INTRODUCTION OF NEW STOCKS INTO THE QUOTA MANAGEMENT SYSTEM ON 1 OCTOBER 2005

CONSULTATION DOCUMENT

8 June 2004

TABLE OF CONTENTS

INTRODUCTION

1 In accordance with s 19(7) of the Fisheries Act 1996 (the 1996 Act), the purpose of this document is to commence the consultation process on behalf of the Minister of Fisheries on those species or stocks proposed for introduction into the Quota Management System (QMS) on 1 October 2005 (refer Table 1). 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 results of assessments of the costs and benefits of QMS introduction, as outlined in this document.

2 The Fisheries Amendment Bill (No.3) is currently being considered by the Primary Production Select Committee. The Bill proposes a number of changes to the 1996 Act in relation to introduction of species into the QMS and management of species outside the QMS. These changes include: removal of Individual Catch Entitlement provisions; removing the permit moratorium and specifying thresholds which would trigger a determination by the Minister of Fisheries on whether a stock or species should be introduced into the QMS. As the Bill has not yet become and law, and is therefore subject to change, this document is based on the existing provisions and requirements of the 1996 Act.

3 The word 'species' is used where it is proposed to introduce all stocks (ie, FMAs 1−10) of a species into the QMS on a particular date (ie, 1 October 2005).

Table 1: MFish proposed list of species/stocks to be introduced into the QMS on 1 October 2005

Species (code)	Scientific name	Proposed Management Areas
Albacore Tuna (ALB)	Thunnus alalunga	ALB1 (FMAs 1-10)
Cockles (COC)	Austrovenus Stutchburyi	COC 1B (FMA 1), COC 2 (FMA 2), COC 3B (FMA 3), COC 4 (FMA 4), COC 5 (FMAs 5 & 6) COC 7C (FMA 7)
Non QMS Dredge Oyster (OYS)	Tiostrea chilensis	OYS 1 (FMA 1), OYS 2 (FMA 2 and part of FMA 7), OYS 3 (FMA 3), OYS 4 (FMA 4), OYS 5B (FMAs 5 & 6), OYS7A (FMA 7 – West Coast South Island), OYS 8 (FMA 8), OYS 9 (FMA 9)
Pipi (PPI)	Paphies australis	PPI 1B (FMA 1), PPI 2 (FMA 2), PPI 3 (FMA 3), PPI 4 (FMA 4), PPI 5 (FMA 5 & 6), PPI 7 (FMA 7), PPI 8 (FMA 8), PPI 9 (FMA 9)
Non QMS Scallops	Pecten novaezelandiae	SCA 2 (part of FMA 2, FMA 7 & 1), SCA 3 (FMAs 3 & 4), SCA 5 (FMAs 5 & 6), SCA 7A (FMA 7 – West Coast South Island), SCA 8 (FMA 8 and southerly part of FMA9)
Skipjack Tuna (SKJ)	Katsuwonus pelamis	SKJ 1 (FMAs 1-10)
Tuatua (TUA)	Paphies subtriangulata	TUA 1 (FMA 1), TUA 2 (FMA 2), TUA 3 (FMA 3), TUA 4 (FMA 4) TUA 5 (FMA 5 & 6), TUA 7 (FMA 7), TUA 8 (FMA 8), TUA 9 (FMA 9)

4 A separate consultation paper on the introduction of seaweeds into the QMS on 1 October 2005 was sent to stakeholders in mid-April and is available on the MFish website: www.fish.govt.nz.

5 MFish note that the costs and benefits analysis for skipjack tuna is equivocal. Accordingly, an option of either introducing or deferring introduction is provided.

6 MFish proposes that the fishing year is 1 October to 30 September for all species or stocks except for non-QMS scallops, which Mfish proposes to be 1 April to 31 March, and that the TACC and ACE are expressed as greenweight. The proposed QMAs for each stock and results of assessments of the costs and benefits of QMS introduction are outlined in each of the species-specific sections within this document.

7 Because of the administrative timeframe to introduce species or stocks into the QMS on 1 October 2005, MFish requests that you provide your written comments in response to this consultation document no later than **16 July 2004.** Your comments should be in response to the following proposals:

- The species or stocks outlined in Table 1 including the results of assessments of the costs and benefits of QMS introduction;
- 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).

8 Please send your written comments on this document to:

Kristin Philbert, Ministry of Fisheries, P O Box 1020, Wellington, (04) 470 2585, or email to philberk@fish.govt.nz.

9 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 2005, once consultation has occurred and submissions have been considered.

10 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:

Arthur Hore, P O Box 19747, Auckland (09) 820 7686	(Pelagic)
Jodi Mantle, P O Box 19747, Auckland (09) 820 7687	(North inshore)
Scott Williamson, Private Bag 14, Nelson (03) 548 1069	(Central inshore)

Background

11 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.

12 These issues can be largely remedied by introducing non-QMS fisheries into the QMS, and developing management controls by way of stock management strategies and fisheries plans. For these reasons, the overall 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.

13 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 1996 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 tools for sustainable management, enhancing fisheries for all resource users.

14 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.

15 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

16 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 2005 are as follows:

17 Following the consultation time period, ending **16 July 2004,** 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 results of assessments of the costs and benefits of QMS introduction.

18 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 2 outlines the indicative combined timeframe involved in introducing species or stocks into the QMS on 1 October 2005.

Table 2: Indicative combined timeframe for 1 October 2005 QMS introductions

Task	Date
Consultation with stakeholders	8 June – 16 July 2004
Final advice paper to the Minister	2 September 2004
Validation of catch data complete	1 October 2003
Section 18 QMS declaration notified in the Gazette	16 September 2004
Tuna catch history years	23 September
Notification of eligible catch (etc)	15 October
Objection period	18 October 2004 – 31 January 2005
Objection assessment complete	4 March 2005
Notification of PCH (etc)	24 March 2005
Appeal Period	29 March 2005 – 22 June 2005
PCH transfer period	23 June 2005 – 20 July 2005
TACCs notified in gazette	May / June 2005
Notification of quota allocation	6 September 2005

Outline of the Consultation Document

19 This document was compiled in accordance with s 10 of the 1996 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.

20 The next section of this document, titled 'Quota Management Areas', outlines the statutory obligations and policy principles used by MFish to determine proposed QMAs.

21 A further section explains the methodology used to assess the costs and benefits of introducing species or stocks into the QMS. This section, titled 'Costs and Benefits of Introducing Species into the QMS', also explains improvements made to the decision-making methodology, including a decision path approach, which have been implemented in this document.

22 The remainder of this document consists of a section on each species or stock proposed for QMS introduction on 1 October 2004, and includes the following:

- **Summary of Proposals –** summarises MFish's proposals and alternative options for each stock;
- **Assessment of Costs and Benefits –** outlines the results of MFish's assessments of the **costs** and benefits of QMS introduction, which considered 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

23 In proposing QMA boundaries for species or stocks to be introduced into the QMS, MFish considered the two statutory obligations set out in the 1996 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)).

24 In addition, MFish has developed a set of principles to assist in defining practicable QMAs, as outlined in Table 7. 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 3: Principles in setting proposed QMAs

	PRINCIPLES	FISHERIES MANAGEMENT OUTCOMES
1.	Management areas should be based principally on the biological characteristics of the stock.	• Sustainability requirements of the 1996 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).	• 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.	• 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.	• 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.	• Reduced complexity and business compliance costs. • Flexibility for exercise of customary rights.

25 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 tools in the 1996 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 1996 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.

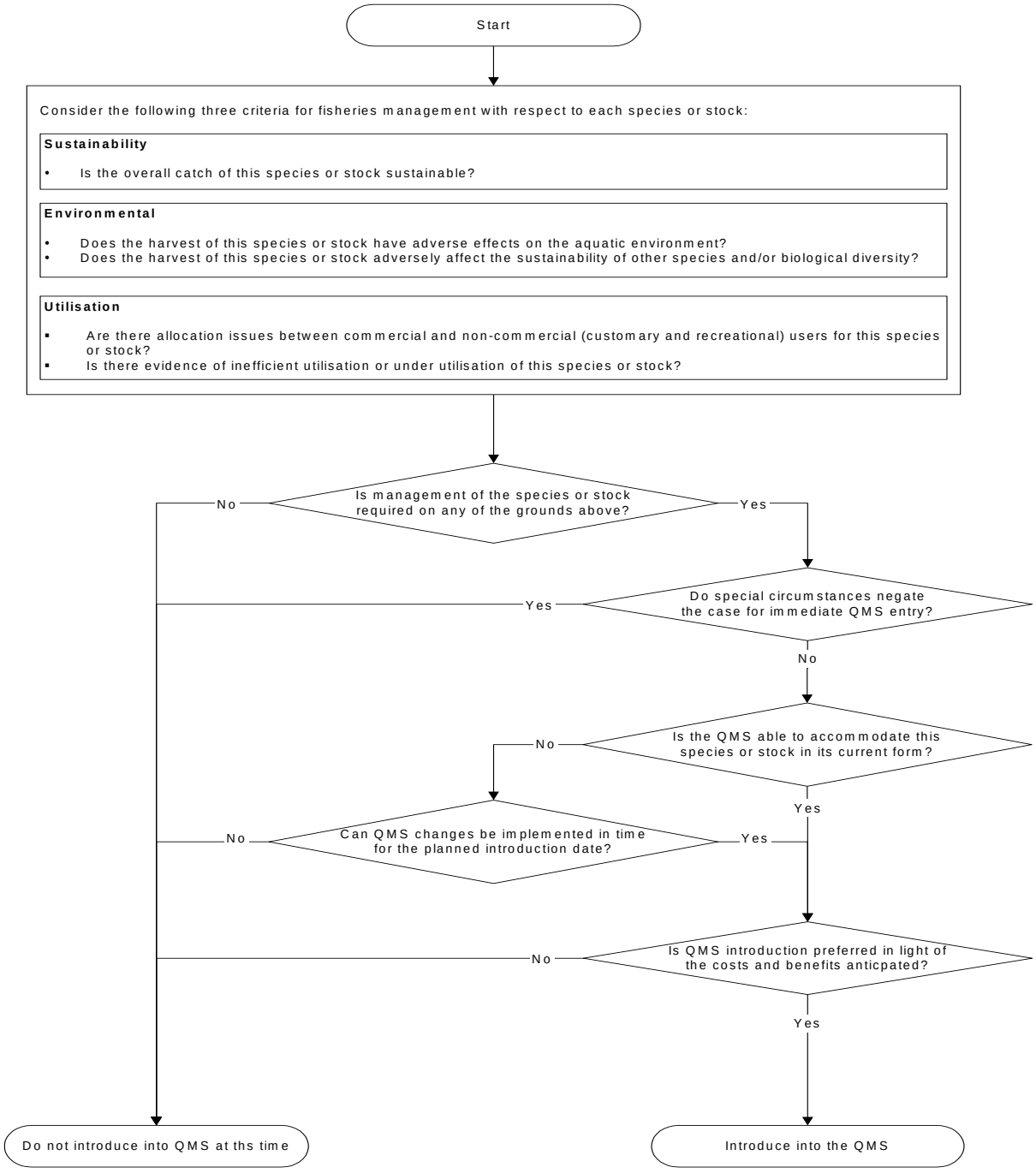
Costs and Benefits of Introducing Species into the QMS

26 Section 19(8) of the 1996 Act requires the Minister of Fisheries to have regard to the costs and benefits of introducing stocks into the QMS. For this reason, MFish undertook assessments of the costs and benefits for each species or stock proposed for QMS introduction on 1 October 2005.

The Decision Path

27 The analysis of costs and benefits is based on a decision path. The decision path (refer Figure 1) is designed to illustrate the analytical process used on the matters that are important for the species or stock under consideration. The decision path is based on three key criteria that reflect the obligations outlined in the 1996 Act: stock sustainability; environmental effects of fishing on biodiversity and the aquatic environment; and utilisation.

Figure 1 The Decision Path for Cost/benefit Assessments



Guidelines for the decision path

28 The three criteria (sustainability, environmental and utilisation), and their corresponding questions, as outlined at the top of the decision path, are considered together when concluding whether or not active management is required.

29 Should active management of a species or stock be required, the right-hand side of the decision path leads to consideration of QMS introduction. The first decision point on the right-hand side concerns 'special circumstances', which asks, in light of the generic case for the QMS as the management framework of choice, are there any special circumstances that are unusual or are likely to negate the generic case?

30 If there are no special circumstances that would negate the generic case for QMS introduction, then consideration is given to the next two decision points with respect to the QMS' ability to accommodate the species or stock. Such consideration includes identifying required changes to the QMS, if any, and the timing of the changes.

31 Should the QMS in its current form be able to accommodate the species or stock, then the last decision point sets out conclusive statements regarding the costs and benefits of introducing the species or stock into the QMS.

32 Should the results of the cost/benefit assessments demonstrate uncertainty regarding the requirement for active management, the left-hand side of the decision path is followed. In this situation, MFish proposes either that the species or stock not be introduced into the QMS, or QMS introduction be reconsidered in the future at such time as more definitive sustainability or utilisation issues may be identified that warrant active management.

33 However, for consultative purposes, MFish has also completed the right-hand side of the decision path for those species or stocks MFish proposes not to introduce into the QMS or those that MFish has no preference regarding the two options proposed; either QMS introduction on 1 October 2004 or reconsideration in the future.

Preference for QMS introduction

Purpose

34 The purpose of this portion of the Costs and Benefits section is to outline the generic, or general, argument in favour of introducing species or stocks into the QMS. As noted, this argument forms the basis to the species-specific cost/benefit assessments. To assist in understanding of the general argument for QMS introduction, the argument begins with a brief description of the issues relevant to ensuring effective fisheries management occurs and then outlines the shortcomings of the non-QMS framework.

The fisheries management problem

35 The initial state of any fishery is common property freely accessible to whomever desires to extract its value, or stream of benefits. So long as the overall harvest level remains low, there will be no scarcity of benefits that fishers can derive from the fishery. The commonly cited 'tragedy of the commons', however, presumes that this type of free-for-all open access will inevitably lead to degradation of the fishery, leading to its collapse and the erosion of benefits to fishers.

36 The tragedy is presumed to be inevitable because participants lack any incentives to limit their harvest of the fishery. Should any fisher choose to constrain his or her harvest in order to benefit the future of the fishery, the lack of constraint on access allows others to reap any resulting benefits. It is, therefore, presumed that each fisher will harvest as much as possible while having little regard for the future state of the fishery, thus ensuring its eventual degradation.

37 The central problem of fisheries management is to avoid the 'tragedy of the commons' by rationing access once fishers begin to compete for the scarce value, or

benefits, derived from a fishery. The central problem is not remedied unless rationing access limits harvest to sustainable levels.

38 In time virtually all fisheries become susceptible to this central problem, potentially affecting both commercial and non-commercial fishers alike. Traditionally, Māori fisheries management limited access and use of a fishery in a number of ways, one of which, kaitiaki remains as an integral part of customary fishing regulations.

39 More generally, prior to 1986 various management measures have been used unsuccessfully to address the central problem. The QMS was implemented in 1986 to address the problem that had become severe for a number of inshore commercial fisheries. The QMS was further improved as a management framework with the enactment of the 1996 Act. The 1996 Act brought about improved sustainability measures and the balancing regime that provides commercial fishers with incentives to control their catch to the level of their quota holdings. The purpose of the Act requires decision makers to address the central management problem by providing for utilisation whilst ensuring sustainability. The purpose of the Act (s 8) is outlined as follows:

a) The purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability.

b) In this Act –

'Ensuring sustainability' means –

i) Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and

ii) Avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment:

'Utilisation' means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic and cultural wellbeing.

40 Enabling people to provide for their wellbeing must entail (at the least) the provision of the opportunity for utilisation. To deny access is to disable the ability of a class of people to provide for their wellbeing, which is contrary to the utilisation obligation in the Purpose of the 1996 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 expressed 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 …"

41 However, in an open access environment there is a need to actively manage stocks once they become scarce so that people can provide for their wellbeing in the long term.

42 The current moratorium on issuing new fishing permits prevents open access to fisheries for commercial use. However, the requirement to actively manage the stocks covered by the moratorium remains because those with fishing permits can increase effort and catch, while non-commercial use can also increase. MFish has identified

three inter-related key criteria that indicate when active management is required. These criteria are based on concerns about:

- Stock sustainability;
- Effects of fishing on biodiversity and the aquatic environment; and
- Utilisation, particularly when the fishery has allocation-related problems or development opportunities that impact on the ability of people to provide for their wellbeing.

43 Once the requirement for active management has been identified for a species or stock, then consideration is given to the most appropriate management framework. There are two types of frameworks available under current legislation, the QMS and non-QMS. MFish does not consider the non-QMS framework best enables people to provide for their wellbeing whenever a stock becomes scarce.

44 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.

45 As the non-QMS framework does not normally 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.

46 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 CCL, which is a ceiling on the level of commercial harvest of a fishery.

47 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.

48 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.

49 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 wellbeing.

50 The non-QMS framework's most effective tool for addressing the management problem is the implementation of Individual Catch Entitlements (ICE). ICE avoids

the 'race to catch fish' by allocating a proportion of the CCL to each incumbent. However, the allocation to incumbents precludes new entrants, which is considered to be contrary to the purpose of the 1996 Act and may be ultra vires in an open access environment.

51 ICE lacks divisibility, which means that incumbents are allocated a defined proportion of the CCL that cannot be divided more narrowly. ICE also lacks transferability, which precludes incumbents from divesting of their ICE or investing in more. The consequence is that incumbents may not have access to the level of harvest necessary to maximise the value of the fishery. The lack of transferability also makes ICE unable to allocate access rights between generations, which mean that any claims of unfairness are left to the Government to resolve.

52 The 1996 Act does not provide guidance on the legitimate purpose for which ICE may be used. MFish contends that ICE should be implemented solely for fisheries management purposes. However, there are provisions within the 1996 Act that allow ICE to be translated into quota, which MFish considers to be a far superior access right for the reasons outlined above and others outlined later in this document. MFish also contends that ICE should not be implemented for the purpose of circumventing the quota allocation provisions in the 1996 Act.

