of how well the current management framework provides for well-being. Relevant considerations include, the degree of current or likely rent dissipation, overcapitalisation, and conflict between sector groups that are promoted by the current management framework.

Schedule 4C

- 28 Schedule 4C contains a list of species which remain covered by a moratorium on the issue of fishing permits and where allocation of quota will be on the basis of catch history if the stock is introduced into the QMS before 1 October 2009.
- 29 Parliament’s intent in creating Schedule 4C was to ensure species considered as having sustainability concerns were adequately managed before they were considered for introduction into the QMS. Those species on Schedule 4C were identified as being subjected to a sustainability risk in an open access environment post 1 October 2004.
- 30 The process for introducing species listed on Schedule 4C is not the same as for other species. Because Parliament has already identified there is a sustainability risk for the species listed on the Schedule, the Minister is not required to make a determination of whether the current management framework will ensure sustainability or provide for utilisation (s 17B(5)). The Minister can determine to introduce a species listed on Schedule 4C into the QMS, subject to consideration of the additional requirements specified in the Act – those requirements are identified in the decision path and discussed below.
- 31 If the Minister proposes to introduce a species listed on the Schedule 4C that is also listed on CITES then the Minister must consult with the Minister of Conservation (s 17B(7)). None of the species proposed for introduction in this document are listed on CITES.
- 32 If the Minister determines not to introduce a species listed on the Schedule 4C following the statutory consultation process the outcome is the removal of the species from the Schedule (s 17B(5)(b)). This will also result in removal of the moratorium on issuing permits for the species. In addition, removal from Schedule 4C will mean that catch history will still be used as the basis for quota allocation if the species is subsequently introduced to the QMS before 1 October 2009 (see s 29A(2)(a)).

Purpose of Act better met by use of section 11 measure

- 33 The Act requires the Minister to introduce a stock into the QMS unless the purpose of the Act would be better met by setting one or more sustainability measures under s 11 (see s 17B(2)). The critical question is whether s 11 measures on their own, as compared to the QMS, will be better able to meet the purpose of the Act for the stocks

or species concerned. It is acknowledged that management under the QMS could also include use of s 11 measures, such as use of method restrictions or area closures.

- 34 Section 11 outlines a non-exhaustive list of sustainability measures that the Minister may apply to a stock. There are potentially an infinite number of types and combinations of management measures that could be considered under s 11. Generically, MFish 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 measure chosen (based on the analysis outlined below).
- 35 The test under s 17B(2) is therefore to identify whether there is any information to suggest that the generic analysis outlined below does not apply to the particular stock or species, and that management using measures under s 11 on their own would better achieve the purpose and principles of the Act. In particular, MFish notes that a significant limitation of s 11 is that it does not address utilisation considerations. It is not lawful to use a s 11 measure to meet a utilisation obligation. Where utilisation factors arise, the QMS will invariably be the most efficient means of addressing those factors.

Sustainability

- 36 The Act requires stocks to be managed in order to meet the reasonably foreseeable needs of future generations. The sustainability requirement holds whether stocks are managed within or outside the QMS. However, as mentioned, MFish considers the QMS best ensures stock sustainability because of its useful measures (particularly the balancing regime) and incentives (via quota allocations), neither of which are present in the non-QMS framework.
- 37 Section 11 of the Act outlines a number of potential sustainability measures, although the list is not exhaustive. The non-QMS framework can restrain individual catch levels, and therefore manage stocks sustainably, through a combination of input controls, such as area closures and gear and method restrictions. The non-QMS framework also includes the ability to set a Catch Limit (CL) or Commercial Catch Limit (CCL), which is a ceiling on the level of commercial harvest of a fishery.
- 38 However, the setting of a CCL can exacerbate adverse impacts on the fishery and aquatic environment when competition within the fishery becomes excessive. In this situation, a CCL creates an 'olympic style' fishery whereby fishers compete for access until the CCL is reached. The time fishers have to 'race to catch fish' is constrained more as harvest effort increases.
- 39 A CCL can have a different effect on a bycatch fishery. In the event the bycatch is taken as an inevitable consequence of a target fishery, and the bycatch fishery CCL has been reached, causing the fishery to be closed, access to the more valued target fishery may then be constrained, thus reducing its value to fishers. However, a CCL applied to a bycatch fishery can also cause a 'race to catch' the target species before the fishery is closed due to the bycatch CCL being reached.
- 40 Fishers typically respond to a CCL or regulatory input controls by investing in vessels and/or gear that circumvent the intended effect of imposing the regulations. The

consequence is that the fishery becomes over-capitalised and inefficient, and, therefore, impacts on peoples' ability to provide for their well-being.

- 41 The QMS balancing regime strongly discourages the over catch of a TACC while at the same time providing flexibility for those times when catch of a species cannot be avoided, and the fisher does not have authority to catch the species. Overfishing is controlled by graduated administrative incentives based around the payment of deemed values. Over-fishing thresholds, and the ability to restrict harvest via legislative conditions imposed on fishing permits for both QMS and non-QMS stocks, act to prevent fishers who have over caught their ACE from fishing in areas where over catch raises particular sustainability concerns.
- 42 Method restrictions are a common fisheries management tool. A method restriction constrains the range of harvest methods that can be used for fishing purposes. They can be used to deal with a variety of sustainability issues such as limiting the effects of fishing on the benthos (e.g. restricting harvesting to use of handgathering in place of dredges in vulnerable environments) or to address bycatch issues for seabirds (e.g. use of tori lines) or catch of juveniles species (e.g. mesh size restrictions). However, the tool is not effective in managing fishing effort of the available fishing methods or constraining the quantum of catch taken.
- 43 Area based controls are designed to deal with issues relating to matters such as maintaining biodiversity (e.g. closure at Spirits Bay), protecting habitats of particular significance for fisheries management (e.g. closure of areas with juvenile stocks), and managing the effects of localised depletion (e.g. temporary closure of customary fishing grounds). However, area closures do not adequately manage the areas open to fishing. One potential outcome is for closures to concentrate fishing effort into the remaining areas thereby increasing the risk to the sustainability of the stock or species.
- 44 A number of measures relating to a species' biological characteristics or reproductive capacity are available under s 11. The measures relate to the species size, sex, or state. The purpose of such measures is often to ensure that sufficient of the population reaches maturity so that the sustainability of the stock is ensured. Examples include a restriction on the taking of berried female rock lobster or paua less than 125mm in size. The measures can be effective in managing the portion of the stock that is available to fishing, in particular in the case of size limits.
- 45 Section 11 also provides for the setting of a fishing season. In some jurisdictions overseas fishing seasons are used as way of constraining fishing effort, for example the number of fishing days. In New Zealand those stocks or species with a fishing season, the season is usually determined on the basis of optimal condition of the resource (as in the case of scallops), or the impacts on a protected species with the closure of the fishery due to a protected species interaction. A fishing season in itself may not be effective in managing total catch, and certainly not very effective in achieving utilisation obligations under the Act.
- 46 Introduction of all stocks with sustainability and/or utilisation concerns will result in the price of quota for target stocks being based, in part, on the price of quota for bycatch stocks. While this outcome may add operating costs in a mixed fishery, it will focus incentives on the management of species groups, rather than solely on target stocks. Furthermore, this situation will require fishers to face more accurately the costs of their operations' impacts on bycatch stocks. Where sustainable catch

limits for bycatch stocks constrain the catch of target stocks, stock value and vulnerability will need to be considered together. Fishers will have increased incentives to minimise their catch of vulnerable stocks, or their impacts on the aquatic environment, by adopting environmentally sensitive technologies and fishing practices.

- 47 MFish considers that the level of information on stocks and harvest effort will be improved in the QMS environment because of the incentives created by quota allocations, particularly in undeveloped and under-developed fisheries that are likely to be ‘proved up’ in order to substantiate any consideration of increasing harvest levels. Improvements in the level of available information should also benefit the long-term sustainability of stocks and the environment.
- 48 QMS introduction should incline commercial fishers to take more interest in the management of fisheries, given their investments. MFish continues to advocate the development of fisheries plans to improve the management of fisheries, and notes that quota allocations can facilitate the formulation of participant-initiated management arrangements. The incentives quota holders have to take an interest in a fishery’s management, coupled with non-commercial interests, may prove invaluable in the long-term management of the fishery.

Utilisation

- 49 MFish considers that because the QMS better provides for sustainable utilisation, it is the best framework for enabling people to provide for their social, cultural and economic well-being.
- 50 The non-QMS framework does not ration commercial access to a fishery, except by way of the current permit moratorium, because fishing permits are granted upon request. The non-QMS framework also fails to allocate access rights between generations, which inherently results in claims of unfairness. This failing of the non-QMS framework requires the Government to intervene in the resolution of any future access issues.
- 51 As the non-QMS framework does not define commercial fishers’ catch from year to year, it fails to provide them with incentives to maximise the value of a fishery, which then inhibits investments and impedes consideration of management for the future.
- 52 The allocation of quota provides a significantly better access right than non-QMS fishing permits because it is based on a secure proportion of the TACC allocated in perpetuity. Commercial fishers can retain indefinitely their proportions of the TACC, thus providing certainty and security when planning long-term operations and investments. Quota’s security of tenure provides a means of capitalising the value of future harvesting rights in the fishery. The possibility of trade makes this capital value an asset that holders will wish to enhance.
- 53 The QMS provides the best opportunity for people to pursue economic well-being by allowing quota to be purchased by the most efficient users of the resource. Because quota is divisible, meaning that it can be divided more narrowly, fishers can match quota holdings with their operations through buying and selling. Similarly, the transferability of quota allows less efficient users to exit a fishery by selling their quota and receiving a return on their investment. Lastly, quota’s tradability provides

the means for inter-generational transfers. The QMS allows for a smooth re-allocation of access rights, via quota trading, from one generation to the next without requiring Government involvement.

- 54 QMS introduction is generally preferred because it facilitates the entry of Māori into commercial fisheries and allows the means for the Crown to meet its obligations to Māori under the Deed of Settlement 1992. Transferable commercial access to Māori is not available under non-QMS management.
- 55 Although no trade in quota occurs between customary and recreational users, these user groups benefit from QMS stocks being sustainably managed and from the Minister considering their interests when setting the TAC and allowances. The QMS operates to place a cap on commercial catch and applies an economic incentive to constrain overcatch by commercial fishers; thereby supporting customary and/or recreational interests in the stock.
- 56 In addition, since customary and recreational groups have an explicit allowance for a stock on the setting of a TAC under the QMS, they are in a better position to provide their input into its management by way of a fisheries plan or other means. The overall benefits of QMS introduction for the customary and recreational users are derived from improvements to the management of the species or stock.

Highly migratory species considerations

- 57 If a species proposed for introduction is a highly migratory species, despite meeting the other legislative requirements noted above, the species cannot be introduced into the QMS outside of New Zealand's Exclusive Economic Zone except to give effect to - a national allocation to New Zealand by an international fisheries organisation in relation to that stock; or any other management measures to which New Zealand has agreed, made by an international fisheries organisation in relation to that stock (s 17B(6)). In the absence of these factors, introduction of a highly migratory species is limited to the stock within the EEZ.

ALBACORE TUNA (ALB)

Summary of Proposals

- 1 The Ministry of Fisheries (MFish) proposes that:
 - a) Albacore tuna (*Thunnus alalunga*) be introduced into the quota management system (QMS) on 1 October 2007;
 - b) The quota management area (QMA) be ALB 1 (Fisheries Management Areas 1-10 combined);
 - c) The fishing year be 1 October to 30 September; and
 - d) The unit of measurement be greenweight.

Background

- 2 Albacore was previously considered for introduction into the QMS on 1 October 2005. Stakeholders expressed widely divergent views in submissions on the proposal, with strong opinions being expressed both for and against the introduction.
- 3 The Minister is required to introduce a species into the QMS if satisfied that the current management of the species is not ensuring the sustainability of the species, or is not providing for the utilisation of the species. In considering the information presented on albacore and the submissions received, the Minister was not satisfied that those requirements were met and decided not to introduce albacore at that time.
- 4 The Minister acknowledged that the QMS is the preferred long term management regime for albacore but decided there was no urgency to introduce the species. He considered that there was no sustainability risk to albacore within New Zealand's exclusive economic zone (NZ's EEZ) and access was available to any fisher who chose to apply for a permit to fish for albacore.
- 5 In making the decision not to introduce albacore into the QMS, the Minister indicated that albacore would be reconsidered for introduction when and if new information came to hand. He wished to avoid the creation of any expectation as to the date of introduction and no timeframe was indicated.
- 6 Substantial changes have since occurred in the albacore fishery. Importantly, concerns about the future of the stock in the south Pacific have been identified and regional management measures are likely to be introduced shortly. In addition, the albacore fishery in NZ's EEZ is changing. The changes involve rationalisation of the tuna fleet so that there are now fewer fishers in the fishery; albacore catches by both the longline and trolling fleets have also declined.
- 7 As a result of this new information, MFish is now proposing that albacore be introduced into the QMS on 1 October 2007.