53 The non-QMS framework does not provide the same level of flexibility as the QMS on the matter of overfishing. MFish notes that current access arrangements and fishing practices for non-QMS stocks rely on the continuation of the permit moratorium and retention of the s 89(2A) transitional provision that allows the taking of inevitable bycatch species. Section 89(2A) is scheduled to expire on 30 September 2004, as set out in the 1996 Act.

54 As of 1 October 2004, s 241 will be the only means of recognising that in some cases capture cannot be avoided, however, these provisions provide a limited number of defences to taking fish without authority (a fishing permit). MFish's analysis of these provisions suggests that in some situations fishers may need to avoid the areas in which non-target stocks occur in order to provide sufficient evidence against potential prosecution. Once s 89(2A) expires on 30 September 2004, there will be no incentive framework outside the QMS, other than s 241 and the risk of prosecution, for fishers to avoid the capture of non-target stocks.

55 MFish contends that leaving species subject to the permit moratorium is inconsistent with the purpose of the 1996 Act. The Act requires that utilisation of fisheries resources is provided for. MFish's preferred approach is to remove the permit moratorium. MFish will shortly be developing proposals on the scope of any legislative amendment, and on management options to address the take of residual non-QMS species when s 89(2A) expires. An amendment to the 1996 Act to lift, or sequentially lift, the permit moratorium is likely to be required before s 89(2A) expires.

56 Although no decisions have been made on this matter, the assessments of costs and benefits of QMS introduction outlined in this document consider the effect that lifting the permit moratorium would have on the stocks in question. This consideration assumes that the post-permit moratorium environment will likely be characterised by open access.

Argument in favour of the QMS

57 MFish considers the QMS to be the best framework available within the 1996 Act to provide for the utilisation of fisheries resources while ensuring sustainability. MFish's preference for the QMS is based on the management tools available within the 1996 Act and the characteristics of quota, which make it a more desirable commercial access right than the non-QMS fishing permit. When the available management tools are combined with the allocation of quota, the QMS becomes a powerful framework for addressing the central management problem outlined above and other consequential management problems. The remainder of this section presents the generic argument in favour of the QMS by outlining why it best meets the sustainable utilisation purpose of the 1996 Act.

Sustainability

58 The 1996 Act requires stocks to be sustained in order to meet the 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 tools (particularly the balancing regime) and incentives (via quota allocations), neither of which are present in the non-QMS framework.

59 The 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.

60 MFish considers that interactions within multi-species fisheries can be better managed within the QMS than under a CCL regime. Introduction of all stocks that require active management 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 accurate 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.

61 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.

62 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

63 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 wellbeing. In particular, 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.

64 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, 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.

65 The cost to commercial fishers of introducing a stock into the QMS is largely a function of the QMAs and catch limits set. TACCs are not set until just before QMS introduction. However, MFish notes that the socio-economic impact of any proposed TACC is a factor relevant to the Minister's consideration of any proposed catch limit.

66 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. Currently, transferable commercial access to Māori is not available under non-QMS management.

67 Although no trade in quota occurs between customary and recreational users, it is expected that these user groups benefit from QMS stocks being sustainably managed and from the Minister considering their interests when setting the TAC and allowances. As well, since customary and recreational groups have an explicit allowance for a stock, they are in a better position to provide their input into its management by way of a fisheries plan or other means. Generally, there are no costs to customary and recreational users for the introduction of a stock into the QMS. However, the implementation of a new TACC may impinge on their utilisation aspirations. The overall benefits of QMS introduction for the customary and recreational users are derived from improvements to the species or stock's management.

68 Most commercially valued stocks were introduced into the QMS in the mid-1980s to early 1990s, a time when there was a need to rationalise effort in fully- or over-developed fisheries. MFish seeks to avoid some of the problems that have occurred when fisheries have been allowed to develop outside the QMS. For this reason, MFish considers that it would be preferable for QMS introduction to occur soon after a fishery has been identified as having commercial development potential, and sufficient information is available on which to base stock determinations and initial management controls.

69 While there may be some increased costs associated with the introduction of an undeveloped or under-developed fishery into the QMS, these costs would most likely be offset by the long-term investment opportunities made available once a proportion of the TAC has been allocated for commercial use.

70 The allocation of costs by way of cost recovery levies is largely driven by:

a) The level at which TACs and TACCs are set, or estimated catch for species without a TACC;

b) The port price for that species; and

c) Species-specific research.

71 Where a non-QMS species was previously not charged cost recovery levies, there will be an increased cost to that species upon QMS introduction equal to the cost recovery levies. Where a non-QMS species was previously charged levies, and the estimated catch in the levy model is equal to the TACC, then other things being equal, there will be no cost increase from cost recovery levies. Should the TACC for a new QMS species be higher than the previous non-QMS catch limit, in the event one pre-existed, the proportion of costs recovered through levies would increase. Similarly, should an increase in research occur for the QMS species, levy charges would increase.

72 The process for setting TACs, TACCs and allowances occurs approximately six months after the decision is made about QMS introduction.

Highly Migratory Species

73 Two HMS (highly migratory species) species (albacore and skipjack tuna), are included in this document. A number of issues common to these species warrant separate discussion, as outlined below.

International obligations

74 New Zealand is a party to a number of international agreements that have a bearing on HMS management, including the United Nations Fish Stocks Agreement, the Food and Agriculture Organization of the United Nations Code of Conduct for Responsible Fishing, the Convention for Biological Diversity, and others.[1] Most of these agreements contain general obligations regarding international co-operation and measures to ensure the sustainability of species and/or ecosystems. In the absence of specific sustainability or utilisation concerns regarding a particular species, these

[1] These and other agreements were summarised briefly in Appendix 1 of the HMS stakeholder consultation paper. See Ministry of Fisheries, *Management of Highly Migratory Fish Species: Stakeholder Consultation Paper*, December 2002.

general obligations would not constitute criteria for management intervention by way of QMS introduction.

75 However, New Zealand is a party to some international agreements that include, or will include in the future, specific obligations regarding particular species' sustainability and utilisation. The best current example is the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), under which New Zealand has agreed to limit its annual harvest of southern bluefin tuna to 420 tonnes. The Western and Central Pacific Fisheries Commission (WCPFC), which has not yet entered into force, is expected to entail similar obligations for other tunas and possibly other HMS within the next five to ten years.

76 Where New Zealand has specific international obligations regarding a particular species' sustainability and/or utilisation, consideration will be given to management intervention. The decision criteria outlined in the decision path (Figure 1) would then be used to assess the prospect of QMS introduction.

Quota management areas

Fishing beyond the EEZ

77 All HMS that are found in New Zealand waters are part of stocks that range throughout the South Pacific Ocean. Once fishers have been allocated quota, efficiency is best achieved by allowing fishers to catch their quota wherever harvest costs are lowest and/or returns are highest. Having a single QMA encompassing both New Zealand fisheries waters (Territorial Sea and Exclusive Economic Zone (EEZ)) and the high seas would also simplify reporting and avoid the cost of having an observer on board if carrying fish across the outer boundary of the EEZ.

78 Some stakeholders have argued that quota that has been developed in New Zealand waters should be caught here. However, MFish considers that, for a given biological stock, maximum value is generally obtained in the long term by allowing fishers to take fish wherever they can maximise their returns. Forcing fishers to fish in New Zealand waters is akin to putting a tariff on imports – while it supports local businesses in the short term, it inhibits New Zealand's international competitiveness and may restrain resources from moving out of inefficient sectors. In principle, HMS should be managed within a single QMA that encompasses the entire Pacific region.

79 However, HMS fisheries can be managed in other ways. For example, the establishment of an under-utilised area (eg, beyond the EEZ) as a separate QMA, coupled with a relatively small number of incumbents, could lower transaction costs and, therefore, facilitate co-operative behaviour and investments.

80 Furthermore, there remains considerable uncertainty about how the WCPFC will manage one coastal nation's fishers fishing in other nations' EEZs. For example, if a New Zealand-flagged vessel fishes in another nation's EEZ, would its catch contribute to that of New Zealand or the other nation? Once national allocations have been made, would the fish caught be counted against New Zealand's allocation or that of the other nation? The WCPFC has yet to address these issues, and until then it will be problematic for New Zealand to determine permit holders' catch histories and QMA boundaries.

81 Therefore, apart from southern bluefin tuna, for which these issues have been addressed internationally, MFish proposes that HMS fishing beyond the EEZ would remain under non-QMS management for the time being. Fishers will still be required to have high seas fishing permits for these HMS fisheries, and the permits could be subject to conditions, potentially including measures to protect seabirds and sharks.

82 When national allocations are determined for a given species, or when other circumstances warrant, MFish will consider introducing the out-of-zone catch into the QMS. Should a national allocation require a reduction in New Zealand's overall catch, the Minister of Fisheries would decide how to apportion any reduction between those operating within the EEZ, the high seas and other nations' EEZs. It is not possible at this time to provide any guidance on how such a reduction, if any, would be apportioned. Such guidance would most likely depend on the WCPFC's basis for determining national allocations.

Setting TACs for HMS

83 For HMS that migrate over wide portions of the Pacific Ocean, and for which New Zealand takes only a small percentage of overall catch, it is not feasible to base TACs on the maximum sustainable yield (MSY).

84 Accordingly, MFish is considering recommending to the Minister of Fisheries that stocks be added to the Third Schedule of the 1996 Act. Inclusion in the Third Schedule would enable the Minister to set alternative TACs that he considers appropriate to achieve the purpose of the Act. Having a stock on the Third Schedule would also enable the Minister to vary the TACC during the season based on the current abundance of the stock (s 14).

85 However, as noted, the setting of TACs, TACCs and other allowances are outside the scope of consultation for this document.

ALBACORE TUNA (ALB)

Summary of Proposals

1 MFish proposes that:

a) Albacore tuna (ALB) is introduced into the quota management system (QMS) on 1 October 2005;

b) The quota management area (QMA) be ALB 1 (Fisheries Management Areas 1-10 combined);

c) The fishing year is 1 October to 30 September; and

d) The unit of measurement is greenweight.

Assessment of criteria for QMS introduction

Sustainability criteria

Is the overall catch of this species sustainable?

2 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 four other Scombrids: skipjack, slender and butterfly tuna, and blue mackerel.

3 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.

4 The maximum recorded fork length for albacore is 127 cm. Female albacore mature at about 85 cm fork length and spawn in the austral summer from November to February in tropical and subtropical waters, between the lines of latitude of about 10ºS and 20º S, west of the line of longitude of 140ºW. Males mature at about 71 cm fork length. Juveniles recruit to surface (troll) fisheries in New Zealand coastal waters and in the vicinity of the sub-tropical convergence zone at about 2 years of age, at 45–50 cm fork length.

5 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 1 437 to 5 180 tonnes for the period 1991 to 2000. Peak years in the troll fishery were from 1994 to 1996.

6 Most of the longline catch of albacore is from the east coast of the North Island. The proportion of the total albacore landings taken by tuna longlining has progressively increased since the early 1990s as the domestic longline fleet has expanded. The

proportion of total catch by longline increased from around 4% in 1991 to 63% in the 1999 calendar year and 41% in 2000.

7 Most of the fish caught by trolling are juveniles, while surface longlining catches mostly adults and sub-adults. Troll caught fish range from 38–99 cm fork length and a mean of 63 cm, with three modes present, while longline caught fish range from 37–133 cm fork length with a mean of 83 cm and the distribution is bi-modal.

8 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 (WCPFC). Participating countries in the Preparatory Conference establishing the Western and Central Pacific Fisheries Commission (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. As yet there are no specific international obligations with regard to management of albacore tuna. The Preparatory Conference may propose interim management measures (which are voluntary) before the Commission starts operating. Once the Commission is formed, decisions on overall catch limits will likely occur within five years; decisions on allocation amongst Commission members will take longer.

9 The Preparatory Conference has charged a scientific coordinating group with providing interim scientific advice on the status of Pacific tuna species. This group has reported that current catch levels from the South Pacific albacore stock appear to be sustainable. However, there is evidence of localized depletion of albacore and this is a potentially important issue, particularly for small island developing states dependant on these resources.

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	5000
1989-90	2036	0	2036	3144
1990-91	2295	0	2295	2451
1991-92	3780	1	3782	3434
1992-93	3506	<1	3506	3323
1993-94	6375	0	6375	5315
1994-95	6955	<1	6955	6195
1995-96	6131	<1	6131	6316
1996-97	3938	<1	3938	3728
1997-98	6731	<1	6731	6525
1998-99	3835	<1	3835	3727
1999-00	4960	2	4961	4697
2000-01	5591	20	5611	5509
2001-02	5830	1	5831	5638
2002-03	6579	<1	6579	6354-

Does the harvest of this species have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

10 Harvesting of tuna may have impacts with regard to predator/prey interactions and trophic dynamics, as tunas feed on a variety of fish and other marine species. 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.

11 Understanding of food web relationships is still at an early stage, but MFish considers that, if evidence emerges of impacts on biodiversity from harvesting of albacore, this can be managed at that time based on international cooperation where appropriate.

12 In New Zealand waters, a substantial proportion of albacore tuna is taken by trolling. There are no known environmental impacts of this fishing method.

13 Albacore is also taken both as a target and bycatch by surface longline (around 39 to 63% of the albacore catch in recent years). Environmental issues are common to the fishing method rather than specific to fishing for albacore species. A large number of fish species are taken as bycatch of surface longline fishing, but many of these are only rarely taken. The main fish bycatch species associated with the surface longline fishery within the EEZ are to be introduced into the QMS. This will provide the mechanisms for sustainability actions as required

14 There are however a suite of species that are unlikely to enter the QMS in the short term. Our knowledge of these species is limited. There is a risk that the tuna longline fishery will affect the long-term viability of these species. Tuna longline fisheries also 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.

15 Fishing vessels sometimes capture seabirds that are chasing baited hooks, and the seabirds 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.

16 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. New Zealand surface longline vessels are required to use tori lines of a specified standard. Vessels are also using a variety of practices to reduce seabird bycatch including the use of artificial baits and the practice of setting longlines at night.

17 MFish and the Department of Conservation have developed a National Plan of Action for Seabirds that includes measures that will apply to all New Zealand fishing vessels.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

18 There is no documented customary fishery for albacore tuna, although some stakeholders have stated that Maori have a long history of fishing for highly migratory species. Albacore tuna is a species that is likely to be more available to customary harvest than the other large tuna species in that they are readily taken by trolling.

19 Albacore is prized as a recreational species and is taken by trolling and with baited lines on the east and west coasts of the north island. Albacore is among a number of species that have been tagged and released by recreational gamefishers. Tag and release data and recreational diary surveys have provided information to describe the distribution and size of the recreational fishery for albacore. A total recreational catch of 260 tonnes was estimated for 1996. The majority of this catch estimate (71%) was contributed by catches in FMAs 1 and 2. Similarly these areas produced the majority (81%) of albacore tagged and released by the recreational sector with catches concentrated in the period January to March.

20 MFish is not aware of any current conflicts between recreational and commercial fishing for albacore. The fishing grounds that are readily accessible to recreational fishing for albacore are limited to those areas where this species is found near shore. There is some potential for spatial competition in these areas within the fishery particularly in relation to commercial longline fishing for albacore, which is concentrated on the east coast of the North Island.

Is there evidence of inefficient utilisation or under-utilisation of this species or stock?

21 There is potential for expansion of the fishery for albacore in New Zealand fisheries waters. This potential exists in areas that have been only lightly exploited by the existing domestic fleet and in providing a more efficient framework for the management of the mix of species that are the target and bycatch of the surface longline fleet.

22 For example, the Kermadec FMA and areas close to the northern New Zealand EEZ boundary have seen relatively little fishing for albacore by the domestic fleet in part because of the limited size and capacity of vessels in the fleet. These areas have been fished successfully for albacore by foreign licensed fleets in the past. A more certain management environment will potentially provide incentives for investment in vessel capacity and a more widely distributed domestic fishery.

23 The MFish consultation paper on management of highly migratory species (Ministry of Fisheries, December 2002, *Management Of Highly Migratory Fish Species: Stakeholder Consultation Paper)* described apparent excess competition and race to catch in the surface longline tuna fishery, driven by the commercial catch limit for southern bluefin tuna.

24 This may be causing under-utilisation of that part of the albacore stock available to surface longlining (adults). While the southern bluefin season is open vessels compete for fish on the main bluefin grounds. Albacore is taken in advance of the

seasonal run of southern bluefin tuna but once this begins southern bluefin tuna becomes the focus of the surface longline fishery. Once the annual limit for southern bluefin is reached and that fishery is closed, fishers move to different areas to target bigeye and albacore to avoid unauthorised take of southern bluefin. This fishing pattern does not optimise the catch of albacore by tuna longline fishing.

25 Southern bluefin tuna will be managed within the QMS from 1 October 2004 and once the race for catch of southern bluefin is removed, fishers will be better able to optimise their catch of all commercial species, including albacore.

26 Although the size of the trolling fleet is larger than the longline fleet there is no apparent conflict or race for fish in the troll fishery. Overcrowding in the troll fleet has been reported in the past but is not apparent now. The fleet is smaller than in the past and the geographical spread of the fishery has also increased in recent years. Both factors reduce the potential for conflict within the fishery and the risk of inefficient utilisation.

27 Recent use of foreign owned tuna longline vessels to fish for albacore in New Zealand fisheries waters has led to conflict with domestically owned vessels operating in the tuna longline fishery. The longline fishery can be highly competitive in space and time. Continued and/or expanding interest in using foreign owned vessels in the albacore fishery can be expected if the fishery remains in an open access management regime because of the potential for expansion in the fishery. The potential for conflict and inefficient utilisation is high in this circumstance.

Conclusions drawn from the criteria

28 Albacore tuna is a highly migratory species and its sustainability can only be managed effectively by a regional fisheries organisation. Nonetheless, New Zealand has an obligation to conserve and manage the resources that occur in its waters. While having regard to the assessment of the status of the stock as a whole, New Zealand also has an interest in developing this fishery

29 The open access nature of the albacore fishery creates the potential for management problems such as inefficient utilisation, spatial competition on fishing grounds, poor economic returns from the fishery and the potential implications for bycatch species (including other tunas) of tuna longlining for albacore. There is significant recreational interest in this species and some potential for conflict within some areas of the fishery.

30 These factors combined suggest the need for active management of this species.

Special circumstances

Do special circumstances negate the case for immediate QMS entry?

31 MFish does not consider that there are any special circumstances that would negate the case for immediate entry of albacore into the QMS. There is no national catch limit set for this species, however, MFish does not consider that this is a reason to preclude entry of this species into the QMS and the setting of TACs.

32 On the basis that it is not possible to estimate MSY for the part of the albacore tuna stock found within New Zealand fisheries waters, MFish will recommend inclusion of albacore on the Third Schedule to the Fisheries Act 1996 (the Act). MFish considers that the purpose of the Act will be better achieved by setting a TAC otherwise than in accordance with s 13(2) and will propose that a TAC is set for albacore pursuant to s 14 of the Act. A TAC set under the provisions of s 14 of the Act can better provide for utilisation (conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing) for stocks whose range extends beyond the bounds of New Zealand fisheries waters while still ensuring sustainability. Section 14 provides the opportunity for an in-season review of the TAC to take advantage of available yield beyond any pre-determined target stock level.

Is the QMS in its current form able to accommodate the species?

33 MFish does not favour continued open access to the albacore tuna fishery and considers that active management is required. Albacore is a highly migratory species and its biological range extends beyond the New Zealand EEZ. Despite this, MFish considers that the QMS in its current form can be used to accommodate this species

Conclusion

Is QMS introduction preferred in light of the cost and benefits anticipated?

34 Albacore tuna is a relatively high value species and is an important part of the harvest mix for surface longline tuna vessels. In addition, it is the target species of a significant trolling fleet that operates seasonally from the West Coast of both North and South Islands.

35 Within international constraints there is potential for further development of the albacore fishery. As described in the generic section, the QMS is the preferred environment for development of under-utilised fisheries. The sustainability and utilisation issues described above, especially the potential for development and the potential management problems if an open access regime continues, indicate that management intervention is preferred for albacore tuna.

36 An additional consideration is the overlap between the albacore fishery and the fisheries for other large tuna species and related bycatch. Yellowfin, bigeye, southern bluefin tuna and Pacific bluefin tuna will be managed in the QMS from 1 October 2004 as will a number of tuna longline bycatch species. Maintaining an open access regime for albacore while related fisheries are managed within the QMS is problematic.

37 MFish considers that QMS introduction would provide substantial benefits in terms of more efficient utilisation and by providing a framework in which the interests of non-commercial fishers can be taken into account. The management costs, which include the costs for new entrants and the ongoing costs associated with reporting, are likely to be relatively low in comparison to these benefits. There is also likely to be, in time, a national allocation for albacore tuna from the Western and Central Pacific Fisheries Commission and the QMS would be an effective way of managing that

allocation. Accordingly, MFish considers that the QMS is the preferred management framework for albacore tuna.

Stocks and Areas

38 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

39 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).

40 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.

41 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 were most abundant and/or fishing costs were 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.

42 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)

43 This proposed QMA encompasses all New Zealand fisheries waters, including the Kermadec FMA (refer Figure 1).

Figure 1: Proposed QMA for albacore tuna.

Fishing Year

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

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

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

Unit of Measure

47 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 tuna be introduced into the QMS, and accordingly proposes that greenweight be retained as the unit of measure.

COCKLES (COC)

Summary of Proposals

1 The Ministry of Fisheries (MFish) proposes that:

a) Cockles (other than COC1A, COC3, COC7A and COC7B) be introduced into the quota management system (QMS) on 1 October 2005;

b) The quota management areas (QMA) are COC1B, COC2, COC3B, COC4, COC5, COC7, COC8 and COC9;

c) The fishing year be 1 October to 30 September; and

d) The unit of measurement be greenweight.

Assessments of Costs and Benefits

Sustainability criteria

Is the overall catch of this species or stock sustainable?

2 Four New Zealand cockle (*Austrovenus stutchburyi*, formerly *Chione stutchburyi)* stocks are currently managed under the QMS. These stocks are COC1A[1], COC3, COC7A and COC7B. However, fishing effort for cockles under open access is likely to increase in non-QMS areas, if market demands increase. Given the localised nature of cockles, an increase in unconstrained fishing effort may give rise to sustainability concerns in new harvest areas.

3 There is limited stock assessment information to determine stock status of non-QMS cockles. Because of the patchy distribution of cockles, there is no precise information on the distribution of cockle beds throughout New Zealand. Therefore, an accurate estimate of total cockle biomass or sustainable yield is not available from existing data.

4 Reported commercial catches of non-QMS cockle stocks have been relatively small (see Table 1). MFish does not know if these catch levels are sustainable because there has been no investigation of the status or potential yield of non-QMS cockle stocks. In addition, catch history cannot be used as an indicator of stock abundance because records of cockle catches from non-QMS stocks are poor and the accuracy of the harvest estimates is unknown.

[1] COC1A – Whangarei Harbour; COC3 – Otago Peninsula; COC7A – Golden and Tasman Bays and COC7B – Marlborough Sounds.

Table 1: **Reported landings (t) of cockles by Fisheries Management Area (FMA) for fishing years 1989–90 to 2001–2002.**

	Reported landings						
FMA/YEAR	**1 +1A**	**2**	**3**	**4**	**5**	**7+7A**	**8**
1989–90	233		29			195	
1990–91	382		109	3		535	
1991–92	551		97		<1	276	
1992–93	332		182			293	
1993–94	573		194	4		440	
1994–95	507	<1	344	3	4	325	
1995–96	488		309			329	
1996–97	502	<1	291			320	
1997–98	439		423			512	<1
1998–99	472		383		3	552	
1999–00	505	<1	553		<1	729	
2000–01	424	<1	697		<1	740	3
2001–02	422	3	644			558	

5 Cockles may also be taken as bycatch in the target pipi and tuatua fisheries (also proposed for introduction into the QMS 1 October 2005). Changes to fishing patterns in these target fisheries (including development of new and existing harvest areas) are likely to influence catches of cockles.

6 Cockles, like other sedentary species, form localised populations in open and sheltered sandy habitats. These populations are likely to demonstrate spatial and temporal fluctuations in stock size and structure due to the influence of environmental factors on population dynamics. These factors include water temperature, exposure rates, water currents, sand movement, food availability, and predation. In addition, fishing pressure by commercial and non-commercial fishers may have an impact on population dynamics, as fishers generally harvest large cockles. The biological attributes suggest this species is vulnerable to the effects of fishing and habitat disturbance, and is particularly susceptible to localised depletion.

7 Overall, there is no information that establishes any sustainability concerns about the non-QMS cockle stocks at present. Nevertheless, under open access, commercial fishing effort for cockles is likely to increase in non-QMS areas, if market demand increases. This risk arises because cockles are a highly marketable shellfish species and the cost of entry into the cockle fishery would be relatively low (ie, it is beach-based fishery). Given the localised nature of cockles, an increase in unconstrained fishing effort may give rise to sustainability concerns in new harvest areas.

Does the harvest of this species or stock have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

8 MFish considers the harvesting of cockles under current catch levels does not have adverse effects on the environment or the sustainability of other species and/or biodiversity. However under open access, fishing effort for cockles may increase in non-QMS areas, if market demands increase. Given the localised nature of cockles, an

increase in unconstrained fishing effort may give rise to adverse effects on the aquatic environment or the sustainability of other species and/or biological diversity.

9 Cockles are an important food source for coastal predatory fish (ie, flounder), crabs and seabirds. Cockles are also likely to play an important role in stabilising sandy beaches and banks by reducing the transport of sediment material. The species may also assist in maintaining water quality through their filter-feeding activity within estuarine and harbour environments. A reduction in cockle biomass may have implications on associated and dependent species, and on the physical aquatic environment, particularly if localised depletion of discrete cockle populations occurs. Constraining catches to appropriate levels would reduce the effects of fishing on the aquatic environment.

10 Commercial fishers are permitted to use mechanical harvesting within defined areas of the COC 7A. MFish has no information on the physical impacts of mechanical harvesting for cockles on the benthic environment within COC 7A. However all harvesting is restricted to three discrete areas within COC 7A to restrict environmental impacts and control sustainability.

11 With the exception of the COC 7A fishery, all commercial and non-commercial harvesting for cockles is restricted to handgathering. Handgathering is a low impact method that essentially has no discernable effect on the environment.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

12 MFish considers there are no allocation issues between commercial and non−commercial users for cockles under current catch levels. However, under open access, fishing effort for cockles is likely to increase in non-QMS areas, if market demands increase. Given the localised nature of cockles, an increase in unconstrained fishing effort may create significant potential allocation issues over access to localised cockle populations.

13 Increases in both commercial and non-commercial catches may create significant potential allocation issues between users over access to localised cockle populations. Conflict of access may also arise in direct response to increasing population in northern New Zealand given the relative accessibility of fishers to coastal areas where cockle beds occur. These issues will be exacerbated by an increase in preference for cockles by customary and recreational fishers in response to changes in population demographics.

Is there evidence of inefficient or under utilisation of this species or stock?

14 Based on the available information at this time, MFish can not determine if cockle stocks are being utilised efficiently.

15 MFish has no stock assessment information about non-QMS cockles and therefore cannot determine if the stock is at or near the maximum sustainable yield (MSY).

16 There is some evidence of under-utilisation in the non-QMS areas. However, MFish has not issued any commercial fishing permits in other areas since 1991. Also, the number of non-quota permit holders in FMA 1 has declined from 14 in 1989-90 to three in the current fishing year, which is likely to be attributed to the establishment of the COC 1A fishery. This information suggests that current utilisation has been constrained by the permit moratorium.

Conclusions drawn from the criteria

17 The best available information indicates there are no sustainability concerns for non–QMS cockles at this time under current catch levels. However, this species is sedentary in nature and forms discrete, localised beds in coastal areas. These biological attributes suggest that cockles are vulnerable to the effects of fishing, particularly localised depletion.

18 Under open access, cockle catches are expected to increase if market demand increases. There is a risk that fishing effort would increase in new cockle harvest areas, and this could lead to localised depletion and sustainability problems. Increased effort in the associated shellfish fisheries such as tuatua and pipi, could also result in an increase in bycatch of cockle that may not be sustainable.

19 While there are no concerns about the current effects of fishing for cockles on the aquatic environment, this species plays an important role in coastal ecosystems. Unconstrained fishing effort may have an adverse effect on associated and dependent species, and the physical coastal environment.

20 An increase in catch levels could lead to significant utilisation problems between commercial and non-commercial users. Unconstrained fishing may lead to localised depletion of beds that are shared between different sectors, and this could create conflict of access issues due to the reduced availability of cockles for non-commercial fishers. The potential for conflict between commercial and non-commercial sectors over access to cockles is likely to occur due to the increase in population, particularly in coastal areas of the North Island.

21 Given the discussion above, MFish considers there is a case for the non-QMS cockle fishery requiring active management to ensure the sustainability of the cockle stocks and avoid potential allocation problems.

Special Circumstances

Do special circumstances negate the case for immediate QMS entry?

22 Introducing cockle into the QMS is unlikely to result in additional administrative and management costs that are different to those associated with other QMS species.

23 The introduction of cockles into the QMS is likely to impose new constraints for both the cockle fishery, and associated tuatua and pipi fisheries. These constraints would largely arise from the competing demand among fishers for annual catch entitlement (ACE) to cover cockle catches. The impact of these constraints will depend on the extent to which cockles can be avoided in the associated fisheries, as well as the amount of cockle ACE that is available relative to demand.

24 A shortfall in ACE will have a greater effect on fishers that do not qualify for the allocation of quota. If fishers hold insufficient ACE to cover catches, they will be required to either pay deemed values or modify their fishing operations to avoid catching cockles.

25 On balance, there are no special circumstances regarding non-QMS cockles that negate the case for its introduction into the QMS on 1 October 2005. All major sedentary shellfish species are either currently or will be managed under the QMS framework.

Consideration of the QMS

Is the QMS in its current form able to accommodate this species or stock?

26 The QMS in its current form is able to accommodate the introduction of non-QMS cockles.

Can QMS changes be implemented in time for the planned introduction date?

27 No changes are required to the QMS in order to introduce non-QMS cockles.

Conclusion

Is QMS introduction preferred in the light of the costs and benefits anticipated?

28 On balance, the QMS is the preferred management framework for cockle stocks not already in the QMS. The main reasons to introduce the remaining cockle stocks into the QMS are its susceptibility to adverse fishing effects, particularly localised depletion, and potential allocation issues between fisheries sectors. These issues require active management and are best managed under the QMS framework.

29 Managing the remaining cockle stocks within the QMS and constraining catches within appropriately set total allowable catches would satisfy the statutory requirement to provide for utilisation while ensuring sustainability. QMS management for this species would provide a positive initiative to ensure the long–term sustainability of cockles, while minimising the risks of the adverse effects of fishing on the aquatic environment and on fisheries users. The QMS would enable fishers to actively manage the entire cockle fishery within sustainable limits and gain benefits that accrue from having secure access rights. Those rights would provide benefits by enhancing fishers' ability to plan fishing and business arrangements, both in the short and longer term.

30 The QMS would also confer incentives to rationally explore of the potential for sustainable development of the fishery in both existing and new harvest areas. The QMS also has inherent incentives to mitigate the potential effects of fishing on the aquatic environment and on other fisheries sectors through adopting environmentally appropriate technologies and fishing practices.

31 The open access alternative would provide commercial fishers with incentives for 'racing for catch', rather than rational efficient fishing to obtain the best value from the fishery. Risks to the sustainability of the cockle stocks, associated and dependent

species, as well as the physical environment, are increased under an open access environment.

32 Managing the remaining cockle stocks under the QMS would likely increase operating costs for fishers. These costs would arise from the requirement to secure ACE or pay deemed values. However, there would be operational efficiencies for the mix of sedentary fisheries (where appropriate) if cockles were managed within the QMS.

Stock and Areas

33 Cockles are found widespread on sandy, protected beaches and banks around the North Island, South Island, Stewart Island, Chatham Islands and Auckland Islands.

34 NIWA advises that boundaries of individual stocks of cockles should be based on biological characteristics of the stock. There are many spatially defined beds of juveniles/adults, which are likely to be linked to other beds through the relatively extended and mobile planktonic larval stage, receiving and providing spat from/to other beds nearby. NIWA suggests that stock boundaries for management purposes can be encompassed within the general Fisheries Management Areas (FMAs).

Proposed Quota Management Areas

35 The 1996 Act defines two statutory matters that must be considered when defining QMAs.

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

36 In addition to the matters above, MFish has developed a set of principles to assist in defining practicable QMAs, which is set out in the introduction section of this paper. In considering these statutory obligations and principles, MFish considers the following are key factors in defining QMAs for the non-QMS cockles:

a) Cockle beds are widespread throughout New Zealand;

b) It would be impractical and administratively costly to manage cockles based on the general statistical reporting areas;

c) Cockles are often located in areas with other sedentary shellfish species such as tuatua, and pipi. The management of cockles needs to be closely aligned with these associated fisheries; and

d) Cockles are found in the Chatham Islands. Therefore, it is appropriate to establish a separate QMA for this area.

Proposals

37 MFish proposes that cockles should be managed in eight QMAs in addition to the existing QMAs (refer to Figure 1 below). The proposed QMAs are aligned with the QMAs for the pipi and tuatua fisheries to reflect the close association between these fisheries.

38 MFish notes that commercial fisheries may overlap with important customary and recreational fisheries in some areas. It may also be inappropriate to allow commercial harvesting to all areas within a QMA to mitigate the effects of fishing in ecological sensitive areas. MFish will consider management measures that may be necessary to support the introduction of non-QMS cockles into the QMS if it sets sustainability and other management measures for this species. This may include the use of fisheries regulations to initially constrain commercial harvesting to existing harvest areas. This will enable appropriate total allowable commercial catches to be set to allow for commercial utilisation while mitigating the risks of fishing in environmentally sensitive coastal areas. The proposed approach will reflect the management regime established for the Challenger cockle fisheries.

39 MFish notes there is unlikely to be any development of a non-QMS cockle fishery within FMA 10 given the isolation of the FMA from the mainland, lack of potential habitat, and the presence of a marine reserve. Consequently, it is appropriate to retain FMA 10 outside the QMS.

COC 1B (FMA 1)

40 This proposed QMA extends from North Cape to Cape Runaway, incorporating the northern parts of the east coast of the North Island. COC1 excludes Whangarei Harbour, already established as COC1A.

COC 2 (FMA 2)

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

COC 3B (FMA 3)

42 This proposed QMA extends from the Clarence River mouth (Marlborough) to Slope Point on the Catlins coast (Southland).

COC 4 (FMA 4)

43 This proposed QMA encompasses the Chatham Islands and the eastern Chatham Rise. Commercial catches of cockle are taken from the Chatham Island beaches.

COC 5 (FMAs 5 & 6)

44 MFish notes there is unlikely to be any development of a COC fishery within FMA 6. In such areas MFish usually sets larger QMAs to reduce management costs. MFish proposes to combine FMAs 5 and 6 for COC5. MFish considers the combination of these two FMAs to form a single management unit appropriate.