Assessment of Legislative Criteria

- 8 Section 17B of the Fisheries Act 1996 (the Act), requires the Minister to make albacore subject to the QMS if he is satisfied that the current management is not ensuring the sustainability, or not providing for the utilisation of the species. He may, however, determine that the purpose of the Act would be better met by using general sustainability measures.

Ensuring sustainability

Harvest of species

Fishery information

- 9 Albacore tuna (*Thunnus alalunga*) is a member of the family Scombridae, which includes tuna and mackerel species. There are five tunas of the genus *Thunnus* known in New Zealand waters: albacore, bigeye, yellowfin, southern bluefin and Pacific bluefin tuna; and five other Scombrids: skipjack, slender and butterfly tuna, and blue and frigate mackerel.
- 10 Albacore found in New Zealand waters are part of a single south Pacific stock and are widely distributed around New Zealand on a seasonal basis, mostly between the lines of latitude of 34° S to 44° S. They are targeted by trolling, and are caught in surface longline fisheries both as a target species and as a bycatch of target fishing for southern bluefin and bigeye tunas.
- 11 The maximum recorded fork length for albacore is 127 cm. Female albacore mature at about 85 cm fork length and spawn from November to February in tropical and subtropical waters, between the lines of latitude of about 10°S and 20° S, west of the line of longitude of 140°W. Males mature at about 71 cm fork length. Juveniles recruit to troll fisheries in New Zealand coastal waters and in the vicinity of the subtropical convergence zone at about 2 years of age, at 45–50 cm fork length.
- 12 The New Zealand troll fishery is operated by domestic vessels and occurs mostly in coastal waters off the west coasts of the North and South Islands. Troll catches ranged from 1437 to 5180 tonnes for the period 1991 to 2000. Peak years in the troll fishery were from 1994 to 1996. Catches have declined in 2003 and 2004, as have the number of vessels participating in the troll fishery.
- 13 Most of the longline catch of albacore comes from the north east coast of the North Island, particularly from the area between Napier and East Cape. The proportion of the total albacore landings taken by tuna longlining progressively increased since the early 1990s as the domestic longline fleet expanded, from around 4% in the 1991 calendar year to 63% in 1999 and 41% in 2000. However, this proportion has significantly decreased to less than 20% since 2003 as the number of vessels participating in the longline fishery has substantially declined. It is expected that this rationalisation in the longline fishery is due to the introduction of other tunas into the QMS, in particular southern bluefin tuna.

- 14 Most of the fish caught by trolling are juveniles, ranging from 38–99 cm fork length with a mean of 63 cm. Surface longlining catches mostly adults and sub-adults, from 37–133 cm fork length with a mean of 83 cm.
- 15 Reported landings of albacore by all methods are shown in Table 1. Landings ranged between 4 960 tonnes and 6 579 tonnes between 1999-00 and 2003-04. Recent catches have been declining. Landings in 2004-05 were the lowest since the early 1990s.

Table 1: Reported New Zealand commercial landings and discards (t) of albacore from CELRs and CLRs, and LFRRs (processor records) by fishing year.

	CELR and CLR		Total	
	Landed	Discarded	Reported	LFRR
1988-89	20	0	20	5 000
1989-90	2 036	0	2 036	3 144
1990-91	2 295	0	2 295	2 451
1991-92	3 780	1	3 782	3 434
1992-93	3 506	<1	3 506	3 323
1993-94	6 375	0	6 375	5 315
1994-95	6 955	<1	6 955	6 195
1995-96	6 131	<1	6 131	6 316
1996-97	3 938	<1	3 938	3 728
1997-98	6 731	<1	6 731	6 525
1998-99	3 835	<1	3 835	3 727
1999-00	4 960	2	4 961	4 697
2000-01	5 611	<1	5 611	5 509
2001-02	5 830	1	5 831	5 638
2002-03	6 579	<1	6 579	6 354
2003-04	5 265	<1	5 265	4 977
2004-05	3 612	<1	3 612	3 400

Stock assessment and regional management information

- 16 South Pacific albacore is listed as a highly migratory species in Annex 1 of the United Nations Convention on the Law of the Seas (UNCLOS) and by reference in the Western and Central Pacific Fisheries Convention (the Commission). As yet there are no specific international obligations with regard to management of albacore tuna. However, participating countries in the Commission have urged states to exercise reasonable restraint in respect of any increase in fishing effort and capacity with regard to the reported status of highly migratory stocks.
- 17 A stock assessment for the entire south Pacific stock for albacore was undertaken during 2005 and is the first since 2003. The assessment indicated that total catches of albacore were relatively stable over the period from 1960 to 1995, but that they have increased in recent years. The key conclusions of the stock assessment were that overfishing is not occurring and the stock is not in an overfished state.
- 18 Overall, fishery impacts on the total biomass are low, although considerably higher impacts occur for the portion of the population vulnerable to longline. There is

evidence of localised depletion of albacore and this is a potentially important issue, particularly for small island developing states dependant on these resources.

- 19 The Commission's Scientific Committee has recommended that current levels of catch and effort for albacore appear to be sustainable. However, given the age-specific mortality of longline fleets, any significant increase in effort will reduce catch per unit effort to low levels, with only moderate increases in yields. Catch per unit effort reductions may be more severe in areas of locally concentrated fishing effort. The Scientific Committee also advised that estimates of maximum sustainable yield are highly uncertain, because of the extrapolation of catch and effort well beyond any historical levels. Furthermore, there are critical biological uncertainties for south Pacific albacore that need to be addressed in order to inform the next full stock assessment.
- 20 The Commission is meeting in December 2005. A number of management proposals will be put forward in the Commission relating to longline fishing effort, and to albacore in particular. The Commission will be considering these proposals and the advice provided by the Scientific Committee, and will determine a programme of action to implement agreed responses to the scientific advice received. Actions are likely to include the implementation of management measures related to albacore in the Pacific.
- 21 In summary, MFish considers the current management framework for albacore is not affecting sustainability in NZ's EEZ. However, it should be noted that there are regional concerns about future catch rates of albacore and the stock assessment is underpinned by highly uncertain estimates of maximum sustainable yield as well as biological uncertainties. It is likely that regional management measures for albacore will be implemented shortly.

Adverse effects on the aquatic environment

- 22 MFish considers that introduction of albacore into the QMS will improve stakeholder incentive to better manage the effects on the environment associated with fishing for this species. Fishing for albacore has two types of effects on the aquatic environment. There are impacts as a result of removing albacore from the ecosystem, and the fishing methods used have an effect on other species.

Effects on the ecosystem

- 23 Because tunas feed on a variety of fish and other marine species, their harvesting may have impacts with regard to predator/prey interactions and trophic dynamics. NIWA report that observer longline data show that albacore mostly consume fish and squid. Lancetfish and lantern fish are the most commonly consumed fish species. Albacore also consume small amounts of crustaceans and octopus. Further, albacore are found in the stomachs of blue and mako sharks caught by longline.
- 24 Our understanding of albacore-related food web relationships is still at an early stage and more information is needed on such relationships. If clear evidence emerges that albacore harvesting is having effects on biodiversity, MFish considers that it will be possible to apply appropriate management measures to avoid any adverse impacts. This could be done based on international cooperation, if required.

Impacts of fishing methods

- 25 In New Zealand waters, a substantial proportion of albacore tuna is taken by trolling. There are no known environmental impacts of this fishing method.
- 26 There are environmental impacts associated with use of longlines to target albacore, in relation to protected species (up to 60% of the albacore catch has been taken by longline in recent years). In general, environmental effects are common to the fishing method rather than specific to fishing for albacore species.
- 27 Tuna longline fisheries occasionally catch fur seals, cetaceans and turtles within New Zealand fisheries waters. There are therefore potential impacts on associated and dependent species, biodiversity and protected species that will require monitoring and possibly future management action.
- 28 Longline fishing vessels also capture seabirds that chase baited hooks, and drown as the lines sink. Seabirds are also caught in trawl and other fisheries, but longliners are considered to be the main threat to several vulnerable albatrosses and other seabird species. The risks of seabird capture vary geographically and by species. An active programme is underway to mitigate and monitor the capture of seabirds in surface longline fisheries.
- 29 MFish has established standard environmental controls on line and trawl target fisheries to mitigate the impact of these fishing methods on marine mammals and seabirds. These include prohibitions on net sonde monitor cables and compulsory reporting of bycatch of protected species. Longline vessels fishing for tuna are required to use tori lines of a specified standard. Vessels use a variety of practices to reduce seabird bycatch, including the use of artificial baits and the practice of setting longlines at night.
- 30 MFish and the Department of Conservation have developed a National Plan of Action for Seabirds. Voluntary codes of practice are being developed as a result, and these will specify appropriate mitigation measures.
- 31 One of the main reasons for introducing tunas into the QMS is that allocation of rights improves stakeholder's ability to identify and implement the most efficient solutions for mitigating adverse effects through collective action. Other key tuna species taken by longline (southern bluefin, yellowfin and bigeye) were introduced into the QMS on 1 October 2004. Albacore is the last remaining major tuna target species taken by longline not in the QMS. Leaving this fishery outside the QMS under open access has the potential to undermine both stakeholders' and MFish's ability to manage environmental issues across all tuna longline fisheries.

Providing for utilisation

- 32 As discussed in the general issues section of this paper, MFish considers that two factors can be considered to determine whether the current management framework of a species is adequately providing for utilisation. The first factor is whether the current management framework is providing for utilisation by not inhibiting or preventing access. The second factor is whether the current management framework enables people to provide for their social, economic and cultural well-being.

Access is prevented or inhibited

- 33 MFish considers that the current management framework for albacore does not inhibit or prevent access to the fishery. Albacore tuna is currently managed under an open access fishery management regime whereby fishers can obtain access to the fishery via the holding or issuing of a fishing permit.

Providing for well-being

- 34 MFish considers that the current management framework for albacore does not enable people to provide for their well-being.
- 35 As a target fishery, there is value in the albacore resource and therefore incentives to utilise the resource directly. The fishery is near shore and requires little capital investment to enter. In an open access environment with low entry cost there are strong incentives for fishers to enter the fishery. While the fishery may not be currently fully utilised, competition between fishers does occur in years when albacore abundance is low. This competition will result in diminishing rent from the fishery as fishers compete amongst each other for a share of the resource.
- 36 While there is development potential in the fishery, MFish considers that the current management framework does not provide the best basis for this potential to be maximised. Rights are not clearly defined under the current management. The only existing rights are those of access, granted by the fishing permit. Fishers have no ongoing security of access, nor a guaranteed share of the resource. Any development or investment undertaken by fishers is therefore not supported by long-term tenure.
- 37 Rights cannot be transferred, which means a fisher wishing to leave the albacore fishery will get no return on capital invested (to the extent that the capital is not transferable to another fishery). As such, the existing right within the current management framework does not provide a sound basis for investment, and therefore foundation for development of the fishery.
- 38 The QMS provides the best opportunity for commercial fishers to pursue economic wellbeing by allowing quota to be purchased by the most efficient users of the resource. Because quota is divisible, fishers can match quota holdings with their landings through buying and selling of quota or ACE. Similarly, the transferability of quota allows less efficient users to exit a fishery and receive a return on their investment. Lastly, quota's tradability provides the means for inter-generational transfers. The QMS allows for a smooth re-allocation of access rights, via quota trading, from one generation to the next without requiring government intervention.
- 39 MFish is aware of some industry views that further management measures for albacore should not be implemented until regional agreement on management measures, and in particular national allocations is reached. Some in industry consider that introduction into the QMS before this time may impact on their well-being by ultimately restricting the amount of allocation New Zealand interests will receive when any national allocations are agreed.
- 40 MFish does not believe that the industry needs to be concerned about restrictions in the allocations that New Zealand interests may receive under a regional agreement. There is no requirement following introduction of a stock or species into the QMS

that a constraining catch limit needs to be set if there are no sustainability concerns. The QMS provides a better and more secure framework for development of the fishery (and therefore to provide for well-being), and in so doing, to promote New Zealand's interests.