COC 7C (FMA 7)

45 This proposed QMA extends from Awarua Point, Westland to Cape Farewell.

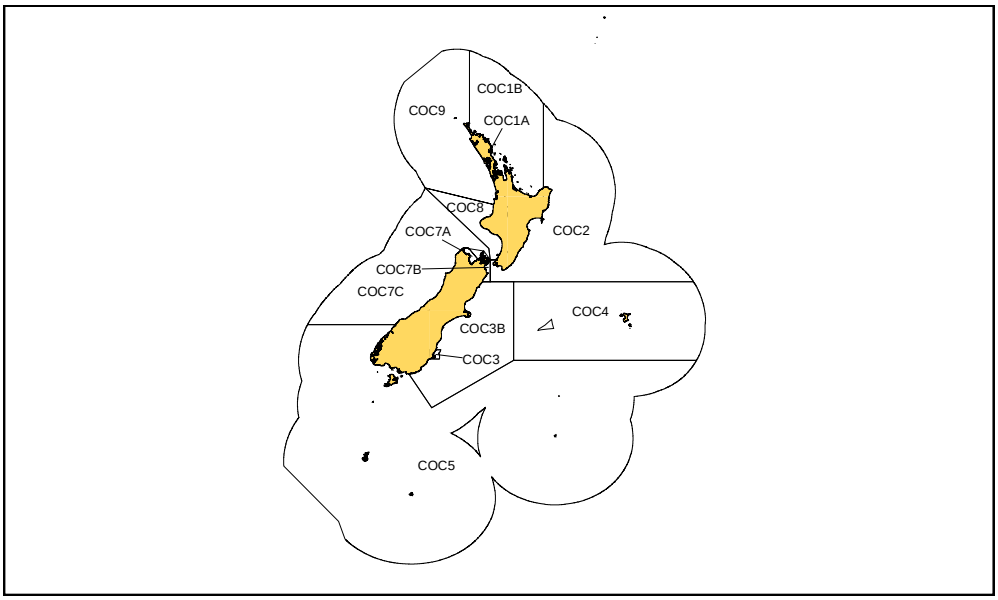
COC 8 (FMA 8)

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

COC 9 (FMA 9)

47 This proposed QMA extends from Tirua Point to North Cape.

Figure 1. Proposed Quota Management Areas for cockles



Fishing Year

48 The fishing year for cockles is from 1 October to 30 September. This is consistent with the cockle stocks already managed under the QMS. Accordingly, should cockles be introduced to the QMS, the proposed fishing year is 1 October to 30 September.

Unit of Measure

49 MFish considers the unit measure should be greenweight. Greenweight has been used historically for management purposes in the cockle 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 cockles be introduced into the QMS.

NON-QMS DREDGE OYSTER (OYS)

Summary of Proposals

1 MFish proposes that:

a) Dredge oyster stocks not already in the QMS be introduced into the QMS on 1 October 2005;

b) The QMAs are OYS1 (FMA 1), OYS2 (FMA 2 and part of FMA 7), OYS3 (FMA 3), OYS4 (FMA 4), OYS5B (FMAs 5 & 6), OYS7A (FMA 7 - West Coast South Island), OYS8 (FMA 8), OYS9 (FMA 9);

c) The fishing year is 1 October to 30 September; and

d) The unit of measurement is greenweight.

Assessment of criteria for QMS introduction

Sustainability criteria

Is the overall catch of this species sustainable?

2 Reported commercial catches of non-QMS[1] dredge oyster (*Tiostrea chilensis*) stocks have been relatively small, ranging between 0 tonnes in 1990-91 and 86 tonnes in 1997-98 (Table 1). MFish does not know if these catch levels are sustainable because there has been no investigation of the status or potential yield of non-QMS oyster stocks. In addition, catch history cannot be used as an indicator of stock abundance because records of oyster catches from non-QMS stocks are poor and the accuracy of the harvest estimates is unknown.

3 However, the unreliability of the non-QMS oyster catch history and the absence of any stock assessment information does not prevent an assessment of potential sustainability risks for non-QMS stocks.

[1] Two dredge oyster stocks are managed in the QMS (OYS 7 and OYU 5). There is also a bycatch fishery on the Chatham Islands.

Table 1 **Reported landed catch (tonnes) of OYS for fishing years 1989-90 to 2002-03. FMA 5B = FMA 5 minus OYU 5; FMA 7B = FMA 7 minus OYS 7. Catch data extracted from FIS database except data for FMA 7B which was provided by NIWA.**

Fishing year	FMA 1	FMA 2	FMA 3	FMA 4	FMA 5B	FMA 6	FMA 7B	FMA 8	FMA 9	FMA 10	Total
1989-90							0.20				0.20
1990-91											0.00
1991-92	0.08		0.65					4.37			5.10
1992-93			0.54				0.70				1.24
1993-94			0.03						0.34		0.37
1994-95			0.00	0.50							0.50
1995-96	4.98	0.67	4.13	9.65			1.40				20.83
1996-97	2.01	0.95	0.15	15.49		2.92	1.00		0.82		23.34
1997-98	0.53	0.44		84.36	0.12		0.20			0.40	86.04
1998-99	0.44	0.13	0.12		13.33		0.20				14.22
1999-00			0.14	0.06							0.19
2000-01	0.08	0.10	0.13	0.34							0.65
2001-02	0.01			3.63				0.01			3.65
2002-03	0.05		0.60	1.48	0.15			0.02			2.29
Total	8.18	2.29	6.49	115.49	13.60	2.92	3.70	4.39	1.16	0.40	158.62

4 Oysters are long lived, slow growing, brood relatively few larvae that usually do not disperse widely, and may have high post-settlement mortality, and populations outside established commercial fishery areas are likely to be in small and localised areas. All these traits indicate that repeated dredging of localised patches may lead to localised depletion and may cause significant incidental mortality. Risks to the sustainability of non-QMS oyster stocks would probably increase if catch levels increased in an open access environment. The extent to which existing regulatory measures in the national and regional commercial fishing regulations minimise this risk is unknown. Localised depletion may be avoided by commercial fishing regulations that prohibit the taking of dredge oysters, or the use of dredges, in certain times and places.

5 Dredge oysters outside the Foveaux Strait are mainly found on mud and sand substrates in coastal areas. They are also found in deeper offshore waters along the south and east coast of the South Island and off the North Island along the coasts of Taranaki, Wairarapa, Hawkes Bay, Bay of Plenty, and Firth of Thames. In these areas with minimal structural habitat, oysters may play a significant role for larval settlement. In the Foveaux Strait for example, oyster spat settle primarily on live oysters, oyster shells and circular saw shells. MFish considers that unconstrained fishing of non-QMS stocks, as might happen in an open access environment, could remove important settlement habitat and pose a significant risk to sustainability.

6 MFish also considers that an increase in effort for target stocks that take dredge oyster as bycatch could also affect the sustainability of non-QMS dredge oyster populations. MFish is recommending that non-QMS scallop stocks be introduced into the QMS to ensure sustainability and efficient utilisation. Dredge oysters are a significant scallop bycatch fishery and their bycatch would likely increase if effort in the scallop fishery increases.

Does the harvest of this species or stock have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

7 Bottom dredging is the main method used to commercially harvest oysters and can have adverse effects on the aquatic environment and affect biological diversity. However, the extent to which an increase in dredging effort targeted at non-QMS stocks would promote adverse effects is unknown. Non-QMS oyster populations are mainly present on mud and sand, and are generally not part of biogenic reefs as they are in Foveaux Strait. Nevertheless, there will be some populations that occur in more structural habitat that could be damaged if dredging effort increased. MFish considers that this is an element of risk that needs to be managed.

8 Dredge oysters are taken together with scallops, green-lipped mussel and occasionally horse mussels and volutes, but little is known about the relationship between oysters and these other species. An increase in dredging activity in an open access environment could increase the catch of, and adversely affect, the sustainability of these other species.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

9 There is very little quantitative information on recreational harvest levels of non-QMS oyster stocks. The 1999-2000 National Marine Recreational Fishing Survey estimates small quantities are taken from FMAs 1, 3, and 9[2]. There is no quantitative information on non-commercial customary harvest levels of non-QMS oyster stocks.

10 Under an open access system, competition between commercial and non-commercial sectors may lead to a decrease in the quality of the oyster fishery for the non-commercial sector. Non-QMS oyster populations are patchily distributed around New Zealand coastal waters in inlets and harbours including Pauatahanui Inlet, Fiordland, Lyttelton, Akaroa, Wellington, Kaipara and Manukau Harbours. Increased commercial effort in such coastal locations could subject the resource to localised depletion. This situation would require an allocation decision be made between commercial and non-commercial sectors.

11 The extent to which existing regulatory measures in the national and regional commercial fishing regulations minimise this risk is unknown. For example, the Fisheries (Commercial Fishing) Regulations 2001 prohibit the commercial take of oysters in South Island fisheries waters (generally south of Cook Strait) between September and February the next year. In a open access environment, this regulation will still apply but commercial fishers might concentrate effort between March and August, still leading to localised depletion.

[2] An amateur daily bag limit of 50 is set for most recreational fishing areas.

Is there evidence of inefficient utilisation or under utilisation of this species or stock?

12 In the absence of a comprehensive stock assessment, it is not possible to determine whether the overall catch of non-QMS oyster is at or near the maximum sustainable yield (MSY), therefore potential utilisation is unknown. Reports indicate that catches are sporadic, but there is anecdotal evidence of other localised fisheries. At present, there is limited commercial access to these fisheries because of the fishing permit moratorium.

13 It is not known whether non-QMS dredge oyster stocks have the potential to develop into significant target fisheries because the densities of non-QMS populations are generally less than those of populations managed in the QMS. However, there is already an established market for dredge oyster, and commercial fishing permits have been issued in the past for non-QMS stocks. Coupled with low entry costs in an open access environment, non-QMS stocks could be a valuable resource.

Conclusions drawn from the criteria

14 MFish is unable to determine if there are any current sustainability concerns for non-QMS dredge oyster stocks. There is no stock assessment information and the catch history for non-QMS stocks is unreliable. However, this species is sedentary in nature and forms discrete, localised beds in coastal areas. In addition, oyster shells probably form important settlement habitat for spat. These attributes suggest dredge oyster is vulnerable to the effects of fishing, particularly localised depletion.

15 In an open access environment, it is possible that fishing effort for dredge oyster would increase. This could introduce sustainability problems that cannot be efficiently managed in a non-QMS environment. Increased effort in other shellfisheries, including scallops, could also result in increased local catches of dredge oyster. Given the known biological characteristics of dredge oyster, this interaction would need to be actively managed.

16 There are no known concerns about the current effects of fishing for non-QMS dredge oyster on the aquatic environment. The effects of increased dredging effort on three-dimensional structural habitat would probably be minimal because non-QMS dredge oyster stocks are found mainly on mud and sand. However, increased effort might reduce the availability of important spat settlement habitat.

17 There are a number of coastal areas where commercial fishing for dredge oysters is prohibited by regulation. However, this is unlikely to mitigate potential access conflicts between commercial and non-commercial fishers in an open access environment. An increase in commercial catches could lead to localised depletion of beds that are shared between different sectors. This could in turn create conflict over who should have access to the resource, and consequently require allocative decisions.

18 The Fisheries Act 1996 provides that decision makers should be cautious when information is uncertain, unreliable, or inadequate, as in the case of non-QMS dredge oysters (s 10(c)). However, that Act also provides that the absence of, or any uncertainty in, information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of the Act (s 10(d)). Despite the paucity of

information on non-QMS drege oysters, MFish considers non-QMS dredge oyster stocks require active management to ensure stock sustainability, to avoid potential allocation problems, and to provide an efficient platform for development given there is an existing market for dredge oyster.

Special Circumstances

Do special circumstances negate the case for immediate QMS entry?

19 Introducing non-QMS dredge oyster into the QMS is unlikely to result in additional administrative and management costs that are different to those associated with other QMS species.

20 MFish acknowledges that managing oyster under the QMS will impose higher economic costs than under an open access regime where there are no binding catch limits. These costs will arise from the requirement that fishers hold ACE, pay deemed values and cost recovery levies, or modify their target fishing operations to avoid catching oyster. These requirements will have an economic impact on fishers, particularly in transitional costs to entrants to the fishery since 1992 who will not be allocated catch history.

21 The aggregate cost impacts on fishers will be determined to a large extent by the sustainability settings (TACC levels) set for oysters within the QMS.

Consideration of the QMS

Is the QMS in its current form able to accommodate this species or stock?

22 Yes, the QMS in its current form is able to accommodate the introduction of non-QMS oyster stocks.

Can QMS changes be implemented in time for the planned introduction date?

23 No changes are required to the QMS for non-QMS oysters.

Conclusion

Is QMS introduction preferred in light of the costs and benefits anticipated?

24 The QMS is the preferred management framework for non-QMS dredge oyster stocks. Oysters are susceptible to the effects of overfishing, particularly via localised depletion. There is the potential for adverse effects on associated species if catch levels increase, and there are potential allocation issues that are best resolved in the QMS framework.

25 Managing non-QMS dredge oyster in the QMS and constraining catches within appropriately set Total Allowable Catches (TACs) would satisfy the statutory requirement to provide for utilisation while ensuring sustainability.

26 The open access alternative would provide commercial fishers with incentives for 'racing for catch', rather than rational efficient fishing to obtain the best value from the fishery. Risks to the sustainability of non-QMS dredge oyster stocks and

associated species, as well as the aquatic environment are increased under an open access system.

27 The QMS enables fishers to actively manage the dredge oyster fishery within sustainable limits and gain benefits that accrue from having secure access rights. Those rights would provide benefits by enhancing fishers' ability to plan fishing and business arrangements, both in the short and longer term. The QMS would also confer incentives for the rational exploration of the potential for sustainable development of the fishery in both existing and new harvest areas. The QMS also has inherent incentives to mitigate the potential effects of fishing on the aquatic environment and on other fisheries sectors through adopting environmentally appropriate technologies and fishing practices, which are of particular concern for dredge fisheries.

28 Managing non-QMS dredge oysters in the QMS would likely increase operating costs for fishers. These costs would arise from the requirement to secure ACE or pay deemed values. However, there would be operational efficiencies for the mix of sedentary fisheries (where appropriate) if non-QMS dredge oysters were managed in the QMS.

Stocks and Areas

29 There have been no biological studies that are directly relevant to the recognition of non-QMS stocks of dredge oysters around New Zealand. They have a relatively cosmopoliton distribution and are found in inlets and harbours, as well as in deeper offshore waters. Information currently available supports limited larval dispersion from localised patches of oysters, suggesting genetically and geographically more or less distinct stocks around New Zealand.

30 NIWA recommends that the 10 standard FMAs apply to the non-QMS dredge oyster stocks, with any particular beds warranting it later being managed as constituent substocks of the FMAs.

Proposed Quota Management Areas

31 MFish has considered s 19(2)[3] and s 19(3)[4] of the Act in developing its QMA proposals for non-QMS dredge oysters. In addition, MFish has developed a set of principles to assist in defining practicable QMAs. These are discussed in the introductory section to this consultation document. In considering s 19(2), s 19(3) and the MFish principles, the following are the key issues in defining QMAs for the non-QMS dredge oyster fishery:

a) No commercial or potentially commercial invertebrate is completely aligned with dredge oysters in its distribution;

b) The Chatham Islands dredge oyster stocks are the most productive oyster fishery outside the QMS because oysters are commonly taken as scallop

[3] as far as practicable, the same QMAs should be maintained for different species
[4] a separate QMA may be set for the waters surrounding the Chatham Islands if the stock can be managed effectively as a unit

bycatch. The Chatham Islands dredge oyster stock can be effectively managed as a unit if a QMA is set for the waters surrounding the Chatham Islands;

c) Dredge oyster populations are mainly isolated and probably form separate substocks over wider areas; and

d) It would be impractical and costly to manage dredge oyster based on small spatial scales (for example, statistical reporting areas).

32 Taking into account the principles and key management issues, MFish proposes that non-QMS dredge oysters be managed in eight QMAs, in addition to OYU 5 and OYS 7 which are already managed in the QMS.

Proposals

OYS1 (FMA 1)

33 This proposed QMA extends from North Cape to Cape Runaway, incorporating the northern parts of the east coast of the North Island.

OYS2 (FMA 2 and part of FMA 7)

34 This proposed QMA extends from Cape Runaway to the coast adjacent to Porirua. OYS2 also includes part of FMA 7, along the east coast of the South Island from West Head (at the boundary of OYS7) to the Clarence River mouth.

OYS3 (FMA 3)

35 This proposed QMA extends from the Clarence River mouth (Marlborough) to Slope Point on the Catlins coast (Southland).

OYS4 (FMA 4)

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

OYS5B (FMAs 5 & 6)

37 MFish notes there is unlikely to be any development of an OYS fishery within FMA 6. In such areas MFish usually sets larger QMAs to reduce management costs. MFish proposes to combine FMAs 5 and 6 for OYS, excluding the Foveaux Strait oyster fishery OYU5.

OYS7A (FMA 7 - West Coast South Island)

38 This proposed QMA extends from Awarua Point, Westland to Cape Farewell.

OYS8 (FMA 8)

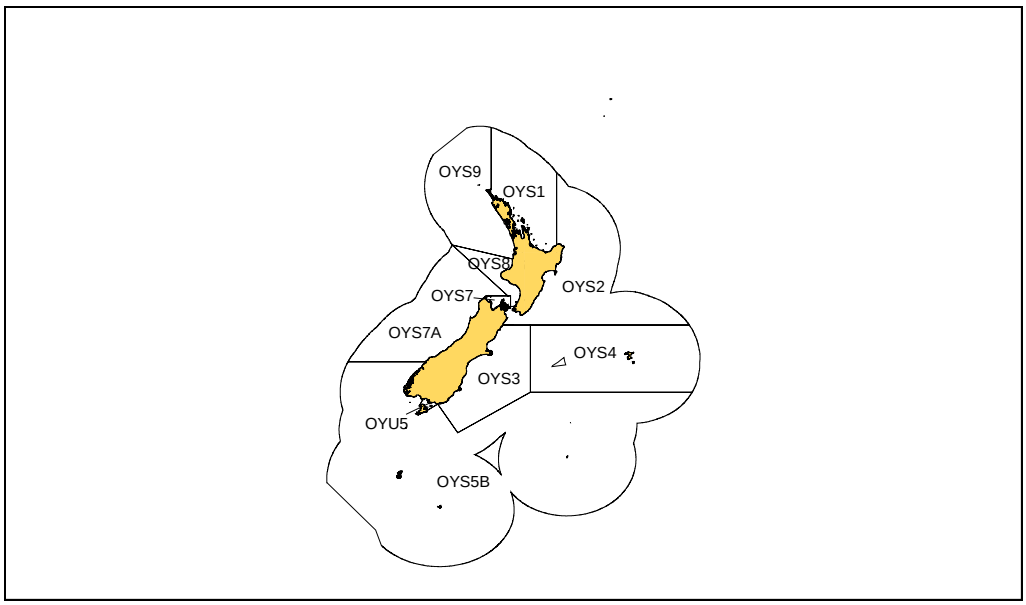
39 This proposed QMA extends from the Porirua coast north to Tirua Point, south of Kawhia Harbour.

OYS9 (FMA 9)

40 This proposed QMA extends from Tirua Point to North Cape.

41 MFish does not propose to manage dredge oysters in FMA 10 in the QMS. The relative paucity of catch records from FMA 10, coupled with the presence of a marine reserve and the isolation from the mainland suggest the development potential of a dredge oyster fishery in FMA 10 is low.

Figure 1 Map of proposed dredge oyster quota management areas



Fishing year

42 A 1 October to 30 September fishing year is consistent with the fishing year for dredge oyster stocks already managed in the QMS.

Unit of measure

43 In the intensively managed Foveaux Strait QMS oyster fishery the unit of measure is numbers of oysters. However, greenweight has been used historically for management purposes in the non-QMS dredge oyster stocks. MFish considers there is no need to change the unit of measure for non-QMS oysters if they are introduced into the QMS.

PIPI (PPI)

Summary of Proposals

1 The Ministry of Fisheries (MFish) proposes that:

a) Pipi (expect PPI1A) be introduced into the quota management system (QMS) on 1 October 2005;

b) The quota management areas (QMAs) be PPI1B (FMA 1 excluding PPI1A), PPI2 (FMA 2), PPI3 (FMA 3), PPI4 (FMA 4), PPI5 (FMA 5 & FMA 6), PPI7 (FMA 7), PPI8 (FMA 8) and PPI9 (FMA 9);

c) The fishing year be 1 October to 30 September; and

d) The unit of measurement be greenweight.

Assessment of costs and benefits

Sustainability criteria

Is the overall catch of this species or stock sustainable?

2 Pipi (*Paphies australis*) is a common shellfish throughout New Zealand. The species is found widespread in suitable sandy and soft-bottom habitats, and is most abundant in northern North Island. MFish has limited stock assessment information to determine the stock status of pipi. There are no estimates of current or reference biomass, or sustainable yield.

3 Almost all commercial catches (ie, 99%) are taken from the Mair Bank pipi fishery in Whangarei Harbour. Very small catches are taken from other areas. Annual catches of pipi are shown in Table 1 below.

Table 1: **Estimated catches (tonnes) of pipi by FMA for fishing years 1989–90 to 2001-02. Catches based on data extracted from MFish databases by NIWA.**

Fishing year	Estimated catch	Landing (CELR)
1989–90	120.547	120.892
1990–91	276.042	274.867
1991–92	302.637	326.674
1992–93	188.262	186.267
1993–94	244.210	243.673
1994–95	175.108	171.923
1995–96	137.889	135.880
1996–97	145.814	145.736
1997–98	120.354	119.439
1998–99	125.976	126.914
1999–00	153.334	152.942
2000–01	186.644	187.264
2001–02	192.552	192.247
Total	2369.4	2384.7
Mean	182.3	183.4

4 The Mair Bank pipi fishery is restricted to a zone within 1.5 nautical miles of the coastline from Home Point at the northern extent of the Whangarei Harbour entrance, to Mangawhai Heads, south of the harbour[1]. The Whangarei Harbour pipi fishery (PPI1A) will be managed under the QMS from 1 October 2004. The QMA for the PPI1A fishery includes the waters of Whangarei Harbour only. Therefore, pipi beds outside the harbour are not included in the PPI1A fishery. Annual catches from pipi beds outside Whangarei Harbour are not known but are expected to be minor.

5 MFish believes that recent catches within the permitted area outside Whangarei Harbour are sustainable, as catch levels are likely to be small. Additionally, MFish is unaware of any concerns by non-commercial fishers on the availability of pipi outside Whangarei Harbour.

6 Pipi has been taken as a bycatch in the target Challenger cockle fishery (Area 7), and is also likely to be taken as bycatch in the target tuatua and surf clam fisheries in other areas. Changes to fishing patterns in these target fisheries (including development of new and existing harvest areas) are likely to influence catches of pipi.

7 Pipi inhabit both the intertidal and subtidal zones of sheltered beaches in bays, harbours and estuary mouths. This species is often found in high densities, over 1000 per m^2. While pipi can be found in large numbers, they have a patchy distribution and are easily accessed by gatherers. Given the sedentary nature of pipi, this species is vulnerable to the effects of fishing and habitat disturbance. Pipi are susceptible to localised depletion, particularly if catch levels are significant or concentrated within a small number of areas.

8 Under open access, fishing effort for pipi in areas outside of Whangarei Harbour may increase if market demand for pipi increases. This risk arises because pipi is a marketable shellfish species, and the cost of entering the pipi fishery is relatively low (ie, it is a beach-based fishery).

[1] Regulation 4D of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986.

Does the harvest of this species or stock have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

9 Pipi are an important food source for harbour fish (particularly juvenile fish), crabs and seabirds. Pipi are also likely to play an important role in stabilising sandy beaches and banks by preventing the transport of finer sediment material. Additionally, pipi are known to play an important role in maintaining the water quality in estuarine systems (by their filter-feeding activity).

10 While catch levels of pipi are currently low for areas outside Whangarei Harbour, an increase in catch levels may have implications on associated and dependent species, and on the physical aquatic environment. These implications are most likely to arise if localised pipi populations become depleted. Constraining catches to appropriate levels would reduce the effects of fishing on the aquatic environment.

11 Any potential adverse effect of fishing on the aquatic environment is more to do with the quantity of catch than the methods used to harvest. This is because all commercial and non-commercial harvesting of pipi is restricted to handgathering, which is a low impact method. Handgathering essentially has no discernable effect on the environment where harvesting occurs.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

12 Commercial, customary and recreational fishers harvest pipi. Consequently, potential allocation issues may occur in this fishery as different fishing sectors try to obtain a share of the resource. While there is no information on levels of non-commercial harvest, MFish is not aware that current commercial harvest levels are limiting the availability of pipi to non-commercial fishers.

13 Under open access, unconstrained commercial fishing on pipi fisheries outside Whangarei Harbour may lead to allocation issues both within and between sectors. Conflict of access may also arise in direct response to increasing population growth in northern New Zealand, given the relative accessibility of fishers to coastal areas where pipi beds occur. These issues will be exacerbated by an increase in preference for pipi by recreational fishers in response to changes in human population demographics.

Is there evidence of inefficient utilisation or under utilisation of this species or stock?

14 Presently, the majority of commercial catches are taken within Whangarei Harbour. While catch levels in other areas are either small or non-existent, MFish believes pipi stocks outside the harbour have the potential to develop into significant fisheries in areas where densities are high. The potential to develop pipi fisheries arises if market demand for pipi increases, and because of the low entry costs into the fishery.

15 Commercial fishers in FMA 1 are currently restricted to a catch limit of 200 kg per day. This catch limit impacts on harvest efficiency of pipi stocks. MFish would remove this measure if pipi were managed under the QMS framework.

Conclusions drawn from the criteria

16 Best available information does not suggest that there are sustainability concerns for pipi due to current catch levels. However, this species is sedentary in nature and forms discrete, localised beds in coastal areas. These biological attributes suggest that pipi is vulnerable to the effects of fishing, particularly localised depletion.

17 Under open access, pipi catches are expected to increase if market demand increases. There is a risk that fishing effort would increase in both existing and new pipi harvest areas, and this could lead to localised depletion and sustainability problems. Increased effort in the associated shellfish fisheries such as cockle, tuatua and surf clams, could also result in an increase in bycatch of pipi that may not be sustainable.

18 While MFish has no concerns about the current effects of fishing for pipi on the aquatic environment, this species plays an important role in coastal and estuarine ecosystems. Unconstrained fishing effort could have an adverse effect on associated and dependent species, and the physical coastal environment. Managing the pipi fishery within the QMS would provide the appropriate tools to manage those risks.

19 An increase in catch levels could lead to utilisation issues between commercial and non-commercial users. Unconstrained fishing may lead to localised depletion of beds that are shared between different sectors, and could create conflict of access issues due to the reduced availability of pipi for non-commercial fishers. The potential for conflict between commercial and non-commercial sectors over access to pipi may occur due to the increase in population in coastal areas of the North Island.

20 Given the discussion above, MFish considers the pipi fishery requires active management to ensure the sustainability of pipi stocks and to avoid potential allocation problems.

Special Circumstances

Do special circumstances negate the case for immediate QMS entry?

21 There are no special circumstances that would negate the case for immediate entry of this fishery into the QMS.

Consideration of the QMS

Is the QMS in its current form able to accommodate this species or stock?

22 The QMS in its current form is able to accommodate the introduction of pipi.

Can QMS changes be implemented in time for the planned introduction date?

23 No changes are required to the QMS in order to introduce pipi.

Conclusion

Is QMS introduction preferred in light of the costs and benefits anticipated?

24 On balance, the QMS is the preferred management framework for pipi. The main reasons to introduce pipi into the QMS are its susceptibility to adverse fishing effects, particularly localised depletion, and the potential allocation issues between fisheries sectors. These issues require active management and are best managed under the QMS framework.

25 Including this stock into the QMS and constraining catches under an appropriate total allowable catch would satisfy the purpose of the Fisheries Act 1996 (the Act) to provide for utilisation while ensuring sustainability. QMS management would provide a positive initiative to help ensure long-term sustainability of the pipi resource, minimise any risks of adverse effects of harvesting on the aquatic environment, manage potential allocation issues and provide for efficient commercial utilisation.

26 The QMS would enable fishers to actively manage the pipi fishery within sustainable limits and gain benefits that accrue from having secure access rights. Those rights would provide benefits by enhancing fishers' ability to plan fishing and business arrangements, both in the short and longer term.

27 The QMS would also confer incentives for the rational exploration of the potential for sustainable development of the fishery in both existing and new harvest areas. The QMS also has inherent incentives to mitigate the potential effects of fishing on the aquatic environment, and on other fisheries sectors, through adopting environmentally appropriate technologies and fishing practices.

28 The open access alternative to management under the QMS would provide commercial fishers with incentives for 'racing for catch', rather than for rational fishing to obtain the best value from the fishery. This environment would not serve the ongoing interests of those stakeholders, or the interests of the non-commercial sector that harvest pipi.

29 Accordingly, MFish proposes that all pipi (expect PPI1A) be introduced into the QMS on 1 October 2005.

Stock and Areas

30 Pipi are distributed throughout mainland New Zealand, and Stewart, Chatham and Auckland Islands. They are found in sheltered beaches in bays, harbours and the mouths of estuaries. NIWA advises there have been no biological studies directly relevant to the identification of separate stocks of pipi around New Zealand.

31 NIWA suggest the ten standard FMAs be applied for pipi.

Proposed Quota Management Areas

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

- As far as practicable, the same QMAs must 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)).

33 In addition to the statutory matters above, MFish has developed a set of principles to assist in defining practicable 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 pipi:

a) Pipi beds are common throughout New Zealand;

b) Pipi are often located in areas with other sedentary shellfish species such as cockle, tuatua and surf clams. The management of pipi needs to be closely aligned with these associated fisheries; and

c) Pipi has been reported as occurring in the Chatham Islands. Therefore, it is appropriate to establish a separate QMA for this area.

Proposals

34 MFish proposes that pipi should be managed within eight QMAs (refer to Figure 1 below). The proposed QMAs are aligned with the QMAs for the various surf clams, as well as the proposed QMAs for the cockle and tuatua fisheries, to reflect the close association between these fisheries.

35 MFish will explore the use of fisheries regulations to constrain commercial harvesting to existing harvest areas. This will enable appropriate total allowable commercial catch limits to be set to allow for commercial utilisation while mitigating the risks of fishing in environmentally sensitive coastal areas. The proposed approach will be considered when setting sustainability measures to support the introduction of pipi into the QMS and reflects the management regime established for the Challenger cockle fisheries.

36 MFish notes there is unlikely to be any development of a pipi fishery within FMA 10 given the isolation of the FMA from the mainland, lack of potential habitat, and the presence of a marine reserve. Consequently, it is appropriate for FMA 10 to remain outside the QMS.

PPI1B (FMA 1)

37 This proposed QMA extends from North Cape to Cape Runaway, incorporating the northern parts of the east coast of the North Island. PPI1B excludes Whangarei Harbour (which is already established as PPI1A).

PPI2 (FMA 2)

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

PPI3 (FMA 3)

39 This proposed QMA extends from the Clarence River mouth (Marlborough) to Slope Point on the Catlins coast (Southland).

PPI4 (FMA 4)

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

PPI5 (FMAs 5 & 6)

41 MFish notes there is unlikely to be any development of a PPI fishery within FMA 6. In such areas MFish usually sets larger QMAs to reduce management costs. MFish proposes to combine FMAs 5 and 6 for PPI.

PPI7 (FMA 7)

42 This proposed QMA extends from Awarua Point, Westland around the top of the South Island to the Clarence River on the east coast of the South Island.

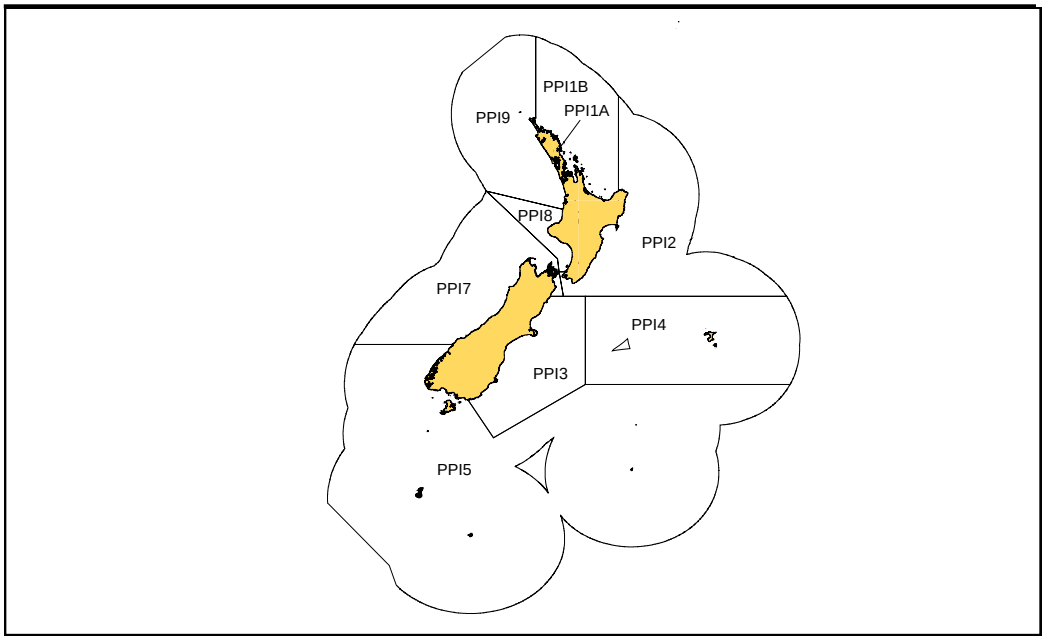
PPI8 (FMA 8)

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

PPI9 (FMA 9)

44 This proposed QMA extends from Tirua Point to North Cape.

Figure 1 Quota Management Areas for Pipi



Fishing Year

45 The proposed fishing year for pipi is from 1 October to 30 September. This is consistent with the fishing year that applies to the associated cockle and tuatua fisheries.

Unit of Measure

46 MFish considers the unit of measurement should be greenweight. Greenweight has been used historically for management purposes in the pipi fishery. This unit of measure also applies to all the associated cockle and surf clam QMS fisheries. There does not appear to be any rationale for changing this unit of measure should pipi be introduced into the QMS.

NON-QMS SCALLOPS (SCA)

Summary of Proposals

1 MFish proposes that:

a) Scallop stocks not already in the QMS be introduced into the QMS on 1 April 2006;

b) The QMAs are SCA2 (part of FMA 2, FMA 7 and FMA 1), SCA3 (FMAs 3 & 4), SCA5 (FMAs 5 & 6), SCA7A (FMA 7 - West Coast South Island), SCA8 (all of FMA 8 and southerly part of FMA 9);

c) The fishing year is 1 April to 31 March; and

d) The unit of measurement is meatweight.

Assessment of criteria for QMS introduction

Sustainability criteria

Is the overall catch of this species sustainable?

2 Reported commercial catches of non-QMS[1] scallop (*Pecten novaezelandiae*) range between 55 tonnes in 1989-90 and 0.4 tonnes in 2000-01. MFish does not know if these catch levels are sustainable because there has been no investigation of the status or potential yield of non-QMS scallop stocks. In addition, catch history cannot be used as an indicator of stock abundance because records of scallop catches from non-QMS stocks are poor and the accuracy of the harvest estimates is unknown.

3 Table 1 shows estimated catches from reporting areas combined (with approximation at some boundaries) into FMAs for non-QMS scallop stocks. However, NIWA advises that most of the catches in FMAs 3 and 5 are likely to be queen scallops, and that it is unlikely catches reported in the other FMAs are *P. novaezelandiae*. In addition, estimated catches exceed landings, so there are probably errors in the accuracy of this data. However, the unreliability of the non-QMS scallop catch history and the absence of any stock assessment information does not prevent an assessment of potential sustainability risks for non-QMS stocks.

[1] A number of scallop stocks are managed under the QMS (SCA 1, SCA CS, SCA 4, and SCA 7).