Catch history

- 41 The setting of catch history years is not a part of this decision on whether or not to introduce albacore into the QMS. If the Minister agrees to introduce albacore into the QMS catch history years will be set as a separate decision, when the total allowable catch, and total allowable commercial catch is determined. However, catch history was a significant issue raised during previous consultation when it was proposed to introduce albacore into the QMS on 1 October 2005.
- 42 The Minister of Fisheries has discretion to determine which catch history years will be set for albacore. Current management arrangements for albacore include a decision by the previous Minister of Fisheries, after consultation, that if catch history is used as a basis for allocation for tuna fisheries in the future then that catch history is in the past (pre 30 September 2002). The purpose of signalling these intentions concerning qualifying catch history years was to discourage fishers from increasing their fishing effort in order to build their catch history in anticipation of the possible introduction of tuna into the QMS.
- 43 Following a further review of long term management arrangements for highly migratory species the Minister made a decision in principle to specify qualifying catch history years for albacore as 1 October 2000 to 30 September 2002.
- 44 Some tuna industry organisations disagreed with the proposed catch history qualifying years and an opportunity for further input into this decision in principle was provided. There was however no strong consensus among permit holders for change. Having considered responses to the second review, the Minister confirmed his previous decisions regarding the qualifying catch history period for albacore. The Government's position is that this decision in principle continues to stand.
- 45 Submissions at the time noted the constraint and the change in investment in the fishery that resulted from the Minister's decision in principle. Fishers have little incentive to invest in expanding their interest in the fishery other than the annual returns from any additional catch, given that they will not accumulate catch history past 30 September 2002.
- 46 Likewise new entrants face the same barriers to investment. Their future participation remains at risk. It is accepted that in setting catch history years, some fishers will be disadvantaged. However, there has been a lack of consensus within industry as to which years would be best, and there has been no formal proposal to extend the qualifying period to include more recent years.
- 47 MFish considers that a decision to again defer QMS introduction will only further exacerbate the potential difficulties that fishers face in developing and investing in the albacore fishery. There is the possibility that deferral will create a situation where the existing participants in the fishery will mostly be fishers who were not involved in the fishery during the qualifying catch history period, particularly with the changing

economics of the fishery as well as fleet rationalisation. To prevent this happening, MFish considers that albacore should be introduced into the QMS as soon as possible.

Determination about current management

- 48 MFish considers that the current management framework may not be adequately managing environmental effects of longlining for albacore. It also does not provide the best management framework to enable people to provide for their social, cultural and economic well-being, given that fishers would like to develop the fishery.

Use of section 11 sustainability measures

- 49 MFish notes that regulatory measures currently require the use of tori lines to mitigate seabird capture in the tuna longline fisheries. However, MFish considers that introduction to the QMS will provide better opportunity to manage environmental effects and enable utilisation through allocation of rights than use of a measure or measures imposed under s 11. Allocation of rights will provide better incentives than exist currently for rights holders to collectively manage the albacore fishery. Allocation of transferable rights also provides the best opportunity to enable social, cultural and economic well-being in the fishery.
- 50 Accordingly, MFish does not consider that the purpose of the Act would be better met by setting, on their own, one or more sustainability measures under s 11, compared to the benefits of introduction to the QMS.

Highly migratory species considerations

- 51 Albacore is a highly migratory stock. MFish is not proposing to introduce the species outside the EEZ into the QMS at this time.

Conclusion

- 52 There are no known sustainability issues for albacore in the NZ EEZ. The stock is not likely to be fully utilised. However, there have been substantial changes in the fishery in the most recent fishing years. There has been a significant reduction in the longline fleet, as well as a decrease in the number of boats trolling for albacore. Catches have also decreased, in line with this reduction in effort.
- 53 Importantly, there are concerns for albacore in the wider south Pacific region. There is a risk that anticipated increases in catches throughout the range of the species will reduce catch per unit effort to low levels, particularly in areas of locally concentrated fishing effort. Regional management measures are likely to be implemented for albacore shortly, in response to such risks.
- 54 There are environmental impacts associated with longlining for albacore (and other tuna species). The longline method generically takes a number of seabirds and some limited catch of associated rare or protected species such as turtles and marine mammals.
- 55 Environmental impacts on seabirds are currently mitigated via a regulatory measure requiring the use of tori lines and further voluntary measures implemented by the joint

venture tuna longline fleet. Further sustainability measures could be implemented under s 11 or voluntarily to mitigate additional impacts. However, MFish considers further sustainability measures imposed under s 11 on their own may not be successful in further mitigating effects, if albacore was to remain outside the QMS and be managed under an open access regime. Additional regulatory controls may inhibit people's ability to provide for their social and cultural well-being.

- 56 MFish considers that allocation of rights provides a better opportunity to create incentives for stakeholder management. Such allocation improves rights holders' ability to identify and implement the most efficient solutions for mitigating adverse effects through collective action. This in turn also creates an opportunity to better provide for utilisation which is not available in the current management framework.
- 57 There may be development opportunity in the albacore fishery. However, the existing open access management framework fails to produce an environment conducive for investment or development, and as such does not adequately enable well being.

Stock and Areas

- 58 Albacore tuna that occur in New Zealand fisheries waters are part of a south Pacific stock. NIWA has recommended a single QMA for New Zealand fisheries waters for a stock boundary for albacore tuna.

Proposed Quota Management Areas

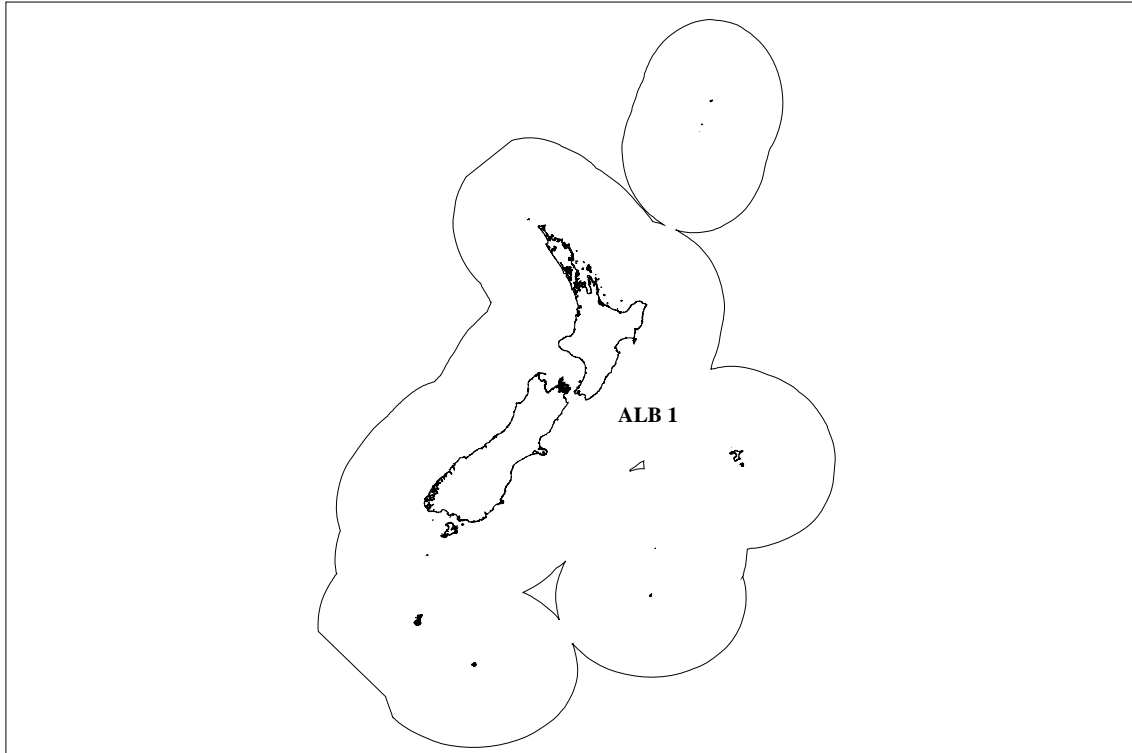
- 59 The Act requires that, as far as practicable, the same QMAs be maintained for different species. In this case it is most relevant to consider management arrangements that apply to other highly migratory species. In the absence of regional management measures, MFish has decided not to propose including the high seas in the QMAs for other highly migratory species at this time (an exception is for southern bluefin tuna). In effect, New Zealand fisheries waters are being used to define a unit for the purpose of management. A single QMA for New Zealand fisheries waters applies to other tuna (other than southern bluefin tuna) and related bycatch that is taken by surface longline. MFish's initial view is that the QMA for albacore should be the same as for these related species.
- 60 A single QMA for all of New Zealand fisheries waters would be efficient in that it would allow fishers to take their annual catch entitlement wherever the fish are most abundant and/or fishing costs are lowest. MFish policy principles indicate that stock boundaries should take into account the existing characteristics of the fishery (known fisheries, relevant fisheries management issues). There are no issues that would suggest an alternative QMA option for albacore, given the management arrangements for other tuna and highly migratory bycatch species.
- 61 The Act also requires that a separate QMA may be set for the waters surrounding the Chatham Islands if the stock can be managed effectively as a unit. Albacore tuna are not regularly caught around the Chatham Islands, and there is no reason to consider this area as a separate management unit. MFish concludes that this area can not be effectively managed as a unit.

Proposal

ALB 1 (FMAs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

62 The proposed QMA encompasses all New Zealand fisheries waters, including the Kermadec fisheries management area (refer Figure 1).

Figure 1: Proposed QMA for albacore tuna.



Fishing Year

63 The current fishing year for albacore is from 1 October to 30 September. The alternative fishing year is 1 April to 31 March.

64 Albacore is often taken in association with bigeye and other tunas. A 1 October fishing year is applied to these other tuna species, and MFish considers that albacore should be aligned with them.

65 Accordingly, should albacore be introduced into the QMS, MFish proposes that the fishing year be from 1 October to 30 September.

Unit of Measure

66 Greenweight has been used historically for management purposes in the tuna fisheries. MFish considers there is no reason to change this unit of measure should albacore be introduced into the QMS, and accordingly proposes that greenweight be retained as the unit of measure.

CONGER EELS (CON)

Summary of Proposals

- 1 The Ministry of Fisheries (MFish) proposes that:
 - a) Three species of conger eel (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) [Conger Eels (CON)] be introduced into the Quota Management System (QMS) on 1 October 2007;
 - b) The Quota Management Areas (QMAs) be CON 1 (FMA 1), CON 2 (FMA 2), CON 3 (FMA 3), CON 4 (FMA 4), CON 5 (FMA 5), CON 6 (FMA 6), CON 7 (FMA 7), CON 8 (FMA 8), CON 9 (FMA 9) and CON 10 (FMA 10) (Figure 1);
 - c) The fishing year be 1 October to 30 September; and
 - d) The unit of measurement be greenweight.
- OR**
- e) The three species of conger eel (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) [Conger Eels (CON)] not be introduced into the Quota Management System (QMS) on 1 October 2007.

Fishery Background

Biological characteristics

- 2 A number of conger eel species are found in New Zealand waters. The three conger eel species proposed for QMS introduction are members of the family Congridae (Conger eels). Of the three conger eel species, the two most common are the southern conger eel (*Conger verreauxi*) and the northern conger eel (*Conger wilsoni*). The southern and northern conger eel are similar in appearance, but the southern conger eel grows larger (1-1.5m), and has a longer dorsal fin. The northern conger eel (0.7-0.8m) is more slender than the southern conger eel. The third conger eel species, *Conger cinereus*, can be distinguished from the southern and northern conger eels by the black streak on the pectoral fin and, often, below the eye.
- 3 Conger eels are widely distributed throughout New Zealand waters to depths of 500m, but are more common around the rocky coasts of the southern North Island and the South Island. The southern conger eel is common in the South Island and west coast of the North Island, the northern conger eel on the east coast of the North Island, and *Conger cinereus* around the Kermadec Islands.
- 4 Conger eels favour very rough ground and inhabit reefs, broken ground, wrecks and other artificial environments. In shallow waters, conger eels are mostly nocturnal feeders but in depths greater than 30m they feed anytime. They are voracious predators that feed on fishes, crabs and octopuses.

- 5 Conger eels (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) spend their entire life in marine waters. When conger eels reach maturity, between 5 -15 years, they migrate to deep water (to 4000m) to spawn and die. The larvae drift for some time until they reach shallower waters where larval development is completed.

Commercial fishery

- 6 In New Zealand, the conger eel fishery is small (less than 200 tonnes). Catch is mainly made up of the three species proposed for introduction into the QMS (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*). Other species are rarely caught. Most conger eels caught commercially are landed headed and gutted for further processing, although a small quantity is sold alive. Conger eels are caught as a bycatch of trawling (red cod and flatfish), lining (snapper and hāpuku) and potting (rock lobster and blue cod). MFish considers it likely that there is a considerable unreported bycatch of conger eels that is discarded, particularly so in the early 1990s.
- 7 Reported landings of conger eels by fisheries management areas (FMAs) are show in Table 1. These landings relate to the landings of the three conger eel species proposed for introduction into the QMS.

Table 1 Landings of Conger Eels (CON) for the period 1990 – 2004 taken from the landing section of catch effort landing returns—sourced from Fisheries Information System (FIS) (tonnes). Note: no CON landings for FMA 10.