Table 1 **Estimated catches (tonnes) from CELR data where reporting areas were combined (with approximation at some boundaries) into non-QMS stock boundaries by FMA.**

Fishing year	FMA 2	FMA 3	FMA 5	FMA 7	FMA 8	FMA 10	Total
1989-90	35.0	19.8	0.0	0.0	0.0	0.0	54.9
1990-91	2.1	2.1	0.6	0.0	1.1	0.0	5.8
1991-92	2.2	1.5	0.0	0.0	0.0	0.0	3.6
1992-93	0.8	3.3	0.3	0.0	0.0	0.0	4.4
1993-94	1.0	0.1	0.1	0.7	0.0	0.0	1.9
1994-95	1.6	0.1	0.0	0.0	16.9	0.0	18.6
1995-96	5.1	11.7	3.9	0.0	0.4	0.0	21.1
1996-97	2.8	10.9	2.5	1.2	0.0	0.4	17.8
1997-98	0.3	16.3	1.3	2.6	0.2	0.0	20.6
1998-99	2.6	2.4	0.0	2.0	0.0	0.0	6.9
1999-00	0.0	0.3	5.8	3.5	0.0	0.0	9.7
2000-01	0.0	0.2	0.0	0.0	0.0	0.0	0.4
2001-02	0.1	0.0	0.1	0.0	0.7	0.0	0.8
Total	53.5	68.6	14.5	10.0	19.2	0.4	166.5

4 There is no information on the genetics of scallop stocks, but high-density enduring populations are geographically separated. Enduring populations of non-QMS scallops tend to be in areas where local hydrographic features allow the retention of larvae, particularly in enclosed harbours and inlets (e.g. Paterson Inlet and Port Pegasus, Stewart Island; Fiordland sounds). MFish considers that these high density, isolated, enduring populations would be at risk if catch levels increased in an open access environment. The potential for localised depletion is enhanced because scallop populations typically vary greatly in size from year to year.

5 Dredging, especially in areas with high silt levels, is thought to remove settlement surfaces and suspend silt that causes high mortality in newly settled spat. If dredging effort increases in either enduring or emphemeral non-QMS populations, there may be adverse affects on settlement and recruitment.

6 Because there are enduring scallop populations outside the QMS, and because there is an established market for scallops, MFish believes that targeting of non-QMS populations will increase after the removal of the fishing permit moratorium. There were fishing permits issued before the moratorium, and renewed during the moratorium, that suggest there are accessable scallop fisheries not managed in the QMS. MFish considers that the population dynamics of localised populations, and the annual variability in population size, mean that non-QMS scallops will be susceptible to overfishing in an open access environment.

Does the harvest of this species or stock have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

7 Bottom dredging is the main method used to commercially harvest scallops and can have adverse effects on the aquatic environment and affect biological diversity. The extent to which an increase in dredging effort targeted at non-QMS scallop stocks would promote adverse effects is unknown. The diversity of epibenthic macrofauna on scallop habitats is relatively low compared to other marine habitats and there are probably few direct associations with other species.

8 However, the fishing permit moratorium has largely prevented the development of scallop dredging in non-QMS populations, and MFish considers that new areas could be dredged for scallops once the moratorium is removed. Previously undredged areas will be subject to a higher level of adverse affects than modified habitat that supports the QMS stocks.

9 In addition, scallops in some northern areas inhabit the same areas as high densities of horse mussels (*Atrina zelandica*), in the Challenger area with green-lipped mussels (*Perna canaliculus*) and dredge oysters (*Ostrea chilensis*), and at the Chatham Islands and in Southland with dredge oysters. In localised areas where these filter-feeding species occur together in high densities, there may be competition for food. In addition, scallops have a wide range of invertebrate and vertebrate predators. There may be adverse affects on these relationships if catch levels increase in an open access environment.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

10 There are significant recreational and customary Maori fisheries for scallops around New Zealand, from QMS and non-QMS stocks. It is important to note that daily bag limits vary nationally from 50 scallops in Challenger to 10 scallops in Paterson Inlet, and generally 20 scallops elsewhere. There is no data available on customary catches of scallops from areas not already in the QMS.

11 Like existing commercial scallop fisheries, it is likely that high density non-QMS scallop populations are easily accessable by commercial and non-commercial fishers. Under an open access system, competition between commercial and non-commercial sectors may lead to a decrease in the quality of the scallop fishery for the non-commercial sector. Increased commercial effort high scallop density locations could subject the resource to localised depletion. This situation would require an allocation decision be made between commercial and non-commercial sectors.

Is there evidence of inefficient utilisation or under utilisation of this species or stock?

12 In the absence of a comprehensive stock assessment and reliable catch records, it is not possible to determine whether the overall catch of non-QMS scallop is maximising potential utilisation. Reports indicate that catches are sporadic and there appears to be no other target fishery, apart from those already in the QMS. However, there are enduring populations not in the QMS where commercial access is restricted due to the permit moratorium.

13 It is not known whether non-QMS scallop stocks have the potential to develop into significant target fisheries because the densities of non-QMS populations are generally less than those of populations managed in the QMS. However, there is already an established market for scallops, and commercial fishing permits have been issued in the past for non-QMS stocks. Coupled with low entry costs in an open access environment, non-QMS stocks could be a valuable resource.

Conclusions drawn from the criteria

14 MFish is unable to determine if there are any current sustainability concerns for non-QMS scallop stocks. There is no stock assessment information and the catch history for non-QMS stocks is unreliable. However, high density enduring populations would probably be at risk of localised depletion under an open access environment if catch levels increased. Even emphemeral populations would be a valuable commodity that fishers could target relatively easily when found.

15 In an open access environment, it is possible that fishing effort for scallop would increase. This could introduce sustainability problems that cannot be efficiently managed in a non-QMS environment.

16 There are no known concerns about the current effects of fishing for non-QMS scallop on the aquatic environment. The effects of increased dredging effort on three-dimensional structural habitat would probably be minimal because non-QMS scallop stocks are found mainly on sand and silt and gravel. However, increased effort might reduce the availability of important spat settlement habitat.

17 There are a number of coastal areas where commercial fishing for scallops is prohibited by regulation. However, this is unlikely to mitigate potential access conflicts between commercial and non-commercial fishers in an open access environment. An increase in commercial catches could lead to localised depletion of beds that are shared between different sectors. This could in turn create conflict over who should have access to the resource, and consequently require allocative decisions.

18 MFish considers non-QMS scallop stocks require active management to ensure stock sustainability, to avoid potential allocation problems, and to provide an efficient platform for development given there is an existing market for scallop. High density QMS scallop stocks, such as SCA 7, illustrate the success of an efficient management platform that allows effective allocative and micromanagement (e.g. enhancement) decisions. This opportunity needs to be examined for enduring non-QMS stocks, but can only be effectively done within the QMS.

Special Circumstances

Do special circumstances negate the case for immediate QMS entry?

19 Introducing non-QMS scallop into the QMS is unlikely to result in additional administrative and management costs that are different to those associated with other QMS species.

20 MFish acknowledges that managing scallop under the QMS will impose higher economic costs than under an open access regime where there are no binding catch limits. These costs will arise from the requirement that fishers hold ACE, pay deemed values and cost recovery levies, or modify their target fishing operations to avoid catching scallop. These requirements will have an economic impact on fishers, particularly in transitional costs to entrants to the fishery since 1992 who will not be allocated catch history.

21 The aggregate cost impacts on fishers will be determined to a large extent by the sustainability settings (TACC levels) set for scallops within the QMS. To the extent non-QMS scallop stocks are relatively small, the potential for cost-recovered research for this species would be limited.

Consideration of the QMS

Is the QMS in its current form able to accommodate this species or stock?

22 Yes, the QMS in its current form is able to accommodate the introduction of non-QMS scallop stocks.

Can QMS changes be implemented in time for the planned introduction date?

23 No changes are required to the QMS for non-QMS scallops.

Conclusion

Is QMS introduction preferred in light of the costs and benefits anticipated?

24 The QMS is the preferred management framework for non-QMS scallop stocks. Enduring scallop populations are susceptible to the effects of overfishing, particularly via localised depletion. There is the potential for adverse effects on the aquatic environment and associated species if catch levels increase. These effects cannot be quantified. In addition, there are potential allocation issues that are best resolved in the QMS framework.

25 There is the significant potential for increased targeting of non-QMS populations once the permit moratorium is removed. Managing non-QMS scallops in the QMS and constraining catches within appropriately set Total Allowable Catches (TACs) would satisfy the statutory requirement to provide for utilisation while ensuring sustainability.

26 The open access alternative would provide commercial fishers with incentives for 'racing for catch', rather than rational efficient fishing to obtain the best value from the fishery. Risks to the sustainability of non-QMS scallop stocks and associated species, as well as the aquatic environment are increased under an open access system.

27 The QMS enables fishers to actively manage the scallop fishery within sustainable limits and gain benefits that accrue from having secure access rights. Those rights would provide benefits by enhancing fishers' ability to plan fishing and business arrangements, both in the short and longer term. The QMS would also confer incentives for the rational exploration of the potential for sustainable development of the fishery in both existing and new harvest areas. The QMS also has inherent incentives to mitigate the potential effects of fishing on the aquatic environment and on other fisheries sectors through adopting environmentally appropriate technologies and fishing practices, which are of particular concern for dredge fisheries.

28 Managing non-QMS scallops in the QMS would likely increase operating costs for fishers. These costs would arise from the requirement to secure ACE or pay deemed

values. However, there would be operational efficiencies for the mix of sedentary fisheries (where appropriate) if non-QMS scallops were managed in the QMS.

Stocks and Areas

29 There have been no biological studies that are directly relevant to the recognition of separate stocks of scallops around New Zealand. The potential for planktonic larvae to be widely dispersed by currents increases the potential for gene flow over large distances. Some populations, particularly over the Chatham Islands, may be geographically separated. In addition, high-density enduring populations are geographically separated. Enduring populations of non-QMS scallops tend to be in areas where local hydrographic features allow the retention of larvae, particularly in enclosed harbours and inlets (e.g. Paterson Inlet and Port Pegasus, Stewart Island; Fiordland sounds), and several of these support recreational and customary Maori fisheries. NIWA recommends that these populations could be managed as sub-areas within FMAs, with sub-area boundaries defined by geographical features likely to retain larvae (individual inlets and sounds).

30 The relatively long planktonic larval life of scallops provides an opportunity for gene flow across large distances when larvae are transported away from nuclear populations by currents. Ephemeral and low density populations, usually found along lengths of coastline with alongshore current flows and without features capable of retaining larvae, could also be managed as sub-areas within FMAs, but with fine spatial scale reporting of catch and effort.

31 NIWA recommend that there is no known biological reason to suggest any particular portioning of stocks.

Proposed Quota Management Areas

32 MFish has considered s 19(2)[2] and s 19(3)[3] of the Act in developing its QMA proposals for non-QMS scallops. In addition, MFish has developed a set of principles to assist in defining practicable QMAs. These are discussed in the introductory section to this consultation document. In considering s 19(2), s 19(3) and the MFish principles, the following are the key issues in defining QMAs for the non-QMS scallop fishery:

a) There are no known biological or other reason to suggest any particular partitioning of stocks;

b) There is already a small QMA around the Chatham Islands;

c) Some scallop populations are mainly isolated and probably form separate enduring populations over wider areas; and

d) It is impractical and administratively costly to manage scallop based on small statistical reporting areas.

[2] as far as practicable, the same QMAs should be maintained for different species

[3] a separate QMA may be set for the waters surrounding the Chatham Islands if the stock can be managed effectively as a unit

33 Taking into account the principles and key management issues, MFish proposes that non-QMS scallops be managed in five QMAs, in addition to the existing four QMAs.

Proposals

SCA2 (part of FMA 2, FMA 7 and FMA 1)

34 This proposed QMA is an amalgamation of the parts of FMAs 1 and 2 that are excluded from existing scallop QMAs for SCA1 and SCACS. SCA2 starts in the Bay of Plenty, east of SCACS, and south of SCA1, and extends easterly and southerly along the east coast of the North Island to the coast adjacent to Porirua. SCA 2 also includes part of FMA 7, along the east coast of the South Island from West Head (at the boundary of SCA7) to the Clarence River mouth.

SCA3 (FMAs 3 & 4)

35 This proposed QMA extends from the Clarence River mouth (Marlborough) to Slope Point on the Catlins coast (Southland), and encompasses FMA 4, excluding the Chatham Island scallop fishery, already established as SCA4.

SCA5 (FMAs 5 & 6)

36 MFish notes there is unlikely to be any development of a SCA fishery within FMA 6. In such areas MFish usually sets larger QMAs to reduce management costs. MFish proposes to combine FMAs 5 and 6 for SCA.

SCA7A (FMA 7 - West Coast South Island)

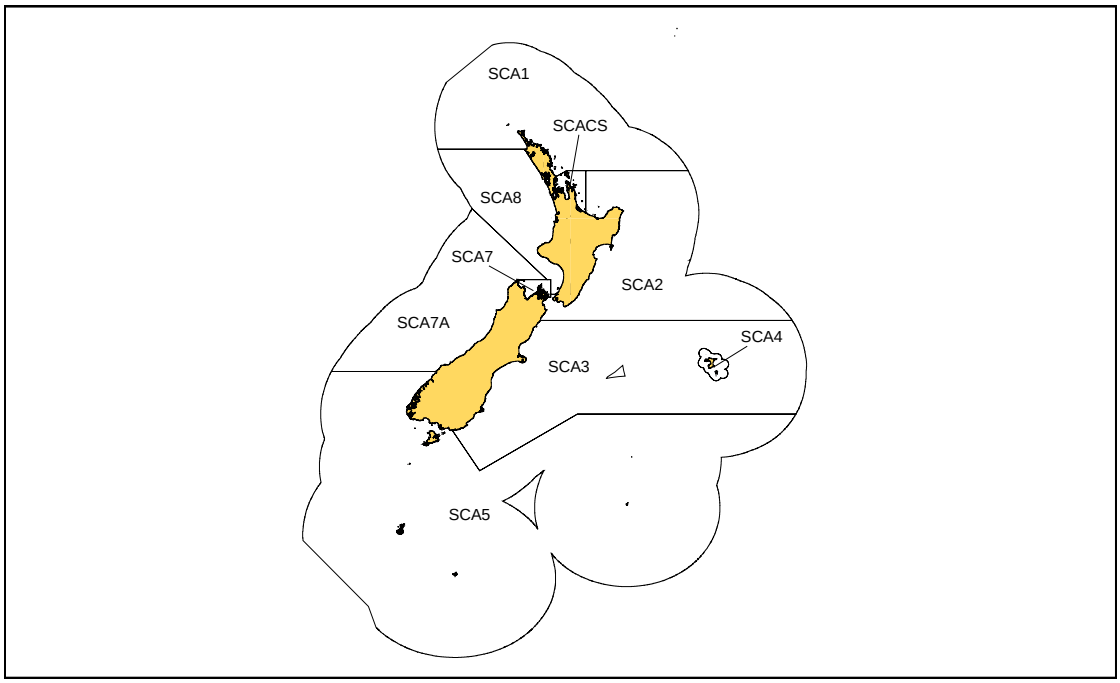
37 This proposed QMA extends from Awarua Point, Westland to Cape Farewell.

SCA8 (all of FMA 8 and southerly part of FMA 9)

38 This proposed QMA extends from the Porirua coast north to Tirua Point (FMA 8) and north to Tauroa Point in FMA 9.

39 MFish does not propose to manage scallops in FMA 10 in the QMS. The relative paucity of catch records from FMA 10, coupled with the presence of a marine reserve and the isolation from the mainland suggest the development potential of a scallop fishery in FMA 10 is low.

Figure 2 **Map of proposed and existing scallop quota management areas**



Fishing year

40 A 1 April to 31 March fishing year is consistent with the fishing year for scallop stocks already managed in the QMS. There is no biological reason for an alternative fishing year. MFish proposes a 1 April to 31 March fishing year should non-QMS scallop stocks be introduced into the QMS.

Unit of measure

41 Meatweight is used for management purposes in the QMS scallop stocks. There is no reason to change this unit of measure should non-QMS scallop be introduced into the QMS.

SKIPJACK TUNA (SKJ)

Summary of Proposals

1 MFish proposes that:

a) Skipjack tuna (SKJ) is introduced into the quota management system (QMS) on 1 October 2005,

b) The quota management area (QMA) be SKJ 1 (Fisheries Management Areas 1-10 combined);

c) The fishing year is 1 October to 30 September; and

d) The unit of measurement is greenweight.

OR

a) The entry of skipjack into the QMS is deferred; and

b) The decision in principle to set catch history qualifying years for skipjack from 1 October 1999 to 30 September 2002 is set aside and catch history qualifying years would be future years to be determined at the time a decision is made to bring skipjack into the QMS.

Assessment of criteria for QMS introduction

Sustainability criteria

Is the overall catch of this species sustainable?

2 Skipjack tuna (*Katsuwonus pelamis)* is a member of the family Scombridae, which includes nine other tuna and mackerel species known in New Zealand waters: albacore, bigeye, yellowfin, southern bluefin, Pacific bluefin, skipjack, slender, and butterfly tuna, and blue mackerel.

3 Skipjack are a pelagic and oceanic species with a wide distribution, being found in tropical and subtropical waters of the major oceans. They occur from the surface to about 260 metres in depth.

4 Skipjack in New Zealand waters are part of a single western Pacific stock that extends between lines of latitude 40^{o} N and 40^{o} S. Such a distribution roughly corresponds to within the 20^{o}C isotherm. Skipjack tagged in New Zealand are caught throughout the Western Pacific Ocean, but are caught predominantly in Fiji, and fish are known to migrate to New Zealand from Australia and Fiji.

5 The maximum-recorded fork length for skipjack is 108 cm and they mature at about 45 cm fork length. They spawn in batches throughout the year in equatorial waters, and from spring to early autumn in subtropical waters. Females of 41–87 cm fork length spawn between 80 000 and 2 million eggs per season. Juveniles from the equatorial region migrate north and south. Estimates of longevity vary between eight and 12 years.

6 In New Zealand waters, skipjack are targeted and caught mostly by purse seine with a very small amount taken by surface longline. The length distribution for skipjack tuna caught on tuna longlines shows a size range from 31–84 with a mean of 60 cm. These fish are estimated to be two to three years old.

7 Reported landings of skipjack are shown in Table 1. Landings ranged between 3 726 and 11 071 tonnes during the last five fishing years (Table 1). In addition captures by New Zealand fishing vessels have been recorded from other EEZs or the high seas in recent years (Table 1, column 6).

Table 1: Reported commercial landings and discards (t) of skipjack from CELRs and CLRs (mainly purse seine fisheries), and TLCER (tuna longline fishery), and LFRRs (processor records) by fishing year.

	CELR and CLR		Total		Other EEZs or
Fishing year	Landed	Discarded	reported	LFRR	High seas
1988-89	0	0	0	5 769	
1989-90	6 627	0	6 627	3 972	
1990-91	7 408	0	7 408	5 371	
1991-92	1 000	0	1 000	988	
1992-93	1 189	0	1 189	946	
1993-94	3 215	0	3 216	3 136	
1994-95	1 113	0	1 113	861	
1995-96	4 214	0	4 214	4 520	
1996-97	6 303	0	6 303	6 571	
1997-98	7 325	0	7 325	7 308	
1998-99	5 690	0	5 690	5 347	
1999-00	11 071	0	11 071	10 561	
2000-01	3 839	859	4 698	4 020	280
2001-02	3 726	0	3 726	3 487	7 565
2002-03*	3 868	0	3 869	-	9 103

*incomplete

8 Skipjack is listed as a highly migratory species in Annex 1 of the United Nations Convention on the Law of the Sea (UNCLOS) and by reference in the Western and Central Pacific Fisheries Convention (WCPFC). Participating countries in the Preparatory Conference establishing the Western and Central Pacific Fisheries Commission (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. As yet there are no specific international obligations with regard to management of skipjack tuna in the central and western Pacific, apart from access agreements. These access agreements relate to the entry of foreign flag vessels to the EEZs of participating states in the Western and Central Pacific. Currently up to 70% of the purse seine fishery for tuna in the central and western Pacific occurs within these waters.

9 Once the Commission is formed, decisions on short and long term management arrangements for skipjack will be required. A range of options is likely to be considered including both capacity and catch limits. Any long-term option will have consequences for allocation between participating states. The option of a catch limit for skipjack, if implemented is likely to be some time away.

10 The Preparatory Conference has charged a scientific coordinating group with providing interim scientific advice on the status of Pacific tuna species. This group has reported that skipjack is currently exploited at a modest level relative to its biological potential. Recent modelling suggests that the skipjack population in the western and central Pacific, in comparison to the past 30 years, is at an all time high. However, for this species, recruitment variability, influenced by environmental conditions will continue to be the primary influence on stock size and fishery performance.

Does the harvest of this species have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

11 Harvesting of tunas may have impacts with regard to predator/prey interactions and trophic dynamics, as tunas feed on a variety of fish and other marine species. Skipjack is an opportunistic feeder, eating fish, crustaceans and molluscs.

12 Understanding of food web relationships is still at an early stage, but MFish considers that, if evidence emerges of impacts on biodiversity from harvesting of skipjack, this can be managed at that time based on international cooperation where appropriate.

13 In New Zealand waters, skipjack tuna is primarily taken by purse seining. There are few environmental impacts associated with this fishing method. However, some non-QMS species and non-fish species are taken as bycatch.

14 A very small amount of the skipjack catch is taken by surface longline (around 1-9 tonnes per year in recent years). Environmental issues are common to the fishing method rather than specific to fishing for this species. A large number of fish species are taken as bycatch of surface longline fishing but many of these are only rarely taken. The main fish bycatch species associated with the surface longline fishery within the EEZ have been introduced into the QMS. This will provide the mechanisms for sustainability actions as required.

15 There is also a non-fish bycatch associated with the surface longline fishery. Fishing vessels sometimes capture seabirds that are chasing baited hooks, and the seabirds drown as the lines sink. Seabirds are also caught in trawl and other fisheries, but longliners are considered to be one of the main threats 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. In northern waters the potential for turtle bycatch will require monitoring and potentially mitigation.

16 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. New Zealand surface longline vessels are required to use tori lines of a specified standard. Vessels are using a variety of practices to reduce seabird bycatch including the use of artificial baits and the practice of setting longlines at night.

17 MFish and the Department of Conservation have developed a National Plan of Action for Seabirds (NPOA) that includes measures that will apply to all New Zealand fishing vessels.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

18 There is no documented customary fishery for skipjack tuna, although some stakeholders have stated that Maori have a long history of fishing for highly migratory species. Skipjack tuna is a species that is likely to be more available than the other large tuna species (though seasonal) to customary harvest.

19 Skipjack is taken as a recreational species when trolling and with baited lines on the East and West Coasts of the North Island. Catches are likely to be highly variable between years, recreational diary surveys estimate that 159 000 skipjack were taken by recreational fishers during 2000-01. MFish is not aware of allocation issues between recreational and commercial use of skipjack in the current fishery. It is likely, given that both sectors rely on spatial aggregations of fish, that conflicts may arise if there is a significant expansion in the purse seine fleet fishing for skipjack.

Is there evidence of inefficient utilisation or under-utilisation of this species or stock?

20 Fishing practices have evolved to utilise this species in the face of varying international market demand, and varying availability within New Zealand fishery waters from year to year. The purse seine fishery for skipjack cannot be understood without taking into account the other species that the vessels target and/or other areas of vessel operations. There are now two distinct purse seine fleets operating within New Zealand fisheries waters. One is the fleet of smaller domestic purse seine vessels that fish entirely within New Zealand fisheries waters. For these vessels, skipjack is a variable (albeit important) component of their catch.

21 For approximately five months of the year (December to May) the domestic purse seine fleet, based in Tauranga, tends to target exclusively for skipjack tuna with very little non-target catch. This fleet operates primarily on the east coast of the north island when fishing for skipjack. When skipjack are not available, this fleet fishes for a mix of other species including kahawai (*Arripis trutta)*, jack mackerels (*Trachurus* spp.), and blue mackerel (*Scomber australasicus*).

22 There are now New Zealand owned "superseine" vessels, which operate primarily in northern waters of the central and western Pacific under individually negotiated access arrangements. These vessels fish within New Zealand waters during the skipjack season to varying degrees and will rely on access to the New Zealand fishery for a component of their fishing operations.

23 The purse seine fishery for skipjack in New Zealand fisheries waters relies on fishing surface schools of fish. The availability of skipjack to the fishery is influenced not only by the abundance of skipjack, which migrates annually to New Zealand fisheries waters but also the prevailing environmental conditions during the course of the

season. These environmental conditions influence both the appearance of skipjack on the surface (and hence its availability to the fishery) and the ability of surface schools to be sighted and fished.

24 These factors combine to make the skipjack fishery in New Zealand waters highly competitive. This competition manifests as both competition for available surface schools, which are often spatially aggregated, and the ability of intensive fishing to temporarily reduce local abundance. Excess competition can result in inefficient utilisation and poor fishery economics.

25 In the past, when large US super seiners fished freely in New Zealand fisheries waters, domestic purse seine vessels complained of crowding on the east coast of the North Island. MFish notes that the US-Pacific States Tuna Treaty provides for continuing access to New Zealand fisheries waters of certain US-flagged purse seine vessels fishing for skipjack tuna. The activities of these vessels are subject to voluntary arrangements to minimise the potential for conflict with domestic vessels.

26 MFish notes there are opportunities for further development of the New Zealand skipjack fishery. New Zealand vessels have only sporadically fished the west coast of the North Island in the past. More recently large catches in this area of the fishery have been realised and certainly foreign licensed catches on the west coast have been considerable in the past. The degree to which a skipjack purse seine fishery could operate within the available waters of the Kermadec Fishery Management Area is not known.

Conclusions drawn from the criteria

27 Skipjack tuna is a highly migratory species and its sustainability can only be managed effectively by a regional fisheries organisation with jurisdiction across the full range of the stock. Current assessments do not indicate any sustainability concerns regarding skipjack however purse seine fishing for skipjack in the central Pacific has a bycatch of juvenile bigeye and yellowfin tuna. Management measures for this fishing method are being proposed by some states to manage the bycatch implications of purse seining. No such issues are known to exist in the New Zealand skipjack fishery.

28 Within New Zealand fisheries waters there is development potential for skipjack. Outside of New Zealand fisheries waters there is also the potential for further development within the constraints of access arrangements for other areas of the fishery in the central and western Pacific and the need to manage bycatch implications of the fishery. It is not proposed to introduce skipjack into the QMS outside of New Zealand fisheries waters in the short term.

29 The QMS is the preferred management framework for skipjack if it is determined that active management of the fishery within New Zealand fisheries waters is required. MFish considers that there are generic benefits from realising the further potential from the fishery within a QMS framework because of the certainty provided to participants in the fishery from this management framework. These benefits are addressed further in the generic section of this position paper.

30 The characteristics of the skipjack fishery in New Zealand waters indicate the potential for conflict both within the commercial sector and between the commercial and non-commercial sectors of the fishery. This conflict has already been realised in

the past between domestic and foreign licensed fleets. A continuation of open access arrangements in the skipjack fishery therefore creates the potential for spatial competition and local depletion effects with associated inefficiencies in utilisation and economic impact on the fleet. While there is potential for an expansion in catch there are limits to the potential for expansion in capacity without undesirable competitive effects on the efficient utilisation of the resource.

31 MFish considers that the development of cooperative arrangements to manage competitive effects within the fishery is likely to be enhanced by QMS management. An open access regime provides few incentives for fishers to cooperate. If voluntary arrangements cannot be agreed MFish notes that dispute procedures are available under the 1996 Act (these are available to address the impacts of fishing on the fishing interests of others in both a QMS and a non-QMS environment).

32 There is a case for active management of the skipjack fishery within New Zealand fisheries waters and the QMS is the preferred management regime for this to occur. MFish considers that the ongoing management costs are outweighed by the benefits.

33 MFish is aware that some fishers are concerned that introduction of skipjack into the QMS within New Zealand fisheries waters will constrain the further development of New Zealand interests in the central and western Pacific skipjack fishery. They consider fishing in New Zealand fisheries waters for part of the year an important component of an annual fishing plan that includes fishing in the northern part of the central and western Pacific area, and claim that expansion of skipjack fisheries in New Zealand waters is necessary for continued expansion of involvement by New Zealand fishers in the central and western Pacific fishery.

34 MFish considers that there is some development potential in the fishery in New Zealand waters but that there are likely to be limits to the potential for expansion in capacity without economic impacts. Introduction of skipjack into the QMS within New Zealand fisheries waters will not unnecessarily constrain catches in this area since TACCs can be increased within and between fishing years when catches and other factors justify such an increase. MFish acknowledges that there would be a cost to new or late entrants to the fishery within New Zealand fisheries waters (they will be required to purchase quota) but these entrants will then benefit from the advantages of QMS management. These costs and benefits will apply to New Zealand interests that wish to fish elsewhere in the central and western and Pacific while maintaining access to the New Zealand fishery.

35 The alternative is to allow a further period of open access to the skipjack fishery in New Zealand fisheries waters. The incentive of "fishing for catch history" may encourage fishers to enter the fishery and the lack of restriction on fisheries would allow domestic capacity to increase and expand into offshore waters if desired. However, there are risks associated with this alternative, including the potential for localised depletion of skipjack, excessive competition between fishers, and possible over-captilisation.

36 The WCPFC provides that conservation and management areas established for the high seas and those adopted for national jurisdictions shall be compatible in order to ensure conservation and management of highly migratory fish stocks in their entirety. New Zealand has a duty to ensure that any measures applied to highly migratory

stocks within areas under its national jurisdiction do not undermine the effectiveness of measures adopted by the Commission. The Commission is also required to take into account existing management arrangements in national jurisdictions when deciding on conservation and management measures to ensure that these are not undermined. MFish does not consider that the imposition of a QMS regime within New Zealand coastal waters would be inconsistent with long term management arrangements for the central and western Pacific even if capacity limits were the preferred long term option.

Special circumstances

Do special circumstances negate the case for immediate QMS entry?

37 MFish does not consider that there are any special circumstances that would negate the case for immediate entry of skipjack into the QMS. There is no national catch limit set for this species, however MFish does not consider that this is a reason to preclude entry of this species into the QMS and the setting of TACs.

38 On the basis that it is not possible to estimate MSY for the part of the skipjack tuna stock found within New Zealand fisheries waters, MFish will recommend inclusion of skipjack on the Third Schedule to the Fisheries Act 1996 (the Act). MFish considers that the purpose of the Act will be better achieved by setting a TAC otherwise than in accordance with s 13(2) and will propose that a TAC is set for skipjack pursuant to s 14 of the Act. A TAC set under the provisions of s 14 of the Act can better provide for utilisation (conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing) for stocks whose range extends beyond the bounds of New Zealand fisheries waters while still ensuring sustainability. Section 14 provides the opportunity for an in-season review of the TAC to take advantage of available yield beyond any pre-determined target stock level.

39 Past concerns have been raised that current administrative arrangements would not be responsive enough to allow increases in TAC during the course of a season in time to realise the benefits of increased abundance during that season. MFish is not opposed to considering prospective catch limits for skipjack up to a point that the advantages of QMS management are not dissipated. This will allow flexibility to adjust to seasonal variations in abundance to some degree. Further, MFish notes that there is opportunity for stakeholders to collectively develop decision rules in the future that will streamline any adjustment process for a TAC during the course of a season if required.

Is the QMS in its current form able to accommodate the species?

40 Skipjack is a highly migratory species and its biological range extends beyond New Zealand fisheries waters. Despite this, MFish considers that the QMS in its current form can be used to accommodate this species.

Conclusion

Is QMS introduction preferred in light of the cost and benefits anticipated?

41 Skipjack tuna is a relatively low value species yielding returns because of the potential for high catch rates by the purse seine method. It is an important part of the harvest mix for small domestic purse seine vessels and a component of the fishery for New Zealand flagged purse seine vessels that operate further afield.

42 There is potential for further development of the skipjack fishery in New Zealand fisheries waters. The QMS is the preferred environment for development of under–utilised fisheries. The skipjack fishery in New Zealand fisheries waters has particular characteristics that give rise to the utilisation issues described above. The potential for fishery development and the potential for management problems if an open access regime continues, suggest that management intervention is indicated for skipjack tuna found within New Zealand fisheries waters.

43 MFish considers that QMS introduction would provide benefits in terms of more efficient utilisation and by providing a framework in which the interests of non-commercial fishers can be taken into account. The ongoing management costs are not considered to outweigh these benefits.

44 The skipjack fishery in the wider central and western Pacific also provides opportunities for further development of New Zealand interests. It is not proposed to introduce skipjack into the QMS outside of New Zealand fisheries waters in the short term, at least until long-term management arrangements in the central and western Pacific are known. The impact of introducing skipjack into the QMS within New Zealand fisheries waters on these operations will be to provide stable access to the New Zealand zone for existing participants. New or late entrants to the fishery will face the cost of acquiring access to a share of the New Zealand fishery. Whether these costs act to constrain the potential for the development of offshore fisheries for skipjack by New Zealand interests is not clear.

45 MFish therefore invites stakeholder views on the alternative of deferring the entry of skipjack into the QMS. If this option were to be adopted, MFish considers that the Minister's decision in principle to set catch history qualifying years for skipjack from 1 October 1999 to 30 September 2002 would need to be set aside and catch history qualifying years would be future years to be determined at the time a decision is made to bring skipjack into the QMS.

Stocks and Areas

46 Skipjack tuna that occur in New Zealand fisheries waters are part of a central and western Pacific Ocean stock. NIWA has recommended a single QMA for New Zealand fisheries waters for stock boundaries for skipjack tuna based on the biological distribution of this species.

Proposed Quota Management Areas

47 The Fisheries Act 1996 (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).

48 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 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 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 skipjack should be the same as for these related species.

49 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 were most abundant and/or fishing costs were lowest. MFish policy principles indicate that stock boundaries should take into account the existing characteristics of the fishery (known fisheries, relevant fisheries management issues). The potential for competitive effects in the fishery might suggest an alternative QMA option for skipjack in which there is separation between east and west coast. However, on balance MFish considers that, given the management arrangements for other tuna and highly migratory bycatch species a single QMA is preferred. The competitive effects in the fishery can be addressed by other mechanisms.

50 Skipjack 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

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

51 This proposed QMA encompasses all New Zealand fisheries waters, including the Kermedec FMA (refer Figure 1).

Figure 1: Proposed QMAs for skipjack tuna

Fishing Year

52 The current fishing year for skipjack tuna is from 1 October to 30 September. The alternative fishing year is 1 April to 31 March.

53 A 1 October fishing year applies for these other tuna species, and MFish considers that skipjack should be aligned with them.

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

Unit of Measure

55 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 skipjack tuna be introduced into the QMS, and accordingly proposes that greenweight be retained as the unit of measure.

TUATUA (TUA)

Summary of Proposals

1 The Ministry of Fisheries (MFish) proposes that:

a) Tuatua be introduced into the quota management system (QMS) on 1 October 2005;

b) The quota management areas (QMAs) be TUA 1 (FMA 1), TUA 2 (FMA 2), TUA 3 (FMA 3), TUA 4 (FMA 4), TUA 5 (FMA 5 and 6), TUA 7 (FMA 7), TUA 8 (FMA 8), and TUA 9 (FMA 9);

c) The fishing year be 1 October to 30 September; and

d) The unit of measurement be greenweight.

Assessment of costs and benefits

Sustainability criteria

Is the overall catch of this species or stock sustainable?

2 Tuatua (*Paphies subtriangulata*) is a common wedge-shaped surf clam belonging to the same family that includes toheroa, deepwater tuatua, and pipi. Tuatua is widespread throughout New Zealand in suitable sandy and soft-bottom habitats, and is more common on North Island beaches. The species is generally found in the intertidal zone and upper subtidal zone, where it can form discrete bands. Tuatua commonly occurs in areas mixed with other surf clam species.