	FMA 1	FMA 2	FMA 3	FMA 4	FMA 5	FMA 6	FMA 7	FMA 8	FMA 9	Total
1990-91	2	7	26	1	2	0	22	7	0	67
1991-92	5	13	21	4	3	0	34	7	0	87
1992-93	5	17	25	34	2	1	30	7	0	121
1993-94	5	15	31	24	7	1	23	8	0	114
1994-95	7	16	22	17	13	1	22	10	0	108
1995-96	2	13	23	11	46	19	20	30	0	164
1996-97	8	14	22	7	49	3	25	18	0	146
1997-98	10	12	8	21	22	1	19	9	0	102
1998-99	9	9	11	14	28	2	30	9	1	113
1999-00	11	9	13	11	21	2	27	7	2	103
2000-01	13	14	12	14	18	6	33	9	2	121
2001-02	14	16	13	36	27	7	57	9	1	180
2002-03	8	20	17	38	25	10	74	6	1	199
2003-04	12	23	14	31	19	5	84	11	1	200
2004-05	10	24	19	22	17	4	78	8	1	183

Non-commercial fishery

- 8 There is little Maori customary fishing information available about conger eels. Tangata Tiaki have not reported customary take of conger eels under customary fishing authorisations. However, a 1989 Waitangi Tribunal report stated that conger eel is an important customary fishery in the Ngai Tahu rohe.
- 9 MFish does not have specific information on the quantity of conger eel that is harvested by the recreational sector. Recreational fishers usually catch conger eels when lining in reef areas, and usually return them to the sea. There are no restrictions

on the number of conger eels that non-commercial fishers can catch. No conger eels were recorded as being taken during three national telephone/diary surveys of recreational fishers during 1996, 2000 and 2001.

Assessment of Legislative Criteria

Ensuring sustainability

- 10 Conger eels are likely to be susceptible to overfishing and local depletion because they are localised reef fish, very territorial and, internationally, are known to have low productivity¹. Low productivity of conger eels results from their longevity (average lifespan between 5 and 15 years), they breed only once in deepwater, and there is high mortality of eggs and larvae.
- 11 No estimates of current and reference biomass are available. Landings of the three conger eel species proposed for QMS introduction are stable at around 190 tonnes over the last four years, although landings have trebled over the last 15 years. The lower landings in earlier years may be due to under-reporting. It is not known whether recent catch levels are below, at, or above a level that will allow these conger eel species to move towards a size that will support the maximum sustainable yield. However, current catches are probably below maximum sustainable yield levels because conger eels are not targeted, and some fishers return them to the water alive.
- 12 Current management (open access) has not resulted in sustainability concerns for Conger eels. Catch levels appear to be stable but, should catch increase rapidly, the sustainability of these fisheries could be at risk under an open access regime because of the susceptibility of conger eels to over fishing and local depletion.

Providing for utilisation

Access is prevented or inhibited

- 13 Conger eels are managed as an open access fishery. Fishers can obtain access to the fishery by obtaining a fishing permit. MFish does not consider that the current management framework inhibits access to the fishery.

Providing for well-being

- 14 The critical issue for the Crown in managing conger eel species is creating a management framework that provides for utilisation, and enables people to provide for their social, cultural and economic wellbeing. MFish considers that introduction of the three conger eel species (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) into the QMS is the best way to provide for this. MFish considers that development opportunities exist for conger eels because current catches are probably below maximum sustainable yield levels, and utilisation of the fishery is best carried out within the QMS.

¹ Fishbase.org, an international fisheries data base, lists conger eel as having very low resilience because the minimum population doubling time is more than 14 years.

- 15 There are important commercial conger eel fisheries overseas and it is not unreasonable to expect that, if markets are found, fishers will want to develop the fishery accordingly. Conger eel is an important marine eel fishery in Europe and Japan. In Europe, conger eel is highly regarded and around 10 000 tonnes of conger eel are taken annually. Local prefecture fisheries in Japan each support around 350 tonnes of conger eel harvest each year. Overseas, conger eel is targeted by trapping (potting) or lining in areas close to rocky reefs.
- 16 MFish believes it is likely that commercial interest in conger eels will develop in New Zealand. The capital cost of entry for existing fishers is low because they only have to obtain traps, hauling gear and tanks for holding live fish. Some interest in developing the conger eel fishery was expressed before the moratorium on the issue of target fishing permits in 1992. While no targeting of conger eels by potting has occurred since the lifting of the moratorium on 1 October 2004, some fishers are starting to optimise conger eel bycatch when targeting flatfish. These conger eels are being sold live, directly to customers by wharf sales. Other fishers are likely to want to enter the local market once they become aware of the opportunity to enter the fishery.
- 17 In addition, recreational fishers are showing more interest in the conger eel fishery. Anecdotal information from recreational fishers in the South Island suggests they are catching and retaining more conger eels, particularly in areas where quota management stocks are locally depleted, such as the Kaikoura coast.
- 18 An open access environment for the three species of conger eel proposed for QMS introduction is unlikely to enable people to provide for their social, economic, and cultural wellbeing. Few restrictions on the number of commercial entrants into the fishery, and the low cost of harvesting of conger eels, means that an open access regime will probably result in increasing competition between current fishers and new entrants coming into the fishery as the fishery develops.
- 19 Under open access, commercial fishers have an incentive to ‘race for catch’ rather than efficiently fish to obtain the best value from the fishery. The associated economic incentives are to overcapitalise catching capacity and to focus on catch quantity rather than quality in order to compete. These incentives cause rent dissipation and other characteristic inefficiencies of open access regimes. There is also potential for conflict between interest groups, and within the commercial fishing sector. These conflicts are likely to arise out of competition for access to local fishing grounds.
- 20 In contrast, the QMS provides the best opportunity for fishers to pursue economic wellbeing. Because quota is divisible, fishers can match quota holdings with their landings through buying and selling of quota or ACE. Similarly, the transferability of quota allows fishers to exit a fishery and receive a return on their investment. Lastly, quota’s tradability provides the means for inter-generational transfers. The QMS allows for a smooth re-allocation of access rights, via quota trading, from one generation to the next without requiring government intervention.
- 21 The QMS also provides the most effective means of providing for the utilisation interests of all sectors through the setting of a sustainable TAC, allocating the resource between sectors, and application of measures that effectively constrain

commercial catches. This, in turn, provides for the social and cultural wellbeing of all interest groups.

Use of section 11 tool

- 22 Should sustainability concerns arise during the development of the fishery for these three conger eel species, MFish considers that the benefits of introduction into the QMS outweigh open access to the fishery with the use of sustainability measures under section 11.
- 23 MFish does not consider that section 11 measures on their own can effectively manage the sustainability issues identified for the conger eel fishery, should a target fishery develop. There is a risk that sustainability concerns, such as overfishing and localised depletion, would increase under an open access regime.
- 24 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 these conger eel species. 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 likely fishers will 'race to catch' as much as they can from localised populations of conger eels until the catch limit is reached. Also, seasonal controls are likely to focus intensive effort during short periods of time on conger eel populations without necessarily ensuring the long-term sustainability of the populations.
- 25 In contrast, the QMS provides a framework that enables people to invest in, and develop, a fishery when they choose to do so. As well as setting a TAC, management under the QMS could also include use of s 11 measures, such as the retention of any method restrictions, to further support sustainability.
- 26 The QMS provides greater incentives for commercial fishers to develop and manage the fishery sustainably through the provision of secure property rights. 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.
- 27 Fishing for conger eels does not directly have an adverse effect on the aquatic environment because conger eels are caught as a bycatch of other target fisheries that have already been introduced to the QMS. MFish considers it unlikely that target fishing for conger eels using clay pots, as used in overseas fisheries, would have any significant impacts on the aquatic environment. However, there may be adverse affects on predator/prey relationships if the fishery were to develop significantly.
- 28 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.

Schedule 4C

29 Conger eels are not listed on Schedule 4C.

Highly migratory species considerations

30 Conger eels are not a highly migratory species.

CITES listing

31 Conger eels are not listed in any appendix to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), so the Minister of Fisheries does not need to consult with the Minister of Conservation when considering introducing conger eels into the QMS.

Determination about current management

32 MFish preliminary view is that management of these three conger eel species (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) under the QMS better meets the purpose of the Act than continuing to manage them under an open access framework. The main reason for moving these conger eel species to a rights-based regime under the QMS will be to enable utilisation that best provides for social, economic, and cultural wellbeing. The current management of these conger species is, arguably, not providing for the best utilisation of the species. In addition, the QMS could be used to address sustainability concerns that might arise during development of the fishery.

33 Alternatively, QMS introduction could be deferred until the fishery develops further. MFish seeks input and submissions from tangata whenua and stakeholders on these two options.

Proposal

34 MFish proposes that three conger eel species (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) be introduced into the QMS from 1 October 2007. Other conger eel species are uncommon in the fishery.

Stock and areas

35 There have been no biological studies that are directly relevant to the recognition of separate stocks of conger eel species (*Conger verreauxi*, *Conger wilsoni*, *Conger cinereus*) around New Zealand.

Proposed quota management areas

36 The Act sets out two statutory matters that need to be considered when defining QMAs:

- As far as practicable, the same QMAs be maintained for different species (s 19(2)); and

- A separate QMA may be set for a stock in the waters surrounding the Chatham Islands if the stock in that area can be managed effectively as a unit for fisheries management purposes (s 19(3)).

37 In addition to the statutory matters above, MFish has developed a set of principles to assist in defining practical QMAs, which is set out in the Introduction section of this paper. In considering these statutory matters and principles, MFish considers that the following are key factors in defining QMAs for the conger eel species:

- a) The management of conger eel species needs to be aligned with associated fisheries (multispecies finfish and rock lobster);
- b) Conger eels can be overfished and locally depleted;
- c) Larger QMAs that align with associated fisheries provide administrative savings and greater flexibility for rights holders to decide the most efficient way to use the resource and meet the requirements of the Act.

38 MFish recommends that FMAs 1-10 be applied as fishstock boundaries for the conger eel species. Adopting FMAs 1-10 is a balance between the ability to manage sustainability issues should the fishery develop and alignment with the main target trawl fisheries. The adoption of FMAs 1-10 will allow for the possibility that there are several biological stocks and help avoid the impact of any overfishing of a stock.

Proposals

Conger Eels CON 1 (FMA 1)

39 This proposed QMA extends from North Cape to Cape Runaway.

Conger Eels CON 2 (FMA 2)

40 This proposed QMA extends from Cape Runaway to the coast adjacent to Porirua.

Conger Eels CON 3 (FMA 3)

41 This proposed QMA extends from the Clarence River mouth (Marlborough) to Slope Point on the Catlins coast (Southland). It includes Pegasus Bay, the Mernoo Bank and the Canterbury Bight.

Conger Eels CON 4 (FMA 4)

42 This proposed QMA encompasses the Chatham Islands and the eastern Chatham Rise.

Conger Eels CON 5 (FMA 5)

43 This proposed QMA extends from Slope Point (Catlins coast) around the Southland coast, including Stewart Island, to Awarua Point at the northern end of Fiordland.

Conger Eels 6 (FMA 6)

44 This proposed QMA takes in the Sub-Antarctic.

Conger Eels CON 7(FMA 7)

45 This proposed QMA extends from Awarua Point around the west, north and east coast of the South Island to the Clarence River.

Conger Eels CON 8 (FMA 8)

46 This proposed QMA extends from the Porirua coast north to Tirua Point, south of Kawhia Harbour.

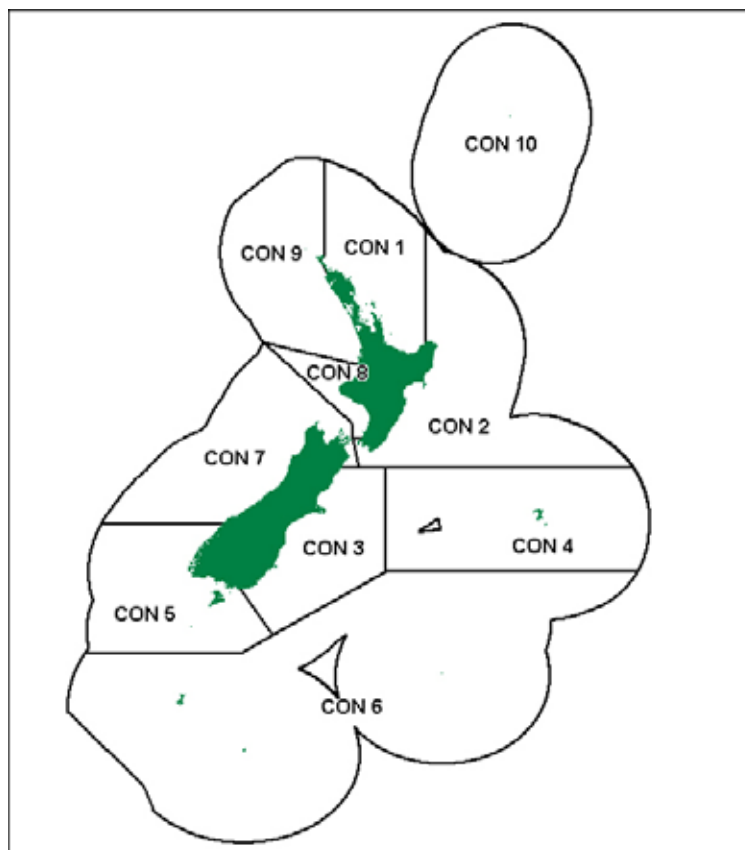
Conger Eels CON 9 (FMA 9)

47 This proposed QMA extends north from Tirua Point to North Cape. MFish considers that this stretch of coast is sufficiently large to encompass a QMA in its own right.

Conger Eels 10 (FMA 10)

48 This proposed QMA surrounds the Kermadec Islands.

Figure 1 Map of Proposed Conger Eel Quota Management Areas.



Fishing Year

49 MFish proposes the fishing year for Conger Eels be from 1 October to 30 September.

Unit of Measure

50 MFish proposes that the unit of measure for Conger Eels is greenweight. Conger eels are not typically processed at sea.

PRAWN KILLER (PRK)

Summary of Proposals

- 1 MFish proposes to seek the Minister's agreement to:
 - a) Introduce the species 'prawn killer' (*Ibacus alticrenatus*, also known as 'shovel-nosed lobster – species code PRK) into the quota management system (QMS) on 1 October 2007;
 - b) Define the quota management areas (QMAs) as PRK1, PRK2, PRK3, PRK4A, PRK5, PRK6A, PRK6B, PRK7, PRK8, PRK9, and PRK10 (using the same QMAs as defined for scampi (*Metanephrops challengeri* - SCI);
 - c) Establish the fishing year as 1 October to 30 September;
 - d) Define the unit of measurement for PRK as greenweight.

Assessment of Legislative Criteria

- 2 Pursuant to s 17B of the Fisheries Act 1996 (the Act), the Minister must determine to make prawn killers subject to the QMS if he is satisfied that the current management is not ensuring sustainability or not providing for the utilisation of prawn killers, unless he determines that the purposes of the Act would be better met by using general sustainability measures.

Ensuring sustainability

- 3 Two key factors should be considered to determine whether or not the current (non-QMS) management framework is ensuring the sustainability of prawn killer stocks:
 - a) Is the current framework maintaining, or is it likely to maintain, the potential of the prawn killer stocks to meet the reasonably foreseeable needs of future generations?
 - b) Is fishing for prawn killers under the current framework having an adverse effect on the aquatic environment?
- 4 To inform the consideration of those factors, the species' biology and fishery characteristics are briefly described below.

Description of species

- 5 The species 'prawn killer' or 'shovel-nosed lobster' (*Ibacus alticrenatus*) is a member of the family Scyllaridae or 'slipper lobsters'.
- 6 'Prawn killers' (species code PRK) are reported to occur around the North and South Islands of New Zealand in relatively deep water from depths of about 80 to 300 metres. The species occurs on soft sediment seafloor where it digs into the substrate and covers itself with sand and mud (it is not known whether or not it forms distinct burrows as do scampi). The species' diet is reported to consist mainly of

molluscs and polychaete worms. MFish is not aware of reports detailing interactions between PRK and other species.

7 Little information on the species' biology is available from New Zealand reports, although larval development was documented by Atkinson & Boustead (1982)¹. Information about the same species in eastern Australian waters² suggests that:

- The prawn killer is a relatively small lobster (carapace lengths for egg-bearing females range from 38.2 to 52.0 mm);
- Individuals of other *Ibacus* species reach maximum average length within 5 to 7 years;
- Females of other *Ibacus* species reach maturity 1.7 to 2 years after settlement;
- Brood fecundity (egg numbers) is size dependent and the lowest (from 1734 to 14762) in *I. alticrenatus* compared with two other species;
- The egg is relatively large and hatches at an advanced stage (egg size ranged from 0.94 to 1.29 mm);
- The relatively short-lived larval stages do not travel far before settlement, so localised distribution is maintained; and
- Information from other *Ibacus* species suggests that moulting occurs 3 to 4 times within the first year after recruitment.

Harvest of species

8 In New Zealand, the landings of prawn killer are reported mostly as a bycatch in targeted scampi trawls in QMAs SCI 1 and 2. While the prawn killer is thought to be the primary species in the catch taken in New Zealand waters, at least three other members of the family Scyllaridae (*Ibacus brucei*, *Antipodarctus aoteanus*, *Scyllarus mawsoni*) might be involved, although thought to be uncommon in the New Zealand catch. Reported landings of PRK are shown in Table 1 below.

¹ Atkinson, J.M. and Boustead, N.C. 1982 "The complete larval development of the scyllarid lobster *Ibacus alticrenatus* Bate, 1888 in New Zealand waters". *Crustaceana* 42: 275-287.

² Haddy, J.A., Courtney, A.J., & Roy, D.P. 2005 "Aspects of the reproductive biology and growth of Balmain bugs (*Ibacus* spp.) (Scyllaridae)" *Journal of Crustacean Biology*, 25(2): 263-273.

Table 2: Reported landings (greenweight kgs) of PRK from the Fisheries Information System (2004-05 data is preliminary).

Fishing Year	PRK 1	PRK 2	PRK 3	PRK 4	PRK 5	PRK 6	PRK 7	PRK 8	PRK 9
1990/91	11,589.00								
1991/92	3,344.00	482							
1992/93	42,237.00	6,863.00					16		
1993/94	10,946.00	30							
1994/95	518								
1995/96	1,782.00								
1996/97	23,125.00								
1997/98									
1998/99		192							
1999/00	80						4		
2000/01									2
2001/02	6,051.50	367							
2002/03	20,986.80	8,392.40				5.7			
2003/04	24,352.00	260	10	10					
2004/05	3,254.00	1,148.30							

9 Reported ‘fishing-year’ landings have been highly variable between years, and peaked at about 49 tonnes in 1992-93 (in FMAs 1 and 2 combined). In recent years, landings peaked at 29 to 24 tonnes in 2002-03 and 2003-04 respectively.

10 No catch by customary Maori or other non-commercial fishers is known or thought to exist.

Maintaining potential to meet the needs of future generations

11 MFish notes that no sustainability concerns arising from the past and current levels of harvest of PRK have been demonstrated. However, there is currently no information on the abundance, yield, or stock status for any PRK stock or area on which to base conclusions regarding stock sustainability.

12 MFish notes that there are currently no controls on PRK catch levels, and access to the fishery is ‘open’. MFish considers that existing levels of harvest are unlikely to be putting the potential for future use of PRK stocks at risk. However, MFish considers that the scope for increased targeted effort and catch does provide a sustainability risk if the open access regime is retained, and catch and effort were to increase substantially.

13 Under the current non-QMS regime, species such as PRK may be returned to the sea lawfully as long as the catch and discard is reported. Incentives to retain and land the catch of PRK are not strong given the competing incentives to retain the higher value scampi, and it is likely that much of the discarded PRK catch is not reported. Managing PRK under the QMS would require PRK to be landed, and provide other tools which strengthen the incentives to land the catch. Improved information about the fishery would result, which would assist in understanding the fishery and being able to maintain the potential for the fishery to meet the needs of future generations.

- 14 Given the characteristics of the species (outlined above) and the likely preferred fishing method (trawling), MFish considers that risks to stock sustainability (and to the aquatic environment, as discussed below) could arise if effort and catch were to increase as the fishery developed.

Adverse effects on the aquatic environment

- 15 MFish does not consider that, on balance, there is an adverse impact from the existing levels of harvest of PRK, given that its capture is incidental to the target fishing of other species (mostly scampi).
- 16 Target fishing for scampi within the constraints of existing scampi TACCs is relatively localised within the respective QMA boundaries. MFish has considered the localised fishing to provide mitigation of the effects of fishing and ensure the maintenance of biodiversity at the QMA scale. There are no known habitats of particular significance for fisheries management that are likely to require protection from fishing for PRK.
- 17 However, MFish notes that PRK is likely to be a relatively important species within the soft sediment benthic fauna within its depth range. Cryer et al. (2002) showed evidence that trawling might generally change the benthic community structure and reduce biodiversity over broad spatial scales. Those authors showed a statistically significant negative relationship between the density of PRK and an index of scampi trawling ‘intensity’ in QMA1 (SCI1).
- 18 MFish notes that there are various approaches under development to ensure that any adverse effects of fishing generally are avoided, remedied, or mitigated. These include the development of the Marine Protected Area Strategy and the Benthic Impact Strategy. The future management of any directed fishery for PRK will be influenced by those strategies.
- 19 PRK is reported taken mostly as a bycatch in the scampi target trawl fishery in scampi fishery QMAs SCI1 and SCI2. Scampi trawling uses small mesh gear (approximately 60 mm cod-end mesh). It could be expected that target trawling for PRK would require similar gear and take similar bycatch species to the scampi fishery, although PRK are generally taken in shallower waters.
- 20 Concerns were raised in the past by inshore trawl operators, specifically in FMA 2, that a target fishery for PRK would adversely affect finfish stocks by catching juveniles in the fine mesh trawl nets. There has been no detailed examination of existing data to address those concerns, although it has been shown that the size structure of QMS finfish bycatch in scampi trawls is not substantially different from that taken in trawls targeting other species in similar areas.
- 21 Commercially important bycatch species taken in the scampi fishery are likely to also form part of the bycatch of targeted trawling for PRK. Those species (such as hoki, hake, ling) are managed within the QMS, which provides the mechanisms for ensuring the sustainability of those species/stocks.
- 22 Scampi trawling is known to take some protected species such as fur seals and various seabird species, and it can be expected that trawling for PRK with similar gear could

have similar effects. Controls on trawling are in place to mitigate the impact on marine mammals and seabirds, including prohibitions on net sonde cables and requiring the compulsory reporting of captures.

- 23 In addition, MFish and the Department of Conservation have developed a National Plan of Action (NPOA) that includes measures that will apply to all New Zealand fishing vessels. The NPOA includes measures to monitor and mitigate the capture of seabird species in commercial fisheries. A code of practice to mitigate seabird captures is being implemented on over half of the vessels currently operating in the scampi fishery. The NPOA requires that the remaining vessels put similar mitigation strategies into practice as soon as possible.

Providing for utilisation

- 24 Two factors should be considered to determine whether or not the current non-QMS framework is adequately providing for utilisation:
- a) Is the current framework inhibiting or preventing access?
 - b) Is the current framework enabling people to provide for their social, cultural, and economic wellbeing?

Access prevented or inhibited

- 25 PRK is currently managed under an open access fishery management regime whereby fishers are able to obtain access (authority to take the species) via the issue of a generic fishing permit under s 91 of the Act. Fishing permits generally are granted upon application.
- 26 MFish considers that the current management framework is not inhibiting or preventing access to or the utilisation of the PRK fishery.

Providing for wellbeing

- 27 MFish considers that the current open access regime for PRK satisfies the first step towards enabling people to provide for their wellbeing in that any fisher, who wishes to, can obtain a fishing permit to authorise access to the PRK resource (subject to the constraints under s 91 excluding applicants who have unpaid levies, deemed values, or suspended permits).
- 28 Having obtained a fishing permit, a fisher wishing to target PRK would require to have, or to obtain, relatively specialised fishing gear, vessel capacity, processing capability, and access to markets. The costs of acquiring a vessel, gear, etc. would be substantial, but not notably different to those costs associated with utilising another trawl fishery/species of similar characteristics.
- 29 MFish notes that, within the current open access regime, there are many uncertainties that face potential entrants to the fishery, and the problems with open access could adversely affect the ability of people to provide for their wellbeing in the long term. Further development of the fishery under open access could also pose risks regarding stock sustainability and environmental effects.

- 30 Open access could result in a ‘race’ for fish or what is also known as an ‘Olympic’ style of fishing behaviour. The associated incentives are to overcapitalise on catching capacity and to focus on catch quantity rather than quality in order to compete, giving rise to the associated rent dissipation and other characteristic inefficiencies of open access regimes. There would also be the potential for conflict between differing interest groups within the commercial fishing sector. Those conflicts might arise out of competition for space on the defined fishing grounds. Conflicts could also arise from the competitive focus on catch volume, and perceptions about the effects of PRK fishing on other species.
- 31 MFish is aware that markets for New Zealand PRK already exist (locally and certainly in Australia, where the landings of similar and identical species in Queensland during 2000, 2001, and 2002 were worth approximately AU\$ 650 000 to AU\$ 850 000). One fishing company expressed interest during the mid 1990s to further explore the potential of the PRK fishery in New Zealand under a special permit, but the proposal was not finalised.
- 32 Given the existence of markets and the previous interest in developing the fishery, MFish considers that retaining open access to PRK does not provide the best management framework to enable people to provide for their wellbeing.
- 33 Introduction of PRK into the QMS, and the allocation of quota rights would, in the view of MFish, provide the appropriate opportunities, incentives, and certainty to foster the rational development of the fishery. The allocation of, or the potential to purchase, quota rights would provide the certainty and security of tenure to facilitate longer-term planning of investments and fishing operations. Capitalising the value of future harvesting rights and the ability to trade those rights further increases the incentives to enhance their capital asset value.
- 34 MFish considers that the QMS provides the best opportunity for people to pursue economic wellbeing by allowing quota to be purchased by the most efficient users of the resource. Because quota is divisible, fishers can match quota holdings with their landings through buying and selling of quota or ACE. Similarly, the transferability of quota allows less efficient users to exit a fishery and receive a return on their investment. Lastly, quota’s tradability provides the means for inter-generational transfers. The QMS allows for a smooth re-allocation of access rights, via quota trading, from one generation to the next without requiring government intervention.
- 35 Introduction of PRK into the QMS is the MFish-preferred option given the rationale noted above, because property rights provide a more secure basis for investment in the utilisation and development of the fishery.