3 There is limited stock assessment information to determine stock status of tuatua. There are no estimates of current or reference biomass, or sustainable yield. The majority of commercial catches are taken in fisheries management area (FMA) 9, and are mainly restricted to Kaipara Harbour and along Dargaville beach. Annual commercial catches in FMA 9 increased through the early 1990s, and have substantially declined in recent years (Table 1). Most recent catches were taken in the Kaipara Harbour dredge fishery (FMA 9). It is not known whether catches in FMA 9 are sustainable. Very minor commercial catches of tuatua were taken in other FMAs in the early 1990s.

Table 1: **Estimated catches (tonnes) of tuatua by FMA for fishing years 1989–90 to 2002-03. Catches based on data extracted from MFish databases by NIWA.**

FMA/Year	1	7	8	8/9	9
1989-90	0.8		0.1	0.1	69
1990-91	0.3	0.2	0.4		63
1991-92	0.6	2.1	0.5		77
1992-93	0.2	0.1	0.2	0.2	107
1993-94	0.5				175
1994-95	0.4				173
1995-96					93
1996-97					62
1997-98					73
1998-99					73
1999-00					44
2000-01					15
2001-02					5
2002-03					10

4 A maximum annual harvest of 2 190 tonnes can be taken from the Kaipara Harbour dredge fishery (based on a maximum daily catch limit[1] of 600 kg of tuatua for each of the eligible ten permit holders[2]). Annual catches have always been substantially lower than the maximum catch limit and probably reflects relatively low market demand and high catching costs relative to the 600 kg daily catch limit. Since 1990 the number of active fishers has decreased from 10 to four fishing permit holders.

5 Tuatua may be taken as a bycatch in the target cockle, pipi, and surf clam fisheries. Changes to fishing patterns in these target fisheries (including development of new and existing harvest areas) are likely to influence catches of tuatua.

6 Tuatua, like other sedentary species, form localised populations in open and sheltered soft-bottom habitats. These populations are likely to demonstrate spatial and temporal fluctuations in stock size and structure due to the influence of environmental factors on population dynamics. These factors include water temperature, exposure rates, water currents, sand movement, food availability, and predation. In addition, fishing pressure by commercial and non-commercial fishers may have an impact of population dynamics, as fishers generally harvest large tuatua. The biological attributes of tuatua suggest this species is vulnerable to the effects of fishing and habitat disturbance, and is particularly susceptible to localised depletion.

7 Overall, there is no information that establishes any sustainability concerns about tuatua stocks at present. However, MFish notes the dramatic decline in catch levels in FMA 9 since the mid-1990s. This decline may indicate decreasing stock abundance, or alternatively, reflect a decrease in fishing effort caused by changes in market demand and possibly increasing catching costs. MFish is unaware of any concerns by customary and recreational fishers on the availability of tuatua within the Kaipara Harbour.

8 Commercial fishing effort for tuatua is likely to increase under open access in both existing harvest areas (particularly in northern beaches of the North Island), as well as new areas if market demand increases. This risk arises because tuatua is a marketable shellfish species and the cost of entry into the tuatua fishery would be relative low

[1] Regulation 22A of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986
[2] Based on total number of permit holders during the 1990-91 and 1991-92 fishing years

(ie, it is a beach-based fishery). Given the localised nature of tuatua, an increase in unconstrained fishing effort could give rise to sustainability concerns in both existing and new harvest areas.

Does the harvest of this species or stock have adverse effects on the aquatic environment or adversely affect the sustainability of other species and/or biological diversity?

9 Tuatua are an important food source for harbour and estuarine fish (particularly juvenile fish), crabs, and seabirds. Tuatua are also likely to play an important role in stabilising sandy beaches and banks by reducing the transport of finer sediment material. The species may also assist in maintaining water quality through their filter-feeding activity within estuarine and harbour environments. A reduction in tuatua biomass may have implications on associated and dependent species, and on physical aquatic environment, particularly if localised depletion of discrete tuatua populations occurs. Constraining catches to appropriate levels would reduce the effects of fishing on the aquatic environment.

10 Commercial fishers are permitted to use dredges[3] within a defined area of the Kaipara Harbour entrance to harvest tuatua beds at water depths of about 20 m. MFish has no information on the physical impacts of dredging for tuatua on the benthic environment within the harbour. Dredging is restricted to the harbour entrance, which is likely to be a very dynamic environment characterised by strong tidal flows and continual movement of sand and other material across the seabed. A commercial operation extracts sand by dredge from the same general area as the commercial fishery, and research information on this activity indicates that sand movement within the harbour rapidly removes the effects of dredging. MFish considers the effects of commercial tuatua dredging at current levels on the benthic environment are likely to be the same.

11 With the exception of the Kaipara Harbour dredge fishery, all commercial and non-commercial harvesting for tuatua is restricted to handgathering. This is a low impact method that essentially has no discernable effect on the environment where harvesting occurs.

Utilisation criteria

Are there allocation issues between commercial and non-commercial (customary and recreational) users for this species or stock?

12 Tuatua is readily available in many areas throughout New Zealand and is commonly taken by non-commercial fishers.

13 There are unlikely to be allocation issues in the Kaipara Harbour fishery given the commercial tuatua beds occur in depths of 20 m and alternative tuatua beds within the harbour are available for non-commercial fishers. MFish is unaware whether tuatua within the sub-tidal beds play a role in supporting tuatua beds elsewhere in the harbour. However, no concerns have been raised about availability of tuatua to non-commercial fishers. An increase in commercial catches of tuatua in the

[3] Regulation 4A(3) of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986

Kaipara Harbour may potentially have implications for non-commercial tuatua beds through the loss of spat that recruit into intertidal beds.

14 There are unlikely to be allocation issues in other areas between commercial and non-commercial fishers under current harvest levels. However, increases in both commercial and non-commercial catches may create significant potential allocation issues between users over access to localised tuatua populations. Conflict of access may also arise in direct response to an increasing population in northern New Zealand given the relative accessibility of fishers to coastal areas where tuatua beds occur. These issues will be exacerbated by an increase in preference for tuatua by recreational fishers in response to changes in population demographics.

Is there evidence of inefficient utilisation or under utilisation of this species or stock?

15 There is some evidence of both inefficient and under utilisation of the existing commercial harvest areas, including the Kaipara Harbour dredge fishery. Commercial catches no longer occur in areas outside Kaipara Harbour, and catches within the harbour have declined significantly since the mid-1990s. The number of permit holders has also declined from 10 in 1991-92 to 4 in the current fishing year. The decline in both catch levels and fisher participation may be attributable to a combination of low market demand for tuatua and increasing catching costs relative to the maximum daily catch limits[4] that apply to the commercial fisheries. MFish would remove these daily limits if tuatua were managed under the QMS framework.

Conclusions drawn from the criteria

16 The best available information indicates there are no sustainability concerns for tuatua under current catch levels. However, this species is sedentary in nature and forms discrete, localised beds in coastal and estuarine areas. These biological attributes suggest that tuatua is vulnerable to the effects of fishing, particularly localised depletion.

17 Under open access, tuatua catches are expected to increase as market demand increases. There is a risk that fishing effort may increase in both existing and new tuatua harvest areas, and this could lead to localised depletion and sustainability problems. Increased effort in the associated shellfish fisheries such as cockle, pipi and surf clams, may also result in an increase in bycatch of tuatua that may not be sustainable.

18 While there are no concerns about the current effects of fishing for tuatua on the aquatic environment, this species plays an important role in coastal and estuarine ecosystems. Unconstrained fishing effort could have an adverse effect on associated and dependent species, and the physical coastal environment.

19 An increase in catch levels could lead to utilisation issues between commercial and non-commercial users. Unconstrained fishing may lead to localised depletion of beds that are shared between different sectors, and this could create conflict of access

[4] In addition to the 600 kg daily catch limit that applies to the Kaipara Harbour commercial dredge fishery, a 200 kg daily catch limit applies to the commercial handgathering fisheries in FMA 9 (Regulation 22A of the Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986)

issues due to the reduced availability of tuatua for non-commercial fishers. The potential for conflict between commercial and non-commercial sectors over access to tuatua is likely to occur due to the increase in population in coastal areas of the North Island. Allocation problems are unlikely to occur in the Kaipara Harbour because the commercial tuatua beds are not available to non-commercial fishers.

20 Given the discussion above, MFish considers that tuatua requires active management to ensure the sustainability of the tuatua stocks and avoid potential allocation problems.

Special Circumstances

Do special circumstances negate the case for immediate QMS entry?

21 Introducing tuatua into the QMS is unlikely to result in additional administrative and management costs that are different to those associated with other QMS species.

22 MFish acknowledges that managing tuatua under the QMS will impose higher economic costs on fishers. These costs will arise from the requirement for fishers to hold annual catch entitlement (ACE), pay deemed values and cost recovery levies, or modify their target fishing operations to avoid catching tuatua.

23 However, on balance, there are no special circumstances regarding tuatua that negate the case for its introduction into the QMS on 1 October 2005. All major sedentary shellfish species (ie, cockle, pipi and surf clams stocks) are either currently, or are proposed to be managed under the QMS framework.

Consideration of the QMS

Is the QMS in its current form able to accommodate this species or stock?

24 The QMS in its current form is able to accommodate the introduction of tuatua.

Can QMS changes be implemented in time for the planned introduction date?

25 No changes are required to the QMS in order to introduce tuatua.

Conclusion

Is QMS introduction preferred in light of the costs and benefits anticipated?

26 On balance, the QMS is the preferred management framework for tuatua. The main reasons to introduce tuatua into the QMS are its susceptibility to adverse fishing effects, particularly localised depletion, and the potential allocation issues between fisheries sectors. These issues require active management and are best managed under the QMS framework.

27 Managing tuatua within the QMS and constraining catches within appropriately set total allowable catches would satisfy the purpose of the Fisheries Act 1996 (the Act) to provide for utilisation while ensuring sustainability. QMS management for this species would provide a positive initiative to ensure the long-term sustainability of tuatua, while minimising the risks of the adverse effects of fishing on the aquatic

environment and on fisheries users. The QMS would enable fishers to actively manage the tuatua fishery within sustainable limits and gain benefits that accrue from having secure access rights. Those rights would provide benefits by enhancing fishers' ability to plan fishing and business arrangements, both in the short and longer term.

28 The QMS would also confer incentives to rationally explore the potential for sustainable development of the fishery in both existing and new harvest areas. The QMS also has inherent incentives to mitigate the potential effects of fishing on the aquatic environment and on other fisheries sectors through adopting environmentally appropriate technologies and fishing practices.

29 The open access alternative would provide commercial fishers with incentives for 'racing for catch', rather than rational efficient fishing to obtain the best value from the fishery. Risks to the sustainability of the tuatua stocks, associated and dependent species, as well as the physical environment, are increased under an open access environment.

30 Managing tuatua under the QMS would be likely to increase operating costs for fishers. These costs would arise from the requirement to own ACE to cover catch or pay deemed values. However, there would be operational efficiencies for the mix of sedentary fisheries (where appropriate) if tuatua were managed within the QMS.

Stock and Areas

31 Tuatua is found widespread on sandy and soft-bottom beaches and banks around the North Island, at more scattered locations in northern South Island and Stewart Island, as well as the Chatham Islands.

32 Tuatua demonstrate morphodynamic differences between areas. Individuals generally attain larger sizes and abundance on reflective beaches than on more shallow-sloping, dissipative beaches.

33 NIWA advises the boundaries of individual stocks of tuatua are likely to be the continuous lengths of exposed sandy beaches between geographical features (rivers, headlands etc) on which tuatua occur. NIWA suggests that stock boundaries for management purposes can be encompassed within the general statistical area subdivisions of FMAs.

Proposed Quota Management Areas

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

- As far as practicable, the same QMAs must be maintained for different species (s 19(2)); and
- A separate QMA may be set for the stock in 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)).

35 In addition to the above matters, MFish has developed a set of principles to assist in defining practicable QMAs, which is set out in the introductory section of this paper. In considering these statutory matters and principles, MFish considers the following are key factors in defining QMAs for tuatua.

a) Tuatua beds are common throughout New Zealand;

b) It is impractical and administratively costly to manage tuatua based on small statistical reporting areas;

c) Tuatua are often found in areas with other sedentary shellfish species such as cockle, pipi and surf clams. The management of tuatua needs to be closely aligned with these associated fisheries; and

d) Tuatua are found in the Chatham Islands. Therefore, it is appropriate to establish a separate QMA for this area.

Proposals

36 MFish proposes that tuatua should be managed within eight QMAs (refer to Figure 1 below). The proposed QMAs are aligned with the QMAs for the various surf clams, as well as the proposed QMAs for the cockle and pipi fisheries to reflect the close association between these fisheries.

37 MFish notes that commercial fisheries may overlap with important customary and recreational fisheries in some areas. It may also be inappropriate to allow commercial harvesting to all areas within a QMA to mitigate the effects of fishing in ecological sensitive areas. MFish will consider management measures that may be necessary to support the introduction of tuatua into the QMS if it sets sustainability and other management measures for this species. This may include the use of fisheries regulations to initially constrain commercial harvesting to existing harvest areas. This will enable appropriate total allowable commercial catches to be set to allow for commercial utilisation while mitigating the risks of fishing in environmentally sensitive coastal areas. The proposed approach will reflect the management regime established for the Challenger cockle fisheries.

38 MFish notes there is unlikely to be any development of a tuatua fishery within FMA 10 given the isolation of the FMA from the mainland, lack of potential habitat, and the presence of a marine reserve. Consequently, it is appropriate to retain FMA 10 outside the QMS.

TUA1 (FMA 1)

39 This proposed QMA extends from North Cape to Cape Runaway, incorporating the northern parts of the east coast of the North Island. Small commercial catches of tuatua are taken from Northland beaches.

TUA2 (FMA 2)

40 This proposed QMA extends from Cape Runaway to the coast adjacent to Porirua. There is no data on reported catches for tuatua in FMA 2.

TUA3 (FMA 3)

41 This proposed QMA extends from the Clarence River mouth (Marlborough) to Slope Point on the Catlins coast (Southland). There is no data on reported catches for tuatua in FMA 3.

TUA4 (FMA 4)

42 This proposed QMA encompasses the Chatham Islands and the eastern Chatham Rise. There is no data on reported catches for tuatua in FMA 4.

TUA5 (FMAs 5 & 6)

43 MFish notes there is unlikely to be any development of a tuatua fishery within FMA 6. In such areas, MFish usually sets larger QMAs to reduce management costs. MFish proposes to combine FMAs 5 and 6 for this species. The proposed QMA extends from Slope Point on the Catlins coast to Awarua Point, Westland, and includes all southern waters of New Zealand and the sub-Antarctic islands.

TUA7 (FMA 7)

44 This proposed QMA extends from Awarua Point, Westland around the top of the South Island to the Clarence River on the east coast of the South Island. Commercial catches of tuatua are taken in Cloudy and Clifford Bays.

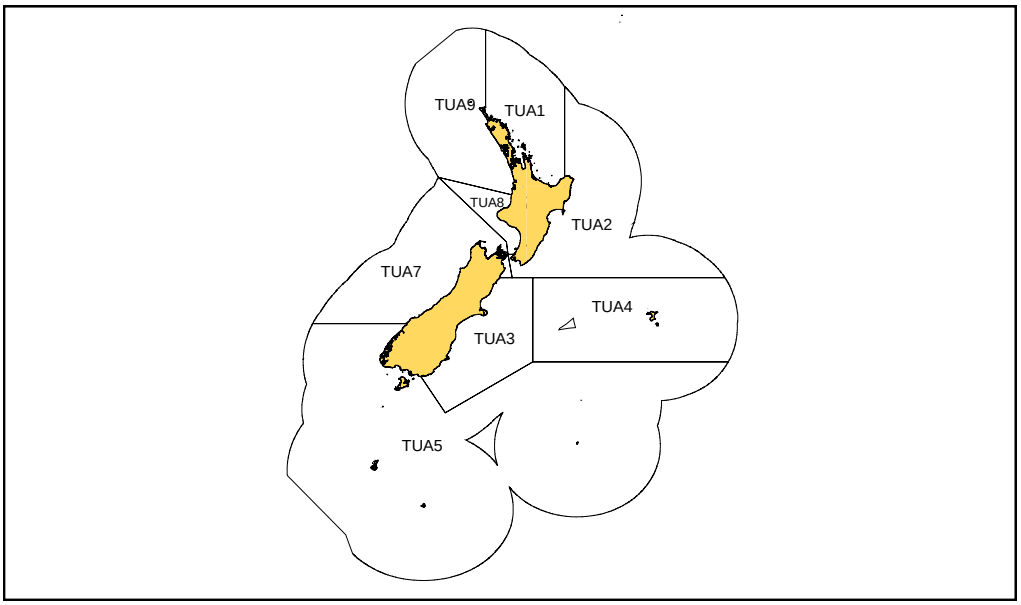
TUA8 (FMA 8)

45 This proposed QMA extends from the Porirua coast north to Tirua Point, south of Kawhia Harbour. Small commercial catches of tuatua are taken from Taranaki beaches.

TUA9 (FMA 9)

46 This proposed QMA extends from Tirua Point to North Cape. This is the main area for catches of tuatua. MFish considers it appropriate to manage tuatua within FMA 9 as a separate management area to enable the principal commercial fisheries to be managed as a unit.

Figure 1 **Quota Management Areas for tuatua**



Fishing Year

47 The fishing year for tuatua is from 1 October to 30 September. This is consistent with the fishing year that applies to the associated cockle and surf clam QMS fisheries. Accordingly, should tuatua be introduced into the QMS, the proposed fishing year is 1 October to 30 September.

Unit of Measure

48 MFish considers that the unit of measurement should be greenweight. Greenweight has been used historically for management purposes in the tuatua fishery. This unit of measure also applies to all the associated cockle and surf clam QMS fisheries. There does not appear to be any rationale for changing this unit of measure should tuatua be introduced into the QMS.