Determination about current management

- 36 MFish considers that current levels of harvest of PRK have not yet given rise to any sustainability concerns. However, the characteristics of the species and the fishery indicate that concerns could arise if the fishery was to develop further.
- 37 It is also evident that the current open access regime is not providing the best framework under which people can provide for their wellbeing by developing and

improving the fishery. MFish considers that moving to a rights-based regime under the QMS would better enable the provision of wellbeing from the PRK fishery.

Use of section 11 sustainability measures

- 38 As noted in the introductory section of this document, section 11 measures (such as catch limits) cannot effectively address the management issues identified above. Specifically, MFish considers that 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 PRK fishery. The allocation of transferable rights also provides the best opportunity to enable social, cultural and economic wellbeing to be derived from the fishery.
- 39 Accordingly, MFish 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.

Conclusion

- 40 The available information regarding sustainability concerns or adverse effects of fishing for PRK at recent and current harvest levels does not, of itself, promote introduction of PRK into the QMS. However, the characteristics of the species and fishery do suggest that any increased fishing effort for, and catch of, PRK could give rise to sustainability concerns.
- 41 Although the obligation to provide for utilisation of the PRK fishery is being met currently by the open access management regime, the existing management framework fails to produce an environment conducive for investment or development. MFish does not consider the existing management framework to best promote the orderly development of the fishery, which is in the best long-term interests of both New Zealand and the fishers.
- 42 MFish considers that the allocation of rights under the QMS would provide a better framework for the sustainable utilisation of the fishery. The rights-based approach to management provides greater certainty for investment and rational development, as well as incentives for collective action by rights holders to identify the most efficient solutions for mitigating adverse effects and thereby creating the best opportunity to enable their social, cultural and economic well-being.
- 43 Since markets exist for PRK, and interest in development of the fishery has been expressed previously, MFish considers that a case for QMS introduction does exist.

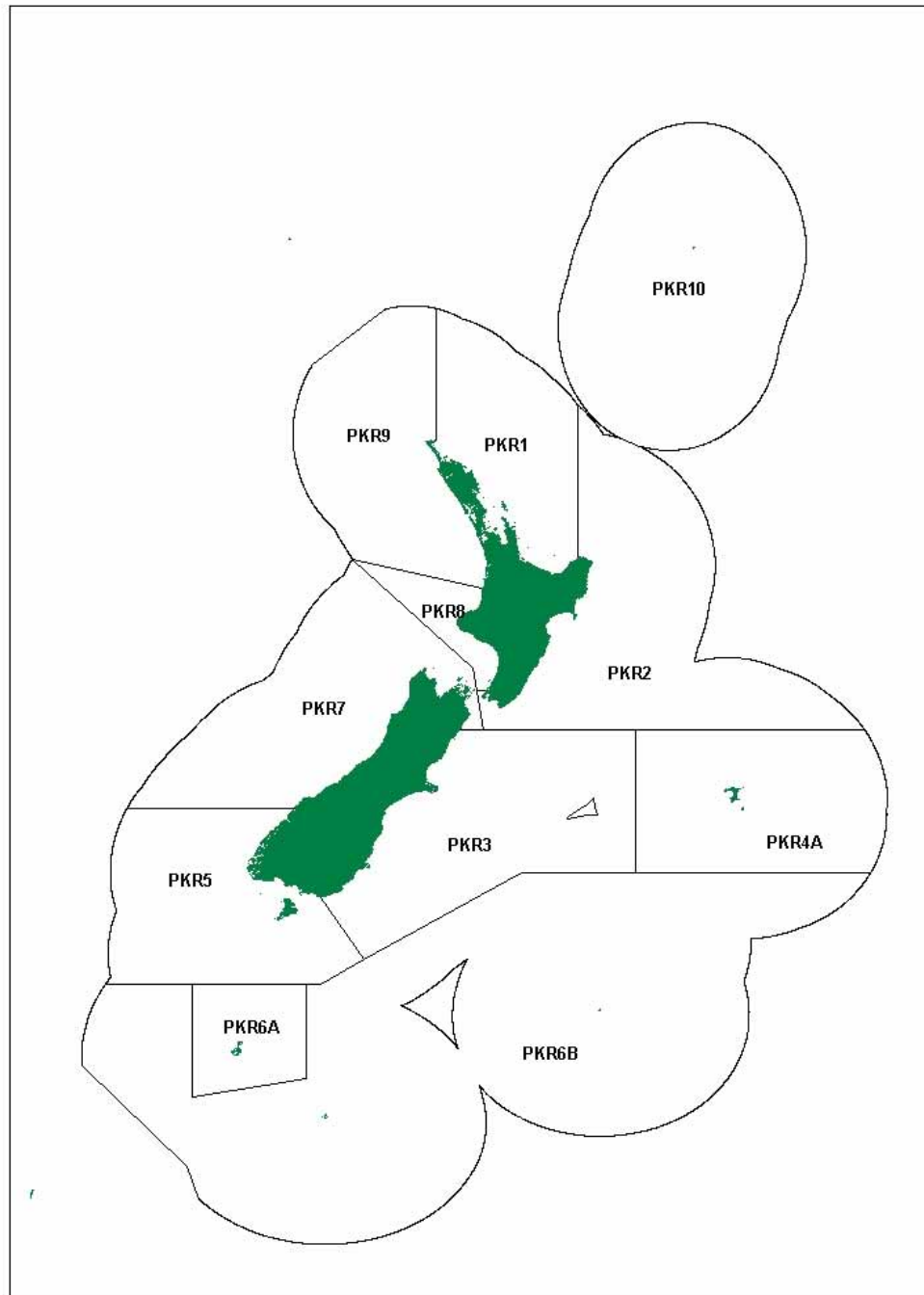
Stocks and Areas

- 44 Prawn killers are reported to occur around the North and South Islands of New Zealand in relatively deep water from depths of about 80 to 300 metres. The relatively short-lived larval stages do not travel far before settlement, so localised distribution is likely to be maintained. However, the stock structure of PRK in New Zealand waters is not currently known.

Proposed Quota Management Areas

- 45 The Act defines two statutory obligations that must be considered when defining QMAs:
- As far as practicable, the same QMAs should be maintained for different species – section 19(2); and
 - A separate QMA may be set for the waters surrounding the Chatham Islands if the stock can be managed effectively as a unit – section 19(3).
- 46 The Act requires that, as far as practicable, the same QMAs are maintained for different species. In this case it is most relevant to consider management arrangements that apply to other similar species or associated fisheries.
- 47 The majority of the reported catch of PRK is taken in association with target trawling for scampi. In the absence of a detailed understanding of the distribution and stock structure of PRK, MFish proposes that the QMAs for PRK be defined as the same as those for scampi (SCI) as shown in Figure 1 below. Those QMAs are also the same as the standard fishery management areas or FMAs for FMA 1, 2, 5, 7, 8, 9, and 10. MFish considers that the proposed QMAs satisfy the requirement to maintain the same areas for different species, as far as practicable.
- 48 The differences in the scampi QMAs SCI 3, 4A, 6A, and 6B are associated with characteristics of the scampi fisheries and the option to establish a separate QMA for Chatham Islands waters. In SCI 3, 6A, and 6B, the QMA boundaries were set to account for the spatial distribution of scampi and other management matters. The existing fishing grounds for scampi straddled FMA boundaries, therefore, new boundaries were designed to keep fishing areas (and stocks) together as far as possible. While the spatial distribution of PRK in those areas is not well described, it is likely that it will have some similarity to that of scampi.
- 49 The scampi QMA SCI 4A was set to encompass the fishery within Chatham Islands waters, on consideration that the stock could be managed effectively as a unit. MFish considers that would similarly apply to PRK.

Figure 1. Map showing proposed QMAs for prawn killer (PRK) stocks.



Proposal

PRK 1, 2, 3, 4A, 5, 6A, 6B, 7, 8, 9, 10

50 The proposed QMAs for PRK are coincident with those defined for scampi stocks, as shown in Figure 1.

Fishing Year

51 The current fishing year for PRK is from 1 October to 30 September. The alternative fishing year is 1 April to 31 March.

52 The fishing year for scampi and most of the QMS finfish bycatch species likely to be taken in association with PRK begins on 1 October. MFish considers that the same fishing year should apply for PRK.

Unit of Measurement

53 Most of the catch of PRK is reported as ‘Greenweight’. MFish considers that there is no reason to change this unit of measure should PRK be introduced into the QMS, and accordingly proposes that greenweight be retained as the unit of measure.

SEAL SHARK (BSH)

Summary of Proposals

- 1 MFish proposes that seal shark (*Dalatias licha* - species code BSH) not be introduced into the QMS on 1 October 2007 based on the lack of evidence to support the utilisation or sustainability criteria for introduction, and no information to support QMS entry additional to that from previous consultation in 2003.
- 2 MFish notes that the entry of seal shark into the QMS may be reconsidered in the future if more definitive sustainability or utilisation issues are identified that warrant active management. However, should seal shark be introduced into the QMS later than 1 October 2009, provisional catch history (PCH) will not be the basis for the allocation of quota.

Assessment of Legislative Criteria

- 3 Pursuant to section 17B of the Fisheries Act 1996 (the Act), the Minister must make a determination whether or not to make seal shark subject to the QMS, if he is satisfied that the current management is not ensuring the sustainability or not providing for the utilisation of seal shark. In either of those two cases, unless the Minister considers the purpose of the Act would be better met by using general sustainability measures, he must make seal shark subject to the QMS.

Ensuring sustainability

Description of species

- 4 Seal shark comprises one of the 95 chondrichthyan species found in New Zealand waters and one of 30 species caught by commercial and recreational fisheries. Seal shark is believed to be a mobile species, possibly undergoing seasonal or long-term migrations. Like other deepwater shark and dogfish species, it may not be able to withstand high exploitation rates due to low productivity and fecundity.
- 5 Seal shark is widely distributed over the New Zealand continental shelf. 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.
- 6 In a review of the distribution and abundance of deepwater sharks in New Zealand (Blackwell and Stevenson, 2003), seal shark was identified as one of six species that commonly occur on the middle and lower New Zealand continental shelf, mainly in depths greater than 600m. In that review, the only relative biomass estimates for seal shark were derived from two trawl surveys on the Chatham Rise in 2001, resulting in estimates from 103 to 289 tonnes. Analysis of trawl survey and catch per unit effort (CPUE) data from 1989-90 through 1998-99 indicated an increase in seal shark

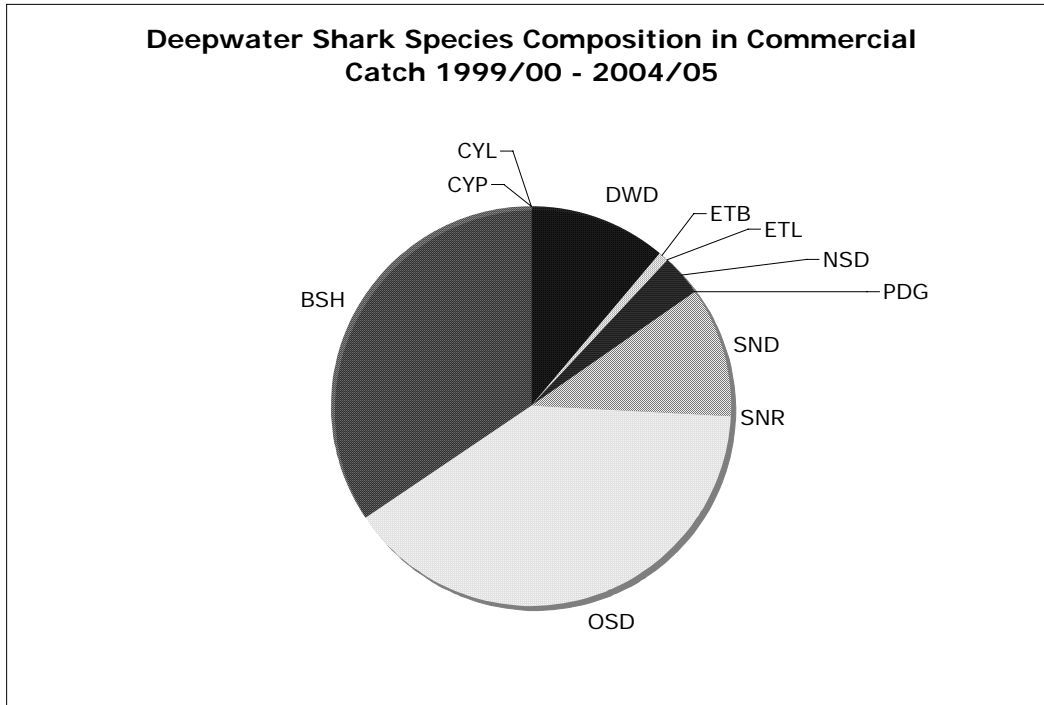
relative abundance in depths greater than 800 m on the Chatham Rise, although the changes may represent better catch reporting rather than changes in abundance. Other regions in New Zealand waters were not reviewed.

- 7 Of the published data on the biology of sharks in New Zealand waters, little has focused on seal shark. Although this is a large shark (maximum recorded length 182 cm), males become sexually mature at 100 cm and females at 120 cm and productivity is expected to be low. These are ovoviviparous sharks (internal hatching with live births) with an average litter size of 12 pups ranging from 40-42 cm at birth. Distribution of juveniles is unknown. Seal shark feed primarily on bony fish (94% of their diet) and also on elasmobranches and cephalopods (completing the remaining 6%).

Harvest of species

- 8 The level of deepwater shark catch from New Zealand fisheries is uncertain because of the high percentage of discarding and the use of species codes such as ‘other sharks and dogs’ (OSD) or ‘deepwater dogs’ (DWD) to report commercial catches. Figure 1 shows the OSD and DWD proportions of the reported estimated catch at 40% and 11% respectively. Seal shark are commonly confused with Lucifer dogfish (*Etmopterus lucifer*) in reporting. The target fishery for seal shark accounts for less than 10% of the annual catch. Catch reported as BSH contributes 34% of the reported commercial deepwater shark catch. Discarding of deepwater shark species is commonplace as a result of relatively low value and historically low utilisation. Most reported deepwater shark catch is dumped at sea or only the fins and livers are landed. As much as 80% of the OSD category from 1999/00-2004/05 was discarded.

Figure 1. Deepwater Shark Species Composition in Commercial Catch. Species codes identified as OSD other sharks and dogs, DWD deepwater dogs, BSH *Dalatias licha* seal shark, SND *Deania calcea* shovelnose spiny dogfish, NSD *Squalus mitsukurii* northern spiny dogfish, ETB *Etmopterus baxteri* Baxter's lantern dogfish, ETL *Etmopterus lucifer* Lucifer dogfish, CYL *Centrocygnus coelolepis*, CYP *Centrocygnus crepidater*, SNR *Deania histricosa*, Rough shovelnose dogfish, PTB *Oxynotus bruniensis*, Prickly dogfish



- 9 The estimated commercial catch of seal sharks has increased from 1989-90 through 2004-05 (Table 1). The increase in reported catch levels during this period may indicate increasing stock abundance, or alternatively, may reflect an increase in reporting of seal shark catches. The reported discards of seal shark nearly equalled reported landings. Catch per unit effort (CPUE) of seal shark caught on the northeast and south Chatham Rise between 1989-90 and 1998-99 increased, but data is unavailable for other areas.

- 10 A total of 100-500 tonnes per year of BSH is reported taken in New Zealand waters (Figure 2). Vessels that capture BSH target more valuable hoki, orange roughy, and ling. Deepwater shark species account for 1.5% of the total catch of all species when targeting hoki, 3% when targeting oreo and 7% when targeting orange roughy. Of those deepwater shark bycatch values, seal shark accounts for 21% of the hoki fishery deepwater shark bycatch, 39% of the oreo fishery deepwater shark bycatch and 62% of the orange roughy fishery deepwater shark bycatch.

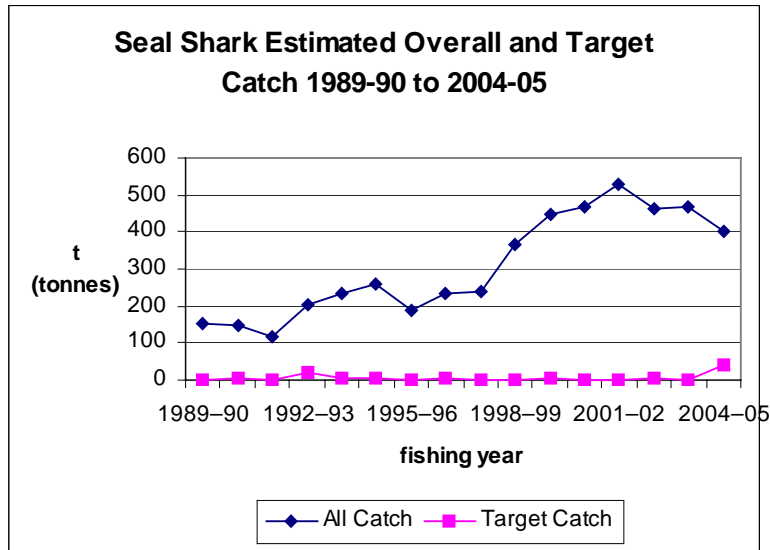
Table 1: Reported greenweight landings (tonnes) of seal shark by fishing year 1989-90 to 2004-05, are from TCEPRs, CELRs, CLRs and LFRRs. TCEPRs and CELRs provide estimated catch values. Landings data are derived from CELRs and CLRs. Landing from LFRRs come from catch which is landed to a LFR and is probably sold.

Fishing year	Estimated catch (t) (TCEPR and CELR data)	Landings (t) (CLR and CELR)	Discards (t) (CLR)	Landings (t) LFRR
1989-90	152	97	1	104
1990-91	148	125	2	141
1991-92	115	188	3	183
1992-93	203	257	2	231
1993-94	232	331	8	304
1994-95	261	378	47	372
1995-96	188	452	184	282
1996-97	234	354	23	327
1997-98	241	517	144	419
1998-99	368	769	467	356
1999-00	448	762	468	319
2000-01	469	810	411	406
2001-02	529	838	432	444
2002-03	464	804	310	532
2003-04	467	729	334	401
2004-05	403	716	203	495

Note: BSH landed under the CLR and CELR forms includes discards and other destination type codes (eaten, wharf sales, bait use, discarded or lost) whereas LFRR forms document BSH sold by harvesters to Licensed Fish Receivers.

- 11 Changes in fishing patterns in the target fisheries will determine seal shark catches. If seal shark continues to be taken primarily as bycatch, it is likely that current catch levels will remain the same. However, under open access, catch might increase if market demand for seal shark increases.
- 12 It is not known whether or not recent catch levels of seal shark are sustainable. Because of very limited stock assessment information for this species, there are no estimates of current or reference biomass, or sustainable yield. There are risks associated with the unchecked harvest of seal shark. An increase in fishing effort could have an adverse impact of seal shark biomass, which could be exacerbated if catches are concentrated in few areas.

Figure 2. Estimated catch of seal shark from 1989-90 through 2004-05 from TECPR and CELR estimated catch data from all fisheries and from BSH target fishery, November 2005.



Deepwater shark species considered particularly vulnerable

13 The International Council for the Exploration of the Sea (ICES) has recently published a report for the overhaul of deep sea fisheries, advising zero catch of some depleted deep sea shark species (ICES, 2005). This work is fully supported by the International Union for the Conservation of Nature (IUCN). IUCN urges that governments expedite the work called for by Food and Agriculture Organization’s (FAO) Committee on Fisheries in March 2005 to develop technical guidelines on deepwater fisheries. The guidelines suggest methods must be developed to avoid catching deepwater sharks as bycatch in other fisheries or else these fisheries must be reduced substantially. These should take into account the particular vulnerability of deep sea species and the gaps in scientific knowledge regarding most of these species. MFish is preparing a regional National Plan of Action (NPOA) for sharks to provide a framework for the management of deepwater and other shark species.

Adverse effects on the aquatic environment

14 Seal shark is a deepwater demersal species that occurs widely over the continental shelf and slope of New Zealand. The species has a depth range of 40 to 1800 metres, but is more commonly found in depths between 450 and 850 metres. Seal shark is principally caught as bycatch by the methods of bottom trawling and set netting when targeting other species. Any existing effects arise principally from those target fisheries. It is unlikely that there will be additional adverse effects on the aquatic environment under current seal shark catch levels unless there is an increase in target fishing effort beyond current levels.

15 Target fisheries that capture seal shark are active participants in developing and implementing fishing practices to minimise the incidental capture of marine mammals and seabirds. MFish considers that any effects of the seal shark fishery on the aquatic environment will be managed under similar arrangements.

Providing for utilisation of seal shark

Providing for wellbeing

- 16 In the last decade, seal shark has become an important bycatch species, more recently marketed for its flesh. Although estimated catch appears to have declined, landings of seal shark from 1999-00 through 2004-05 increased, peaking at over 800 tonnes in 2002-03. However, discards continued to fall during that period. Of the seal shark landed, 65% is dressed followed by 15% liver processing, which shows some level of market interest. Additional processed states include headed and gutted at 8.5%, and 9% mealed (Figure 3). The change in estimated catch of seal shark indicates some recent commercial interest. The target fishery shows highly variable catch, but few consistent harvesters from 1999-00 through 2004-05 (Table 2).
- 17 MFish considers that the key issue for the Crown in managing seal shark is creating a management framework that enables the utilisation of fisheries resources while ensuring deepwater shark sustainability. Currently, seal shark is managed using an open access management regime. The only barriers to entry are the requirement to obtain a fishing permit and any capital costs associated with fishing. MFish considers that the current framework is enabling people to provide for their wellbeing to the current extent of interest in the seal shark resource.
- 18 Seal shark is on schedule 4D of the 1996 Fisheries Act, which stipulates that provisional catch history (PCH) will be the basis for quota allocation if the species is introduced into the QMS before 1 October 2009. While the mechanism for allocation is not a legislative criterion for deciding whether or not to introduce, it is a basis for obtaining the views of stakeholders regarding the proposal not to introduce at this time.

Figure 3. Proportional seal shark product forms from 1999-00 through 2004-05 Processed codes from LFRR reports of BSH landed catch: DRE dressed; LIV liver; MEA mealed; HGU head/gutted; HGT, head/gutted/tailed; FIN fins; FIL, fillet; GUT gutted; GRE greenweight; HGF head/gutted/finned, DVC dressed-V cut, SKF fillets: skin-off; TSK fillets: skin-off trimmed.

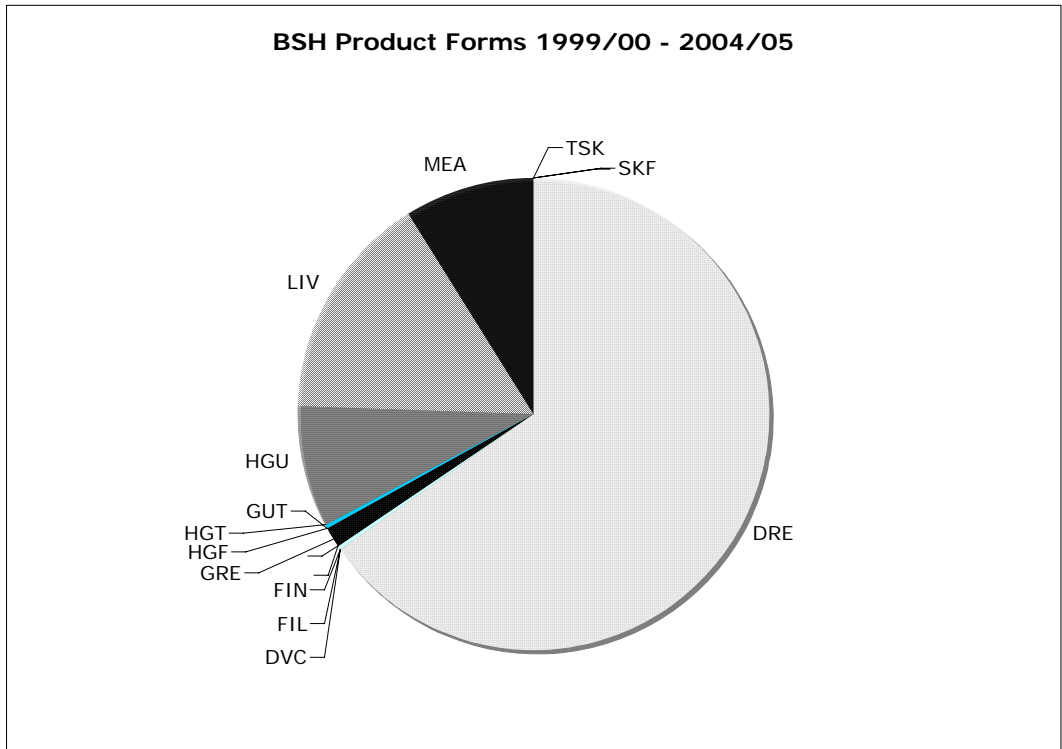


Table 2. Seal Shark target fishery estimated catch from 1989-90 through 2004-05 (TECPR and CELR forms).

Species Caught	Fishing Year	Total Estimated Catch Weight (kg)	Number of Records	Maximum Estimated Catch Weight (kg)	Number of Clients	Number of Vessels
BSH	1989/90	1,997	20	300	8	8
BSH	1990/91	4,703	39	1,500	5	5
BSH	1991/92	590	18	120	3	3
BSH	1992/93	19,340	31	2,300	3	3
BSH	1993/94	7,105	23	600	4	4
BSH	1994/95	3,580	13	800	2	2
BSH	1995/96	140	1	140	1	1
BSH	1996/97	3,989	15	800	2	3
BSH	1997/98	75	3	35	2	2
BSH	1999/00	3,500	2	2,000	1	1
BSH	2002/03	6,500	9	1,500	2	2
BSH	2003/04	2,240	5	1,600	2	2
BSH	2004/05	39,181	32	4,180	3	3

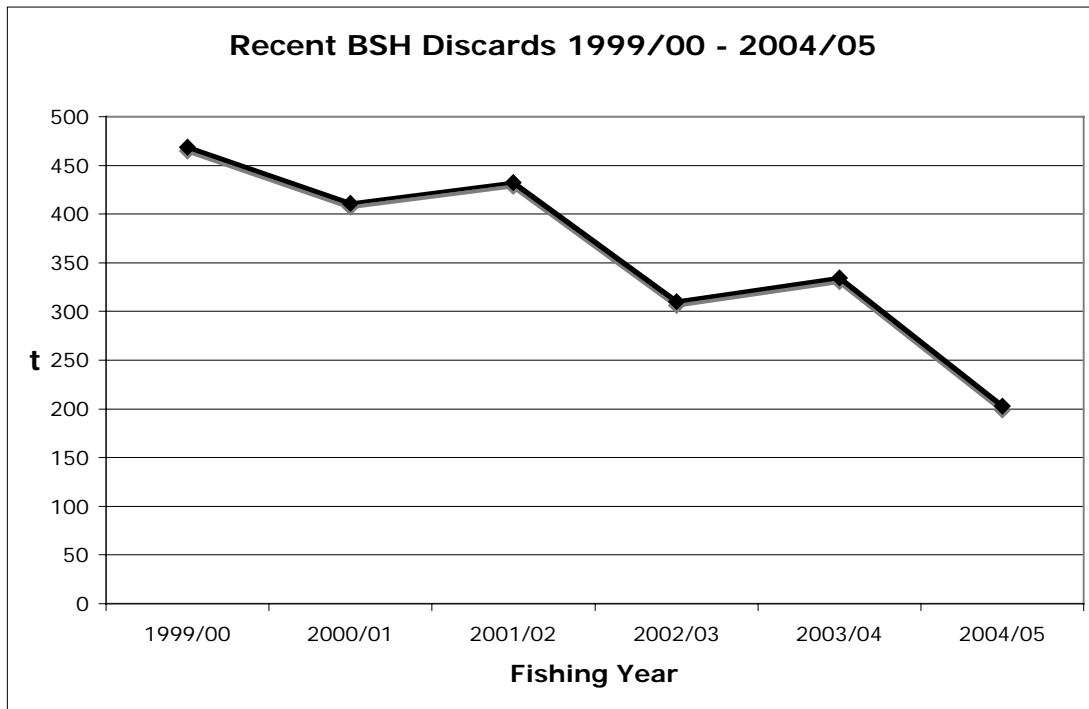
Commercial and non-commercial (customary and recreational) allocation issues

- 19 Seal shark is of little or no value to customary or recreational fishers. Because of the species' offshore location and deepwater distribution, non-commercial catches are likely to be negligible. There is no quantitative information on customary and recreational harvest levels of seal shark. It is unlikely that allocation issues will arise between commercial and non-commercial sectors given the absence of customary and recreational fisheries for seal shark.

Inefficient or under utilisation

- 20 There is some evidence of current inefficient or under utilisation of seal shark. Presently, the associated target fisheries determine catches of seal shark and there is a high level of discarding, presumably due to a lack of market demand for this species. The estimated catch of BSH has shown an increase from 1989-90 through 2004-05. In the last 6 years, nearly 52% of the catch was landed, with the remaining 46% discarded. Although recent information shows declining rates of discarding (Figure 4), the decline might be a result of lower catch of target fisheries such as hoki and orange roughly in 2003-04 and 2004-05.
- 21 The level of discarding indicates that some fishers are presently under utilising this species as only a proportion of overall catch is retained for processing. Given the bycatch nature of the fishery and the low market value, a substantial target fishery for BSH is unlikely to develop unless market incentives change.
- 22 In the absence of abundance data, it is not possible to ascertain whether or not the overall catch is at or near the maximum sustainable yield (MSY) and, therefore, the full potential for utilisation is unknown. The current level of market utilisation appears constrained by market demand for the species, and not the framework under which the fishery is managed and operated. Future market potential for seal shark is unknown. Increases in demand for seal shark and accompanying increases in catch and effort would be expected to increase utilisation.
- 23 Although catch of seal shark has increased over the last ten years, any assumptions drawn from this data should be made with caution as higher reported catch levels may be due to better reporting and/or changed fishing practices in the target fisheries resulting in higher seal shark landings. The target species of which seal shark is a bycatch are all constrained under the QMS and catch is unlikely to increase significantly in the future.

Figure 4. Seal Shark reported discards from 1999-00 through 2004-05 fishing years



Determination about current management

Management requirements on sustainability or utilisation grounds

- 24 Seal shark may be vulnerable to the effects of fishing, given the low productivity and fecundity of elasmobranch species in general. On balance, MFish cannot yet conclude that recent catch levels of seal shark are not sustainable.
- 25 While catches have increased from 1989-90 through 2004-05, the apparent trend of increasing catch may reflect increasing abundance or changes in reporting rather than increases in utilisation. Utilisation and associated fishing pressure are unlikely to increase in the absence of greater market demand. Future market potential for this species is unknown. It is also possible that catch of this species may increase if targeting of other deepwater non-QMS species occurs.
- 26 If seal shark is not introduced in 2007, further monitoring of catch could improve knowledge of stock status and utilisation. MFish is aware of international views that further management measures for deepwater shark species should not be implemented until regional agreements on a National Plan of Action for shark management measures are developed.

Use of section 11 sustainability measures

- 27 MFish considers that currently there are no sustainability concerns that require additional measures under section 11 that would improve management of the seal shark fishery.

Conclusion

- 28 MFish proposes that the Minister does not introduce seal shark into the QMS at this time. There is not enough evidence to show that the existing management framework unnecessarily constrains utilisation or threatens sustainability. Although the biological characteristics of seal shark make it vulnerable to over fishing, MFish cannot demonstrate that the present management is adversely affecting sustainability. There is no evidence that the current management framework is not providing for the utilisation of seal shark.
- 29 While there are longer-term sustainability and utilisation benefits of managing seal shark under the QMS, MFish considers it prudent not to introduce into the QMS at this time and to reconsider the introduction of this species at such a time as more explicit sustainability or utilisation issues are identified that warrant active management.

Stocks and Areas

- 30 To assist stakeholders to evaluate views that might be supportive of introduction of seal shark into the QMS, MFish has developed the following proposals for stock boundaries, fishing year and the unit of measurement.
- 31 There is no information on stock structure, recruitment patterns, or other biological characteristics to assist in setting the fishstock boundaries. NIWA notes that there is no information on the existence of natural stock boundaries, and no biological justification for sub-dividing the New Zealand region. NIWA recommends that seal shark should be managed as a single fishstock.

Proposed Quota Management Areas

- 32 The 1996 Act sets out two statutory obligations that must be considered when defining QMAs:
- As far as practicable, the same QMAs should be maintained for different species (s 19(2));
 - A separate QMA may be set for the waters surrounding the Chatham Islands if the stock can be managed effectively as a unit (s 19(3)).
- 33 In addition, MFish has developed a set of principles to assist in defining practicable QMAs. In considering these statutory obligations and principles MFish considers the following are key issues in defining QMAs for seal shark, should it be introduced:
- a) There is no biological information available to indicate separate seal shark stocks. The species is very widely distributed within and beyond New Zealand waters;
 - b) The translation of the existing FMAs into ten QMAs would impose unnecessary management costs on fishers and MFish;
 - c) The characteristics of the seal shark fishery and the species' distribution means it is largely impracticable to maintain the same QMAs as the associated target

species. Instead, it is appropriate to manage the species as a northern and southern stock to reflect the predominant distribution of catches in southern areas and the species' vulnerability to overfishing;

- d) FMAs should be amalgamated where commercial catch and development potential is low;
- e) While seal shark is present around the Chatham Islands, there is no biological reason to separate this area from other parts of the Chatham Rise. It is not proposed to implement a separate QMA around the Chatham Islands;
- f) Taking into account the principles and key management issues noted above, it is proposed that seal shark be managed within three QMAs, which are based on combining several FMA boundaries (refer to Figure 5).

Proposals

BSH1 (FMAs 1, 2, 7, 8, 9)

- 34 This proposed QMA extends from Awarua Point at the northern end of Fiordland, then in a clockwise direction around the west coast of the South and North Islands, down the east coast of the North Island to the Clarence River (Marlborough). The proposed QMA includes FMAs 1, 2, 7, 8, and 9. FMAs 2 and 7 account for modest sea shark landings, but reported landings in FMAs 1, 8, and 9 are low. Any further division of this QMA at this time could impose unnecessary costs on fishers and MFish.

BSH3 (FMAs 3, 4, 5, and 6)

- 35 This proposed QMA extends from the Clarence River to Awarua Point, encompassing the southern waters of FMAs 3, 4, 5, and 6. Most of the seal shark catch (80%) is caught in within the proposed QMA with the largest catches occurring in FMAs 3 and 6 (ie, Puysegur Bank and Chatham Rise) as a bycatch in the hoki, ling and orange roughy fisheries. It is most effective to manage BSH3 as a separate QMA to incorporate the majority of catches within a single management area.

BSH10 (FMA 10)

- 36 This proposed 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. However, given the important characteristics of this FMA (which includes the Kermadec Islands), it is appropriate to maintain a separate QMA for seal shark.

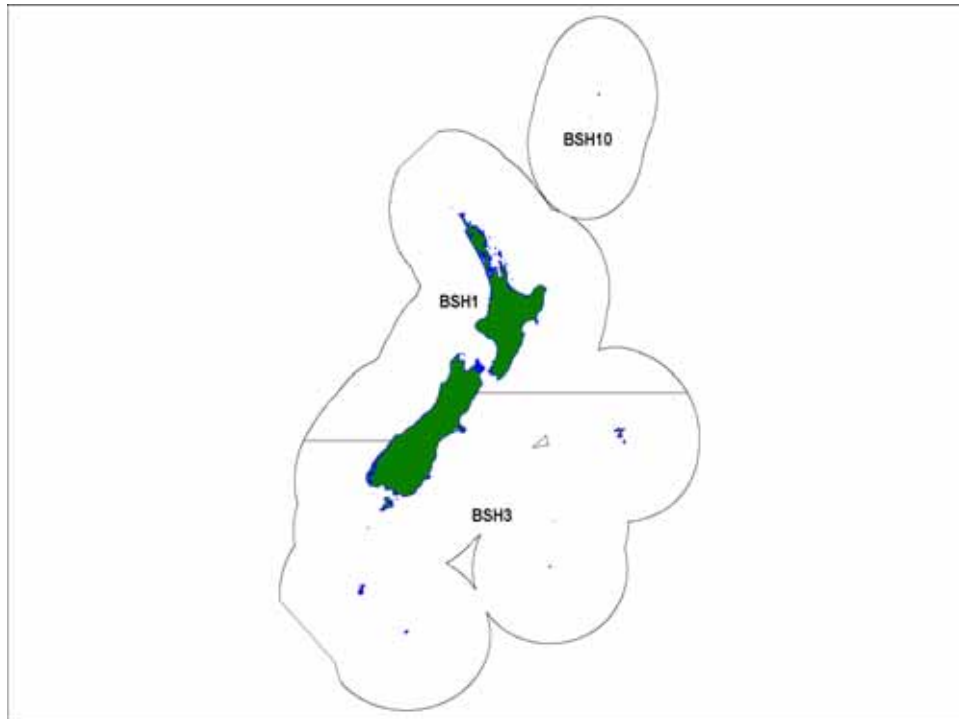
Fishing Year

- 37 Should seal shark be introduced into the QMS, MFish 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.

Unit of Measurement

38 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.

Figure 5: Proposed Quota Management Areas for seal shark



References:

International Council for the Exploration of the Sea. 2005. Deepwater Fisheries. Scientific Advisory Committee on Fisheries Management. Denmark.

Blackwell, R.G. and M.I. Stevenson. Review of the distribution and abundance of deepwater sharks in New Zealand waters. New Zealand Fisheries Assessment Report. July 2003.

Ministry of Fisheries, FIS database Source: FishServe

Conclusions of the Deepsea Chondrichthyan Workshop, University of Otago, Dunedin 27-29 November 2003.

International Council for the Exploration of the Sea Press Release

International Union for the Conservation of Nature Species Redlist

FAO International Plan for the Conservation and Management of Sharks 1999